MASSACHUSETTS INSTITUTE OF TECHNOLOGY

REPORT ON THE AUDIT OF FEDERAL FINANCIAL ASSISTANCE PROGRAMS IN ACCORDANCE WITH THE Uniform Guidance

FOR THE YEAR ENDED JUNE 30, 2021

Page intentionally left blank

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
Report on the Audit of Federal Financial Assistance Programs in Accordance with the Uniform Guidance For the Year Ended June 30, 2021

Table of Contents

Page intentionally left blank

SECTION I

FINANCIAL REPORTS

Page intentionally left blank

Report of Independent Auditors

To the Members of the Corporation of the
Massachusetts Institute of Technology:

Report on the Consolidated Financial Statements

We have audited the accompanying consolidated financial statements of the Massachusetts Institute of Technology and its subsidiaries (the "Institute"), which comprise the consolidated statements of financial position as of June 30, 2021 and 2020, and the related consolidated statement of activities for the year ended June 30, 2021 and the consolidated statements of cash flows for the years ended June 30, 2021 and 2020, and the related notes to the financial statements.

Management's Responsibility for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on the consolidated financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on our judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the Institute's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Institute's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the consolidated financial position of the Massachusetts Institute of Technology and its subsidiaries as of June 30, 2021 and 2020, the changes in their net assets for the year ended June 30, 2021 and their cash flows for the years ended June 30, 2021 and 2020 in accordance with accounting principles generally accepted in the United States of America.

Emphasis of Matter

As discussed in Note A to the consolidated financial statements, the Institute changed the manner in which it accounts for leases in 2021. Our opinion is not modified with respect to this matter.

Other Matters

We previously audited the consolidated statement of financial position as of June 30, 2020, and the related consolidated statements of activities and of cash flows for the year then ended (the statement of activities is not presented herein), and in our report dated September 11, 2020, we expressed an unmodified opinion on those consolidated financial statements. In our opinion, the information set forth in the accompanying summarized financial information as of June 30, 2020 and for the year then ended, is consistent, in all material respects, with the audited consolidated financial statements from which it has been derived.

Other Information

Our audit was conducted for the purpose of forming an opinion on the consolidated financial statements as a whole. The accompanying schedule of expenditures of federal awards for the year ended June 30, 2021 and the financial responsibility supplemental schedule as of and for the year ended June 30, 2021 are presented for purposes of additional analysis as required by Title 2 U.S. *Code of Federal Regulations* Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (Uniform Guidance) and the Department of Education, respectively, and are not a required part of the consolidated financial statements. The information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the consolidated financial statements. The information has been subjected to the auditing procedures applied in the audit of the consolidated financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the consolidated financial statements or to the consolidated financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the schedule of expenditures of federal awards and the financial responsibility supplemental schedule are fairly stated, in all material respects, in relation to the consolidated financial statements taken as a whole.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated October 13, 2021 on our consideration the Institute's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts and grant agreements and other matters for the year ended June 30, 2021. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing and not to provide an opinion on the effectiveness of internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the Institute's internal control over financial reporting and compliance.

PricewaterhouseCoopers LLP

Boston, Massachusetts
October 13, 2021

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
CONSOLIDATED STATEMENTS OF FINANCIAL POSITION
as of June 30, 2021 and 2020

(in thousands of dollars)	2021	2020
Assets		
Cash	$ 345,519	$ 572,448
Accounts receivable, net	358,742	262,986
Pledges receivable, net, at fair value	571,268	620,340
Contracts in progress, principally US government	81,766	99,886
Deferred charges and other assets	236,721	186,360
Investments, at fair value	34,793,438	24,364,668
Operating leases - right of use assets	273,512	-
Net asset position - defined benefit pension plan	950,414	-
Net asset position - retiree welfare benefit plan	439,150	92,073
Land, buildings, and equipment (at cost of $6,642,569 for June 2021; $6,334,817 for June 2020), net of accumulated depreciation	4,475,962	4,306,769
Total assets	**$ 42,526,492**	**$ 30,505,530**
Liabilities and Net Assets		
Liabilities:		
Accounts payable, accruals, and other liabilities	$ 712,377	$ 646,072
Deferred revenue and other credits	321,496	206,154
Advance payments	513,726	457,567
Operating lease liabilities	282,040	-
Liabilities due under life income fund agreements, at fair value	321,450	232,921
Borrowings, net of unamortized issuance costs	3,929,034	4,194,017
Net liability position - defined benefit pension plan	-	551,868
Total liabilities	**$ 6,080,123**	**$ 6,288,599**
Net Assets:		
Without donor restrictions	$ 15,725,732	$ 9,582,028
With donor restrictions	20,720,637	14,634,903
Total net assets	**$ 36,446,369**	**$ 24,216,931**
Total liabilities and net assets	**$ 42,526,492**	**$ 30,505,530**

The accompanying notes are an integral part of the consolidated financial statements.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
CONSOLIDATED STATEMENT OF ACTIVITIES
For the year ended June 30, 2021
(with summarized financial information for the year ended June 30, 2020)

(in thousands of dollars)	2021 Without Donor Restrictions	2021 With Donor Restrictions	Total 2021	Total 2020
Operating Revenues				
Tuition and similar revenues, exclusive of financial aid of $401,198 in 2021 and $387,338 in 2020	$ 344,303	$ -	$ 344,303	$ 374,669
Sponsored support:				
Campus direct	578,900	-	578,900	597,357
Lincoln direct	1,073,876	-	1,073,876	1,042,970
SMART direct	28,246	-	28,246	32,635
Indirect cost recovery	276,103		276,103	268,004
Total sponsored support	1,957,125	-	1,957,125	1,940,966
Contributions	422,901	25,278	448,179	383,361
Other revenue	200,878	-	200,878	203,935
Support from investments:				
Endowment	749,106	-	749,106	737,202
Other investments	163,536	-	163,536	174,672
Total support from investments	912,642	-	912,642	911,874
Auxiliary enterprises	81,965	-	81,965	115,981
Total revenues	$ 3,919,814	$ 25,278	$ 3,945,092	$ 3,930,786
Operating Expenses				
Salaries and wages	$ 1,617,407	$ -	$ 1,617,407	$ 1,593,091
Employee benefits	577,802	-	577,802	537,409
Supplies and services	964,472	-	964,472	1,047,114
Subrecipient agreements	142,319	-	142,319	164,095
Utilities, rent, and repairs	226,187	-	226,187	211,701
Total expenses before depreciation and interest	3,528,187	-	3,528,187	3,553,410
Results of operations before depreciation and interest	391,627	25,278	416,905	377,376
Depreciation	209,325	-	209,325	201,659
Interest expense	126,468	-	126,468	116,777
Results of operations	55,834	25,278	81,112	58,940
Net periodic benefit income other than service cost	135,255	-	135,255	128,066
Net results	$ 191,089	$ 25,278	$ 216,367	$ 187,006
Other Revenues, Gains, and Losses				
Contributions	$ -	$ 57,005	$ 57,005	$ 140,390
Net return on investments	4,290,416	6,599,497	10,889,913	2,142,655
Distribution of investment income and gains	(387,782)	(524,860)	(912,642)	(911,874)
Other changes	3,916	99,588	103,504	12,518
Postretirement plan changes other than net periodic benefit cost	1,875,291	-	1,875,291	(122,769)
Net asset reclassifications and transfers	170,774	(170,774)	-	-
Total other revenues, gains, and losses	5,952,615	6,060,456	12,013,071	1,260,920
Increase in net assets	6,143,704	6,085,734	12,229,438	1,447,926
Net assets at the beginning of the year	9,582,028	14,634,903	24,216,931	22,769,005
Net assets at the end of the year	**$ 15,725,732**	**$ 20,720,637**	**$ 36,446,369**	**$ 24,216,931**

The accompanying notes are an integral part of the consolidated financial statements.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
CONSOLIDATED STATEMENTS OF CASH FLOWS
for the years ended June 30, 2021 and 2020

(in thousands of dollars)	2021	2020
Cash Flow from Operating Activities		
Increase in net assets	$ 12,229,438	$ 1,447,926
Adjustments to reconcile change in net assets to net cash used in operating activities:		
Net gain on investments	(10,952,680)	(2,149,914)
Change in retirement plan asset, net of accrued benefit liability	(1,849,359)	147,466
Depreciation	209,325	201,659
Net gain on life income funds and donor advised funds	(204,534)	(13,464)
Non-cash operating lease costs	40,225	-
Amortization of bond premiums and discounts and other adjustments	4,735	(2,315)
Change in operating assets and liabilities:		
Pledges receivable	49,072	(36,957)
Accounts receivable	(98,983)	15,492
Contracts in progress	18,120	3,421
Deferred charges and other assets	(50,089)	15,359
Accounts payable, accruals, and other liabilities	71,552	51,065
Liabilities due under life income fund agreements	110,341	43,057
Deferred revenue and other credits	119,321	57,756
Advance payments	56,159	17,457
Operating lease liabilities	(39,335)	-
Reclassification of donated securities	(8,308)	(9,848)
Reclassification of investment income	(4,907)	(5,028)
Reclassification of contributions restricted for long-term investment	(159,110)	(142,683)
Net cash and restricted cash used in operating activities	(459,017)	(359,551)
Cash Flow from Investing Activities		
Purchase of land, buildings, and equipment	(384,586)	(516,950)
Purchases of investments	(9,173,044)	(8,227,259)
Proceeds from sale of investments	9,822,591	7,986,183
Student notes issued	(3,904)	(5,143)
Collections from student notes	7,054	9,586
Net cash and restricted cash provided by (used in) investing activities	268,111	(753,583)
Cash Flow from Financing Activities		
Proceeds from sale of donated securities restricted for endowment	8,308	9,848
Investment income for restricted purposes	4,907	5,028
Contributions restricted for long-term investment	159,110	142,683
Payments to beneficiaries of life income funds	(21,812)	(19,747)
Proceeds from borrowings	-	1,105,742
Repayment of borrowings	(261,180)	(77,030)
Repayments of government advances for student loans	(3,978)	(8,974)
Net cash and restricted cash (used in) provided by financing activities	(114,645)	1,157,550
Net (decrease) increase in cash and restricted cash	(305,551)	44,416
Cash and restricted cash at the beginning of the period	1,028,958	984,542
Cash and restricted cash at the end of the period	**$ 723,407**	**$ 1,028,958**
Supplemental Information on cash and restricted cash:		
Cash on Statements of Financial Position	$ 345,519	$ 572,448
Cash and restricted cash included in Investments (see Note B)	364,982	443,876
Restricted cash included in Other Assets (see Note G)	12,906	12,634
Total cash and restricted cash on Cash Flow	**$ 723,407**	**$ 1,028,958**

The accompanying notes are an integral part of the consolidated financial statements.

Notes to Consolidated Financial Statements

A. Accounting Policies

Basis of Presentation

The accompanying financial statements have been prepared in accordance with generally accepted accounting principles (GAAP) in the United States of America. The consolidated financial statements (financial statements) include MIT and its wholly owned subsidiaries.

Net assets, revenues, expenses, and gains and losses are classified into two categories based on the existence or absence of donor-imposed restrictions. The categories are net assets with donor restrictions and net assets without donor restrictions.

Net assets with donor restrictions include gifts, pledges, trusts and remainder interests, and income and gains that are either required by donors to be permanently retained or for which restrictions have not yet been met. Such restrictions include purpose restrictions where donors have specified the purpose for which the net assets are to be spent, or time restrictions imposed by donors or implied by the nature of the gift (e.g., capital projects, pledges to be paid in the future, life income funds), or by interpretations of law (net gains on donor-endowed gifts, where the gains have not yet been appropriated for spending). Net assets without donor restrictions are all the remaining net assets of MIT.

Donor-restricted gifts and grants (including gifts of long-lived assets) and distributed restricted endowment income, for which the restrictions are met within the same year of gift, grant, or distribution, are reported as revenue without donor restrictions. Amounts for which the restrictions are not met within the same year of gift, grant, or distribution are reclassified to net assets with donor restrictions through the net asset reclassifications and transfers line in the Statement of Activities. These amounts are released back to net assets without donor restrictions, through the net asset reclassification and transfers line, during the years in which the restrictions are met. Gifts specified for the acquisition or construction of long-lived assets are reported as net assets with donor restrictions until the monies are expended and the long-lived assets (i.e., buildings) are put into use, at which point they are reclassified to net assets without donor restrictions, also through the net asset reclassifications and transfers line.

MIT administers its various funds, including endowments, funds functioning as endowments, school or departmental funds, and related accumulated gains, in accordance with the principles of fund accounting. Gifts are recorded in fund accounts, and investment income is distributed to funds annually. Income distributed to funds may be a combination of capital appreciation and yield pursuant to MIT's total return investment and spending policies. Each year, the Executive Committee of the Corporation approves the rates of distribution of investment return to funds from MIT's investment pools. See Note J for further information on income distributed to funds.

MIT's operating revenues include tuition, sponsored support, contributions (expendable gifts and pledge payments), other revenue, support from investments, and auxiliary revenue.

Net results, as presented in MIT's Statement of Activities, is the measure to which the Institute manages its annual budget and is used in financial reports presented to MIT's leadership, including the Executive Committee and the Corporation. It is a comprehensive measure of MIT's annual financial performance, including operating activity and the non-service cost components of net periodic benefit costs or income that serve as a basis for cost recovery.

The Statement of Activities also shows results of operations, a measure of ongoing activities, which excludes the impacts of the components of net periodic retirement benefit costs or income other than service costs, and results of operations before depreciation and interest, which is a valuable measure for the Institute as it highlights the impacts of financing and capital development costs that are included in net results.

A. Accounting Policies (continued)

Tax Status

MIT is a nonprofit organization that is tax-exempt under Section 501(c)(3) of the Internal Revenue Code, originally recognized in October 1926, with the most recent affirmation letter dated September 2017.

US GAAP requires MIT to evaluate tax positions taken by the Institute to recognize a tax liability (or asset) if the Institute has taken an uncertain tax position that, more likely than not, would not be sustained upon examination by the IRS. MIT has analyzed the tax positions taken and has concluded that as of June 30, 2021, there are no significant uncertain positions taken or expected to be taken.

Cash

Certain cash balances, totaling $56.2 million and $82.6 million at June 30, 2021 and 2020, respectively, are restricted for use under certain sponsored research agreements or are held on behalf of a related party. These amounts are included within the cash line in the Consolidated Statements of Financial Position.

The Institute had approximately $301.9 million and $561.7 million at June 30, 2021 and 2020, respectively, of its cash accounts with a single institution. The Institute has not experienced any losses associated with deposits at this institution.

Land, Buildings, and Equipment

Land, buildings, and equipment are shown at cost when purchased, or at fair value as of the date of a gift when received as a gift, net of accumulated depreciation. When expended, costs associated with the construction of new facilities are shown as construction in progress until such projects are completed and put into use. Depreciation is computed on a straight-line basis over the estimated useful lives of 25 to 50 years for buildings, 3 to 25 years for equipment, and 4 to 6 years for software.

Fully depreciated assets were removed from the financial statements in the amount of $71.5 million and $59.4 million during 2021 and 2020, respectively. Land, buildings, and equipment at June 30, 2021 and 2020, are shown in Table 1 below.

TABLE 1. LAND, BUILDINGS, AND EQUIPMENT

(in thousands of dollars)	2021	2020
Land	$ 107,557	$ 107,557
Land improvements	109,590	84,414
Educational buildings	5,448,940	4,787,262
Equipment	421,981	392,726
Software	45,693	52,757
Total	6,133,761	5,424,716
Less: accumulated depreciation	(2,166,607)	(2,028,048)
Construction in progress	503,281	909,979
Software projects in progress	5,527	122
Net land, buildings, and equipment	**$ 4,475,962**	**$ 4,306,769**

Depreciation expense was $209.3 million in fiscal 2021 and $201.7 million in fiscal 2020. Net interest expense of $31.8 million and $31.2 million was capitalized during fiscal 2021 and fiscal 2020, respectively, in connection with MIT's construction projects.

A. Accounting Policies (continued)

Tuition and Student Support

Tuition and similar revenues, shown in Table 2 below, include tuition and fees for degree programs as well as tuition and fees for executive and continuing education programs at MIT. Tuition revenue is recognized over the period during which the courses are taken.

TABLE 2. TUITION AND SIMILAR REVENUES

(in thousands of dollars)	2021	2020
Undergraduate and graduate programs*	$ 279,831	$ 306,287
Executive and continuing education programs	64,472	68,382
Tuition and similar revenues	**$ 344,303**	**$ 374,669**

** Undergraduate and graduate programs at published rates totaled $681,029 and $693,625 in fiscal 2021 and fiscal 2020, respectively, and financial aid applied to undergraduate and graduate programs was $401,198 and $387,338 in fiscal 2021 and fiscal 2020, respectively.*

Tuition support shown in Table 3 below is awarded to undergraduate students by MIT based on need. Graduate students are provided with tuition support in connection with research assistance, teaching assistance, and fellowship appointments.

TABLE 3. STUDENT SUPPORT

	2021			2020		
(in thousands of dollars)	Institute Sources	External Sponsors	Total Student Support	Institute Sources	External Sponsors	Total Student Support
Undergraduate tuition support	$ 137,759	$ 21,447	$ 159,206	$ 138,041	$ 19,503	$ 157,544
Graduate tuition support	263,439	60,742	324,181	249,297	62,963	312,260
Fellowship stipends	35,608	16,185	51,793	29,982	15,098	45,080
Student employment	53,814	86,627	140,441	51,251	85,676	136,927
Total	**$ 490,620**	**$ 185,001**	**$ 675,621**	**$ 468,571**	**$ 183,240**	**$ 651,811**

Sponsored Support and Advance Payments

Almost all of Lincoln and SMART sponsored revenue, and a portion of Campus sponsored revenue, come from exchange contracts. Sponsored revenue related to exchange contracts is recognized as MIT fulfills the terms of the agreements, which generally span less than five years. Almost all of Campus sponsored revenue, and a portion of Lincoln and SMART sponsored revenue, comes from non-exchange contracts. Sponsored revenue associated with non-exchange contracts is recognized as the qualified expenditures are incurred. Sponsored activities at Lincoln, for which the contractual performance obligations have not yet been met, totaled $809.5 million and $752.3 million as of fiscal 2021 and fiscal 2020, respectively. Sponsored activities on campus, which are contractually authorized by the sponsor, but for which costs have not yet been incurred, totaled $1,048.5 million and $997.0 million as of fiscal 2021 and fiscal 2020, respectively.

Advance payments are amounts received by MIT from sponsors under the terms of agreements that generally require the exchange of assets, rights, or privileges between MIT and the sponsor. Advance payments are made for activity that will occur in the near future, generally within the next fiscal year. The majority of these payments relate to activity at Lincoln.

Indirect sponsored revenue includes the portion of facilities and administrative expenses that is attributed to sponsored activities. MIT has recorded reimbursement of indirect costs relating to sponsored research activities at negotiated fixed billing rates. For non-research activities, such as instruction and other sponsored activity, MIT records reimbursement of indirect costs on federal awards using the de minimis rate allowed by Uniform Guidance, and for non-federal awards, based on internally generated rates that are not required to be negotiated.

The revenue generated by the negotiated research rates is adjusted each fiscal year to reflect any variance between the negotiated fixed rates and rates based on actual costs. The actual cost rate is audited by the Defense Contract Audit Agency (DCAA), and a final fixed-rate agreement is signed by the US government and MIT. The variance between the negotiated fixed rate and the final audited rate results in a carryforward (over- or under-recovery). The carryforward is included in the calculation of negotiated fixed billing rates in future years. Any adjustment in the rate is charged or credited to net assets without donor restrictions.

Gifts and Pledges (Contributions)

Gifts and pledges (contributions) are recognized when MIT has an unconditional right to receive payment. Gifts of securities are recorded at their fair value at the date of contribution. Donated securities received totaled $58.6 million and $72.9 million in fiscal 2021 and fiscal 2020, respectively. Gifts of equipment received from manufacturers and other donors are put into use and recorded by MIT at fair value. Gifts of equipment totaled $1.2 million in fiscal 2021 and $10.9 million in fiscal 2020. Pledges consist of unconditional promises to contribute to MIT in the future. Pledges are reported at their estimated fair values. Pledges receivable are classified as Level 3 under the valuation hierarchy described in Note B.

Pledges, trusts, and remainder interests are reported at their estimated fair values. MIT records items of collections as gifts at nominal value. They are received for educational purposes, and most are displayed throughout MIT. In general, collections are not disposed of for financial gain or otherwise encumbered in any manner.

Other Revenue and Auxiliary Enterprises

For the revenue streams included in other revenue and auxiliary enterprises, revenue is recognized at the point in time when goods or services are provided and are included in the without donor restrictions net asset category. Other revenue includes patent royalty revenue, membership agreement revenue, medical services revenue, and various other types of revenue. Auxiliary enterprises revenue includes room and board revenue, as well as revenue earned by MIT Press, Technology Review, and Endicott House.

A. Accounting Policies (continued)

Life Income Funds

MIT's life income fund agreements with donors consist primarily of irrevocable charitable gift annuities, pooled income funds, and charitable remainder trusts for which MIT serves as trustee. Assets are invested and payments are made to donors and other beneficiaries in accordance with the respective agreements. MIT records the assets that are associated with each life income fund at fair value and records as liabilities the present value of the estimated future payments at current interest rates to be made to the donors and beneficiaries under these agreements. Life income fund assets are included within investments in the Consolidated Statements of Financial Position. A rollforward of liabilities due under life income fund agreements is presented in Table 4 below.

TABLE 4. LIABILITIES DUE UNDER LIFE INCOME FUNDS

(in thousands of dollars)	2021	2020
Balance at the beginning of the year	$ 232,921	$ 209,611
Additions for new gifts	3,538	9,336
Termination and payments to beneficiaries	(31,550)	(23,029)
Net investment and actuarial gain	116,541	37,003
Balance at the end of the year	**$ 321,450**	**$ 232,921**

Recently Adopted Accounting Standards

On July 1, 2020, the Institute adopted ASU 2016-02 – *Leases* (Topic 842), which requires a lessee to recognize a right of use asset and a lease liability, initially measured at the present value of the lease payments, in its balance sheet. The guidance also expands the required quantitative and qualitative disclosures surrounding leases. The effects of adopting this guidance resulted in the inclusion of the present value of operating lease payments in the Statement of Financial Position as "Operating leases—right of use assets" of $313.7 million and "Operating leases liabilities" of $321.4 million upon adoption. The Institute elected the package of practical expedients to not reassess: (1) whether any expired or existing contracts are or contain leases, (2) lease classification for any expired or existing leases, and (3) initial direct costs for any expired or existing leases. The Institute elected the short-term lease exemption policy as well as the practical expedient that allows lessees to treat the lease and non-lease components as a single lease component. In addition, the Institute elected to use hindsight to reassess lease terms or impairment at the adoption date. Refer to Note G for further details regarding leases.

On July 1, 2019, the Institute adopted ASU 2016-15 - *Statement of Cash Flows* (Topic 230): *Classification of Certain Cash Receipts and Cash Payments*, which provides clarification on classifying a variety of activities within the Statements of Cash Flows. The adoption of this standard did not have a material impact to the Institute's Statements of Cash Flows.

On July 1, 2019, the Institute adopted ASU 2016-18 - *Statement of Cash Flows* (Topic 230): *Restricted Cash*. Under this new guidance, the Institute must identify all cash, cash equivalents, and amounts generally described as restricted cash or cash equivalents within the Statements of Financial Position for inclusion in the beginning and ending totals within the Statements of Cash Flows. The Institute has evaluated and applied this guidance on a retrospective basis and included all applicable cash balances within the Statements of Cash Flows.

A. Accounting Policies (continued)

Non-Cash Items

Non-cash transactions excluded from the Consolidated Statements of Cash Flows include $25.7 million and $33.6 million of accrued liabilities related to plant and equipment purchases as of June 30, 2021 and 2020, respectively.

Use of Estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Reclassifications

Certain June 30, 2020, balances and amounts previously reported have been reclassified to conform to the June 30, 2021, presentation.

Subsequent Events

In July 2021, MIT issued $225.0 million of taxable bonds. The taxable bonds was issued pursuant to the indenture agreement dated December 1, 2019, related to the previously issued $300.0 million Taxable Bonds, Series F, which has a fixed interest rate of 2.989 percent and a maturity date of July 1, 2050. Combined, the aggregate principal amount outstanding of Taxable Bonds, Series F, is $525.0 million. Proceeds from this debt issuance will help fund general corporate purposes, including a new graduate residence on West Campus.

MIT has evaluated subsequent events through October 13, 2021, the date on which the financial statements were issued. There were no subsequent events other than the above debt issuance that occurred after the balance sheet date that have a material impact on MIT's financial statements.

Summarized Information

The Consolidated Statement of Activities includes certain prior year summarized comparative information in total, but not by net asset class. Such information does not include sufficient detail to constitute a presentation in conformity with accounting principles generally accepted in the United States of America. Accordingly, such information should be read in conjunction with MIT's financial statements for the year ended June 30, 2020, from which the summarized information was derived.

B. Investments

Investments are presented at fair value in accordance with GAAP. MIT performs ongoing due diligence to determine that the fair value of investments is reasonable. In particular, to ensure that the valuation techniques for investments that are categorized within the fair value hierarchy are fair, consistent, and verifiable, MIT has established a Valuation Committee ("the Committee") that oversees the valuation processes and procedures and ensures that the policies are fair and consistently applied. The Committee is responsible for conducting annual reviews of the valuation policies, evaluating the overall fairness and consistent application of the valuation policies, and performing specific reviews of certain reported valuations. The Committee performs due diligence over the external managers and, based on this review, substantiates the use of net asset value (NAV) as a practical expedient for estimates of fair value of its investments in externally managed funds. The Committee is comprised of senior personnel with members who are independent of investment functions. The Committee meets biannually, or more frequently as needed. Members of the Committee report annually to MIT's Risk and Audit Committee. The methods described in this note may produce a fair value that may not be indicative of net realizable value or reflective of future fair values. While MIT believes its valuation methods are appropriate and consistent with those of other market participants, the use of different methodologies or assumptions to determine the fair value of certain financial instruments could result in a different estimate of fair value at the reporting date.

Exchange and over-the-counter investment transactions are accounted for on the trade date. External fund investment transactions are accounted for on the settle date. Dividend income is recorded on the ex-dividend date. Interest and real estate income are recorded on the accrual basis of accounting. Realized gains and losses are recorded by MIT using the average cost method. For external funds, the realized gains and losses are recognized subsequent to the return of all capital invested.

MIT may enter into short sales whereby it sells securities that may or may not be owned by MIT in anticipation of a decline in the price of such securities or in order to hedge portfolio positions. Cash collateral and certain securities owned by MIT may be held at counterparty brokers to collateralize these positions and are included in investments on the Consolidated Statements of Financial Position and in restricted cash included in investments on the Statements of Cash Flows.

MIT values its investments at fair value on the Consolidated Statements of Financial Position in accordance with GAAP, which establishes a hierarchy of valuation inputs based on the extent to which the inputs are observable in the marketplace. Observable inputs reflect market data obtained from sources independent of the reporting entity. Unobservable inputs reflect the entity's own assumptions about how market participants would value an asset or liability based on the best information available. Valuation techniques used to measure fair value must maximize the use of observable inputs and minimize the use of unobservable inputs. MIT follows a fair value hierarchy based on three levels of inputs, of which the first two are considered observable and the last is unobservable.

The following describes the hierarchy of inputs used to measure fair value and the primary valuation methodologies used by MIT for financial instruments measured at fair value on a recurring basis. The three levels of inputs are as follows:

• Level 1 – Valuations based upon observable inputs that reflect quoted prices in active markets for identical assets and liabilities.

• Level 2 – Valuations based upon: (i) quoted market prices for similar assets or liabilities in active markets; (ii) quoted prices for identical or similar assets or liabilities in markets that are not active; or (iii) other significant market-based inputs, which are observable, either directly or indirectly.

• Level 3 – Valuations based upon unobservable inputs that are significant to the overall fair value measurements.

Investments managed by external managers in fund structures are not readily marketable and are reported at fair value utilizing the most current information provided by the external manager, subject to assessments that the information is representative of fair value and in consideration of any factors deemed pertinent to the fair value measurement. These investments are shown in the NAV column of Table 6.

A financial instrument's categorization within the valuation hierarchy is based upon the lowest level of input that is significant to the fair value measurement. Market information is considered when determining the proper categorization of the investment's fair value measurement within the fair valuation hierarchy.

Cash and short-term investments include cash, money market funds, repurchase agreements, and negotiable certificates of deposit, and are valued at cost, which approximates fair value. Instruments listed or traded on a securities exchange are valued at the last quoted price on the primary exchange where the securities are traded.

B. Investments (continued)

Investments in non-exchange-traded debt are primarily valued using independent pricing sources that use broker quotes or models using observable market inputs.

Investments managed by external managers include investments in (i) absolute return; (ii) domestic, foreign, and private equity; (iii) real estate; and (iv) real asset commingled funds. The fair value of securities held in external investment funds that do not have readily determinable fair values are determined by the external managers based upon industry-standard valuation approaches that require varying degrees of judgment, taking into consideration, among other things, the cost of the securities, valuations, and transactions of comparable public companies, the securities' estimated future cash flow streams, and the prices of recent significant placements of securities of the same issuer. Using these valuations, most of these external managers calculate MIT's capital account or NAV in accordance with, or in a manner consistent with, GAAP's fair value principles.

As a practical expedient, MIT is permitted under GAAP to estimate the fair value of its investments with external managers using the external managers' reported NAV without further adjustment, unless MIT expects to sell the investment at a value other than NAV or the NAV is not calculated in accordance with GAAP.

MIT has elected to measure certain equity securities, without a readily determinable fair value, that do not qualify to use NAV as a practical expedient, at cost or the fair value on the date of donation less impairment, adjusted for changes in observable prices of the same issuer (the "measurement alternative"). The election to apply the measurement alternative is applied on a security by security basis. MIT reassesses whether these investments qualify for the measurement alternative and performs an impairment analysis on an annual basis.

As of June 30, 2021 and 2020, MIT held $235.6 million and $235.3 million, respectively of investments that are valued using the measurement alternative. These investments are included within Level 3 of the fair value hierarchy table. There have been no impairment adjustments or observable price changes recognized.

Level 3 investments are valued by MIT based upon valuation information received from the relevant entity, which may include last trade information, third-party appraisals of real estate, or valuations prepared in connection with the administration of an employee stock ownership plan. MIT may also utilize industry standard valuation techniques, including discounted cash flow models. The significant unobservable inputs used in the fair value measurements of MIT's direct investments may include their cost of capital, equity, and industry risk premiums, and for construction under development in Kendall Square, discounts related to completion.

Significant increases or decreases in these inputs in isolation may result in a significantly lower or higher fair value measurement, respectively. Split-interest agreements are generally valued at the present value of the future distributions expected to be received over the term of the agreement.

Over-the-counter positions, such as interest rate and total return swaps, credit default swaps, options, exchange agreements, and interest rate cap and floor agreements, are valued using broker quotes or models using market-observable inputs. Because the swaps and other over-the-counter derivative instruments have inputs that can usually be corroborated by observable market data, they are generally classified within Level 2. Derivatives usually include exchange traded derivatives, such as futures and options, and are generally classified within Level 1.

MIT leverages certain real estate investments to optimize the use of invested capital in support of the Institute's mission. The liabilities associated with these financings are presented, on a net basis, with the investment balances on the associated real estate asset found in Table 5. The liabilities associated with real estate investments were $716.4 million and $331.3 million in fiscal years 2021 and 2020, respectively. MIT's subsidiaries are separate legal entities, whose assets and credit are not available to satisfy the liabilities of MIT as a stand-alone entity. Also, the liabilities of MIT's subsidiaries do not constitute obligations of MIT as a stand-alone entity.

All net realized and unrealized gains and losses relating to financial instruments held by MIT shown in Table 5 are reflected in the Consolidated Statement of Activities. Cumulative unrealized gains related to Level 3 investments totaled $1,999.4 million and $1,549.7 million as of June 30, 2021 and 2020, respectively.

Certain investments in real estate, equities, and private investments may be subject to restrictions that: (i) limit MIT's ability to withdraw capital after such investment; and (ii) may limit the amount that may be withdrawn as of a given redemption date. Most absolute return, domestic equity, and foreign equity commingled funds limit withdrawals to monthly, quarterly, or other periods, and may require notice periods. In addition, certain of these funds are able to designate a portion of the investments as illiquid in "side-pockets," and these funds may not be available for withdrawal until liquidated by the investing fund. Generally, MIT has no discretion as to withdrawal with respect to its investments in private equity, real estate, and real asset funds. Distributions are made when sales of assets are made within these funds and the investment cycle for these funds can be as long as 15 to 20 years. These restrictions may limit MIT's ability to respond quickly to changes in market conditions. However, MIT does have various sources of liquidity at its disposal. Refer to footnote E for further details.

B. Investments (continued)

Table 5 presents MIT's investments at fair value as of June 30, 2021 and 2020, respectively, grouped by the valuation hierarchy as defined earlier in this note.

TABLE 5. INVESTMENTS

(in thousands of dollars)	Level 1	Level 2	Level 3	NAV	Total Fair Value
Fiscal Year 2021					
Cash and short-term investments	$ 441,646	$ -	$ -	$ -	$ 441,646
US Treasury	2,481,174	-	-	-	2,481,174
US government agency	-	77,445	-	-	77,445
Domestic bonds	10,187	888,329	119,092	-	1,017,608
Foreign bonds	676	82,445	-	-	83,121
Common equity:					
Domestic	295,858	1	234,757	-	530,616
Foreign	948,655	-	87,539	-	1,036,194
Equity:**					
Absolute return	-	-	-	5,742,657	5,742,657
Domestic	-	-	-	3,158,017	3,158,017
Foreign	-	-	-	3,848,479	3,848,479
Private	-	-	-	11,658,356	11,658,356
Real estate*	2,397	-	3,321,213	1,054,112	4,377,722
Real assets*	9,287	-	313	235,127	244,727
Split-interest agreements	-	-	89,999	-	89,999
Other	-	-	6,445	-	6,445
Derivatives, asset/(liabilities)	(84)	(684)	-	-	(768)
Investments, at fair value	**$ 4,189,796**	**$ 1,047,536**	**$ 3,859,358**	**$ 25,696,748**	**$ 34,793,438**
Fiscal Year 2020					
Cash and short-term investments	$ 567,092	$ 19,562	$ -	$ -	$ 586,654
US Treasury	1,881,118	-	-	-	1,881,118
US government agency	-	268,878	-	-	268,878
Domestic bonds	13,877	406,895	113,689	-	534,461
Foreign bonds	1,533	77,371	-	-	78,904
Common equity:				-	
Domestic	28,101	1	234,413	-	262,515
Foreign	472,971	-	13,502	-	486,473
Equity:**					
Absolute return	-	-	-	3,829,785	3,829,785
Domestic	-	-	-	2,487,684	2,487,684
Foreign	-	-	-	3,983,707	3,983,707
Private	-	-	-	5,903,638	5,903,638
Real estate*	2,579	-	2,884,164	887,799	3,774,542
Real assets*	-	-	356	202,096	202,452
Split-interest agreements	-	-	78,322	-	78,322
Other	-	-	2,507	-	2,507
Derivatives, asset/(liabilities)	13	3,015	-	-	3,028
Investments, at fair value	**$ 2,967,284**	**$ 775,722**	**$ 3,326,953**	**$ 17,294,709**	**$ 24,364,668**

** Includes direct investments and investments held through commingled vehicles.*

*** Includes commingled vehicles that invest in these type of investments.*

B. Investments (continued)

Table 6 below is a rollforward of the investments classified by MIT within Level 3 of the fair value hierarchy defined earlier in this note as of June 30, 2021 and 2020.

TABLE 6. ROLLFORWARD OF LEVEL 3 INVESTMENTS

(in thousands of dollars)	Fair Value Beginning	Realized Gains (Losses)	Change in Unrealized Gains (Losses)	Purchases	Sales	Other Changes and Transfers	Fair Value Ending
Fiscal Year 2021							
Domestic bonds	$ 113,689	$ -	$ 12	$ 17,436	$ (12,045)	$ -	$ 119,092
Common equity:							
Domestic	234,413	58	119	225	(58)	-	234,757
Foreign	13,502	-	39,906	34,131	-	-	87,539
Real estate	2,884,164	38,501	397,440	520,286	(108,918)	(410,260)	3,321,213
Real assets	356	-	(43)	-	-	-	313
Split-interest agreements	78,322	-	13,092	58	(1,473)	-	89,999
Other	2,507	-	(62)	4,000	-	-	6,445
Investments, at fair value	**$ 3,326,953**	**$ 38,559**	**$ 450,464**	**$ 576,136**	**$ (122,494)**	**$ (410,260)**	**$ 3,859,358**
Fiscal Year 2020							
Domestic bonds	$ 108,735	$ -	$ -	$ 12,581	$ (7,627)	$ -	$ 113,689
Common equity:							
Domestic	234,516	1,198	(103)	-	(1,198)	-	234,413
Foreign	-	-	(1,179)	308	-	14,373	13,502
Real estate	2,377,201	447,658	(167,180)	664,959	(516,167)	77,693	2,884,164
Real assets	384	-	(28)	-	-	-	356
Split-interest agreements	159,098	190	(47,636)	-	(33,330)	-	78,322
Other	2,923	-	(691)	275	-	-	2,507
Investments, at fair value	**$ 2,882,857**	**$ 449,046**	**$ (216,817)**	**$ 678,123**	**$ (558,322)**	**$ 92,066**	**$ 3,326,953**

Table 7 below sets forth a summary of valuation techniques and quantitative information utilized in determining the fair value of MIT's Level 3 investments as of June 30, 2021 and 2020.

TABLE 7. LEVEL 3 VALUATION TECHNIQUES

(in thousands of dollars)	Fair Value as of June 30, 2021	Fair Value as of June 30, 2020	Valuation Technique	Unobservable Input	2021 Rates	2021 Weighted Average	2020 Rates	2020 Weighted Average
Real estate	$ 3,244,149	$ 2,628,076	Income approach	Discount Rate	4.5-7.75%	6.38%	4.75-8.25%	6.66%
				Capitalization Rate	3.0-6.5%	4.98%	4.25-7.0%	5.32%
				Terminal Capitalization Rate	4.25-7.0%	5.44%	4.5-7.25%	5.70%
Equity securities	279,321	191,663	Discounted cash flow	Discount Rate	12.50%	12.5%	12.50%	12.50%
			Market approach	Price/GWP	0.7-4.7x	3.2x	N/A	N/A
Split-interest agreements	89,999	78,322	Net present value	Discount Rate	1.45%	1.45%	0.85%	0.85%
Real assets	313	356	Discounted cash flow	Discount	25.0%	25.0%	25.0%	25.00%
Total assets	**$ 3,613,782**	**$ 2,898,417**						

Certain Level 3 assets totaling $245,576 and $428,536 as of June 30, 2021, and June 30, 2020, respectively, have been valued at cost or using unadjusted third party quotations and thus have been excluded from this table.

B. Investments (continued)

MIT has made commitments to make periodic contributions in future periods to investments managed by external managers, and in other cases has entered into contractual arrangements that may limit its ability to initiate redemptions due to notice periods, lock-ups, and gates. Details on the remaining unfunded commitments and current redemption terms and restrictions by asset class and type of investment are provided below in Table 8 as of June 30, 2021 and 2020.

TABLE 8. UNFUNDED COMMITMENTS AND REDEMPTON TERMS AND RESTRICTIONS

	2021		2020			
(in thousands of dollars)	Unfunded Commitments	Fair Value	Unfunded Commitments	Fair Value	Redemption Terms	Redemption Restrictions
Equity:						
Absolute return[1]	$ 56,999	$ 5,742,657	$ 76,043	$ 3,829,785	Ranges from daily to 38 months[4]	0 to 365 days
Domestic[2]	52,723	3,158,017	51,757	2,487,684	Ranges from 55 days to 38 months[4]	15 to 105 days
Foreign[3]	-	3,848,479	-	3,983,707	Ranges from 4 months to 49 months[4]	40 to 91 days
Private	2,850,260	11,658,356	2,100,480	5,903,638	Close-ended funds not available for redemption	Not Applicable
Real estate	795,235	1,054,112	698,589	887,799	Close-ended funds not available for redemption	Not Applicable
Real assets	64,530	235,127	79,850	202,096	38 months[4]	Lock up provision ranges from 30 days to not redeemable
Total	**$ 3,819,747**	**$ 25,696,748**	**$ 3,006,719**	**$ 17,294,709**		

[1]Absolute return funds include funds that have remaining lock-up provisions up to 52 months.
[2]Domestic funds include funds that have remaining lock-up provisions up to 45 months.
[3]Foreign funds include funds that have remaining lock-up provisions up to 44 months .
[4]Includes funds that are not available for redemption.

C. Derivative Financial Instruments and Collateral

For its investment management, MIT uses a variety of financial instruments with off-balance sheet risk involving contractual or optional commitments for future settlement. MIT uses these instruments primarily to manage its exposure to extreme market events and fluctuations in asset classes or currencies. Instruments utilized include fixed income futures, options on interest rate exchange agreements, credit default swaps, equity, and index options.

Total return swaps involve commitments to pay interest in exchange for a market-linked return based on notional amounts. To the extent the total return of the security or index underlying the transaction exceeds or falls short of the offsetting interest rate obligation, MIT will respectively receive a payment from or make a payment to the counterparty.

MIT's portfolio of interest rate caps and swaptions is designed for protection from significant increases in interest rates. An interest rate swaption is an option to enter into an interest rate swap agreement on pre-set terms at a future date. The purchaser and seller of the swaption agree on the expiration date, option type, exercise style, the terms of the underlying swap, and the type of settlement. As the expiration date approaches, the swaption holder can either notify the seller of its intention to exercise or let the option expire. An interest rate cap places a ceiling on a floating rate of interest on a specified notional principal amount for a specific term. The buyer of the cap uses the cap contract to limit its maximum interest rate exposure.

If the buyer's floating rate rises above the cap strike, the cap contract provides for payments from the seller to the buyer of the cap for the difference between the floating rate and the cap strike. If the floating rate remains below the cap strike, no payments are required. The cap buyer is required to pay an upfront fee or premium for the cap. The cap premium charged by the seller depends upon the market's assessment of the probability that rates will move through the cap strike over the time horizon of the deal. The payoff is expected to occur in extreme market conditions that would negatively impact MIT's other assets.

Derivatives held by limited partnerships and commingled investment vehicles pose no off-balance sheet risk to MIT due to the limited liability structure of these investments. To manage the counterparty credit exposure of MIT's direct off-balance sheet financial instruments, MIT requires collateral to the maximum extent possible under normal trading practices. Collateral is moved on a daily basis as required by fluctuations in the market. The collateral is generally in the form of debt obligations issued by the US Treasury or cash. In the event of counterparty default, MIT has the right to use the collateral to offset the loss associated with the replacement of the agreements. MIT enters into arrangements only with counterparties believed to be creditworthy. On June 30, 2021, cash collateral and certain securities owned by MIT were held at counterparty brokers to collateralize these positions and are included in investments in the Consolidated Statements of Financial Position.

C. Derivative Financial Instruments and Collateral (continued)

Table 9 summarizes the notional exposure and net ending fair value relative to the financial instruments with off-balance sheet risk as of June 30, 2021 and 2020, related to MIT's investment management.

TABLE 9. DERIVATIVE FINANCIAL INSTRUMENTS

(in thousands of dollars)	Notional Exposure Long	Notional Exposure Short	Net Ending Fair Value*	Net Gain (Loss)**
Fiscal Year 2021				
Fixed income and equity instruments:				
Fixed income futures	$ 17,800	$ (6,300)	$ (84)	$ (91)
Options on interest rate exchange agreements	385,000	-	-	(1)
Equity options	-	-	-	(43)
Total fixed income and equity instruments	402,800	(6,300)	(84)	(135)
Index instruments:				
Equity index swaps	-	(1,060,419)	(335)	(33,005)
Index options	-	-	-	(3,407)
Total index instruments	-	(1,060,419)	(335)	(36,412)
Credit instruments	-	(13,282)	(349)	(173)
2021 Total	**$ 402,800**	**$ (1,080,001)**	**$ (768)**	**$ (36,720)**
Fiscal Year 2020				
Fixed income and equity instruments:				
Fixed income futures	$ 19,100	$ (6,100)	$ 13	$ 2
Options on interest rate exchange agreements	839,000	-	1	(24)
Equity options	53	-	43	43
Total fixed income and equity instruments	858,153	(6,100)	57	21
Index instruments:				
Equity index swaps	-	(499,730)	(321)	(7,834)
Index options	299	-	3,407	397
Total index instruments	299	(499,730)	3,086	(7,437)
Credit instruments	-	(33,806)	(115)	587
2020 Total	**$ 858,452**	**$ (539,636)**	**$ 3,028**	**$ (6,829)**

** The fair value of all derivative financial instruments is reflected in investments at fair value in the Consolidated Statements of Financial Position.*

*** Net gain (loss) from the derivative financial instruments is located in other revenue, gains, and losses as net return on investments in the Consolidated Statement of Activities.*

C. Derivative Financial Instruments and Collateral (continued)

Table 10 below provides further details related to MIT's credit instruments and summarizes the notional amounts and fair value of the purchased credit derivatives, classified by the expiration terms and the external credit ratings of the reference obligations as of June 30, 2021 and 2020.

The act of entering into a credit default swap contract is often referred to as "buying protection" or "selling protection" on an underlying reference obligation. The buyer is obligated to make premium payments to the seller over the term of the contract in return for a contingent payment upon the occurrence of a credit event with respect to the underlying obligation. The seller bears the obligation to "protect" the buyer in the event of default of the underlying issuer. Upon this event, the cash payment that the buyer receives is equal to the clearing price established by an auction of credit default swap claims, which is designed to approximate the recovery value of an unsecured claim on the issuer in default. The swap will last for a predetermined amount of time, typically five years. Upon termination of the swap, the buyer is no longer obligated to make any premium payments, and there is no other exchange of capital.

TABLE 10. CREDIT DERIVATIVE INSTRUMENTS

	Purchased Protection		
(in thousands of dollars)	Purchased Notional Amounts	Purchased Fair Value*	Notional Amounts < 5 Years to Maturity
Fiscal Year 2021			
Credit rating on underlying or index:			
A- to AAA	$ -	$ -	$ -
BBB- to BBB+	13,282	(349)	13,282
2021 Total	$ 13,282	$ (349)	$ 13,282
Fiscal Year 2020			
Credit rating on underlying or index:			
A- to AAA	$ -	$ -	$ -
BBB- to BBB+	33,806	(115)	33,806
2020 Total	$ 33,806	$ (115)	$ 33,806

** The fair value of all instruments is reflected in Investments, at fair value, in the Consolidated Statements of Financial* Position.

C. Derivative Financial Instruments and Collateral (continued)

Counterparty risk may be partially or completely mitigated through master netting agreements included within an International Swaps and Derivatives Association, Inc. (ISDA) Master Agreement between MIT and each of its counterparties. The ISDA Master Agreement allows MIT to offset with the counterparty certain derivative instruments' payables and/or receivables with collateral held with/from each counterparty. To the extent amounts due from the counterparties are not fully collateralized, contractually or otherwise, there is the risk of loss from counterparty non-performance.

Maximum risk of loss from counterparty credit risk on over-the-counter derivatives is generally the aggregate unrealized appreciation in excess of any collateral pledged by the counterparty. ISDA Master Agreements allow MIT or the counterparties to an over-the-counter derivative to terminate the contract prior to maturity in the event either party fails to meet the terms in the ISDA Master Agreements. This would cause an accelerated payment of net liability, if owed to the counterparty.

Tables 11 and 12 below summarize the effect that the offsetting of recognized assets and liabilities could have in the Consolidated Statements of Financial Position.

TABLE 11. OFFSETTING OF FINANCIAL AND DERIVATIVE ASSETS AND LIABILITIES

	2021			2020		
(in thousands of dollars)	Gross Amount	Cash/Treasury Collateral Posted (Received)	Net Amount	Gross Amount	Cash/Treasury Collateral Posted (Received)	Net Amount
Assets						
Derivatives	$ -	$ -	$ -	$ 3,645	$ (13,690)	$ (10,045)
Repurchase agreements	70,357	(71,485)	(1,128)	12,217	(12,482)	(265)
Total assets	70,357	(71,485)	(1,128)	15,862	(26,172)	(10,310)
Liabilities						
Derivatives	(684)	12,705	12,021	(630)	260	(370)
Total liabilities	(684)	12,705	12,021	(630)	260	(370)
Total assets and liabilities, net	**$ 69,673**	**$ (58,780)**	**$ 10,893**	**$ 15,232**	**$ (25,912)**	**$ (10,680)**

Table 12 below reconciles the net recognized assets and liabilities, as shown in Table 11, to derivative financial instruments, as shown in Table 6.

TABLE 12. RECONCILIATION OF FINANCIAL AND DERIVATIVE ASSETS AND LIABILITIES

(in thousands of dollars)	2021	2020
Derivatives from Table 5	$ (768)	$ 3,028
Repurchase agreements from Table 11	70,357	12,217
Fixed income futures	84	(13)
Total	**$ 69,673**	**$ 15,232**

D. Pledges Receivable

Table 13 below shows the time periods in which pledges receivable as of June 30, 2021 and 2020, are expected to be realized.

TABLE 13. PLEDGES RECEIVABLE

(in thousands of dollars)	2021	2020
In one year or less	$ 352,658	$ 316,174
Between one year and five years	250,565	274,365
More than five years	89,472	98,441
Less: allowance for unfulfilled pledges	(121,427)	(68,640)
Pledges receivable, net	**$ 571,268**	**$ 620,340**

A review of pledges is periodically made with regard to collectability. As a result, the allowance for unfulfilled pledges is adjusted, and some pledges have been cancelled and are no longer recorded in the financial statements.

Pledges are discounted in the amount of $26.4 million and $28.5 million in 2021 and 2020, respectively. The pledge discount rate ranges from fiscal year 2022 at 0.3 percent to fiscal year 2044 at 2.4 percent. MIT has gross conditional pledges, not recorded, for the promotion of education and research of $353.6 million and $367.3 million in 2021 and 2020, respectively. Conditional pledges are categorized as follows: fundraising challenge, building construction progress, foundation grants, and other. As of June 30, 2021, conditional pledge amounts are broken out as follows: fundraising challenge of $141.0 million, building construction progress of $136.0 million, foundation grants of $52.6 million, and other of $24.0 million. As of June 30, 2020, conditional pledge amounts are broken out as follows: fundraising challenge of $157.9 million, building construction progress of $137.7 million, foundation grants of $53.7 million, and other of $18.0 million.

Table 14 below is a rollforward of pledges receivable as of June 30, 2021 and 2020.

TABLE 14. ROLLFORWARD OF PLEDGES RECEIVABLE

(in thousands of dollars)	2021	2020
Balance at beginning of the year	$ 620,340	$ 583,383
New pledges	192,190	182,734
Pledge payments received	(190,585)	(173,452)
Change in pledge discount	2,110	31,751
Change in reserve for unfulfilled pledges	(52,787)	(4,076)
Balance at the end of the year	**$ 571,268**	**$ 620,340**

E. Liquidity

Table 15 below details the Institute's financial assets and resources available to meet cash needs for general expenditures within one year of the date of the Consolidated Statements of Financial Position.

TABLE 15. LIQUIDITY AND AVAILABILITY OF RESOURCES

(in thousands of dollars)	2021	2020
Financial assets:		
Cash and liquid operating investments	$ 2,327,158	$ 2,190,390
Accounts and notes receivable	340,265	241,281
Contributions receivable	174,392	201,527
Investments appropriated for spending in the following year	928,214	832,304
Total financial assets available within one year	**$ 3,770,029**	**$ 3,465,502**

As part of the MIT's liquidity management strategy, financial assets are structured to be available as its general expenditures, liabilities, and other obligations come due. MIT invests its working capital, which is comprised of cash and capital project funds in excess of daily requirements, in various investment vehicles. To help manage unanticipated liquidity needs, MIT also maintains a bank line of credit for $500.0 million, of which $387.0 million and $137.0 million was undrawn at June 30, 2021 and 2020, respectively (see Note F for further details on the line of credit).

F. Net Borrowings

MIT's outstanding borrowings as of June 30, 2021 and 2020, are shown in Table 16 below.

TABLE 16. NET BORROWINGS

(in thousands of dollars / due dates are calendar based / par values as of 2021)	2021	2020
Educational plant		
Massachusetts Development Finance Agency (MassDevelopment)		
Series I, 5.20%, due 2028, par value $30,000	$ 30,374	$ 30,432
Series J-1, variable rate, due 2031, par value $125,000	125,000	125,000
Series J-2 variable rate, due 2031, par value $125,000	125,000	125,000
Series K, 5.5%, due 2022-2032, par value $177,000	182,600	183,268
Series L, 5.0%-5.25%, due 2023-2033, par value $115,670	120,588	121,149
Series M, 5.25%, due 2022-2030, par value $80,525	84,008	95,816
Series P, 5.0%, due 2050, par value $136,055	207,392	209,850
Total MassDevelopment	874,962	890,515
Taxable		
Medium Term Notes Series A, 7.125% due 2026, par value $17,415	17,394	17,390
Medium Term Notes Series A, 7.25%, due 2096, par value $45,604	45,476	45,472
Taxable Bonds, Series B, 5.60%, due 2111, par value $750,000	747,207	747,176
Taxable Bonds, Series C, 4.678%, due 2114, par value $550,000	550,000	550,000
Taxable Bonds, Series D, 2.051-3.959%, due 2026-2038, par value $456,000	456,000	456,000
Taxable Bonds, Series E, 3.885%, due 2116, par value $500,000	500,000	500,000
Taxable Bonds, Series F, 2.989%, due 2050, par value $300,000	300,000	300,000
Taxable Bonds, Series G, 2.294% due 2051, par value 350,000	350,000	350,000
Notes payable to bank, variable rate, due 2023	113,034	113,034
Total Taxable	3,079,111	3,079,072
Total educational plant*	3,954,073	3,969,587
Notes payable to bank, variable rate, due 2023**	-	250,000
Total Other	-	250,000
Total borrowings	3,954,073	4,219,587
Unamortized bond issuance costs	(25,039)	(25,570)
Total borrowings net of unamortized debt issuance cost	**$ 3,929,034**	**$ 4,194,017**

** Proceeds from recent issuances were in the process of being invested in physical assets in 2020 and 2021 with unused balances held in investments.*

*** $250 million of borrowing associated with line of credit was being held as a liquidity reserve in 2020 in response to the COVID-19 pandemic and was subsequently repaid in fiscal 2021.*

F. Net Borrowings (continued)

The aggregate amounts of debt payments and sinking fund requirements for each of the next five fiscal years are shown in Table 17 below.

TABLE 17. DEBT PRINCIPAL OBLIGATIONS

(in thousands of dollars)		
2022	$	11,765
2023		55,500
2024		51,455
2025		12,385
2026		13,030

MIT maintains a line of credit with a major financial institution for an aggregate commitment of $500.0 million. As of June 30, 2021, $387.0 million was available under this line of credit. The line of credit expires on March 31, 2023.

Cash paid for interest on long-term debt in 2021 and 2020 was $163.1 million and $138.3 million, respectively.

Variable interest rates as of June 30, 2021, are shown in Table 18 below.

TABLE 18. VARIABLE INTEREST RATES

(in thousands of dollars)	Amount	Rate
MassDevelopment Series J-1	$ 125,000	0.05%
MassDevelopment Series J-2	125,000	0.06%
Notes payable to bank	113,034	0.62%

In the event that MIT receives notice of any optional tender on its Series J-1 and Series J-2 variable-rate bonds, or if these bonds become subject to mandatory tender, the purchase price of the bonds will be paid from the remarketing of such bonds. However, if the remarketing proceeds are insufficient, MIT will be obligated to purchase the bonds tendered at 100.0 percent of par on the tender date. In the event that MIT is obligated to purchase the bonds, cash or short-term investments from liquid operating investments would be used as a source of funds.

MIT maintains an interest rate swap agreement to manage the interest cost and risk associated with a portion of the variable rate debt included in Table 18 above. Under the agreement, MIT pays a fixed rate of 4.91 percent and receives a payment indexed to the Securities Industry and Financial Market Association (SIFMA) index on a notional amount of $125.0 million. As of June 30, 2021 and 2020, the swap agreement had a fair value of ($48.0) million and ($61.0) million, respectively. The notional amount of this derivative is not recorded on MIT's Consolidated Statements of Financial Position. This swap had a net gain of $13.0 million and net loss of $12.2 million in 2021 and 2020, respectively.

G. Commitments and Contingencies

Federal Government Funding

MIT receives funding or reimbursement from federal agencies for sponsored programs under government grants and contracts. These grants and contracts provide for reimbursement of indirect costs. MIT's indirect cost reimbursements for sponsored research activities are based on rates negotiated with the Office of Naval Research (ONR), MIT's cognizant federal agency. Research rates are based on fixed rates with carryforward of under- or over-recoveries. MIT recorded a net under-recovery of $37.8 million and a net over-recovery of $10.2 million as of June 30, 2021 and 2020, respectively.

The DCAA is responsible for auditing indirect charges to research grants and contracts in support of ONR's negotiating responsibility. The Institute's rates have been audited by DCAA through 2019, and the audit for fiscal years 2020 and forward is in progress. ONR has completed negotiations of final rates through 2018, and the negotiations for 2019 and forward are in progress.

Leases

The Institute is the lessee of space under operating (rental) leases, with contractual terms longer than twelve months. The Institute determines whether a contract is a lease at inception. Identified leases are subsequently measured, classified, and recognized at lease commencement. The Institute's leases generally have terms that range from one to fifteen years for property, with certain leases inclusive of renewal options if they are considered to be reasonably assured at lease commencement. Right of use assets and lease liabilities for operating leases are included in "Operating leases—right of use assets" and "Operating lease liabilities," respectively, in the Consolidated Statements of Financial Position. Lease assets represent our right to use an underlying asset for the lease term, and lease liabilities represent our obligation to make lease payments arising from the lease.

Operating lease right of use assets and associated lease liabilities are recognized based on the present value of future minimum lease payments to be made over the expected lease term, using the incremental borrowing rate at the commencement date in determining the present value of future payments. Rent expense related to operating leases, including short-term leases, was $37.3 million and $35.1 million in 2021 and 2020, respectively.

Future minimum lease payments and reconciliation to the consolidated statement of financial position at June 30, 2021, are as follows:

TABLE 19. LEASE OBLIGATIONS

(in thousands of dollars)

2022	$	39,494
2023		40,493
2024		37,830
2025		35,737
2026		32,924
Thereafter		108,560
Total minimum lease payments		295,038
Less: Amount representing interest		(12,998)
Present value of net minimum lease payments	$	282,040

The lease cost and other required information for the year ended June 30, 2021, are:

TABLE 20. QUANTITATIVE DISCLOSURES

(in thousands of dollars)

Capitalized Operating Lease Cost*	$	39,335
Operating Cash flows from Capitalized Operating Leases**	$	36,307
Weighted Average Remaining Lease Term in Years		7.8
Weighted Average Discount Rate		1.1%

* The accretion of the operating lease liability for the period ending June 30, 2021

** Supplemental cash flow information representing lease cost reported in utilities, rent, and repairs in the consolidated statements of activities

Assets Pledged as Collateral

As of June 30, 2021, $12.9 million of assets were pledged as collateral to various suppliers and government agencies. This is classified as restricted cash on the Consolidated Statements of Cash Flows.

G. Commitments and Contingencies (continued)

Future Construction

As of June 30, 2021, MIT had contractual obligations of approximately $297.3 million in connection with educational plant construction projects. It is expected that the resources to satisfy these commitments will be provided from unexpended plant funds, anticipated gifts, bond proceeds, and funds without donor restrictions.

MIT has also made commitments related to the development of its commercial real estate holdings in Kendall Square and to the enhancement of its East Campus gateway. At June 30, 2021, these commitments included approximately $218.9 million of contractual obligations related to the Kendall Square Initiative, and $144.8 million related to other commercial real estate projects. In addition, MIT and the federal government have entered into an agreement whereby MIT will construct a new transportation center on four of the 14 acres of federally owned land located at the John A. Volpe National Transportation Systems Center site in Kendall Square in exchange for the fee interest to and the right to redevelop the adjacent ten acres of land. The exchange will be executed upon completion of the construction of the new facility. MIT is committed to investing $750.0 million in the exchange phase of the project. Costs incurred for construction of the new facility, which are included in investments, were $124.5 million and $90.0 million in fiscal 2021 and fiscal 2020, respectively.

Related Entities

MIT has entered into agreements, including collaborations with third-party not-for-profit and for-profit entities, for education, research, and technology transfers. Some of these agreements involve funding from foreign governments. These agreements subject MIT to greater financial risk than do its normal operations. In the opinion of management, the likelihood of realization of increased financial risks by MIT under these agreements is remote.

General

MIT is subject to certain other legal proceedings and claims that arise in the normal course of operations. In the opinion of management, the ultimate outcome of these actions will not have a material effect on MIT's financial position.

H. Functional Expense Classification

MIT's expenditures on a functional basis for the years ended June 30, 2021 and 2020, are shown in Table 21 below.

TABLE 21. EXPENDITURES BY FUNCTIONAL CLASSIFICATION

(in thousands of dollars)	General and administrative	Instruction and unsponsored research	Sponsored research	Total
Fiscal Year 2021				
Compensation	$ 515,995	$ 600,591	$ 943,368	$ 2,059,954
Other operating	115,215	382,495	609,081	1,106,791
Space related	142,597	194,350	225,033	561,980
2021 Total	**$ 773,807**	**$ 1,177,436**	**$ 1,777,482**	**$ 3,728,725**
Fiscal Year 2020				
Compensation	$ 483,320	$ 598,880	$ 920,234	$ 2,002,434
Other operating	124,450	427,602	659,157	1,211,209
Space related	127,983	194,865	207,289	530,137
2020 Total	**$ 735,753**	**$ 1,221,347**	**$ 1,786,680**	**$ 3,743,780**

Expenses are presented by functional classification in alignment with the overall mission of the Institute. Each functional classification displays all expenses related to the underlying operation by natural classification. Natural expenses attributable to more than one functional expense category are allocated using reasonable cost allocation techniques. Depreciation and utilities, rent, and repair expenses are allocated directly and/or based on square footage. Interest expense on indebtedness is allocated to the functional categories that have benefited from the proceeds of the associated debt.

I. Retirement Benefits

MIT offers a defined benefit pension plan and a defined contribution plan to its employees. The plans cover substantially all MIT employees.

MIT also offers a retiree welfare benefit plan (certain healthcare and life insurance benefits) for retired employees. Substantially all MIT employees may become eligible for those benefits if they reach a qualifying retirement age while working for MIT. The healthcare component of the welfare plan is paid for in part by retirees, their covered dependents, and beneficiaries. Benefits are provided through various insurance companies whose charges are based either on the claims and administrative expenses paid during the year or annual insured premiums. The life insurance component of the welfare plan includes basic life insurance and supplemental life insurance. The basic life insurance plan is non-contributory and covers the retiree only. The supplemental life insurance plan is paid for by the retiree. MIT maintains a trust to pay for the retiree welfare benefit plan.

MIT contributes to the defined benefit pension plan amounts that are actuarially determined to provide the retirement plan with sufficient assets to meet future benefit requirements. There were no designated contributions to the defined benefit pension plan for 2021 and 2020. MIT designated contributions of $2.4 million and $1.5 million to the retiree welfare benefit plan in 2021 and 2020, respectively.

For the defined contribution plan, the amount contributed and expenses recognized during 2021 and 2020 were $68.9 million and $67.3 million, respectively.

For purposes of calculating net periodic benefit cost, plan amendments for the defined benefit pension plan are amortized on a straight-line basis over the average future service of active participants at the date of the amendment. Plan amendments to the retiree welfare benefit plan are amortized on a straight-line basis over the average future service to full eligibility of active participants at the date of amendment.

Cumulative gains and losses (including changes in assumptions) in excess of 10 percent of the greater of the projected benefit obligation or the market-related value of assets for both the defined benefit pension plan and the retiree welfare benefit plan are amortized over the average future service of active participants. The annual amortization shall not be less than the total amount of unrecognized gains and losses up to $1.0 million.

Components of Net Periodic Benefit Cost

Table 22 below summarizes the components of net periodic benefit cost recognized in net results and other amounts recognized in other revenues, gains, and losses in net assets without donor restrictions for the years ended June 30, 2021 and 2020.

TABLE 22. COMPONENTS OF NET PERIODIC BENEFIT COST AND OTHER AMOUNTS RECOGNIZED IN OTHER REVENUES, GAINS, AND LOSSES

	Defined Benefit Pension Plan		Retiree Welfare Benefit Plan	
(in thousands of dollars)	2021	2020	2021	2020
Components of net periodic benefit cost recognized in net results:				
Service cost	$ 129,749	$ 123,255	$ 33,819	$ 30,988
Interest cost	163,467	169,792	23,562	24,309
Expected return on plan assets	(312,083)	(298,900)	(54,000)	(50,605)
Amortization of net actuarial loss (gain)	44,534	30,285	(1,000)	(1,000)
Amortization of prior service cost (credit)	265	265	-	(2,212)
Net periodic benefit cost (income) recognized in net results	25,932	24,697	2,381	1,480
Other amounts recognized in other revenues, gains, and losses				
Current year prior service cost	890	-	-	-
Current year actuarial (gain) loss	(1,484,305)	147,676	(348,077)	2,431
Amortization of actuarial (gain) loss	(44,534)	(30,285)	1,000	1,000
Amortization of prior service (cost) credit	(265)	(265)	-	2,212
Total other amounts recognized in other revenues, gains, and losses	(1,528,214)	117,126	(347,077)	5,643
Total recognized	**$ (1,502,282)**	**$ 141,823**	**$ (344,696)**	**$ 7,123**

I. Retirement Benefits (continued)

The estimated net actuarial loss and prior service cost for the defined benefit pension plan that will be amortized from net assets without donor restrictions into net periodic benefit cost during the next fiscal year are $33.4 million and $0.3 million, respectively. The estimated net actuarial gain and prior service credit for the retiree welfare benefit plan that will be amortized from net assets without donor restrictions into net periodic benefit cost during the next fiscal year are $10.3 million and zero, respectively.

Cumulative amounts recognized in net assets without donor restrictions are summarized in Table 23 below for the years ended June 30, 2021 and 2020.

TABLE 23. CUMULATIVE AMOUNTS RECOGNIZED IN NET ASSETS WITHOUT DONOR RESTRICTION

	Defined Benefit Pension Plan		Retiree Welfare Benefit Plan	
(in thousands of dollars)	2021	2020	2021	2020
Amounts recognized in unrestricted net assets without donor restrictions consist of:				
Net actuarial (gain) loss	$ (729,003)	$ 799,836	$ (438,748)	$ (91,671)
Prior service cost	2,943	2,318	-	-
Total cumulative amounts recognized in net assets without donor restrictions	**$ (726,060)**	**$ 802,154**	**$ (438,748)**	**$ (91,671)**

I. Retirement Benefits (continued)

Benefit Obligations and Fair Value of Assets

Table 24 below summarizes the benefit obligations, plan assets, and amounts recognized in the Consolidated Statements of Financial Position for MIT's retirement benefit plans. MIT uses a June 30 measurement date for its defined benefit pension plan and retiree welfare benefit plan.

The projected benefit obligation for the defined benefit pension plan, as shown in Table 24, was $5,429.6 million and $4,830.0 million as of June 30, 2021 and 2020, respectively. Another measure of the plan's liabilities is the accumulated benefit obligation. While the projected benefit obligation factors in future salary increases, the accumulated benefit obligation does not. The accumulated benefit obligation of MIT's defined benefit pension plan was $5,131.3 million and $4,664.4 million as of June 30, 2021 and 2020, respectively.

MIT provides retiree drug coverage through an Employer Group Waiver Plan (EGWP). Under EGWP, the cost of drug coverage is offset through direct federal subsidies, brand-name drug discounts, and reinsurance reimbursements.

TABLE 24. PROJECTED BENEFIT OBLIGATIONS AND FAIR VALUE OF ASSETS

	Defined Benefit Pension Plan		Retiree Welfare Benefit Plan	
(in thousands of dollars)	2021	2020	2021	2020
Change in projected benefit obligations:				
Projected benefit obligations at beginning of year	$ 4,829,967	$ 4,468,263	$ 668,473	$ 613,441
Service cost	129,749	123,255	33,819	30,988
Interest cost	163,467	169,792	23,562	24,309
Retiree contributions	-	-	8,949	8,159
Net benefit payments, transfers, and other expenses	(160,548)	(161,473)	(39,151)	(35,125)
Employer Group Waiver Plan (EGWP) reimbursement	-	-	9,176	9,223
Plan amendments	890	-	-	-
Assumption changes and actuarial net loss (gain)	466,052	230,130	(41,648)	17,478
Projected benefit obligations at end of the year	5,429,577	4,829,967	663,180	668,473
Change in plan assets:				
Fair value of plan assets at beginning of the year	4,278,099	4,058,218	760,546	711,157
Actual return on plan assets	2,262,440	381,354	360,429	65,652
Employer contributions	-	-	2,381	1,480
Employer Group Waiver Plan (EGWP) reimbursement	-	-	9,176	9,223
Retiree contributions	-	-	8,949	8,159
Net benefit payments, transfers, and other expenses	(160,548)	(161,473)	(39,151)	(35,125)
Fair value of plan assets at end of the year	6,379,991	4,278,099	1,102,330	760,546
Funded (unfunded) status at end of the year	**950,414**	**(551,868)**	**439,150**	**92,073**
Amounts recognized in the Consolidated Statements of Financial Position consist of:				
Net assets (liabilities)	**$ 950,414**	**$ (551,868)**	**$ 439,150**	**$ 92,073**

I. Retirement Benefits (continued)

Assumptions for Financial Parameters and Healthcare Trend Rates

Table 25 below summarizes assumptions and healthcare trend rates. The expected long-term rate of return assumption represents the expected average rate of earnings on the funds invested or to be invested to provide for the benefits included in the benefit obligation. The long-term rate of return assumption is determined based on a number of factors, including historical market index returns, the anticipated long-term asset allocation of the plans, historical plan return data, plan expenses, and the potential to outperform market index returns.

TABLE 25. ASSUMPTIONS

	Defined Benefit Pension Plan		Retiree Welfare Benefit Plan	
(in thousands of dollars)	2021	2020	2021	2020
Assumptions used to determine benefit obligation as of June 30:				
Discount rate	3.25%	3.36%	3.47%	3.42%
Rate of compensation increase*	5.50%	0.00%/5.00%		
Assumptions used to determine net periodic benefit cost for the year ended June 30:				
Discount rate	3.36%	3.77%	3.42%	3.85%
Expected long-term return on plan assets	7.75%	7.75%	7.50%	7.50%
Rate of compensation increase**	0.00%/5.00%	4.00%		
Assumed health care cost trend rates:				
Healthcare cost trend rate assumed for next year			6.50%	6.50%
Rate to which the cost trend rate is assumed to decline (the ultimate trend rate)			5.00%	4.75%
Year the rate reaches the ultimate trend rate			2027	2025

** For the 6/30/2020 plan measurement, it was assumed that there would be no salary increases or cost-of-living adjustments through 2022; normative rates apply thereafter.*

*** For determining fiscal 2021 benefit cost it is assumed that there will be no salary increase or cost-of-living adjustments through 2022; normative rates apply thereafter.*

As an indicator of sensitivity, a one percentage point change in the assumed healthcare cost trend rate would affect 2021's retiree welfare plan as shown in Table 26 below.

TABLE 26. HEALTHCARE COST TREND RATE SENSITIVITY

(in thousands of dollars)	1% Point Increase	1% Point Decrease
Effect on 2021 postretirement service and interest cost	$ 11,641	$ (9,130)
Effect on postretirement benefit obligation as of June 30, 2021	101,357	(83,062)

Plan Investments

The investment objectives for the assets of the plans are to minimize expected funding contributions and to meet or exceed the rate of return assumed for plan funding purposes over the long term. The nature and duration of benefit obligations, along with assumptions concerning asset class returns and return correlations, are considered when determining an appropriate asset allocation to achieve the investment objectives.

Investment policies and strategies governing the assets of the plans are designed to achieve investment objectives within prudent risk parameters. Risk management practices include the use of external investment managers, the maintenance of a portfolio diversified by asset class, investment approach, security holdings, and the maintenance of sufficient liquidity to meet benefit obligations as they come due.

I. Retirement Benefits (continued)

Tables 27A and 27B present investments at fair value of MIT's defined benefit pension plan and retiree welfare benefit plan, which are included in net assets available for benefits as of June 30, 2021 and 2020, grouped by the valuation hierarchy detailed in Note B. The investment values in these tables exclude certain items included in the assets and liabilities shown in Table 24.

TABLE 27A. DEFINED BENEFIT PENSION PLAN INVESTMENTS

(in thousands of dollars)	Level 1	Level 2	Level 3	NAV	Total Fair Value
Fiscal Year 2021					
Cash and short-term investments	$ 298,777	$ -	$ -	$ -	$ 298,777
US Treasury	444,454	-	-	-	444,454
US government agency	-	17,996	-	-	17,996
Common equity:					
Domestic	139,135	-	74	-	139,209
Foreign	191,030	-	4,214	-	195,244
Equity:*					
Absolute return	-	-	-	939,409	939,409
Domestic	-	-	-	623,980	623,980
Foreign	-	-	-	973,895	973,895
Private	-	-	-	2,493,529	2,493,529
Real estate*	1,755	-	-	243,970	245,725
Real assets*	-	-	-	52,532	52,532
Other	-	-	850	-	850
Derivatives	(6)	-	-	-	(6)
Total plan investments assets	**$ 1,075,145**	**$ 17,996**	**$ 5,138**	**$ 5,327,315**	**$ 6,425,594**
Liabilities associated with investments					
Investments sold, but not yet purchased	(53,473)	-	-	-	(53,473)
Other liabilities	(1,276)	(99)	-	-	(1,375)
Total plan investment liabilities	**(54,749)**	**(99)**	**-**	**-**	**(54,848)**
Total plan investments	**$ 1,020,396**	**$ 17,897**	**$ 5,138**	**$ 5,327,315**	**$ 6,370,746**
Fiscal Year 2020					
Cash and short-term investments	$ 89,862	$ -	$ -	$ -	$ 89,862
US Treasury	237,436	-	-	-	237,436
US government agency	-	34,237	-	-	34,237
Domestic bonds	-	-	-	-	-
Common equity:					
Domestic	28,382	-	74	-	28,456
Foreign	95,567	-	-	-	95,567
Equity:*					
Absolute return	-	-	-	700,276	700,276
Domestic	-	-	-	504,414	504,414
Foreign	-	-	-	1,003,706	1,003,706
Private	-	-	-	1,309,936	1,309,936
Real estate*	1,059	-	-	213,340	214,399
Real assets*	-	-	-	48,754	48,754
Other	-	-	419	-	419
Derivatives	748	762	-	-	1,510
Total plan investments assets	**$ 453,054**	**$ 34,999**	**$ 493**	**$ 3,780,426**	**$ 4,268,972**
Liabilities associated with investments					
Investments sold, but not yet purchased	-	-	-	-	-
Other liabilities	**(11)**	**(66)**	**-**	**-**	**(77)**
Total plan investment liabilities	**(11)**	**(66)**	**-**	**-**	**(77)**
Total plan investments	**$ 453,043**	**$ 34,933**	**$ 493**	**$ 3,780,426**	**$ 4,268,895**

** Equity, real estate, and real assets categories include commingled vehicles that invest in these types of investments.*

I. Retirement Benefits (continued)

TABLE 27B. RETIREE WELFARE BENEFIT PLAN INVESTMENTS

(in thousands of dollars)	Level 1	Level 2	Level 3	NAV	Total Fair Value
Fiscal Year 2021					
Cash and short-term investments	$ 47,922	$ -	$ -	$ -	$ 47,922
US Treasury	139,458	-	-	-	139,458
US government agency	-	5,647	-	-	5,647
Common equity:					
Domestic	24,336	-	-	-	24,336
Foreign	33,530	-	744	-	34,274
Equity:*					
Absolute return	-	-	-	179,596	179,596
Domestic	-	-	-	107,345	107,345
Foreign	-	-	-	169,879	169,879
Private	-	-	-	356,184	356,184
Real estate*	310	-	-	35,470	35,780
Real assets*	-	-	-	6,408	6,408
Other	-	-	150	-	150
Derivatives	(2)	-	-	-	(2)
Total plan investments assets	**$ 245,554**	**$ 5,647**	**$ 894**	**$ 854,882**	**$ 1,106,977**
Liabilities associated with investments					
Investments sold, but not yet purchased	(7,597)	-	-	-	(7,597)
Other liabilities	(227)	(54)	-	-	(281)
Total plan investment liabilities	**(7,824)**	**(54)**	**-**	**-**	(7,878)
Total plan investments	**237,730**	**5,593**	**894**	**854,882**	**1,099,099**
Fiscal Year 2020					
Cash and short-term investments	$ 36,610	$ -	$ -	$ -	$ 36,610
US Treasury	58,187	-	-	-	58,187
US government agency	-	8,387	-	-	8,387
Common equity:	-	-	-	-	-
Domestic					
Foreign	4,923	-	-	-	4,923
Equity:*	16,988	-	-	-	16,988
Absolute return					
Domestic	-	-	-	130,375	130,375
Foreign	-	-	-	89,370	89,370
Private	-	-	-	199,787	199,787
Real estate*	-	-	-	177,749	177,749
Real assets*	187	-	-	28,570	28,757
Other	-	-	-	5,583	5,583
Derivatives	122	135	-	-	257
Total plan investments assets	**$ 117,017**	**$ 8,522**	**$ -**	**$ 631,434**	**$ 756,973**
Liabilities associated with investments					
Investments sold, but not yet purchased	-	-	-	-	-
Other liabilities	(3)	(12)	-	-	(15)
Total plan investment liabilities	(3)	(12)	-	-	(15)
Total plan investments	**$ 117,014**	**$ 8,510**	**$ -**	**$ 631,434**	**$ 756,958**

** Equity, real estate, and real assets categories include commingled vehicles that invest in these types of investments.*

I. Retirement Benefits (continued)

The plans have made commitments to make periodic contributions in future periods to investments managed by external managers, and in other cases have entered into contractual arrangements that may limit their ability to initiate redemptions due to notice periods, lock-ups, and gates. Details on the remaining unfunded commitments and current redemption terms and restrictions by asset class and type of investment for both the defined benefit pension plan and retiree welfare benefit plan are provided in Table 28 below as of June 30, 2021 and 2020.

TABLE 28. UNFUNDED COMMITMENTS AND REDEMPTON TERMS AND RESTRICTIONS

	2021		2020			
(in thousands of dollars)	Unfunded Commitments	Fair Value	Unfunded Commitments	Fair Value	Redemption Terms	Redemption Restrictions
Defined Benefit Pension Plan						
Equity:						
Absolute return[1]	$ 16,173	$ 939,409	$ 22,323	$ 700,276	Ranges from 2 months to 37 months[4]	30 to 365 days
Domestic[2]	396	623,980	396	504,414	Ranges from 4 months to 38 months[4]	90 to 105 days
Foreign[3]	-	973,895	-	1,003,706	Ranges from 4 months to 49 months	40 to 91 days
Private	485,550	2,493,529	380,663	1,309,936	Close-ended funds not available for redemption	Not Applicable
Real estate	187,033	243,970	155,389	213,340	Close-ended funds not available for redemption	Not Applicable
Real assets	15,180	52,532	18,233	48,754	Close-ended funds not available for redemption	Not Applicable
Total	**$ 704,332**	**$ 5,327,315**	**$ 577,004**	**$ 3,780,426**		
Retiree Welfare Benefit Plan						
Equity:						
Absolute return[1]	$ 2,216	$ 179,596	$ 2,703	$ 130,375	Ranges from 2 months to 37 months[4]	30 to 365 days
Domestic[2]	44	107,345	44	89,370	Ranges from 4 months to 38 months[4]	30 to 365 days
Foreign[3]	-	169,879	-	199,787	Ranges from 4 months to 49 months	90 to 105 days
Private	81,572	356,184	62,732	177,749	Close-ended funds not available for redemption	40 to 91 days
Real estate	29,712	35,470	22,983	28,570	Close-ended funds not available for redemption	Not Applicable
Real assets	2,503	6,408	2,995	5,583	Close-ended funds not available for redemption	Not Applicable
Total	**$ 116,047**	**$ 854,882**	**$ 91,457**	**$ 631,434**		

[1]Absolute return funds include funds that have remaining lock-up provisions up to 22 months.

[2]Domestic funds include funds that have remaining lock-up provisions up to 24 months.

[3]Foreign funds include funds that have remaining lock-up provisions up to 32 months.

[4] Includes funds that are not available for redemption.

I. Retirement Benefits (continued)

Target allocations and weighted-average asset allocations of the investment portfolios for MIT's defined benefit pension plan and retiree welfare benefit plan as of June 30, 2021 and 2020, are shown in Table 29 below.

TABLE 29. PLANNED INVESTMENT ALLOCATION

	Defined Benefit Pension Plan			Retiree Welfare Benefit Plan		
	2021 Target Allocation	2021	2020	2021 Target Allocation	2021	2020
Cash and short-term investments	0-10%	5%	2%	0-10%	4%	5%
Fixed income	3-13%	7%	7%	10-20%	13%	9%
Equities	35.5-82.5%	68%	69%	32-82%	62%	64%
Marketable alternatives	14-24%	15%	16%	14.5-24.5%	17%	17%
Real assets	0-8%	1%	1%	0-5.5%	1%	1%
Real estate	2.5-12.5%	4%	5%	0-8%	3%	4%
Total		**100%**	**100%**		**100%**	**100%**

Expected Future Benefit Payments

In fiscal 2022, MIT does not expect to contribute to its defined benefit pension plan or to the retiree welfare benefit plan. These contributions assume a 7.75 percent and 7.50 percent expected return on assets for the defined benefit pension plan and retiree welfare benefit plan, respectively. MIT elected to adopt Pri-2012 mortality tables for employees and retirees issued by the Society of Actuaries (SOA) in October 2019. Mortality rates are projected generationally from the base year of 2012 using Scale MP-2020.

Table 30 below reflects the total expected benefit payments for the defined benefit pension plan and retiree welfare benefit plan over the next 10 years. These payments have been estimated based on the same assumptions used to measure MIT's benefit obligations as of June 30, 2021.

TABLE 30. EXPECTED FUTURE BENEFIT PAYMENTS

(in thousands of dollars)	Pension Benefits	Retiree Welfare
2022	$ 179,076	$ 26,012
2023	195,153	28,644
2024	213,002	30,475
2025	230,141	32,119
2026	237,491	33,661
2027 - 2031	1,252,166	188,760

**Retiree Welfare Benefits" reflect the total net benefits expected to be paid from the plans (e.g., gross benefit reimbursement offset by retiree contributions)*

J. Components of Net Assets and Endowment

Tables 31A and 31B present the composition of net assets as of June 30, 2021, and June 30, 2020, respectively. The amounts listed in the without donor restriction category under the endowment funds sections are those gifts and other funds received over the years that MIT designated as funds functioning as endowment and invested with the endowment funds. A large component of net assets with donor restriction in other invested funds is pledges, the majority of which will be reclassified to net assets without donor restrictions when cash is received.

TABLE 31A. 2021 TOTAL NET ASSET COMPOSITION

(in thousands of dollars)	Without Donor Restrictions	With Donor Restrictions	Total
Endowment Funds			
General purpose	$ 2,378,115	$ 2,577,284	$ 4,955,399
Departments and research	1,429,232	3,835,349	5,264,581
Library	22,323	97,900	120,223
Salaries and wages	1,064,538	6,542,497	7,607,035
Graduate general	165,405	458,401	623,806
Graduate departments	344,414	1,455,519	1,799,933
Undergraduate	440,869	2,957,116	3,397,985
Prizes	17,802	101,512	119,314
Miscellaneous	2,165,381	1,340,382	3,505,763
Endowment funds before pledges	8,028,079	19,365,960	27,394,039
Pledges	-	133,165	133,165
Total endowment funds	8,028,079	19,499,125	27,527,204
Other Invested Funds			
Student-related loan funds	18,056	32,427	50,483
Building funds	147,047	23,031	170,078
Designated purposes:			
Departments and research	482,791	-	482,791
Other purposes	288,503	28,496	316,999
Life income funds and donor advised funds	59,311	260,542	319,853
Pledges	-	438,103	438,103
Other funds available for current expenses	4,407,074	438,913	4,845,987
Retirement benefits overfunded	1,389,564	-	1,389,564
Funds for educational plant	905,307	-	905,307
Total other invested funds	7,697,653	1,221,512	8,919,165
Total net assets	**$ 15,725,732**	**$ 20,720,637**	**$ 36,446,369**

J. Components of Net Assets and Endowment (continued)

TABLE 31B. 2020 TOTAL NET ASSET COMPOSITION

(in thousands of dollars)	Without Donor Restrictions	With Donor Restrictions	Total
Endowment Funds			
General purpose	$ 1,585,054	$ 1,712,557	$ 3,297,611
Departments and research	933,024	2,524,714	3,457,738
Library	14,880	62,550	77,430
Salaries and wages	707,388	4,342,847	5,050,235
Graduate general	110,256	301,133	411,389
Graduate departments	220,360	937,844	1,158,204
Undergraduate	293,639	1,952,567	2,246,206
Prizes	11,832	67,555	79,387
Miscellaneous	1,459,540	1,143,778	2,603,318
Endowment funds before pledges	5,335,973	13,045,545	18,381,518
Pledges	-	114,387	114,387
Total endowment funds	5,335,973	13,159,932	18,495,905
Other Invested Funds			
Student-related loan funds	18,509	32,115	50,624
Building funds	186,666	73,316	259,982
Designated purposes:			
Departments and research	460,286	-	460,286
Other purposes	195,261	17,205	212,466
Life income funds and donor advised funds	30,968	185,937	216,905
Pledges	-	505,953	505,953
Other funds available for current expenses	3,044,223	660,445	3,704,668
Retirement benefits underfunded	(459,795)	-	(459,795)
Funds for educational plant	769,937	-	769,937
Total other invested funds	4,246,055	1,474,971	5,721,026
Total net assets	**$ 9,582,028**	**$ 14,634,903**	**$ 24,216,931**

MIT's endowment consists of approximately 4,400 individual funds established for a variety of purposes and includes both donor-restricted endowment funds and funds that function as endowments. As required by GAAP, net assets associated with endowment funds, including funds designated to function as endowments, are classified and reported based on the existence or absence of donor-imposed restrictions.

The Executive Committee has interpreted the Massachusetts-enacted version of the Uniform Prudent Management of Institutional Funds Act (UPMIFA) as allowing MIT to appropriate for expenditure or accumulate so much of an endowment fund as MIT determines is prudent for the uses, benefits, purposes, and duration for which the endowment fund is established, subject to the intent of the donor as expressed in the gift instrument. Unless stated otherwise in the gift instrument, the assets in an endowment fund shall be donor-restricted assets until appropriated for expenditure by the Executive Committee. In accordance with UPMIFA, the Executive Committee considers the following factors in making a determination to appropriate or accumulate endowment funds:

i. the duration and preservation of the fund
ii. the purposes of MIT and the endowment fund
iii. general economic conditions
iv. the possible effects of inflation and deflation
v. the expected total return from income and the appreciation of investments
vi. other resources of MIT
vii. the investment policies of MIT

J. Components of Net Assets and Endowment (continued)

Table 32 below reflects changes in endowment net assets without and with donor restrictions as of June 30, 2021 and 2020, respectively.

TABLE 32. CHANGES IN ENDOWMENT NET ASSETS

(in thousands of dollars)	Without Donor Restriction	With Donor Restriction	Total
Fiscal Year 2021			
Endowment net assets, July 1, 2020	$ 5,335,973	$ 13,159,932	$ 18,495,905
Investment return:			
Net Investment income	12,244	37,062	49,306
Net appreciation (realized and unrealized)	2,867,324	6,672,003	9,539,327
Total investment return	2,879,568	6,709,065	9,588,633
Contributions	-	106,078	106,078
Appropriation of endowment assets for expenditure	(223,791)	(525,315)	(749,106)
Other changes:			
Net asset reclassifications and transfers	36,329	49,365	85,694
Endowment net assets, June 30, 2021	**$ 8,028,079**	**$ 19,499,125**	**$ 27,527,204**
Fiscal Year 2020			
Endowment net assets, July 1, 2019	$ 5,042,357	$ 12,526,971	$ 17,569,328
Investment return:			
Net Investment income	3,481	11,652	15,133
Net appreciation (realized and unrealized)	484,684	1,123,005	1,607,689
Total investment return	488,165	1,134,657	1,622,822
Contributions	-	103,436	103,436
Appropriation of endowment assets for expenditure	(222,038)	(515,164)	(737,202)
Other changes:			
Net asset reclassifications and transfers	27,489	(89,968)	(62,479)
Endowment net assets, June 30, 2020	**$ 5,335,973**	**$ 13,159,932**	**$ 18,495,905**

Underwater Endowment Funds

From time to time, the fair value of assets associated with individual donor-restricted endowment funds may fall below the value of the initial and subsequent donor gift amounts (underwater). When underwater endowment funds exist, they are classified as a reduction of net assets with donor restrictions. There were no underwater endowment funds reported in net assets with donor restrictions as of June 30, 2021, or June 30, 2020.

J. Components of Net Assets and Endowment (continued)

Endowment Investment and Spending Policies

MIT's investment policy is based on the primary goal of maximizing return relative to appropriate risk such that performance exceeds appropriate benchmark returns at the total pool, asset class, and individual manager levels. To achieve its long-term rate-of-return objectives, MIT relies on a total return strategy in which investment returns are realized through both capital appreciation (realized and unrealized gains) and current yield (interest and dividends). MIT targets a diversified asset allocation that places greater emphasis on equity-based investments to achieve its long-term objectives within prudent risk constraints.

The Institute's primary investment pool, Pool A, is principally for endowment and funds functioning as endowment. The effective spending rate on pooled endowed funds was 4.2 percent, or 4.5 percent on a three-year-average basis, and 4.3 percent, or 4.8 percent on a three-year-average basis, for fiscal 2021 and fiscal 2020, respectively.

Pool A operates as a mutual fund with units purchased and redeemed based on the previous month's unit market value. Certain endowed assets are also maintained in separately invested funds.

MIT has adopted spending policies designed to provide a predictable stream of funding to programs supported by its investments while maintaining the purchasing power of assets. For pooled investments, the Executive Committee of the Corporation votes to distribute funds for operational support from general investments. In accordance with MIT's spending policy, these distributions are funded from both investment income and market appreciation. The distribution rates were $81.80 per Pool A unit for both fiscal 2021 and fiscal 2020. For separately invested endowment funds, only the annual investment income generated is distributed for spending. For any underwater endowment funds, the distribution of funds for operational support is at the discretion of the Executive Committee.

K. Department of Education Fiscal Responsibility Standards

As disclosed in the accompanying supplemental schedule, the Department of Education finalized new borrower defense rules that require the inclusion of a supplemental schedule to the audited financial statements that contains all financial elements needed to calculate the composite score ratios with a cross-reference to the financial statement line, or notes disclosure, that contains the element. The required financial elements as of June 30, 2021 not already included in a previous footnote are outlined in Table 33 below.

TABLE 33. FINANCIAL ELEMENTS IN THE SUPPLEMENTAL SCHEDULE NOT READILY AVAILABLE IN THE INSTITUTE'S CONSOLIDATED FINANCIAL STATEMENTS

(in thousands of dollars)

Financial Element		**2021**
Property, plant, and equipment- pre-implementation	$	3,572,907
Property, plant, and equipment- post-implementation with outstanding debt for original purchase		177,000
Property, plant, and equipment- post-implementation without outstanding debt for original purchase		199,650
Construction in Process		526,405
Long-term debt- for long term purposes pre-implementation		3,080,212
Long-term debt- for long term purposes post-implementation		177,000
Net assets with donor restrictions: restricted in perpetuity		3,987,940

Page intentionally left blank

Massachusetts Institute of Technology
Financial Responsibility Supplemental Schedule
June 30, 2021

(in thousands of dollars)

Reference	*Financial Element*		*Amount*
	Primary Reserve Ratio		
Expendable Net Assets:			
Consolidated Statement of Financial Position- Net assets without donor restrictions	Net assets without donor restrictions		$ 15,725,732
Consolidated Statement of Financial Position- Net Assets with donor restrictions	Net assets with donor restrictions		20,720,637
Consolidated Statement of Financial Position- Land, buildings and equipment, net of accumulated depreciation	Property, plant, and equipment, net (includes construction in progress and capital leases	$ 4,475,962	
Footnote K - Property, plant, and equipment- pre-implementation	Less: Property, plant, and equipment- pre-implementation		3,572,907
Footnote K - Property, plant, and equipment- post-implementation with outstanding debt for original purchase	Less: Property, plant, and equipment- post-implementation with outstanding debt for original purchase		177,000
Footnote K - Property, plant, and equipment- post-implementation without outstanding debt for original purchase	Less: Property, plant, and equipment- post-implementation without outstanding debt for original purchase		199,650
Footnote K - Construction in Process	Less: Construction in Process		526,405
Consolidated Statement of Financial Position- Operating leases - right of use assets	Less: Lease right-of-use asset, post-implementation		273,512
Footnote I, Table 24 - Net Asset for Defined Benefit Pension Plan plus Net asset for Retiree Welfare Benefit Plan	Post-employment and retirement assets		1,389,564
Footnote K - Long-term debt- for long term purposes pre-implementation and post-implementation	Long-term debt- for long term purposes	$ 3,929,034	
Footnote K - Long-term debt- for long term purposes pre-implementation	Long-term debt- for long term purposes pre-implementation		3,080,212
Footnote K - Long-term debt- for long term purposes post-implementation	Long-term debt- for long term purposes post-implementation		177,000
Consolidated Statement of Financial Position- Operating lease liability	Post-implementation lease liability		282,040
Footnote J, Table 31a - Life income funds and donor advised funds with donor restrictions	Less: Life income funds and donor advised funds with donor restrictions		260,542
Footnote K - Net assets with donor restrictions: restricted in perpetuity	Less: Net assets with donor restrictions: restricted in perpetuity:		3,987,940
	Total Expendable Net Assets:		**$ 29,598,101**
Total Expenses and Losses:			
Notes to the Consolidated Financial Statements- Footnote H, Table 21 - 2021 Total	Total expenses without donor restrictions		$ 3,728,725
Consolidated Statement of Activities- Postretirement plan changes other than net periodic benefit cost	Non-operating and net investment loss		-
Consolidated Statement of Activities- Postretirement plan changes other than net periodic benefit cost	Less: Pension- related changes other than net periodic costs		-
	Total Expenses and Losses:		**$ 3,728,725**
	Equity Ratio		
Modified Net Assets:			
Consolidated Statement of Financial Position- Net assets without donor restrictions	Net assets without donor restrictions		$ 15,725,732
Consolidated Statement of Financial Position- Net assets with donor restrictions	Net assets with donor restrictions		20,720,637
N/A	Less: Intangible assets		-
N/A	Less: Unsecured related party receivables		-
	Total Modified Net Assets:		**$ 36,446,369**
Modified Assets:			
Consolidated Statement of Financial Position- Total assets	Total assets		$ 42,526,492
N/A	Lease right-of-use asset, pre-implementation		-
N/A	Lease right-of-use liability, pre-implementation		-
N/A	Less: Intangible assets		-
N/A	Secured and unsecured related party receivable		
N/A	Less: Unsecured related party receivables		-
	Total Modified Assets:		**$ 42,526,492**
	Net Income Ratio		
Change in Net Assets Without Donor Restrictions:			
Consolidated Statement of Activities- Increase in net assets without donor restriction	Change in net assets without donor restrictions:		$ 6,143,704
	Total Change in Net Assets Without Donor Restrictions:		**$ 6,143,704**
Total Revenues and Gains:			
Consolidated Statement of Activities- Total Revenues, Net return on investments, Distribution of accumulated investment gains, Other changes	Total operating revenue and other gains		$ 7,826,364
	Total Revenues and Gains:		**$ 7,826,364**

The accompanying note is an integral part of the financial responsibility supplemental schedules.

Massachusetts Institute of Technology
Note to Financial Responsibility Supplemental Schedule
June 30, 2021

1. Basis of Presentation

The accompanying financial responsibility supplemental schedule (the "Schedule") of Massachusetts Institute of Technology (the "Institute") provides financial information required by the Department of Education to calculate of the primary reserve ratio, equity ratio, net income ratio and the composite score as defined in Subpart L of 34 CFR 668 for the fiscal year-ended June 30, 2021. The financial information in the Schedule has been prepared in accordance with accounting principles generally accepted in the United States of America consistent with the consolidated financial statements. The Schedule is presented for purposes of additional analysis as required by the Department of Education and is not a required part of the basic financial statements.

The accompanying note is an integral part of the financial responsibility supplemental schedules.

SECTION II

SCHEDULE OF EXPENDITURES OF FEDERAL AWARDS

Page intentionally left blank

Massachusetts Institute of Technology
Schedule of Expenditures of Federal Awards
For the Year Ended June 30, 2021

Federal Grantor/ Pass Through Grantor/ Program Title	Assistance Listing Number	Total $ Amount Expended	$ Amount Passed to Subrecipients
Research and Development			
U.S. Department of Defense:	12		
Air Force		$ 400,972,321	$ 31,013,811
Army		86,066,872	7,874,878
Classified		212,879,873	11,877,955
Defense Advance Research Project Agency		46,390,285	8,516,841
Missile Defense Agency		84,499,289	4,846,380
National Security Agency		11,487,894	170,116
Navy		69,591,225	3,889,967
Other DOD		145,104,158	5,019,619
Passthrough		50,844,940	510,044
Total Department of Defense		$ 1,107,836,857	$ 73,719,611
U.S. Department of Commerce	11	$ 9,982,563	$ 829,341
U.S. Department of Commerce - Passthrough	11	773,177	-
U.S. Department of Energy	81	55,615,090	4,187,213
U.S. Department of Energy - Passthrough	81	21,681,774	32,902
U.S. Department of Health and Human Services	93	113,015,425	14,373,691
U.S. Department of Health and Human Services - Passthrough	93	27,473,883	-
U.S. Department of Homeland Security	97	24,036,126	2,393,226
U.S. Department of Homeland Security - Passthrough	97	1,262,046	-
U.S. Department of Transportation	20	25,587,308	339,082
U.S. Department of Transportation - Passthrough	20	718,883	-
Miscellaneous Federal Government	Various	18,407,229	1,175,604
Miscellaneous Federal Government - Passthrough	Various	1,946,796	609,758
National Aeronautics & Space Administration	43	61,662,785	10,855,314
National Aeronautics & Space Administration - Passthrough	43	20,070,141	1,175,943
National Science Foundation	47	81,333,072	5,252,424
National Science Foundation - Passthrough	47	14,035,138	-
Total Research and Development	Appendix A	$ 1,585,438,293	$ 114,944,109

The accompanying notes are an integral part of this schedule.

Massachusetts Institute of Technology
Schedule of Expenditures of Federal Awards
For the Year Ended June 30, 2021

Federal Grantor/ Pass Through Grantor/ Program Title	Assistance Listing Number	Total $ Amount Expended	$ Amount Passed to Subrecipients
Student Financial Assistance Cluster Expenditures			
U.S. Department of Education Cluster:			
Grants:			
Pell	84.063	$ 4,332,924	
Federal Supplemental Educational Opportunity	84.007	1,873,669	
Federal Work Study	84.033	1,794,335	
Federal Perkins Loan:	84.038		
New Loans		-	
Balance Outstanding From Prior Years		11,310,852	
Loan Administrative Cost Allowance		-	
William D. Ford Federal Direct Loan Program:	84.268		
Direct Subsidized and Unsubsidized Loans		7,607,621	
Direct Plus Loan for Parents and for Graduate or Professional Students		10,506,363	
Total Student Financial Assistance Cluster Expenditures		$ 37,425,764	
Highway Planning and Construction Cluster			
U.S. Department of Transportation - Passthrough	20.205	$ 45	-
Total Highway Planning and Construction Cluster		$ 45	$ -
Other Federal Expenditures:			
U.S. Department of Commerce	Appendix B	$ 113,728	$ 39,304
U.S. Department of Commerce - Passthrough	Appendix C	171,210	-
U.S. Department of Defense	Appendix B	2,394,556	832,002
U.S. Department of Defense - Passthrough	Appendix C	2,893,642	-
U.S. Department of Energy	Appendix B	166,958	5,805
U.S. Department of Energy - Passthrough	Appendix C	261,353	-
U.S. Department of Health and Human Services	Appendix B	2,152	-
U.S. Department of Health and Human Services - Passthrough	Appendix C	-	-
U.S. Department of Homeland Security	Appendix B	-	-
U.S. Department of Transportation	Appendix B	5,075	-
Miscellaneous Federal Government	Appendix B	724,708	-
Miscellaneous Federal Government - Passthrough	Appendix C	587,780	-
National Aeronautics & Space Administration	Appendix B	1,936,152	44,588
National Aeronautics & Space Administration - Passthrough	Appendix C	534,124	-
Total Other Federal Expenditures		$ 9,791,438	$ 921,699
Total Federal Expenditures		$ 1,632,655,540	$ 115,865,808

The accompanying notes are an integral part of this schedule.

Massachusetts Institute of Technology
Notes to Schedule of Expenditures of Federal Awards
For the Year Ended June 30, 2021

1. Basis of Presentation

The accompanying schedule of expenditures of federal awards including appendices A, B and C (the "Schedule") summarize the expenditures of the Massachusetts Institute of Technology (the "Institute") under programs of the federal government for the year ended June 30, 2021. Because the Schedule presents only a selected portion of the activities of the Institute, it is not intended to and does not present the financial position, changes in net assets and cash flows of the Institute. The accompanying appendices A, B, and C provide detail on the federal awards expended by the Institute.

For purposes of the Schedule, federal awards include all grants, contracts and similar agreements entered into directly between the Institute and agencies and departments of the federal government and all subawards to the Institute by nonfederal organizations pursuant to federal grants, contracts and similar agreements. The information in this schedule is presented in accordance with the provisions of the Office of Management and Budget's *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* ("Uniform Guidance"). Therefore, certain amounts presented in the Schedule may differ from amounts presented in, or used in preparation of, the consolidated financial statements. Assistance Listing Numbers ("AL") and pass-through numbers are provided when available. Negative amounts represent adjustments to amounts reported in prior years in the normal course of business.

2. Summary of Significant Accounting Policies for Federal Expenditures

Expenditures for direct costs are recognized as incurred using the accrual method of accounting and the cost accounting principles in OMB's Uniform Guidance or Federal Acquisition Regulations. Moreover, expenditures include a portion of costs associated with general Institute activities (facilities and administrative costs) which are allocated to awards under negotiated formulas commonly referred to as facilities and administrative rates.

The Institute applies its predetermined approved facilities and administrative rate when charging indirect costs to federal awards rather than the 10% de minimis cost rate as described in Section 200.414 of the Uniform Guidance.

The Institute receives funding from federal government agencies for sponsored research under government grants and contracts. These grants and contracts provide for reimbursement of indirect costs based on rates negotiated with the Office of Naval Research (ONR), the Institute's cognizant federal agency. The Institute's indirect cost reimbursements are based on fixed rates with carryforward of under or over recoveries.

The Defense Contract Audit Agency ("DCAA") is responsible for auditing indirect charges to grants and contracts. The Institute has final audited rates through 2020 and negotiated fixed rates for indirect costs through the 2022 fiscal year.

Massachusetts Institute of Technology
Notes to Schedule of Expenditures of Federal Awards
For the Year Ended June 30, 2021

3. Federal Student Loan Programs

The Federal Perkins Loan Program (AL #84.038) is administered directly by the Institute and balances and transactions relating to this program are included in the Institute's consolidated financial statements. The balance of loans outstanding for this program at June 30, 2021 is $9,090,542.

The William D. Ford Federal Direct Loan Programs (AL #84.268) are not administered by the Institute and balances and transactions relating to these programs are not included in the Institute's consolidated financial statements.

4. Lincoln Laboratory

Lincoln Laboratory ("the Laboratory"), designated as a Federally Funded Research and Development Center ("FFRDC"), is a mission oriented, multidisciplinary laboratory. The Director of Lincoln Laboratory reports to MIT's Vice President of Research. The Laboratory is directly integrated into the Institute as part of its **r**esearch **l**aboratory system and the Laboratory's reporting relationship with the Institute is like that of any other MIT research laboratory. The Laboratory is charged with responsibility for producing contractual research products and services. MIT establishes policy for, and provides guidance to, the Laboratory and performs administrative and service functions in support of the operations of the Laboratory.

Appendix A
Massachusetts Institute of Technology
Schedule of Expenditures of Federal Awards - Worksheet
Federal Research Support
FY 21 Expenditures

Sponsor	Campus Direct (Appendix A-1)	Lincoln Direct (Appendix A-2)	Lincoln Passthrough (Appendix A-2)	Campus Passthrough (Appendix A-3)	Total
Department of Defense:					
Air Force	$ 25,945,279	$ 375,027,042	$ 1,027,447	$ 12,416,644	$ 414,416,412
Army	20,717,418	65,349,454	2,883,531	5,354,335	94,304,738
Classified	-	212,879,873	-	-	212,879,873
Defense Advanced Research Project Agency	16,037,525	30,352,760	-	15,700,205	62,090,490
Missile Defense Agency	-	84,499,289	60,056	-	84,559,345
National Security Agency	-	11,487,894	-	-	11,487,894
Navy	18,687,616	50,903,609	647,951	8,038,371	78,277,547
Other Department of Defense	574,463	144,529,695	836,830	3,879,570	149,820,558
Total Department of Defense	81,962,301	975,029,616	5,455,815	45,389,125	1,107,836,857
Department of Commerce	3,307,526	6,675,037	-	773,177	10,755,740
Department of Energy	52,939,465	2,675,625	3,066,865	18,614,909	77,296,864
Department of Health & Human Services	113,015,425	-	1,618,899	25,854,984	140,489,308
Department of Homeland Security	25,881	24,010,245	-	1,262,046	25,298,172
Department of Transportation	2,392,676	23,194,632	421,644	297,239	26,306,191
Miscellaneous Federal Government:					
Department of Agriculture	115,320	-	-	17,733	133,053
Department of Education	359,592	-	-	-	359,592
Department of Interior	1,467,542	-	-	414,755	1,882,297
Other	2,402,407	14,062,368	9,164	1,505,144	17,979,083
Total Miscellaneous Federal Government	4,344,861	14,062,368	9,164	1,937,632	20,354,025
Nat'l Aeronautics & Space Administration	21,727,744	39,935,041	8,069,527	12,000,614	81,732,926
National Science Foundation	81,333,072	-	316,653	13,718,485	95,368,210
Total Federal Sponsors	**$ 361,048,951**	**$ 1,085,582,564**	**$ 18,958,567**	**$ 119,848,211**	**$ 1,585,438,293**

Note for Appendices A-1, A-3, B and C details:
- Contracts without Assistance Listing ("AL") numbers were shown as ".RD" in the Assistance Listing # column for Reseach & Development and ".U00" for Non-R&D.
- Amounts less than 50 cents appear as zero due to rounding.

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE					
Air Force					
Air Force	FA9453-18-2-0017	Remote-epitaxy of multijunction solar cells on graphene coated III-V substrates	12.114	141,402	-
Air Force	FA8750-16-2-0141	Development of a Wide -Bandgap Programmable Nanophotonic Processor	12.300	5,043	-
Air Force	FA8750-17-2-0126	Human Data Interaction Project	12.300	38,292	60,000
Air Force	FA8750-19-2-1000	AI Accelorator	12.300	93,112	-
Air Force	FA8750-19-2-1000	COVID-19: AI Accelorator	12.300	14,719,324	-
Air Force	FA8750-20-2-1007	Integration of Strong Second-order Nonlinearities with Large-Scale Silicon Photonics	12.300	74,250	-
Air Force	FA2386-17-1-4661	Development of tele-operated quadrupedal robotic platform for disaster response	12.630	1,251	-
Air Force	FA2386-20-1-4070	COVID-19: Developing graphene Josephson microwave single-photon detector for quantum information science	12.800	27,177	-
Air Force	FA9550-14-1-0035	(MURI) Advanced Quantum Material - A New Frontier for Ultracold Atoms	12.800	286,311	225,082
Air Force	FA9550-15-1-0038	(MURI 14)-A unified mathematical and algorithmic framework for managing multiple information sources of multi-physics systems	12.800	568,485	393,728
Air Force	FA9550-15-1-0514	(MURI) FATE: Foldable and Adaptive Two-Dimensional Electronics	12.800	849,498	332,578
Air Force	FA9550-16-1-0208	Automated Discovery of Important Chemical Reactions	12.800	30,369	-
Air Force	FA9550-16-1-0324	Quantum Gas Microscopy of Strongly Correlated Fermions	12.800	206,654	-
Air Force	FA9550-16-1-0382	COVID-19: Quantum Optoelectronics and Plasmonics with Novel Van der Waals Heterostructures	12.800	167,286	-
Air Force	FA9550-16-1-0391	High-Speed Quantum Communications using Silicon Photonics	12.800	13,340	-
Air Force	FA9550-17-1-0058	Pixel matrices and other compositional analyses of interconnected systems	12.800	239,291	-
Air Force	FA9550-17-1-0081	The Marvin Minsky Institute for Society of Mind Theory	12.800	284,165	-
Air Force	FA9550-17-1-0165	Learning to Plan in Hybrid Spaces	12.800	329,182	-
Air Force	FA9550-17-1-0192	Spontaneous Computation in Chemical Systems	12.800	17,471	-
Air Force	FA9550-17-1-0288	(YIP) DNA-Programmed Epitaxy of Nanoparticle Superlattices	12.800	172,725	-
Air Force	FA9550-17-1-0316	High-resolution methods for passive geolocation and navigation	12.800	39,397	-
Air Force	FA9550-17-1-0362	User Interaction for Teaming with Autonomous Systems	12.800	174,600	-
Air Force	FA9550-18-1-0023	Coupling in Uncertain Multi-physics Systems	12.800	142,872	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Air Force	FA9550-18-1-0080	Remote Sensing of Coronal Mass Ejections using Widefield Low Frequency Imaging Arrays	12.800	-379	-
Air Force	FA9550-18-1-0341	COVID-19: Low Bandgap, Highly Polarizable, and Intrinsically Conductive Polymers	12.800	208,746	-
Air Force	FA9550-18-1-0376	(DURIP) Single-Photon Detection System for Photonic Quantum Technologies	12.800	57,808	-
Air Force	FA9550-18-1-0436	COVID-19: Empty State Electronics	12.800	979,618	280,244
Air Force	FA9550-18-1-0436	Empty State Electronics	12.800	564,239	174,744
Air Force	FA9550-19-1-0048	(YIP) Harnessing Magnons for Hybrid Quantum Information Systems	12.800	128,101	-
Air Force	FA9550-19-1-0063	(YIP) Competing Orders in Nanostructured High-Tc Superconductors	12.800	134,204	-
Air Force	FA9550-19-1-0065	(YIP) On-Chip PHz Processing of Optical Fields using Nanostructured Electron Emitters	12.800	150,279	-
Air Force	FA9550-19-1-0104	Electro-Active Polymers for Robust and Flexible Electrospray Propulsion	12.800	20,942	-
Air Force	FA9550-19-1-0113	A Category-Theoretic Approach to Agent Interaction: Information, Communication, Planning, and Learning	12.800	184,009	-
Air Force	FA9550-19-1-0119	DURIP: Laser systems for trapping, transporting and shaping ultracold dysprosium atoms	12.800	18,244	-
Air Force	FA9550-19-1-0153	(DURIP) Simultaneous Annealing and Irradiation Furnace for Optimized Generation of Diamond Color Centers	12.800	0	-
Air Force	FA9550-19-1-0240	COVID-19: Scalable accelerated algorithms for exascale simulation and optimization/deep learning	12.800	43,675	-
Air Force	FA9550-19-1-0240	Scalable accelerated algorithms for exascale simulation and optimization/deep learning	12.800	238,272	-
Air Force	FA9550-19-1-0263	Building Attack Resilience into Complex Networks: Deterrence, Inspection, and Recovery	12.800	68,439	-
Air Force	FA9550-19-1-0269	Learning to Learn Concepts as Programs: Hierarchical Bayes and Amortised Inference	12.800	65,812	-
Air Force	FA9550-19-1-0319	Structured Assignment: Geometric Optimization Algorithms for Large-Scale Matching	12.800	39,259	-
Air Force	FA9550-19-1-0381	COVID-19: Physics and Management of Aerothermal-Mechanical Interactions for Enabling Robust Operation of Thermal System	12.800	114,947	-
Air Force	FA9550-19-1-0381	Physics and Management of Aerothermal-Mechanical Interactions for Enabling Robust Operation of Thermal System	12.800	29,296	-
Air Force	FA9550-19-1-0392	High Performance Area-Enhanced Hierarchical Evaporator for Extreme Thermal Management	12.800	149,759	-
Air Force	FA9550-20-1-0044	Design of robust and accurate biosensing systems in living cells	12.800	304,634	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Air Force	FA9550-20-1-0066	(PECASE) Unraveling phonons at the atomic scale: a new tool to explore the science of thermal transport	12.800	238,801	-
Air Force	FA9550-20-1-0105	Multiplexed Quantum Repeaters for High-Speed Quantum Networks	12.800	54,231	35,771
Air Force	FA9550-20-1-0113	COVID-19: Development of a Photonic Field-Programmable Gate Array (pFPGA) for Software-Controlled Photonics	12.800	54,977	-
Air Force	FA9550-20-1-0115	COVID-19: Topological photonics for enabling high-power lasers	12.800	50,137	-
Air Force	FA9550-20-1-0163	COVID-19: Short Range Order and Electronic Entropy: from Melts to Solids	12.800	95,251	-
Air Force	FA9550-20-1-0291	(PECASE) Guiding Thermal Catalytic Reactions with Interfacial Electric Fields	12.800	240,314	-
Air Force	FA9550-20-1-0402	COVID-19: Invisible Hardware Speculation: A Comprehensive and Efficient Defense Solution Against Speculative Side Channel Attacks	12.800	32,047	-
Air Force	FA9550-20-1-0429	Shock Propagation through Architectured PrintCast Composites	12.800	84,459	-
Air Force	FA9550-21-1-0014	The Marvin Minsky Institute for Society of Mind Theory	12.800	288,224	-
Air Force	FA9550-21-1-0058	(MURI) Prediction, Statistical Quantification and Mitigation of Extreme Events Caused by Exogenous Causes or Intrinsic Instabilities	12.800	1,640	-
Air Force	FA8650-17-1-7713	Visible Integrated Photonics Enhanced Reality (VIPER)	12.910	155,582	-
Air Force	FA8650-19-2-7921	Discrete Integrated Circuit Electronics	12.910	134,995	-
Air Force	FA8650-20-2-2002	COVID-19: Enhanced Computational Aircraft Prototype Syntheses (EnCAPS)	12.910	561,029	81,484
Air Force	FA8650-21-2-7120	Ingestible Transceiver-Actuatable Resident Gastrointestinal bioElectronic Therapeutic for Travelers Diarrhea (iTARGET-TD)	12.910	132,260	-
Air Force	FA8650-14-C-2472	Computational Aircraft Prototype Syntheses (CAPS)	12.RD	1	-
Air Force	FA8650-17-C-9113	Nanoscale X-ray Tomosynthesis for Rapid Assessment of IC Dice (NXT-RAID)	12.RD	272,221	-
Air Force	FA8750-17-C-0229	Genetic circuit design for extreme environments enabled by models extracted from petabyte-scale perturbation analyses	12.RD	986,311	258,223
Air Force	FA8750-17-C-0239	BayesDB for Data-Centric Scientific Discovery	12.RD	302,661	-
Air Force	FA8750-17-C-0239	COVID-19: BayesDB for Data-Centric Scientific Discovery	12.RD	138,736	-
		Total for Air Force		**25,945,279**	**1,841,852**
Army					
Army	W81XWH-14-1-0240	Extracellular Matrix Biomarkers for Diagnosis, Prognosis, Imaging and Targeting	12.420	812,450	82,996
Army	W81XWH-17-1-0159	Synthetic Tumor Recruited Immuno-Cellular Therapy (STRICT) for Lung Cancer	12.420	-6,959	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Army	W81XWH-17-1-0427	Connecting Mechanical to Biomechanical Performance of Prosthetic Feet to Design Customized Passive Devices that Provide Improved Mobility	12.420	58,662	17,487
Army	W81XWH-17-1-0669	Heritably immunizing white-footed mice against tick-borne disease	12.420	6,396	-
Army	W81XWH1810513	Modeling of lung adenocarcinoma tumorigenesis using recombinase-driven sequential gene mutations	12.420	-12,898	-
Army	W81XWH1810515	Investigating the Oligomerization of TorsinA as a Means to Develop DYT1 Dystonia Theraputics	12.420	277,052	-
Army	W81XWH-18-2-0010	Intravenous Hemostatic Nanoparticles to Stop Bleeding from Noncompressible and Unidentifiable Wounds	12.420	236,526	79,291
Army	W81XWH-19-1-0151	An Osseo-Neural Transtibial Prosthesis with Efferent-Afferent Neural Control	12.420	1,259,325	118,650
Army	W81XWH-19-1-0257	Leveraging rational nanoparticle design for improved treatment of pediatric and adolescent cancers (CA181202)	12.420	18,662	-
Army	W81XWH1910555	New avenues for neurofibromatosis therapy	12.420	4,480	-
Army	W81XWH2010365	Do the changes of the mechanical environment in MS lesions affect myelin repair and responses of oligodendrocytes topro-myelinating drugs?	12.420	48,356	-
Army	W81XWH2010481	Cartilage Penetrating Nanocarrier-Drug Conjugate for Disease-Modifying Intervention in Post-Traumatic Osteoarthritis	12.420	71,858	-
Army	W81XWH2010661	Defining the Effects of the Liver Microenvironment on Metastatic Colon Cancer	12.420	250,481	-
Army	W81XWH2110089	On-demand angiogenesis for coronary microvascular disease in women: a synthetic biology approach	12.420	28,055	-
Army	W81XWH2110235	Delivery of pro-angiogenesis anti-miRs from electrostatically-assembled bandages for diabetic ulcers	12.420	37,719	-
Army	W81XWH2110283	Interrogation of requisite niche factors for leukemia cell survival at single cell resolution	12.420	2,843	-
Army	W911NF-11-1-0400	Multi-Qubit Enhanced Sensing and Metrology	12.431	940,273	518,493
Army	W911NF-13-D-0001, T.O. 8	ISN 3 FY'13 funding	12.431	863,820	45,540
Army	W911NF-13-D-0001, T.O. 9	ISN 3 FY'13 funding	12.431	692,655	87,276
Army	W911NF-15-1-0128	Realizing Novel Phases of Materials with Light-Matter Interaction	12.431	67,613	-
Army	W911NF-15-1-0166	Managing Uncertainty: Principles For Robust And Dexterous Continuum Mechanics	12.431	0	-238
Army	W911NF-16-1-0034	Coupled Synthesis, Transport, and Magnetization Studies to Detect New Topological Phases	12.431	195,253	-
Army	W911NF-16-1-0440	Research Area 2.1: Fluid-Driven Sediment Transport: A first-principles approach joining geological observations and granular-fluid physics	12.431	121,930	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Army	W911NF-16-2-0176	A Systems Approach for Managing the Health of Force	12.431	229,203	187,790
Army	W911NF-17-1-0068	Smooth Modeling of Flows on Graphs	12.431	-17,245	-
Army	W911NF-17-1-0174	Physical Properties of Materials: Exotic Physical Properties of Electronically Coupled Two-Dimensional Metal-Organic Frameworks	12.431	-837	-
Army	W911NF-17-1-0433	New Frameworks for Quantum Algorithms	12.431	127,669	-
Army	W911NF-17-1-0435	High-Quality Tunable Graphene Plasmonic Metamaterials	12.431	35,582	-
Army	W911NF-17-1-0508	10.1.2:10.1.1: Low Latency Wireless Networks for Mission Critical Communications	12.431	99,687	-
Army	W911NF-17-1-0521	Polymer Chemistry: Uniform chiral polymers by IEG: synthesis and assembly	12.431	89,377	-
Army	W911NF-17-1-0527	Quantum Machine Learning	12.431	396,028	-
Army	W911NF-18-1-0063	Research Area 10.3: Reliability and robustness for fast Bayesian inference of complex data	12.431	21,844	-
Army	W911NF-18-1-0116	Improving Qubit Performance with Advanced, Novel, & Emerging Materials and Architectures	12.431	187,080	-
Army	W911NF-18-1-0118	Rheological Interaction Physics of Wheeled Locomotion in Soft Substrates for Improved Mobility: MIT Component	12.431	153,640	-
Army	W911NF-18-1-0407	Towards a Theory of Large-Scale Human Interactions	12.431	64,645	-
Army	W911NF1810411	High Performance Superconducting Qubit Technology Engineering Research (HiPSTER)	12.431	743,137	144,100
Army	W911NF1810432	Ab-Initio Solid-State Quantum Materials: Design, Production, and Characterization at the Atomic Scale	12.431	1,129,196	797,117
Army	W911NF-18-2-0048	ISN 4 Collaborative Agreement Core 6.1 Funding	12.431	3,243,413	-
Army	W911NF-18-2-0055	Synthetic Routes to Graphamid and Grapheylene by High Pressure Control of In-Plane Polymerization and Activation Volume	12.431	99,367	-
Army	W911NF-19-1-0057	Higher-order geometry and topology of complex networks W911NF-17-S-0002	12.431	492,462	274,847
Army	W911NF-19-1-0098	Parametrized Model Order Reduction for Engineered Coastal and Hydraulic Systems: Component Libraries and Digital Twins	12.431	146,029	-
Army	W911NF1910156	DURIP: A Wireless Networking Testbed for Low Latency Mission Critical Communications	12.431	1,080	-
Army	W911NF-19-1-0217	Foundations of Decision Making with Behavioral and Computational Constraints	12.431	850,677	457,022
Army	W911NF-19-1-0275	Theoretical Investigation of Mechanically Coupled Chemical Kinetics and Phase Transitions in Energetic Materials	12.431	314,115	-
Army	W911NF-19-1-0311	Research Area 7.2: Catalyzing High Potential Redox of Inert Molecules	12.431	50,713	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Army	W911NF-19-1-0322	Computation and Statistics in High-dimensional Problems of Autonomy	12.431	131,451	-
Army	W911NF1910372	Optical Communication with Synthetic Cells	12.431	-34,896	-
Army	W911NF-19-1-0481	Development of Methods for Continuous-Variable Quantum Computing with Trapped-Ion	12.431	262,221	127,928
Army	W911NF1910517	Efficient light-matter interfaces for Rydberg arrays and entanglement in topological quantum networks	12.431	488,796	145,936
Army	W911NF1920034	Machine Learning for Discovery of Routes to Energetic Materials	12.431	41,745	-
Army	W911NF1920065	Understanding of non-covalent interactions at electrified interfaces for energy conversion and storage - KCI-MR-1: Materials for Soldier and Platform Power Systems	12.431	80,223	-
Army	W911NF1920098	Mechanics and Design of Triply Periodic Minimal Surfaces	12.431	83,799	-
Army	W911NF1920117	Structural Robotics	12.431	157,350	-
Army	W911NF1920124	COVID-19: More Powerful Analysis of Complex, Multiplatform, Adaptive Systems Using System Theory-- CCE-AA-6 Complex Adaptive Systems Analysis	12.431	75,757	-
Army	W911NF1920124	More Powerful Analysis of Complex, Multiplatform, Adaptive Systems Using System Theory-- CCE-AA-6 Complex Adaptive Systems Analysis	12.431	102,320	-
Army	W911NF1920211	Expression of Recombinant Products with Butyrylcholinesterase (BChE) Activity in Pichia pastoris.	12.431	484,824	-
Army	W911NF-20-1-0037	Metastable Quibits in Multi-Ion Systems	12.431	986,618	416,478
Army	W911NF-20-1-0074	Investigation of Interface Exchange Coupling Between Two Quantum Systems: Research Instrumentation for Physical Property Characterizations	12.431	360,206	-
Army	W911NF2010084	Ultrafast Spatial Light Modulation by Optical Control	12.431	183,495	-
Army	W911NF2010100	ARRA - Precursors for Partially Observed Systems and Applications to Unsteady Flow Separation Events	12.431	120,736	-
Army	W911NF-20-1-0168	Geometric Approaches to Near-Optimization	12.431	37,651	-
Army	W911NF2010200	Metal-Organic Chalcogenolates	12.431	51,582	-
Army	W911NF20F0026, T.O. 10	ISN 3 FY'13 funding	12.431	80,691	-
Army	W911NF2110054	YIP: Elucidating the Role of Flash Heating in Ultrasonic Powder Compaction	12.431	6,103	-
Army	W911NF2110095	Geometry Processing Summer Institute 2021	12.431	1,879	-
Army	W911NF-21-1-0174	Ultrafast Ti:Sapphire amplifier for studying Floquet-Bloch states in novel quantum materials	12.431	4,251	-
Army	W911NF2120109	SBIML 2.0: Synthetic Biology Inspired Machine Learning	12.431	39,734	-
Army	W911NF1810436	Assessment of Nanoparticle Assemblies for Efficient Gene Therapy Vehicles	12.630	15,112	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Army	W911NF1920144	Human-Robot Co-Training for Unpredicted Tasks	12.630	3,220	-
Army	W912HZ-17-2-0027	Carbon Nanotube Sensors to Enable Real-Time Distributed Sensing of Contaminates in Water	12.630	42,194	-
Army	W911NF-16-2-0023	Automated System for Knowledge-based Continuous Organic Synthesis (ASKCOS)	12.910	438,998	27,700
Army	W911NF-16-2-0192	Superdetectors: Unlocking the Potential of NonEquilibrium Superconductivity at the Nanoscale	12.910	66,971	26,645
Army	W911NF-17-2-0043	An Osseointegrated Transfemoral Prosthesis Offering Long-Term Bi-Directional Efferent-Afferent Neural Transmission	12.910	58,440	36,324
Army	W911NF-18-2-0257	SBIML: Synthetic Biology Inspired Machine Learning	12.910	-3,519	-
Army	W911NF-19-1-0511	Rotating Sensing with Superfluid Quantum Gases	12.910	337,299	69,350
Army	W911NF1920105	Engineered biofilms to block arsenic absorption in the small intestine	12.910	29,069	10,277
Army	W911NF2120041	Super Headlights: Superconducting Nanowire Detectors for Passive Infrared Sensing	12.910	77,604	-
Army	W81XWH-16-1-0565	Engineer Synthetic Tumor Recruited Immuno-Cellular Therapy (STRICT)	12.RD	142	-
Army	W911NF-13-D-0001, T.O. 1	ISN 3 FY'13 funding	12.RD	239,822	-
Army	W911NF-13-D-0001, T.O. 2	ISN 3 FY'13 funding	12.RD	479,443	-
Army	W911NF2020061	Investigation of Interface Exchange Coupling Between Two Quantum Systems	12.RD	284,834	-
Army	W911SR20C0031	Biotemplated carbon nanofibers for the broad-spectrum removal of chemical threats	12.RD	439,365	-
Army	W912DW-17-P-0088	Standardization of Polymeric Sampling for Measuring Feeely Dissolved Organic Contaminant Concentrations in Sediment Porewater	12.RD	30,476	-
		Total for Army		**20,717,418**	**3,671,011**
DARPA					
DARPA	D19AP00037	Dislocation-free heteroepitaxy or IR devices by remote epitaxy	12.910	189,856	-
DARPA	HR0011-15-2-0047	Computer-Synthesized Protocols for Resilient Networking	12.910	82,828	-
DARPA	HR00111720029	Large-scale, Reconfigurable and Multifunctional 2.5-D Conformal Optics	12.910	593,915	396,328
DARPA	HR00111720061	2D material based layer transfer for maximizing maganetoelectric coupling	12.910	42,019	-
DARPA	HR00111920025	COVID-19: Rethinking molecular design: Deep integration of AI, physical chemistry, and HTE	12.910	1,067,491	-
DARPA	HR00111920025	Rethinking molecular design: Deep integration of AI, physical chemistry, and HTE	12.910	242,061	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DARPA	HR00112010001	ML Assisted Superconducting Qubit Readout	12.910	32,479	13,845
DARPA	HR00112020013	Active Learning and Regeneration of Software Components for Cybersecurity	12.910	153,561	-
DARPA	HR0011-20-2-0049	COVID-19: Oxidation of mixed plastic to dicarboxylic acids and subsequent conversion to high-value products with engineered microbes	12.910	1,005,001	575,069
DARPA	HR00112110002	Active learning of nonlinear operators for forecasting extreme and rare events	12.910	38,307	-
DARPA	HR0011-21-2-0001/HR0011048983	High-performance Portable Atmospheric Water Extractor for Extreme Climates	12.910	362,483	12,835
DARPA	N66001-16-C-4007	Demonstration of On-Demand Continuous Flow Manufacturing of Pharmaceuticals	12.910	0	-
DARPA	FA8750-20-C-0075	COVID-19: Performance-Driven Design Synthesis	12.RD	648,055	-
DARPA	FA8750-20-C-0075	Performance-Driven Design Synthesis	12.RD	298,667	-
DARPA	HR0011-15-C-0084	The MIT-Broad Foundry: TA2	12.RD	956,500	537,843
DARPA	HR0011-16-C-0030	Principles, Limits, and Methods for Computational Periscopy	12.RD	480,783	130,738
DARPA	HR0011-18-3-0006	Revolutionizing Computing Systems through Dense and Fine-grained Monolithic 3D Integration	12.RD	5,613,380	4,510,290
DARPA	HR001118C0018	The Hardware Security Compiler: A Rapid-Development Workflow with End-to-End Formal Verification	12.RD	-14,402	3,154
DARPA	HR0011-19-9-0021	Decision Making via Hierarchy of Network Games: Algorithms, Game Theory, Artificial Intelligence, and Learning	12.RD	172,825	139,200
DARPA	HR00111990057	Acquiring language like children by grounding semantic parsing	12.RD	627,304	-
DARPA	HR00112090016	PAPPA	12.RD	266,179	-
DARPA	HR00112090017	High-Performance Productivity and Portability with Domain Specific Languages	12.RD	608,333	166,623
DARPA	HR00112090081	Novel vacuum-fluctuation based light sources from visible to X-Ray frequencies	12.RD	231,197	-
DARPA	HR001120C0015	Guaranteed Robust Artificial InteLligence (GRAIL)	12.RD	1,756,414	627,645
DARPA	HR001120C0191	COVID-19: Cross-Scale Capability Runtime Monitoring and Reconfiguration	12.RD	390,217	85,154
DARPA	HR00112190069/HR0011152825	Quantum annealing for machine learning	12.RD	7,216	-
DARPA	HR0112090066	DIM3: Discrete Inverse Methods for Multiphysics Modeling	12.RD	184,856	-
		Total for DARPA		**16,037,525**	**7,198,725**
Navy					
Navy	HQ00341910002	Investigation of Leading Indicators for Systems Engineering Effectiveness in Model-Centric Programs	12.300	80,327	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Navy	HQ00342010008	Phase 2: Investigation of Leading Indicators for Systems Engineering Effectiveness in Model-Centric Programs	12.300	123,959	-
Navy	N00014-15-1-2460	Computational Wave Hydromechanics in Support of Model Tests in The MASK Wave Basin	12.300	760	-
Navy	N00014-15-1-2622	Investigating flow features near abrupt topography in the Mariana Basin	12.300	-19,254	-
Navy	N00014-15-1-2626	High-Order Multi-Resolution Multi-Dynamics Modeling for FLEAT	12.300	55,855	-
Navy	N00014-16-1-2090	Time-Resolved Measurement of Physical and Chemical Evolution of Energetic Materials Under Dynamic Shock Loading	12.300	32,385	-
Navy	N00014-16-1-2141	Design and Operation of Efficient and Secure Navigation Networks	12.300	150,073	-
Navy	N00014-16-1-2432	Synthesis Genome for Novel Oxides: accelerating realization of advanced materials	12.300	-14,043	361
Navy	N00014-16-1-2450	Long-term monitoring of deep-ocean Near Inertial Wave activity and surface sea-ice cover in the Arctic Ocean using PDS-CPIES	12.300	117,205	-
Navy	N00014-16-1-2657	Investigation of Emerging Quantum Materials and Topological Order	12.300	-152,225	-
Navy	N00014-16-1-2815	Quantum simulators with ultracold atoms - mapping out possibilities for new materials	12.300	455,708	-
Navy	N00014-16-1-2945	Incorporating Distributed Systems in Early-Stage Set-Based Design of Navy Ships	12.300	183,144	-
Navy	N00014-16-1-3105	Understanding Dynamic Stability of Advanced Ships in Steep Waves by Direct Fully-Nonlinear Computations	12.300	2,736	-
Navy	N00014-16-1-3116	Mapping the spatio-temporal dynamics of perception in the human brain	12.300	320,151	-
Navy	N00014-16-1-3163	A New Paradigm for Analysis of Complex, Networked, Social and Engineering Systems	12.300	631,021	-
Navy	N00014-17-1-2072	Context and Task-aware Active Perception for Multiagent Systems	12.300	152,429	27,136
Navy	N00014-17-1-2077	Simulation-Based Classification for Structural Health Monitoring; A Parametrized Component Model-Order-Reduction Approach	12.300	11,326	-
Navy	N00014-17-1-2147	Statistical Learning Theory of Complex Causal Models	12.300	62,878	-
Navy	N00014-17-1-2177	Optimization Over Combinatorial Optimization Polytopes	12.300	356	-
Navy	N00014-17-1-2186	Observational Benchmarks for BSION project	12.300	38,494	-
Navy	N00014-17-1-2194	Fast, Exact, and Approximate Algorithms in Network and Combinatorial Optimization	12.300	41,995	-
Navy	N00014-17-1-2197	A Unified Approach to Passive and Active Ocean Acoustic Waveguide Remote Sensing	12.300	1,676	-
Navy	N00014-17-1-2254	Optical-transition atomic clock beyond the standard quantum limit	12.300	-187	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Navy	N00014-17-1-2257	Topologically Protected Quantum States in Superfluid Fermi Gases	12.300	29,293	-
Navy	N00014-17-1-2379	A System for Efficient and Accurate Network Navigation (DURIP)	12.300	1,083	-
Navy	N00014-17-1-2474	Environmentally Adaptive Acoustic Communication and Navigation in the new Arctic	12.300	31,774	-
Navy	N00014-17-1-2609	Hierarchical Nanoscale Materials Programmed using Structured DNA Nanoparticles	12.300	109,543	-
Navy	N00014-17-1-2670	Vision-based Agile Autonomous Navigation in Contested Environments using High-Performance Embedded Computing	12.300	44,325	-
Navy	N00014-17-1-2790	Algorithmic Tractability and Computational Limits in High-Dimensional Linear Regression	12.300	-17,568	-
Navy	N00014-17-1-2791	High-Dimensional Causal Prediction	12.300	175,453	-
Navy	N00014-17-1-2883	Complex Two-Dimensional Materials for Emergent Electronics	12.300	62,318	-
Navy	N00014-17-1-2920	Multi-Sensing Multi-Active Nanocomposite Coating for Quantitatively Characterizing Foulant-Surface Interactions and Controlled Fouling Release	12.300	56,666	-
Navy	N00014-17-1-2956	Computer-aided design of functional transition metal complexes	12.300	67,094	-
Navy	N00014-17-1-2959	Machine Learning Enabled Wall Modeling for LES of Turbulent Boundary Layers including Laminar Precursors	12.300	2,808	-
Navy	N00014-17-1-2977	Bridging the Nano-Macro gap for 3D Optical/Multi-functional Metamaterials	12.300	168,570	-
Navy	N00014-17-1-2985	Support Vector Machine Learning in Marine Hydrodynamic	12.300	64,602	-
Navy	N00014-18-1-2066	Optical Breakdown Acoustic Sources for Broadband Underwater Sensing	12.300	35,845	-
Navy	N00014-18-1-2085	ONR Graduate Traineeship Special Research Award in Ocean Acoustics Program for Daniel Michael Duane	12.300	53,021	-
Navy	N00014-18-1-2122	Online Optimization and Learning in a Complex Environment	12.300	82,945	-
Navy	N00014-18-1-2177	Fin-based Structures for Increasing Linearity in GaN Transistors	12.300	99,391	-
Navy	N00014-18-1-2187	Design and Metrology Support for High Power Fault Testing Systems	12.300	36,251	-
Navy	N00014-18-1-2210	Mathematical Certification of Mission Success Robustness for Multi-Agent Dynamic Group Action Models with Imperfect Perception	12.300	154,135	-
Navy	N00014-18-1-2258	Epitaxial Growth of Structural Proteins into Hierarchical Mesostructured Materials	12.300	159,159	-
Navy	N00014-18-1-2284	Tracking hydrogen: A multi-scale experimental-computational study of hydrogen influence on dislocations, plasticity, damage	12.300	104,391	-
Navy	N00014-18-1-2298	Combinatorial Statistical Inference with Mathematical Optimization	12.300	159,861	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Navy	N00014-18-1-2378	Instrumentation To Enable Novel Real-Time Vibrational Spectroscopy Of Shocked Materials (DURIP)	12.300	15,808	-
Navy	N00014-18-1-2434	Adaptive-resolution chemical discovery strategies for precise and fast computer-aided transition metal complex design	12.300	93,766	-
Navy	N00014-18-1-2436	Thermal Management Technologies for Low-Temperature Undersea Dive Persistence: a Novel Arctic Diving Suit	12.300	-406	-
Navy	N00014-18-1-2458	Numerical Superintensity of Tropical Cyclones: A Unique Challenge in Atmospheric Modeling	12.300	12,486	-
Navy	N00014-18-1-2496	VAMPIRE 3: A Decentralized Platform for Acoustic Diagnostics	12.300	156,062	-
Navy	N00014-18-1-2525	An Algorithmic Theory of Robustness	12.300	259,024	-
Navy	N00014-18-1-2762	Uncovering Lagrangian transport structures associated with oceanic fronts, meanders, eddies and filaments	12.300	146,016	-
Navy	N00014-18-1-2765	Robust Causal Methodology for Planning and Learning from Interventions in the Face of Uncertainty	12.300	141,044	-
Navy	N00014-18-1-2781	Four-Dimensional Lagrangian Analysis, Numerics, and Estimation Systems (4D-LANES)	12.300	92,264	-
Navy	N00014-18-1-2815	Robot grasp and manipulation of deformable linear objects with applications for cable following: Manipulation Planning through Shared Autonomy	12.300	162,140	-
Navy	N00014-18-1-2832	Technical Proposal: Task-Aware Non-Gaussian Perception and Planning for Distributed Marine Autonomy	12.300	273,244	-
Navy	N00014-18-1-2847	Integration of Physical Domain Knowledge and Machine Learning	12.300	615,339	-
Navy	N00014-18-1-2878	Complex Smart Colloids	12.300	712,928	-
Navy	N00014-18-1-2894	Data-Driven Non-Line-of-Sight Imaging	12.300	124,652	-
Navy	N00014-19-1-2036	Realistic models of cortical pyramidal neurons based on accurate whole-cell synaptic mapping: Implications for biologically-inspired AI models	12.300	544,550	102,608
Navy	N00014-19-1-2091	Combat Power Monitor III	12.300	2,525	-
Navy	N00014-19-1-2114	Synthesis Genome for Novel Oxides: Accelerating Realization of Advanced Materials	12.300	114,561	-
Navy	N00014-19-1-2180	Algorithms for Distributed and Asynchronous Load Balancing in Multi-Objective Optimization for Robot Autonomy	12.300	104,700	-
Navy	N00014-19-1-2307	Thermal Management Technologies for Low-Temperature Undersea Dive Persistence: a Novel Arctic Diving Suit	12.300	91,073	-
Navy	N00014-19-1-2317	A de novo structural biopolymer library to predict, design and control the assembly of hierarchically mesostructured materials	12.300	169,673	-
Navy	N00014-19-1-2325	Wireless Communication through the Water-Air Interface	12.300	180,687	-
Navy	N00014-19-1-2344	DURIP: Combinatorial DNA nanoparticle libraries for structural biology and materials research	12.300	69,378	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Navy	N00014-19-1-2359	High Current Experimental and Modeling Targeting Large Scale, Safe, Reliable and Cost-Effective Lithium Ion Battery Systems	12.300	113,292	-
Navy	N00014-19-1-2362	Enabling Crowd-Scale Deliberation For Complex Problems	12.300	141,865	-
Navy	N00014-19-1-2375	Materials By Design: Rational Modeling, Optimization and Synthesis of Heterogeneous Materials	12.300	110,377	-
Navy	N00014-19-1-2584	Towards more biologically plausible learning in neural networks	12.300	252,819	-
Navy	N00014-19-1-2605	The Integrated Sea Ice Dynamic Experiment (SIDEx)	12.300	152,849	-
Navy	N00014-19-1-2607	The Integrated Sea Ice Dynamics Experiment (SIDEx)	12.300	42,326	-
Navy	N00014-19-1-2631	Analog Quantum Computing with a Molecular Quantum Gas Microscope	12.300	533,114	-
Navy	N00014-19-1-2664	Dynamic Environmental Estimation, Prediction, and Acoustic Inference (DEEP-AI)	12.300	193,033	-
Navy	N00014-19-1-2665	Data Driven Methods for Structure Learning in Underwater Acoustic Modeling	12.300	234,547	-
Navy	N00014-19-1-2676	Laser system for array of entangled atomic clocks and quantum simulation	12.300	126,964	-
Navy	N00014-19-1-2693	Interdisciplinary Nonlinear Bayesian Data Assimilation	12.300	56,814	-
Navy	N00014-19-1-2716	Assessing Realism and Uncertainties in Navy Decision Aids	12.300	83,985	-
Navy	N00014-19-1-2724	Network Science for Time-Critical Missions: Inference, Control, Learning, and Decision Making	12.300	77,575	-
Navy	N00014-19-1-2741	Environmentally Adaptive Autonomy for Under-Ice Acoustic Navigation and Communication	12.300	258,366	21,841
Navy	N00014-20-1-2023	Machine Learning for Submesoscale Characterization, Ocean Prediction, and Exploration (ML-SCOPE)	12.300	1,139,279	590,476
Navy	N00014-20-1-2035	A Unified Approach to Passive and Active Ocean Acoustic Waveguide Remote Sensing	12.300	576,197	-
Navy	N00014-20-1-2059	Development of WakeLES: a two-phase large-eddy simulation capability for the turbulent free-surface air-entraining bubbly flow near wake of a surface ship	12.300	152,781	-
Navy	N00014-20-1-2084	Synthetic Nucleic Acid Nanoparticles for RNA Structural & Synthetic Biology	12.300	305,479	50,069
Navy	N00014-20-1-2119	Management and Control of Highly-Dynamic Tactical Networks in Disruptive Environments	12.300	213,429	-
Navy	N00014-20-1-2150	A database for functional transition metal complex discovery	12.300	233,736	-
Navy	N00014-20-1-2189	A GPU Computational Facility for ML and AI Based Design of Multifunctional Materials (DURIP)	12.300	281,089	-
Navy	N00014-20-1-2202	DURIP: Expansion of Combinatorial DNA Nanoparticle Libraries for Materials Research & Structural Biology	12.300	333,531	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Navy	N00014-20-1-2203	In Situ Investigation of Nanoscale Dynamic Processes in Templated Crystallization of Structural Biopolymers (DURIP)	12.300	557,785	-
Navy	N00014-20-1-2221	Searching for new aluminum/gallium and electrolyte combinations for high-energy energy generation systems	12.300	83,868	-
Navy	N00014-20-1-2280	Synthesis Genome for Inorganic Materials: Case Oriented Proposal	12.300	94,983	-
Navy	N00014-20-1-2300	Nano-Curing Embedded Heaters for Extreme Performance of Sea-based Airframe Structures	12.300	36,494	-
Navy	N00014-20-1-2306	Interface Exchange and Topology Driven Quantum Properties in 2D systems	12.300	199,052	-
Navy	N00014-20-1-2336	Mathematical Foundations of Modern Learning Problems	12.300	108,128	-
Navy	N00014-20-1-2353	Dashboard Maintenance and Tactical Decision Aid	12.300	352,603	-
Navy	N00014-20-1-2366	Physics-informed, machine learning methods for the quantification of extreme ocean events for naval vessels	12.300	71,176	-
Navy	N00014-20-1-2394	Optimization, Federated learning, and high dimensional statistics for large-scale machine learning	12.300	147,339	-
Navy	N00014-20-1-2428	Optical-transition atomic clock beyond the standard quantum limit	12.300	185,759	-
Navy	N00014-20-1-2531	Underwater Backscatter Networking	12.300	97,616	-
Navy	N00014-20-1-2532	Lightweight representations for decentralized learning in data-rich environments	12.300	4,441	-
Navy	N00014-20-1-2533	Secure and Resilient Soft Real-Time Cyber-Physical Systems	12.300	94,728	-
Navy	N00014-20-1-2561	Understanding Extreme Response and Damage of Biological Materials	12.300	228,377	-
Navy	N00014-20-1-2589	Developing next generation AI vision systems by characterizing and exploiting untapped primate visual processing circuit motifs	12.300	412,301	78,982
Navy	N00014-20-1-2647	Research Evaporator for High-Fidelity Superconducting Circuit Fabrication	12.300	399,200	-
Navy	N00014-20-1-2749	Security Monitors for Control Systems	12.300	224,172	-
Navy	N00014-20-1-2790	CyberAlloys: Computational Design of High-Toughness Steels for Additive Manufacturing	12.300	113,494	-
Navy	N00014-20-1-2807	A proposal to enhance project New Phase Change Materials for Photonics by installing chalcogen plasma gas sources for epitaxial thin film growth	12.300	132,364	-
Navy	N00014-20-1-2826	Information Flow on Networks	12.300	134,010	-
Navy	N00014-20-1-4005	Hybrid Encoding for Singed Expressions (HESE) and Direct HESE Analog-to-Digital Converters	12.300	259,071	139,064
Navy	N00014-21-1-2192	Thermal Management Technologies for Low-Temperature Undersea Dive Persistence: a Novel Arctic Diving Suit	12.300	69,482	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Navy	N00014-21-1-2280	ONR Graduate Traineeship Special Research Award in Ocean Acoustics Program for Daniel Michael Duane	12.300	762	-
Navy	N00014-21-1-2382	Integrated Modeling-Data-Simulation for Engineering Estimation: A Heat Transfer ParAnaLyst	12.300	7,804	-
Navy	N00014-21-1-2400	Self-damping structural materials	12.300	12,957	-
Navy	N00014-21-1-2402	Design of Environmentally Responsive Hierarchical Materials	12.300	31,785	-
Navy	N00014-21-1-2497	Furthering Technology for using Lithium Ion Batteries	12.300	87,250	-
Navy	N00014-21-1-2573	Improving Group Decision-Making for Contentious Topics	12.300	13,625	-
Navy	N00014-21-1-4013	Hierarchical Nanoscale Materials Programmed using Structured DNA Nanoparticles	12.300	66,758	-
Navy	N66001-17-1-4039	The Promise of Diversity: Geometry, Probability, Optimization and Machine Learning	12.910	1,698	-
Navy	N660012014028 / MIPR# HR0011047345	A Paradigm Shift in the Space Enterprise via Servicing for LEO Mega Constellations	12.910	174,715	-
Navy	N0018919PZ315	Engineering Support for the Interagency Very-Long Baseline Interferometry (VLBI) Correlator	12.RD	120,655	-
Navy	N0018921PZ142	Engineering Support for the Interagency Very-Long Baseline Interferometry (VLBI) Correlator	12.RD	16,048	-
Navy	N66001-13-C-4025	INSCyT 2: Phase II Parent	12.RD	-4,542	-
Navy	N66001-13-C-4025	Integrated and Scalable Cyto-Technologies (INSCyT) for Flexible Microbial Manufacturing	12.RD	278,156	-
Navy	N66001-16-C-4039	Novel Millimeter Wave Klystron Amplifier	12.RD	220,815	95,530
		Total for Navy		**18,687,616**	**1,106,068**
Other DOD					
Other DOD	HQ00342010020	Hyperspectral communication channels for receiving information from fielded natural and engineered microbial sensors	12.300	47,514	-
Other DOD	HDTRA1-15-1-0051	Gene Duplication and Amplification in the Evolution of Antimicrobial Resistance: Clinical Significance and Diagnostic Potential	12.351	103,426	-
Other DOD	HDTRA1-16-1-0038	Using Coacervates to Maximize Enzymatic Activity at Interfaces for Heavy Metal Detection	12.351	-306	-
Other DOD	HDTRA12110013	Robust AI-driven counter-measures: screening, guiding, combining	12.351	74,305	-
Other DOD	HQ00342010032	Understanding and Re-engineering Epigenetic Cell Memory: A Theory-driven Approach	12.630	50,839	-
NSA	H98230-19-C-0292	MIT Center for Quantum Engineering (MIT-CQE)	12.RD	17,291	-
Other DOD	2019-19020100001	Exploring and Understanding Co-designed Systems	12.RD	60,371	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Other DOD	W912HQ20C0015	Retrobiosynthetic design for renewable energetic materials	12.RD	221,024	-
		Total for Other DOD		**574,463**	**-**
		TOTAL for Department of Defense		**81,962,301**	**13,817,656**

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF COMMERCE					
DOC	NA17OAR4170295	Tlusty- Real Time Detection of Vibrio for Oyster Aquaculture	11.417	49,907	48,628
DOC	NA18OAR4170105	2018 Omnibus: Sea Grant College Program	11.417	2,390,266	295,436
DOC	NA16OAR4310112	Influence of atmospheric ageing on fire-derived carbonaceous particles: laboratory studies and modeling in support of FIREX	11.431	48,866	-
DOC	NA16OAR4310177	Exploring linkages between AMOC and ITCZ variability	11.431	155,953	-
DOC	NA18OAR4310110	The aging of aerosol nitrate and implications for the global nitrogen cycle	11.431	225,373	-
DOC	NA19OAR4310180	Exploring the trend in inorganic aerosol deposition	11.431	106,925	-
DOC	NA18NWS4680058	New Frameworks for Predicting Extreme Rapid Intensification	11.468	42,241	32,853
DOC	70NANB17H177	Situational Awareness For Emergencies Through Network-Enabled Technologies (SafeT-N	11.609	108,871	-
DOC	70NANB20H014	Open Materials Metrology and Modeling (OM3)	11.609	179,123	-
		Total for Department of Commerce		**3,307,526**	**376,917**
		TOTAL for Department of Commerce		**3,307,526**	**376,917**

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF ENERGY					
DOE	DE-FC02-93ER54186	Fusion Development and Technology - Parent	81.049	726,851	-
DOE	DE-FG02-00ER15087	Revealing Nanoscale Energy Flow Using Ultrafast Terahertz to X-Ray Beams	81.049	-1,025	-4,593
DOE	DE-FG02-02ER45977	Fundamental Studies on Heat Conduction in Polymers	81.049	111,722	-
DOE	DE-FG02-03ER46076	Strongly Correlated Electronic Systems: Local Moments and Conduction Electrons	81.049	137,070	-
DOE	DE-FG02-03ER54700	Physics of High Energy Plasmas	81.049	-872	-
DOE	DE-FG02-07ER46454	Probing Excitons in Confined Environments using Photon-Resolved Methods	81.049	196,717	-
DOE	DE-FG02-07ER46474	Bimolecular Interactions in Organic Semiconductors: Hot charge, Hot excitons, Efficiency Droop, and Instability	81.049	230,593	-
DOE	DE-FG02-08ER46488	Materials Exhibiting Biomimetic Carbon Fixation and Self Repair: Theory and Experiment (Renewal)	81.049	7,245	-
DOE	DE-FG02-08ER46488	Materials Exhibiting Biomimetic Carbon Fixation and Self-Repair: Theory and Experiment	81.049	125,053	-
DOE	DE-FG02-08ER46514	Novel Temperature Limited Tunneling Spectroscopy of Quantum Hall Systems	81.049	221,651	-
DOE	DE-FG02-08ER46521	Ultrafast Electronic and Structural Dynamics in Quantum Materials	81.049	413,834	-
DOE	DE-FG02-91ER54109	Theoretical Research in Advanced Physics and Technology (Renewal of 6937946)	81.049	448,315	-
DOE	DE-FG02-91ER54109	Theoretical Research in Advanced Physics and Technology (Renewal/Continuation of 6931788)	81.049	844,880	-
DOE	DE-FG02-94ER40818	Research in Nuclear Physics: Medium Energy Nuclear Physics	81.049	756,575	-
DOE	DE-FG02-94ER54235		81.049	1	-
DOE	DE-FG02-94ER54235	APTE Parent	81.049	-1	-
DOE	DE-FG02-94ER61937	Sectoral Interactions, Compounding Influences and Stressors, and Complex Systems: Understanding Tipping Points and Non-Linear Dynamics	81.049	688,945	-
DOE	DE-FG02-99ER15004	Physics of Channelization: Theory, Experiment, and Observation	81.049	-9,450	-
DOE	DE-SC0002626	Electrochemically-Driven Phase Transitions in Battery Storage Compounds	81.049	47,728	-
DOE	DE-SC0002633	SISGR: Chemomechanics of Far-From Equilibrium Interfaces	81.049	611,234	-
DOE	DE-SC0007106	Encoding Material Structure Into the Primary Sequence of Polymers	81.049	38,700	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DOE	DE-SC0007106	Engineered Protein Nanostructures for Advanced Functional Materials	81.049	63,285	-
DOE	DE-SC0008739	Unconventional Metals in Strongly Correlated Systems	81.049	128,855	-
DOE	DE-SC0008744	Optimizing oil production in oleaginous yeast by cell-wide measurements and genome-based models.	81.049	0	-
DOE	DE-SC0010492	Long Pulse High Performance Scenarios and Control in EAST	81.049	539,298	-
DOE	DE-SC0011088	MIT RELATIVISTIC HEAVY ION GROUP	81.049	1,183,260	-
DOE	DE-SC0011090	FY2020 - 2022 Task R Theoretical Nuclear Physics	81.049	1,106,201	-
DOE	DE-SC0011091	Task W - Neutrino Physics	81.049	558,412	-
DOE	DE-SC0011755	PARENT OF AMS-02 OPERATIONS	81.049	3,681,962	-
DOE	DE-SC0011848	PARENT OF AMS-02 RESEARCH	81.049	2,027,507	-
DOE	DE-SC0011939	TASK A: PARTICLE PHYSICS COLLABORATION	81.049	938,189	-
DOE	DE-SC0012071	Support of US Burning Plasma Organization	81.049	115,198	-
DOE	DE-SC0012470	MDSPlus Development and Support	81.049	334,236	-
DOE	DE-SC0012470	MDSPlus Development and Support 2017-20	81.049	274,659	-
DOE	DE-SC0012567	Task C: Theoretical High Energy Physics	81.049	729,856	-
DOE	DE-SC0013905	Study of Heavy Flavor Mesons and Flavor-Tagged Jets with the CMS Detector	81.049	-452	-
DOE	DE-SC0013999	Confronting Dark Matter with the Multiwavelength Sky	81.049	-1,198	-
DOE	DE-SC0014176	Tunable Oxygen Reduction Electrocatalysis by Phenazine-Modified Carbons	81.049	9,875	-
DOE	DE-SC0014229	Phase Contrast Imaging for Wendelstein 7-X	81.049	283,785	60,447
DOE	DE-SC0014251	Gas-Puff-Imaging for Diagnosis of Boundary and SOL Physics in W7-X	81.049	291,339	-
DOE	DE-SC0014264	MIT Plasma Science and Fusion Center Magnetic Confinement Fusion Experiment Research and Related Activities	81.049	7,268,160	-
DOE	DE-SC0014901	Computer-Aided Construction of Chemical Kinetic Models	81.049	243,724	-
DOE	DE-SC0015566	High Frequency High Gradient Accelerator Research	81.049	484,452	-
DOE	DE-SC0016154	Measurement of Helicons and Parametric Decay Waves in DIII-D with Phase Contrast Imaging	81.049	485,541	-
DOE	DE-SC0016214	Catalysis Beyond the Active Site: Pore Engineering in Lewis Acid Zeolites for Enhanced Cycloaddition Chemistry	81.049	220,562	-
DOE	DE-SC0016215	Magnetic Reconnection in Strongly-Magnetized, Weakly-Collisional Plasmas: Onset, Turbulence, and Energy-Partition in 3D, Plasmoid-Dominated Regimes	81.049	6,631	-
DOE	DE-SC0016285	AMS THERMAL COOLING SYSTEM	81.049	217,594	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DOE	DE-SC0016408	Control of the Plasma-Material Interface for Long Pulse Optimization in EAST and KSTAR	81.049	154,759	-
DOE	DE-SC0016409	Disruption Prediction and Avoidance in High Beta Long Pulse KSTAR Plasmas	81.049	-2,216	-
DOE	DE-SC0017381	Electron Temperature Fluctuation and n-T Phase Angle Measurements for Validation of Gyrokinetic Transport Models at ASDEX Upgrade	81.049	209,020	6,303
DOE	DE-SC0017936	Collaborative Proposal: R&D Toward CUPID, a Tonne-Scale Bolometric OvBB Experiment	81.049	1,274	-
DOE	DE-SC0018090	Center for Integrated Simulation of Fusion Relevant RF Actuators	81.049	409,995	137,231
DOE	DE-SC0018091	Microparticle Supersonic Impact: A Testbed for the Exploration of Metals under Extreme Conditions	81.049	64,103	-
DOE	DE-SC0018094	Nonequilibrium Properties of Driven Electrochemical Interfaces	81.049	63,377	-
DOE	DE-SC0018095	Development of an Ultrahigh-bandwidth Phase Contrast Imaging System for detection fo Electron scale turbulence and Gigahertz Radiofrequecny Waves	81.049	142,133	-
DOE	DE-SC0018096	Simultaneous mitigation of density and energy errors in approximate DFT for transition metal chemistry	81.049	78,117	-
DOE	DE-SC0018097	Interrogating protein-protein association through spectroscopic studies of model membranes	81.049	44,380	-
DOE	DE-SC0018097	Spectroscopic studies of protein-protein association in model membranes	81.049	210,520	-
DOE	DE-SC0018121	Computing the Properties of Matter with Leadership Computing Resources	81.049	392,871	-
DOE	DE-SC0018229	MIT-Bates Research and Engineering Center	81.049	1,808,743	-
DOE	DE-SC0018235	Fundamental studies of thermal and electrical transport in microporous metal-organic frameworks	81.049	16,248	-
DOE	DE-SC0018357	Nonequilibrium Physics of Multiphase Flow in Porous Media: Wettability and Disorder	81.049	164,030	-
DOE	DE-SC0018934	Exploring Natural Aerosol Formation from DMS Oxidation and Implications for Aerosol Forcing	81.049	333,545	-
DOE	DE-SC0018935	Interplay of Magnetism and Superconductivity in van der Waals Heterostructures	81.049	189,916	-
DOE	DE-SC0018936	Development of an absolute polarimeter and spin-rotator for a polarized He-3 ion source source at RHIC and polarimetry for high energy He-3 beams	81.049	51,840	-
DOE	DE-SC0018945	Predictive Theory of Topological States of Matter	81.049	121,940	-
DOE	DE-SC0018947	Portable Parallel Algorithms and Frameworks for Exascale Graph Analytics	81.049	54,888	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DOE	DE-SC0019087	Rational Sub-Nanometer Manipulation of Polymer Morphology for Efficient Chemical Separations	81.049	184,924	-
DOE	DE-SC0019089	Feasibility Study: High-k Temperature (HiT) Fluctuation Diagnostic	81.049	75,516	-
DOE	DE-SC0019112	The Center for Enhanced Nanofluidic Transport (CENT)	81.049	1,992,040	1,212,729
DOE	DE-SC0019126	Novel Terahertz-Induced Quantum States Probed with Ultrafast Coherent X-Rays	81.049	698,906	203,265
DOE	DE-SC0019127	Algebraic Approach Toward Quantum Information in Quantum Field Theory and Holography	81.049	144,910	-
DOE	DE-SC0019128	Quantum Algorithms for Collider Physics	81.049	19,852	-
DOE	DE-SC0019129	Bosonic Dark Matter Search Using Superconducting Nanowire Single-Photon Detectors	81.049	33,063	-
DOE	DE-SC0019345	Excitons in Low-Dimensional Perovskites	81.049	325,514	-
DOE	DE-SC0019383	Real-time Measurements of Complex Transition Metal Oxide Nanostructure Growth	81.049	135,813	-
DOE	DE-SC0019768	Search for a Non-Zero Value of the Electric Dipole Moment of the Neutron	81.049	191,147	-
DOE	DE-SC0019998	Controlling Exciton Dynamics with DNA Origami for Quantum Information Science	81.049	435,335	-
DOE	DE-SC0019999	Medium Energy Nuclear Physics: Exotic Physics & Advanced Tools at J.Lab and the EIC	81.049	382,428	-
DOE	DE-SC0020042	Novel 2D materials and Structures via Janus Manipulation	81.049	186,062	-
DOE	DE-SC0020148	Tracing the Topological Fingerprint of Weyl Semimetals Using Neutron Probes	81.049	198,344	-
DOE	DE-SC0020149	Creating and Probing Large Gap 2D Topological Insulators for Quantum Computing	81.049	1,263,875	-
DOE	DE-SC0020180	Discovery and Design of Stable Nanocrystalline Alloys: The Grain Boundary Segregation Genome	81.049	142,979	-
DOE	DE-SC0020181	Quantum Devices for Neutrino and Rare Particle Detection	81.049	147,866	85,986
DOE	DE-SC0020240	Short-Range Correlations in Nuclei and the EMC Effect	81.049	506,985	-
DOE	DE-SC0020264	Quantum algorithms for fusion-plasma dynamics	81.049	336,686	240,938
DOE	DE-SC0020265	Study of Short-Range Correlations in Nuclei Using Electro-induced Nucleon-knockout Reactions at High Momentum-Transfer	81.049	53,526	-
DOE	DE-SC0020327	Boundrary, SOL, and Divertor Physics Studies on TCV	81.049	503,260	-
DOE	DE-SC0020973	Molecular Control of Heterogeneous Electrocatalysis	81.049	190,021	-
DOE	DE-SC0020974	Primary and Secondary Sphere Effects on the Valence Isomerism of Fe-S Clusters	81.049	134,903	-
DOE	DE-SC0020998	A multiresolution sharp-interface framework for tightly-coupled multiphysics simulations	81.049	75,585	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DOE	DE-SC0020999	Electrocatalytic alkene epoxidation at disrupted metal ensembles in blended electrolytes	81.049	88,771	-
DOE	DE-SC0021006	The QCD structure of nucleons and light nuclei	81.049	59,503	-
DOE	DE-SC0021025	Revealing the molecular origin of interactions between nanocrystals	81.049	121,559	-
DOE	DE-SC0021120	Study of High Harmonic Fast Wave Interaction with the Scrape-Off-Layer Plasmas in NSTX-U	81.049	99,567	-
DOE	DE-SC0021176	Shedding Light on Nuclear Properties at the Limits of Existence	81.049	617,105	-
DOE	DE-SC0021178	Liquid Metal surface properties and plasma material interactions for plasma-facing component development in NSTX-U	81.049	28,332	-
DOE	DE-SC0021179	Laser Spectroscopy of Exotic Atoms and Molecules Containing Octupole-Deformed Nuclei	81.049	83,006	-
DOE	DE-SC0021180	Josephson Traveling Wave Parametric Amplifiers to Enable Future Neutrino Mass Measurements	81.049	14,274	-
DOE	DE-SC0021181	Exploring the Effects of Environmental Radiation on Superconducting Qubit Coherence	81.049	57,342	-
DOE	DE-SC0021202	Accelerating radio frequency modeling using machine learning	81.049	64,483	-
DOE	DE-SC0021225	FAIR Framework for Physics-Inspired Artificial Intelligence in High Energy Physics	81.049	44,520	-
DOE	DE-SC0021226	Frameworks, Algorithms and Scalable Technologies for Mathematics (FASTMath) SciDAC Institute	81.049	1,246	-
DOE	DE-SC0021580	Signatures of Reaction Mechanisms in the Vibrational Level Population Distribution of Reaction Products	81.049	56,970	-
DOE	DE-SC0021629	Role of neutrals versus transport in determining the pedestal density structure	81.049	7,491	-
DOE	DE-SC0021634	Carbonate Management to Enable Energy- and Carbon-Efficient CO2 Electrolysis	81.049	84,749	-
DOE	DE-SC0021637	Adapting transient grating spectroscopy for non-destructive in situ/operando, measurement of thermomechanical properties of fusion materials under plasma bombardment	81.049	2,619	-
DOE	DE-SC0021647	Unitary Qubit Lattice Algorithms for Plasma Physics	81.049	10,481	-
DOE	DE-SC0021650	Investigating Excitonic Properties through Photon Correlation in Quantum Optical Materials	81.049	8,988	-
DOE	DE-EE0007810	Self-assembling rechargeable Li batteries from alkali and alkaline-earth halides	81.086	12,168	12,168
DOE	DE-EE0008316	A direct process for wire production from sulfide concentrates	81.086	565,715	-
DOE	DE-EE0009096 09/01	Machine-learned processing pathways for solid state electrolytes	81.086	597,976	-
DOE	DE-EE0009165	Multifunctional Optical Outcouplers for Efficient and Stable White OLEDs	81.086	501,282	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DOE	DE-EE0009211	Transit-Centric Smart Mobility for High-Growth Urban Activity Centers: Improving Energy Efficiency through Machine Learning	81.086	96,352	-
DOE	DE-EE0007531	Improving Tolerance of Yeast to Lignocellulose-Derived Feedstocks and Products	81.087	117,591	-
DOE	DE-EE0007535	Low Cost (CAPEX and variable): Tool design for cell and module fabrication with thin, free-standing silicon wafers	81.087	53	-
DOE	DE-EE0007982	Rapid Construction of Validated Chemistry Models for Advanced Biofuels	81.087	64,323	47,594
DOE	DE-EE0008375	Ceramic Castable Cement Tanks and Piping for Molten Salt	81.087	297,157	245,896
DOE	DE-EE0008381	High temperature pumps and valves for molten salt	81.087	295,960	187,784
DOE	DE-EE0008558	Low-cost, high-efficiency III-V photovoltaics enabled by remote epitaxy through graphene	81.087	408,812	202,397
DOE	DE-EE0008830	Micro-mechanically guided high-throughput alloy design exploration towards metastability-induced hydrogen embrittlement resistance	81.087	375,137	73,000
DOE	DE-EE0009366	Machine Learning Accelerates Innovation in Perovskite Manufacturing Scale-up	81.087	55,379	-
DOE	DE-FE0026489	Electrochemically-Mediated AmineRegeneration In CO2 Scrubbing Processes	81.089	126,893	-
DOE	DE-FE0031668	Robust highly durable solid oxide fuel cell cathodes - Improved materials compatibility & self-regulating surface chemistry	81.089	212,780	-
DOE	DE-FE0031677	AOI 4 Capillary-driven Condensation for Heat Transfer Enhancement in Steam Power Plants	81.089	249,441	-
DOE	DE-EM0004484	NRI: Extra Robotic Limbs for Body Support in Kneeling and Crouching Works	81.104	14,551	-
DOE	DE-NA0003938	High-Energy-Density Physics, Laboratory Astrophysics, and Student Training on OMEGA	81.112	206,548	-
DOE	DE-NA0003868	Center for Advanced Nuclear Diagnostics and Platforms for ICF and HED Physics at Omega, NIF, and Z	81.113	1,063,000	256,099
DOE	DE-EE0007662	Modeling Photovoltaics Innovation and Deployment Dynamics	81.117	-1	-
DOE	DE-NE0008416	Development of Accident Tolerant Fuel Options for Near Term Applications	81.121	-2,867	-2,867
DOE	DE-NE0008578	MULTI-GROUP TRANSPORT CROSS SECTION & DIFFUSION COEFFICIENT GENERATION FOR DETERMINISTIC REACTOR MODELS USING MONTE CAROL CALCULATIONS.	81.121	26,352	-
DOE	DE-NE0008693	Determination of Critical Heat Flux and Leidenfrost Temperature on Candidate Accident Tolerant Fuel Materials	81.121	202,928	202,928
DOE	DE-NE0008728	University Reactor Upgrades Infrastructure Support for: Modular Hot Cells for Post-Irradiation Examination	81.121	188,148	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DOE	DE-NE0008751	Determination of Molecular Structure and Dynamics of Molten Salts by Advanced Neutron and X-ray Scattering Measurements and Computer Modeling	81.121	233,088	-
DOE	DE-NE0008752	Evaluation of Economics Benefits of Accident Tolerant Plants Through Risk-Informed Approaches	81.121	241,723	93,407
DOE	DE-NE0008827	Nanodispersion Strengthened Metallic Composites with Enhanced Neutron Irradiation Tolerance	81.121	-9,961	-
DOE	DE-NE0008871	Simultaneous Corrosion/Irradiation Testing in Lead and Lead-Bismuth Eutectic: The Radiation Decelerated Corrosion Hypothesis	81.121	267,515	14,074
DOE	DE-NE0008872	Demonstrating Reactor Autonomous Control Framework using Graphite Exponential Pile	81.121	153,194	-
DOE	DE-NE0008873	Design of risk informed autonomous operation for advanced reactor	81.121	225,088	117,110
DOE	DE-NE0008966	Flexible Siting Criteria and Staff Minimization for Micro-Reactors	81.121	71,464	-
DOE	DE-NE0008967	Highly Compact Steam Generators for Improved Economics of Small Modular Reactors	81.121	70,678	-
DOE	DE-NE0008999	Molten Salt Reactor Test Bed with Neutron Irradiation	81.121	225,081	2,987
DOE	DE-NE0009014	(20-20186) University Research Reactor Upgrades Infrastructure Support for MIT Research Reactor's Normal & Emergency Electrical Power Supply Systems	81.121	63,507	-
DOE	DE-NE008989	Validation of Robustness in TCR Design Strategies	81.121	89,924	-
DOE	DE-OE0000920	Effcient UltRa Endpoint IoT-enabled Coordinated Architecture (EUREICA)	81.122	304,138	40,494
DOE	DE-NA0003965	CESMIX: Center for the Exascale Simulation of Material Interfaces in Extreme Environments	81.124	495,527	-
DOE	DE-AR0000433	Engineering high yield pathways for methane activation and conversion to liquid fuels	81.135	4,274	4,274
DOE	DE-AR0000713	Generating Realistic Information for Development of Distribution and Transmission Algorithms	81.135	22,494	-
DOE	DE-AR0000847	Seamless Hybrid-integrated Interconnect NEtwork (SHINE)	81.135	143,631	-
DOE	DE-AR0001005	Thermal Energy Grid Storage (TEGS) Using Multi-Junction Photovoltaics (MPV)	81.135	150,940	-
DOE	DE-AR0001066	Multimetallic Layered Composites (MMLCs) for Rapid, Economical Advanced Reactor Deployment	81.135	218,397	89,598
DOE	DE-AR0001130	MULTISCALE POROUS HIGH-TEMPERATURE HEAT EXCHANGER USING CERAMIC COEXTRUSION	81.135	480,891	276,714
DOE	DE-AR0001133	CARBONHOUSE: A SCALABLE ALL-CARBON BUILDING LOGIC DERIVED FROM HYDROCARBON RESOURCES	81.135	526,753	195,431

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DOE	DE-AR0001154	Distributed nuclear reactor core monitoring with single-crystal harsh-environment optical fibers	81.135	87,795	-
DOE	DE-AR0001218	Machine learning assisted models for understanding and optimizing boiling heat transfer on scalable random surfaces	81.135	530,052	-
DOE	DE-AR0001220	GLOBAL OPTIMIZATION OF MULTICOMPONENT OXIDE CATALYSTS FOR OER/ORR	81.135	492,425	-
DOE	DE-AR0001261	Radio Frequency tools for Breakthrough Fusion Concepts	81.135	132,268	68,972
DOE	DE-AR0001295	High Fidelity Digital Twins for BWRX-300 Critical	81.135	199,020	57,256
DOE	DE-AR0001298	Generation of Critical Irradiation Data to Enable Digital Twinning of Molten-Salt Reactors	81.135	65,606	-
DOE	DE-AR0001311	Power plant CO2 capture integrated with lime-based direct air capture	81.135	185,602	22,665
DOE	DE-AR0001409	ELECTROCHEMICALLY MODULATED CO2 REMOVAL FROM OCEAN WATERS	81.135	45,980	-
DOE	DE-AR0001434	Additive Manufacuring of Oxygen-Resistant Gradient Refractory Composites	81.135	5,687	-
DOE	656002	US CMS DAQ Subsystem	81.RD	274,213	-
DOE	N000394719	Metal Microplasma Printing for Agile Electronics	81.RD	24,573	-
DOE	PO #629763	US CMS Common Operations	81.RD	0	-
DOE	PO NO. 646969	High Luminosity (HL) LHC CMS Detector Upgrade Project Trigger & DAQ: Track Correlator Trig	81.RD	-90	-
DOE	SUB NO. 652561	LPC Distinguished Researchers award - Markus Klute	81.RD	-103	-
DOE	SUB NO. 656089	US CMS COMMON OPERATIONS	81.RD	21,150	-
DOE	SUBCONTRACT 672189	Quantum Metrology for Dark Matter Axion Detection	81.RD	85,854	-
DOE	SUBCONTRACT 675352	QuantISED Theory Consortium	81.RD	7,432	-
DOE	SUBCONTRACT NO. 655714	US CMS Hadron Calorimeter (HCAL) Subsystem	81.RD	21,255	-
		Total for Department of Energy		**52,939,465**	**4,150,287**
		TOTAL for Department of Energy		**52,939,465**	**4,150,287**

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF HEALTH & HUMAN SERVICES					
CDC					
CDC	75D30120C09254	Development of a cough/sneeze simulator to measure performance of PPE	93.RD	177,615	-
		Total for CDC		**177,615**	**-**
Other HHS					
HHS	1-R01-FD007226-01	Flexible Platform for End-to-end Manufacturing of Gene Therapies to Advance Development of Treatments for Ultrarare Diseases	93.103	271,090	-
HHS	1-U01FD006483-01	Smart Data Analytics for Risk Based Regulatory Science and Bioprocessing Decisions	93.103	0	-
HHS	1-U01-FD006751-01	Novel Process Analytic Technology for Continuous Bioprocessses	93.103	983,367	-
HHS	5-R01-FD006584-02	Continuous Viral Vector Manufacturing based on Mechanistic Modeling and Novel Process Analytics	93.103	160,606	-
HHS	5-R01-FD006584-03	Continuous Viral Vector Manufacturing based on Mechanistic Modeling and Novel Process Analytics	93.103	372,972	-
HHS	5-U01FD006483-02	Smart Data Analytics for Risk Based Regulatory Science and Bioprocessing Decisions	93.103	451,737	-
HHS	5-U01FD006483-03	Smart Data Analytics for Risk Based Regulatory Science and Bioprocessing Decisions	93.103	782,349	-
HHS	5-U01-FD006751-02	Novel Process Analytic Technology for Continuous Bioprocessses	93.103	990,274	-
HHS	U01FD006755-01	Integrated Continuous Processing Facility for Small Molecule and Biologic Lyophilized Final Dosage Forms	93.103	140,397	-
HHS	U01FD006755-02	Integrated Continuous Processing Facility for Small Molecule and Biologic Lyophilized Final Dosage Forms	93.103	130,109	-
HHS	U01FD006755-02 REVISED	Integrated Continuous Processing Facility for Small Molecule and Biologic Lyophilized Final Dosage Forms	93.103	462,705	-
HHS	75A50119C00076	3D Vaccine Printer	93.RD	402,614	-
HHS	75P00120P00168	Web-Based Accessibility Initiative	93.RD	329,837	-
HHS	HHSP233201500054C DUNS# 001425594	Web Accessibility Initiative (WAI) Core	93.RD	152,677	-
		Total for Other HHS		**5,630,733**	**-**
NIH					
NIH	5-R01-MH107680-05	The cognitive searchlight: TRN circuit dissection in health and disease	93.077	256,658	-
NIH	2T32ES007020-46	Training Grant in Environmental Toxicology	93.113	661,252	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	5P30ES002109-39	MIT Center for Environmental Health Sciences (YR 36-40)	93.113	357,483	-
NIH	5P30ES002109-40	MIT Center for Environmental Health Sciences (YR 36-40)	93.113	463,526	-
NIH	5-R35-ES028303-05	Mechanism of Eukaryotic Environmental Mutagenesis	93.113	552,396	-
NIH	5-R35-ES028374-05	Protein Kinase Signaling in the Genotoxic Stress Response	93.113	214,880	-
NIH	5-T32-ES007020-45	Training Grant in Environmental Toxicology	93.113	21,476	-
NIH	5-F32-DE027877-03 REVISED	Environmentally-responsive, layer-by-layer coatings for the on-demand delivery of therapeutic growth factors and antibiotics to repair craniomaxillofacial bone defects	93.121	17,824	-
NIH	5-R01-DE013023-20	Novel Polymers for Tissue Engineering	93.121	0	-
NIH	5-R01-DE024747-02	Tunable Nanolayer-Polymer Composite Patches for Cell-Free CMF Repair	93.121	234,249	234,249
NIH	5-R01-DE024747-05	Tunable Nanolayer-Polymer Composite Patches for Cell-Free CMF Repair	93.121	241,221	-
NIH	7-R01-DE029342-02	Identification and Validation of a Novel Central Analgesia Circuit	93.121	145,207	-
NIH	3P24ES027707-03	Science and Engineering for Sensors, Mechanisms, and Biomarkers of Exposures	93.143	-207	-
NIH	3P42ES027707-04S1	Science and Engineering for Sensors, Mechanisms, and Biomarkers of Exposures	93.143	9,706	-
NIH	3-P42-ES027707-04S2	Science and Engineering for Sensors, Mechanisms, and Biomarkers of Exposures	93.143	31,077	-
NIH	3-P42-ES027707-04S3	Science and Engineering for Sensors, Mechanisms, and Biomarkers of Exposures	93.143	33,333	-
NIH	5P42ES027707-02 REVISED	Science and Engineering for Sensors, Mechanisms, and Biomarkers of Exposures	93.143	-6	-
NIH	5P42ES027707-03 REVISED	Science and Engineering for Sensors, Mechanisms, and Biomarkers of Exposures	93.143	1,068,852	-
NIH	5P42ES027707-04	Science and Engineering for Sensors, Mechanisms, and Biomarkers of Exposures	93.143	36,662	-
NIH	5-P42-ES027707-05	Science and Engineering for Sensors, Mechanisms, and Biomarkers of Exposures	93.143	254,690	-
NIH	3-R01-HG008754-03S1	High-Throughput Native Context Mapping and Modeling of Regulatory DNA	93.172	97,018	97,018
NIH	5-F31-HG010818-02	Leveraging biological pathways, gene networks, and functional annotations to understand the genetic architecture of diseases and complex traits	93.172	38,545	-
NIH	5-R01-HG002439-16 REVISED	Regulation and Function of Alternative mRNA Isoform Expression in Mammals	93.172	155,748	-
NIH	5-R01-HG002439-18	Regulation and Function of Alternative mRNA Isoform Expression in Mammals	93.172	213,065	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	5-R01-HG008363-03 REVISED	High-throughput methods for elucidating the control of chromatin accessibility	93.172	1,326	-
NIH	5-R01-HG008754-04	High-Throughput Native Context Mapping and Modeling of Regulatory DNA	93.172	189,215	-88,844
NIH	5-R01-HG010959-02	Privacy-preserving genomic medicine at scale	93.172	122,507	8,820
NIH	3-R01-DC016607-01A1S1	The neural architecture of pragmatic processing	93.173	2,652	-
NIH	3-R01-DC016607-04S1 REVISED	The neural architecture of pragmatic processing	93.173	344,450	-
NIH	5-R01-DC000238-33	Experimental - Theoretical Studies of Cochlear Mechanisms	93.173	33,178	-
NIH	5-R01-DC000238-36 REVISED	Experimental - Theoretical Studies of Cochlear Mechanisms	93.173	204,756	-
NIH	5-R01-DC014739-05	Auditory Scene Analysis with Complex Sounds	93.173	229,560	-
NIH	5-R01DC017970-03	Computational Cognitive Neuroscience of Human Auditory Cortex	93.173	327,623	-
NIH	1-R01-AT011460-01	Noninvasive sensory stimulation to promote glymphatic-lymphatic clearance for the treatment of Alzheimer's Disease	93.213	18,160	-
NIH	1 RF1 MH117809-01	From Electron Microscopy to Neural Circuit Hypotheses: Bridging the Gap	93.242	733,106	242,542
NIH	1-R01-MH111872-01	Multi-Site Non-Invasive Magnetothermal Excitation and Inhibition of Deep Brain Structures	93.242	85,259	85,259
NIH	1-R01-MH111916-03	Development of an Integrated System for Monitoring Home-Cage Behavior in Non-Human Primates	93.242	40,066	-
NIH	1-R01-MH112694-01	Simultaneous multiplexed in situ fluorescence imaging of neuronal proteins and messenger RNAs	93.242	61,928	61,928
NIH	1-R01-MH114031-01	RNA Scaffolds for Cell Specific Multiplexed Neural Observation	93.242	29,319	-
NIH	1-R01-MH126351-01 REVISED	Spatiotemporal dynamics of locus coeruleus circuits during learned behavior	93.242	2,212	-
NIH	1-RF1-MH120017-01	Re-engineering Rabies Virus	93.242	764,788	-
NIH	1-RF1-MH121270-01 REVISED	Highly specific, renewable, and cost-effective antibody toolbox for 3D proteomic phenotyping of the brain	93.242	1,488,875	1,013,195
NIH	1-RF1-MH121885-01A1	Nobrainer: A robust and validated neural network tool suite for imagers	93.242	339,193	41,290
NIH	1-RF1-MH124606-01	Multiplexed Nanoscale Protein Mapping Through Expansion Microscopy and Immuno-SABER	93.242	304,051	164,899
NIH	1-U01-MH119509-01	Single Cell Transcriptional and Epigenomic Dissection of Schizophrenia and Bipoloar Disease	93.242	3,174	-
NIH	3-F32-MH115441-03S1	Development of Line-Scan Temporal Focusing for fast structural imaging of synapse assembly/disassembly in vivo	93.242	68,665	-
NIH	5-F31-MH117886-02	Genome-scale transcription factor screen for neural differentiation - J. Joung	93.242	32,410	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	5-F31-MH124393-02	Exploring the role of genetic structural variation in neuropsychiatric diseases	93.242	49,292	-
NIH	5-F32-MH117933-03	Characterizing Neural Adaptation in Autism Spectrum Disorder	93.242	42,236	-
NIH	5-F32-MH122995-03	Markerless Tracking of 3D Posture to Reveal the Sensory Origins of Body Schema - PDF: K. Severson	93.242	22,808	-
NIH	5-K99-MH116100-02S1	Testing the Mechanisms, Layers, and Frequencies of Prediction Encoding and its Violation	93.242	100,403	-
NIH	5-K99-MH120279-02	Magnetic Modulation on Targeted Neural Circuits in Autism	93.242	48,729	-
NIH	5-R01-MH060379-20	Functional and anatomical characterization of the striosomal system	93.242	342,115	-
NIH	5-R01-MH085802-10	MicroRNA mechanisms of Rett Syndrome	93.242	11,600	-
NIH	5-R01-MH085802-12	Early developmental mechanisms of Rett Syndrome	93.242	19,609	-
NIH	5-R01-MH102441-05	Dissecting the Neural Circuits Encoding Positive and Negative Valence	93.242	0	-
NIH	5-R01-MH104536-09	Imaging Synaptic Transmission of Individual Active Zones	93.242	245,480	-
NIH	5-R01-MH106469-05	Synaptic pathophysiology of the 16p11.2 microdeletion mouse model	93.242	93,185	-
NIH	5-R01-MH109978-05	Network-based prediction and validation of causal schizophrenia genes and variants	93.242	327,758	117,081
NIH	5-R01-MH111503-03	A platform for high-throughput production of targeting systems for cell-type-specific transgene expression in wild-type animals	93.242	97	-
NIH	5-R01-MH111872-03	Multi-Site Non-Invasive Magnetothermal Excitation and Inhibition of Deep Brain Structures	93.242	28,160	28,160
NIH	5-R01-MH111872-04	Multi-Site Non-Invasive Magnetothermal Excitation and Inhibition of Deep Brain Structures	93.242	114,231	-
NIH	5-R01-MH111916-03	Development of an Integrated System for Monitoring Home-Cage Behavior in Non-Human Primates	93.242	282,193	-
NIH	5-R01-MH112694-05	Simultaneous multiplexed in situ fluorescence imaging of neuronal proteins and messenger RNAs	93.242	266,015	-
NIH	5-R01-MH114031-04	RNA Scaffolds for Cell Specific Multiplexed Neural Observation	93.242	363,441	77,026
NIH	5-R01-MH115037-05	Elucidating neural substrates that mediate autism-like behaviors	93.242	500,105	-
NIH	5-R01-MH115592-05	Thalamocortical Dynamics and Consciousness	93.242	416,665	-
NIH	5-R01-MH120118-03	Behavioral and mechanistic dissection of a cognitive thalamo-cortical network	93.242	502,893	-
NIH	5-R01-MH121802-03	Mutant Shank3 macaque monkeys for neurobiological studies of ASD	93.242	261,419	-
NIH	5-R01-MH122025-03	CRCNS US-French Research Proposal : Principles of Inference through Neural Dynamics	93.242	317,834	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	5-R01-MH122270-03	Characterization of amygdalar circuits mediating suppression of innate social behaviors	93.242	982,215	-
NIH	5-R21-MH120440-02	Mechanisms Underlying Glial Regulation of Neuronal Excitability in Drosophila	93.242	128,855	-
NIH	5R24MH117295-03	DANDI: Distributed Archives for Neurophysiology Data Integration	93.242	941,143	623,608
NIH	5-R37-MH087027-10 REVISED	Cortical Circuits for Attention and Decisions	93.242	152,482	-
NIH	5-U01-MH108168-04 REVISED	Connectomes Related to Anxiety and Depression in Adolescents	93.242	2,509	2,509
NIH	5-U01-MH108168-04S1 REVISED	Connectomes Related to Anxiety and Depression in Adolescents	93.242	50,000	50,000
NIH	5-U01-MH114819-03	A Molecular and Cellular Atlas of the Marmoset Brain	93.242	1,275,288	695,618
NIH	5-U01-MH117072-02	Towards integrated 3D reconstruction of whole human brains at subcellular resolution	93.242	25,293	24,467
NIH	5-U01-MH117072-03	Towards integrated 3D reconstruction of whole human brains at subcellular resolution	93.242	1,288,401	250,381
NIH	5-U01-MH117072-04	Towards integrated 3D reconstruction of whole human brains at subcellular resolution	93.242	161,635	-
NIH	1-K99-AA028579-01A1	Arousal-induced noradrenergic signaling modulates cortical astrocyte-neuron circuits during ethanol consumption	93.273	45,188	-
NIH	1-R01-DA045549-01	High-Performance Imaging Through Scattering Living Tissue	93.279	35,036	-
NIH	1-RF1-DA049005-01	Novel tools for spatiotemporal modulation of astrocytes in neuronal circuits	93.279	489,566	263,196
NIH	5-R01-DA029639-11	Novel Platforms for Systematic Optical Control of Complex Neural Circuits In Vivo	93.279	621,502	187,851
NIH	5-R01-DA038642-05	Molecular imaging of dopaminergic signaling in rodent brain	93.279	-2,647	-
NIH	5-R01-DA045549-04	High-Performance Imaging Through Scattering Living Tissue	93.279	466,617	112,145
NIH	1-K99-EB028311-01 REVISED	Engineering a diagnostic platform for rapid breath-based respiratory pathogen identification and treatment monitoring	93.286	14,263	-
NIH	1-R01-EB024591-01	Synthetic Genetic Controller Circuits to Reprogram Cell Fate	93.286	362,965	1,996
NIH	1-R01-EB025854-01	Synthetic biology-regulated RNA vaccines	93.286	191,836	-
NIH	1-R01-EB026344-01	Multivalent Nano-conjugates for Targeted Penetration of and Delivery to Dense Extracellular Matrices	93.286	202,855	-
NIH	1-R01-EB027717-01A1	Micro-invasive biochemical sampling of brain interstitial fluid for investigating neural pathology	93.286	392,466	-
NIH	1-R21-EB028414-01A1	Mechanical Augmentation of the Diaphragm for End-Stage Respiratory Failure	93.286	177,275	-
NIH	1-U01-EB029132-01	Microvascular Permeability, Inflammation, and Lesion Physiology in Endometriosis: A Microphysiological Systems Approach	93.286	-30,810	-
NIH	2-P41-EB015871-31	MIT Laser Biomedical Research Center	93.286	686,999	227,889

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	2-R01-EB001965-14	Advanced Instrumentation for Dynamic Nuclear Polarization NMR Research	93.286	45,090	-
NIH	2-R01-EB004866-13	Innovative Instrumentation for High Magnetic Field DNP NMR	93.286	1,425	-
NIH	2-R01-EB017755-05	Mucin Glycans in the Regulation of Microbial Virulence	93.286	128,862	73,872
NIH	2-T32-EB001680-16	Neuroimaging Training Program	93.286	160,166	-
NIH	3-K99-EB025254-02S1	High-throughput micro-RNA profiling of single cells and its application in leukemia	93.286	18,252	-
NIH	3R01EB022062-04S1 REVISED	Tabletop liquid-helium-free, persistent-mode 1.5-T/70-mm osteoporosis MRI magnet	93.286	1,061	-
NIH	3-R01-EB025854-03S1	COVID-19: Synthetic biology-regulated RNA vaccines	93.286	223,787	-
NIH	3-R01-EB026344-03S1 REVISED	Multivalent Nano-conjugates for Targeted Penetration of and Delivery to Dense Extracellular Matrices	93.286	25,820	-
NIH	3-R21-EB026008-02S1 REVISED	COVID-19: Structured DNA Nanoparticles Therapeutic mRNA and CRISPR/Cas9 Delivery	93.286	103,530	21,707
NIH	5-K99EB027706-02	Developing next generation multiphoton systems to reveal cortico-thalamic interactions underlying short-term memory in behaving mice	93.286	73,966	-
NIH	5-P41-EB015871-32	MIT Laser Biomedical Research Center	93.286	4,147	-
NIH	5-P41-EB015871-35	MIT Laser Biomedical Research Center	93.286	290,063	-
NIH	5-R01-EB000244-41	A new high-throughput gastrointestinal tract explant platform for drug formulation discovery and metabolic disease modulation	93.286	335,400	335,400
NIH	5-R01-EB000244-42	A new high-throughput gastrointestinal tract explant platform for drug formulation discovery and metabolic disease modulation	93.286	126,872	-
NIH	5-R01-EB001965-17	Advanced Instrumentation for Dynamic Nuclear Polarization NMR Research	93.286	504,225	-
NIH	5-R01-EB004866-12	Novel Traveling Wave Tubes for CW and Pulsed DNP NMR	93.286	18,997	-
NIH	5-R01-EB004866-12 REVISED	Novel Traveling Wave Tubes for CW and Pulsed DNP NMR	93.286	76,715	-
NIH	5-R01EB004866-14	Innovative Instrumentation for High Magnetic Field DNP NMR	93.286	44,463	-
NIH	5-R01-EB017205-07	Critical Care Informatics	93.286	351,024	-
NIH	5-R01-EB017755-07	Mucin Glycans in the Regulation of Microbial Virulence	93.286	525,306	-
NIH	5-R01-EB020740-04	Nipype: Dataflows for Reproducible Biomedical Research	93.286	188,274	-21,485
NIH	5-R01-EB022062-04 REVISED	Tabletop liquid-helium-free, persistent-mode 1.5-T/70-mm osteoporosis MRI magnet	93.286	236,727	18,603
NIH	5-R01-EB022433-04	Lymph node-targeted molecular vaccines	93.286	-4	-
NIH	5-R01-EB024261-04	Expansion Microscopy	93.286	343,679	-
NIH	5-R01-EB024531-03	Computational Design, Fabrication, and Evaluation of Optimized Patient-Specific Transtibial Prosthetic Sockets	93.286	30,433	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	5-R01-EB024591-04	Synthetic Genetic Controller Circuits to Reprogram Cell Fate	93.286	210,074	199,695
NIH	5-R01-EB025256-04	Programmed Differentiation Circuits for Organoids using Meso-Microfluidics	93.286	130,188	-
NIH	5R01EB025854-04	Synthetic biology-regulated RNA vaccines	93.286	339,561	-
NIH	5-R01-EB026344-04	Multivalent Nano-conjugates for Targeted Penetration of and Delivery to Dense Extracellular Matrices	93.286	326,757	-
NIH	5-R01-EB027717-03	Micro-invasive biochemical sampling of brain interstitial fluid for investigating neural pathology	93.286	229,758	-
NIH	5-R01-EB030946-02	Synthetic gene sensors and effectors to redirect organoid development	93.286	21,508	-
NIH	5-R21-EB026008-02 REVISED	Structured DNA Nanoparticles Therapeutic mRNA and CRISPR/Cas9 Delivery	93.286	-10,461	-
NIH	5-T32-EB001680-15	Neuroimaging Training Program	93.286	13,045	-
NIH	5-T32-EB019940-04	Neurobiological Engineering Training Program	93.286	6,360	-
NIH	5T32EB019940-05	Neurobiological Engineering Training Program	93.286	53,829	-
NIH	5-U01-EB029132-02	Microvascular Permeability, Inflammation, and Lesion Physiology in Endometriosis: A Microphysiological Systems Approach	93.286	633,383	-
NIH	1-DP2-GM140938-01	DYNAMIC BOTTOM-UP DISSECTION OF CHROMATIN LOOPING AND GENE REGULATION	93.31	253,124	-
NIH	1DP2AI136597-01	Developing powerful daisy drive systems for the precise alteration of local populations	93.310	164,160	-
NIH	1DP2ES027992	Proteome-Driven Holistic Reconstruction of Organ-Wide Multi-Scale Networks	93.310	1,147,691	-
NIH	1-DP2-GM119162-01	Continuous Directed Evolution of Biomolecules in Human Cells for Medical Research	93.310	-6	-
NIH	1DP2GM119419	"Bottom-up" Profiling of Interacting Cellular Systems	93.310	-13,651	-
NIH	1-R01-ES031576-01	Epigenetics of the human gut microbiome	93.310	133,582	-
NIH	1-U01-CA231079-01	Development of multifunctional probes for profiling microbial glycans	93.310	560,330	-
NIH	5-R01-ES031576-03	Epigenetics of the human gut microbiome	93.310	227,708	-
NIH	5-U24-OD026638-04	Knockin marmoset reporters for non-invasive measuring of genome-editing efficiency	93.310	762,247	-
NIH	4-UH3-TR002186-03	Cartilage-Bone-Synovium MPS: Musculoskeletal Disease Biology in Space	93.350	481,624	128,333
NIH	5-UG3-TR002186-02	Cartilage-Bone-Synovium MPS: Musculoskeletal Disease Biology in Space	93.350	-8,072	-8,072
NIH	1S10OD023513-01A1	New RF Electronics Console and Probes for 900 Mhz NMR Spectrometer	93.351	400,000	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	1-U01-CA250554-01	Developing high-throughput genetic perturbation strategies for single cells in cancer organoids	93.353	655,580	-
NIH	1-R21-CA256081-01	Innovative Droplet Lenses for NextGen Light Sensors of Biomarkers of Inflammation	93.393	9,122	-
NIH	2-P01-CA026731-35A1	Endogenous Nitrite Carcinogenesis In Man	93.393	1,233	-
NIH	4-K00-CA245813-03	Protein Phosphatase PP2A and DNA damage in cell fate decisions of acute myeloid leukemic cells	93.393	15,919	-
NIH	5-P01-CA026731-39	Endogenous Nitrite Carcinogenesis In Man	93.393	115	-
NIH	5-P01-CA042063-32	Characterization of Pathways Controlling Cancer at the Level of Gene Regulation	93.393	1,613,837	-
NIH	5-R01-CA021615-42 REVISED	Mutagenesis and Repair of DNA	93.393	163,053	-
NIH	5-R01-CA080024-23	Intra and Extra-Chromosomal Probes for Mutagenesis by Carcinogens	93.393	523,176	-
NIH	5-R01-CA206157-25 REVISED	Regulation of MITOSIS by Proteolysis in Yeast	93.393	173,604	-
NIH	1-R01-CA207029-01A1	RNA circuits for cell state determination in mammalian cells in vitro and in vivo	93.394	271,499	271,499
NIH	1-R01-CA220468-01	Organic nanoparticles for dual MRI-guided therapeutic selection and ovarian cancer drug delivery	93.394	84,831	36,677
NIH	1-R01-CA252216-01	Omniview tethered capsule folow cost , non-endoscopic Barretts esophagus screenings in unsedated patients	93.394	48,451	-
NIH	1-R21-CA236685-01	Building microenvironment-containing organoids from patient samples with single-cell precision	93.394	120,665	108,015
NIH	1-R21-CA259840-01	High-efficiency microfluidic cell fusion for dendritic cell/tumor cell vaccine production	93.394	40,102	-
NIH	1R33CA223904-01	Advanced development and validation of microdevices for high-throughput in situ drug sensitivity testing in tumors	93.394	125,965	125,965
NIH	4-R01-CA178636-04	Intraoperative real time breast cancer margin assessment with nonlinear microscopy	93.394	6,264	6,264
NIH	5-R01-CA075289-19	Optical Biopsy Using Coherence Tomography	93.394	6,754	6,754
NIH	5-R01-CA178636-05	Intraoperative real time breast cancer margin assessment with nonlinear microscopy	93.394	410	-
NIH	5-R01-CA207029-05	RNA circuits for cell state determination in mammalian cells in vitro and in vivo	93.394	207,068	-
NIH	5-R01-CA218094-04	Deep learning based antibody design using high-throughput affinity testing of synthetic sequences	93.394	141,753	-
NIH	5-R01-CA220468-05	Organic nanoparticles for dual MRI-guided therapeutic selection and ovarian cancer drug delivery	93.394	399,035	-
NIH	5-R01-CA235740-03	Microengineered Technologies for Quantitative, Multiplexed and Spatially Resolved Measurement of miRNA in Tissue Sections	93.394	491,716	229,165

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	5-R01-CA249151-02	Increasing nerve-sparing radical prostatectomy rates using intraoperative nonlinear microscopy	93.394	39,834	-
NIH	5-R01-CA252216-02	Omniview tethered capsule folow cost , non-endoscopic Barretts esophagus screenings in unsedated patients	93.394	213,441	-
NIH	5-R21-CA236685-03	Building microenvironment-containing organoids from patient samples with single-cell precision	93.394	93,620	-
NIH	5-R33-CA191143-03 REVISED	Single cell growth assay for residual cells in acute lymphoblastic leukemia	93.394	10,544	-
NIH	5R33CA223904-03	Advanced development and validation of microdevices for high-throughput in situ drug sensitivity testing in tumors	93.394	136,827	-
NIH	1-R01-CA226898-01A1	RNA-Binding Proteins as Molecular Integrators that Control the Response of HGSOC to Ant-Cancer Therapies	93.395	493,746	-
NIH	1-R01-CA235375-01A1	Delivery of cytokines for cancer immunotherapy using nanolayer-controlled trafficking of liposomal nanoparticles	93.395	123,777	-
NIH	1-R01-CA247632-01	Enhancing CAR-T cell activity against solid tumors by vaccine boosting through the chimeric receptor	93.395	39,165	26,515
NIH	5-R01-CA034992-36 REVISED	Understanding and Improving Platinum Anticancer Drugs	93.395	-44	-
NIH	5-R01-CA073808-24	Human Ribonuclease as a Cytotoxin	93.395	343,297	-
NIH	5-R01-CA235375-03	Delivery of cytokines for cancer immunotherapy using nanolayer-controlled trafficking of liposomal nanoparticles	93.395	321,931	-
NIH	5-R01-CA247632-03	Enhancing CAR-T cell activity against solid tumors by vaccine boosting through the chimeric receptor	93.395	349,669	-
NIH	1-R01-CA206218-01A1	Reprogramming the tumor microenvironment via self-amplified RNA (SafeR) circuits	93.396	109,796	-
NIH	1-R01-CA245314-01A1	Impact of fasting on intestinal stem cells and cancer	93.396	31,783	-
NIH	1-R33 -A257878-01	Super-resolution microscopy for dynamic analysis of focal enhancer amplifications in cancer	93.396	27,812	-
NIH	1R35CA242379-01	Understanding the role of metabolism in cancer	93.396	280,242	-
NIH	1-U01-CA238720-01	Identification of adaptive response mechanisms in breast cancer by information theory and proteomics	93.396	49,956	40,246
NIH	3-U01-CA202177-05S2	Quantitative analyses of tumor cell extravasation	93.396	197,699	-
NIH	5 U01 CA215798-03	Systems approaches to understanding the relationships between genotype, signaling, and therapeutic efficacy	93.396	-6,245	-
NIH	5 U01 CA215798-03 REVISED	Systems approaches to understanding the relationships between genotype, signaling, and therapeutic efficacy	93.396	678	-
NIH	5-R00-CA204595-05	Tumor-intrinsic oncogenic alterations and evasion of anti-tumor immunity	93.396	-28,754	-
NIH	5-R01-CA206218-05 REVISED	Reprogramming the tumor microenvironment via self-amplified RNA (SafeR) circuits	93.396	40,207	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	5-R01-CA211184-05 REVISED	Dietary control of stem cells in physiology and cancer	93.396	752,607	-
NIH	5-R01-CA233477-03	Identifying and targeting evolutionary trajectories in cancer	93.396	433,465	-
NIH	5-R01-CA233983-03	Development of novel metastatic mouse models that recapitulate the major immune contexts of human colon cancer	93.396	382,894	-
NIH	5-R01-CA245314-02	Impact of fasting on intestinal stem cells and cancer	93.396	307,638	-
NIH	5-R35-CA242379-02	Understanding the role of metabolism in cancer	93.396	1,024,079	-
NIH	5-U01-CA184897-05	Dynamics of Gene and Isoform Regulation during EMT and tumor progression	93.396	-122	-
NIH	5-U01-CA184898-06	Embryonal Brain Tumor Networks	93.396	12,830	19,941
NIH	5-U01CA202177-05	Quantitative analyses of tumor cell extravasation	93.396	226,123	128,642
NIH	5-U01-CA214381-03	Development of Physiologic Tissue Models to Assess Tumor Explant Response to Immune Checkpoint Blockade	93.396	312,971	225,266
NIH	5-U01-CA214381-03 REVISED	Development of Physiologic Tissue Models to Assess Tumor Explant Response to Immune Checkpoint Blockade	93.396	29,982	-
NIH	5-U01-CA214381-04	Development of Physiologic Tissue Models to Assess Tumor Explant Response to Immune Checkpoint Blockade	93.396	339,185	-
NIH	5U01CA215798-04	Systems approaches to understanding the relationships between genotype, signaling, and therapeutic efficacy	93.396	632,325	536,623
NIH	5-U01-CA215798-05	Systems approaches to understanding the relationships between genotype, signaling, and therapeutic efficacy	93.396	24,372	-
NIH	5-U01-CA238720-02	Identification of adaptive response mechanisms in breast cancer by information theory and proteomics	93.396	237,806	51,208
NIH	5-U01-CA238720-03	Identification of adaptive response mechanisms in breast cancer by information theory and proteomics	93.396	2,824	-
NIH	2-P30-CA014051-48	Cancer Center Support (Core) Grant – (Parent)	93.397	2,047	-
NIH	2-P30-CA014051-49	Cancer Center Support (CCSG) Grant	93.397	119,344	-
NIH	2-P30-CA014051-49 REVISED	Cancer Center Support (CCSG) Grant	93.397	2,630,319	-
NIH	5-P30-CA014051-50	Cancer Center Support (CCSG) Grant	93.397	470,746	-
NIH	5-U54CA210180-04	MIT/Mayo Physical Sciences Center for Drug Delivery and Efficacy in Brain Tumors	93.397	493,581	428,426
NIH	5-U54-CA210180-05	MIT/Mayo Physical Sciences Center for Drug Delivery and Efficacy in Brain Tumors	93.397	1,560,069	687,899
NIH	5-U54-CA217377-03	Quantitative and functional characterization of therapeutic resistance in cancer (PARENT)	93.397	110,471	107,645
NIH	5-U54-CA217377-04	Quantitative and functional characterization of therapeutic resistance in cancer (PARENT)	93.397	1,480,975	587,255
NIH	5-U54-CA217377-04 REVISED	Quantitative and functional characterization of therapeutic resistance in cancer (PARENT)	93.397	74,322	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	5-U54-CA217377-05	Quantitative and functional characterization of therapeutic resistance in cancer (PARENT)	93.397	41,277	-
NIH	1-F31-CA254162-02	Understanding Compartmentalized Leucine Metabolism Downstream of mTORC1 Signaling	93.398	45,520	-
NIH	1-F31-CA261093-01	Investigating the impact of heterogeneous and homogenous neoantigen expression patterns on the anti-tumor immune response	93.398	2,153	-
NIH	1-F32-CA247210-01A1	Layer-by-Layer Nanoparticles for Combination Cytokine Immunotherapy of Ovarian Cancer [PDF: S. Smith]	93.398	24,283	-
NIH	1-F32-CA261012-01	Targeting the Oncogenic Fusion Transcription Factor PAX3-FOXO1 with Small Molecules	93.398	13,440	-
NIH	5-F30-CA228229-03	Elucidating the role of GATOR2 in nutrient sensing by mTORC1	93.398	50,520	-
NIH	5-F30-CA236179-03 REVISED	Regulation by mTORC1 of the lysosomal efflux of essential amino acids	93.398	49,847	-
NIH	5-F31-CA228241-03 REVISED	Genetic identification of novel mTORC1 regulators and homeostatic signaling mechanisms	93.398	30,692	-
NIH	5F31CA232340-04	Determining the mechanism of serine sensing by the mTOR pathway	93.398	45,520	-
NIH	5-F31-CA232355-03	Defining the mechanism of starvation-induced ribophagy	93.398	47,580	-
NIH	5-F31-CA236036-03 REVISED	The Effect of Serine Source on Nucleotide Metabolism in Cancer: Manipulating Environmental Nutrient Availability to Impact Tumor Growth	93.398	44,505	-
NIH	5-F31-CA239493-03	Rebalancing protein homeostasis enhances tumor antigen presentation	93.398	45,594	-
NIH	5-F31-CA250171-02	Characterizing the Physicochemical Properties of Estrogen Receptor-mediated Transcriptional Condensates in Breast Cancer	93.398	45,649	-
NIH	5-F32-CA239362-03	Cytosolic Delivery of Tumor Antigens into Dendritic Cells - Postdoctoral Fellow: Nicholas Truex	93.398	61,799	-
NIH	5-F32-CA247259-02	Molecular probes for allele-specific interdiction of K-Ras G12D signaling	93.398	49,497	-
NIH	5-F32-CA247274-02	Genomic incorporation of stapled peptides for cost effective discovery and synthesis of novel therapeutics - PDF: Emma Chory	93.398	69,104	-
NIH	5-K00-CA212227-06	Imaging Cancer Angiogenesis with Acoustic Angiography Ultrasound	93.398	101,589	-
NIH	5-K99-CA226396-02	Investigating functional sites in protein kinases as targets for cancer mutations and novel drugs	93.398	21,897	-
NIH	5-K99-CA226400-02 REVISED	Investigating immune-microbiota interaction in lung cancer	93.398	-4,492	-
NIH	5-K99-CA234221-02S1	Understanding metabolic heterogeneity in pancreatic cancer	93.398	123,936	-
NIH	5-K99-CA237861-02	Developing multiplexed microenvironmental sensors for precision diagnostics of cancer metastasis	93.398	122,626	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	5-K99-CA241072-02	Exploring the impact of HSP90 inhibition on antigen presentation and anti-tumor immune responses	93.398	137,750	-
NIH	5-F32-HL154658-02	Investigating the role of NADPH oxidase 4 (Nox4) in cardiomyocyte maturation	93.837	49,434	-
NIH	5-R01-HL127174-04	Canonical & non-canonical regulation of the HDL receptor by PDZK1's PDZ domains	93.837	44,613	-
NIH	5-R01-HL140471-04	Investigating the role of H2A.Z dynamics in regulating cardiac lineage commitment	93.837	491,262	131,988
NIH	5-R01-HL153857-02	Stretchable Hydrogel Bioinks-Enabled Microfluidic Bioprinting of Functional Small-Diameter Blood Vessels	93.837	289,935	107,126
NIH	1-F30-HL156404-01	Molecular determinants of fetal hemoglobin induction by hydroxyurea to treat sickle cell disease	93.839	25,411	-
NIH	1F31AR079263-01	Chondronoids for Studying Collagen-II Homeostasis and Diseases	93.846	6,084	-
NIH	5-R01-AR071443-05	Defining and Modulating Mechanisms of Collagen Proteostasis	93.846	230,658	-
NIH	5-R56-AR044276-24	Chemistry and Biology of Collagen	93.846	330,688	-
NIH	1-F32-DK122762-01A1 REVISED	Simultaneous gastric and brain electrical interfacing for development of endoscopic gastric stimulation treatments for gastroparesis	93.847	8,712	-
NIH	1-K99-DK123407-02 REVISED	Elucidating the role of fasting in intestinal stemness and tissue regeneration	93.847	54,837	-
NIH	5-F31-DK113665-04	Leucine Sensing by the mTORC1 Pathway in the Liver - PDF Cangelosi	93.847	45,692	-
NIH	5-F32-DK118785-03	Glycemic Control by Glucose-Responsive Hydrogels Based on Synthetic Lectin Mimics	93.847	68,794	-
NIH	5-F32-DK126233-02	Engineered nanoparticles to rescue complement dysfunction and vascular disease during diabetes	93.847	46,250	-
NIH	5-R01-DK115558-05	Macromolecular interactions controlling the ALA synthases, keystone enzymes that initiate heme biosynthesis	93.847	504,010	-
NIH	1-R01-NS089076-01A1	Epigenetic pathology and therapy in Huntington's disease	93.853	5,697	8,693
NIH	1-R01-NS113245-01	Functional dissection of thalamocortical interactions through genetically-defined TRN subnetworks	93.853	378,610	-
NIH	1-R01-NS115576-01	Wireless Magnetomechanical Neuromodulation of Targeted Circuits	93.853	82,176	66,175
NIH	1-R01-NS115576-01 REVISED	Wireless Magnetomechanical Neuromodulation of Targeted Circuits	93.853	236,626	-
NIH	1-R01-NS120592-01	Nanosensors for sensitive brain-wide neurochemical imaging	93.853	144,360	-
NIH	1-R01-NS121078-01	Human 3D Neuro-Vascular Interaction and Meningeal Lymphatic Models with Application to Alzheimer's Disease	93.853	3,338	-
NIH	1-T32-NS105587-01A1	Computationally Enabled Integrative Neuroscience	93.853	-75,979	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	1-U01-NS110453-01	Single-cell transcriptional and epigenomic dissection of Alzheimer's Disease and Related Dementias	93.853	-232,793	-
NIH	1-U01-NS121471-01	Computational neuroscience of language processing in the human brain	93.853	25,712	-
NIH	1-UF-1NS107712-01 REVISED	Intracellular calcium sensing with molecular fMRI	93.853	217,002	-
NIH	1-UG3-NS115064-01	Construction of an integrated immune - vascular brain - chip as a platform for the study, drug screening, and treatments of Alzheimer's disease	93.853	845,179	-
NIH	1-UG3-NS115064-01 REVISED	Construction of an integrated immune - vascular brain - chip as a platform for the study, drug screening, and treatments of Alzheimer's disease	93.853	-6	-
NIH	2-R01-NS089076-06	Epigenetic pathology and therapy in Huntington's disease	93.853	485,797	119,547
NIH	3-F32-NS116107-02S1	New molecular pathways that link gut microbiota to neural circuit activity and behavior	93.853	55,310	-
NIH	3-R01-NS104892-03S1 REVISED	Neuromodulatory control of collective circuit dynamics in C. elegans	93.853	-402	-
NIH	3-UG3-NS115064-01S1	COVID-19: Construction of an integrated immune - vascular brain - chip as a platform for the study, drug screening, and treatments of Alzheimer's disease	93.853	176,234	-
NIH	5-F31-NS113464-02	The Role of Neuronal DNA Double Strand Breaks in Neuroinflammation	93.853	45,693	-
NIH	5-F31-NS118753-02	Interferometric, acousto-optic modulated diffuse correlation spectroscopy @ 1064 nm (AOM-iDCS) toward higher sensitivity, non-invasive measurement of cerebral blood flow	93.853	40,369	-
NIH	5-F31-NS118948-02	Effect of Nanoscale Active Zone Morphology on Synaptic Vesicle Release Probability	93.853	37,100	-
NIH	5-F32-NS110481-03 REVISED	Correlation of astrocyte Ca2+ microdomain activity with motor learning and neuronal function	93.853	55,014	-
NIH	5-F32-NS114358-03	Molecular mechanism of CPG15 mediated activity-dependent synaptic plasticity	93.853	62,285	-
NIH	5-K99-NS107639-02 REVISED	Mapping neurochemical activity of the basal ganglia in pathological behaviors	93.853	23,904	-
NIH	5K99NS118112-02	Network and dendritic mechanisms of context-dependent cortical computation	93.853	84,929	-
NIH	5-R01-NS040296-18	Characterization of the Drosophila Synaptotagmin Family	93.853	18,965	-
NIH	5-R01-NS040296-20	Characterization of the Drosophila Synaptotagmin Family	93.853	399,284	-
NIH	5-R01-NS078127-05R	Neural mechanisms of timing in the oculomotor system	93.853	-66	-
NIH	5-R01-NS089076-05 REVISED	Epigenetic pathology and therapy in Huntington's disease	93.853	4,517	-
NIH	5-R01-NS098505-03	Dissecting the role of thalamic inhibition in neurodevelopmental diseases	93.853	260,067	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	5-R01-NS098505-05	Dissecting the role of thalamic inhibition in neurodevelopmental diseases	93.853	230,214	-
NIH	5-R01-NS102727-02	Scalable Cell- and Circuit-Targeted Electrophysiology	93.853	14,527	-
NIH	5-R01-NS102727-04	Scalable Cell- and Circuit-Targeted Electrophysiology	93.853	320,509	314,931
NIH	5-R01NS102730-05	Mechanisms underlying DNA double strand break response in Alzheimer?s disease and frontal temporal dementia	93.853	389,442	-
NIH	5-R01-NS104892-05	Neuromodulatory control of collective circuit dynamics in C. elegans	93.853	400,999	-
NIH	5-R01-NS106031-04	A dendritic mechanism for cholinergic neuromodulation of cortical function	93.853	402,942	-
NIH	5-R01-NS113079-03	Dendritic Computation and Representation of Head Direction in Retrosplenial Cortex	93.853	431,321	-
NIH	5-R01-NS113245-03	Functional dissection of thalamocortical interactions through genetically-defined TRN subnetworks	93.853	265,147	-
NIH	5-R01-NS117588-02	Molecular and Cellular Mechanisms Mediating Structural and Functional Active Zone Maturation	93.853	148,843	-
NIH	5R01NS119519-02	Sensorimotor learning through adjustments of cortical dynamics	93.853	97,887	-
NIH	5-R21-NS102762-02	Improving in vitro generation of human oligodendrocyte lineage cells by mechanical stimulation	93.853	167	-
NIH	5-R21-NS105027-02	Development of 3D vascularized model of Blood Brain Barrier and its application to Alzheimer disease research	93.853	173,909	36,502
NIH	5-R21-NS105070-02	Novel implementation of Temporal Focusing Line Scanning for Fast Imaging of Synaptic Structural Dynamics in vivo	93.853	-13,999	-
NIH	5-R37-NS051874-24	The Cdk5/35 Kinase	93.853	9,816	-
NIH	5-R37NS051874-26	The Cdk5/35 Kinase	93.853	266,710	-
NIH	5-T32-NS105587-02	Computationally Enabled Integrative Neuroscience	93.853	207,385	-
NIH	5-U01-NS103470-03	Genetically-targeted hemodynamic functional imaging	93.853	2,087	-
NIH	5-U01-NS110453-02	Single-cell transcriptional and epigenomic dissection of Alzheimer's Disease and Related Dementias	93.853	368,390	-
NIH	5-U01-NS110453-03	Single-cell transcriptional and epigenomic dissection of Alzheimer's Disease and Related Dementias	93.853	785,384	-
NIH	7-R01-NS077986-10	Pre-motor Neural Circuits for Exploratory Movement	93.853	146,240	-
NIH	7-R01-NS109947-05	Cortical Signature and Modulation of Pain	93.853	307,858	126,888
NIH	1-DP2-AI158126-01	Repertoire-scale T cell antigen identification via peptide-MHC lentivirus display	93.855	300,645	-
NIH	1-R21-AI158169-01	COVID-19: EVOLVING VIRUS-SPECIFIC sACE2 MIMICS FOR COMPETITIVE INHIBITION OF SARS-CoV-2	93.855	46,333	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	1-R61-AI161297-01	Immune engineering of optimized sequential immunization strategies for HIV vaccines	93.855	6,354	-
NIH	2-R01-AI055258-16	Synthetic Ligands for Directing Immune Responses	93.855	40,044	-
NIH	5-F31-AI133989-03	Solid-state NMR studies of the dynamic interactions of the influenza A M2 membrane protein with water, antiviral drugs, and the M1 protein	93.855	40,160	-
NIH	5-F31-AI145181-03	Quadruplet Decoding for Multiplexed Non-Canonical Amino Acid Incorporation	93.855	20,994	-
NIH	5-F32-AI136459-03 REVISED	Characterizing spatio-temporal changes in immune cell landscapes of multiple sclerosis patients in response to B cell depletion with Ocrelizumab	93.855	31,545	-
NIH	5-R01-AI016892-42	AAA+ proteolytic machines	93.855	562,272	-
NIH	5-R01-AI055258-15	Synthetic Ligands for Modulating Immune Cell Responses	93.855	-2,329	-
NIH	5-R01-AI055258-17	Synthetic Ligands for Directing Immune Responses	93.855	533,262	-
NIH	5-R01-AI111395-05	Characterization and Development of a Cross Spectrum Anti-Dengue Antibody	93.855	31,627	-
NIH	5-R01-AI126592-06	The Chemistry and Biology of Galactofuranose-Containing Glycans	93.855	535,039	-
NIH	5-R01-AI141543-03	Target-specific antimalarial compound identification using phenotypic assays	93.855	622,189	-
NIH	5-R21-AI149694-02	Systematic discovery, characterization, and design of novel genome editing and delivery tools using a high-throughput metagenomic screening pipeline	93.855	278,378	-
NIH	5-R21-AI151827-02 REVISED	Dissecting the mechanism of cyclophosphamide-enhanced antibody efficacy	93.855	252,223	-
NIH	5-R33-AI121669-04	Engineering "Phagebody" Antimicrobials for Carbapenem-Resistant Enterobacteriaceae	93.855	410,899	-
NIH	5-U19-AI131135-03	3D Models of Engineered Human iPS Cells to Investigate Neurotropic Virus Infections	93.855	2,485	-
NIH	5-U19-AI131135-04	3D Models of Engineered Human iPS Cells to Investigate Neurotropic Virus Infections	93.855	40,518	-
NIH	5-U19-AI131135-04 REVISED	3D Models of Engineered Human iPS Cells to Investigate Neurotropic Virus Infections	93.855	1,601,031	883,692
NIH	5-U19-AI131135-05	3D Models of Engineered Human iPS Cells to Investigate Neurotropic Virus Infections	93.855	170,900	-
NIH	1DP2GM128200-01	Nanometer distance assay to uncover protein dynamics	93.859	710,812	-
NIH	1-DP2-GM140922-01	An Evolutionary Framework For Identifying Determinants Of Colonization In Human Microbiomes	93.859	150,994	-
NIH	1-F32-GM137510-01A1 REVISED	Investigation of the design, structure and mechanism of Mena protein interaction inhibitors	93.859	9,287	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	1-F32-GM142152-01	Investigating mechanisms regulating cytoskeletal dynamics and alignment during epithelial tissue folding	93.859	20,672	-
NIH	1-F32-GM142288-01	Development of Small Molecule Probes for the Selective Modification and Labeling of the Mycobacterial Cell Wall	93.859	15,609	-
NIH	1-K99-GM140212-01	Evolutionary adaptation and spatial organization of signaling in the Mitotic Exit Network	93.859	34,730	-
NIH	1-R01-GM137138-01	A high-resolution 1.3-GHz LTS/HTS NMR magnet (1.3G)	93.859	7,266	-
NIH	1-R21-GM129688-01	A 10-K REBCO 23.5-T magnet towards a tabletop liquid-helium-free 1-GHz magnet for microcoil NMR spectroscopy	93.859	400	-
NIH	1-R35-GM141517-01	Structure and function of ClpXP	93.859	31,933	-
NIH	1R35GM141861-01	Manifold representations and active learning for 21 st century biology	93.859	3,077	-
NIH	1-R35-GM141963-01	Development of New Strategies for Chemical Synthesis and Study of Complex Natural Products	93.859	30,757	-
NIH	2-R01-GM059426-17	Catalytic Stereoselective Olefin Metathesis Reactions	93.859	48,581	48,581
NIH	2R01GM066976-14A1	Structures and lipid interactions of curvature-inducing membrane peptides by NMR	93.859	14,112	-
NIH	2-R01-GM074825-10A1	Synthesis and Study of Complex Natural Products	93.859	3,500	3,500
NIH	2-T32-GM008334-29	Interdepartmental Biotechnology Training Program	93.859	35,871	-
NIH	2-T32-GM008334-30	Interdepartmental Biotechnology Training Program	93.859	328	-
NIH	2-T32-GM087237-11	Graduate Training in Computational and Systems Biology	93.859	-962	-
NIH	3-F32-GM126765-03 REVISED	Investigating the VapBC family of toxin-antitoxin systems in Mycobacterium tuberculosis – PDF Nocedal	93.859	45,757	-
NIH	3-R35-GM122483-03S1	Metal-Catalyzed Methods for Organic Synthesis	93.859	64,115	-
NIH	3-R35-GM126982-04S1	Metalloenzyme structure, function and assembly	93.859	283,302	-
NIH	4R00GM126277-03	Non-cleaved Electro-Mechanical Expansion (NEME) technology for super-resolution imaging of biological samples with conventional optical microscopes	93.859	148,003	-
NIH	5F31GM129905-02	Understanding the Starvation Induced Selective Autophagy of Specific mRNAs and lncRNAs	93.859	291	-
NIH	5-F31-GM131648-03	Structural Basis of Metallocofactor Delivery and Repair	93.859	40,816	-
NIH	5-F32-GM123710-03 REVISED	Chiral polymer nanoparticles for probing biological systems	93.859	8,375	-
NIH	5-F32-GM125163-03 REVISED	Copper-Catalyzed Enantioselective Addition of Styrene-Derived Nucleophiles to Thiocarbenium Ions by Ligand-Controlled Chemoselective Hydrocupration (PDF: Thomas)	93.859	1,711	-
NIH	5-F32-GM126643-02 REVISED	Molecularly Imprinted Polymer-Carbon Nanotube Sensors for the Detection of Magnesium	93.859	-9	-
NIH	5-F32-GM126844-02 REVISED	A Small-Molecule Mask for Traceless Protein Delivery	93.859	1,692	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	5F32GM126913-02 REVISED	Efficient Synthesis of Modular Fluorinated Brush- Arm Star Polymers for 19F MRI	93.859	3,308	-
NIH	5-F32-GM128238-03 REVISED	Catalytic Asymmetric Amine Synthesis using Ni/Photoredox Decarboxylations (PDF: McCann)	93.859	-6,838	-
NIH	5-F32-GM129882-03 REVISED	Taming radical enzymes through directed evolution and structural analysis	93.859	61,848	-
NIH	5-F32-GM130071-03	Materials Approaches for Understanding Biological Energy Transduction and Bifurcation	93.859	66,379	-
NIH	5-F32-GM131592-02	Chemo- and Regio- Selective Lysine Modification on the Surface of Native Proteins: Synthetic Methods for the Improvement of Cancer Therapeutics (PDF: Dhanjee)	93.859	58,739	-
NIH	5-F32-GM133056-03	Structural Characterization of AdoMet Radical Enzyme-Catalyzed Posttranslational Modifications in Bacterial Anaerobic Metabolism	93.859	60,244	-
NIH	5-F32-GM133073-02	Site-Selective Modification of Peptides and Proteins through Noncovalent Interactions	93.859	53,377	-
NIH	5-F32-GM133116-03	Chemical probes of mycobacterial growth and persistence	93.859	55,215	-
NIH	5-F32-GM134568-02	Defining Adaptors for mRNA Degradation in Bacteria	93.859	56,580	-
NIH	5-F32-GM134576-02 REVISED	Structural and functional characterization of phosphoglycosyl transferases from human pathogens	93.859	62,714	-
NIH	5-F32-GM134577-03	Investigating mechanisms regulating cell adhesion during tissue remodeling	93.859	60,882	-
NIH	5-F32-GM136023-03	Design and synthesis of nucleoside-based small molecules to inhibit phosphoglycosyl transferases	93.859	64,277	-
NIH	5-F32-GM136190-02	Living Additive Expansion Microscopy	93.859	45,754	-
NIH	5-F32-GM137477-02	Developing glycan-directed tools to investigate microbial infection	93.859	58,855	-
NIH	5-F32-GM137478-02 REVISED	Primary and Secondary Sphere Effects on the Valence Isomerism of Fe-S Clusters	93.859	77,450	-
NIH	5-F32-GM137543-02	Developing Cyclopentadiene as a Reagent in Bioorthogonal Chemistry	93.859	56,609	-
NIH	5-F32-GM139231-02	Exploring novel mechanisms of antiviral immunity in bacteria.	93.859	61,813	-
NIH	5-F32-GM139304-02	The Structures of hVDAC-1 and hVDAC-2 by High Frequency Magic Angle Spinning Nuclear Magnetic Resonance Spectroscopy	93.859	54,115	-
NIH	5-K99-GM134153-02 REVISED	Control of topoisomerase activity during DNA replication by bacterial chromosome structuring proteins	93.859	59,839	-
NIH	5-K99-GM135536-02	In-depth characterization of the metabolic effect of the bacterial alamorne ppGpp	93.859	87,102	-
NIH	5K99GM136915-02	Investigating how mechanical connectivity yields developmental robustness	93.859	79,898	-
NIH	5-P41-GM132079 -03	MIT Harvard Center for Magnetic Resonance-Year 1	93.859	-20,401	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	5-P41-GM132079-02	MIT Harvard Center for Magnetic Resonance-Year 1	93.859	1,077,606	-
NIH	5-P41-GM132079-03	MIT Harvard Center for Magnetic Resonance-Year 1	93.859	66,565	-
NIH	5-R00-GM115765-05S1	Elucidating how intracellular bacterial pathogens hijack host intercellular communication to promote spread	93.859	65,811	-
NIH	5-R00-GM130896-04	Molecular Mechanisms regulating chromatin looping in time and space	93.859	326,721	-
NIH	5-R01-GM024663-43	Genetic Analysis of Nematode Egg Laying and Co-regulated Behavioral Systems	93.859	393,413	-
NIH	5-R01-GM031030-38	Molecular Genetics of Rhizobium Nodulation Plasmids	93.859	215,852	-
NIH	5-R01-GM034277-36	Regulation of mRNA Processing	93.859	600,946	-
NIH	5-R01-GM039334-32 REVISED	Deciphering Membrane-Associated Glycan Assembly and Transfer	93.859	132,261	-
NIH	5-R01-GM044783-28	Protein Chemistry	93.859	18,632	-
NIH	5-R01-GM044783-29	Protein Chemistry	93.859	438,531	-
NIH	5-R01-GM049039-24	Endovascular Devices and Vascular Repair	93.859	152,930	-
NIH	5-R01-GM052339-25	Initiation of DNA Replication of Yeast Chromosomes	93.859	140,121	-
NIH	5-R01-GM059426-20	Catalytic Stereoselective Olefin Metathesis Reactions	93.859	36,954	-
NIH	5-R01-GM066976-17	Structures and lipid interactions of curvature-inducing membrane peptides by NMR	93.859	276,114	-
NIH	5-R01-GM074825-13	Synthesis and Study of Complex Natural Products	93.859	170,909	-
NIH	5-R01-GM077537-13	High Resolution Assembly Structure of the Nuclear Pore Complex	93.859	10,216	-
NIH	5-R01-GM081871-12	Structure based Prediction of the interactome	93.859	422,590	-
NIH	5-R01-GM082209-08 REVISED	Computational Design of Inhibitor Specificity	93.859	-1,886	-
NIH	5-R01-GM082899-13	Cell cycle regulation and chromosome organization in Caulobacter crescentus	93.859	202,842	-
NIH	5-R01-GM085319-12	Function of Sequence-specific RNA Binding Proteins	93.859	537,179	-
NIH	5-R01-GM088204-10	Solid-state NMR of the influenza M2 protein in lipid bilayers	93.859	177,639	-
NIH	5-R01-GM089732-11	Synthesis and Study of Cyclotryptamine and Diketopiperazine Alkaloids	93.859	654,835	-
NIH	5-R01-GM101988-41 REVISED	Sequence Determinants of Protein Structure and Stability	93.859	339,015	-
NIH	5-R01-GM102311-08	Environmental modulation of microbial conflict and cooperation	93.859	94,744	-
NIH	5-R01GM105984-08 REVISED	Investigating Mechanisms of Force Transmission in Tissue Morphogenesis	93.859	334,693	-
NIH	5-R01-GM108348-07	Compressive Genomics for Large Omics Data Sets: Algorithms, Applications and Tools	93.859	21,060	-
NIH	5-R01-GM110048-06	Analysis and design of protein interactions that regulate cell death	93.859	204,625	-
NIH	5-R01-GM114190-05	Polymer models of mitotic and interphase chromosomes	93.859	7	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	5-R01-GM114190-07	Polymer models of mitotic and interphase chromosomes	93.859	273,287	-
NIH	5-R01-GM114547-09	Synthetic Methods based on Biphilic Phosphorus Catalysts	93.859	554,905	-
NIH	5-R01-GM114834-13	Modified Phase 3B of a 3-phase 1.3-GHz LTS/HTS NMR magnet	93.859	14	-
NIH	5-R01-GM114834-13 REVISED	Modified Phase 3B of a 3-phase 1.3-GHz LTS/HTS NMR magnet	93.859	-36	-
NIH	5-R01-GM118695-04	Bioinorganic Explorations of Host-Defense Proteins	93.859	340,444	-
NIH	5-R01GM125646-04 REVISED	Investigating RhoA GTPase regulation in sculpting tissues	93.859	275,484	-
NIH	5-R01-GM126376-02	Metallobiochemistry of innate immunity and bacterial physiology	93.859	207,325	207,401
NIH	5-R01-GM126376-04	Metallobiochemistry of innate immunity and bacterial physiology	93.859	145,268	-
NIH	5-R01-GM129007-04	Mapping, modeling and manipulating the interactions of protein domains that bind short linear motifs	93.859	420,987	-
NIH	5-R01-GM130936-03	Reagents for Chemical Oligophosphorylation, Synthesis of Oligophosphate-Organic Molecule Conjugates, and Biochemical Studies	93.859	215,806	-
NIH	5-R01-GM131627-02 REVISED	Structure and function of the monotopic phosphoglycosyl transferase superfamily: Initiators of biosynthesis of complex bacterial glycoconjugates	93.859	200,956	72,272
NIH	5-R01-GM132997-32	High Field DNP and EPR in Biological Systems	93.859	50,992	-
NIH	5-R01-GM132997-33	High Field DNP and EPR in Biological Systems	93.859	347,057	-
NIH	5-R01-GM134734-03	Nuclear Organization and Dynamics of Mediator and RNA Polymerase II in Living Stem Cells	93.859	484,780	-
NIH	5-R01-GM135413-03	Dissecting the functional organization of the serotonergic system in C. elegans	93.859	343,016	-
NIH	5-R01-GM136882-02	Modeling the Organometallic Chemistry of Radical S-adenosylmethionine Enzymes	93.859	397,451	-
NIH	5-R01-GM137138-02	A high-resolution 1.3-GHz LTS/HTS NMR magnet (1.3G)	93.859	386,838	-
NIH	5-R01-GM140108-02	Mechanobiology of Vimentin Intermediate Filaments in 3D Collective Cell Migration	93.859	220,156	92,587
NIH	5-R21-GM129688-02	A 10-K REBCO 23.5-T magnet towards a tabletop liquid-helium-free 1-GHz magnet for microcoil NMR spectroscopy	93.859	4,751	-
NIH	5-R21-GM134240-02	Inverting Coupling Selectivity with Cooperative Metal-Ligand Constructs	93.859	213,940	-
NIH	5-R21-GM135780-02	Esterase Specificity for Pharmacology and Chemical Biology	93.859	183,220	-
NIH	5-R21-GM140613-02	Acoustically-driven optical-interferometric microscope for cell characterization	93.859	50,655	-
NIH	5-R25-GM116705-05	IMPACT Program for Biomedical Researcher Career Development	93.859	330,468	178,186
NIH	5-R35-GM118066-05	Causes and consequences of aneuploidy	93.859	447,780	-
NIH	5-R35-GM122483-05	Metal-Catalyzed Methods for Organic Synthesis	93.859	1,066,066	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	5-R35-GM122538-05	Mechanisms and regulation of replication, the cell cycle, gene expression, and horizontal gene transfer in prokaryotes, focusing on Bacillus subtilis	93.859	769,625	-
NIH	5-R35-GM124732-05	Evolution and Regulation of Bacterial Proteome Composition	93.859	349,954	-
NIH	5-R35-GM126982-03S1	Metalloenzyme structure, function and assembly	93.859	164,380	-
NIH	5-R35-GM133580-03	From epigenome to genome and back: disentangling the relationship between epigenetic modifications and chromatin organization	93.859	476,837	-
NIH	5-R35-GM136354-02	Leveraging Next-Generation Directed Evolution Platforms and Chemical Control of Proteostasis to Deliver Robust Biotechnologies and Illuminate Roles of Chaperone Networks in Protein Evolution	93.859	513,038	-
NIH	5-R37-GM057073-22	Structure-Function Relationship of Glycosaminoglycans	93.859	606,345	-
NIH	5-RM1-GM135102-02	A universal pipeline for functional characterization of the human microbiota at a massive scale	93.859	1,126,140	823,806
NIH	5-T32-GM007287-45	Pre-Doctoral Training in Biological Sciences	93.859	202,281	-
NIH	5-T32-GM087237-12	Graduate Training in Computational and Systems Biology	93.859	362,420	-
NIH	9-R01-GM132997-31	High Field DNP and EPR in Biological Systems	93.859	88,080	-
NIH	5-DP1-HD091947-05	How Does the Functional Organization of the Human Brain Arise in Development?	93.865	529,679	-
NIH	5-F32-HD096829-04	How infants use the affiliations of their caregivers to evaluate others.	93.865	61,188	-
NIH	5-F32-HD097982-03	Linguistic Experience and Generalization: Early Links between Sounds,Words, and Grammar	93.865	58,612	-
NIH	5-F32-HD100064-03	Neurocognitive Basis of Language Comprehension in Children with Dyslexia	93.865	59,572	-
NIH	5-F32-HD103363-02	Neural foundations of learning, reasoning, and surprise in human infants [PDF: S. Liu]	93.865	48,679	-
NIH	5-R01-HD085866-05	Mitotic exit control	93.865	45,738	-
NIH	5-R01-HD097135-04	Agonist-Antagonist Myoneural Interface for Functional Limb Restoration after Transtibial Amputation	93.865	577,409	-
NIH	5-R21-HD090346-02	Using fMRI in awake human infants to study functional development of cortex	93.865	-34,538	-
NIH	1 P30 AG064190-01	MIT Roybal Center for Translational Research to Improve Healthcare for the Aging	93.866	225,637	83,215
NIH	1-R01-AG062335-01	Elucidating the Molecular Mechanisms of Neuropsychiatric Symptoms in Alzheimer's Disease	93.866	253,754	-
NIH	1-R01-AG067151-01A1	Single-Cell Transcriptional and Epigenomic Dissection to Identify Therapeutic Targets for ALS and FTD	93.866	433,630	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	1-R56-AG067151-01	Single-Cell Transcriptional and Epigenomic Dissection to Identify Therapeutic Targets for ALS and FTD	93.866	745,502	142,038
NIH	1-R56-AG069192-01	The infectious etiology of Alzheimer's disease revealed at nanoscale precision	93.866	222,086	7,638
NIH	1-R56-AG069232-01	Manipulating neural oscillations with non-invasive sensory stimulation for Alzheimer's disease intervention	93.866	411,914	-
NIH	1-RF1-AG048029-01 REVISED	Alzheimer's Disease Risk Genes in Human Microglia and Neurons Derived from iPSCs	93.866	-86,192	-
NIH	1-RF1-AG054012-01	Cell type specific epigenetic analysis to understand complex mechanisms underlying Alzheimer's disease phenotypes	93.866	27,158	-
NIH	1-RF1-AG054012-01 REVISED	Cell type specific epigenetic analysis to understand complex mechanisms underlying Alzheimer's disease phenotypes	93.866	492,385	-
NIH	1-RF1-AG054321-01 REVISED	Demystifying Microglia in Aging and Alzheimer's Disease	93.866	987,914	523,702
NIH	1-RF1-AG058504-01 REVISED	Solid State NMR Studies of Amyloid Proteins	93.866	687,631	-
NIH	1-RF1-AG062377-01 REVISED	Dissection of endosomal trafficking mechanisms in Alzheimers Disease	93.866	882,650	-
NIH	1-U01-AG066757-01	Development of PU.1 Inhibitory Modulators as Novel Therapeutics for Alzheimer's Disease	93.866	843,974	525,396
NIH	3-RF1-AG059661-01S1	Molecular structures of tau aggregates studied by solid-state NMR	93.866	306,387	-
NIH	5 P30 AG064190-02	MIT Roybal Center for Translational Research to Improve Healthcare for the Aging	93.866	3,155	-
NIH	5-F31-AG069418-02	Investigation of Seeded Alzheimer's Disease Tau Fibrils with Solid-State NMR	93.866	41,233	-
NIH	5-K99-AG055697-03 REVISED	Deciphering cell-type specific mechanisms of APOE4 in Alzheimer's disease	93.866	-2,042	-
NIH	5-K99-AG063896-02	Development of In Vitro Compression-Induced Rotator Cuff Injury Model: Aging and Inflammation in Tendon Degeneration	93.866	63,640	-
NIH	5-R00-AG050749-05	Quantitation and biochemical characterization of autophagy's role in aging	93.866	146,288	-
NIH	5-R01-AG049897-05	A Randomized Controlled Trial of Health Care Hotspotting	93.866	202,414	23,301
NIH	5-R01-AG058002-05	Epigenomic, transcriptional and cellular dissection of Alzheimer's variants	93.866	796,886	639,759
NIH	5-R01-AG062335-04	Elucidating the Molecular Mechanisms of Neuropsychiatric Symptoms in Alzheimer's Disease	93.866	1,134,879	50,697
NIH	5-R37-AG032449-13	Determinants of Elderly Health: The Role of Place-Based Factors	93.866	427,913	155,364
NIH	7-R01-AG058002-02	Epigenomic, transcriptional and cellular dissection of Alzheimer's variants	93.866	424,732	-
NIH	1-R21-EY032369-01	Multimodal probes for multiscale calcium imaging	93.867	73,516	-
NIH	2-R01-EY011289-29A1	Novel Diagnostics With Optical Coherence Tomography	93.867	20,067	20,067

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	2R01EY011289-34	Novel Optical Diagnostics with Optical Coherence Tomography	93.867	97,456	78,607
NIH	5-F31-EY031259-02	Distinct long-range inputs to prefrontal cortex coordinate visual decision making	93.867	45,983	-
NIH	5-F32-EY028028-03	Contributions of glial neurotransmitter transport in balancing excitation and inhibition in visual cortex	93.867	-3,024	-
NIH	5-K99-EY029326-02 REVISED	Synaptic and intrinsic mechanisms underlying visual cortical enhancement following retinal inactivation	93.867	83,361	-
NIH	5-P30-EY002621-42	Core-Vision Processes	93.867	-507	-
NIH	5-P30-EY002621-43	Core-Vision Processes	93.867	611,755	-
NIH	5-R01-EY007023-28	Cell-specific circuits and contextual modulation in visual cortex	93.867	-408	-
NIH	5-R01-EY011289-30	Novel Diagnostics With Optical Coherence Tomography	93.867	7,693	7,693
NIH	5-R01-EY011289-35	Novel Optical Diagnostics with Optical Coherence Tomography	93.867	176,341	-
NIH	5-R01-EY020517-10	Project Prakash: Development of Object Perception After Late Sight Onset	93.867	411,807	-
NIH	5-R01-EY023037-08	Behavioral Consequences and cellular substrates of plasticity in visual cortex	93.867	535,892	-
NIH	5-R01-EY025437-03	in vivo imaging of inhibitory circuit remodeling in mouse visual cortex	93.867	1,442	-
NIH	5-R01-EY025437-05 REVISED	in vivo imaging of inhibitory circuit remodeling in mouse visual cortex	93.867	161,125	-
NIH	5-R01-EY028219-04	Astrocyte-neuron interactions in visual cortex circuits	93.867	576,858	-
NIH	5-R01-EY029245-04 REVISED	Using the principles of synaptic plasticity to promote recovery from amblyopia	93.867	638,562	-
NIH	5-R01-EY029666-04	Neural Mechanisms for Feature-Based Attention	93.867	590,521	-
NIH	5-R21-TW010245-02 REVISED	Low Cost Mobile Platform for Pulmonary Disease Screening	93.989	27,116	-
NIH	75N97020C00013	COVID-19: A Federated COVID-Rich ICU Database	93.RD	5,974	-
		Total for NIH		**107,207,077**	**14,373,691**
		TOTAL for Department of Health & Human Services		**113,015,425**	**14,373,691**

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF HOMELAND SECURITY					
DHS	70FB7020C00000019	COVID-19: Development of alternative foundation system(s) for the SEED post-disaster housing unit for OCONUS tropical islands	97.RD	25,881	-
		Total for Department of Homeland Security		**25,881**	**-**
		TOTAL for Department of Homeland Security		**25,881**	**-**

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF TRANSPORTATION					
DOT	692M151940009	FAA Joint University Program for Air Transportation	20.108	100,859	-
DOT	13-C-AJFE-042	Center of Excellence for Alternative Jet Fuels and Environment	20.109	-83	-
DOT	13-C-AJFE-046	Center of Excellence for Alternative Jet Fuels and Environment	20.109	113,556	-
DOT	13-C-AJFE-048	Center of Excellence for Alternative Jet Fuels and Environment	20.109	292,807	-
DOT	13-C-AJFE-MIT	Center of Excellence for Alternative Jet Fuels and Environment	20.109	712,129	-
DOT	13-C-AJFE-MIT-01	Center of Excellence for Alternative Jet Fuels and Environment	20.109	101,236	-
DOT	13-C-AJFE-MIT-026	Center of Excellence for Alternative Jet Fuels and Environment	20.109	13,708	-
DOT	13-C-AJFE-MIT-041	Center of Excellence for Alternative Jet Fuels and Environment	20.109	-50,106	-
DOT	13-C-AJFE-MIT-043	Center of Excellence for Alternative Jet Fuels and Environment	20.109	18,439	-
DOT	13-C-AJFE-MIT-045	Center of Excellence for Alternative Jet Fuels and Environment	20.109	96,423	-
DOT	13-C-AJFE-MIT-047	Center of Excellence for Alternative Jet Fuels and Environment	20.109	85,341	-
DOT	13-C-AJFE-MIT-050	Center of Excellence for Alternative Jet Fuels and Environment	20.109	183,673	12,589
DOT	13-C-AJFE-MIT-052	Center of Excellence for Alternative Jet Fuels and Environment	20.109	285,784	-
DOT	DTRT13-G-UTC31	Region 1 University Transportation Center	20.701	-15	-15
DOT	693JJ618C000010	Augmented Reality for Railroad Operations Using Head-up Displays	20.RD	379,931	185,992
DOT	DTFH6115C00033	Future freight and logistics survey: integrated data collection using mobile sensing, wireless communication and machine learning algorithms	20.RD	0	-
DOT	DTRT5717C10121	Library Services for DOT	20.RD	58,917	-
DOT	DTRT5717P80110/V3332010	Ductile Fracture of Stainless Steel Rail Equipment	20.RD	77	-
		Total for Department of Transportation		**2,392,676**	**198,566**
		TOTAL for Department of Transportation		**2,392,676**	**198,566**

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
MISCELLANEOUS FEDERAL GOVT					
Department of Interior					
DOI	D18AC00019	Ultrasmall and Ultrafast: Ferrimagnetic Skyrmions Manipulated by Spins and Photons	12.910	597,553	-
DOI	D18AC00037	Many-body atomic clocks based on non-equilibrium correlated quantum matter	12.910	251,007	181,300
DOI	D18AP00039	Adaptive-focus topological features for machine-learning-driven discovery of 2D coordination polymers	12.910	264,751	-
DOI	D18AP00065	Adversarial Machine Learning through the Cryptographic Lens	12.910	14,516	-
DOI	D18AP00070	Reconfigurable Energy-efficient Chip-scale Optical Network beyond the classical Figureof-merit (RECONFig)	12.910	44,778	-
DOI	R17AC00135	Tailoring Advanced Desalination Technologies for 21st Century Agriculture	15.506	2	-
DOI	R18AC00109	PILOT TESTING DYNAMIC OPTIMIZED, PHOTOVOLTAIC-POWERED, TIME-VARIANT ELECTRODIALYSIS REVERSAL DESALINATION SYSTEMS	15.506	139,206	-
DOI	R19AC00104	HIGH RECOVERY PULSED ELECTRIC FIELD ELECTRODIALYSIS REVERSAL DESALINATION TO MINIMIZE BRINE AND MITIGATE SCALE AT LOW COST	15.506	72,062	-
DOI	G20AP00022	Quantifying uncertainty in earthquake source parameters using the Large N LASSO Array: Collaborative Research with MIT and Boston University	15.807	57,671	-
DOI	G21AP10035-00	Improving seismicity detection to map active structures in the Central Virginia Seismic Zone: Collaborative Research with Massachusetts Institute of Technology and Boston University	15.807	25,994	-
		Total for Department of Interior		**1,467,542**	**181,300**
Department of Education					
ED	91990020C0105	Open Source Standard Wallet Application	81.RD	196,102	-
ED	P116F150045	Towards Scalable Differentiated Instruction Using Technology-enabled Competency-based Dynamic Scaffolding	84.116F	163,490	83,998
		Total for Department of Education		**359,592**	**83,998**
Department of Agriculture					
USDA	59-8042-7-007	Fluid Dynamics of Impact and Mixing for Improved Washing of Fresh and Fresh-cut Produce	10.001	96,877	-
USDA	2021-67021-33999	Nanosensors for Measuring and Decoding Immune Signaling Waveforms In Planta	10.310	18,444	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
		Total for Department of Agriculture		**115,320**	**-**
Other Agencies					
Misc.	83618301	The Hawaii Island Volcanic Smog Sensor Network (HI-Vog)	66.509	98,892	23,717
Misc.	84000501-0	Leveraging comprehensive organic oxidation experiments for the development of improved atmospheric chemical mechanisms	66.509	35,986	-
Misc.	EAC-20-0067	Taking Stock of American Election Administration Eight Years after the PCEA	90.RD	14,573	-
Misc.	AID-OAA-A-12-00095	CITE and IDIN	98.001	1,660,370	604,471
Misc.	7200AA21CA00009	Strengthening Development Research and Inclusive Innovation in Latin America through the Center for Innovation and Technology Network	98.012	2,336	-
Misc.	AID-OAA-A-16-00058	Ultra-Low Energy Drip Irrigation for MENA Countries	98.RD	590,250	87,525
		Total for Other Agencies		**2,402,407**	**715,713**
		TOTAL for Miscellaneous Federal Govt		**4,344,861**	**981,011**

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION					
NASA	80GSFC20C0078	Advancing VGOS from a Budding Concept to a High-Accuracy Global Geodetic Observatory	12.RD	1,272,118	-
NASA	80NSSC17K0048	HIGH-CADENCE XRT MONITORING OF ULTRALUMINOUS X-RAY SOURCES TO SEARCH FOR ORBITAL PERIODS (SWIFT 1215176)	43.001	9	-
NASA	80NSSC17K0561	Signatures of the multiple scales of motion in shaping marine phytoplankton biogeography	43.001	149,080	37,082
NASA	80NSSC17K0773	Generating mare magmas by lunar magma ocean cumulate remelting: Experiments and models	43.001	125,285	-
NASA	80NSSC17M0075	Exploring Arctic Climate Change with Models and Data	43.001	331,550	-
NASA	80NSSC18K0138	High-Speed, Low-Noise, Radiation-Tolerant CCD Image Sensors for Strategic High-Energy Astrophysics Missions	43.001	70,463	-
NASA	80NSSC18K0457	Large Geodetic Array Processing and Correlation Impacts	43.001	191,278	-
NASA	80NSSC18K0553	Solar System Planetary Geodesy Research	43.001	8,150	-
NASA	80NSSC18K0682	The Design, Analysis and Research with Retro-reflector Arrays	43.001	8,584	-
NASA	80NSSC18K0819	Precise Masses for K2's Ice Giants Observed by HST and Spitzer (PID 71/2018A_N115)	43.001	20,884	-
NASA	80NSSC18K0849	The MIT-Hawaii-IRTF Joint Campaign for NEO Spectral Reconnaissance	43.001	180,290	-
NASA	80NSSC18K1004	Earth, Mars or YORP spinup: Isolating the mechanisms for asteroid surface refreshing	43.001	74,718	-
NASA	80NSSC18K1057	ASPECT: Active Shoreline Processes and Evolution of Coasts on Titan	43.001	92,610	23,612
NASA	80NSSC18K1091	Modeling extreme mass ratio inspirals: How accurate must the models be?	43.001	113,693	-
NASA	80NSSC18K1615	Optimizing Sensitivity to Sterile Neutrino Dark Matter in the Galactic Center	43.001	5,679	-
NASA	80NSSC18K1616	X-RAY FLARES FROM YOUNG STARS AND THE SUN: BRIDGING THE GAP WITH NUSTAR+CHANDRA	43.001	-139	-
NASA	80NSSC18K1643	Plasma and Energetic Particle Archive for Jovian Magnetospheric Interactions with the Galilean Moons	43.001	26,659	-
NASA	80NSSC18K1677	Auroral Emissions Radio Observer (AERO)	43.001	1,586,667	1,021,106
NASA	80NSSC19K0078	Ionospheric Response to Super Storms and Its Role in Geospace Coupling	43.001	202,141	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NASA	80NSSC19K0157	XRT AND UVOT MONITORING OF THE TIDAL DISRUPTION FLARE ASASSN-14LI TO DETECT THE NEWLY FORMED ACCRETION DISK	43.001	-1,364	-
NASA	80NSSC19K0205	Designing applications to foster the health of terrestrial and wetland ecosystems in the coastal zone of West Africa	43.001	290,754	23,161
NASA	80NSSC19K0262	Ionospheric imprint of regional mesopause variability - a four dimensional study of atmospheric coupling	43.001	151,524	92,320
NASA	80NSSC19K0335	High Resolution and High Efficiency X-ray Transmission Grating Spectrometer	43.001	888,471	-
NASA	80NSSC19K0342	Dynamics and Chemistry of the Summer Stratosphere	43.001	-601	-
NASA	80NSSC19K0464	The Thermal Maturity of Neoproterozoic Strata: Carbonate Clumped Isotope Thermometry and Biomarker Analyses	43.001	72,574	-
NASA	80NSSC19K0465	Biosignatures of the 'Dirty Ice' of the McMurdo Ice Shelf: Analogues for biological oases during the Cryogenian and on other icy worlds.	43.001	173,896	112,764
NASA	80NSSC19K0469	Microbial Functional and Evolutionary Adaptations to Aridity	43.001	1,124	-
NASA	80NSSC19K0471	A Database Approach to Life's use of Chemical Space for Insight into the Nature and Signatures of Life on Other Worlds	43.001	174,558	-
NASA	80NSSC19K0617	Vector Interferometry Space Technology using AERO (VISTA)	43.001	878,678	139,675
NASA	80NSSC19K0633	PROBING THE POTENTIAL HIGH ENERGY ENVIRONMENT IN THE GJ 1132 AND LHS 1140 SYSTEMS	43.001	12,933	-
NASA	80NSSC19K0834	Can gravity wave generation in the mesospheric polar vortex drive traveling ionospheric disturbances?	43.001	164,519	60,957
NASA	80NSSC19K0943	Quantifying the Effect of Contrail Cirrus on Climate, Atmospheric Composition, and Air Quality Through Coordinated Modeling and Observation	43.001	120,041	-
NASA	80NSSC19K1028	Electronic Life-detection Instrument for Enceladus/Europa (ELIE)	43.001	22,984	1,329
NASA	80NSSC19K1277	Swath Mapping Lidar Science and Requirements	43.001	13,090	-
NASA	80NSSC19K1287	NICER (Continuation) - Detector Team Support and Legacy Science	43.001	512,115	29,521
NASA	80NSSC19K1387	HIGH-CADENCE XRT MONITORING OF ULTRALUMINOUS X-RAY SOURCES TO SEARCH FOR ORBITAL PERIODS (Swift 1518170)	43.001	-10	-
NASA	80NSSC19K1448	CONSTRAINING THE ORBIT AND CHARACTERIZING THE ACCRETION STRUCTURE OF 4U 1626-67 (NICER 2116)	43.001	35,704	-
NASA	80NSSC19K1515	Characterizing Unresolved Point-Source Populations in the Inner Galaxy	43.001	12,630	-
NASA	80NSSC19M0224	Surface Deformation and Change with Small Satellite Crosslink Communications and Precision Time Transfer Systems	43.001	76,605	27,888
NASA	80NSSC20K0031	A Novel Probe of Low-Mass Axion Dark Matter Using Betelgeuse	43.001	46,700	17,159

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NASA	80NSSC20K0037	PROBING THE ORIGIN OF SLOW PULSATIONS IN 4U 0114+65 (NuSTAR 5134)	43.001	26,937	-
NASA	80NSSC20K0234	Guiding the search for signals of biological and prebiotic processes by the NASA Mars 2020 Rover mission	43.001	47,417	-
NASA	80NSSC20K0372	SIMULTANEOUS DISC AND CORONA REVERBERATION MAPPING IN AGN MRK 335 (NICER 2073)	43.001	33,398	-
NASA	80NSSC20K0382	The Impact of Titan's Impacts	43.001	173,563	60,610
NASA	80NSSC20K0400	Demonstration of Pointing Stability to Enable Astrophysics with Rotating Synthetic Aperture Telescopes	43.001	158,044	-
NASA	80NSSC20K0401	Toward Fast, Low-Noise, Radiation-Tolerant X-ray Imaging Arrays for Lynx: Raising Technology Readiness Further	43.001	275,817	60,023
NASA	80NSSC20K0433	Testing the ULX Unified Model with SWIFT Monitoring of NGC6946 X-1 (SWIFT 1417122)	43.001	16,118	-
NASA	80NSSC20K0470	SIMULTANEOUS DISC AND CORONA REVERBERATION MAPPING IN AGN MRK 335 (SWIFT 1518037)	43.001	88,500	-
NASA	80NSSC20K0484	Delta T: Dynamics and Detectability of Deltas on Titan	43.001	80,761	20,294
NASA	80NSSC20K0499	Confronting Lyman-alpha radiation pressure in galaxy formation simulations	43.001	21,051	-
NASA	80NSSC20K0575	COOLEST CORONA IN EDDINGTON-LIMITED AGN ARK 564 (NuStar)	43.001	76,520	-
NASA	80NSSC20K0733	XARM observations of black hole accretion flows	43.001	15,561	-
NASA	80NSSC20K0737	MIT Participation in Calibration and Ground Software Development for XRISM	43.001	157,357	-
NASA	80NSSC20K0802	Simultaneous Disc and Corona Reverberation Mapping in AGN Mrk 335 (XMM 84276)	43.001	8,958	-
NASA	80NSSC20K0851	JOINT NUSTAR AND XMM TOO OBSERVATIONS TO CONSTRAIN THE SPINS OF SUPERMASSIVE BLACK HOLES IN TIDAL DISRUPTION FLARES (XMM 5210)	43.001	16,704	-
NASA	80NSSC20K0907	Development of sub-arcsecond x-ray telescope optics	43.001	626,854	16,618
NASA	80NSSC20K1012	Continuing Development of Bragg Reflector Optics and Gratings for Polarimetry	43.001	108,735	-
NASA	80NSSC20K1084	Mapping the evolution of the accretion flow in Tidal Disruption Events (XMM 82381)	43.001	6,319	-
NASA	80NSSC20K1085	Testing the origin of the X-ray Emission in Gamma-ray Loud NLSI 1H0323+342 (XMM 82378)	43.001	70,694	-
NASA	80NSSC20K1157	Assessing the Impact of Glacial Melt on the Coupled Climate	43.001	67,348	-
NASA	80NSSC20K1248	A Constellation of Small Satellites to Search for a Transiting Earth-Size Planet in an Earth-like Orbit about a Bright Sun-Like Star	43.001	33,599	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NASA	80NSSC20K1249	Globe Orbiting Soft X-ray Polarimeter (GOSoX),	43.001	41,491	-
NASA	80NSSC20K1417	Material Mixing on the Moon from Impacts	43.001	79,173	-
NASA	80NSSC20K1584	DO SUPERGIANT FAST X-RAY TRANSIENTS LAUNCH JETS? A MULTIWAVELENGTH STUDY (FERMI 131162)	43.001	3,468	-
NASA	80NSSC20K1785	Model-Data Exploration of Hemispherical Asymmetries in the Magnetosphere/Ionosphere System	43.001	38,994	3,905
NASA	80NSSC20K1846	Lunar Orbiter Laser Altimeter Investigation and Associated Science	43.001	129,250	-
NASA	80NSSC20M0071	RESOURCE: Resource Exploration and Science of OUR Cosmic Environment	43.001	192,205	-
NASA	80NSSC21K0090	LEVERAGING THE SYNERGY BETWEEN TESS AND SPECULOOS: HUNTING FOR EXOPLANETS AROUND THE NEAREST LATE M DWARFS (TESS GI 3279)	43.001	6,129	-
NASA	80NSSC21K0102	TOO OBSERVATIONS TO CONSTRAIN THE SPINS OF SUPERMASSIVE BLACK HOLES IN TIDAL DISRUPTION EVENTS (NICER 3139)	43.001	7,246	-
NASA	80NSSC21K0108	ESTABLISHING THE TESS MISSION'S LEGACY OF LONG-PERIOD PLANETS (TESS 3188)	43.001	47,950	27,927
NASA	80NSSC21K0154	Investigating the Intensity of the Early Lunar Dynamo	43.001	40,523	-
NASA	80NSSC21K0354	A SYSTEMATIC STUDY OF TESS ORBITAL PHASE CURVES (TESS GI 3232)	43.001	2,881	-
NASA	80NSSC21K0550	Gravitational-Wave Instrumentation Subject Matter Expert for the NASA LISA Study Office	43.001	41,694	-
NASA	80NSSC21K0557	Response of the seasonal ice zone in the Southern Ocean to changes in the wind	43.001	65,489	-
NASA	80NSSC21K0660	RELATIVISTIC REFLECTION AND REVERBERATION MAPPING IN A BLACK HOLE BINARY (NICER 3058)	43.001	5,797	-
NASA	80NSSC21M0012	MIT Media Lab: Supporting NASA's SciAct Portfolio	43.001	147,015	-
NASA	NNA13AA90A	Foundations of Complex Life: Evolution, Preservation & Detection on Earth & Beyond	43.001	564	-
NASA	NNX15AF85G	The Search for Extra-Terrestrial Genomes (SETG)	43.001	70,735	-4,764
NASA	NNX15AH72G	Experimental and Theoretical Investigations of Solar Nebula Magnetic Fields	43.001	21,971	21,971
NASA	NNX15AK10G	Lunar Orbiter Laser Altimeter Investigation and Associated Science	43.001	52,724	-
NASA	NNX15AL14G	Continuing Progress in Soft X-ray Polarimetry	43.001	-1,184	-
NASA	NNX15AL62G	Investigating the Ancient Lunar Dynamo	43.001	40,472	-
NASA	NNX16AC98G	Advanced Global Atmospheric Gases Experiment [AGAGE] Collaborative Project: MIT Component	43.001	814,089	461,495

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NASA	NNX16AE93G	Raising the Technology Readiness Level of 4.7-THz local oscillators	43.001	47	-
NASA	NNX16AR47G	Assessing Ecosystem Vulnerability to Climate Change through Optics, Imagery and Models	43.001	77,230	65,822
NASA	NNX17AE47G	Development of High Resolution X-ray Telescope Optics	43.001	64,981	-
NASA	NNX17AG43G	Development of a Critical Angle Transmission Grating Spectrometer	43.001	0	-
NASA	NNX17AL45G	L3 Study Team / LISA Science Team participation	43.001	34,904	-
NASA	80NSSC19K1607	Traffic Management Paradigms for Autonomous Environments using Control Theory	43.002	36,708	-
NASA	80NSSC20M0080	Modeling and Analysis of Safety in New Human-Automation Teaming	43.002	64,843	-
NASA	NNX15AQ50A	Search and Rescue under the Tree Canopy	43.002	-28,207	-
NASA	NNX15AU66A	Swept time-space domain decomposition rule for breaking the latency barrier	43.002	76,733	76,733
NASA	NNX16AK25A	Feasibility of Hybrid-Electric Propulsion for Ultra-Efficient Commercial Aircraft	43.002	-3,128	-3,128
NASA	80NSSC18K0162	Dynamic self-assembly driven by time varying fields	43.003	-8,206	-
NASA	80NSSC17K0346	CLICK: CubeSat Laser Infrared Crosslink	43.012	-1,801	-1,617
NASA	80NSSC18K1579	CLICK mission	43.012	366,902	86,038
NASA	80NSSC18M0042	SPRINT: Scheduling Planning Routing Intersatellite Network Tool	43.012	37,895	-
NASA	80NSSC18M0045	High SPecific-impulse Electrospray Explorer for Deep-space (HiSPEED)	43.012	17,107	-
NASA	80NSSC19K0211	Simulating the Operational Local Volume for Electrospray ion Thrusters (SOLVEiT)	43.012	79,314	-
NASA	80NSSC19K0217	MOSAIC: Miniature Optical Steered Antenna for Intersatellite Communication	43.012	201,635	-
NASA	80NSSC19K1055	Molybdenum-Tungsten Alloys for Nuclear Applications	43.012	5,789	-
NASA	80NSSC19M0039	Automated Reconfigurable Mission Adaptive Digital Assembly Systems (ARMADAS)	43.012	69,462	-
NASA	80NSSC20K1019	Dynamic Orbital Slingshot for Redezvous with Interstellar Objects	43.012	101,117	-
NASA	80NSSC21K0219	Advanced Space Technology Roadmapping Architecture (ASTRA)	43.012	68,484	-
NASA	80NSSC21K0345	REDUCED GRAVITY EXPERIMENTS TO ADVANCE CFD BOILING MODELS FOR CRYOGENIC FLUID MANAGEMENT SYSTEMS	43.012	25,190	-
NASA	80NSSC21K0353	Autonomous Robot Swarms for Lunar Orbit Servicing and Space Asset Assembly	43.012	211,871	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NASA	80NSSC21K0541	A Suborbital Evaluation of Paraffin and Beeswax Formation in Microgravity for Low-Earth-Orbit Propulsion Applications	43.012	74,581	-
NASA	80MSFC17C0012	Imaging X-ray Polarimetry Explorer - Main Project (Phase B - D)	43.RD	170,526	-
NASA	80MSFC19C0050	Thermally stable nanocrystalline Nickel alloys by powder metallurgy	43.RD	379,193	-
NASA	80NSSC21P0025	Autonomous multifunctional sensor platform	43.RD	90,818	-
NASA	NNG14FC03C	Transiting Exoplanet Survey Satellite	43.RD	6,357,691	2,534,654
NASA	NNG15HZ35C	NASA Mark IV/VLBI Follow-On	43.RD	206	-
NASA	NNH17CH01C	The Mars Oxygen Isru Experiment (MOXIE) Continuation	43.RD	1,089,456	79,734
NASA	NNX14AT22A	Global Environmental Impact of Supersonic Cruise Aircraft in the Stratosphere	43.RD	829	-
		Total for National Aeronautics and Space Administration		**21,727,744**	**5,092,886**
		TOTAL for National Aeronautics and Space Administration		**21,727,744**	**5,092,886**

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NATIONAL SCIENCE FOUNDATION					
NSF	CBET-0939511	Science and Technology Center: Emergent Behavior of Integrated Cellular Systems (EBICS)	47.041	1,853,435	1,227,119
NSF	CBET-1454299	CAREER: Molecular Catalysis for Waste Valorization	47.041	3,921	-
NSF	CBET-1554398	CAREER: NANO-PARTICLE SELF-ASSEMBLY OUT OF EQUILIBRIUM	47.041	109,274	-
NSF	CBET-1605406	NSF/CBET-BSF: Effect of Sunlight Intensity on Functional Inhomogeneity and Stability of Organic-Inorganic Perovskite Solar Cells	47.041	-126	-
NSF	CBET-1653758	CAREER: Tuning passive prosthetic leg dynamics to create low-cost, robust devices that can replicate physiological gait in multiple activities of daily living	47.041	84,209	-
NSF	CBET-1703978	Multi-propulsor Hydrodynamics for Water-Air Transition in Archer Fish	47.041	5,741	-
NSF	CBET-1704266	Enabling high-throughput computational discovery of stable and active single-site oxidation catalysts	47.041	87,720	-
NSF	CBET-1705923	Engineering a new family of consensus repeat proteins based on nucleoporins	47.041	100,883	-
NSF	CBET-1706193	Collaborative Research: Hybrid Discrete-Continuum Numerical Simulation of Granular Materials	47.041	89,955	-
NSF	CBET-1729397	DMREF: Computational Design of Next-generation Nanoscale DNA-based Materials	47.041	448,608	209,268
NSF	CBET-1751925	CAREER: Holistic Assessment of the Potential of Byproduct-Derived Alkali-Activated Materials	47.041	31,711	-
NSF	CBET-1804241	Collaborative Research: Dynamic Manipulation of Micro-scale Liquid-Liquid Interfaces within Complex Droplets for Tunable Optics	47.041	72,776	-
NSF	CBET-1804247	Chemical and structural design of inorganic-organic layers for stabilized Li anodes	47.041	93,245	-
NSF	CBET-1805566	Collaborative Research: Establishing Design Principles for Molecular Engineering of High Concentration Redox Electrolytes	47.041	424	-
NSF	CBET-1846426	CAREER: Revealing spin-state-dependent reactivity in open-shell single atom catalysts with systematically-improvable computational tools	47.041	93,123	-
NSF	CBET-1847541	CAREER: Hybrid Biorobotic Matrices to Simulate Diaphragmatic and Myocardial Biomechanics	47.041	134,922	-
NSF	CBET-1851052	Heat Transfer Across Nanostructured Metal-Semiconductor Interfaces	47.041	85,295	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	CBET-1907716	Understanding Gas Transport through Nanopores in Graphene Membranes	47.041	124,300	-
NSF	CBET-1919316	NSF transfer CAREER: Precision control for sustainable carbon nanotube manufacturing: Enabling next generation materials and defining the next generation engineer	47.041	44,139	-
NSF	CBET-1936696	Single Molecule Studies of Topologically Complex Polymers	47.041	94,436	-
NSF	CBET-1944007	CAREER: Engineering interphases on omniphobic electrodes for selective electrosynthesis	47.041	159,982	-
NSF	CBET-2001231	Flexible Optoelectronic Systems for Chronic Bi-Directional Neural Interfacing	47.041	91,274	-
NSF	CBET-2006299	CAREER: Engineering Heat Conduction Through Alloys and Interfaces	47.041	88,360	-
NSF	CBET-2019245	Collaborative Research: Scale-free continuum percolation of bubbles as a universal mechanism of the boiling crisis	47.041	120,986	-
NSF	CBET-2026225	RAPID: Multiphase flow physics driving respiratory infectious disease transmission	47.041	104,878	-
NSF	CBET-2027870	Collaborative Research: Unraveling the Spatiotemporal Dynamics of Inertio-Elastic Turbulence using Measurements and Data-Infused Simulations	47.041	81,191	-
NSF	CBET-2034902	Collaborative Research: Creep-enabled 3D solid-state lithium metal batteries	47.041	176,117	-
NSF	CMMI-1452875	CAREER: A Closed Loop Methodology for Investigating Trust, Culture, and Information Sharing in Global Supply Chains	47.041	23,937	-
NSF	CMMI-1536233	The Role of Genetic Modifications, Age and Exercise on Cartilage Biomechanics using Genetically Engineered Mice	47.041	30,641	-
NSF	CMMI-1547154	EAGER: Cybermanufacturing: A WYSIWYG Middleware for Additive Manufacturing	47.041	-12,156	-
NSF	CMMI-1562912	Analytical probabilistic traffic models for large-scale network optimization	47.041	20,088	-
NSF	CMMI-1563343	A Data-Driven and Real-time Approach to Personalized Bundle Recommendation and Pricing; from Theory to Practice	47.041	-4	-
NSF	CMMI-1634259	Revenue Management For Enterprise Users of Cloud Infrastructure	47.041	38,124	-
NSF	CMMI-1644558	CM/Collaborative Research: A Computational Approach to Customizing Design	47.041	1,012	-
NSF	CMMI-1661627	Designing Extremely Robust Soft Wet Adhesives by Exploiting Molecular-Scale Reversible Crosslinks and Macro-Scale Instabilities	47.041	-178	-
NSF	CMMI-1702689	Collaborative Research: Multiscale modeling and measurement of clay aggregate behavior	47.041	84,208	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	CMMI-1727189	Quasi-integral control for robustness to perturbations of integrated genetic devices in living cells for biotechnology	47.041	5,138	-
NSF	CMMI-1727239	An Optimization Framework for Optimal A-B Testing	47.041	94,296	-
NSF	CMMI-1727565	Boundary interactions in pilot-wave hydrodynamics	47.041	73,236	-
NSF	CMMI-1729304	DMREF:GOALI: Discovery and Design of Additives for Novel Polymer Morphology and Performance	47.041	188,776	-
NSF	CMMI-1752172	CAREER: Directed Epitaxial Assembly of Structural Biopolymers in Hierarchical Mesostructures for Enhanced Mechanical Behavior, Mass Transport and Heat Transfer.	47.041	49,662	-
NSF	CMMI-1760025	Electrochemical separation and recovery of metals from liquid alloys	47.041	60,606	-
NSF	CMMI-1762961	Computational Modeling for Predicting 3D Cancer Cell Invasion into ECM Fiber Network	47.041	13,635	-
NSF	CMMI-1824297	AN INTEGRATED EXPERIMENTAL AND COMPUTATIONAL PLATFORM FOR DISCOVERY AND PROCESSING OF FUNCTIONAL NANO-EMULSIONS	47.041	202,537	-
NSF	CMMI-1826097	Collaborative Research: Learning to Control Dynamically Complex Objects	47.041	92,317	-
NSF	CMMI-1854833	Hybrid Intelligence for Design: Bridging Human and Machine Intelligences for Collaborative Design of Engineering Systems and Infrastructure	47.041	394,597	-
NSF	CMMI-1922206	DMREF: Collaborative Research: Fundamentals of short-range order-assisted alloy design: Thermodynamics, kinetics, mechanics	47.041	198,701	-
NSF	CMMI-1933416	Collaborative Research: Wettability Control on the Mechanics of Hydrocapillary Fracture	47.041	114,441	-
NSF	CMMI-1942016	Career: Shear Shock Propagation and Damage in Soft Materials	47.041	107,379	-
NSF	CMMI-2021625	NSF CMMI: Dual Faceted Linearization and Its Application to Nonlinear MPC	47.041	109,061	-
NSF	CMMI-2026444	FW-HTF-P Shaping Technology and Institutions for the Work of the Future	47.041	61,524	-
NSF	CMMI-2039771	D-ISN: TRACK 1: Supply Chain Analysis to Thwart Illegal Logging: Machine Learning-based Monitoring and Strategic Network Inspection	47.041	25,926	-
NSF	CMMI-2045417	CAREER: Integrated Design and Digital Fabrication using Topology Optimization and Material Extrusion 3D Printing	47.041	17,701	-
NSF	ECCS-1653100	CAREER: On-Chip Terahertz Electronic Frequency Combs	47.041	94,264	-
NSF	ECCS-1653553	CAREER: Spin-Orbit Interaction based Spintronics in Superconductors	47.041	107,064	-
NSF	ECCS-1702716	Spectroscopy with Quantum Sensors at the Nanoscale	47.041	16,466	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	ECCS-1709212	Collaborative Research: Conformal and robust integrated infrared spectroscopic sensors	47.041	9,143	-
NSF	ECCS-1711027	CCSS: Small : Universal Feature Selection in Integrated Monitoring of Large Networks	47.041	90,870	-
NSF	ECCS-1740274	E2CDA: Type I: Collaborative Research: Interconnects Beyond Cu	47.041	1,905	-
NSF	ECCS-1808692	Model Reduction of High Dimensional Hidden Markov Models and Markov Decision Processes	47.041	2,007	-
NSF	ECCS-1808828	Electrical switching of magnetic devices by voltage-controlled proton insertion for low-power, high-performance data storage and computing	47.041	-1,442	-
NSF	ECCS-1809314	Collaborative Research: Stability, security and emergency control for reconfigurable networked microgrids	47.041	62,069	-
NSF	ECCS-1809917	CMOS THz Molecular Clock With Enhanced Stability And Energy Efficiency	47.041	40,285	-
NSF	ECCS-1824360	Tag-of-Everything: Secured Wireless Powering and Communication Using THz Spectrum for Ultra-Small, Package-Less ID Chips	47.041	198,794	-
NSF	ECCS-1933556	Collaborative Research: Quantum Communication with Loss-Protected Photonic Encoding	47.041	126,534	-
NSF	ECCS-2000743	Collaborative Research: Kinetic Inductance in Superconducting Nanowire Microwave Devices	47.041	170,916	-
NSF	ECCS-2002570	EAGER: Fundamentals of Modeling and Control for the Evolving Electric Power System Architectures	47.041	21,970	-
NSF	ECCS-2012258	Development of Room Temperature Terahertz Quantum Cascade Lasers	47.041	191,382	-
NSF	ECCS-2023468	Collaborative Research: Scaling Distributed AI Systems based on Universal Optical I/O	47.041	30,629	-
NSF	ECCS-2023987	Collaborative Research: Tellurene mid-infrared integrated photonics	47.041	84,529	-
NSF	ECCS-2026344	Conformable systems for spatiotemporal decoding of facial strains	47.041	109,277	-
NSF	ECCS-2028199	PIC: CMOS-compatible, monolithic, and high-performance optical isolators on silicon	47.041	174,583	-
NSF	ECCS-2028824	EAGER SARE: Physical-Layer Security of THz Communication Using Orbital Angular Momentum and Rapid Frequency Hopping	47.041	20,070	-
NSF	ECCS-2029670	SWIFT: LARGE: Adaptive Radio Frequency Interference Cancellation for Radio Science Observatories	47.041	58,149	-
NSF	ECCS-2044688	CAREER: Conformable Piezoelectrics for Soft Tissue Imaging	47.041	9,210	-
NSF	EFMA-1641064	EFRI ACQUIRE: Scalable Quantum Communications with Error-Corrected Semiconductor Qubits	47.041	77,045	374

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	EFMA-1830901	EFRI C3 SoRo: Soft, Strong, and Safe Configurable Robots for Diverse Manipulation Tasks	47.041	638,280	167,115
NSF	EFMA-1935291	EFRI C3 SoRo: Functional-Domain Soft Robots (FunDo SoRo) Precisely Controlled by Quantitative Dynamic Models and Data	47.041	410,937	58,126
NSF	IIP-1717362	PFI:BIC - Development, Deployment and Evaluation of an Intelligent Service System for Personalized Early Literacy Learning Using Mobile Devices	47.041	434,939	86,936
NSF	IIP-1735671	Type II: MIT Innovation Corps Site	47.041	30,444	-
NSF	IIP-1818795	I-Corps Teams: Improving the Energy Efficiency of Transport Refrigeration Units	47.041	5,253	-
NSF	IIP-1832931	I-Corps New England Regional Innovation Node (NERIN)	47.041	1,231,163	21,443
NSF	IIP-1928890	I-Corps Teams: Electric Reservoir Stimulation	47.041	4,634	-
NSF	IIP-1928909	I-Corps Teams: Robust Filtration Membranes For Harsh Environment Separations	47.041	5,236	-
NSF	IIP-1931623	I-Corps Teams: Reducing Exercise-Related Injuries with Fabric-Based Technologiees	47.041	4,753	-
NSF	IIP-1946423	I-Corps Teams: Decentralized fertilizer production for improving soil quality and plant growth	47.041	161	-
NSF	IIP-2026063	I-Corps Teams: Aquaculture Diagnostics	47.041	27,778	-
NSF	IIP-2028103	I-Corps Teams: ARISE: Autonomous Distributed Systems	47.041	888	-
NSF	IIP-2029983	I-Corps: Autonomous Robotic Instructor for Workforce Training	47.041	1,063	-
NSF	IIP-2035836	I-Corps Teams: OxyTrack: Quantitative Tissue Oxygen Sensors	47.041	15,000	-
NSF	IIP-2037748	I-Corps Teams: A physicochemical method for improving microorganism viability during manufacturing and storage	47.041	10,080	-
NSF	IIP-2043000	I-Corps: Low carbon method of hydrogen gas production from hydrogen sulfide	47.041	34,111	-
NSF	IIP-2103773	I-Corps Teams: Non-Invasive Neurotech for Tactile Stimulation	47.041	30,963	-
NSF	IIP-2110076	I-Corps: Micro-Logistics IoT: Bridging the Information Gap in Supply Chain	47.041	37,893	-
NSF	IIP-2123323	I-Corps Teams: Membrane Materials for Efficient Gas and Vapor Separations	47.041	11,239	-
NSF	SMA-2022413	Innovation Dynamics of Emerging Co-Creation Practices: What are the impacts on Inclusion?	47.041	116,413	-
NSF	2000726	Geometry and topology of holomorphic symplectic varieties	47.049	19,240	-
NSF	AST-1614868	Shaping the Narrow Jets of Material from Supermassive Black Holes	47.049	82,330	-
NSF	AST-1659420	REU Site: Astronomy and Informatics at the MIT Haystack Observatory	47.049	7,674	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	AST-1716251	Establishing the properties of the first stars and supernovae and the origins of the heaviest elements with stellar archaeology	47.049	139,243	-
NSF	AST-1751096	CAREER: Tracing the Birth and Growth of Galaxy Clusters with the South Pole Telescope 3rd Generation Survey	47.049	79,678	-
NSF	AST-1814053	Collaborative Research: Exploring the physics of galaxy clusters with comprehensive cosmological simulations	47.049	21,068	-
NSF	AST-1814259	Simulating galaxy formation with cosmic dust	47.049	101,991	-
NSF	AST-1828470	MRI [WINTER]: Development of a Wide-Field Infrared Camera for Robotic Surveys of the Dynamic Astronomical Sky	47.049	327,833	-
NSF	AST-1836002	LLAMAS: A Facility Integral Field Spectrograph for the Magellan Telescopes	47.049	1,813,023	-
NSF	AST-1909097	Exploring the LEGO Legacy Survey: Relating Galaxies observed by ALMA to the Milky Way	47.049	146,383	-
NSF	AST-1909307	Collaborative Research: EDGES-3: Validating and Refining Global 21cm Measurements of Cosmic Dawn	47.049	56,004	-
NSF	AST-1909831	Collaborative Research: The impacts of massive BH formation and evolution pathways on GW sources	47.049	21,045	-
NSF	AST-1950348	REU/RET Site: Radio Science in Astronomy, Geodesy, and Geospace Science at MIT Haystack Observatory	47.049	74,462	-
NSF	AST-2008031	Collaborative Research: Cosmology with CHIME	47.049	89,040	-
NSF	CHE-1629358	DMREF: Analysis and Optimization of Polymer Networks for Emerging Applications	47.049	110,214	-
NSF	CHE-1654415	CAREER: Characterizing Water's Response to Hydrophilic Surfaces	47.049	113,506	-
NSF	CHE-1664799	Synthesis of d- and p-Block Element Molecules, Reagents, and Precursors	47.049	-40,498	-
NSF	CHE-1665383	Coherent Spectroscopy and Coherent Control of Molecules and Materials	47.049	29,626	-
NSF	CHE-1709364	Chemical and biochemical determinants of phosphorothioate stability and location in bacterial genomes	47.049	10,766	10,148
NSF	CHE-1709993	Collaborative Research: Multiphase Reactivity of Atmospheric Organic Radicals: Gas- vs. Liquid- vs. Particle-phase Chemistry	47.049	53,151	-
NSF	CHE-1800301	Stochastic Path Integral Formalism and Applications to Coherent Energy Transfer	47.049	37,655	-
NSF	CHE-1800410	Molecular Rydberg Spectra Encode Intramolecular Dynamics	47.049	165,628	-
NSF	CHE-1828570	MRI: Development of a broadband THz electron paramagnetic resonance spectrometer	47.049	20,130	-
NSF	CHE-1836913	EAGER: Analog Quantum Simulation of Dissipative Quantum Dynamics in Condensed-Phase Chemical Systems	47.049	31,227	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	CHE-1839155	RAISE- TAQS: Room-Temperature Quantum Sensing and Computation using DNA-based Excitonic Circuits	47.049	234,282	-
NSF	CHE-1845464	CAREER: Reprogramming Transcriptional Regulation by Chemical Stabilization of Repressive Homodimers	47.049	109,236	-
NSF	CHE-1900060	Main Group Catalysts for N-H and O-H Activation Chemistry	47.049	185,858	-
NSF	CHE-1900109	Exploration of Non-Equilibrium Interfacial Phenomena in Spin Forbidden Oxidation	47.049	96,834	-
NSF	CHE-1900358	Fragment Embedding for Photochemical Electronic Structure Simulations	47.049	92,919	-
NSF	CHE-1900391	New Cycloaddition and Annulation Strategies for Organic Synthesis	47.049	224,110	-
NSF	CHE-1904453	Collaborative Proposal: Investigation of Fundamental Properties and Electrical Control of Neurotransmitter Flow through Single-Walled Carbon Nanotubes	47.049	10,653	-
NSF	CHE-1904867	Expanding N-Heterocyclic Carbene Surface Chemistry	47.049	313,823	-
NSF	CHE-1945500	CAREER: Fundamentals of conformational and surface water dynamics in supramolecular nanofibers	47.049	138,953	-
NSF	CHE-1955612	Synthesis of d- and p-Block Element Molecules, Reagents, and Precursors	47.049	194,743	-
NSF	CHE-1955628	Sustainable Carboxylation with Carbon Dioxide at Tailored Heterogeneous Electrocatalysts	47.049	103,065	-
NSF	CHE-2029751	COVID-19: Collaborative Research: RAPID: Augmenting Mucosal Gels with Associating Brush Polymers to Prevent COVID19 Infection	47.049	73,727	-
NSF	CHE-2102669	Electrosynthesis via Electrochemical Hydrogen Permeation	47.049	2,059	-
NSF	DMR-1419807	NSF Materials Research Science and Engineering Centers (MRSEC) - Full Proposal	47.049	1,998,115	43,517
NSF	DMR-1507047	BaSnO3 as a Transparent Mixed Ionic-Electronic Conducting Material - Utilizing Novel In Situ Methods to Advance Understanding of Structure-Processing-Property Relations	47.049	4,073	-
NSF	DMR-1554891	CAREER: Geometrical Frustration in Spin Orbit Systems	47.049	90,350	-
NSF	DMR-1645232	2016 Alan T. Waterman Award	47.049	348,678	-
NSF	DMR-1654548	CAREER: Quantifying Radiation Damage in Metals with Wigner Energy Spectral Fingerprints	47.049	31,404	-
NSF	DMR-1700137	Surface/Interface Phenomena and Topological Order in Emerging Quantum Materials	47.049	54,756	-
NSF	DMR-1708280	FORCES & FLUCTUATIONS OUT OF EQUILIBRIUM	47.049	64,612	-
NSF	DMR-1709315	Dynamics of Associative Polymers Revealed by Self-Diffusion	47.049	69,334	-
NSF	DMR-1743059	Convergence QL: NSF/DOE Quantum Science Summer School	47.049	51,973	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	DMR-1751736	CAREER: Fundamentals of complex chalcogenide electronic materials	47.049	102,388	-
NSF	DMR-1751739	CAREER: FRACTAL ELECTRONIC TEXTURES IN QUANTUM CRITICAL SOLIDS	47.049	143,020	-
NSF	DMR-1808190	Rare earth garnets for spintronics	47.049	-12,562	-
NSF	DMR-1809740	Synthesis and Applications of Functional Carbon Nanomaterials	47.049	222,344	-
NSF	DMR-1809802	Tuning the Electronic and Topological Properties of Twisted van der Waals Heterostructures	47.049	134,008	-
NSF	DMR-1809815	Probing Chiral Fermion Dynamics in Topological Semimetals	47.049	128,078	-
NSF	DMR-1847861	CAREER: Strongly correlated systems through the lens of topological phases	47.049	156,360	-
NSF	DMR-1905164	Scalable Quantum Emitters Enabled through Rational Bottom-Up Synthesis	47.049	148,922	-
NSF	DMR-1911666	Novel Phases of Electronic Insulators and Quantum Hall Systems	47.049	109,198	-
NSF	DMR-1911792	Epitaxial Ceramic Nanocomposites by Design	47.049	65,748	-
NSF	DMR-1922311	DMREF: Collaborative Research: The Synthesis Genome: Data Mining for Synthesis of New Materials	47.049	61,991	-
NSF	DMR-1923976	Collaborative Research: Traversals in Transformation Strain Space and Microstructure Design for High Performance Ferroelastic Materials	47.049	79,400	-
NSF	DMR-2002860	Entropy and Phase Transformations in Stable Nanocrystalline Alloys	47.049	39,517	-
NSF	DMR-2004556	Collaborative Research: Improving contact fatigue and wear properties using graded nanostructured surfaces in metallic materials	47.049	42,978	-
NSF	DMR-2004913	GOALI: Frictional Ignition of Metals in High-Pressure Oxygen Environments	47.049	75,722	-
NSF	DMR-2022428	Entanglement and emergence in quantum states of matter	47.049	77,803	-
NSF	DMR-2105495	Singlet Fission, Triplet Upconversion, and Thermally-Activated Delayed Fluorescence: Controlling Exciton Dynamics with Metal-Organic Frameworks	47.049	599	-
NSF	DMS-1500771	Free boundaries and extremal inequalities	47.049	4,609	-
NSF	DMS-1502244	Tensor categories and representation theory	47.049	48,969	-
NSF	DMS-1601946	Topics in arithmetic geometry	47.049	73,221	-
NSF	DMS-1601953	Wall-crossing and dualities in representation theory	47.049	110,988	-
NSF	DMS-1623977	2017-2019 Talbot Workshops	47.049	-4,998	-
NSF	DMS-1651995	CAREER: Gaussian Graphical Models: Theory, Computation, and Applications	47.049	1,094	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	DMS-1664412	FRG: cQIS: Collaborative Research: Mathematical Foundations of Topological Quantum Computation and its applications	47.049	-1,520	-
NSF	DMS-1664619	FRG: Collaborative Research: Integrable Probability	47.049	24,966	-
NSF	DMS-1707270	Mean Curvature Flow and Nonlinear Heat Equations	47.049	41,452	-
NSF	DMS-1712596	Collaborative Research: Statistical Estimation with Algebraic Structure	47.049	10,137	-
NSF	DMS-1712862	Universal randomness in 2D	47.049	197,139	-
NSF	DMS-1719637	Collaborative Research: Overcoming order reduction and stability restrictions in high-order time-stepping	47.049	40,629	-
NSF	DMS-1723011	Collaborative Research: CDS&E-MSS: Stochastic Approximations for the Solution and Uncertainty Analysis of Data-Intensive Inverse Problems	47.049	28,219	-
NSF	DMS-1737944	Algorithms for anomaly detection using graphical models	47.049	125,309	-
NSF	DMS-1749858	CAREER: Classical and quantum chaos	47.049	66,864	-
NSF	DMS-1760264	FRG: Collaborative Research: Algebra and geometry behind link homology	47.049	59,116	-
NSF	DMS-1764176	Graph Theory and Additive Combinatorics	47.049	49,301	-
NSF	DMS-1764370	Combinatorics in Algebra, Geometry, and Physics	47.049	39,158	-
NSF	DMS-1764403	Collaborative Research: Dynamics of Nonlinear PDE: Integrating Deterministic and Probabilistic Methods	47.049	75,684	-
NSF	DMS-1808794-002	Gauge Theory and Trivalent Graphs in Three Manifolds	47.049	65,187	-
NSF	DMS-1812142	Evolution equations in geometry	47.049	74,835	-
NSF	DMS-1845034	CAREER: Higher enumerative geometry via representation theory and mathematical physics	47.049	-2,876	-
NSF	DMS-1845034-001	CAREER: Higher enumerative geometry via representation theory and mathematical physics	47.049	37,082	-
NSF	DMS-1853981	Colored Stochastic Vertex Models	47.049	99,189	-
NSF	DMS-1855773	Mathematical Sciences:Geometric methods in the representation theory of affine Hecke algebras, finite reductive groups and character sheaves	47.049	53,230	-
NSF	DMS-1901642-001	Algebraic cycles and L-values	47.049	74,109	-
NSF	DMS-1901849	K-stability and higher dimensional geometry	47.049	106,260	-
NSF	DMS-1902645	Geometric Partial Differential Equations and Algebraic Geometry	47.049	57,176	-
NSF	DMS-1904997	Lefschetz fibrations, their noncommutative counterparts, and formal groups	47.049	97,505	-
NSF	DMS-1906072	Classical methods in motivic homotopy theory	47.049	48,706	-
NSF	DMS-1916120	PRIMES, MathROOTS, and CrowdMath: Expanding Opportunities for High School Students	47.049	109,307	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	DMS-1940092	CAREER: Phase Transitions in Randomized Combinatorial Search and Optimization Problems	47.049	80,427	-
NSF	DMS-1952706	Collaborative Research: Optimal-complexity spectral methods for complex fluids	47.049	53,831	-
NSF	DMS-1953181	Interpolation Methods in Statistics and Machine Learning	47.049	20,017	-
NSF	DMS-1953945	Probabilistic and analytic aspects of the Loewner energy	47.049	39,465	-
NSF	DMS-1953946	Analytic and Algebraic Methods in Discrete Geometry	47.049	18,584	-
NSF	DMS-1953947	2020 - 2022 Talbot Workshops	47.049	550	-
NSF	DMS-1954455	Soliton dynamics for nonlinear wave equations	47.049	71,564	-
NSF	DMS-1955614	Microlocal Analysis in General Relativity	47.049	74,416	-
NSF	DMS-2000192	Multiplicities and Period Integrals for Spherical Varieties	47.049	19,706	-
NSF	DMS-2001318	Tensor categories and representations of quantized algebras	47.049	25,156	-
NSF	DMS-2002579	Relative aspects of the Langlands program, L-functions and Beyond Endoscopy	47.049	9,065	-
NSF	DMS-2002778	Convex body shape recovery via geometric measures and inequalities	47.049	19,864	-
NSF	DMS-2004589	Nonlinear Analysis of Three-Dimensional Water-Wave Patterns via Exponential Asymptotics	47.049	36,302	-
NSF	DMS-2005345	Dynamics and singularities of geometric flows	47.049	52,209	-
NSF	DMS-2015517	Inference in High-Dimensional Statistical Models. Algorithmic Tractability and Computational Barriers	47.049	5,823	-
NSF	DMS-2022448	Collaborative Research: National Institute for Foundations of Data Science	47.049	137,029	3,300
NSF	DMS-2054129	Combinatorics and its Applications	47.049	5,370	-
NSF	DMS-2101507	Sheaves, representations and dualities	47.049	40,531	-
NSF	OMA-1936263	QII-TAQS Characterizing and Utilizing 2D Van der Wals Materials with Superconducting Quibits	47.049	262,426	28,196
NSF	PHY-1454673	CAREER: SELECTIVE TRANSPORT IN BIOLOGICAL HYDROGELS - FROM DESIGN PRINCIPLES TO MECHANISMS	47.049	21,027	-
NSF	PHY-1506019	Strongly Interacting Fermi Gases of Ultracold Atoms	47.049	39,996	-
NSF	PHY-1506369	A Program in Ultralow-Temperature Atomic Physics	47.049	471,586	-
NSF	PHY-1541160	INSPIRE: Testing Bell's Inequality with Astrophysical Observations	47.049	5,938	5,938
NSF	PHY-1554875	Career: Next-Generation Liquid Scintillator Detectors: Picosecond Timing and Quantum-Dot-Doped Scintillator	47.049	-2,802	-
NSF	PHY-1620045	Research in Theoretical Elementary Particle Physics	47.049	1,465	-
NSF	PHY-1626069	MRI: Development of the IsoDAR Front-End	47.049	8,905	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	PHY-1654168	CAREER: Magnetogenesis Revisited: The First Self-consistent Plasma Dynamo	47.049	41,472	-
NSF	PHY-1707549	Studies of strong-gravity binaries and their gravitational waves	47.049	31,482	-
NSF	PHY-1707840	Quantum Optomechanics on Multiple Mass Scales	47.049	172,216	-
NSF	PHY-1707999	Inferring the Physics of mRNA Trafficking in Neuronal Systems	47.049	162,702	-
NSF	PHY-1720311	Dynamical decoupling, error mitigation and noise correlations in multi-qubit systems	47.049	83,622	-
NSF	PHY-1734011	Center for Ultracold Atoms	47.049	1,508,163	638,490
NSF	PHY-1743900	RAISE: A phase separation model for transcriptional control in mammals	47.049	63,362	51,866
NSF	PHY-1801996	The EPP-Supported Neutrino Program at MIT	47.049	356,107	-
NSF	PHY-1806251	New Experimental Techniques for Neutrino Physics	47.049	192,905	-
NSF	PHY-1806440	Rare Event Searches at MIT	47.049	259,986	-
NSF	PHY-1806765	Many-body entanglement for precision measurement	47.049	190,270	-
NSF	PHY-1836814	Collaborative Proposal: The Next Generation of Gravitational Wave Detectors	47.049	442,147	-
NSF	PHY-1841699	CAREER: Quark and Gluon Structure of Nucleons and Nuclei	47.049	35,428	-
NSF	PHY-1848247	CAREER: Symmetry and Geometry in Biological Active Matter	47.049	243,352	-
NSF	PHY-1904160	LHCb operations and computing	47.049	360,009	-
NSF	PHY-1904160-001	LHCb operations and computing	47.049	122,631	37,503
NSF	PHY-1912764	The PA-Supported Neutrino Program at MIT	47.049	235,827	-
NSF	PHY-1912836	SEARCHING FOR PHYSICS BEYOND THE STANDARD Model AT THE LHCB EXPERIMENT	47.049	93,261	-
NSF	PHY-1914418 000	WoU-MMA: Collaborative Research: A Next-Generation SuperNova Early Warning System for Multimessenger Astronomy	47.049	28,435	-
NSF	PHY-1915218	Quantum simulation of out-of-equilibrium spin models	47.049	71,485	-
NSF	PHY-2010136	The Dynamic Onset of Magnetic Reconnection	47.049	80,837	-
NSF	PHY-2011905	Cosmic Censorship from Gauge/Gravity Duality	47.049	87,146	-
NSF	PHY-2012088	Quantum optomechanics: from fundamental tests to quantum tools of the future	47.049	141,316	-
NSF	PHY-2012110	Strongly interacting quantum mixtures of ultracold atoms	47.049	156,897	-
NSF	PHY-2015620	Summer School and Workshop on Genome Architecture and Function	47.049	34,678	-
NSF	PHY-2019786	AI Institute: AI Research Institute for Fundamental Interactions	47.049	632,703	22,961
NSF	PHY-2026995	RAPID Immunogenicity of SARS-CoV2 to Human T Cells	47.049	61,244	-
NSF	PHY-2028125	Composable Next Generation Software Framework for Space Weather Data Assimilation and Uncertainty Quantification	47.049	311,252	63,049

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	PHY-2033046	COVID-19: RAPID: Identifying the role of mucus in COVID-19 pathogenesis	47.049	189,148	23,547
NSF	PHY-2035015	EAGER: QSA: Accelerating lattice quantum field theory calculations via interpolator optimization using NISQ-era quantum computing	47.049	44,520	-
NSF	AGS-1520825	Hazards SEES: Uncovering the hidden skeleton of environmental flows: advanced Langrangian methods for hazards prediction, mitigation and response	47.050	188,917	170,829
NSF	AGS-1552195	Improved understanding of the response of mean and extreme precipitation to climate change	47.050	-11	-
NSF	AGS-1638672	Collaborative Research: Comprehensive Characterization of Atmospheric Organic Carbon over Multiple Generations of Oxidation	47.050	78,930	-
NSF	AGS-1702691	Collaborative Research: Madagascar Caves and Paleoclimate (MADCAP): Investigating climate variability in the Southern Hemisphere of the Western Indian Ocean	47.050	-3,684	-
NSF	AGS-1740533	Collaborative Research: Convection and rainfall enhancement over mountainous tropical islands	47.050	32,507	-
NSF	AGS-1749986	Improved understanding of changes in convective available potential energy and links to the large-scale circulation	47.050	145,893	-
NSF	AGS-1762141	A Next Generation Geospace Facility at Millstone Hill	47.050	-1,466	-
NSF	AGS-1804512	Collaborative Research: P2C2: Reconstructing Northeast Mexico Hydroclimate since the Last Interglacial Period	47.050	44,333	-
NSF	AGS-1835576	Collaborative Research: Framework: Software: HDR: Data-Driven Earth System Modeling	47.050	179,110	-
NSF	AGS-1848863	Collaborative Research: Understanding the role of coupled chemistry-climate interactions in internal climate variability	47.050	81,465	-
NSF	AGS-1850089	Collaborative Research: Design of a Nanosat Constellation for Measuring Internal Gravity Wave Fluxes in the Earth's Stratosphere	47.050	93,764	-
NSF	AGS-1906719	Advancing the Understanding of the Impacts of Wave-Induced Temperature Fluctuations On Atmospheric Chemistry	47.050	98,857	-
NSF	AGS-1906768	Collaborative Research: Physics of and Climate Regulation by Convective Aggregation	47.050	183,992	-
NSF	AGS-1914920	Collaborative Research: Integrating GEOS-Chem atmospheric chemistry into the NCAR Community Earth System Model (CESM)	47.050	115,460	-
NSF	AGS-1933005	Collaborative Research: DASI Track 1: Development of a Distributed MIMO Meteor Radar Network for Space Weather Research	47.050	126,408	-
NSF	AGS-1936642	Integrating Observational Constraints and Modeling of Atmospheric Reactive Organic Carbon	47.050	108,761	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	AGS-1945871	The Global Circuits Paradox	47.050	80,241	-
NSF	AGS-1952737	Scientific and Technical Discovery at the Millstone Hill Geospace Facility	47.050	2,006,057	-
NSF	AGS-2031472	Improved understanding of the moist dynamics of the extratropical storm tracks and their response to climate change	47.050	26,497	-
NSF	AGS-2033787	Collaborative Research: CEDAR: Three-dimensional large electron density gradients at mid-latitudes from a TEC-based ionospheric data assimilation system (TIDAS)	47.050	42,261	-
NSF	EAR-1520825	Hazards SEES: Uncovering the hidden skeleton of environmental flows: advanced Langrangian methods for hazards prediction, mitigation and response	47.050	55,633	-
NSF	EAR-1551321	ABR: Experimental Studies of Hydrous Mantle Melting	47.050	34,936	-
NSF	EAR-1615426	Collaborative Research: Integrating the geological and genomic records: time-calibrating Earth's dynamic biogeochemical history	47.050	181,999	-
NSF	EAR-1647504	INSPIRE: Search for Records of the Hadean Dynamo in Detrital Zircons	47.050	91,583	66,201
NSF	EAR-1659923	Predictive Models for Wave Damping by Flexible Aquatic Vegetation	47.050	111,440	-
NSF	EAR-1702588	Collaborative Research: Quantifying precipitation changes in the South American subtropics over the late Pleistocene	47.050	24,724	-
NSF	EAR-1722935	Collaborative Research: Relating bulk composition to seismic properties in crustal rocks	47.050	94,620	-
NSF	EAR-1753482	Melt Network Geometry in Stressed, Partially Molten Mantle Rocks: Implications for Seismic Anisotropy	47.050	141,429	-
NSF	EAR-1827715	Collaborative Research: Calibrating the end-Ediacaran extinction at a new boundary site with U-Pb Geochronology & Chemostratigraphy	47.050	130,559	-
NSF	EAR-1833478	Collaborative Research: Community Facility Support: Facilitating Access and Innovation through a Collaborative Organization for Rock Deformation (CORD)	47.050	75,792	-
NSF	EAR-1836304	Development of Multi-Channel Ultrasound Recording System for a High?Pressure, High?Temperature Rock Deformation Apparatus	47.050	13,590	-
NSF	EAR-1843686	Community Facility Support for GNSS Data Analysis with GAMIT/GLOBK	47.050	90,485	-
NSF	EAR-1852946	Methane isotopologue fractionation during microbial methanogenesis and methonotrophy by pure and mixed laboratory cultures	47.050	111,256	-
NSF	EAR-1854564	Impact of vegetation geometry and distribution on bedload transport	47.050	88,072	-
NSF	EAR-1902179	Constraining the Nature and Formation Age of the Shyok Suture Zone in Ladakh, NE India	47.050	110,694	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	EAR-1903544	Collaborative Research: Regional hydrologic and vegetation changes over the last 150 kyr in the Searles and Death Valley basins	47.050	113,123	-
NSF	EAR-1905733	Collaborative Research: Development of a turnkey SQUID microscope platform for paleomagnetism and installation in a National Multi-User Facility	47.050	154,018	-
NSF	EAR-1923491	Collaborative Research: Hydrologic Disturbance in Tropical Peatlands: Linking Drainage, Soil Moisture, Flammability, and Carbon Fluxes	47.050	66,207	-
NSF	EAR-1925863	Collaborative Research: Do arc-continent collisions in the tropics set the Earth's climate state?	47.050	49,587	-
NSF	EAR-1948453	Laboratory Acquisition Protocols and Standards: A Standardized Digital Data System for Experimental Results	47.050	104,451	-
NSF	EAR-2021677	Collaborative Research: Modes of melt extraction in silicic mushes: processes, efficiency and timescales	47.050	34,489	-
NSF	EAR-2022928	Collaborative Research: Blueschist Rheology: Experimental Constraints On Glaucophane Strength And Deformation Mechanisms	47.050	25,922	-
NSF	EAR-2103408	Collaborative Research: What makes Low-Frequency Earthquakes low frequency?	47.050	103,100	-
NSF	ICER-1854929	PREEVENTS Track 2: Collaborative Research: Predicting Hurricane Risk along the United States East Coast in a Changing Climate	47.050	219,499	-
NSF	OAC-1835618	Collaborative Research: Framework: Data: Toward Exascale Community Ocean Circulation Modeling	47.050	96,872	-
NSF	OCE-1536515	Collaborative Research: An Ocean Tale of Two Climates: Modern and Last Glacial Maximum	47.050	86,859	-
NSF	OCE-1658451	Microbial interactions on particulate organic matter: from community structure to function.	47.050	-264	-
NSF	OCE-1736109	Collaborative Research: Deep Circulation over the Flanks of a Mid-Ocean Ridge	47.050	133,436	-
NSF	OCE-1736996	Collaborative Research: US GEOTRACES PMT: Pb and Cr isotopes	47.050	7,027	-
NSF	OCE-1756324	Collaborative Research: Bottom Boundary Layer Turbulent and Abyssal Recipes	47.050	120,543	-
NSF	OCE-1923312	Improving Accuracy and Precision of Marine Inorganic Carbon Measurements	47.050	94,773	-
NSF	OCE-1924050	Cr Isotope Oceanography of the Eastern Tropical North Pacific Ocean	47.050	129,854	-
NSF	OCE-2023520	Collaborative Research: Coupling of Trade Winds with the Ocean's Subtropical Cells	47.050	11,577	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	OCE-2048470	Features and implications of nitrogen assimilation trait variability in populations of Prochlorococcus	47.050	14,237	-
NSF	OPP-1837646	NNA: Collaborative Research: Navigating the New Arctic--Persistent, Long-Range, Autonomous Under-Ice Observations of Arctic Change	47.050	21,341	-
NSF	ACI-1550172	Collaborative Research: SI2-SSI: Jet Energy-loss Tomography with a Statistically and Computationally Advanced Program Envelope (JETSCAPE)	47.070	593	-
NSF	ACI-1550487	Collaborative Research: SI2-SSI: Integrating Data with Complex Predictive Models under Uncertainty: An Extensible Software Framework for Large-Scale Bayesian Inversion	47.070	25,195	-
NSF	ACI-1640829	CIF21 DIBBs: PD: Metadata Toolkits for Building Multi-faceted Data-relationship Models	47.070	-14,969	-
NSF	CCF-1231216	A Center for Brains, Minds, and Machines: The Science and the Technology of Intelligence	47.070	3,997,481	1,381,385
NSF	CCF-1452616	[Revised Budget] CAREER: Applications of Quantum Information Theory	47.070	146,547	-
NSF	CCF-1453261	CAREER: Algorithmic Aspects of Machine Learning	47.070	47,509	-
NSF	CCF-1461559	AF: Medium: Distributed Algorithms for Resource-Constrained and Dynamic Settings	47.070	5,714	-
NSF	CCF-1512611	SHF: Medium: Fiat: Correct-by-Construction and Mostly Automated Derivation of Programs with an Interactive Theorem Prover	47.070	44,868	-
NSF	CCF-1521584	Collaborative Research: Expeditions in Computing: The Science of Deep Specification	47.070	3,389	-
NSF	CCF-1521759	Collaborative Research: Evolvable Living Computing - Understanding and Quantifying Synthetic Biological Systems' Applicability, Performance, and Limits	47.070	-110	-
NSF	CCF-1521925	Collaborative Research: Evolable Living Computing: Understanding and Quantifying Synthetic Biological Systems' Applicability, Performance and Limits	47.070	524,130	-
NSF	CCF-1525705	CIF:Small: Cooperative Interference Engineering for Network Secrecy	47.070	77,570	-
NSF	CCF-1533644	XPS: FULL: FP: A profile-centric IDE for science-based performance engineering in the cloud	47.070	221,625	-
NSF	CCF-1533753	XPS: FULL: DSD: Scalable High Performance with Halide and Simit Domain Specific Languages	47.070	-12,669	-
NSF	CCF-1535851	AitF: FULL: Sparse Fourier Transform: From Theory to Practice	47.070	2,040	-
NSF	CCF-1553428	CAREER: Fast Graph Algorithms and Continuous Optimization	47.070	9,551	-
NSF	CCF-1563880	Title: SHF: Medium: Collaborative Research: Run-Time Support for Scalable Concurrent Programming	47.070	18,558	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	CCF-1564025	AF: Medium: Collaborative Research: Top-down algorithmic design of structured nucleic acid assemblies	47.070	61,884	-
NSF	CCF-1565235	AF:Large:Collaborative Research: Algebraic Proof Systems, Convexity, and Algorithms	47.070	240,806	-
NSF	CCF-1617730	AF: SMALL: Frontiers in Algorithmic Game Theory	47.070	-873	-
NSF	CCF-1640012	E2CDA: Type I: Collaborative Research: Energy Efficient Computing with Chip-Based Photonics	47.070	9,399	-
NSF	CCF-1651838	CAREER:Matrix Products: Algorithms and Applications	47.070	163,511	-
NSF	CCF-1717610	CIF:Small:Submodular Optimization Techniques for Sensor and Signal Processing	47.070	257,324	-
NSF	CCF-1717842	CIF: Small: Fundamental limits and coding for massive wireless random-access	47.070	67,398	-
NSF	CCF-1723344	AitF: Collaborative Research: Algorithms for Probabilistic Inference in the Real World	47.070	164,625	-
NSF	CCF-1725303	SPX: Collaborative Research: Mongo Graph Machine (MGM): A flash-based appliance for large graph analytics	47.070	-24,349	-
NSF	CCF-1729369	Collaborative Research: EPiQC: Enabling Practical-Scale Quantum Computation	47.070	456,189	-
NSF	CCF-1733808	AitF: Collaborative Research: Fast, Accurate, and Practical: Adaptive Sublinear Algorithms for Scalable Visualization	47.070	952	-
NSF	CCF-1740184	E2CDA: Type I: Collaborative Research: Energy-Efficient Artificial Intelligence with Binary RRAM and Analog Epitaxial Synaptic Arrays	47.070	17,511	-
NSF	CCF-1740519	AF: Medium: Collaborative Research: Hardness in Polynomial Time	47.070	56,728	-
NSF	CCF-1740525	AF: Small: Graphs and structures for distance estimation	47.070	-5,645	-
NSF	CCF-1740751	MIT Institute for Foundations of Data Science	47.070	393,379	-
NSF	CCF-1741615	CAREER: Common Links in Algorithms and Complexity	47.070	155,431	-
NSF	CCF-1751011	CAREER: A Programming Language for Developing Software to Execute Reliably on Unreliable Hardware	47.070	36,364	-
NSF	CCF-1807575	SemiSynBio:Collaborative Research:Very large-scale genetic circuit design automation	47.070	95,613	-
NSF	CCF-1810758	NSF-BSF: AF: Small: An Algorithmic Theory of Brain Networks	47.070	30,537	-
NSF	CCF-1814969	SHF: Small: A Scalable Architecture for Ubiquitous Parallelism	47.070	165,782	-
NSF	CCF-1816209	CIF: Small: Occlusion-Based Computational Imaging and Scene Analysis: Theory, Methods and Applications	47.070	10,523	-
NSF	CCF-1836712	FMitF: Verifying concurrent system software with Cspec	47.070	224,502	-
NSF	CCF-1845763	CAREER: Parallel Algorithms and Frameworks for Graph and Hypergraph Processing	47.070	27,135	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	CCF-1901292	AF: Medium: Collaborative Research: Theoretical Foundations of Deep Generative Models and High-Dimensional Distributions	47.070	77,314	-
NSF	CCF-1909429	AF:Small Average-Case Fine-Grained Complexity	47.070	229,262	-
NSF	CCF-1918421	Expeditions: Collaborative Research: Global Pervasive Computational Epidemiology	47.070	49,195	-
NSF	CCF-1918839	Expeditions:Understanding the World Through Code	47.070	408,341	-
NSF	CCF-1931307	NSF Student Travel Grant for 2019 TCS Women Meeting at STOC	47.070	-5,842	-
NSF	CCF-1937501	RTML: Large: Co-design of Hardware and Algorithms for Energy-efficient Robot Learning	47.070	381,775	-
NSF	CCF-1940205	CAREER: Reducibility among high-dimensional statistics problems: information preserving mappings, algorithms, and complexity.	47.070	52,320	-
NSF	CCF-1943349	CAREER: Efficient Algorithms and Hardware for Accelerated Machine Learning	47.070	5,000	-
NSF	CCF-1955217	Collaborative Research: AF : Medium: Foundations of Structured Optimization	47.070	2,740	-
NSF	CCF-1955864	Collaborative Research: CNS: Occlusion and directional resolution in computational imaging	47.070	77,429	-
NSF	CCF-1956054	AF Medium: DNA-based Data Storage and Computing Materials	47.070	98,457	-
NSF	CCF-1956211	Collaborative Research: FET: Medium: Quantum Localization and Synchronization Networks	47.070	25,443	-
NSF	CCF-2003830	AF: Small: Distributed Algorithms for Dynamic, Noisy Platforms: Wireless Networks, Robot Swarms, and Insect Colonies	47.070	49,915	-
NSF	CCF-2006664	AF: Small: Sparsity in Local Computation	47.070	86,680	-
NSF	CCF-2006798	Collaborative Research: AF: Small: Fine-grained complexity of approximate problems	47.070	82,526	-
NSF	CCF-2007674	FET: Small: Robust and modular CRISPR/dCas9 transcriptional programs through regulated dCas9 generators	47.070	74,537	-
NSF	CCF-2028888	Collaborative Research: PPoSS: Planning: Principles for Edge Sensing and Computing for Personalized, Precision Healthcare at National Scale	47.070	6,937	-
NSF	CCF-2029016	Collaborative Research: PPoSS: Planning: Scalable Systems for Probabilistic Programming	47.070	42,860	-
NSF	CCR-1822920	SPX: Collaborative Research: Distributed Database Management with Logical Leases and Hardware Transactional Memory	47.070	321,661	-
NSF	CNS-1347267	MIT VMS I-Corps Site	47.070	47,439	-
NSF	CNS-1350685	CAREER: Practical Algorithms and Fundamental Limits for Complex Cyber-Physical Systems	47.070	-349	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	CNS-1407470	NeTS:Medium:Collaborative Research:An App-Centric Transport Architecture for the Internet	47.070	86,070	-
NSF	CNS-1413920	TWC: TTP Option: Frontier: Collaborative: MACS: A Modular Approach to Cloud Security	47.070	76,540	-
NSF	CNS-1523546	NeTS:Small: Low Latency Scheduling for Data Centers	47.070	43,592	-
NSF	CNS-1524317	NeTS: Small: A Migration Approach to Optimal Control of Wireless Networks	47.070	20,834	-
NSF	CNS-1526791	NeTS: Small: A Programmable Network Data Plane for Resource Management in Datacenters	47.070	51,174	-
NSF	CNS-1526815	NSFSaTC-BSF: TWC: Small: Enabling Secure and Private Cloud Computing using Coresets	47.070	86,683	-
NSF	CNS-1563763	CSR:Medium: A high-performance certified file system and applications	47.070	194,710	-
NSF	CNS-1563826	NeTS: Medium: Collaborative Research: Language and Hardware Primitives for Programming the Data Plane in High-Speed Networks	47.070	377,122	-
NSF	CNS-1617091	NeTS: Small: Collaborative Research: Ultrascale WDM-based Datacenter Networks: Architecture Design and Control Algorithms	47.070	18,402	-
NSF	CNS-1704172	CSR: Medium: Collaborative Research: Soup: Flexible Storage and Processing for On-Line Applications	47.070	143,717	-
NSF	CNS-1713725	NeTS: Small: Optimizing Information Freshness in Wireless Networks	47.070	103,744	-
NSF	CNS-1717199	NeTS: Small: Cognitive Management and Control of Agile Dynamic Optical Networks	47.070	55,652	-
NSF	CNS-1718161	NSF-BSF: Foundations of Lattice-based Cryptography	47.070	18,742	-
NSF	CNS-1735463	CRISP Type 2: Collaborative Research: Understanding the benefits and mitigating the risks of interdependence in critical infrastructure systems	47.070	222,117	-
NSF	CNS-1739723	CPS: Small: Scaling Cyber-Physical Systems to the Low-Power Internet of Things	47.070	26,814	-
NSF	CNS-1751009	CAREER: Data-Driven Network Resource Management Systems	47.070	59,351	-
NSF	CNS-1801399	SaTC: CORE: Medium: Collaborative: Bridging the Gap between Protocol Design and Implementation through Automated Mapping	47.070	330	-
NSF	CNS-1812522	SaTC:CORE:Small: verifying security for data non-interference	47.070	148,623	-
NSF	CNS-1813087	SaTC: CORE: Small: Design of Efficient, Horizontally-Scaling, and Strongly Anonymous Communication Networks	47.070	196,512	-
NSF	CNS-1815221	SaTC: CORE: Small: Towards Adversarially Robust Machine Learning	47.070	87,848	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	CNS-1837212	CPS:Medium: LEAR-CPS: Low-Energy computing for Autonomous mobile Robotic CPS via Co-Design of Algorithms and Integrated Circuits	47.070	203,229	-
NSF	CNS-1841562	NSF Student Travel Grant for the ACM Conference on Information-Centric Networking 2018	47.070	0	-
NSF	CNS-1844280	CAREER: Wirelesss Sensing for In Vivo Medical Devices	47.070	96,038	-
NSF	CNS-1907905	CNS Core: Small: Wireless Network Control in Uncooperative and Adversarial Environments	47.070	56,916	-
NSF	CNS-1910676	CNS Core: Small: Network Architecture and Routing Protocols for Payment Channel Networks	47.070	191,491	-
NSF	CNS-1923130	CSforAll: RPP: Pathways for Advancing Computing Education	47.070	42,923	-
NSF	CNS-1925583	CCRI: Planning: Algorithmically Updating Repository of Reductions in Fine-Grained Complexity	47.070	-8,712	-
NSF	CNS-1925609	CCRI: Medium: Cilk Infrastructure for Next-Generation Parallel-Programming Research	47.070	341,609	-
NSF	CNS-1946976	EAGER: Scalable Photonic AI Accelerators Based on Photoelectric Multiplication	47.070	69,171	-
NSF	CNS-1955370	Collaborative Research: CNS Core: Medium: Learning to Cache and Caching to Learn in High Performance Caching Systems	47.070	74,425	-
NSF	CNS-2002908	Collaborative Research: MLWiNS: Deep Neural Networks Meet Physical Layer Communications -- Learning with Knowledge of Structure	47.070	55,064	-
NSF	CNS-2006827	Collaborative Research: CNS Core: Small: Understanding Per-Hop Flow Control	47.070	111,186	-
NSF	CNS-2008624	Collaborative Research: CNS Core: Small: A Principled Framework for Workload Distribution Techniques in Large-Scale Networks	47.070	40,833	-
NSF	CNS-2031115	COVID-19: RAPID: Coordination and summarization of studies of cyberspace during COVID-19 pandemic	47.070	75,960	-
NSF	CNS-2031115	RAPID: Coordination and summarization of studies of cyberspace during COVID-19 pandemic	47.070	9,240	-
NSF	CNS-2031288	COVID-19: RAPID: SafePaths: A privacy-first contact tracing solution for early interventions of COVID-19 spread	47.070	100,000	-
NSF	CNS-2032704	COVID-19: RAPID: Wireless Positioning for Mitigating COVID19 Surface Transmissions	47.070	83,488	-
NSF	CNS-2043385	SCC-CIVIC-PG Track A: Enhancing Transit Flexibility to Improve Post-Pandemic Sustainability	47.070	23,638	-
NSF	CNS-2044973	CAREER: Certifiable Perception for Autonomous Cyber-Physical Systems	47.070	1,510	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	DMS-1839258	TRIPODS+X:RES:Collaborative Research: Learning with expert-in-the-loop for multimodal weakly labeled data: with application to massive scale medical imaging	47.070	145,933	-
NSF	DRL-1734443	NRI: INT: COLLAB: Development, Deployment and Evaluation of Personalized Learning Companion Robots for Early Literacy and Language Learning	47.070	155,742	38,624
NSF	IIP-2023995	I-Corps Teams: Label-free Optical Imaging of the Lymphatic System for Anatomical Pathology, Image-guided Surgery, and Disease Screening.	47.070	1,166	-
NSF	IIP-2029338	I-Corps Teams: Rapid 3D prnting in gel suspension	47.070	37,933	-
NSF	IIS -2002324	CHS: Small: Collaborative Research: Catalyzing Youth Civic Engagement Through Innovations in Social Computing	47.070	20,841	-
NSF	IIS-1350160	CAREER: Human-Aware Autonomy for Team-Oriented Environments	47.070	109,620	-
NSF	IIS-1404494	SCH: EXP: Collaborative Research: THink - Inferring Cognitive State From Subtle Behaviors	47.070	0	5,440
NSF	IIS-1453141	CAREER: Advances in Monitoring Human Performance: Moving Wearable Technology from the Expert to Nonexpert User	47.070	32,957	-
NSF	IIS-1527181	RI: Small: Time Resolved Imaging: New Methods for Capture, Analysis and Applications	47.070	12,104	-
NSF	IIS-1546290	BIGDATA: Collaborative Research: F: Making Big Data Accessible on Personal Computers: Big Network Algorithms and Data Streams	47.070	-5,454	-
NSF	IIS-1553284	CAREER: Scalable learning with combinatorial structure	47.070	140,698	-
NSF	IIS-1607189	US-Israel Research Proposal: IIS: CRCNS: Collaborative: New Tools for Extracting Neuronal Phenotypes from a Volumetric Set of Cerebral Cortex Images	47.070	2,484	-
NSF	IIS-1607486	US-German Research Proposal: Neurocomputation in the Visual Periphery: Experiments and Models	47.070	79,751	-
NSF	IIS-1637824	NRI: Collaborative Research: Towards Robots with Human Dexterity	47.070	60,295	-
NSF	IIS-1716413	CHS: Small: An Integrated Editing Environment for 3D Printing	47.070	179,665	-
NSF	IIS-1718258	III:Small:A New Perspective on Grouped Variable Selection via Modern Optimization	47.070	93,722	-
NSF	IIS-1723381	S&AS:INT: Integrated Reasoning, Planning and Acting for Household Robots	47.070	43,055	-
NSF	IIS-1723943	S&AS: INT: COLLAB: Autonomy as a Service	47.070	62,594	-
NSF	IIS-1729931	Collaborative Research: Computational Photo-Scatterography: Unraveling Scattered Photons for Bio-imaging	47.070	162,972	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	IIS-1741137	BIGDATA: F: Testing high dimensional distributions without the curse of dimensionality	47.070	22,133	9,031
NSF	IIS-1741341	BIGDATA: F: Collaborative Research: Towards automating data analysis: interpretable, interactive, and scalable learning via discrete probability	47.070	377,956	-
NSF	IIS-1745125	CAREER: Exact Algorithms for Learning Latent Structure	47.070	893	-
NSF	IIS-1750286	CAREER: Robust, scalable, reliable machine learning	47.070	62,461	-
NSF	IIS-1761812	Spokes: MEDIUM: NORTHEAST: Collaborative: Data science foundry: A collaborative platform for computational social science	47.070	168,631	-
NSF	IIS-1763434	III: Medium: Massively Parallel Data Analytics on Heterogeneous Architectures	47.070	350,777	-
NSF	IIS-1815372	CHS: Small: Collaborative Research: Computational Acoustic Design for Digital Manufacturing	47.070	29,604	-
NSF	IIS-1815529	RI:Small:Computational analysis of eye movements in reading: reader characteristics, cognitive state, and natural language processing	47.070	98,335	-
NSF	IIS-1815585	CHS: Small: Collaborative Research: Computational Fine Art Reproduction	47.070	71,881	-
NSF	IIS-1822181	2nd Summer School on Cognitive Robotics	47.070	-1,987	-
NSF	IIS-1830282	NRI:INT:COLLAB: Collaborative Task Planning and Learning through Language Communication in a Human-Robot Team	47.070	157,110	-
NSF	IIS-1833154	Workshop for Women in Machine Learning	47.070	6,895	-
NSF	IIS-1838071	BIGDATA:F: Statistical and Computational Optimal Transport for Geometric Data Analysis	47.070	226,992	-
NSF	IIS-1844406	CAREER: Adaptive Physical User Interfaces	47.070	181,528	-
NSF	IIS-1846088	CAREER: Modern nonconvex optimization for machine learning: foundations of geometric and scalable techniques	47.070	52,969	-
NSF	IIS-1900933	III: Medium: Learning-based Synthesis of Data Processing Engines	47.070	209,262	-
NSF	IIS-1900991	III: Large: Collaborative Research: Analysis Engineering for Robust End-to-End Data Science	47.070	3,200	-
NSF	IIS-1926930	EAGER: AI-DCL: Collaborative Research: Understanding and Overcoming Biases in STEM Education Using Machine Learning	47.070	11,012	-
NSF	IIS-1935450	EAGER: Reimagining Teachers? Assessment Literacy Using Game-Based learning Analytics	47.070	33,426	-
NSF	IIS-1942659	CAREER: Effective Interaction Design for Data Visualization	47.070	28,914	-
NSF	IIS-1954886	CHS: Medium: Collaborative Research: Increasing Communication Rates through a Haptic Display of Speech	47.070	77,365	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	IIS-1955697	Collaborative Research: CHS: Medium: Discovery and Exploration of Design Trade-Offs	47.070	90,963	-
NSF	IIS-2006152	CHS:Small:Capturing Multisensory Interactions in Cutaneous Displays	47.070	151,156	-
NSF	IIS-2008116	Collaborative Research: CHS: Small: Learning Maker Skills By Building Game Props	47.070	55,088	-
NSF	IIS-2027266	COVID-19: RAPID: Preventing the Spread of Coronavirus with Efficient Deep Learning	47.070	128,078	-
NSF	IIS-2033792	Quantifying the Unknown Unknowns for Data Integration	47.070	1,542	-
NSF	IIS-2035018	EAGER: Neural Behavioral Analysis (NBA) Pipeline for Behavior and Neural Activity Analysis in Autism	47.070	86,086	-
NSF	OAC-1636766	BD Spokes: SPOKE: NORTHEAST: Collaborative: A Licensing Model and Ecosystem for Data Sharing	47.070	32,222	25,319
NSF	OAC-1739772	Collaborative Research: SSE: Extending the physics reach of LHCb in Run 3 using machine learning in the real-time data ingestion and reduction system	47.070	17,687	-
NSF	OAC-1835443	Framework: Software: Next-Generation Cyberinfrastructure for Large-Scale Computer-Based Scientific Analysis and Discovery	47.070	360,214	23,460
NSF	OAC-1839159	RAISE TAQS: Very Large Scale Integrated Electronics and Photonics Platform for Scalable Quantum Information Processing	47.070	209,033	-
NSF	OAC-1841617	Collaborative Research: Community Planning for Scalable Cyberinfrastructure to Support Multi-Messenger Astrophysics	47.070	1,145	-
NSF	OAC-1931391	Frameworks: Collaborative Research: Extensible and community-driven thermodynamics, transport, and chemical kinetics modeling with Cantera: expanding to diverse scientific domains	47.070	124,849	-
NSF	OAC-1931469	Collaborative Research: Frameworks: Machine learning and FPGA computing for real-time applications in big-data physics experiments	47.070	176,554	-
NSF	OAC-1934700	Collaborative Research: Advancing Science with Accelerated Machine Learning	47.070	224,437	-
NSF	OAC-1940231	Collaborative Research: Autonomous Computing Materials	47.070	205,731	-
NSF	OAC-1947440	BD Spokes: SPOKE: NORTHEAST: Collaborative: A Licensing Model and Ecosystem for Data Sharing	47.070	91,111	-
NSF	OAC-2004645	Collaborative Research : Elements : Extending the physics reach of LHCb by developing and deploying algorithms for a fully GPU-based first trigger stage	47.070	35,030	-
NSF	OAC-2041897	EAGER: Computer Progress and Economic Prosperity	47.070	174,521	-
NSF	OAC-2053626	Collaborative Research: From Brains to Society: Neural Underpinnings of Collective Behaviors Via Massive Data and Experiments	47.070	251,755	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	OAC-2103799	Collaborative Research: Elements: A Self-tuning Anomaly Detection Service	47.070	16,297	-
NSF	OIA-1231216	A Center for Brains, Minds, and Machines: The Science and the Technology of Intelligence	47.070	28,251	-
NSF	DEB-1655983	NSFDEB-BSF: Ecological networks and ecosystem function in the cow rumen microbiome: a multi-scale approach	47.074	-11,523	-
NSF	DEB-1924148	CNH2-S: Mercury Pollution and Human-Technical-Environmental Interactions in Artisanal Mining	47.074	197,541	71,822
NSF	DEB-2024349	EAGER: Bioforecasting: understanding and predicting species persistence in ecological communities under changing environments	47.074	86,790	-
NSF	IOS-1645061	IOS EDGE: Development of genetic tools for the dominant phototroph in the sea	47.074	82,617	-
NSF	IOS-1845663	CAREER: Dissecting Neural Mechanisms of Behavioral State Control in C. elegans	47.074	97,085	-
NSF	IOS-2035181	EDGE-FGT: Genetic Tools for Picocyanobacteria that Dominate the Oceans	47.074	2,769	-
NSF	MCB-1652390	CAREER: Integrating Chem. Biology Methods & RNA Virus Models to Elucidate How the Metazoan Proteostasis Ntwk Modulates Protein Evolutionary Landscapes	47.074	149,441	-
NSF	MCB-1715859	Breaking the Histone Code: Predicting Genome Organization with Chromatin States	47.074	12,719	-
NSF	MCB-1817708	Multiplexing Autonomous Metabolite Valves	47.074	121,932	-
NSF	MCB-1840257	RoL:FELS:RAISE: Principles of Modular Organization in Resource-Limited Biological Circuits	47.074	156,420	-
NSF	MCB-1844668	CAREER: Cracking the Cleavage Code of RNase Y and Its Associated Y-Complex in Firmicutes	47.074	174,932	-
NSF	MCB-1943141	CAREER: Towards open and community-responsive ecological editing	47.074	288,600	371
NSF	MCB-2027165	Programmable Abiotic-Biotic Interface With planar DNA Nanopore Electrodes	47.074	139,442	12,098
NSF	MCB-2027949	Collaborative Research: MODULUS: Uncovering and re-engineering chromatin modification circuits that dictate epigenetic cell memory	47.074	182,880	-
NSF	MCB-2036037	PROTEIN REGULATORS OF 3D GENOME ARCHITECTURE: DYNAMICS, MECHANISM AND FUNCTION	47.074	105,592	-
NSF	MCB-2041555	Collaborative Research: Multidimensional single-cell phenotyping for elucidating genome to phenome relationships	47.074	5,693	-
NSF	MCB-2042362	CAREER: Chromatin Folding from the Bottom-up	47.074	64,536	-
NSF	MCB-2044895	Biophysics of Nuclear Condensates	47.074	9,520	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	MCB-2046778	CAREER: Developing novel structural techniques to untangle bacterial ribosome biogenesis	47.074	25,097	-
NSF	BCS-1551866	CompCog: The edge of the lexicon: Productive knowledge and direct experience in the acquisition and processing of multiword expressions	47.075	1,234	-
NSF	BCS-1724135	CRCNS US-German-Israeli Collaborative Research Proposal: Hierarchical Coordination of Complex Actions	47.075	53,712	-
NSF	BCS-1823919	Expanding Access to Webcam-based online data collection for developmental research	47.075	163,290	-
NSF	BCS-1826757	CompCog: Advancing Understanding of Visual Crowding	47.075	74,941	-
NSF	BCS-1827598	Collaborative research: An integrated model of phonetic analysis and lexical access based on individual acoustic cues to features	47.075	110,515	-
NSF	BCS-1921501	Computational auditory scene analysis as causal inference	47.075	142,897	-
NSF	BCS-2016404	Doctoral Dissertation Research: Cultures of North American Cannabis Cultivation in an Age of Legalization	47.075	6,453	-
NSF	BCS-2020840	Evaluating Meaning-based explanations of syntactic island effects cross-linguistically	47.075	13,431	-
NSF	SES-1528487	Collaborative Research: A New Design for Identifying Persuasion Effects and Selection in Media Exposure Experiments via Patient Preference Trials	47.075	86,192	-
NSF	SES-1555071	CAREER: Dynamic Games and Institutions	47.075	115,229	-
NSF	SES-1558205	Choice, Learning and Equillibrium	47.075	-2,579	-
NSF	SES-1559367	Experimental Evidence of the Effectiveness of Mechanisms Designed to Increase Tax Compliance	47.075	59,618	-
NSF	SES-1725235	Policy as a Private Good: Firm-Lobbyist-Politician Networks in the Legislative Process	47.075	15,248	-
NSF	SES-1757198	Information, Attention, and Coordination in Macroeconomics	47.075	25,956	-
NSF	SES-1757199	Inferences in Factor Pricing Models with Many Assets	47.075	795	-
NSF	SES-1757307	Multidisciplinary Conference on Election Auditing	47.075	0	-
NSF	SES-1848857	Risk Markets Imbalances and Macroeconomics	47.075	54,040	-
NSF	SES-1919437	Collaborative Research: The Tax Administration Production Function: Evidence from Indonesia	47.075	30,038	-
NSF	SES-1941577	Doctoral Dissertation Research: Sensing the World: The Development of Tactile Information Systems	47.075	3,730	-
NSF	SES-1944138	CAREER: Information Frictions in Consumer Credit Markets: Evidence on Policy, Practice, and Beliefs	47.075	55,526	-
NSF	SES-1946917	Dissertation Grant: Antibiotic Resistance, Planetary Crisis, and Bacteriophage Futures in the 21st Century	47.075	1,178	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	SES-1947087	Standard Grant: Genetown: Tracing the History of the Biotechnology Industry in the Greater Boston Area, 1973-2000	47.075	115,347	-
NSF	SES-1948692	Collaborative Research: The economics of social data	47.075	47,458	-
NSF	SES-1951056	Apprenticeship, Cooperation and Choice	47.075	37,740	-
NSF	SES-2017315	Strategic Links Between Campaign Donations and Lobbying: Evidence from the LobbyView Database of Money in Politics	47.075	62,695	-
NSF	SES-2049263	NSF-BSF: Collaborative Research: Market Conduct in Technology Adoption in the Automobile Industry	47.075	2,395	-
NSF	SMA-1757344	Mapping the Inventor Gender Gap: Analyzing Regional & Organization Variation in the Inclusivity of the Innovation Economy	47.075	73,735	-
NSF	DGE-1745302	Graduate Research Fellowship Program (GRFP)	47.076	17,680,580	-
NSF	DGE-1806815	IGE: Enhancing Graduate Education in Systems Thinking and Multi-Stakeholder Design through a Co-Creation Toolkit	47.076	85,216	-
NSF	DRL_2005702	Collaborative Research: Facilitating Computational Tinkering: Design-Based Strategies to Engage Children and Families in Creating with Code	47.076	63,179	-
NSF	DRL-1639069	DRK-12 Teachers with GUTS (PI Irene Lee)	47.076	1,500	-9,563
NSF	DRL-1644540	Neurocognitive underpinnings of dyslexia and dyscalculia	47.076	84,018	27,977
NSF	DRL-1906636	Outsmarting Artificial Intelligence	47.076	104,960	-
NSF	DRL-1934126	Made with Math	47.076	410,050	-
NSF	DRL-2022502	EAGER: ITEST: Developing AI Literacy (DAILy): An EAGER proposal to refine and study interventions to teach fundamental concepts in AI	47.076	272,714	143,136
NSF	DRL-2024679	Collaborative Research:NCS-FO: How cognitive maps potentiate newlearning: constraining a computational model by decoding the thoughtsof superior memorists	47.076	27,013	-
NSF	DRL-2048746	Developing and Testing Innovations [DTI]: Everyday AI for Youth	47.076	75,896	-
NSF	DUE-1839921	FW-HTF Theme 2: Collaborative Research: Designing Future Reality Today: Physical-Reality Simulation Platform for Future Factories	47.076	87,449	-
NSF	IIS-1917668	Supporting Teachers with Interaction Tools for Challenging Happenings (STITCH)	47.076	369,555	164,900
NSF	OPP-1853918	NSFGEO-NERC: Collaborative Research: A new mechanistic framework for modeling rift processes in Antarctic ice shelves validated through improved strain-rate and seismic observations	47.078	71,459	-
NSF	OPP-1931131	A New Instrument and Measurement Approach to Cryo-Seismogeodesy: Monitoring Antarctic Ice Shelf Stability Using Ice Penetrators	47.078	43,456	-
NSF	OIA-2021069	GCR: Collaborative Research: Fine-grain generation of multiscale patterns in programmable organoids using microrobots	47.083	65,500	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	OIA-2035143	NSF Convergence Accelerator: Future of Oceans: Innovation, Exploration, and Utilization	47.083	76,042	11,015
NSF	OIA-2035215	NSF Convergence Accelerator: Socioresilient Infrastructure: Precision Materials, Assemblages, and Systems	47.083	83,712	-
NSF	OIA-2040620	NSF Convergence Accelerator Track C: Synergistic thrusts towards practical topological quantum computing	47.083	538,570	144,537
NSF	OIA-2040636	NSF Convergence Accelerator Track D: A Community Resource for Innovation in Polymer Materials	47.083	593,449	266,947
NSF	OIA-2122039	Election Science: Convergence Accelerator Workshop Proposal	47.083	79,658	-
NSF	CMMI-1825731	Collaborative Research: Nanomanufacturing of Wafer-Scale 2D Materials: From multilayer precisely into monolayers	47.RD	106,996	-
NSF	CMMI-1826216	Manufacturing USA: Fundamentals and Applications of High-Resolution Flexographic Printing Using Nanoporous Stamps	47.RD	57,971	-
NSF	CMMI-1917891	Trinity: Tradable Mobility Credits for Efficient Transportation	47.RD	100,968	-
NSF	CNS-1739505	CPS: Small: Recover Algorithms for Dynamic Infrastructure Networks	47.RD	121,485	-
NSF	CNS-1932406	CPS: DFG Joint: Medium: Collaborative Research: Data-driven Secure Holonic control and Optimization for the Networked Cyber-Physical Systems (DeCisiON-CPS)	47.RD	35,706	-
NSF	ECCS-1808826	Magnetic Memory Devices Based on Antiferromagnet	47.RD	150,527	-
NSF	ECCS-1954606	Collaborative Research: Energy Efficient Voltage Controlled Non-volatile Domain Wall Devices for Neural Networks	47.RD	189,366	-
NSF	IIP-1951872	I-Corps Teams: Novel, heat-stable binding proteins for diverse diagnostic applications	47.RD	-15,798	-
NSF	IIP-2011473	I-Corps Teams: IoT Sensor Networks Detecting User Behavior in Architectural Space	47.RD	13,023	-
NSF	IIP-2016398	I-Corps Teams: Machine Learning (ML)-powered Data Analyzer for Radio Frequency Integrated Circuits (RFIC) Design	47.RD	15,336	-
NSF	SES-2001208	Advancing Methods for Analyzing Coordination: New Developments in Global Game Theory	47.RD	94,191	-
		Total for National Science Foundation		**81,333,072**	**5,252,424**
		TOTAL for National Science Foundation		**81,333,072**	**5,252,424**
		TOTAL Federal Research Support - On Campus		**361,048,951**	**44,243,438**

Appendix A-2
Massachusetts Institue of Technology
Schedule of Expenditures of Federal Awards - Lincoln Laboratory
By Sponsor & Contract - FY 2021

Sponsor	Contract Number	Program Name	AL #	Total $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE					
AIR FORCE	FA8721-05-C-0002		12.RD	$ 35,543	$ 35,543
	FA8702-15-D-0001		12.RD	374,991,499	29,136,416
ARMY	FA8702-15-D-0001		12.RD	65,349,454	4,203,867
CLASSIFIED	FA8702-15-D-0001		12.RD	212,879,873	11,877,955
DEFENSE ADVANCED RESEARCH PROJECT AGENCY	FA8702-15-D-0001		12.RD	30,352,760	1,318,116
MISSILE DEFENSE AGENCY	FA8721-05-C-0002		12.RD	(10,188)	(10,188)
	FA8702-15-D-0001		12.RD	84,509,477	4,856,568
NATIONAL SECURITY AGENCY	FA8702-15-D-0001		12.RD	11,487,894	170,116
NAVY	FA8702-15-D-0001		12.RD	50,903,609	2,783,899
OTHER DEPARTMENT OF DEFENSE	FA8702-15-D-0001		12.RD	144,529,695	5,019,619
TOTAL DEPARTMENT OF DEFENSE				**$ 975,029,616**	**$ 59,391,911**
NON DEPARTMENT OF DEFENSE					
DEPARTMENT OF ENERGY	FA8702-15-D-0001		81.RD	$ 2,675,625	$ 36,926
DEPARTMENT OF HOMELAND SECURITY	FA8702-15-D-0001		97.RD	24,010,245	2,393,226
FEDERAL AVIATION AUTHORITY	FA8702-15-D-0001		20.RD	23,194,632	140,516
NATIONAL AERONAUTICS AND SPACE ADMINISTRATIOI	FA8702-15-D-0001		43.RD	39,935,041	5,762,428
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATIOI	FA8702-15-D-0001		11.RD	6,675,037	452,424
OTHER NON DOD	FA8702-15-D-0001		99.RD	14,062,368	194,593
TOTAL NON-DEPARTMENT OF DEFENSE				**$ 110,552,948**	**$ 8,980,113**
TOTAL DIRECT AWARDS				**$ 1,085,582,564**	**$ 68,372,024**

Appendix A-2
Massachusetts Institue of Technology
Schedule of Expenditures of Federal Awards - Lincoln Laboratory
By Sponsor & Contract - FY 2021 Continued

Prime Sponsor and Sponsor	Passthrough Contract Number	Program Name	AL #	Total	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE					
AIR FORCE					
ASTRA, LLC	FA8750-18-C-0119	Sun-Tracking Millimeter-Wave Radiometer	12.RD	$ 86,644	$ -
Draper Laboratory	FA8075-17-F-1310	Draper RF System Characterization	12.RD	39,898	-
Vescent Photonics	FA864921P0956	SBS Lasers for Quantum Timing	12.RD	153,221	-
MIT Campus	FA8750-19-2-1000	COVID-19: AI for Personalized Foreign Language Education	12.RD	12,906	-
MIT Campus	FA8750-19-2-1000	COVID-19: Explainable Machine Learning for Decision	12.RD	152,137	-
MIT Campus	FA8750-19-2-1000	COVID-19: AI-Enhanced Spectral Awareness	12.RD	93,637	-
MIT Campus	FA8750-19-2-1000	COVID-19: Objective Performance Prediction & Optimization	12.RD	392,288	-
MIT Campus	FA8750-19-2-1000	COVID-19: AI-Enhanced Spectral Awareness	12.RD	96,716	-
ARMY					
Advanced Functional Fabrics of America	W15QKN-16-3-0001	Controlled Reflectivity Fabrics	12.RD	1,612,188	97,500
Si2 Technologies	W911QX-18-P-0178	Additive Manufacturing for RF Materials	12.RD	111,433	-
Synoptic, Inc.	W56KGU21C0013	Distributed Tactical Communications	12.RD	75,960	-
MIT Campus	W911NF-13-D-0001	Diamond Electronics	12.RD	406,728	-
MIT Campus	W911NF-19-1-0481	Development of Methods for Cont.	12.RD	36,075	-
MIT Campus	W911NF-20-1-0037	Metastable Qui-Bits in Multi-Ion Systems	12.RD	47,009	-
MIT Campus	W911NF-20-F0026	High Performance Micropropulsion System	12.RD	318,110	-
MIT Campus	W911NF-13-D-0001	Q-Diamond	12.RD	276,028	-
DEFENSE MICROELECTRONICS ACTIVITY					
Optowares Inc.	HQ0727-19-C-0001	Measurement Technology for Thin Films on Sapphire	12.RD	173,440	46,801
MISSILE DEFENSE AGENCY					
Triton Systems, Inc.	HQ0147-17-C-7431	Nanofuse	12.RD	35,277	-
Si2 Technologies, Inc.	HQ0860-21-C-7035	Additive Manufacturing of RF Devices	12.RD	24,779	-
NAVY					
Ohio State University	N00014-17-1-2440	Low Excess-Noise Avalanche Photodetector	12.RD	18,349	-
Science Research Laboratory, Inc.	N68335-18-C-0509	Efficient Compact Diode-Pumped High-Power Fiber Coupled Laser Modules	12.RD	318	-
Vescent Photonics LLC	N68335-19-C-0642	Diamond Deployed Devices	12.RD	87,915	-
The Innovation Laboratory	N68335-20-F-0566	Aircraft Threat Intent Estimation	12.RD	284,440	-
Triton Systems, Inc.	N68335-20-C-0704	Retractable Antenna for Improved Communications in Satellite-denied Environment	12.RD	38,814	-
MIT Campus	N00014-20-1-2533	Secure and Resiliant Soft Real-Time	12.RD	218,115	-
OUSD A&S					
Johns Hopkins University Applied Physics Laboratory	HQ003419D0006 (WHS1)	Cyber Resillience Assessments	12.RD	503,254	-
SOCOM					
Mission Solutions Group	H92405-20-F-0003-P00001	API and Data Framework for Tactical AI	12.RD	160,136	-
		Total Department of Defense		**$ 5,455,815**	**$ 144,301**
NON DEPARTMENT OF DEFENSE					
DEPARTMENT OF ENERGY					
University of Rochester	DE-NA0001944	High Power Optical Absorption Measurements	81.RD	$ 2,563	$ -
Triton Systems, Inc.	DE-SC0017884	Photonic Fabrics for Optical Tagging	81.RD	14,418	-
Lawrence Berkeley National Laboratory	DE-AC02-05CH11231	Advanced Quantum Testbed	81.RD	2,590,227	-
Telluric Labs, LLC	DE-SC0019581	Rad-Hard Terabit Data Links for Particle Physics	81.RD	114,547	10,000
UT-Battelle, LLC	DE-AC05-00OR22725	Smokey-X: Cyber-Physical Systems Research	81.RD	148,852	-
MIT Campus	499232	Phonon-Coupling in Qubits	81.RD	105,494	-
MIT Campus	C00069059-2	GaN Vertical Fin Power Transistor Epi	81.135	83,248	-
MIT Campus	N000394719	Microplasma Sputtering for 3D Printing	81.RD	7,516	-
		Total Department of Energy		**$ 3,066,865**	**$ 10,000**

Appendix A-2
Massachusetts Institue of Technology
Schedule of Expenditures of Federal Awards - Lincoln Laboratory
By Sponsor & Contract - FY 2021 Continued

Prime Sponsor and Sponsor	Passthrough Contract Number	Program Name	AL #	Total	$ Amount Passed to Subrecipients
FEDERAL AVIATION AUTHORITY					
Aeronautics Corporation of America	DTFACT-16-00031	Cyber-Safety Commercial Aviation Team	20.RD	$ 328,304	$ -
MIT Campus	13-C-AJFE-MIT-047	Ascent Project 46	20.RD	93,340	-
		Total Federal Aviation Authority		**$ 421,644**	$ -
FEDERAL BUREAU OF INVESTIGATION					
Federal Bureau of Investigation Science and Technology Acquisition Unit	15F06718P0006714	WMD Threat Assessment	16.RD	$ 9,164	$ -
		Total Federal Bureau of Investigation		**$ 9,164**	$ -
NATIONAL AERONAUTICS AND SPACE ADMINISTRATIOI					
Jet Propulsion Laboratory	NNN12AA01C	Psyche Deep-Space Optical Communications	43.RD	$ 253,285	$ -
Jet Propulsion Laboratory	NNN12AA01C	Europa Lander Ladar Design Study	43.RD	6,410,174	909,123
Jet Propulsion Laboratory	NNN12AA01C	Uplink Laser Transmitter Study	43.RD	5,812	-
MIT Campus	80NSSC18K1677	Auroral Emissions Radio Explorer	43.RD	247,592	-
MIT Campus	80NSSC19K0617	LL Vista	43.RD	562,648	-
MIT Campus	80NSSC19K0335	Arcus	43.RD	11,404	-
MIT Campus	80NSSC18K0138	High-Speed, Low-Noise, Radiation-Tolerant	43.RD	13,092	-
MIT Campus	62205664-136106	Digital CCD - Packaging	43.001	34,914	-
MIT Campus	SV0-09008	Readying X-Ray Grating	43.RD	151,802	-
MIT Campus	80NSSC20K0401	Toward Fast, Low-Noise, Radiation-Tolerant	43.RD	378,804	-
		Total National Aeronautics and Space Administration		**$ 8,069,527**	**$ 909,123**
NATIONAL INSTITUTE OF HEALTH					
Massachusetts General Hospital	1-R01-EB025145-01	Gated Diffuse Correlation Spectroscopy	93.859	$ 2,321	$ -
Massachusetts General Hospital	1-R01-DK119860-01	Diagnostic Assistant for Fatty Liver Disease	93.859	66,174	-
Massachusetts General Hospital	1-U01-EB028660-01	Diffuse Correlation Spectroscopy for Functional Imaging of the Human Brain	93.859	642,512	-
Massachusetts General Hospital	3U54HL119145-07S1	MIRACLE	93.RD	236,389	-
Massachusetts General Hospital	HHSN272201400008C	Characterizing COVID-19 Aerosols	93.RD	72,182	-
MIT Campus	1-R01-MH111916-01A1	Development of an Integrated Multimodal	93.859	160,547	-
MIT Campus	1-R01-EB025256-01A1	Programmable Multi-Step Genetic Difference	93.859	185,061	-
MIT Campus	230321	Clin Res for Imprv Prev - Vocal Hyperfunc Yr3	93.173	78,264	-
MIT Campus	5-U01-MH117072-03	Towards Integrated 3D Reconstruction	93.859	175,449	-
		Total National Institute of Health		**$ 1,618,899**	**$ -**
NATIONAL SCIENCE FOUNDATION					
National Radio Astronomy Observatory	AST-1519126	3D Printing of Ultra-Low Loss Materials for Radio Astronomy	47.070	$ 23,846	$ -
University of Illinois Urbana-Champagne	FAIN 2016244	Quantum Leap Challenge Institute	47.070	7,745	-
MIT Campus	CCF-1521759	Evolvable Living Computing	47.070	208,277	-
MIT Campus	AST-1836002	LLAMAS Optical System Integration	47.070	3,698	-
MIT Campus	SV0-09003	EHT Space Downlink Development	47.049	73,087	-
		Total National Science Foundation		**$ 316,653**	**$ -**
Total Passthrough Awards				**$ 18,958,567**	**$ 1,063,424**
Total Federal Awards				**$ 1,104,541,131**	**$ 69,435,448**

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE						
Raytheon Technologies Corporation						
DEPARTMENT OF DEFENSE	6944946	1257946	Extreme Value Statistical Framework for Cold Dwell Fatigue Life Prediction in Ti Alloy Components	12.RD	48,947	-
			Total for Raytheon Technologies Corporation		**48,947**	**-**
Lincoln Laboratory						
DEPARTMENT OF DEFENSE	6941919	16-C-19-0445 PO#7000465881	Climate Modeling and Climate Impact Assessment	12.RD	25,882	-
DEPARTMENT OF DEFENSE	6940077	7000438136	Breaking the Diffraction Limit in Micro-Raman Thermography	12.RD	2,434	-
DEPARTMENT OF DEFENSE	6941920	7000469159	A Safe and High-Energy-Density Electrochemical Power System Using Liquid Fluorinated Reactants	12.RD	171,941	-
DEPARTMENT OF DEFENSE	6945136	7000510281	Wearable stem cell scaffolds for expedited tissue regeneration	12.RD	7,265	-
DEPARTMENT OF DEFENSE	6945165	7000511601	Aluminum-Water Buoyancy Engine for Fast Vertical Underwater Glider	12.RD	23,320	-
DEPARTMENT OF DEFENSE	6945494	7000515469	Cold-Source Steep-Slope Field Effect Transistor	12.RD	23,435	-
DEPARTMENT OF DEFENSE	6943900	PO # 7000493110	3D Hetero-integrated Image Sensor via Remote Epitaxy and 2D Layer Transfer	12.RD	20,534	-
DEPARTMENT OF DEFENSE	6941483	PO #7000462800	Multi-Agent Tactical Autonomy Simulation Cluster	12.RD	2,088	-
DEPARTMENT OF DEFENSE	6930859	PO# 7000290592	Coherent Spin Qubits for Quantum-Enhanced Optimization	12.RD	1,658,616	-
DEPARTMENT OF DEFENSE	6931611	PO# 7000306158	Advanced GaN Transistor Technology (AGT2)	12.RD	22,222	-
DEPARTMENT OF DEFENSE	6935139	PO# 7000367982	Cyber Adversarial SCenario modeling and Automated Decision Engine (CASCADE)	12.RD	4,059	-
DEPARTMENT OF DEFENSE	6935279	PO# 7000369000	Microplasmas for Additive Materials Deposition	12.RD	15,589	-
DEPARTMENT OF DEFENSE	6935235	PO# 7000370657	Phase Change Metamaterials	12.RD	85,272	-
DEPARTMENT OF DEFENSE	6935784	PO# 7000379430	Lane-keeping with Localizing GPR in Poor Conditions	12.RD	4,585	-
DEPARTMENT OF DEFENSE	6935965	PO# 7000381569	Demonstration of Logical Qubits using 3D Integration	12.RD	168,486	-
DEPARTMENT OF DEFENSE	6936301	PO# 7000385936	Design and Characterization of JTWPAs	12.RD	12,320	-
DEPARTMENT OF DEFENSE	6936468	PO# 7000386377	Time-Resolved Observations of Precipitation structure and storm Intensity with a Constellation of Smallsats (TROPICS)	12.RD	59,892	-
DEPARTMENT OF DEFENSE	6936545	PO# 7000389700	WaferSat	12.RD	79,358	-
DEPARTMENT OF DEFENSE	6937231	PO# 7000398589 / LETTER NO. 16-C-17-0691	Alternatives for FEMA Disaster-Related Housing Assistance	12.RD	-20,383	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE	6937411	PO# 7000399771	MIT Haystack Observatory Engineering Support for The Lincoln Space Surveillance Complex (LSSC)	12.RD	2,857,404	-
DEPARTMENT OF DEFENSE	6937660	PO# 7000403338	Physics-In-The-Loop Photorealistic Simulation System For High-Throughput Computing Research	12.RD	122,802	-
DEPARTMENT OF DEFENSE	6938341	PO# 7000407322	Evaluation of Stress Fracture Phenomenology Using Ultrasound	12.RD	86	-
DEPARTMENT OF DEFENSE	6937963	PO# 7000409620	Unhackable Mission Computer	12.RD	215,002	-
DEPARTMENT OF DEFENSE	6938413	PO# 7000416344	Thin Film Microbatteries	12.RD	-661	-
DEPARTMENT OF DEFENSE	6939172	PO# 7000424794	Support of the Westford 9M Remote Antenna - Group 64	12.RD	22,949	-
DEPARTMENT OF DEFENSE	6939164	PO# 7000427652	Secure Multi-Party Computation	12.RD	45,157	-
DEPARTMENT OF DEFENSE	6940197	PO# 7000441730	Miniature Cryocooler as a Platform for Quantum Sensors	12.RD	97,596	-
DEPARTMENT OF DEFENSE	6940414	PO# 7000442717	Quantum Memory Technology Development for Quantum Network Testbed Demonstration	12.RD	17,635	-
DEPARTMENT OF DEFENSE	6940223	PO# 7000443135	Task Execution with Semantic Segmentation	12.RD	187,763	-
DEPARTMENT OF DEFENSE	6940387	PO# 7000443447	Resilient Perception in Degraded Environments	12.RD	170,348	-
DEPARTMENT OF DEFENSE	6940262	PO# 7000443563	Low-defect III-N Devices by Remote Epitaxial GaN	12.RD	-51,024	-
DEPARTMENT OF DEFENSE	6940258	PO# 7000443819	Develop tools for performance characterization and optimization of AI software	12.RD	-5,407	-
DEPARTMENT OF DEFENSE	6940307	PO# 7000444597	Wide Area Ocean Floor Mapping	12.RD	39,567	-
DEPARTMENT OF DEFENSE	6942465	PO# 7000445983	Ionobot: Autonomous Ocean Platform	12.RD	25,312	-
DEPARTMENT OF DEFENSE	6940956	PO# 7000455589	Wallace Observatory Support in Mustang Program	12.RD	8,403	-
DEPARTMENT OF DEFENSE	6941150	PO# 7000458166	Non-Reciprocal Freqency Conversion for IBFD	12.RD	24,393	-
DEPARTMENT OF DEFENSE	6941416	PO# 7000462136	Dry-X Adhesive Tape for Instant Surgical-Strength Tissue Sealing	12.RD	13,370	-
DEPARTMENT OF DEFENSE	6941655	PO# 7000465630	ACC 746: Modular Quantum Memory with Photonic Interface	12.RD	21,483	-
DEPARTMENT OF DEFENSE	6942049	PO# 7000466958	AFRL Machine Learning Course	12.RD	23,778	-
DEPARTMENT OF DEFENSE	6941809	PO# 7000467723	ISN-LL Fiber Collaboration	12.RD	94,661	-
DEPARTMENT OF DEFENSE	6941983	PO# 7000469591	High Thermal Conductivity Polymers for Lightweight Thermal Management	12.RD	41,207	-
DEPARTMENT OF DEFENSE	6942305	PO# 7000470769	Technologies for Reliable Assured Autonomy in Challenging Environments (TRAACE)	12.RD	134,957	-
DEPARTMENT OF DEFENSE	6942563	PO# 7000471328	Superconducting Sensors for Neutrino Detection	12.RD	187,950	-
DEPARTMENT OF DEFENSE	6942171	PO# 7000471801	Weakly Supervised Multimodal Learning for Battlefield Medical Diagnosis	12.RD	3,501	-
DEPARTMENT OF DEFENSE	6942397	PO# 7000474480	Design of kirigami airfoils with tunable drag to lift ratio	12.RD	71,290	-
DEPARTMENT OF DEFENSE	6942549	PO# 7000476809	Climate Risks for Key Crops Over Bangladesh	12.RD	11,981	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE	6942724	PO# 7000478792	USAID Humanitarian Supply Chains	12.RD	106,949	-
DEPARTMENT OF DEFENSE	6943010	PO# 7000482739	Super-DICE Superconducting Discrete Integrated Electronics	12.RD	133,577	-
DEPARTMENT OF DEFENSE	6943134	PO# 7000483190	Sequence Representation Learning in Low Resource, Complex Task Regimes (SERT).	12.RD	17,549	-
DEPARTMENT OF DEFENSE	6943126	PO# 7000483598	System Analysis and Prototype Development for Undersea Exploration Platforms	12.RD	59,557	-
DEPARTMENT OF DEFENSE	6943512	PO# 7000488488	Tunable Infrared Detector and Spectrometer Based on Bilayer Graphene	12.RD	151,127	-
DEPARTMENT OF DEFENSE	6943513	PO# 7000488646	Data-driven Exploration of Cyber-Security	12.RD	49,948	-
DEPARTMENT OF DEFENSE	6943524	PO# 7000489142	Quantum Network System Modeling and Analysis	12.RD	88,241	-
DEPARTMENT OF DEFENSE	6943655	PO# 7000490935	Capabilities Development Group	12.RD	59,645	-
DEPARTMENT OF DEFENSE	6944072	PO# 7000494927	Embedded ICS Security Module	12.RD	9,873	-
DEPARTMENT OF DEFENSE	6944075	PO# 7000495145	Cross-Modal Learning with Vision, Natural Sounds, and Speech	12.RD	113,053	-
DEPARTMENT OF DEFENSE	6944314	PO# 7000497500	Micro-Textured Surfaces for Enhanced Two-Phase Thermal Management	12.RD	35,551	-
DEPARTMENT OF DEFENSE	6944366	PO# 7000497681	Multimodal Learning for Medical Diagnostics and Decision-Making (ML4MD)	12.RD	86,460	-
DEPARTMENT OF DEFENSE	6944343	PO# 7000497994	Structurally Embedded 3D Printing of Carbon Nanotube-Copper Composite Antennas and Electronics	12.RD	28,999	-
DEPARTMENT OF DEFENSE	6944457	PO# 7000499886	Solar Cells for Wafer Satellites	12.RD	47,608	-
DEPARTMENT OF DEFENSE	6944493	PO# 7000499932	Harnessing flexoelectricity for broadband photodetection and energy generation	12.RD	31,849	-
DEPARTMENT OF DEFENSE	6944494	PO# 7000500173	Secure Blended Service for 5G and Beyond	12.RD	45,527	-
DEPARTMENT OF DEFENSE	6944702	PO# 7000501363	Reconfigurable Computer Generated Holograms for Freeform Optics	12.RD	42,750	-
DEPARTMENT OF DEFENSE	6944607	PO# 7000501576	Midwave Infrared Integrated Photonics Platform	12.RD	33,452	-
DEPARTMENT OF DEFENSE	6944622	PO# 7000502143	Scalable Topological Superconducting Materials for Fault-tolerant Quantum Information	12.RD	20,003	-
DEPARTMENT OF DEFENSE	6944659	PO# 7000502371	Ferrioelectric FET based in -memory Compute Hardware	12.RD	48,671	-
DEPARTMENT OF DEFENSE	6944653	PO# 7000502464	Long Range Transmissive X-ray Study	12.RD	64	-
DEPARTMENT OF DEFENSE	6945062	PO# 7000503412	Climate Modeling and Climate Impact Assessment	12.RD	51,806	-
DEPARTMENT OF DEFENSE	6944797	PO# 7000504042	Universal Deep Steganalysis: Challenges and Methods	12.RD	3,993	-
DEPARTMENT OF DEFENSE	6944802	PO# 7000504551	Integrated Acousto-optics	12.RD	9,038	-
DEPARTMENT OF DEFENSE	6944883	PO# 7000505815	Data-driven Exploration of Cyber-Security	12.RD	0	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE	6940196	PO#7000441601	Enhanced Thermoelectric Waste Heat Recovery with Semiconductor Intercalation Compounds	12.RD	6,043	-
DEPARTMENT OF DEFENSE	6940203	PO#7000442589	Natural Pathogen Phenomenology	12.RD	949	-
DEPARTMENT OF DEFENSE	6940225	PO#7000442809	Embedded ICS Security Module	12.RD	22,661	-
DEPARTMENT OF DEFENSE	6940512	PO#7000447700	Research and Development with Open Source Probabilistic Programming Languages	12.RD	33,742	-
DEPARTMENT OF DEFENSE	6941106	PO#7000456741	Engineered cellular sensors utilizing GPCRa and fast BRET readout	12.RD	20,006	-
DEPARTMENT OF DEFENSE	6941098	PO#7000457149	Robust high-extinction integrated modulators	12.RD	32,064	-
DEPARTMENT OF DEFENSE	6942350	PO#7000473193	Color Changing Fabrics	12.RD	27,312	-
DEPARTMENT OF DEFENSE	6942809	PO#7000480340	Defeating Key Disclosure with Quantum Low Probability of Intercept	12.RD	89,975	-
DEPARTMENT OF DEFENSE	6943889	PO#7000492973	Private Automated Contact Tracing (PACT)	12.RD	295,025	-
DEPARTMENT OF DEFENSE	6944173	PO#7000496410	A prototype of extremely low-cost aluminum molten salt battery for nonintermittent off-grid power supply	12.RD	28,664	-
DEPARTMENT OF DEFENSE	6940010	PO# 7000436941	Human-Exoskeleton Teaming	12.RD	26,864	-
DEPARTMENT OF DEFENSE	6944442	PO# 7000493366	U.S. Army FARA Subcontract with Lincoln Lab	12.RD	273,341	-
DEPARTMENT OF DEFENSE	6940202	PO#7000442474	Neural Control of Exoskeletons	12.RD	159,741	-
			Total for Lincoln Laboratory		**9,040,094**	**-**
ARCTOS Technology Solutions, LLC.						
DEPARTMENT OF DEFENSE	6936095	17-S8401-05-C1 / PO# SUBK-00150	Adaptive Flight Control for Hypersonic Vehicles with Integrated Loops Using High Fidelity Models	12.RD	117,994	-
			Total for ARCTOS Technology Solutions, LLC.		**117,994**	**-**
Columbia University						
DEPARTMENT OF DEFENSE	6944919	2(GG016303)/PO SAPOG15323	COVID-19: Ensembles of Molecules in Controlled Quantum States for Quantum Simulations, Ultracold Reactions, and Precision Metrology	12.800	167,213	-
DEPARTMENT OF DEFENSE	6943120	G14463	TRAUMAS: Treatment and recovery augmented with electrical and ultrasound- mediated actuation and sensing	12.91	236,281	-
DEPARTMENT OF DEFENSE	6943003	SUB# 5(GG015670) / PO# SAPOG14463	TRAUMAS: Treatment and recovery augmented with electrical and ultrasound- mediated actuation and sensing	12.910	269,616	-
			Total for Columbia University		**673,109**	**-**
University of Texas at Arlington						

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE	6941202	2016GC524	(MURI) Next Generation Advances in Ionosphere Thermosphere Coupling at Multiple Scales for Environmental Specification and Prediction	12.800	52,407	52,407
DEPARTMENT OF DEFENSE	6941833	2016GC5246	(MURI) Next Generation Advances in Ionosphere Thermosphere Coupling at Multiple Scales for Environmental Specification and Prediction	12.800	200,578	-
			Total for University of Texas at Arlington		**252,985**	**52,407**
Azimuth Corporation						
DEPARTMENT OF DEFENSE	6945195	238-013	Active Metasurface	12.RD	13,283	-
			Total for Azimuth Corporation		**13,283**	**-**
University of Michigan						
DEPARTMENT OF DEFENSE	6936329	3004427924	Multi-Fidelity Modeling of Rocket Combustor Dynamics	12.800	-23	-
DEPARTMENT OF DEFENSE	6940978	PO3005498246/SUBK00010160	Near-Field Radiative Heat Transfer and Energy Conversion in Nanogaps of Nano- and Meta-Structured Materials	12.431	198,797	-
DEPARTMENT OF DEFENSE	6938346	3004811123	Applications Driving Architectures (ADA) Center	12.RD	563,273	-
DEPARTMENT OF DEFENSE	6939785	3005210117	Applications Driving Architectures (ADA) Center	12.RD	130,630	-
DEPARTMENT OF DEFENSE	6940785	SUBK00009163 / PO3005498095	Rapid Autopilot Prototyping for Minimally Modeled Aircraft	12.300	114,018	-
			Total for University of Michigan		**1,006,694**	**-**
University of Maryland						
DEPARTMENT OF DEFENSE	6935254	43830-Z8183003	MURI: Photonic Quantum Matter	12.800	302,822	-
			Total for University of Maryland		**302,822**	**-**
Stanford University						
DEPARTMENT OF DEFENSE	6944571	62455258-159327	COVID-19: ANSRE: Analysis and Synthesis of Rare Events	12.800	104,672	-
DEPARTMENT OF DEFENSE	6944526	62459355-155611	COVID-19: Engineering native human skin commensals to eliminate attractants and introduce repellents and mosquito tracking using millisecond device apparati	12.910	75,822	-
DEPARTMENT OF DEFENSE	6944528	62459356-155611	COVID-19: Engineering native human skin commensals to eliminate attractants and introduce repellents and mosquito tracking using millisecond device apparati	12.910	65,350	-
DEPARTMENT OF DEFENSE	6944527	62459358-155611	COVID-19: Engineering native human skin commensals to eliminate attractants and introduce repellents and mosquito tracking using millisecond device apparati	12.910	183,557	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE	6944524	62459359-155611	COVID-19: Engineering native human skin commensals to eliminate attractants and introduce repellents and mosquito tracking using millisecond device apparati	12.910	94,809	-
DEPARTMENT OF DEFENSE	6944525	62459360-155611	COVID-19: Engineering native human skin commensals to eliminate attractants and introduce repellents and mosquito tracking using millisecond device apparati	12.910	93,706	-
DEPARTMENT OF DEFENSE	6944098	MULTIPLE	Engineering native human skin commensals to eliminate attractants and introduce repellents and mosquito tracking using millisecond device apparati	12.910	599	-
DEPARTMENT OF DEFENSE	6931094	60744752-114407	Role of Bidirectional Computation in Visual Scene Analysis	12.300	36,924	-
DEPARTMENT OF DEFENSE	6939969	61957754-136921	AI Nets: Predicting Action and Inferring Intentions of Groups of Targets with a Network of Surveillance Robots	12.300	96,024	-
			Total for Stanford University		**751,464**	**-**
Boise State University						
DEPARTMENT OF DEFENSE	6940737	8583-PO132256	Plasma and Electro-Energetic Physics	12.800	105,498	-
			Total for Boise State University		**105,498**	**-**
University of Minnesota						
DEPARTMENT OF DEFENSE	6943095	A006524101	Optimal Sensor Tasking Through Deep Reinforcement Learning for Space Situational Awareness	12.800	47,417	-
DEPARTMENT OF DEFENSE	6941912	A007146101	Development of Dynamic Data-Driven Uncertainty Quantification System	12.800	78,489	-
DEPARTMENT OF DEFENSE	6937286	A006141803	Predicting Turbulent Multi-Phase Flows with High Fidelity: A Physics-Based Approach	12.300	115,841	-
			Total for University of Minnesota		**241,746**	**-**
Emory University						
DEPARTMENT OF DEFENSE	6941330	A007735	MURI: Molecular Level Studies of Solid-Liquid Interfaces in Electrochemical Processes	12.800	435,239	-
			Total for Emory University		**435,239**	**-**
Aerospace Corporation						
DEPARTMENT OF DEFENSE	6938786	AGMT DTD 3/15/18	Design of Reconfigurable Constellation Architectures	12.RD	-13,910	-
DEPARTMENT OF DEFENSE	6938879	PO# 4600006296	Relative Operations for Autonomous Maneuvers	12.RD	60,294	-
			Total for Aerospace Corporation		**46,384**	**-**
Pointwise, Inc						

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE	6942801	AGMT. DATED 2/26/2020	Aircraft Configuration Development Using Medium-Fidelity Computational Methods	12.RD	57,097	-
			Total for Pointwise, Inc		**57,097**	**-**
HodlPal Inc						
DEPARTMENT OF DEFENSE	6944201	AGMT. DTD. 03/20/2020	AI-empowered stakeholder engagement, analysis, and consensus building to enhance airman and family readiness and resilience	12.RD	13,891	-
			Total for HodlPal Inc		**13,891**	**-**
National Aerospace Solutions, LLC						
DEPARTMENT OF DEFENSE	6941220	AGMT. DTD. 06/24/2019	Hypersonic Modeling, Analysis, Simulation, and Testing	12.RD	55,373	-
			Total for National Aerospace Solutions, LLC		**55,373**	**-**
SUNY: AIM Photonics						
DEPARTMENT OF DEFENSE	6938269	AGMT. DTD. 3/22/2016	IP-IMI	12.800	-1,086	-
			Total for SUNY: AIM Photonics		**-1,086**	**-**
Electra.aero						
DEPARTMENT OF DEFENSE	6944911	AGRMT EFFECTIVE DATE 12/3/2020	Innovative Control and Configurations for Aircraft with Distributed Electric Propulsion	12.800	19,908	-
			Total for Electra.aero		**19,908**	**-**
Via Science, Inc.						
DEPARTMENT OF DEFENSE	6945480	AGRMT. DTD. 2/10/2021	DataVeil: Privacy protection for AI analysis of pilot training data	12.RD	15,109	-
			Total for Via Science, Inc.		**15,109**	**-**
Spectrohm						
DEPARTMENT OF DEFENSE	6945472	AGRMT. DTD. 2/8/2021	Radio Frequency Imaging for Security & EOD Operations	12.RD	15,071	-
			Total for Spectrohm		**15,071**	**-**
University of Chicago						
DEPARTMENT OF DEFENSE	6941412	AWD100348 (SUB00000079)	Design and optimization of synthesizable materials with targeted quantum characteristics	12.800	101,754	-
DEPARTMENT OF DEFENSE	6930248	FP054294-C	Fundamental Issues in Non-equilibrium Dynamics (MURI)	12.431	18,999	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE	6938423	FP067719	Social MIND: Social Machine Intelligence for Novel Discovery	12.910	-54,886	-
			Total for University of Chicago		**65,867**	**-**
University of California-Santa Barbara						
DEPARTMENT OF DEFENSE	6940947	KK2014	Quantum Codes, Tensor Networks, and Quantum Spacetime	12.800	166,373	-
DEPARTMENT OF DEFENSE	6932998	KK1622	QUANTA: Quantitative Network-based Models of Adaptive Team Behavior	12.431	32,099	-
DEPARTMENT OF DEFENSE	6935172	KK1713	Neural foundations of expertise based on optimal decision-making, physical control and responses to stress	12.431	174,833	-
DEPARTMENT OF DEFENSE	6937076	KK1808	From Data-Driven Operator Theoretic Schemes to Predication, Inference, and Control of Systems	12.431	106,144	-
DEPARTMENT OF DEFENSE	6940558	SUBAWARD NO. KK1955	ICB UARC projects - Research Projects	12.431	592,838	-
DEPARTMENT OF DEFENSE	6940755	SUBAWARD NO. KK1957-03	Fundamental Biological Factors Underlying Human Performance	12.RD	173,854	-
DEPARTMENT OF DEFENSE	6938347	KK1838	A Center for Converged TeraHertz Communications and Sensing	12.910	308,680	-
			Total for University of California-Santa Barbara		**1,554,821**	**-**
GE Global Research						
DEPARTMENT OF DEFENSE	6942343	PO 401134429	Measuring Biological aptitude	12.RD	307,566	-
			Total for GE Global Research		**307,566**	**-**
Metis Design Corporation						
DEPARTMENT OF DEFENSE	6936775	SBIR AGMT EFF 8/27/17	Carbon Nanotube Electronics for Radiation-Resilient Hardware	12.RD	-4,179	-
DEPARTMENT OF DEFENSE	6941669	AGMT DATED 4/15/2019	STTR Phase I: Interlaminar Reinforcement of Composite Rotorcraft Components via Tailored Nanomorphologies of Aligned Carbon Nanotubes	12.RD	-7,585	-
DEPARTMENT OF DEFENSE	6942204	AGMT DTD 1/23/2020	Scalable Manufacturing of Composite Components using Nanostructured Heaters - STTR Phase 2	12.RD	116,004	-
DEPARTMENT OF DEFENSE	6943531	AGMT DTD 6/8/2020	Aligned CNT Reinforcements of High-Temperature Polymer Matrix Composites	12.RD	39,491	-
DEPARTMENT OF DEFENSE	6939815	STTR AGRMNT DTD. 12/05/2018	STTR Phase I: Scalable Manufacturing of Composite Components using Nanostructured Heaters	12.RD	0	-
DEPARTMENT OF DEFENSE	6943603	STTR AGRMNT DTD. 5/29/2020	N19A-T003: Phase 2 - Interlaminar Reinforcement of Composite Rotorcraft Components via Tailored Nanomorphologies of Aligned Carbon Nanotubes	12.RD	113,928	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
			Total for Metis Design Corporation		**257,660**	**-**
Applied Research Associates, Inc.						
DEPARTMENT OF DEFENSE	6944987	S-D00243-05-IDIQ-MIT	Machine Intelligence Solutions for Nuclear Explosion Monitoring (MINEM)	12.RD	20,013	-
			Total for Applied Research Associates, Inc.		**20,013**	**-**
Siemens Corporation, Corporate Technology						
DEPARTMENT OF DEFENSE	6944760	SUB AGREEMENT NO. 198-02	Systemic Generative Engineering	12.RD	112,718	-
			Total for Siemens Corporation, Corporate Technology		**112,718**	**-**
UES, Inc.						
DEPARTMENT OF DEFENSE	6942017	SUB NO. S-111-051-006	Synthetic Biology to Access Unnatural Porphyrins as Intermediates for Photonic Applications	12.RD	165,375	-
DEPARTMENT OF DEFENSE	6942676	SUBCONTRACT# S-111-065-001	3D printed carbon nanotube field emitters	12.RD	16,178	-
			Total for UES, Inc.		**181,553**	**-**
Rice University						
DEPARTMENT OF DEFENSE	6933218	SUBAWARD NO. R19091	Proteus: Controlling Resource-Adaptive Embedded Softward	12.300	4,646	-
DEPARTMENT OF DEFENSE	6944794	R1A26H	Magnetic optical and acoustic neural access	12.RD	6,172	-
DEPARTMENT OF DEFENSE	6942813	SUBCONTRACT NO. R1A26B	Magnetic optical and acoustic neural access	12.RD	53,032	-
			Total for Rice University		**63,850**	**-**
Battelle Memorial Institute						
DEPARTMENT OF DEFENSE	6942129	US001-0000758851-LINE 1	Granular Jamming for Runway Repair	12.RD	107,591	84,134
DEPARTMENT OF DEFENSE	6941249	PO US0011-0000743557-LINE 1	Low-Probability-of-Detect/Intercept Communications Employing Peaky Frequency-Shift-Key Modulation	12.RD	156,869	-
DEPARTMENT OF DEFENSE	6935623	US001-0000550379-LINE 1	Passive Sampling Optimization at Apra Harbor and Orote Landfill, Guam	12.RD	6,171	-
			Total for Battelle Memorial Institute		**270,631**	**84,134**
University of Washington						
DEPARTMENT OF DEFENSE	6941764	UWSC11381 PO42935	Neural-inspired sparse sensing and control for agile flight	12.800	102,571	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE	6941979	UWSC11420	2D MAGIC: New Science from Two-Dimensional MAGnetIC Heterostructures	12.800	230,119	-
DEPARTMENT OF DEFENSE	6941979	UWSC11420	COVID-19: 2D MAGIC: New Science from Two-Dimensional MAGnetIC Heterostructures	12.800	44,747	-
			Total for University of Washington		**377,437**	**-**
Wright Brothers Institute						
DEPARTMENT OF DEFENSE	6944224	WBPO-20-109-MIT	Reducing urea/calcium needs using engineered bacteria for on-site co-production and release	12.800	134,770	-
DEPARTMENT OF DEFENSE	6944516	WBPO-21-018-MIT	Probiotic interventions to reduce fatigue by maintaining brain ATP levels	12.RD	296,278	205,890
			Total for Wright Brothers Institute		**431,048**	**205,890**
Zona Technology, Inc.						
DEPARTMENT OF DEFENSE	6941723	ZTSMIT-CHAOTIC-II	STTR Phase II: AF17A-T017: FUN3D-based Sensitivity Analysis for F-15 in Chaotic Flows	12.RD	133,697	-
			Total for Zona Technology, Inc.		**133,697**	**-**
University of Wisconsin-Madison						
DEPARTMENT OF DEFENSE	6941698	0000000208	From Particles to Landforms: Integrating Theory, Computation, Experiments and Field Data to Overcome Empiricisms	12.431	102,069	-
			Total for University of Wisconsin-Madison		**102,069**	**-**
Beth Israel Deaconess Medical Center						
DEPARTMENT OF DEFENSE	6944889	01029123	DAMP-Mediated Innate Immune Failure and Pneumonia after Trauma	12.420	152,001	-
			Total for Beth Israel Deaconess Medical Center		**152,001**	**-**
University of Utah						
DEPARTMENT OF DEFENSE	6939676	10048163-MIT / PO# U000165214	In-Situ Feature Extraction and Visualization from Discontinuous Galerkin Based High-Order Methods	12.431	35,947	-
DEPARTMENT OF DEFENSE	6935768	10043028-MIT	Design Responding to Engineering Analysis in support of Manufacturing	12.910	81,043	-
DEPARTMENT OF DEFENSE	6935759	10043182-MIT	Augmented Design Through Analysis and Visualization Facilitating Better Designs and Enhanced Designers	12.910	34,842	-
			Total for University of Utah		**151,832**	**-**
Carnegie-Mellon University						

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE	6941571	1130236-420697	MasAI-Assisted Detection and Target Recognition (AIDTR)	12.431	11,262	-
DEPARTMENT OF DEFENSE	6943335	1130252-431282	Individualized Adaptation in Human Agent Teams	12.630	111,365	-
DEPARTMENT OF DEFENSE	6945204	SUBCONTRACT NO. 1990695-439018	Accelerating Human Augmentation Through Artificial Intelligence & Autonomous Systems	12.RD	78,908	-
			Total for Carnegie-Mellon University		**201,535**	**-**
Brigham & Women's Hospital						
DEPARTMENT OF DEFENSE	6942602	122094	Developing targeted chemotherapeutics for malignant brain tumors using an innovative	12.420	34,083	-
DEPARTMENT OF DEFENSE	6943084	122096	A Novel Approach to Lower Extremity Residual Limb Revision to Augment Volitional Motor Control, Restore Proprioception and Reverse Limb Atrophy	12.420	142,954	-
DEPARTMENT OF DEFENSE	6940336	SUBAWARD 117951	A Novel Approach to Lower Extremity Amputation to Augment Volitional Motor Control and Restore Proprioception	12.420	5,648	-
DEPARTMENT OF DEFENSE	6940338	SUBAWARD 119948	A Novel Approach to Upper Extremity Amputation to Augment Volitional Motor Control and Restore Proprioception	12.420	160,560	-
			Total for Brigham & Women's Hospital		**343,245**	**-**
Harvard University						
DEPARTMENT OF DEFENSE	6942205	124164	Billing Agreement - Neha Kapate: Targeted drug delivery to the brain via red blood cell hitchhiking of nanoparticles for improved treatment of glioblastoma multiforme	12.420	-13	-
DEPARTMENT OF DEFENSE	6945040	134062-5093041	Imaging and Control of Biological Transduction using NV-Diamond	12.431	354,505	-
DEPARTMENT OF DEFENSE	6939434	134119-5110647	Topological Superconductivity using Layered Materials	12.431	36,942	-
DEPARTMENT OF DEFENSE	6943704	134371-5113608	Quantum optimization with programmable simulators based on atom arrays	12.431	166,202	-
DEPARTMENT OF DEFENSE	6939734	167982.0001	Billing Agreement - James Collins - Integration of top-down and bottom-up methodologies for accurate modeling of biological networks	12.RD	5,587	-
DEPARTMENT OF DEFENSE	6940105	168007.0002/W911NF1920027	Time-Tolerant Biostasis Therapeutics	12.910	3,725	-
DEPARTMENT OF DEFENSE	6937039	123950-5092634	Quantum Opto-Mechanics with Atoms and Nanostructured Diamond (QOMAND)	12.300	98,029	-
DEPARTMENT OF DEFENSE	6943286	130417-5114573	Next-Generation Materials for Oxygen Generation, Transport, and Storage in the Undersea Environment	12.300	224,829	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE	6943866	124164	Billing Agreement - Neha Kapate: Theranostic Cellular Backpacks for Precision Imaging and Treatment of Traumatic Brain Injury Sites	12.420	6,008	-
DEPARTMENT OF DEFENSE	6943784	124164	Billing Agreement - Wang, Li-Wen - Theranostic Cellular Backpacks for Precision Imaging and Treatment of Traumatic Brain Injury Sites	12.420	9,413	-
DEPARTMENT OF DEFENSE	6944172	PO#70003277658/N. KAPATE/124164	Billing Agreement - Neha Kapate: Theranostic Cellular Backpacks for Precision Imaging and Treatment of Traumatic Brain Injury Sites	12.420	33,341	-
DEPARTMENT OF DEFENSE	6944177	PO#80000049350/L. WANG/124164	Billing Agreement - Wang, Li-Wen - Theranostic Cellular Backpacks for Precision Imaging and Treatment of Traumatic Brain Injury Sites	12.420	58,311	-
			Total for Harvard University		**996,880**	**-**
North Carolina State University						
DEPARTMENT OF DEFENSE	6937652	2017-0383-01	Algorithms for Exploiting Approximate Network Structure	12.431	-4,527	-
			Total for North Carolina State University		**-4,527**	**-**
University of Maryland - College Park						
DEPARTMENT OF DEFENSE	6938456	28725-Z8401005	Center for Distributed Quantum Information	12.431	53,487	-
DEPARTMENT OF DEFENSE	6932890	2875-Z8401005	Center for Distributed Quantum Information	12.431	3,057	-
			Total for University of Maryland - College Park		**56,544**	**-**
Duke University						
DEPARTMENT OF DEFENSE	6944860	313-0837	Quantum control based on real-time environment analysis by spectator qubits	12.431	97,900	-
DEPARTMENT OF DEFENSE	6938444	313-0793	An Integrated Nonparametric Bayesian and Deep Neural Network Framework for Biologically-Inspired Lifelong Learning	12.910	-40,665	-
DEPARTMENT OF DEFENSE	6928294	13-ONR-1109	Expanding the Limits of Acoustic Metamaterials	12.300	-447	-
			Total for Duke University		**56,788**	**-**
Boston University						
DEPARTMENT OF DEFENSE	6941261	4500003079	ICENET: Integrated Cryogenic Egress with Nanophotonics for Exascale Technology	12.431	171,738	-
DEPARTMENT OF DEFENSE	6942484	4500003251	RECURRENT MODULE NETWORKS: A THEORY AND APPLICATIONS	12.910	221,929	-
DEPARTMENT OF DEFENSE	6935193	4500002204	NEURAL CIRCUITS UNDERLYING SYMBOLIC PROCESSING IN PRIMATE CORTEX AND BASAL GANGLIA	12.300	170,704	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE	6943504	4500003329	Neuro_autonomy: Neuroscience-Inspired Perception, Navigation, and Spatial Awareness for Autonomous Robots	12.300	665,495	-
			Total for Boston University		**1,229,867**	**-**
Northeastern University						
DEPARTMENT OF DEFENSE	6943253	504141-78050	COVID-19: Engineered Materials And Materials Design for Engineered Materials (EMMDEM) Year 3	12.431	69,658	-
DEPARTMENT OF DEFENSE	6943253	504141-78050	Engineered Materials And Materials Design for Engineered Materials (EMMDEM) Year 3	12.431	78,572	-
DEPARTMENT OF DEFENSE	6941800	505176-78050	ACHILLES: Assured CryptograpHic Integration of muLtiple Languages for Encrypted Systems	12.RD	212,121	-
			Total for Northeastern University		**360,351**	**-**
University of Pennsylvania						
DEPARTMENT OF DEFENSE	6927407	560102	Evolution of Cultural Norms and Dynamics of Socio Political Change	12.431	30	-
DEPARTMENT OF DEFENSE	6939086	572622	ARCHES: Autonomous Resilient Cognitive Heterogeneous Swarms	12.630	1,111,913	-
DEPARTMENT OF DEFENSE	6940647	PO 4271955 SUB#576432	ARCHES: Autonomous Resilient Cognitive Heterogeneous Swarms	12.630	-2,498	-
DEPARTMENT OF DEFENSE	6944135	SUB# 580416 / PO# 4531469	High-speed Off-Road Dataset Collection	12.630	151,324	-
DEPARTMENT OF DEFENSE	6937175	572339	New phase change materials for photonics: from in-silico design to novel device concepts	12.300	379,478	-
DEPARTMENT OF DEFENSE	6939157	574340, PO 673492	Blueprint for design and assembly of multifunctional, adaptive materials using the nanocrystal periodic table	12.300	266,436	-
			Total for University of Pennsylvania		**1,906,683**	**-**
Modern Technology Solutions, Inc.						
DEPARTMENT OF DEFENSE	6942083	AGMT DATED 9/30/19	A Systems Approach to Analyzing Cybersecurity and Safety in Complex Systems	12.RD	34,752	-
			Total for Modern Technology Solutions, Inc.		**34,752**	**-**
Georgia Institute of Technology						
DEPARTMENT OF DEFENSE	6941447	AWD-000084-G3	Formal Foundations of Algorithmic Matter and Emergent Computation	12.431	224,294	-
DEPARTMENT OF DEFENSE	6938924	RK015-G3/AWD-102036-G3/PO-5011372	Leveraging a New Theoretical Paradigm to Enhance Interfacial Thermal Transport in Wide Bandgap Power Electronics	12.300	176,792	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
			Total for Georgia Institute of Technology		**401,086**	**-**
University of Sydney						
DEPARTMENT OF DEFENSE	6940958	G174385 RESEARCH COLLABORATION AGREEMENT	Quantum Control Engineering	12.431	33,738	-
			Total for University of Sydney		**33,738**	**-**
Texas A & M						
DEPARTMENT OF DEFENSE	6945534	M2101903	Extreme Mechanics of Bio-inspired Mixed-Dimensional Carbon Nanostructures with Thermally Robust Interfacial Bonds	12.431	26,913	-
			Total for Texas A & M		**26,913**	**-**
General Dynamics						
DEPARTMENT OF DEFENSE	6940646	PO# 40279278	General Dynamics Land Systems	12.431	51,418	-
			Total for General Dynamics		**51,418**	**-**
Research Foundation of SUNY-Buffalo						
DEPARTMENT OF DEFENSE	6941275	R1173649	Molecular design and assembly towards conducting ferroic crystals	12.431	43,068	-
			Total for Research Foundation of SUNY-Buffalo		**43,068**	**-**
California Institute of Technology						
DEPARTMENT OF DEFENSE	6939667	S396000	Dynamics in Photo-Doped Metastable States	12.431	53,651	-
			Total for California Institute of Technology		**53,651**	**-**
LongWave Photonics LLC						
DEPARTMENT OF DEFENSE	6940267	STTR AGMT UNDER W911NF18C0097	STTR Phase II: Tunable Active HEterodyne THz Imager (TAHETI)	12.RD	58,765	-
			Total for LongWave Photonics LLC		**58,765**	**-**
QinetiQ North America, Inc.						
DEPARTMENT OF DEFENSE	6940073	SUB3-00233	Robot-Assisted Wire-harness Installation	12.RD	-16,238	-
			Total for QinetiQ North America, Inc.		**-16,238**	**-**
University of California						
DEPARTMENT OF DEFENSE	6941708	SUBAWARD NO. KK1957-05	Fundamental Biological Factors Underlying Human Performance	12.RD	202,111	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE	6933105	1015 G TA243/N00014-16-1-2007	Understanding Scenes and Events through Joint Parsing, Cognitive Reasoning and Lifelong Learning	12.300	201,292	-
			Total for University of California		**403,403**	**-**
I.R.C.C.S. Istituto Ortopedico Galeazzi						
DEPARTMENT OF DEFENSE	6933716	SUBAWARD UNDER W81XWH-15-1-0092	Bone tropism of breast cancer metastases: dissecting the role of endothelial adhesion molecules through human organotypic vascularized microfluidic 3D models	12.420	-86	-
			Total for I.R.C.C.S. Istituto Ortopedico Galeazzi		**-86**	**-**
University of California - Berkeley						
DEPARTMENT OF DEFENSE	6943071	10333	:MESS: Model Building, Exploratory, Social System	12.910	349,939	-
DEPARTMENT OF DEFENSE	6943414	SUB 00010360 PO #BB01389825	Verifying Computations Securely and Robustly in Post-Quantum Era	12.91	262,625	-
DEPARTMENT OF DEFENSE	6940831	SUBAGREEMENT NO. 00010066	Rational Design of Statistical Heteropolymers as Biomimetic Enzymes and Binders	12.351	191,640	-
			Total for University of California - Berkeley		**804,205**	**-**
BAE Systems						
DEPARTMENT OF DEFENSE	6942890	1056208	CAML: MINDFUL	12.910	610,891	-
			Total for BAE Systems		**610,891**	**-**
Harvard Medical School						
DEPARTMENT OF DEFENSE	6942328	152318.5112612.0006	STOP PAIN: Safe Therapeutic Options for Pain and Inflammation	12.910	206,528	-
DEPARTMENT OF DEFENSE	6940234	153283.5110025.0014	Computationally Designed Biostasis Proteins Optimized in High-Throughput Screens	12.910	-34,674	-
DEPARTMENT OF DEFENSE	6943412	153283.5110025.0028	Computationally Designed Biostasis Proteins Optimized in High-Throughput Screens	12.910	176,117	-
			Total for Harvard Medical School		**347,971**	**-**
Wyss Institute						
DEPARTMENT OF DEFENSE	6942594	167982.0001	Billing Agreement - Jacqueline Valeri - Integration of top-down and bottom-up methodologies for accurate modeling of biological networks	12.RD	28,976	-
DEPARTMENT OF DEFENSE	6944907	167982.0001	BILLING AGREEMENT - JACQUELINE VALERI: Integration of top-down and bottom-up methodologies for accurate modeling of biological networks	12.RD	29,428	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE	6945015	167982.0001	BILLING AGREEMENT - MAX ENGLISH: Integration of top-down and bottom-up methodologies for accurate modeling of biological networks	12.RD	23,499	-
DEPARTMENT OF DEFENSE	6945151	167982.0001	BILLING AGREEMENT - RAPHAEL GAYET: Integration of top-down and bottom-up methodologies for accurate modeling of biological networks	12.RD	22,631	-
DEPARTMENT OF DEFENSE	6945301	168007.0002	BILLING AGREEMENT-JAMES COLLINS: Integration of top-down and bottom-up methodologies for accurate modeling of biological networks	12.910	1,862	-
			Total for Wyss Institute		**106,396**	**-**
SYSTEMS & TECHNOLOGY RESEARCH LLC						
DEPARTMENT OF DEFENSE	6937319	2017-0026	STTR Phase II: DEEPSONG	12.RD	28,349	-
DEPARTMENT OF DEFENSE	6941663	2019-0013	Learning with Optimal Labels (LOL)	12.RD	218,399	-
DEPARTMENT OF DEFENSE	6945052	SUBCONTRACT 2020-0071/2021-2010000004/10372.10.2001	Space-Based Machine Automated Recognition Technique (SMART) Program	12.RD	4,702	-
			Total for SYSTEMS & TECHNOLOGY RESEARCH LLC		**251,450**	**-**
Aarno Labs LLC						
DEPARTMENT OF DEFENSE	6943914	2020-MIT-AMP-01	TA2 - Multifocal Relational Analysis for Assured Micropatching (MRAM)	12.RD	572,962	-
DEPARTMENT OF DEFENSE	6939022	SUB UNDER HR001118C0059	Arya: Automatic Injection of Defensive Agents	12.RD	199,442	-
			Total for Aarno Labs LLC		**772,404**	**-**
Sri International						
DEPARTMENT OF DEFENSE	6944475	49823	Assurance For Learning Enabled Systems (ALES)	12.RD	94,812	-
DEPARTMENT OF DEFENSE	6945179	SUBCONTRACT PO55019	Formally-verified Accelerator for Ring-based Secure Iterative-evaluation of Data under Encryption (FARSIDE)	12.RD	21,164	-
			Total for Sri International		**115,977**	**-**
The Broad Institute, Inc.						
DEPARTMENT OF DEFENSE	6945020	5000856-5500001517	Programmable Cas13 - Based Antiviral Therapeutics and Companion Diagnostics	12.910	449,738	-
			Total for The Broad Institute, Inc.		**449,738**	**-**
University of Tennessee						
DEPARTMENT OF DEFENSE	6940664	9500074403	COVID-19: Phytosensors 2.0	12.91	101,080	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE	6944285	9500074403	Phytosensors 2.0	12.910	484,352	-
			Total for University of Tennessee		**585,432**	**-**
BAE Systems Info & Electronic Systems Integration, Inc						
DEPARTMENT OF DEFENSE	6937008	964193	Bundle Congestion Control for Programmable Network Control Points	12.RD	137,658	-
			Total for BAE Systems Info & Electronic Systems Integration, Inc		**137,658**	**-**
Ecovative Design LLC						
DEPARTMENT OF DEFENSE	6939028	AGT DATED 6/30/18	Sustainable Biologically Active Modular Building Materials	12.RD	356,808	-
			Total for Ecovative Design LLC		**356,808**	**-**
Aurora Flight Sciences RDC						
DEPARTMENT OF DEFENSE	6935749	AMA-17-0001	ALASA CubeSat Deformable Mirror Demonstration Mission (DEMI)	12.RD	-9	-
			Total for Aurora Flight Sciences RDC		**-9**	**-**
Aurora Flight Sciences Corporation						
DEPARTMENT OF DEFENSE	6942276	AMA-19-0015	ALASA CubeSat Deformable Mirror Demonstration Mission (DEMI)	12.RD	68,247	-
DEPARTMENT OF DEFENSE	6943436	AMA-20-0003	Gamebreaker	12.RD	90,864	-
DEPARTMENT OF DEFENSE	6943762	SUBCONTRACT NO. AMA-20-0005	Universal Computer Vision Attacks in the Wild	12.RD	131,523	-
DEPARTMENT OF DEFENSE	6944927	SUBCONTRACT NO. AMA-21-0001	End-to-End Learning of Differentiable Surrogates for Mixed-Signal PCB Simulations	12.RD	27,084	-
			Total for Aurora Flight Sciences Corporation		**317,718**	**-**
Applied Physical Sciences Corp.						
DEPARTMENT OF DEFENSE	6944371	APS-20-16	COVID-19: DARPA Sea Train	12.RD	17,916	-
			Total for Applied Physical Sciences Corp.		**17,916**	**-**
Smart Information Flow Technologies						
DEPARTMENT OF DEFENSE	6939369	CPS-MIT-01	sTTR Phase II: MacGyver: Creative Problem Solver	12.RD	13,750	-
			Total for Smart Information Flow Technologies		**13,750**	**-**
IBM Thomas J. Watson Research Center						
DEPARTMENT OF DEFENSE	6942927	CW3013540\PO4700205308	Building Machine Common Sense the Human Way	12.RD	2,561,487	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE	6943356	CW3031624 / PO# 4700229565	Transfer, Augmentation and Automatic Learning with Less Labels	12.91	422,235	-
DEPARTMENT OF DEFENSE	6940701	SUBCONTRACT 4917017433/PO 4700059854	DIVA - IBM	12.RD	83,447	-
			Total for IBM Thomas J. Watson Research Center		**3,067,169**	**-**
University of Virginia						
DEPARTMENT OF DEFENSE	6938713	GG12078.PO #2182122	Ultrasmall skyrmion synthesis guided by high throughput computational materials discovery to advance texitronics	12.910	164,355	-
			Total for University of Virginia		**164,355**	**-**
GrammaTech, Inc						
DEPARTMENT OF DEFENSE	6943304	GT S20-04	ARTEMIS for Automated Software Generation	12.RD	374,708	-
			Total for GrammaTech, Inc		**374,708**	**-**
Raytheon BBN Technologies Corp.						
DEPARTMENT OF DEFENSE	6938139	LBN9513645	Explainable Question Answering System (EQUAS)	12.910	177,890	-
DEPARTMENT OF DEFENSE	6940318	PO #4202005609 BBN REF #90065	INSPECT: IN Situ Phenotype Evaluation using CMOS Technology	12.910	17,424	-
DEPARTMENT OF DEFENSE	6942346	PO# 4202187793 BBN REF#90113	SYMBIANT	12.RD	206,549	-
DEPARTMENT OF DEFENSE	6936196	SLIN 0001 / LBN9513537	Generalized Network Assisted Transport (GNAT)	12.RD	180,716	24,123
			Total for Raytheon BBN Technologies Corp.		**582,579**	**24,123**
NVIDIA Corporation						
DEPARTMENT OF DEFENSE	6938939	PO 56090640	Symphony: Orchestrating Sparse and Dense Data for Efficient Computation	12.RD	1,100,817	-
			Total for NVIDIA Corporation		**1,100,817**	**-**
Teledyne FLIR, LLC						
DEPARTMENT OF DEFENSE	6945445	PO# 1310121015/AGRMT EFFECTIVE 05/17/21	Integrated Soldier Protective System for Unburdened Chem-Bio Protection	12.RD	50,735	-
DEPARTMENT OF DEFENSE	6945506	PO# 1310121015/AGRMT EFFECTIVE 5/17/2021	Integrated Soldier Protective System for Unburdened Chem-Bio Protection	12.RD	19,201	-
			Total for Teledyne FLIR, LLC		**69,936**	**-**
BBN Technologies Corporation						
DEPARTMENT OF DEFENSE	6944299	PO# 4202290027 BBN REF# 90144	Bullet Train	12.RD	396,685	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
			Total for BBN Technologies Corporation		**396,685**	**-**
Perspecta Labs Inc.						
DEPARTMENT OF DEFENSE	6934363	PO-0008492	SCATTERED	12.RD	34,368	-
DEPARTMENT OF DEFENSE	6939719	PO-0016764 PRIME HR001117S0035	WILEE: Agent-Based Threat Detection and Adaptive Collection for Cyber Hunting at Scale	12.RD	317,469	-
DEPARTMENT OF DEFENSE	6943405	PO-0020033	COVID-19: DCASE: Deferred Concretization Adaptive Software Enviornment	12.RD	105,000	-
DEPARTMENT OF DEFENSE	6943405	PO-0020033	DCASE: Deferred Concretization Adaptive Software Enviornment	12.RD	84,834	-
DEPARTMENT OF DEFENSE	6944951	PO-0022190	CICADA: Coevolutionary Intelligent COAs for Adversarial Decisions against Allies	12.RD	145,675	-
			Total for Perspecta Labs Inc.		**687,345**	**-**
Draper Laboratory Incorporated						
DEPARTMENT OF DEFENSE	6932696	SC001-0000000918	Unifying Perception and Control via Fast Approximations for Fast Flight in Cluttered Environments	12.RD	-84	-
			Total for Draper Laboratory Incorporated		**-84**	**-**
Scientific Systems Company, Incorporated						
DEPARTMENT OF DEFENSE	6941339	SC-1656-01	Teammate Aware Autonomy	12.RD	113,332	-
DEPARTMENT OF DEFENSE	6942142	SUBCONTRACT # SC-1674-001	DecPOMDPs for SWIFT ARROW	12.RD	227,301	-
DEPARTMENT OF DEFENSE	6943307	# SC-1699-01	Explanaton Systems	12.RD	61,180	-
			Total for Scientific Systems Company, Incorporated		**401,813**	**-**
Charles River Analytics						
DEPARTMENT OF DEFENSE	6942396	SC1911601	Compositionally Organized Learning To Reason About Novel Experience (COLTRANE)	12.910	408,327	-
			Total for Charles River Analytics		**408,327**	**-**
University of California-San Diego						
DEPARTMENT OF DEFENSE	6943076	SUB 131169460 PO S9002582	COVID-19: Performance Evaluation Network Measurements and Analytics (PENMAN)	12.910	108,782	-
DEPARTMENT OF DEFENSE	6943076	SUB 131169460 PO S9002582	Performance Evaluation Network Measurements and Analytics (PENMAN)	12.910	61,689	-
DEPARTMENT OF DEFENSE	6939646	108548654	RAIDER: Resilient Actionable Intelligence for Distributed Environment understanding and Reasoning	12.300	152,341	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
			Total for University of California-San Diego		**322,812**	**-**
Dynamic Object Language Labs, Inc.						
DEPARTMENT OF DEFENSE	6944821	SUB UNDER HR0011-20-C-0035	Robust Ideal Team Assistant (RITA)	12.RD	402,887	-
			Total for Dynamic Object Language Labs, Inc.		**402,887**	**-**
Emulate, Inc						
DEPARTMENT OF DEFENSE	6943506	SUB# HR0011-20-2-0005/PO# HR0011942573	Programmable Pancreas Project	12.910	135,001	-
			Total for Emulate, Inc		**135,001**	**-**
Princeton University						
DEPARTMENT OF DEFENSE	6940192	SUB0000294	COVID-19: Re-configurable IR frequency comb spectronscopic sending platform for chemical threat detection	12.910	285,015	-
DEPARTMENT OF DEFENSE	6940192	SUB0000294	Re-configurable IR frequency comb spectronscopic sending platform for chemical threat detection	12.910	44,544	-
			Total for Princeton University		**329,559**	**-**
CalTech - Jet Propulsion Lab						
DEPARTMENT OF DEFENSE	6942364	SUBCONTRACT 1642734	Specification-guided and Capability-aware Autonomy for Long-endurance Situational Awareness in Subterranean Environments	43.RD	105,576	-
			Total for CalTech - Jet Propulsion Lab		**105,576**	**-**
Aptima, Inc.						
DEPARTMENT OF DEFENSE	6941672	SUBCONTRACT NUMBER 1197-2015	Agile Teams (A-Teams) - ThermoTeams: An Energy-Based Approach to the Design of Highly Adaptive Teams	12.RD	55,590	-
			Total for Aptima, Inc.		**55,590**	**-**
Haverford College						
DEPARTMENT OF DEFENSE	6944416	SUBK DTD. 12/15/2019	Discovering Reactions and Uncovering Mechanisms of Hybrid Organohalide Perovskite Formation	12.RD	367,035	-
			Total for Haverford College		**367,035**	**-**
Brown University						
DEPARTMENT OF DEFENSE	6933009	00000827	Mathematical Framework for Design Under Uncertainty	12.910	-333	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
			Total for Brown University		**-333**	**-**
University of Southern California						
DEPARTMENT OF DEFENSE	6939922	107215392	Livtronics: Living Electronics for Biologically-Enhanced Sensing, Computing, and Signal Transmission	12.300	537,072	-
DEPARTMENT OF DEFENSE	6942367	125046653	Multi-modal Open World Grounded Learning and Inference (MOWGLI)	12.910	132,598	-
DEPARTMENT OF DEFENSE	6937906	90502031	IARPA QEO, Algorithms and Designs for Quantum Annealing	12.RD	64,490	-
DEPARTMENT OF DEFENSE	6937962	NO. 94711981	SARAL: Summarization and domain-Adaptive Retrieval of Information Across Languages	12.RD	172,898	-
			Total for University of Southern California		**907,058**	**-**
Oasis						
DEPARTMENT OF DEFENSE	6942398	1186-001-45	Detection Rate Improvements Through Understanding and Modeling Variability	12.RD	94,907	-
			Total for Oasis		**94,907**	**-**
Temple University						
DEPARTMENT OF DEFENSE	6941980	264443-MIT / PO P0583584	Elements of Causal Learning: Basic Concepts, Theory, Methods, Algorithms and Applications	12.300	9,682	-
			Total for Temple University		**9,682**	**-**
Virginia Polytechnic Institute & State University						
DEPARTMENT OF DEFENSE	6941716	450677-19825	Science of Tracking, Control, and Optimization of Information Latency for Dynamic Military IoT Systems	12.300	144,189	-
			Total for Virginia Polytechnic Institute & State University		**144,189**	**-**
Cornell University						
DEPARTMENT OF DEFENSE	6937216	81825-10911	PERISCOPE: Perceptual Representations for Actions, Composition, and Verification	12.300	543,418	-
DEPARTMENT OF DEFENSE	6941679	87748-11235	Modeling and Planning with Human Impressions of Robots	12.300	133,479	-
			Total for Cornell University		**676,896**	**-**
Woods Hole Oceanographic Institution						
DEPARTMENT OF DEFENSE	6941770	A101439	COAST: A CubeSat for Measuring Sea Surface Salinity with Integrated Atmospheric Correction Capabilities	12.300	159,040	-
			Total for Woods Hole Oceanographic Institution		**159,040**	**-**

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Cascade Technologies, Inc.						
DEPARTMENT OF DEFENSE	6945418	AGMT DATED 3/25/2021	Software developments for large-eddy simulations on GPU-accelerated systems	12.RD	19,972	-
			Total for Cascade Technologies, Inc.		**19,972**	**-**
Triton Systems						
DEPARTMENT OF DEFENSE	6943989	AGMT DTD 8/13/20	2675 – Towed Array Position Estimation System	12.RD	20,000	-
			Total for Triton Systems		**20,000**	**-**
Applied Ocean Sciences, LLC						
DEPARTMENT OF DEFENSE	6942080	AGMT DTD 8/9/19	Local Stochastic Prediction for UUV/USV Environmental Awareness	12.RD	715	-
DEPARTMENT OF DEFENSE	6944020	STTR AGREEMENT DTD 09/18/2020	Local Stochastic Prediction for UUV/USV Environmental Awareness	12.RD	142,825	-
			Total for Applied Ocean Sciences, LLC		**143,539**	**-**
Pendar Technologies LLC						
DEPARTMENT OF DEFENSE	6944811	AGREEMENT DATED 7/1/2019	Quantum cascade laser array with integrated wavelength beam combining (STTR Phase I)	12.RD	12,155	-
			Total for Pendar Technologies LLC		**12,155**	**-**
Radiation Monitoring Devices						
DEPARTMENT OF DEFENSE	6938352	C18-11	Hot Wall Epitaxy of Mixed Lead Chalcogenides in Resonant Cavity Structures	12.RD	-690	-
DEPARTMENT OF DEFENSE	6941640	C19-20	Hot Wall Epitaxy of Mixed Lead Chalcogenides in Resonant Cavity Structures	12.RD	135,495	-
			Total for Radiation Monitoring Devices		**134,804**	**-**
HyperComp, Inc.						
DEPARTMENT OF DEFENSE	6943550	HPC2MIT-2020-01	Hexahedral Dominant Auto-Mesh Generator	12.RD	28,908	-
			Total for HyperComp, Inc.		**28,908**	**-**
American Society/Engineering Education						
DEPARTMENT OF DEFENSE	2291100	LETTER DATED 8/11/99	NDSEG Fellowship Program	12.300	1,923,589	-
			Total for American Society/Engineering Education		**1,923,589**	**-**
Institute for the Study of Learning & Expertise						

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE	6943551	N00014-20-1-2643	Rapid Acquisition of Hierarchical Procedures from Instructional Documents	12.300	298,049	-
			Total for Institute for the Study of Learning & Expertise		**298,049**	**-**
Florida State University						
DEPARTMENT OF DEFENSE	6935158	R01849	ESRDC - FSU and MIT Sea Grant Collaboration	12.300	63,485	-
			Total for Florida State University		**63,485**	**-**
Dartmouth College						
DEPARTMENT OF DEFENSE	6943533	R1387	Integrated Foundations of Sensing, Modeling, and Data Assimilation for Sea Ice Prediction	12.300	130,915	-
			Total for Dartmouth College		**130,915**	**-**
SeeByte						
DEPARTMENT OF DEFENSE	6942772	SC0001-19	Feasibility Study for a Multi-Architecture Autonomy Framework	12.RD	10,577	-
DEPARTMENT OF DEFENSE	6944771	SC0002-21	Feasibility Study for a Multi-Architecture Autonomy Framework	12.RD	47,917	-
			Total for SeeByte		**58,494**	**-**
American Lightweight Materials Manufacturing Innovation Institute						
DEPARTMENT OF DEFENSE	6934657	SUB AWARD NUMBER 0004A-5	Sub-Award Agreement 0001: Cross-Cut Pillar Lead - Cost Modeling v.2	12.RD	12	-
			Total for American Lightweight Materials Manufacturing Innovation Institute		**12**	**-**
University of Illinois						
DEPARTMENT OF DEFENSE	6943393	SUB# 099963-17888	Robust Photonic Materials with High-Order Topological Protection	12.300	142,464	-
			Total for University of Illinois		**142,464**	**-**
CREARE, Incorporated						
DEPARTMENT OF DEFENSE	6932855	SUBCONTRACT NO. 78380	Ship Airwake Measurement System	12.RD	16,500	-
			Total for CREARE, Incorporated		**16,500**	**-**
University of Texas - Austin						
DEPARTMENT OF DEFENSE	6934067	UTA16-000556	Phonon Hydrodynamics and Spectroscopy in High Thermal Conductivity Materials	12.300	250,444	-
			Total for University of Texas - Austin		**250,444**	**-**

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Vanderbilt University						
DEPARTMENT OF DEFENSE	6940344	SUBCONTRACT UNIV60073	Strategic Sensing and Resource Allocation for Infrastructure Resilience	12.RD	151,261	-
			Total for Vanderbilt University		**151,261**	**-**
HRL Laboratories, LLC						
DEPARTMENT OF DEFENSE	6944969	15026-503667-DS	Microwave Quantum Engineering for Semiconductor Quantum Dot Qubits	12.RD	324,554	-
			Total for HRL Laboratories, LLC		**324,554**	**-**
Dana Farber Cancer Institute						
DEPARTMENT OF DEFENSE	6943260	3085501	Targeted, Rationally Designed Nanoparticle Therapeutics for Pediatric Medulloblastoma	12.420	22,000	-
			Total for Dana Farber Cancer Institute		**22,000**	**-**
Varioscale, Inc.						
DEPARTMENT OF DEFENSE	6944203	AGMT DTD 10/01/2020	Secondary scattering for better accuracy of the underlying Machine Learning framework	12.RD	81,394	-
			Total for Varioscale, Inc.		**81,394**	**-**
ESPACE						
DEPARTMENT OF DEFENSE	6928454	AGMT. DTD. 8/14/13	IMPACT: Validation of iEPS in Space	12.RD	471,647	-
			Total for ESPACE		**471,647**	**-**
George Mason University						
DEPARTMENT OF DEFENSE	6939518	E2045481	Host-based anti-microbial peptides as therapeutic strategies for alphavirus infection	12.351	4,298	-
DEPARTMENT OF DEFENSE	6943499	SUBAWARD NO. E2050661	Host-based anti-microbial peptides as therapeutic strategies for alphavirus infection	12.351	147,149	-
			Total for George Mason University		**151,447**	**-**
Advanced Functional Fabrics of America (AFFOA)						
DEPARTMENT OF DEFENSE	6944563	EXHIBIT 1-A	Shape-Shifting Climate-Adaptive Garments	12.RD	338,077	-811
			Total for Advanced Functional Fabrics of America (AFFOA)		**338,077**	**-811**
North American Philips Corporation - Philips L						

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE	6940908	PO # 4520230567/W81XWH18103 32	Intelligent Mobile Ultrasound for Semi-autonomous, Noninvasive Intracranial Pressure Estimation in Pre-Hospital and PFC settings	12.420	84,122	-
			Total for North American Philips Corporation - Philips L		**84,122**	**-**
Ministry of Defense of Israel						
DEPARTMENT OF DEFENSE	6941452	PO 4440883829	Heterogeneous Multi-Agent Systems for Maritime Applications	12.RD	79,144	-
DEPARTMENT OF DEFENSE	6938047	PO 4440884397	Multifunctional Fiber System for Magnetic Wave Sensing	12.RD	20,924	-
DEPARTMENT OF DEFENSE	6931680	PO 4440949975	Planning and Sensing Algorithms for Underwater Persistent Monitoring	12.RD	137	-
DEPARTMENT OF DEFENSE	6942162	PO 4441024394	Effects of Oxidizing Environments on Carbon-Based Materials	12.RD	246,908	-
DEPARTMENT OF DEFENSE	6942149	PO 4441027883	Planning and Control Algorithms for Autonomous Underwater Docking using Sparse Graphs and Compressed Computation	12.RD	100,016	-
DEPARTMENT OF DEFENSE	6944181	PO 4441050235	HIgh-Fidelity Qubits and Readout: A proposed Collaboration between MIT and HUJI0	12.RD	93,047	-
DEPARTMENT OF DEFENSE	6944649	PO#: 4441098702	Planning and Control Algorithms for Autonomous Underwater Docking using Sparse Graphs and Compressed Computation	12.RD	74,755	-
DEPARTMENT OF DEFENSE	6943699	PO4441091005	Coreset Compression Algorithms	12.RD	11,498	-
			Total for Ministry of Defense of Israel		**626,429**	**-**
Pennsylvania State University						
DEPARTMENT OF DEFENSE	6943905	SA21-03	Interaction of Ionizing Radiation in Materials University Research Alliance (IIRM-URA)	12.351	335,657	-
			Total for Pennsylvania State University		**335,657**	**-**
Stevens Institute of Technology						
DEPARTMENT OF DEFENSE	6940962	SUBAWARD # 2102948-01	Model Curation Innovation & Implementation	12.RD	-1,392	-
DEPARTMENT OF DEFENSE	6941670	SUBAWARD # 2102960-02	WRT 1008 Transforming Systems Engineering through Model-Centric Engineering ? Phase 6	12.431	-1,408	-
			Total for Stevens Institute of Technology		**-2,800**	**-**
Advanced Regenerative Manufacturing Institute						
DEPARTMENT OF DEFENSE	6941797	SUBAWARD NO. T0060	Differentiation and Monitoring of Mature Liver Organoids for Drug Testing	12.630	77,937	-
			Total for Advanced Regenerative Manufacturing Institute		**77,937**	**-**

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
TOTAL for Department of Defense					**45,389,125**	**365,743**

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF COMMERCE						
Northwestern University						
DEPARTMENT OF COMMERCE	6943285	60052977 MIT	CHiMaD Award-Sub from Northwestern Univeristy	11.609	43,342	-
			Total for Northwestern University		**43,342**	**-**
Aerodyne Research Incorporated						
DEPARTMENT OF COMMERCE	6941818	ARI 11519-1	Developing a robust and scalable calibration approach to low-cost AQ sensing (SBIR Phase II)	11.RD	45,321	-
			Total for Aerodyne Research Incorporated		**45,321**	**-**
U Delaware: National Institute for Innovation in Manufacturing Biopharmaceuticals (NIIMBL)						
DEPARTMENT OF COMMERCE	6941814	PC1.0-006 / PO# 53391	NIIMBL Projects	11.619	234,722	-
DEPARTMENT OF COMMERCE	6941812	PC2.1-036 / PO 55644	NIIMBL Projects	11.619	168,799	-
DEPARTMENT OF COMMERCE	6943411	PC2.1-037	NIIMBL Projects	11.619	280,993	-
			Total for U Delaware: National Institute for Innovation in Manufacturing Biopharmaceuticals (NIIMBL)		**684,513**	**-**
			TOTAL for Department of Commerce		**773,177**	**-**

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF ENERGY						
Brown University						
DEPARTMENT OF ENERGY	6941848	00001292	Bridging the time scale in exascale computing of chemical systems	81.049	57,149	-
			Total for Brown University		**57,149**	**-**
University of Alabama-Birmingham						
DEPARTMENT OF ENERGY	6939869	000517656-SC001	Novel, Middle and Long Wave Infrared Laser Sources For Accelerator and X-ray Generation Applications	81.049	15,858	-
			Total for University of Alabama-Birmingham		**15,858**	**-**
University of Illinois-Urbana Champaign						
DEPARTMENT OF ENERGY	6942527	078620-16205 (GRANT CODE: AC995)	Cyber Resilient Energy Delivery Consortium (CREDC)	81.122	99,796	-
			Total for University of Illinois-Urbana Champaign		**99,796**	**-**
University of Illinois Board of Trustees						
DEPARTMENT OF ENERGY	6941114	092266-17209	IDENTIFICATION OF FAULTS SUSCEPTIBLE TO INDUCED SEISMICITY: INTEGRATION OF FORWARD AND JOINT INVERSION MODELING, MACHINE LEARNING, AND FIELD-CALIBRATED GEOLOGIC MODELS	81.089	253,925	-
			Total for University of Illinois Board of Trustees		**253,925**	**-**
Electric Power Research Institute, Inc.						
DEPARTMENT OF ENERGY	6944533	10013019	Build-to-Replace: A New Paradigm for Reducing Advanced Reactor O&M Costs	81.135	22,885	-
			Total for Electric Power Research Institute, Inc.		**22,885**	**-**
AltaRock Energy, LLC						
DEPARTMENT OF ENERGY	6942705	1051-2	Millimeter-Wave Technology Demonstration for Geothermal Direct Energy Drilling	81.135	347,620	-
			Total for AltaRock Energy, LLC		**347,620**	**-**
Worcester Polytechnic Institute						
DEPARTMENT OF ENERGY	6942797	10634-GR	A Catalytic Process to Convert Municipal Solid Waste Components to Energy	81.087	104,944	-
			Total for Worcester Polytechnic Institute		**104,944**	**-**

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Carnegie-Mellon University						
DEPARTMENT OF ENERGY	6943896	1070259-433468	High-fidelity Accelerated Design of High-performance Electrochemical Systems	81.135	34,310	-
			Total for Carnegie-Mellon University		**34,310**	**-**
Harvard University						
DEPARTMENT OF ENERGY	6944324	124163	Billing Agreement: Isaac Harris - Photonics at Thermodynamic Limits Bottom of Form	81.049	10,185	-
DEPARTMENT OF ENERGY	6944182	124180	George Varnavides Billing Agreement A	81.RD	35,963	-
DEPARTMENT OF ENERGY	6920743	133512-5028381	Transport and Imaging of Mesoscopic Phenomena in Single and Bilayer Graphene	81.049	295,650	-
DEPARTMENT OF ENERGY	6939918	AGREEMENT NO. 134126-5110101	QPress: Quantum Press for Next-Generation Quantum Information Platforms	81.049	392,466	-
			Total for Harvard University		**734,264**	**-**
Washington State University						
DEPARTMENT OF ENERGY	6938562	130616 SPC001315	UI-ASSIST: US-India collAborative for smart diStribution System wIth STorage	81.122	147,933	-
DEPARTMENT OF ENERGY	6938310	130862-G003801	AGGREGATE: data-driven modeling preserving controllable DER for outage management and resiliency	81.122	11,014	-
			Total for Washington State University		**158,947**	**-**
Southern California Earthquake Center						
DEPARTMENT OF ENERGY	6943431	131471829	Estimation of Physical Scattering Parameters Related to Shallow Crustal Heterogeneity in Southern California	81.049	24,954	-
			Total for Southern California Earthquake Center		**24,954**	**-**
Purdue University						
DEPARTMENT OF ENERGY	6939853	14000388-014	Manufacturing of Robust High-Temperature Heat Exchangers	81.087	29,793	-
DEPARTMENT OF ENERGY	6944430	14000497-047	Oxidation-Resistant, Thermomechanically-Robust Ceramic Composite Heat Exchangers	81.087	185,992	-
			Total for Purdue University		**215,785**	**-**
Composite Technology Development, Inc.						
DEPARTMENT OF ENERGY	6942443	18526	Integrated Insulation-Cooling Systems for Joints for HTS Cables	81.049	-57	-
DEPARTMENT OF ENERGY	6943491	18767	Thermally conductive insulators for conduction-cooled superconducting magnets	81.049	45,000	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
			Total for Composite Technology Development, Inc.		**44,943**	**-**
UChicago Argonne, LLC						
DEPARTMENT OF ENERGY	6945491	1F-60479	Machine learning augmented optical and X-ray spectroscopy	81.RD	994	-
DEPARTMENT OF ENERGY	6941591	8F-30212	Joint Center for Energy Storage Research (JCESR) Renewal Year 1	81.RD	1,043,903	-
DEPARTMENT OF ENERGY	6941696	9F-60227	Pulsed Thermal Tomography Nondestructive Examination of Additively Manufactured Reactor Materials and Components	81.RD	10,033	-
DEPARTMENT OF ENERGY	6941867	NO. 9F-60231	Advanced characterization of lithium/electrolyte interface	81.RD	158,665	-
DEPARTMENT OF ENERGY	6937302	SUBCONTRACT NO. 7F-30180	Reaction Mechanism Generator (RMG) Software	81.RD	94,996	-
DEPARTMENT OF ENERGY	6939720	WO 2J-30101-0009A	Task 9: LEU Fuel Specification Impact Assessment for the MITR Research Reactor	81.RD	17,480	-
DEPARTMENT OF ENERGY	6943402	WO 2J-30101-0010A	Task 10: Preliminary SAR Review and Alternative HEU-LEU Mixed Core Transition for the MITR-II Research Reactor	81.RD	402,225	-
DEPARTMENT OF ENERGY	6945129	WO 2J-30101-0011A	LEU Fuel Specification Impact Assessment for the MITR Research Reactor – Phase II	81.RD	59,603	-
			Total for UChicago Argonne, LLC		**1,787,899**	**-**
Sandia National Laboratories						
DEPARTMENT OF ENERGY	6942032	2080471	Utilization of CR39 on Z for DD Yield, Yield Anisotropies and Neuron Spectroscopy	81.RD	44,748	-
DEPARTMENT OF ENERGY	6938128	AGREEMENT 1340868 / PO 1874220	Frameworks, Algorithms and Scalable Technologies for Mathematics (FASTMath) SciDAC Institute	81.RD	90,757	-
DEPARTMENT OF ENERGY	6943065	AGREEMENT# 1340868/PO# 2147998/2274475	Improving the efficiency of direct Monte Carlo simulations of hypersonic flows in the presence of large density gradients	81.RD	78,170	-
DEPARTMENT OF ENERGY	6941762	PO# 2059856/1340868	Ionic Liquid Ion Source Development and Demonstration for SNL's nanoImplanter	81.RD	43,276	-
DEPARTMENT OF ENERGY	6942877	PURCHASE ORDER: 2140788	Tools for Correct-by-Construction Hardware and Software in Critical Systems	81.RD	111,269	-
DEPARTMENT OF ENERGY	6944486	PURCHASE ORDER: 2196746	Model Form Epistemic Uncertainty Quantification for Modeling with Differential Equations	81.RD	40,435	-
			Total for Sandia National Laboratories		**408,655**	**-**
Mission Support and Test Services LLC						
DEPARTMENT OF ENERGY	6942283	231648	Real-Time Methods for Statistical Image Enhancement	81.RD	102,031	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
			Total for Mission Support and Test Services LLC		**102,031**	**-**
University of Michigan						
DEPARTMENT OF ENERGY	6931203	3003222367	Consortium for Verification Technology (CVT)	81.113	4,906	-
DEPARTMENT OF ENERGY	6943018	PO 3005787040 / SUBK00009794	Consortium for Monitoring, Technology, and Verification	81.113	348,166	-
			Total for University of Michigan		**353,072**	**-**
Brookhaven National Laboratory						
DEPARTMENT OF ENERGY	6934084	312673	Beam Energy Scan Theory Collaboration	81.RD	-127	-
DEPARTMENT OF ENERGY	6934181	313021	Transverse Momentum Dependent Parton Structure Collaboration	81.RD	24,840	-
DEPARTMENT OF ENERGY	6941332	368338	R&D on the sPHENIX MAPS Vertex Detector upgrade	81.RD	1,378	-
DEPARTMENT OF ENERGY	6938641	NO. 347538	Time-resolved imaging of sub-10 nm skyrmions in ferrimagnets and synthetic antiferromagnets	81.RD	5,110	-
DEPARTMENT OF ENERGY	6944121	SUBCONTRACT NO. 380126	R&D on the sPHENIX MAPS Vertex Detector upgrade	81.RD	728,486	-
DEPARTMENT OF ENERGY	6944786	SUBCONTRACT# 390203	Polarized 3He++ ion Source Development	81.RD	86,610	-
DEPARTMENT OF ENERGY	6944787	SUBCONTRACT# 390988	Homogeneous Calorimeter Development - crystal and glass (eRD1)	81.RD	7,386	-
DEPARTMENT OF ENERGY	6944225	SUBK# 387553	Polarized ion from the Electron Beam Ionization Source	81.RD	41,243	-
DEPARTMENT OF ENERGY	6944490	SUBK# 390034	Co-design Center for Quantum Advantage (C2QA)	81.RD	89,415	-
			Total for Brookhaven National Laboratory		**984,341**	**-**
University of New Mexico						
DEPARTMENT OF ENERGY	6938242	327075-875J	Bimetallic Composite (Incoloy 800H/Ni-201) Development and Compatibility in Flowing FLiBe as a Molten Salt Reactor (MSR) Structural Material	81.121	1,389	-
			Total for University of New Mexico		**1,389**	**-**
UT- Battelle LLC						
DEPARTMENT OF ENERGY	6933214	4000102892	The Consortium for Advanced Simulation of Light Water Reactors (CASL)	81.RD	-7	-
DEPARTMENT OF ENERGY	6944677	4000158704	Center for Bioenergy Innovation	81.049	510,615	-
DEPARTMENT OF ENERGY	6937872	4000159358	Development of Next Generation Slicing Software for Additive Manufacturing	81.RD	406	-
DEPARTMENT OF ENERGY	6938156	4000160305	Optimization of sensor networks for improving climate model predictions	81.RD	153,215	-
DEPARTMENT OF ENERGY	6939467	4000164925	Behavior-Based Metal Additive Manufacturing	81.RD	102,008	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF ENERGY	6941701	4000174269	Machine-Learning-Based Multi-Physics Nuclear Reactor Core Simulations of Molten Salt Reactor	81.RD	20,622	-
DEPARTMENT OF ENERGY	6942904	4000176148	MODELING-ENHANCED INNOVATIONS TRAILBLAZING NUCLEAR ENERGY REINVIGORATION (MEITNER)	81.RD	112,178	-
DEPARTMENT OF ENERGY	6942741	4000177261	Consortium on Coal-based Carbon Materials Manufacturing - Coal-based Separation Membranes	81.RD	78,861	-
DEPARTMENT OF ENERGY	6943240	4000179517	Turbulence Modeling - Systematic comparison between measured and modelled ion heat diffusivities using VITALS	81.RD	43,979	-
DEPARTMENT OF ENERGY	6944264	4000183050	Validation of CASL advanced boiling closures for CFD	81.RD	60,328	-
DEPARTMENT OF ENERGY	6944764	4000183826	Understanding and Controlling Entangled and Correlated Quantum States in Confined Solid-state Systems Created via Atomic Scale Manipulation	81.049	22,602	-
DEPARTMENT OF ENERGY	6936739	4000193546	Coupled Monte Carlo Neutronics and Fluid Flow Simulation of Small Modular Reactors (ExaSMR)	81.RD	179,307	-
DEPARTMENT OF ENERGY	6940671	CW8043	The Effects of Temperature on the Propagation of Nuclear Data Uncertainty in Nuclear Criticality Safety Calculations	81.RD	70,009	-
			Total for UT- Battelle LLC		**1,354,125**	**-**
University of Rochester						
DEPARTMENT OF ENERGY	6940700	417532G/ UR FAO GR510907	Nuclear-particle Spectroscopy and Analysis at Omega	81.112	378,921	-
			Total for University of Rochester		**378,921**	**-**
Boston University						
DEPARTMENT OF ENERGY	6944604	4500003689	Market Clearing of Risky Assets	81.135	40,815	-
			Total for Boston University		**40,815**	**-**
General Atomics						
DEPARTMENT OF ENERGY	6943607	4500085050	Post Irradiation Examination, Characterization and Modeling of Accident Tolerant LWR Fuel Cladding	81.121	134,038	-
DEPARTMENT OF ENERGY	6937870	PO# 4500071909	AToM: Advanced Tokamak Modeling Environment	81.049	127,679	-
			Total for General Atomics		**261,717**	**-**
Northeastern University						
DEPARTMENT OF ENERGY	6939896	503036-78052	Design, Control and Application of Next-Generation Qubits	81.049	214,209	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
			Total for Northeastern University		**214,209**	**-**
Lehigh University						
DEPARTMENT OF ENERGY	6944133	544241-78001	Application of Banking Scoring and Rating for Coherent Risk Measures in Electricity Systems	81.135	102,271	-
			Total for Lehigh University		**102,271**	**-**
Los Alamos National Security, L.L.C.						
DEPARTMENT OF ENERGY	6943049	562714	Support for Etching	81.RD	39,992	-
DEPARTMENT OF ENERGY	6940426	SUBCONTRACT 489270	Thermal Scattering in NJOY21	81.RD	29,040	-
DEPARTMENT OF ENERGY	6940672	SUBCONTRACT NO. 531711	Analysis and Optimization of Parallel Unstructured-Mesh Computations	81.RD	131,165	-
DEPARTMENT OF ENERGY	6945220	SUBCONTRACT NO. 628886	Emergency Control and Monitoring of Power System Networks	81.RD	1,967	-
			Total for Los Alamos National Security, L.L.C.		**202,165**	**-**
Pennsylvania State University						
DEPARTMENT OF ENERGY	6940065	5952-MIT-DOE-1090	Center for Lignocellulose Structure and Formation (CLSF III)	81.049	215,681	-
DEPARTMENT OF ENERGY	6944535	S001256-USDOE	Center for thermal-fluids application in nuclear energy: Establishing the knowledgebase for thermal-hydraulic multiscale simulation to accelerate the deployment of advanced reactors	81.121	42,816	-
			Total for Pennsylvania State University		**258,497**	**-**
Northwestern University						
DEPARTMENT OF ENERGY	6943770	60056489 MIT	Adaptive Discovery and Mixed-Variable Optimization of Next Generation Synthesizable Microelectronic Materials	81.135	76,016	-
			Total for Northwestern University		**76,016**	**-**
Ohio State University						
DEPARTMENT OF ENERGY	6936056	60058746	Alloying Agents to Stabilize Lanthanides Against Fuel Cladding Chemical Interaction: Tellurium and Antimony Studies	81.121	533	-
			Total for Ohio State University		**533**	**-**
Triad National Security, LLC						
DEPARTMENT OF ENERGY	6943684	604325 - BASIC AGMT 485063	Development and Application of Data Processing for Neutron Pair Distribution Analysis of LANSCE Data Collected on Molten Salts	81.RD	10,038	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
			Total for Triad National Security, LLC		**10,038**	**-**
Stanford University						
DEPARTMENT OF ENERGY	6943245	62267053-151086	Controlled Synthesis of Solid-State Quantum Emitter Arrays for Quantum Computing and Simulation	81.049	148,220	-
			Total for Stanford University		**148,220**	**-**
State University of New York						
DEPARTMENT OF ENERGY	6930984	68799	EFRC:NorthEast Center for Chemical Energy Storage (NECCES)	81.049	16,502	-
			Total for State University of New York		**16,502**	**-**
Lawrence Berkeley National Laboratory						
DEPARTMENT OF ENERGY	6941260	7453199	High-Coherence Multilayer Superconducting Structures for Large Scale Qubit Integration and Photonic Transduction	81.RD	445,412	-
DEPARTMENT OF ENERGY	6931128	SUBCONTRACT # 7204982	Molecular Determinants of Community Activity, Stability and Ecology (MDCASE)	81.RD	260,780	-
			Total for Lawrence Berkeley National Laboratory		**706,192**	**-**
University of Maryland						
DEPARTMENT OF ENERGY	6944739	94434-Z7124201	Solution-verification, grid-adaptation and uncertainty quantification for chaotic turbulent flow problems	81.124	98,652	-
			Total for University of Maryland		**98,652**	**-**
University of Minnesota						
DEPARTMENT OF ENERGY	6941840	A004527506	Inorganometallic Catalyst Design Center	81.049	114,392	-
			Total for University of Minnesota		**114,392**	**-**
C.A. Goudey & Associates						
DEPARTMENT OF ENERGY	6939174	AGMT DTD 05/01/2018	AUTONOMOUS TOW VESSELS FOR OFFSHORE MACROALGAE FARMING	81.135	32,148	-
			Total for C.A. Goudey & Associates		**32,148**	**-**
Free Form Fibers LLC						
DEPARTMENT OF ENERGY	6945047	AGMT DTD. 08/24/2020	Ultra-thin 3-D Ceramic Matrix Composite Cladding	81.RD	19,577	-
DEPARTMENT OF ENERGY	6944473	AGRMT EFFECTIVE 06/01/2020	Advanced Fuel Fabrication from the Gas Phase	81.049	64,970	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
			Total for Free Form Fibers LLC		**84,547**	**-**
Adelphi Technology Inc						
DEPARTMENT OF ENERGY	6942781	AGMT EFFECTIVE 1/24/2020	Multiplexing Focusing Analyzer for Efficient Stress-Strain Measurements	81.049	48,370	-
			Total for Adelphi Technology Inc		**48,370**	**-**
FGC Plasma Solutions						
DEPARTMENT OF ENERGY	6941684	AGMT SIGNED 10/11/2019	Control of Static and Dynamic Stability in Lean Combustion via Plasma Actuation in a Novel Fuel Injector Design	81.049	219,724	-
DEPARTMENT OF ENERGY	6944471	SBIR AGRMNT DTD 12/2/2020	In-Cylinder Ammonia Production Using Internal Combustion Engine Enabled by a Low Temperature Plasma	81.049	8,742	-
DEPARTMENT OF ENERGY	6941160	STTR AGMT DTD. 7/1/19	STTR Phase I: Large Volume Plasma Generation for CO2 Processing	81.RD	65	-
			Total for FGC Plasma Solutions		**228,531**	**-**
Brookhaven Technology Group, Inc.						
DEPARTMENT OF ENERGY	6945075	AGMT. DTD. 03/16/2021	Low-cost 2G cables for cable-in-conduit magnets	81.049	15,000	-
DEPARTMENT OF ENERGY	6941954	AGMT. DTD. 09/18/2019	HTS Cable development for the central solenoid of the DEMO fusion reactor	81.049	67,940	-
			Total for Brookhaven Technology Group, Inc.		**82,940**	**-**
Via Separations, LLC						
DEPARTMENT OF ENERGY	6942309	AGMT. DTD. 8/1/19	Scalable Graphene Oxide Membranes for Energy-Efficient Chemical Separations	81.135	517,686	-
			Total for Via Separations, LLC		**517,686**	**-**
Julia Computing						
DEPARTMENT OF ENERGY	6944807	AGREEMENT DATED	Machine learning based well design to enhance unconventional energy production	81.135	1,156	-
			Total for Julia Computing		**1,156**	**-**
Electroformed Nickel, Inc.						
DEPARTMENT OF ENERGY	6936346	AGREEMENT DATED 04/11/17	STTR Phase I: Demonstration of the technological capability for production of neutron-focusing nickel mirrors	81.049	1	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF ENERGY	6939275	STTR AGREEMENT 05/21/18	STTR Phase II: Demonstration of the technological capability for production of neutron-focusing nickel mirrors	81.049	22,122	-
			Total for Electroformed Nickel, Inc.		**22,123**	**-**
Brayton Energy, LLC						
DEPARTMENT OF ENERGY	6940431	AGREEMENT DTD 2/6/19	Reversible Counter-Rotating Turbomachine	81.135	121,412	-
			Total for Brayton Energy, LLC		**121,412**	**-**
Oxeon Energy, LLC						
DEPARTMENT OF ENERGY	6945382	AGRMT DATED 05/01/2021	Performance Validation of a Thermally Integrated 50 kW High Temperature Electrolyzer System	81.089	16,755	-
			Total for Oxeon Energy, LLC		**16,755**	**-**
Bridge 12 Technologies						
DEPARTMENT OF ENERGY	6945470	AGRMT. DTD. 3/22/2021	High Efficiency Megawatt Class Gyrotrons for Instability Control of Burning Plasma Machines	81.135	9,700	-
			Total for Bridge 12 Technologies		**9,700**	**-**
Novum Industria LLC						
DEPARTMENT OF ENERGY	6943695	AGRMT. DTD. 7/29/20	40-T, ?2-cm Warm-Bore Solenoid Magnet for Uses in High Energy Particle Physics Experiments	81.049	101,853	-
			Total for Novum Industria LLC		**101,853**	**-**
CREARE, Incorporated						
DEPARTMENT OF ENERGY	6943898	AGRMT. DTD. 8/17/2020	Helium Rotor Machinery	81.049	23,323	-
			Total for CREARE, Incorporated		**23,323**	**-**
Georgia Institute of Technology						
DEPARTMENT OF ENERGY	6942401	AWD-000286-G2	Aerial Intelligence for Retrofit Building Energy Modeling (AirBEM)	81.086	98,993	-
DEPARTMENT OF ENERGY	6942141	AWD-000372-G2	CONSORTIUM FOR ENABLING TECHNOLOGIES & INNOVATION (ETI)	81.113	544,942	-
DEPARTMENT OF ENERGY	6945218	AWD-102458-G1	Real-time Measurements of Complex Transition Metal Oxide Nanostructure Growth	81.049	42,118	-
			Total for Georgia Institute of Technology		**686,054**	**-**
Lawrence Livermore National Security, LLC						

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF ENERGY	6938345	B627203	Microscale biophysical analyses of algal bacterial interactions	81.RD	90,531	-
DEPARTMENT OF ENERGY	6940158	B631377	Chemical Threat Responsive Carbon Nanotube Membranes	81.RD	168,543	-
DEPARTMENT OF ENERGY	6942385	B635598	Design and implementation of the MRSt neutron spectrometer in support of NIF	81.RD	79,211	-
DEPARTMENT OF ENERGY	6943194	B640614	Experimental Studies of High-Velocity Impacts for Micron-Sized Metallic Particles on Metallic Surfaces	81.RD	133,417	-
DEPARTMENT OF ENERGY	6944481	B643497	Divertor Plasma Simulations	12.RD	39,290	-
DEPARTMENT OF ENERGY	6944957	B645143	Design and implementation of the MRSt neutron spectrometer in support of NIF	81.RD	40,888	-
DEPARTMENT OF ENERGY	6945389	B645222	Advanced Experimental Capability to Study High-Velocity Collisions of Metallic Microparticles	81.RD	21,286	-
DEPARTMENT OF ENERGY	6943589	SUBCONTRACT B640112	High Density Implosions on Omega and the NIF	81.RD	811,882	-
DEPARTMENT OF ENERGY	6943588	SUBCONTRACT B640717	Investigation of laser-driven particle acceleration for the development of tunable ion source for applications in high energy density science	81.RD	533	-
			Total for Lawrence Livermore National Security, LLC		**1,385,579**	**-**
University of Missouri-Columbia						
DEPARTMENT OF ENERGY	6943064	C00069059-2	High quality GaN FETs through transmutation doping and low temperature processing	81.135	159,887	-
			Total for University of Missouri-Columbia		**159,887**	**-**
Battelle-Pacific Northwest Laboratories						
DEPARTMENT OF ENERGY	6943127	CONTRACT #: 517296	Multi-Sector, Multi-Resource Interactions with Multiple Forcers	81.RD	68,549	-
DEPARTMENT OF ENERGY	6944394	CONTRACT #: 538056	Center for Molecular Electrocatalysis	81.RD	74,781	-
DEPARTMENT OF ENERGY	6944507	CONTRACT #: 543753	Making an inorganic analogue of a cell for direct air capture of CO2	81.RD	95,659	-
DEPARTMENT OF ENERGY	6944616	CONTRACT #: 547784	Uncertainty Characterization and Scenario Discovery in GCIMS	81.RD	22,365	-
DEPARTMENT OF ENERGY	6944935	CONTRACT #: 556706	Isotope Verification for Arms Control	81.RD	57,922	-
DEPARTMENT OF ENERGY	6943241	CONTRACT NO. 511287	Siting Gen III+ Small Modular Reactor or Gen IV Advanced Reactor Concepts in the Pacific Northwest	81.RD	31,402	-
DEPARTMENT OF ENERGY	6939625	CONTRACT# 428422	Center for Molecular Electrocatalysis	81.RD	286,403	-
DEPARTMENT OF ENERGY	6942932	CONTRACT# 499232	Phonon-mediated Quasiparticles in Superconducting Circuits	81.RD	65,149	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF ENERGY	6943054	CONTRACT# 514484	Combined Experimental and Computational Efforts to Establish Ion Mobility, Solubility and Stability of Functional Liquids for Electrochemical Energy Storage	81.RD	136,264	-
			Total for Battelle-Pacific Northwest Laboratories		**838,494**	**-**
Battelle Energy Alliance, LLC						
DEPARTMENT OF ENERGY	6936498	CONTRACT 112583 - RELEASE #13	LWR CORE ANALYSIS WITH RELAP-7 FLUIDS MODELS	81.RD	126	-
DEPARTMENT OF ENERGY	6942785	REL 17 BMC 112583	Development of an Advanced Method for TREAT Modeling and Simulation with Thermal Graphite Model Validation	81.RD	39,657	-
DEPARTMENT OF ENERGY	6937503	RELEASE 16 / 00112583	Irradiation of the TREAT LEU Fuel Irradiation Experiment 1 (TIE-1) in MITR	81.RD	-8,500	-
DEPARTMENT OF ENERGY	6939000	RELEASE 18 / BMC 112583	ATR Experiment Safety Margin Characterization-Recommendations for Implementation	81.RD	68,300	-
DEPARTMENT OF ENERGY	6939943	RELEASE 19 / BMC 112583	Low temperature Electrochemical Activation of Ethane for Co-production of Chemicals/Fuels and Hydrogen	81.RD	71,476	-
DEPARTMENT OF ENERGY	6940384	RELEASE 20 /BMC 0112583	Advanced Data Acquisition and Simulation with Live Data Supporting VTR Experiments	81.RD	55,464	-
DEPARTMENT OF ENERGY	6942410	RELEASE 21/BMC 0112583	Moving beyond DPA: A new approach for rapidly quantifying radiation damage	81.RD	108,326	-
DEPARTMENT OF ENERGY	6942013	RELEASE 22 /BMC 0112583	Switchable Solvent Water Extraction and Water Softening ? Thermodynamic Modeling	81.RD	153,164	-
DEPARTMENT OF ENERGY	6943615	RELEASE 24/BMC 112583	Collaboration on Techno-Economic Analysis of the Role of Nuclear Generation in the Energy Market Transition and New Market Opportunities	81.RD	116,553	-
DEPARTMENT OF ENERGY	6944837	RELEASE 25/BMC 112583	An Innovative Approach for Accelerated Irradiation Studies of Materials	81.RD	61,739	-
DEPARTMENT OF ENERGY	6945215	RELEASE 26/BMC 112583	Passive Strain Measurements for Experiments in Radiation Environments	81.RD	2,983	-
DEPARTMENT OF ENERGY	6945053	RELEASE 27 /BMC 0112583	NASA Fuel and Material Irradiation	81.RD	64,631	-
DEPARTMENT OF ENERGY	6945090	RELEASE 28/BMC 112583	Assessment of neutron irradiation tolerance of semi-coherent nano-lamellar structures	81.RD	57,102	-
DEPARTMENT OF ENERGY	6945279	RELEASE 29/BMC 112583	Informative Design of High-Temperature Metal Hydride Moderators in Microreactors	81.RD	5,938	-
			Total for Battelle Energy Alliance, LLC		**796,958**	**-**
Brookhaven Science Associates, LLC						
DEPARTMENT OF ENERGY	6943488	CONTRACT NO. 383445	Quantum UV Sensors Based on High-Tc Superconducting Nanowire Single-Photon Detector	81.RD	222,939	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
			Total for Brookhaven Science Associates, LLC		**222,939**	**-**
Type One Energy Group						
DEPARTMENT OF ENERGY	6943686	DE-AR0001287	Proposal for a Demonstration HTS Stellarator Coil with an Additive-Manufactured Support Case	81.135	141,521	-
			Total for Type One Energy Group		**141,521**	**-**
Plasma Processes, LLC						
DEPARTMENT OF ENERGY	6938695	DE-SC0015931 / PO# 1014-002-JK-050218	SBIR Phase II: Additive Manufacture of Tungsten Armored Plasma Facing Components	81.049	43,357	-
DEPARTMENT OF ENERGY	6940880	PO 1015-002-JK-120618	SBIR Phase II: Advanced Metallic-Silicon Carbide Composite Claddings for Improved Damage Tolerance	81.049	-3,587	-
			Total for Plasma Processes, LLC		**39,769**	**-**
Tanner Research, Incorporated						
DEPARTMENT OF ENERGY	6941794	DE-SC0019905	Quench Detection Method using MEMS Acoustic Sensor Arrays for Superconducting Magnets (STTR Phase 1)	81.049	-222	-
DEPARTMENT OF ENERGY	6944940	DE-SC0019905	Quench Detection Method using MEMS Sensor Arrays for Superconducting Magnets	81.049	68,103	-
			Total for Tanner Research, Incorporated		**67,881**	**-**
University of California-Santa Barbara						
DEPARTMENT OF ENERGY	6940325	KK1939	PhILMs: Collaboratory on Mathematics and Physics Informed Learning Machines for Multiscale and Multiphysics Problems	81.049	228,269	-
			Total for University of California-Santa Barbara		**228,269**	**-**
Texas A & M						
DEPARTMENT OF ENERGY	6944303	M2100082	Secure Monitoring and Control of Solar Power Distribution System Through Dynamic Watermarking	81.087	174,324	-
			Total for Texas A & M		**174,324**	**-**
Western Research Institute						
DEPARTMENT OF ENERGY	6938492	MIT17-10G663	Consortium for Production of Affordable Carbon Fibers (CPACF) in the U.S.	81.086	178,630	-
			Total for Western Research Institute		**178,630**	**-**
Honeywell						
DEPARTMENT OF ENERGY	6933853	N000189586	Additive Manufacturing of Porous Solids	81.RD	21,773	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF ENERGY	6935787	N000189586, LINE 1, MOD 2	Additive Manufacturing of Porous Solids	81.RD	-61,269	-
DEPARTMENT OF ENERGY	6940342	PO N000302644	MIT idea PDRD	81.RD	-233	-
DEPARTMENT OF ENERGY	6942696	PO# N000343525	Porosity controlled additive manufacturing	81.RD	105,326	-
DEPARTMENT OF ENERGY	6945268	PO# N000394905	Porosity-controlled selective laser melting	81.RD	64,823	-
			Total for Honeywell		**130,420**	**-**
National Renewable Energy Laboratory						
DEPARTMENT OF ENERGY	6941550	NO. UGA-0-41029-21	NREL: Lignin-First Biorefinery Development	81.049	16,684	-
DEPARTMENT OF ENERGY	6943963	NO. UGA-0-41029-24	Development of a thermal system modeling framework based on Machine Learning approach	81.RD	45,000	-
DEPARTMENT OF ENERGY	6930865	UGA-0-41029-16/ER392000	Center for Next Generation of Materials by Design: Incorporating Metastablility	81.049	41,078	-
DEPARTMENT OF ENERGY	6942931	UGA-0-41029-22	NREL: Plastics Upcycling Consortium	81.049	116,743	-
DEPARTMENT OF ENERGY	6943104	UGA-0-41029-23	Environmental Design of Cost-Effective High-Temperature Sensible Thermal Energy Storage (TES) Using Industrial Waste	81.RD	109,573	-
			Total for National Renewable Energy Laboratory		**329,078**	**-**
CF Technologies, Inc.						
DEPARTMENT OF ENERGY	6944603	PHASE II SBIR AGMT. 10/15/2020	Supercritical Fluid Separation and Purification of Rare Earth Elements to Lower Energy Consumption and Reduce Waste	81.049	1,316	-
			Total for CF Technologies, Inc.		**1,316**	**-**
Fluor Marine Propulsion						
DEPARTMENT OF ENERGY	6942196	PO 135265 / LINE ITEM 1	Effect of surface properties on the two-phase heat transfer and critical heat flux	81.RD	135,621	-
DEPARTMENT OF ENERGY	6944956	PO#: 140712	Development of Autonomous Thermal Hydraulic Operations	81.RD	110,710	-
			Total for Fluor Marine Propulsion		**246,331**	**-**
Research Foundation of SUNY-Buffalo						
DEPARTMENT OF ENERGY	6940393	PO R1154214	REDUCING OVERNIGHT CAPITAL COST IN ADVANCED REACTORS USING EQUIPMENT-BASED SEISMIC PROTECTIVE TECHNOLOGIES	81.135	155	-
DEPARTMENT OF ENERGY	6940392	PO R1154215	REDUCING OVERNIGHT CAPITAL COST IN ADVANCED REACTORS USING EQUIPMENT-BASED SEISMIC PROTECTIVE TECHNOLOGIES	81.135	48,493	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
			Total for Research Foundation of SUNY-Buffalo		**48,648**	**-**
Lincoln Laboratory						
DEPARTMENT OF ENERGY	6942991	PO# 7000477965	Advanced Quantum Testbed (AQT)	81.RD	153,873	-
			Total for Lincoln Laboratory		**153,873**	**-**
Michigan State University						
DEPARTMENT OF ENERGY	6944410	RC108389 - MIT	CRIS at FRIB-MIT	81.049	126,212	-
			Total for Michigan State University		**126,212**	**-**
Raytheon Technologies Corporation						
DEPARTMENT OF ENERGY	6941044	RESEARCH AGMT 1249042	Hydrogen and Fuel Cell R&S FOA; Topic 1 High Performance Non-PGM Transition Metal Oxide Oxygen Reduction Catalyst for Polymer Electrolyte Membrane Fuel Cells	81.RD	24,896	-
DEPARTMENT OF ENERGY	6940860	RESEARCH AGREEMENT # 2606669	Low-cost Redox-Flow-Battery System with S- and Mn-anion active materials	81.135	95,447	-
			Total for Raytheon Technologies Corporation		**120,342**	**-**
University of Iowa						
DEPARTMENT OF ENERGY	6939845	S00483-01	Foundations of Quantum Computing for Gauge Theories and Quantum Gravity	81.049	10,762	-
			Total for University of Iowa		**10,762**	**-**
University of Massachusetts-Lowell						
DEPARTMENT OF ENERGY	6938248	S51900000036928	Design of a Commercial-Scale, Fluoride-Salt-Cooled, High-Temperature Reactor With Novel Refueling and Decay Heat Removal Capabilities	81.121	20,308	-
			Total for University of Massachusetts-Lowell		**20,308**	**-**
University of Arkansas						
DEPARTMENT OF ENERGY	6942737	SA1712153	Cybersecurity Center for Secure Evolvable Energy Delivery Systems (SEEDS)	81.112	4,687	-
			Total for University of Arkansas		**4,687**	**-**
The REMADE Institute						
DEPARTMENT OF ENERGY	6942536	SA-19-31	Dummy Parent for Identifying Strategies to Maximize Benefit of Fiber Recovery Through Systems Quantification	81.087	88,863	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
			Total for The REMADE Institute		**88,863**	**-**
Faraday Technology, Inc						
DEPARTMENT OF ENERGY	6936670	SC 6305-1031	Microfluidic System for CO2 Reduction to Hydrocarbons	81.049	-5,136	-
			Total for Faraday Technology, Inc		**-5,136**	**-**
Iowa State University						
DEPARTMENT OF ENERGY	6940042	SC-19-487	Center for the Advancement of Topological Semimetals (CATS)	81.RD	105,566	-
			Total for Iowa State University		**105,566**	**-**
University of California - Berkeley						
DEPARTMENT OF ENERGY	6937842	SUB#00009635/PO#BB0099 8750	Methods to Predict Thermal Radiation and to Design Scaled Separate and Integral Effects Testing For Molten Salt Reactors	81.121	-5,465	-
			Total for University of California - Berkeley		**-5,465**	**-**
Princeton University						
DEPARTMENT OF ENERGY	6940086	SUB0000289	Bioinspired Light-Escalated Chemistry (BioLEC)	81.049	117,435	-
			Total for Princeton University		**117,435**	**-**
Columbia University						
DEPARTMENT OF ENERGY	6944420	SUBAWARD 5(GG008711-10)	PINE: Photonic Integrated Networked Energy Efficient Datacenter	81.135	10,671	-
			Total for Columbia University		**10,671**	**-**
University of Colorado Boulder						
DEPARTMENT OF ENERGY	6937968	SUBAWARD#: 1555955 PO# 1000976258	Design and Engineering of Synthetic Control Architectures	81.049	228,959	-
			Total for University of Colorado Boulder		**228,959**	**-**
Phoenix, LLC						
DEPARTMENT OF ENERGY	6945060	SUBCONTRACT AGRMT DTD. 01/01/2021	ULTRA HIGH FLUX DT NEUTRON SOURCE FOR ACCELERATED TESTING OF FUSION MATERIALS AND SUBSYSTEMS TO REACTOR-RELEVANT DPA LEVELS	81.135	2,627	-
			Total for Phoenix, LLC		**2,627**	**-**
Radiation Monitoring Devices						

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF ENERGY	6941874	SUBCONTRACT C20-02	In situ Characterization of Interfaces Between Materials and Molten Salts for Molten Salt Reactors	81.049	188,366	22,902
DEPARTMENT OF ENERGY	6943786	SUBCONTRACT C21-07	Improved High Z, Wide Band Gap Semiconductors through Modeling and Experiment	81.049	20,000	-
			Total for Radiation Monitoring Devices		**208,366**	**22,902**
Form Energy, Inc.						
DEPARTMENT OF ENERGY	6941805	SUBCONTRACT RESEARCH AGREEMENT DATED 10-24-2019	Aqueous Sulfur Systems for Long-Duration Grid Storage	81.135	156,304	-
			Total for Form Energy, Inc.		**156,304**	**-**
University of Nevada-Reno						
DEPARTMENT OF ENERGY	6941933	UNR-20-21	Applications of Machine Learning Techniques to Geothermal Play Fairway Analysis in the Great Basin Region Nevada	81.087	37,808	-
			Total for University of Nevada-Reno		**37,808**	**-**
University of Texas - Austin						
DEPARTMENT OF ENERGY	6938299	UTA18-000276	Partnership for Multiscale Gyrokinetic (MGK) Turbulence	81.049	201,013	-
DEPARTMENT OF ENERGY	6940002	UTA18-001328	AEOLUS: Advances in Experimental Design, Optimal Control, and Learning for Uncertain Complex Systems	81.049	143,475	-
			Total for University of Texas - Austin		**344,489**	**-**
University of Washington						
DEPARTMENT OF ENERGY	6937599	UWSC10120	Ultrafast Control of Emerging Electronic Phenomena in 2D Quantum Materials	81.049	36,529	-
DEPARTMENT OF ENERGY	6944510	UWSC12397 PO BPO52447	Ultrafast Control of Emerging Electronic Phenomena in 2D Quantum Materials	81.049	149,035	-
			Total for University of Washington		**185,564**	**-**
			TOTAL for Department of Energy		**18,614,909**	**22,902**

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF HEALTH & HUMAN SERVICES						
Massachusetts General Hospital						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942258	SUBAWARD# 235212	Using system dynamics to enhance the FDA?s opioids systems model and address the ongoing crisis	93.103	16,997	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944319	224257 (AGARWAL)	Billing Agreement: Vibha Agarwal - A Longitudinal Analysis Stream for FreeSurfer	93.853	29,496	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943787	228097 (DONG)	Billing Agreement: Zijing Dong, Rapid MRI acquisition for pediatric low-grade gliomas	93.286	11,769	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943742	228097 (IYER)	Billing Agreement: Siddharth Iyeri, Rapid MRI acquisition for pediatric low-grade gliomas	93.286	11,836	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944149	229297	Billing Agreement - Paul Dannenberg - Massive wavelength-division multiplexing and imaging with laser particles	93.310	70,116	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942182	229297 - PAUL DANNENBERG	Billing Agreement - Paul Dannenberg Spring 20 - Massive wavelength-division multiplexing and imaging with laser particles	93.310	7,535	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6935377	229354	Improving Human fMRI through Modeling and Imaging Microvascular Dynamics	93.242	167,268	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6935622	229428	Filtered point process inference framework for modeling neural data	93.286	-24,162	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6935800	229825	Role of miR-222 in pathological hypertrophy and heart failure	93.837	44,971	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6935992	229916	Interfering with the macrophage life cycle in atherosclerosis	93.837	103,145	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941265	230662	Billing Agreement - Mingjian He - Noninvasive Low-cost Biomarkers for Preclinical Diagnosis and Longitudinal Tracking of Alzheimer's Disease Using Sleep and Resting State EEG	93.866	69,474	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943570	230662	Billing Agreement: Amanda Beck - noninvasive Low-cost Biomakers for Preclinical Diagnosis and Longitudinal Tracking of Alzheimer’s Disease Using Sleep and Resting State EEG	93.8666	41,980	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937341	230837	Reengineering obesity-induced abnormal microenvironment to improve PDAC Treatment	93.396	130,438	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944905	231345	Billing Agreement - Harvard Training Program in Bioinformatics Applied to Diabetes, Obesity and Metabolism	93.847	28,743	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6945559	231409 (BARKSDALE)	Billing Agreement: Alex Barksdale SS21 - A magnetic particle imager (MOI) for functional brain imaging in humans	93.286	4,051	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943630	231409 (BARKSDALE)	Billing Agreement: Alex Barksdale, Wald A magnetic particle imager (MOI) for functional brain imaging in humans	93.286	34,939	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943995	231409 (MATTINGLY)	Billing Agreement - Eli Mattingly - A magnetic particle imager (MOI) for functional brain imaging in humans	93.286	36,704	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938426	231833	Unique Value of Real Time Shear Stress to Enhance Coronary Disease Management	93.837	61,839	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6945254	232232 (MORALES)	Billing Agreement - Manuel Morales - Multimodal MR-PET Machine Learning Approaches for Primary Prostate Cancer Characterization	93.394	71,736	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943434	232432	Billing Agreement - Alex Shalek & Research Tech - Riley Drake - T Cells in HCV/HIV Co-infection	93.279	69,108	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938653	232432	T cells in HCV/HIV co-infection	93.279	-84	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940260	233405	Harnessing Diverse BioInformatic Approaches to Repurpose Drugs for Alzheimers Disease (R01 Resub)	93.866	44,705	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941972	233481	Combined Cortical and Subcortical Recording and Stimulation as a Circuit-Oriented Treatment for Obsessive-Compulsive Disorder	93.853	12,600	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940323	233811	Leveraging Artificial Intelligence for the assessment of severity of depressive symptoms	93.242	312,993	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943941	234408	Determining antigen recognition in systemic sclerosis	93.855	103,186	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943536	234776 (ROBINSON)	Billing Agreement - Mitchell Robinson - Acousto-optic modulated interferometric DCS (iDCS) operating at 1064 nm	93.286	11,301	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944602	235400	Billing Agreement - Jay Patel - DISCOVERY: Administrative Core	93.853	30,218	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944920	235400	DISCOVERY: Determinants of Incident Stroke Cognitive Outcomes and Vascular Effects on RecoverY	93.853	41,687	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941742	235663	An integrated translational approach to overcome drug resistance	93.353	52,989	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944497	236354	Billing Agreement - Josh Bromley - Base Funding - Immune Mechanisms of Protection against Mycobacterium Tuberculosis Center (IMPAc-TB)	93.RD	53,801	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6945430	236354	Billing Agreement - Sarah Nyquist - Base Funding - Immune Mechanisms of Protection against Mycobacterium Tuberculosis Center (IMPAc-TB)	93.RD	28,252	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944903	236446 (HOEBEL)	Billing Agreement - Katharina Hoebel - Distributed Learning of Deep Learning Models for Cancer Research	93.394	22,663	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943169	236482	Demystifying the antiviral activity of the IgG3+ antibody response	93.855	125,273	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943529	236596	Defining the Fc-correlates of protection against influenza	93.855	34,784	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943532	236632	Multiplexed Antigen-Specific Antibody Fc Profiling on a Chip for Point-of-Care Diagnosis of TB in HIV-infected Children	93.855	75,113	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943526	236707	Prebiotic effect of eicosapentaenoic acid treatment for colorectal cancer	93.396	45,741	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944321	236792 (DONG)	Billing Agreement: Zijing Dong, fMRI Technologies for Imaging at the Limit of Biological Spatiotemporal Resolution	93.286	62,032	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944320	236792 (IYER)	Billing Agreement: Siddharth Iyeri, fMRI Technologies for Imaging at the Limit of Biological Spatiotemporal Resolution	93.286	31,016	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944102	236792 (WANG)	Billing Agreement - Fuyixue Wang - fMRI Technologies for Imaging at the Limit of Biological Spatiotemporal Resolution	93.286	9,065	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944191	236887	Mechanisms of HIV-associated epithelial intestinal stem cell (ISC) dysfunction	93.847	256,724	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944105	237185 (WANG)	Billing Agreement - Fuyixue Wang - Center for Mesoscale Mapping - Project 2	93.286	51,370	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6945014	237288	Billing Agreement - Vincent Miao - Single-Cell Analysis of HIV/SIV Reservoir - 237288	93.855	19,918	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944174	237342 (HOEBEL)	Billing Agreement - Katharina Hoebel - Robust AI to develop risk models in retinopathy of prematurity using deep learning	93.867	7,554	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6945164	237342 (HOEBEL)	Billing Agreement: Katherine Hoebel - Robust AI to develop risk models in retinopathy of prematurity using deep learning	93.867	15,109	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944456	237387	Development of Novel Bacteriophages Targeting Enteric Bacterial Pathogens	93.855	6,648	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944721	237693	Mapping and dissecting the role of antibodies in Mtb control	93.855	6,350	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6945302	238575	Effects of inflammaging on intestinal epithelial cells and aspirin chemoprevention.	93.393	9,208	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942485	AGREEMENT 234061/P30DK043351	Bacterial intraspecies variation in the colorectal cancer microenvironment	93.847	51,038	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937425	SUBAWARD 231183	Parallel Excitation Methods for High Field MRI, NIH, PA-16-160	93.286	285,372	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938915	SUBAWARD NO. 230203	Non-Human Primate Studies of Anesthetic Action	93.279	25,392	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937453	SUBAWARD NO. 231125	Sleep-dependent Memory Processing in Schizophrenia	93.279	77,223	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942989	SUBAWARD# 235289	Platelet alphaIIbeta3 activation and therapeutic targeting	93.839	49,442	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944770	SUBAWARD# 236524	COVID-19: CIMIT Research Proposal Peko Hosoi	93.286	99,458	-
			Total for Massachusetts General Hospital		**3,046,125**	**-**
Fred Hutchinson Cancer Research Center						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941754	00001006276	The Syngenic DNA and uPOET Platform: Overcoming Innate Barriers to Genetic Engineering in Bacteria	93.121	6,273	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941680	0000997305	The Syngenic DNA and uPOET Platform: Overcoming Innate Barriers to Genetic Engineering in Bacteria	93.121	-42,368	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944277	0001041798	The Syngenic DNA and uPOET Platform: Overcoming Innate Barriers to Genetic Engineering in Bacteria	93.121	109,694	-
			Total for Fred Hutchinson Cancer Research Center		**73,598**	**-**
Brown University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944063	00001628	Multifidelity and multiscale modeling of the spleen function in hereditary spherocytosis and sickle cell disease with in vitro and ex vivo validations	93.839	169,096	-
			Total for Brown University		**169,096**	**-**
University of Alabama-Birmingham						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6945045	000526030-001	Alpha-synuclein aggregate induced synapse loss is a pathological event contributing to Lewy body dementias	93.853	133,158	-
			Total for University of Alabama-Birmingham		**133,158**	**-**
Beth Israel Deaconess Medical Center						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944094	01061188	The development and human translation of Temporal Interference brain stimulation	93.242	264,560	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944570	01062405	Predicting Fracture Risk in Patients Treated with Radiotherapy for Spinal Metastatic Disease	93.846	55,382	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944326	01062677	Research Resource for Complex Physiologic Data	93.286	349,439	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942799	1061926	Research Resource for Complex Physiologic Data	93.859	182,968	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940360	SUBAWARD #01028330	Research, Resource for Complex Physiologic Signals	93.859	7,498	-
			Total for Beth Israel Deaconess Medical Center		**859,848**	**-**
University of California, Los Angeles						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944573	0125 G VB305	Precision lung cancer therapy design through multiplexed adapter measurement	93.396	74,043	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944820	1430 G YA886	Anatomical characterization of neuronal cell types of the mouse brain	93.242	92,967	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941247	1554 G WC474	Molecular Analysis of Host Immune Response in Leprosy	93.855	125,846	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942046	1554 G XA369	IL-26 in host defense against infection by intracellular bacteria in skin	93.846	99,157	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944232	2000 G XH151	AN OPEN-SOURCE, WIRELESS, MULTICHANNEL MINIATURIZED MICROSCOPE FOR IMAGING ACTIVITY NEURONAL ACTIVITY	93.853	128,736	-
			Total for University of California, Los Angeles		**520,748**	**-**
Icahn School of Medicine at Mount Sinai						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943553	0255-2446-4609	Physical Activity Genomics, Epigenomics/transcriptomics Site	93.310	48,024	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939068	0255-8673-4609	High-throughput immunophenotypic analyses of humoral responses in Lyme Disease	93.855	0	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944824	0255-E501-4609	Physical Activity Genomics, Epigenomics/transcriptomics Site	93.310	12,716	-
			Total for Icahn School of Medicine at Mount Sinai		**60,740**	**-**
Columbia University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944272	1 (GG013322)	Health Effects and Geochemistry of Arsenic	93.143	15,796	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6934117	1(GG012140)/PO G10545	Analysis of Cancer Cell Metabolism in Diverse Environmental Conditions	93.396	211,346	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942747	1(GG012741-04)	The role of stem cells and the microenvironment in gastrointestinal cancers	93.393	15,841	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943316	2(GG012789-02)	The Role of the Microenvironment in Barrett's Esophagus	93.397	52,404	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940240	2(GG014507)	SCAPE microscopy for high-speed 3D imaging of cellular function in behaving animals: Continued innovation, optimization, and dissemination	93.853	16,923	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940407	PO G13407 1(GG014640)	Distal enhancers controlling motor neuron gene expression program	93.853	157,045	-
			Total for Columbia University		**469,355**	**-**
Dana Farber Cancer Institute						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6928787	1006718	Antigen Presentation and T Cell Programmimg in Human Autoimmune Diseases	93.855	12,740	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942023	1040826	Billing Agreement - M. Silva: Development of self-amplifying RNA replicon platforms for effective HIV vaccines	93.398	16,920	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	2389691	1040827	Billing Agreement - M. Silva: Development of self-amplifying RNA replicon platforms for effective HIV vaccines	93.855	23,165	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944722	1282101	Targeting immunogenicity to the MPER hinge and C-helix for BNAb elicitation	93.855	50,588	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943910	1282601	Targeting immunogenicity to the MPER hinge and C-helix for BNAb elicitation-Project 2	93.855	304,111	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943873	1311401	Development and implementation of multiplex methods to understand the biology and heterogeneity of patient-derived cancer models	93.353	90,879	-
			Total for Dana Farber Cancer Institute		**498,403**	**-**
Oregon Health and Science University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939693	1011660_MIT	Applications of ultrahigh-speed long-range wide-field OCT in anterior eye diseases	93.867	126,642	-
			Total for Oregon Health and Science University		**126,642**	**-**
University of California-San Diego						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937078	101443667 (PO# S9001920)	Development of siderophore-based vaccines against non-typhoidal Salmonella infection	93.855	58,795	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6945442	704347	Reverse Engineering the Brain Stem Circuits that Govern Exploratory Behavior	93.853	217,267	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6936867	91379849 (PO# S9001710)	Infection-homing nanosystems as antibacterial therapeutics-delivery platforms	93.855	283,070	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943714	KR 703870	Antimicrobial activity of Escherichia coli Nissle 1917 microcin M	93.855	88,411	-
			Total for University of California-San Diego		**647,543**	**-**
Tufts University						

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943575	102188-00001-PETER_SZOLOVITS	Tufts Clinical and Translational Science Institute (CTSI)	93.350	35,040	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942047	103076-00001/NIH113/PO EP0192109	Voltage imaging of astrocyte-neuron interactions	93.853	136,609	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941426	HH1241	Understanding and designing cyclic peptides	93.859	25,283	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943555	HH4977	Competing Segment: Models to Predict Protein Biomaterial Performance	93.286	131,585	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939293	HH4977 / PO# EP0159433	Competing Segment: Models to Predict Protein Biomaterial Performance	93.286	0	-
			Total for Tufts University		**328,517**	**-**
Harvard University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942742	109786.5110773	Immune Mechanisms of Protection against Mycobacterium Tuberculosis Center (IMPAc-TB)	93.RD	146,828	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942743	109786.5110775	Immune Mechanisms of Protection against Mycobacterium Tuberculosis Center (IMPAc-TB)	93.RD	354,891	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939817	132692-5106604	Developmental origins of mental illness: evolution and reversibility	93.242	378,130	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6945152	149409	Billing Agreement - Tarun Kamath - Investigating the interaction between the anterolateral motor cortex and basal ganglia	93.853	5,796	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939227	164647-5107687	Novel Age-Dependent DNA Modifications	93.866	254,468	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944582	164677-5115233	High throughput assaying of circuit activity and connectivity in brain organoids	93.242	166,113	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944380	AGMT DTD 11/12/2020	Sensorimotor processing, decision making, and internal states: towards a realistic multiscale circuit model of the larval zebrafish brain	93.853	42,286	-
			Total for Harvard University		**1,348,511**	**-**
Harvard School of Public Health						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942040	111922-5115321	Validating City Scanner: a low-cost mobile air quality platform for cities	93.113	3,042	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944269	112545-5095784	Safety and Health Management of Hazards Associated with Emerging Technologies	93.143	7,901	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943688	113113-5096677	Engineered Nanomaterial Synthesis, Characterization and Method Development Center for Nano-safety Research	93.113	116,471	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939811	114963-5104790	Optimism and Exceptional Longevity	93.866	0	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942706	116353-5115592	Demographic and Health Disparities in Recovery from Hurricane Katrina: KATRINA@10	93.865	14,794	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943539	117127-5108050	Multi-Pathway DNA Repair Capacity Measurements in Lung Cancer Patients and Healthy Controls	93.113	72,793	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941333	117127-5108052	Multi-Pathway DNA Repair Capacity Measurements in Lung Cancer Patients and Healthy Controls	93.113	-893	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944931	117327-5116372	Using genetics and multi-scale imaging to understand the mechanisms underlying mycobacteriophage host choice	93.855	3,845	-
			Total for Harvard School of Public Health		**217,954**	**-**
Brigham & Women's Hospital						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939670	112548	Monitoring peripheral blood leukocyte and immune responses in health and disease	93.855	-764	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6934372	114169	Neuroimaging Analysis Center (NAC)	93.286	-1,196	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6945088	114237	Mucins and immune cell interactions in ovarian cancer pathogenesis & progression	93.396	130,225	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6936292	116900	Macrophage-derived microcalcificaitons	93.837	73,494	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940370	120368	Neuroimaging Analysis Center	93.286	171,158	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940533	120780	Systematic unlocking of stem cell differentiation programs	93.351	32,927	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941991	121535	Pro-inflammatory activation of human macrophages regulated by lncRNAs	93.837	87,307	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941853	121596	Fluorinated macrocyclic peptides as BBB penetrating agent for improved GBM treatment	93.395	321,643	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944620	123929	Epigenetics and 3D structure of miR-10b/HoxD locus in the brain and malignant glioma	93.853	29,042	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937980	SUBAWARD NO. 117954	Integrative multi-omic discovery of proximal mechanisms driving age-dependent neurodegeneration	93.866	306,615	-
			Total for Brigham & Women's Hospital		**1,150,449**	**-**
Rutgers University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941997	1194	Biomarkers and Mechanisms of Paucibacillary and Latent Tuberculosis	93.855	36,611	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944113	1630/PO #25101398	Biomarkers and Mechanisms of Paucibacillary and Latent Tuberculosis	93.855	81,219	-
			Total for Rutgers University		**117,830**	**-**
Harvard Medical School						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942347	149874.5113431.0005	Telemedicine to improve the diagnosis of surgical site infections post-cesarean delivery in rural Rwanda	93.989	54,582	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940261	152447.5074647.0507	Neuropsychiatric Genome-Scale and RDOC Individualized Domains (N-GRID)	93.242	-790	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941988	152561.5112601.0002	Elucidation of the role of Creb5 in synovial joint formation	93.846	15,427	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941917	153032.5091220.0502	4D Nucleome Network Data Coordination and Integration Center	93.393	327	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944104	153056_MITCHEL	Billing Agreement - Jonathan Mitchel - Single-cell analysis of tumor-microenvironment interactions in follicular lymphoma	93.393	62,365	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941551	SUBAWARD 152772.5906243.0105	Center for Genomically Engineered Organs	93.172	3	-
			Total for Harvard Medical School		**131,914**	**-**
Wyss Institute						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942359	168019.0302	Billing Agreement - James J. Collins - Lung-On-a-Chip Disease Models for Efficacy Testing	93.838	1,250	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944323	168019.0402	Billing Agreement - James J. Collins - Lung-On-a-Chip Disease Models for Efficacy Testing	93.838	10,954	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943747	168028.0105	Billing Agreement - Olivia Young - Biomaterials to Create T Cell Immunity	93.353	36,606	-
			Total for Wyss Institute		**48,810**	**-**
University of Massachusetts						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937955	18-010032 A00	Using fMRI to measure the neural-level signals underlying population-level responses	93.242	83,267	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938652	OSP2016196	Center for Reproducible Neuroimaging Computation (CRNC) - Project 2	93.286	4	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939279	OSP2018099/ PO NO.WA01134898	Structural annotation of the human genome	93.172	91,009	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940496	WA00803340/OSP2016201	Center for Reproducible Neuroimaging Computation (CRNC)	93.286	-14	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942855	WA00803347/ OSP2016196	Center for Reproducible Neuroimaging Computation (CRNC) - Project 2	93.286	113,413	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942854	WA00973155/OSP2016201	Center for Reproducible Neuroimaging Computation (CRNC)	93.286	10,861	-
			Total for University of Massachusetts		**298,541**	**-**
Rush University Medical Center						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943886	18052302-SUB02	Culturally relevant contributors to cognitive and MRI changes in older Latinos	93.866	30,956	-
			Total for Rush University Medical Center		**30,956**	**-**
New York University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944145	18-A0-00-1001558-01; PO# M190200494	CRCNS: An Integrative Approach for the Study of Hippocampal-Neocortical Memory Coding during Sleep	93.242	166,681	-
			Total for New York University		**166,681**	**-**
Cornell University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941608	192305-02	Targeted delivery of cytopathicity enhancing agents, and co-ordination with shock and kill, to reduce levels of persistent HIV and enable remission	93.855	11,172	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944351	203561	Targeted delivery of cytopathicity enhancing agents, and co-ordination with shock and kill, to reduce levels of persistent HIV and enable remission	93.855	293,163	-
			Total for Cornell University		**304,335**	**-**
Research Foundation of SUNY-Albany						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938950	19-23-80301	Transational Control of ROS Management	93.113	-1,020	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938948	19-4-80311	Translational regulation in exposure biology: Xenobiotic-induced reprograming of tRNA modifications and selection translation of codon-biased response genes in rat and human models	93.113	205,181	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943525	2-88226	Translational regulation during cigarette smoking-induced reprogramming of the rRNA epitranscriptome, in vitro and in a mouse smoking model	93.113	155,316	-
			Total for Research Foundation of SUNY-Albany		**359,476**	**-**
Health Resources in Action						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937415	1R25OD023756	LEAH-Knox Scholars Program in Biomedical Research	93.859	25,009	-
			Total for Health Resources in Action		**25,009**	**-**

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
La Jolla Institute for Allergy and Immunology						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6945203	20021-06-133-382	Maximizing germinal centers and somatic hypermutation to HIV Env immunogens	93.855	49,241	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940706	22496-33-382	Maximizing germinal centers and somatic hypermutation to HIV Env immunogens	93.855	-1,460	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943527	22498-05-133-382	Maximizing germinal centers and somatic hypermutation to HIV Env immunogens	93.855	203,321	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943342	27909-02-133-408	Consortium for Immunotherapeutics against Emerging Viral Threats	93.855	86,888	-
			Total for La Jolla Institute for Allergy and Immunology		**337,990**	**-**
Johns Hopkins University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939792	2004089323	CRCNS: MOVE!-MOdeling of fast moVement for Enhancement via neuroprosthetics YR 1	93.853	91,309	-
			Total for Johns Hopkins University		**91,309**	**-**
University of California						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943586	2016-3340	From structure to therapy: the TRiC Chaperonin network in Huntington's disease	93.855	214,289	-
			Total for University of California		**214,289**	**-**
Allen Institute for Brain Science						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937892	2017-0572 PO# AIP044827	A comprehensive whole-brain atlas of cell types in the mouse	93.242	108,050	-
			Total for Allen Institute for Brain Science		**108,050**	**-**
University of California - Irvine						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941677	2019-3795	The Neuroimaging Data Model: FAIR descriptors of Brain Initiative Imaging Experiments	93.242	99,875	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941300	SUBAWARD NO. 2014-3129	Neuron and Glial cellular signatures from normal and diseased iPS cells	93.853	156,438	-
			Total for University of California - Irvine		**256,312**	**-**
University of Texas Medical Branch						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943880	20-85074-01	Coordinating Research on Emerging Arboviral Threats Encompassing the Neotropics (CREATE-NEO)	93.855	55,174	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6945351	21-85074-02	Coordinating Research on Emerging Arboviral Threats Encompassing the Neotropics (CREATE-NEO)	93.855	19,879	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
			Total for University of Texas Medical Branch		**75,054**	**-**
University of Texas-MD Anderson Cancer Center						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943466	3001559445	Therapeutic modulation of the phagocytosis axis as a novel glioblastoma immunotherapy	93.853	170,389	-
			Total for University of Texas-MD Anderson Cancer Center		**170,389**	**-**
Board of Regents of the University System of Georgia						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940330	30835-62	Cholera toxin, microbiome and obesity	93.847	2,344	-
			Total for Board of Regents of the University System of Georgia		**2,344**	**-**
Augusta University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942168	31733-2	Hydrogel probes for stereotaxic injection	93.847	10,633	-
			Total for Augusta University		**10,633**	**-**
University of Kentucky						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938783	3200001830-18-315	Inflammation in human obesity and type 2 diabetes	93.847	155	-
			Total for University of Kentucky		**155**	**-**
University of Louisiana at Lafayette						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941981	330185-01	HIVRAD Project: Defense-in-depth against mucosal HIV clade C invasion	93.855	402,893	-
			Total for University of Louisiana at Lafayette		**402,893**	**-**
McLean Hospital						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6945355	401663	Novel Treatment Targets For Affective Disorders Through Cross-Species Investigation of Approach/Avoidance Decision Making	93.242	562,529	-
			Total for McLean Hospital		**562,529**	**-**
National Bureau of Economic Research, Inc.						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940132	4126B.MIT	What Does Health Insurance Do? Evidence from the Oregon Health Insurance Lottery	93.866	185,474	-
			Total for National Bureau of Economic Research, Inc.		**185,474**	**-**
University of Rochester						

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942202	417479 / URFAO: GR510880	Passive Monitoring of Parkinson Disease Features at Home NINDS Morris K. Udall Centers of Excellence for Parkinson's Disease Research (P50)	93.853	130,173	-
			Total for University of Rochester		**130,173**	**-**
Boston Medical Center						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944572	4300744001-MIT 05349	A multi-modular approach for human pluripotent stem cell-based liver regeneration	93.847	63,021	-
			Total for Boston Medical Center		**63,021**	**-**
Boston University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6933002	4500001922	Engineering Multicellular Tissue Structure, Function, and Vascularization	93.286	11,780	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6935452	4500002343	Modeling bi-directional signaling and cytoskeletal dynamics in 3D cell migration	93.393	-3,775	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939954	4500002883	MRI, Genetic and Cognitive Precursors of AD & Dementia	93.866	710	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940789	4500003010	Functional reorganization of the language and domain-general multiple demand systems in aphasia	93.173	196,378	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943389	4500003437	Multidimensional Optimization of Voltage Indicators for In Vivo Neural Activity Imaging	93.242	362,546	-
			Total for Boston University		**567,638**	**-**
The Broad Institute, Inc.						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942491	50000651-5500001353	Innovative technologies to transform antibiotic discovery - Administrative Core	93.855	136	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942487	50000652-5500001352	Genomic applications to transform Gram-negative Abx discovery	93.855	4,909	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942539	50000655-5500001351	Infection site-specific activation and amplification of antimicrobial peptide activity	93.855	90,257	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943347	5000419-5500001352	Genomic applications to transform Gram-negative Abx discovery	93.855	112,404	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943384	5000428-5500001351	Infection site-specific activation and amplification of antimicrobial peptide activity	93.855	1,487,879	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942540	5000651-550000135	Infection site-specific activation and amplification of antimicrobial peptide activity	93.855	106,058	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943346	5000657-5500001353	Innovative technologies to transform antibiotic discovery - Administrative Core	93.855	11,327	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941603	5610226-5500000694	There and Back Again: Epigenetic	93.310	10,941	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
			Total for The Broad Institute, Inc.		**1,823,911**	**-**
Northeastern University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6933466	500449-78050	Predictability in Complex Object Control	93.865	79,417	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6935020	500489-78051	GuMI: New In Vitro Platforms to Parse the Human Gut Epithelial-Microbiome-Immune Axis	93.286	326,554	-
			Total for Northeastern University		**405,970**	**-**
Tufts Medical Center						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944340	5017158-SERV	Johns Hopkins-Tufts Trial Innovation Center	93.350	34,923	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942241	5017158-SERV/U24TR001609	Johns Hopkins-Tufts Trial Innovation Center	93.350	12,314	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941069	PO EP0182273 / 102188-00001-ELAZER_EDELMAN	Clinical and Translational Science Award U54	93.350	684,615	-
			Total for Tufts Medical Center		**731,852**	**-**
Massachusetts Eye and Ear Infirmary						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943500	530842	Implantable Microphones for Fully Implantable Hearing Prosthetics	93.173	61,978	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940820	SUBAWARD NO. 530673	Implantable Microphones for Fully Implantable Hearing Prosthetics	93.173	127,743	-
			Total for Massachusetts Eye and Ear Infirmary		**189,722**	**-**
Lehigh University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944249	544267-78002	Promoting Receptor Protein Tyrosine Phosphatase Activity by Targeting Transmembrane Domain Interactions	93.859	77,518	-
			Total for Lehigh University		**77,518**	**-**
The Scripps Research Institute						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943505	5-53703	S-Nitrosylation-induced posttranslational modification and aberrant cell signaling in sporadic Alzheimer's disease	93.866	113,885	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940241	5-53937	The Consortium for Viral Systems Biology (CViSB)	93.855	1,551	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941210	5-54020	Consortia for HIV/AIDS Vaccine Development (CHAVD) RFA-AI-18-001	93.855	51,077	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942561	5-54180	The Consortium for Viral Systems Biology (CViSB)	93.855	87,314	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943537	5-54276	Consortia for HIV/AIDS Vaccine Development (CHAVD) RFA-AI-18-001	93.855	922,854	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943959	5-54322	Consortia for HIV/AIDS Vaccine Development (CHAVD) - Supplement Project 3	93.855	83,532	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943988	5-54349	Consortia for HIV/AIDS Vaccine Development (CHAVD) Supplement Project 4	93.855	173,915	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944019	5-54355	Consortia for HIV/AIDS Vaccine Development (CHAVD) - Supplement Project 2	93.855	47,660	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6945211	5-54431	The Consortium for Viral Systems Biology (CViSB)	93.855	40,458	-
			Total for The Scripps Research Institute		**1,522,245**	**-**
University of Connecticut						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941937	5652840/PO#357361/357361	Inhibition of Translesion Synthesis as a Novel Strategy for Cancer Chemotherapy	93.395	114,190	-
			Total for University of Connecticut		**114,190**	**-**
Northwestern University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943923	60039739 MIT	Spatio-temporal organization of chromatin and information transfer in cancer	93.397	38,552	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940198	60047352 MIT	Bayesian Generative Methods for Extracting and Modeling Relations in EHR Narratives	93.879	8,551	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944783	60056285 MIT	Modeling the Incompleteness and Biases of Health Data	93.879	37,238	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944260	SP0046269-PROJ001311	Whole-brain recording into nucleic acids using template-independent polymerases	93.853	314,934	-
			Total for Northwestern University		**399,275**	**-**
Stanford University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943642	62106626-28291	Project 1 - Influenza responses and repertoire in vaccination, infection and tonsil organoids	93.855	31,466	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943542	62196377-28291	Influenza responses and repertoire in vaccination, infection and tonsil organoids	93.855	88,511	-
			Total for Stanford University		**119,977**	**-**
Cold Spring Harbor Laboratory						

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941124	64580127/PO# 921003-SV	A High Resolution Cell Type Atlas of the Mouse Forebrain.	93.242	229,295	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6945336	65300112/PO#: 921072-SV	High-throughput approaches to local and long-range synaptic connectivity	93.242	339,973	-
			Total for Cold Spring Harbor Laboratory		**569,268**	**-**
Physical Sciences, Incorporated						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940787	82883-1981-45	Dual-channel sub-millisecond resolution neural imaging system	93.242	-396	-
			Total for Physical Sciences, Incorporated		**-396**	**-**
Indiana University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944530	8750-MIT	Molecular engineering of complementary glucose-responsive conformational switches in insulin and glucagon	93.847	80,484	-
			Total for Indiana University		**80,484**	**-**
University of California - San Francisco						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6932939	8943SC	Balanced Signaling Cues to Guide Cell Transitions in the Blood Lineage Continuum	93.839	147,427	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6934999	9574SC	PROJECT 1: Defining the unique properties of the distinct signaling machinery used by TCR	93.855	61,760	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6935000	9583SC	PROJECT 2: Defining the unique properties of the distinct signaling machinery used by TCR	93.855	62,978	-
			Total for University of California - San Francisco		**272,165**	**-**
University of Southern California						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939012	96266729 ; REFERENCE 105553021	Anatomical characterization of neuronal cell types of the mouse brain	93.242	12,100	-
			Total for University of Southern California		**12,100**	**-**
University of California - Santa Cruz						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944227	A00-0876-S001	Vibrio cholerae biofilms: structure, function, regulation and role in infection	93.855	58,214	-
			Total for University of California - Santa Cruz		**58,214**	**-**
University of Minnesota						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937571	A006079901	Robotic platform for high-density in vivo intracellular recording from mammalian circuits	93.853	-61	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942674	A007605201	Opto-Crown: Transparent skull with embedded optics for cortex-wide cellular resolution imaging in freely moving mice	93.853	161,396	-
			Total for University of Minnesota		**161,335**	**-**
Duke University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942128	A032777	Project 3: Chemical Probe Discovery for PAX3-FOXO1	93.393	190,756	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944917	A034481	Using Genetic Tools to Dissect Neural Circuits for Social Communication	93.242	102,954	-
			Total for Duke University		**293,710**	**-**
University of California/Davis						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942499	A18-0226-S002	Facile Synthesis of Microbial Polysaccharides	93.310	344,621	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944053	A19-1044-S004	Recombinant Immunolabels for Nanoprecise Brain Mapping Across Scales	93.853	80,147	-
			Total for University of California/Davis		**424,768**	**-**
Novopyxis, Inc.						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940061	AGMT DTD 11/29/2018	SBIR Phase I: Droplette: A Platform Technology to Deliver Nucleic Acid Therapeutics Deep into Tissue for the Treatment of Epidermolysis Bullosa and Other Genetic Diseases	93.286	20,322	-
			Total for Novopyxis, Inc.		**20,322**	**-**
Praevium Research Inc.						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940040	AGMT DTD 9/17/2018	SBIR Phase I: Low-cost and high performance MEMS-VCSEL technology for next generation swept source optical coherence tomography and microscopy	93.394	113,465	-
			Total for Praevium Research Inc.		**113,465**	**-**
Biolytic						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943676	AGMT DTD. 09/19/2019	Pool-and-Split Vessel and Synthesizer for the Synthesis of Barcoded Beads used in Single-Cell Applications	93.859	25,509	-
			Total for Biolytic		**25,509**	**-**
Rectify Pharmaceuticals LLC						

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941235	AGREEMENT DATED 04/01/2019	STTR Phase I: Establishing a structural and mechanistic foundation for drug discovery: The ABCA4 transporter in Stargardt's Disease and other retinopathies	93.867	49,185	-
			Total for Rectify Pharmaceuticals LLC		**49,185**	**-**
Tissuevision Inc						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941263	AGREEMENT DTD 9/15/2017	The Development of a Resonant Scanning MMM system for high resolution 3D CNS imaging	93.242	-2,161	-
			Total for Tissuevision Inc		**-2,161**	**-**
InnoTech LLC						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944893	AGRMT DATED 02/08/2021	A multimodal platform for Oral screening of COVID-19	93.310	25,336	-
			Total for InnoTech LLC		**25,336**	**-**
University of Pittsburgh						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943008	AWD00001777 (133980-1)	Motor cortical signaling of impedance during manipulation	93.853	103,549	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944892	AWD00002100 (134992-1)	Multi-cell type human liver on chip microphysiological platform to examine CRISPR-based gene modulation	93.847	66,444	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939246	CNVA0060623 (131345-1)	Neural Encoding of Impedance for Object Manipulation	93.853	17,761	-
			Total for University of Pittsburgh		**187,754**	**-**
University of Kansas						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6935990	FY2017-077	Microfluidic Integrative Circulating miRNA Profiling for Cancer Diagnosis	93.286	-110	-
			Total for University of Kansas		**-110**	**-**
University of Virginia						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943791	GB10844.PO#2261580	Multi-scale model of microbial phenotype modulation by mucins	93.855	104,579	-
			Total for University of Virginia		**104,579**	**-**
Children's Hospital Boston						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938552	GENFD0001442726	Advanced Fetal Imaging	93.286	81,479	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939788	GENFD0001538557	Novel Biologic Therapies for BMT: Mechanistic Evaluation in Rhesus Macaques	93.839	-126,283	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939961	GENFD0001548986	Noninvasive Realtime Assessment of Placental Structure and Function with Novel MR Imaging Methods	93.865	-1,217	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939964	GENFD0001552721	Customized stem cells for clinical application in blood disorders	93.847	2,337	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941710	GENFD0001722202	Morphology-based forward genetic screens of mammalian cells through integration of Cas9 mutagenesis and image-based cell sorting	93.865	8,948	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942423	GENFD0001734192	Novel MRI Assessment of Placental Structure and Function Throughout Pregnancy	93.865	134,446	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944251	GENFD0001905311	Novel Biologic Therapies for BMT: Mechanistic Evaluation in Rhesus Macaques	93.839	25,345	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944070	GENFD0002058190/GENFD0001889843	Molecular Circuits in the Hematopoietic Stem Cell Niche	93.847	300,956	-
			Total for Children's Hospital Boston		**426,010**	**-**
Yale University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6935083	GK000523 (CON-80000585)	Dynamic Neuroimmune Profiling in Patients with Acute Intracerebral Hemorrhage.	93.853	153,811	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940556	GR105733 (CON-80001701)	Human-centered Design and Communities of Practice to Improve Delivery of Home-based TB Contact Investigation in Uganda	93.855	8,595	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944458	GR110761 (CON-80002664)	ELECTRO-BOOST: Electroencephalography for cerebral trauma recovery & oxygenation	93.853	24,005	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942820	M17A12653(A10974)	Systems Immune Profiling of Divergent Responses to Infection	93.855	162,101	-
			Total for Yale University		**348,512**	**-**
Janssen Vaccines & Prevention B.V.						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6936202	HHSN272200800056C	Phenotypic and transcriptomic correlates of immunity for filovirus vaccination	93.RD	-192	-
			Total for Janssen Vaccines & Prevention B.V.		**-192**	**-**
Mayo Clinic Rochester						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6936768	MAS-228292 PO#65353103	The Mayo GBM Xenograft National Resource	93.853	-8,664	-
			Total for Mayo Clinic Rochester		**-8,664**	**-**
European Bioinformatics Institute						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944334	MIT-2582-04	GENCODE: comprehensive genome annotation for human and mouse	93.172	147,390	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
			Total for European Bioinformatics Institute		**147,390**	**-**
University of Massachusetts Medical Center						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941685	OSP2018125	Develop combinatorial non-viral and viral CRISPR delivery for lung diseases	93.310	32,538	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943957	OSP2018125/WA01020040	Develop combinatorial non-viral and viral CRISPR delivery for lung diseases	93.310	228,527	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944367	OSP33133-02	Center for 3D Structure and Physics of the Genome	93.310	214,031	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944306	OSP33133-03/WA01042853	Center for 3D Structure and Physics of the Genome	93.310	249,278	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944925	PO WA01069406	EDAC: ENCODE Data Analysis Center	93.172	129,751	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942714	WA00540618/OSP2017186	EDAC: ENCODE Data Analysis Center	93.172	94,375	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939744	WA00753477/ OSP2017050	Center for 3D Structure and Physics of the Genome	93.310	-2,784	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6933357	WA00753479/OSP2017052	Center for 3D Structure and Physics of the Genome	93.310	-15,791	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941781	WA00904156/OSP2017050	Center for 3D Structure and Physics of the Genome	93.310	-21,585	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942030	WA00904158/OSP2017052	Center for 3D Structure and Physics of the Genome	93.310	15,791	-
			Total for University of Massachusetts Medical Center		**924,130**	**-**
Texas Biomedical Research Institute						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6936815	PO 39803	Defense-in-depth against mucosal HIV clade C invasion	93.855	0	-
			Total for Texas Biomedical Research Institute		**0**	**-**
University of Michigan						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941388	PO# 3005610970/SUBK00011520	Analysis and Characterization of Trauma-Induced Coagulopathy	93.839	23,859	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6934493	SUBAWARD NO. 3004053346	An Accessible Toolbox for Comprehensive Analysis of Neural Tissue Architecture	93.242	-8,241	-
			Total for University of Michigan		**15,617**	**-**
University of Maryland						

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942722	PO#1000001612/SUBAWARD F301577-1	Internal Dynamics of the Postsynaptic Density	93.242	51,112	-
			Total for University of Maryland		**51,112**	**-**
Dartmouth College						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942712	R1346	Computational design of novel protein binders based on structure mining and learning from data	93.859	101,535	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943153	SUBAWARD NO. R1333	Causes and Consequences of Healthcare Efficiency	93.866	12,407	-
			Total for Dartmouth College		**113,942**	**-**
University of California-Riverside						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939893	S-001090	RAPs-mediated post-transcriptional control in Apicomplexan parasites	93.855	235,789	-
			Total for University of California-Riverside		**235,789**	**-**
DeNovX, LLC						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940412	SBIR DTD 03/22/2019	SBIR Phase II: Nucleation Enhanced Crystallization of Pharmaceuticals in Continuous Flow Manufacturing to Mitigate Therapeutic Drug Shortages	93.350	134,207	-
			Total for DeNovX, LLC		**134,207**	**-**
Somagenics, Inc.						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942104	SBIR SUB AGMT EFF 10/1/19	A novel sshRNA-antimiR combination therapy for accelerating healing of diabetic foot ulcer	93.847	12,475	-
			Total for Somagenics, Inc.		**12,475**	**-**
Ension, Inc.						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943638	STTR EFFECTIVE 06/16/2020	Magnetic Levitation Motor for Pediatric Cardiac and Cardiopulmonary Therapies	93.837	89,291	-
			Total for Ension, Inc.		**89,291**	**-**
Integrated Laboratory Systems, Inc.						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944233	SUB UNDER U44ES024698	SBIR Phase II: CometChip: Novel Advances in Throughput and Capacity for the in vivo Comet Assay	93.113	219,733	-
			Total for Integrated Laboratory Systems, Inc.		**219,733**	**-**
CREARE, Incorporated						

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940410	SUB# S633 / PO# 99163	Lab Drone Phase II	93.RD	30,599	-
			Total for CREARE, Incorporated		**30,599**	**-**
Trustees of Boston University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944695	SUBAWARD NO. 4500003743	Precision Monitoring and Assessment in the Framingham Study: Cognitive, MRI, Genetic and Biomarker Precursors of AD & Dementia	93.866	28,249	-
			Total for Trustees of Boston University		**28,249**	**-**
University of Connecticut Health Center						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6942557	UCHC7-115886049	A Comprehensive Functional Map of Human Protein-RNA Interactions	93.172	184,098	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940351	UCHC7-115886049 - CORE# 500785	A Comprehensive Functional Map of Human Protein-RNA Interactions	93.172	-1,068	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944777	UCHC7-129146661-A7	A Comprehensive Functional Map of Human Protein-RNA Interactions	93.172	154,427	-
			Total for University of Connecticut Health Center		**337,457**	**-**
University of Florida						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939490	UFDSP00012280	PREsurgical Cognitive Evaluation via Digital clockfacE drawing	93.866	12,534	-
			Total for University of Florida		**12,534**	**-**
University of Texas - Austin						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6935645	UTA16-001174	NeuroScout: A cloud-based platform for flexible re-analysis of naturalistic fMRI datasets	93.242	137,774	-
			Total for University of Texas - Austin		**137,774**	**-**
University of Washington						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6943230	UWSC11889 / PO#48380	Genetic, Metabolic and Regulatory Control of MIC and Relapse in M. tuberculosis	93.855	105,451	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944261	UWSC12292 BPO: 51861	Optogenetics to improve hand function after spinal cord injury	93.853	285,447	-
			Total for University of Washington		**390,899**	**-**
Vanderbilt University Medical Center						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941207	VUMC 36112	Etiologic Studies of Gastric Carcinoma	93.393	63,076	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
			Total for Vanderbilt University Medical Center		**63,076**	**-**
Vanderbilt University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941961	VUMC77355	The role of distinct cancer stem cell populations in colorectal cancer	93.397	37,403	-
			Total for Vanderbilt University		**37,403**	**-**
Washington University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6935215	WU-17-149	Cross-scale interactions between mineral and collagen for tendon-bone attachment	93.286	-19,441	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937711	WU-18-160	Cross-scale interactions between mineral and collagen for tendon-bone attachment	93.286	19,441	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6944568	WU-21-57	Multiscale models of fibrous interface mechanics	93.846	14,962	-
			Total for Washington University		**14,962**	**-**
			TOTAL for Department of Health & Human Services		**25,854,984**	**-**

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF HOMELAND SECURITY						
National Academy of Sciences						
DEPARTMENT OF HOMELAND SECURITY	6939596	2000009447	Post-Hurricane Supply Chain Adaptability Study	97.RD	-377	-
			Total for National Academy of Sciences		**-377**	**-**
Lincoln Laboratory						
DEPARTMENT OF HOMELAND SECURITY	6942362	PO# 7000398589 / LETTER NO. 16-C-17-0691	Alternatives for FEMA Disaster-Related Housing Assistance	12.RD	921,916	-
			Total for Lincoln Laboratory		**921,916**	**-**
CNA						
DEPARTMENT OF HOMELAND SECURITY	6942847	PO-0024040/1487.0005.D012.00	FEMA LCSC - Project Management Support	97.RD	6,669	-
DEPARTMENT OF HOMELAND SECURITY	6942846	PO-0024040/1487.0006.D015.00	FEMA LCSC - Project Management Support	97.RD	96,187	-
DEPARTMENT OF HOMELAND SECURITY	6943012	PO-0024108/1487.0007.E068.00	FEMA LCSC - Project Management Support	97.RD	18,283	-
DEPARTMENT OF HOMELAND SECURITY	6943159	PO-0024126/1487.0008.E083.00	FEMA LCSC - Project Management Support	97.RD	25,182	-
DEPARTMENT OF HOMELAND SECURITY	6943136	PO-0024147/1487.0009.E088.00	FEMA LCSC - Project Management Support	97.RD	25,382	-
DEPARTMENT OF HOMELAND SECURITY	6943284	PO-0024167/1487.0010.E100.00	FEMA LCSC - Project Management Support	97.RD	25,833	-
DEPARTMENT OF HOMELAND SECURITY	6943319	PO-0024177/1487.0011.E119.0	FEMA LCSC - Project Management Support	97.RD	27,444	-
DEPARTMENT OF HOMELAND SECURITY	6943390	PO-0024201/1487.0012.E143.00	FEMA LCSC - Project Management Support	97.RD	27,644	-
DEPARTMENT OF HOMELAND SECURITY	6943450	PO-0024219/1487.0013.E56.00	FEMA LCSC - Project Management Support	97.RD	13,920	-
DEPARTMENT OF HOMELAND SECURITY	6943998	PO-0024337/1487.0014.E196.00	FEMA LCSC - Project Management Support	97.RD	8,850	-
DEPARTMENT OF HOMELAND SECURITY	6944006	PO-0024342/1487.0015.E198.00	FEMA LCSC - Project Management Support	97.RD	10,641	-
DEPARTMENT OF HOMELAND SECURITY	6944341	PO-0024408/1487.0016.E268.00	FEMA LCSC - Project Management Support	97.RD	36,684	-
DEPARTMENT OF HOMELAND SECURITY	6944392	PO-0024446/1487.0017.E269.00	FEMA LCSC - Project Management Support	97.RD	17,788	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
			Total for CNA		**340,508**	**-**
			TOTAL for Department of Homeland Security		**1,262,046**	**-**

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF TRANSPORTATION						
Boston University						
DEPARTMENT OF TRANSPORTATION	6943154	4500003246	ASCENT Project 3 - Cardiovascular Disease and Aircraft Noise Exposure - Impacts of Aircraft Noise Exposure on Business Activities	20.RD	124,544	-
			Total for Boston University		**124,544**	**-**
University of Maryland						
DEPARTMENT OF TRANSPORTATION	6941839	80895-Z9411201	Analysis of Trajectory-Based Operations	20.RD	31,594	-
			Total for University of Maryland		**31,594**	**-**
University of Maryland - College Park						
DEPARTMENT OF TRANSPORTATION	6942235	80927-Z9421201	Future Climate Scenarios for Runway Length	20.RD	9,261	-
DEPARTMENT OF TRANSPORTATION	6944808	92207-Z9609201	Trajectory-Based Operations Analysis Phase II	20.RD	46,671	-
			Total for University of Maryland - College Park		**55,933**	**-**
General Electric Company						
DEPARTMENT OF TRANSPORTATION	6940636	PO 401138496	Design and Evaluation of a Robust Manual Locomotive Operating Mode	20.RD	85,168	-
			Total for General Electric Company		**85,168**	**-**
			TOTAL for Department of Transportation		**297,239**	**-**

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
MISCELLANEOUS FEDERAL GOVT						
University of California-San Diego						
MISCELLANEOUS FEDERAL GOVT	6944376	111438341/ PO#S9002172	Nonequilibrium Order Parameter Optoelectronics for Quantum Information Processing (NOPO-QuIP)	12.910	183,663	-
			Total for University of California-San Diego		**183,663**	**-**
Southern California Earthquake Center						
MISCELLANEOUS FEDERAL GOVT	6943330	131436291	Update of operational GNSS products and development of integrated products for the GCM	15.807	21,904	-
			Total for Southern California Earthquake Center		**21,904**	**-**
Purdue University						
MISCELLANEOUS FEDERAL GOVT	6940314	15200066-022	MCOQA: Mechanically-driven, COherence-enhanced Quantum Angle	12.910	209,187	-
			Total for Purdue University		**209,187**	**-**
Plasma Energy Innovation, LLC						
MISCELLANEOUS FEDERAL GOVT	6943986	SBIR DTD 09/04/2020	Biomass Gasification Engine Testing	10.212	17,733	-
			Total for Plasma Energy Innovation, LLC		**17,733**	**-**
Harvard University						
MISCELLANEOUS FEDERAL GOVT	6942294	100866-5112734	Raskin Welfare Reform: Transition to Electronic Distributions	98.001	194,269	-
			Total for Harvard University		**194,269**	**-**
Harvard School of Public Health						
MISCELLANEOUS FEDERAL GOVT	6934711	112544-5087396	Projecting and Quantifying Future Changes in Socioeconomic Drivers of Air Pollution and its Health-related Impacts	66.509	195,353	-
			Total for Harvard School of Public Health		**195,353**	**-**
RTI International						
MISCELLANEOUS FEDERAL GOVT	6944125	1-312-0217117-65876L	Economy-Wide Modeling of Energy/Environment Policy Scenarios	12.RD	26,916	-
			Total for RTI International		**26,916**	**-**
Middlesex County						
MISCELLANEOUS FEDERAL GOVT	6938232	AGMT. DTD. 04/02/18	Justice and Mental Health Collaboration	16.745	-26	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
			Total for Middlesex County		**-26**	**-**
Solar Sister, Inc.						
MISCELLANEOUS FEDERAL GOVT	6936133	AGREEMENT DATED 4/1/17	Solar Sister Advancing Women's Sustainable Energy Entrepreneurship and Climate Change Leadership	19.017	40	-
			Total for Solar Sister, Inc.		**40**	**-**
University of Wyoming						
MISCELLANEOUS FEDERAL GOVT	6944619	CARES-HUB4-MIT	Hydrogel Immunoassays for Rapid Point-of-Care COVID Testing	21.019	16,650	-
			Total for University of Wyoming		**16,650**	**-**
Millennium Challenge Account Morocco (MCA-Morocco)						
MISCELLANEOUS FEDERAL GOVT	6943692	EW-20	The J-PAL and EPoD Employment Lab	85.RD	891,332	609,758
			Total for Millennium Challenge Account Morocco (MCA-Morocco)		**891,332**	**609,758**
Yale University						
MISCELLANEOUS FEDERAL GOVT	6939096	GR103296 (CON-80001289)	Drinking Water Vulnerability and Neonatal Health Outcomes in Relation to Oil and Gas Production in the Appalachian Basin	66.511	132,956	-
			Total for Yale University		**132,956**	**-**
National Academy of Sciences						
MISCELLANEOUS FEDERAL GOVT	6938265	SUBAWARD 2000009130	Water Desalination Using Solar-Powered Capacitive Deionization Technology and Abundant Natural Resources	98.001	47,653	-
			Total for National Academy of Sciences		**47,653**	**-**
			TOTAL for Miscellaneous Federal Govt		**1,937,632**	**609,758**

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION						
University of California - Berkeley						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6935635	00009378	High-Order Methods for Fluid Structure Interaction	43.002	-4,488	-
			Total for University of California - Berkeley		**-4,488**	**-**
Universities Space Research Association						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6943259	08-0082	Tracing Cosmic Star-Forming Gas: Connecting Cii, HCN, and other Species in the LEGO Survey	43.RD	6,898	-
			Total for Universities Space Research Association		**6,898**	**-**
University of Illinois-Urbana Champaign						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6941777	097265-17589	Development of the Cryogenic Hydrogen-Energy Electric Transport Aircraft (CHEETA) Design Concept	43.002	330,915	-
			Total for University of Illinois-Urbana Champaign		**330,915**	**-**
Purdue University						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6935856	12000179-009	Constraining lunar crater saturation by modeling GRAIL porosity	43.001	22,587	-
			Total for Purdue University		**22,587**	**-**
CalTech - Jet Propulsion Lab						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6899758	1283622	Voyager Interstellar Mission (VIM) Plasma Science	43.RD	259,197	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6932364	1532689	EUROPA - MISE Co-I Subcontract	43.RD	18,528	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6938408	1597152	Ionization and Enrichment of Intergalactic Gas Near the Reionization Epoch	43.001	1,436	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6941778	1633043	UNVEILING THE ACCRETION PHYSICS AND GEOMETRY IN OAO 1657-415 WITH NuSTAR (4181)	43.001	1,481	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6936100	CREI 1572041	ECCO: Understanding Sea Level, Ice, and Earth's Climate	43.RD	373,216	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6936482	CREI 1576768	Psyche - JPL	43.RD	432,658	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6942894	CREI 1648973	Theory of thermal transport in nanocomposite materials	43.001	58,071	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6943058	CREI 1649946	Generative Adversarial Networks (GANs) for Cybersecurity Research	43.001	1,852	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6943258	CREI 1651069	Information-Driven and Risk-Bounded Autonomy for Adaptive Science and Exploration	43.001	127,279	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6940961	CREI1628175	MIT-JPL EDU	43.001	2,968	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6943541	RSA #: 1650928	High Resolution Soil Moisture Algorithm Using Synergy of Microwave Active and Passive Observation for the NISAR MISSION	43.001	37,360	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6940268	RSA 1610091	Initial RV Follow-up Of NASA's TESS-Discovered Exoplanets (Keck 2018 RSA 1610091)	43.001	734	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6939413	RSA 1611947	Radial Velocity Confirmation of K2 Warm Jupiter Candidates (PID 24/2018B_N160)	43.RD	84	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6939446	RSA 1612723	Recent sea-ice and ice-sheet changes and their relation to the coupled ocean-atmosphere system	43.001	89,775	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6940616	RSA 1622205	Ionization and Enrichment of Intergalactic Gas Near the Reionization Epoch (Keck 2019A)	43.001	11,684	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6940456	RSA 1626219	Photometric Performance Validation for the ASTERIA Space Telescope	43.RD	0	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6942481	RSA 1633754	Extending the WISE Legacy: Planet and Disk Imaging Around the Dustiest Stars (RSA 1633754)	43.001	6,869	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6944800	RSA 1657710	Year 2: Quantifying the Effect of Dust on Solar Energy Generation in Burkina Faso	43.001	43,075	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6943975	RSA NO. - 1654803	Toward seamless simulation, estimation, and prediction of weather and climate with the GEOS/ECCO coupled model and data assimilation system.	43.001	28,117	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6939866	RSA NO. 1608107	Consortium on Ultracold Atoms in Space - Year 6	43.RD	12	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6941404	RSA NO. 1630194	Consortium on Ultracold Atoms in Space - Year 7	43.001	-327	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6941992	RSA NO. 1640511	Scientific and mentoring opportunities with ASTERIA exoplanet observations	43.001	7,866	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6942464	RSA NO. 1640749	Alternative Methods for Acceleration of Wavefront Control Computation for Large Space Telescopes	43.001	49,831	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6942200	RSA NO. 1640773	A Molecular Clock Architecture for Deep Space Inter-SmallSat Radio Occultation	43.001	85,533	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6942135	RSA NO. 1642646	Quantifying the Effect of Dust on Solar Energy Generation in Burkina Faso	43.001	44,913	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6942321	RSA NO. 1643595	Accelerating MCMC to Operational Speeds	43.001	3,359	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6942538	RSA NO. 1646345	Orbit determination via image simulation and processing for Exoplanet Direct Imaging Missions	43.001	40,000	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6944377	RSA NO. 1652472	Consortium on Ultracold Atoms in Space	43.RD	66,668	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6944381	RSA NO. 1657033	Accelerating MCMC to Operational Speeds	43.001	35,734	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6944382	RSA NO. 1657297	Alternative Methods for Acceleration of Wavefront Control Computation for Large Space Telescopes	43.001	64,606	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6944613	RSA NO. 1658304	Impacts of Changing Sea-Ice Regime on Arctic Ocean Biology	43.001	11,612	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6944746	RSA NO. 1658853	A CMOS-Molecular-Clock Integrated Platform for Deep Space Communications, Navigations and Radio Science	43.001	6,586	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6945405	RSA NO. 1660046	A Molecular Clock Architecture for Deep Space Inter-SmallSat Radio Occultation	43.001	13,490	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6944912	RSA NO.1659474	Information-Driven and Risk-Bounded Autonomy for Adaptive Science and Exploration	43.RD	26,257	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6930713	SUBCONTRACT NO. 1510842	Soil Moisture Science and Product Development	43.RD	320,524	-
			Total for CalTech - Jet Propulsion Lab		**2,271,047**	**-**
University of Southern California						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6942679	128759572	SPCTOR: Sensing-Policy ConTroller and OptimezeR	43.001	149,884	-
			Total for University of Southern California		**149,884**	**-**
Applied Physics Lab of Johns Hopkins						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6939800	130359	Europa Imaging System (EIS)	43.RD	34,626	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6941599	158669	Dragonfly	43.RD	21,368	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6936841	SUBAWARD 141711	Anatomy of tori: comparing the extremes demonstrated by Jupiter's and Saturn's Magnetospheres	43.001	31,770	-
			Total for Applied Physics Lab of Johns Hopkins		**87,763**	**-**
University of California-San Diego						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6943170	130808869	Routes of the upper limb of the global overturning circulation	43.001	14,358	-
			Total for University of California-San Diego		**14,358**	**-**
University of Colorado Boulder						

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6932162	1552615/ PO #1000510992	Rock Powered Life	43.001	7,619	-
			Total for University of Colorado Boulder		**7,619**	**-**
Johns Hopkins University						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6941428	157497	Establishing the Presence of Ethane in Titan's Lakes	43.001	18,403	-
			Total for Johns Hopkins University		**18,403**	**-**
Planetary Science Institute						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6944815	1780-MIT	Studying small-body atmospheres through stellar occultations	43.001	18,400	-
			Total for Planetary Science Institute		**18,400**	**-**
University of New Hampshire						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6938280	18-028	Storm Enhanced Density, Tongues of Ionization, and Sub Auroral Polarization Streams	43.001	65,220	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6942920	SUBCONTRACT NO. L0068	Aeronomy at Earth: Tools for Heliophysics Exploration and Research (AETHER)	43.RD	7,737	-
			Total for University of New Hampshire		**72,956**	**-**
Arizona State University						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6937931	18-391	High Temperature GaN Microprocessor for Space Applications	43.001	60,022	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6937562	SUBCONTRACT NO. 17-257	Psyche: Journey to a Metal World (ASU)	43.RD	217,327	-
			Total for Arizona State University		**277,348**	**-**
Lowell Observatory						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6932482	2015-81520	Occultation Studies of Small Bodies in the Outer Solar System	43.RD	9,649	-
			Total for Lowell Observatory		**9,649**	**-**
University of Alabama in Huntsville						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6940732	2019-064	Turbulence as Indicator of Physical Processes at the Heliospheric Interface	43.001	25,604	-
			Total for University of Alabama in Huntsville		**25,604**	**-**
Syracuse University						

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6935422	28469-04461-S01	Distributed Multi-processor Geometry Environment to Support Design and Analysis on Extreme-scale Grids	43.002	24,642	-
			Total for Syracuse University		**24,642**	**-**
Southwest Research Institute						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6893453	299433Q/SUB UNDER NASW-02008	New Horizon Science Team Member 05310-SOW-02 Rev O Chg O	43.RD	20,393	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6938097	K99059JRG	Lucy Phase B	43.RD	6,614	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6939450	L99059JRG	Investigating clouds and fogs on Titan	43.001	109,638	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6943416	N99069EH	Wave-mean interaction in Pluto's atmosphere	43.001	31,881	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6943437	N99074DS	Delivering Stratospheric Ices to Titan's Surface through Methane Rain and Their Effects on Surface Albedo Changes	43.001	41,374	-
			Total for Southwest Research Institute		**209,900**	**-**
Trustees of Boston University						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6944275	4500003542	Our Heliospheric Shield	43.001	29,141	-
			Total for Trustees of Boston University		**29,141**	**-**
Space Telescope Science Institute						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6943190	51787	JWST Telescope Scientist Investigations - 2	43.001	3,548	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6937960	HST-GO-14690.001-A	Identifing the last unkown emission component in the Herbig system HD 163296 (HST GO-14690)	43.RD	41,290	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6935185	HST-GO-14698.002-A	The first spectrally resolved Ha measurement of an accreting planet (HST-GO-14698)	43.RD	4,182	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6937987	HST-GO-14797.015-A	Atmospheric Albedos, Alkalis, and Aerosols of Hot Jupiters (HST 14797)	43.RD	-134	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6938815	HST-GO-15085.001-A	Galaxies in the Diffuse Baryon Field Approaching Reionization: A Joint Study with JWST, HST, and Large Telescopes (HST 15085)	43.RD	53,487	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6938918	HST-GO-15163.011-A	COS Ultraviolet Baryon Survey (CUBS) (HST 15163)	43.RD	22,994	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6940222	HST-GO-15204.001-A	Testing our scenario of a failed wind for TW Hya (HST 15204)	43.RD	2,913	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6942562	HST-GO-15210.002-A	The extremes of protostellar jets: Resolving the hot jet of Sz 102 (HST 15210)	43.RD	5,621	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6937649	HST-GO-15304-001-A	Collecting the Puzzle Pieces: Completing HST's UV +NIR Survey of the TRAPPIST-1 System ahead of JWST	43.RD	167,862	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6938678	HST-GO-15307.008-A	Building the SPT-HST Legacy: Imaging Massive Clusters to z=1.5 (HST 15307)	43.RD	29,893	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6939475	HST-GO-15315.001-A	Revealing Thermal Instabilities in the Core of the Phoenix Cluster (HST 15315)	43.RD	5,829	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6938046	HST-GO-15333.016-A	The Atmospheric Diversity of Mini-Neptunes in Multi-planet Systems (HST 15333)	43.RD	10,893	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6943867	HST-GO-15333.019-A	The Atmospheric Diversity of Mini-Neptunes in Multi-planet Systems (HST 15333)	43.RD	106,493	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6940574	HST-GO-15641.014-A	Focus on Betelgeuse	43.RD	12,770	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6941622	HST-GO-15661.001-A	Testing the Limits of AGN Feedback in Starburst and QSO Central Cluster Galaxies (HST-GO-15661)	43.RD	17,161	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6942589	HST-GO-15814.001-A	Atmospheric characterization of two temperate mini-Neptunes formed in the same protoplanetary nebula (HST-GO-15814)	43.RD	20,641	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6942853	HST-GO-16001.002-A	STUDYING AGN FEEDING AND FEEDBACK IN THE MOST QUENCHED COOL CORE CLUSTER (HST-GO-16001)	43.RD	54,538	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6943297	HST-GO-16038.001-A	Imaging a Rare Starburst Central Galaxy in a Merging Cluster (HST GO-16038)	43.RD	22,442	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6943671	HST-GO-16072.002-A	Constraining the local environment and possible binarity of the closest-known Fast Radio Burst source (HST 16072)	43.RD	1,663	-
			Total for Space Telescope Science Institute		**584,085**	**-**
Pennsylvania State University						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6935503	5586-MIT-NASA-B07G	MIT Participation in a U.S. Contribution to the ATHENA Wide-field Imager	43.001	283,718	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6945150	S001534-NASA	MIT Participation in a U.S. Contribution to the ATHENA Wide-field Imager	43.001	15,260	-
			Total for Pennsylvania State University		**298,978**	**-**
University of Pennsylvania						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6932568	566962/10048151/14976/00	Laboratory Investigations of the Effects of Particulates on the Flow of Ice	43.001	-31	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
			Total for University of Pennsylvania		**-31**	**-**
Northwestern University						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6944393	60057449 MIT	Magneto-Rotational Instability in the Sun? Global Radiation-MHD Simulations of the Near-Surface Shear Layer	43.001	16,829	-
			Total for Northwestern University		**16,829**	**-**
Stanford University						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6934882	61238711-122362	WFIRST - Exoplanet Coronagraphy Science Team	43.001	84,640	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6942497	62205664-136106	Development of integrated readout electronics for next generation X-ray CCDs	43.001	150,647	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6944318	62467927-176172	Safe Aviation Autonomy with Learning-Enabled Components in the Loop	43.002	107,212	-
			Total for Stanford University		**342,499**	**-**
Baylor College of Medicine						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6936096	7000000324 / TRISH PROJ# DS002	Transitional Research Institute	43.003	528,278	119,592
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6940836	PO# 7000000843	Silk Composite Biomaterials for Shielding Medications in Space	43.003	24,961	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6942902	PO#7000001107/NNX16A069A	Dummy Parent: Just in Time Medications from Gastrointestinal Resident Microbial Systems	43.003	303,083	-
			Total for Baylor College of Medicine		**856,323**	**119,592**
University of Maryland - College Park						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6942704	85734-Z6249201	A Framework for Self-Consistent Modeling of Rocky Exoplanet Atmospheres	43.001	87,383	-
			Total for University of Maryland - College Park		**87,383**	**-**
Cornell University						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6943483	87941-11363	Understanding Transient Changes within Smooth Terrains on 67P	43.001	45,632	-
			Total for Cornell University		**45,632**	**-**
Woods Hole Oceanographic Institution						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6935447	A101331	Cooperative Exploration with Under-actuated Autonomous Vehicles in Hazardous Environments	43.001	38,843	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6942473	A101469	Exploring Ocean Worlds: Ocean System Science to Support the Search for Life	43.001	155,368	-
			Total for Woods Hole Oceanographic Institution		**194,211**	**-**
ESPACE						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6945404	AGMT DTD 1/26/2021	Bimodal Ion-Chemical Thruster System	43.RD	6,036	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6941851	ESP-8-27-19	Bimodal Ion-chemical Thruster System (BITS) – STTR Phase I	43.RD	562	-
			Total for ESPACE		**6,597**	**-**
ProtoInnovations, LLC						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6944211	AGMT DTD 10/01/2020	Rover Slip Estimation and Traction Control for Optimal Mobility in Lunar Environments	43.RD	145,021	-
			Total for ProtoInnovations, LLC		**145,021**	**-**
Cross Trac Engineering, Inc.						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6940038	AGMT DTD 10/19/18	STTR Phase II: Optical Intersatellite Communications for CubeSat Swarms	43.001	85,584	-
			Total for Cross Trac Engineering, Inc.		**85,584**	**-**
New Electricity Transmission Software Solutions Inc.						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6944869	AGMT EFF 9/1/20	Integrated Control and Protection Methodology Based on Energy-Space Modeling for EAP Aircraft	43.RD	103,973	-
			Total for New Electricity Transmission Software Solutions Inc.		**103,973**	**-**
STONE AEROSPACE, INC.						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6942011	AGMT. DTD. 06/01/2019	SESAME Full Proposal with Stone Aerospace	43.001	89,534	-
			Total for STONE AEROSPACE, INC.		**89,534**	**-**
Little Prairie Services						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6944937	AGREEMENT DATE 07/30/2020	NTR Fuel Testing in MIT Reactor Facilities	43.RD	60,828	-
			Total for Little Prairie Services		**60,828**	**-**
Docugami, Inc.						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6944670	AGREEMENT DATED	Next generation AI-based assisted document authoring, recommendation and understanding.	43.RD	52,011	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
			Total for Docugami, Inc.		**52,011**	**-**
Rochester Precision Optics						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6942064	AGREEMENT DTD 8/19/19	Hierarchical metasurface optics for multiplexed Visible to Terahertz Cross-Band Systems	43.RD	24,868	-
			Total for Rochester Precision Optics		**24,868**	**-**
Applied NanoFemto Technologies, LLC						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6942260	AGREEMENT DTD 9/1/19	Photonics integrated circuit enabled miniature on-chip urine test system with high sensitivity and reliability	43.RD	56,108	-
			Total for Applied NanoFemto Technologies, LLC		**56,108**	**-**
Smithsonian Inst. - Astrophysical Observatory						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6942692	AR0-21002B	Catalog of Serendipitous Gratings Spectra (Chandra 21200078)	43.001	10,299	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6931555	AR5-16003X	The Evolution of Disk Winds with X-ray Spectral States in Neutron Star Low Mass X-ray Binaries (Chandra 16400627)	43.RD	39,092	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6936158	AR7-18001X	TRACING THE ACCRETION SHOCK IN YOUNG STARS (Chandra 18200023)	43.RD	17,985	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6941717	AR9-20009X	A Systematic Analysis on M31* X-ray Variability with 3 Ms of Chandra Data from 1999 to 2016 (Chandra 20620472)	43.001	15,282	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6945069	DD0-21127X	Detecting the softening of emission at very low accretion rates in a supermassive black hole (Chandra 21708736)	43.001	2,896	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6943670	DD9-20115X	Simultaneous X-ray and Radio Observations of the Second Localized Repeating Fast Radio Burst (Chandra 20508702)	43.001	23,911	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6942802	GO0-21004B	Have Peter-Pan Systems Revealed the Fountain of Youth? (Chandra 21200100)	43.001	2,348	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6942757	GO0-21015A	THE TRUE NATURE OF X-RAYS FROM THE ORION TRAPEZIUM (Chandra 21200414)	43.001	48,374	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6942805	GO0-21124A	Observing the Rarest Clusters at z>1 with Chandra (Chandra 21800528)	43.001	12,993	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6933495	GO5-16044X	Filling the gap in understanding the wind structure of HDE 226868 /Cyg X-1 (Chandra 16400537)	43.RD	10,585	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6935588	GO6-17021X	What are the dust properties around young stars? (Chandra 17200708)	43.RD	8,782	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6934204	GO6-17022X	Heating the Primordial Soup: X-raying the Circumstellar Disk of RY Lupi (Chandra 17200709)	43.RD	-258	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6933767	GO6-17109X	A Fossil Group in Formation (Chandra 17800155)	43.RD	25,848	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6934989	GO6-17134X	Optical Depth of Si K in Bright Low-Mass X-Ray Binaries (Chandra 17910267)	43.RD	52,727	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6936483	GO7-18002C	X-rays from Young Low-Mass Stars: Inhospitable Habitable Zones? (Chandra 18200025)	43.RD	8,745	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6935779	GO7-18015X	What is the hottest cool star? (Chandra 18200423)	43.RD	9,950	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6936844	GO7-18035X	The Puzzling Nature OF THE YOUNG MICROQUASAR CIR X-1 (Chandra 18400420)	43.RD	-4	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6936846	GO7-18134X	THE ATOMIC TO DUST ABUNDANCE RATIO OF SILICON TOWARDS THE GALACTIC BULGE (Chandra 18910684)	43.RD	47,826	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6939871	GO8-19011C	Legacy HETG Spectrum of a Massive Star: zeta Pup (Chandra 19200511)	43.RD	-251	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6940085	GO8-19013X	An (X-ray Gratings) Tale of Two Young Stellar Objects (Chandra 19200676)	12.RD	99,030	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6940210	GO8-19036X	Precise Localization of Transient Low-Mass X-ray Binaries (Chandra 19400475)	43.001	2,314	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6942233	GO9-20005A	Stellar Winds in the Nearest Starburst Cluster: A Deep Look at High Resolution Spectra of NGC 3603 (Chandra 20200133)	43.001	43,945	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6940907	GO9-20014X	Did RW Aur just swallow a planet? (Chandra 20200536)	43.001	14,317	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6941239	GO9-20018X	Does accretion effect the X-ray emission of Herbig stars? (Chandra 20200616)	43.001	26,547	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6942230	GO9-20029X	Precise Localization of Transient Low-Mass X-ray Binaries (Chandra 20400272)	43.001	18,400	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6940590	GO9-20117A	Studying the Progenitors of Our Favorite Clusters at z > 1 (Chandra 20800438)	43.001	26,437	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6944428	SV0-09018	Technology Development of High Speed CMOS Detectors and Multilayer Mirrors for Dynamic Solar Soft X-ray Spectral Imaging	43.001	2,935	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6926645	SV2-82023	ACIS Science Support for the Chandra Program	43.RD	361,385	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6895251	SV3-73016	Support of the Chandra X-Ray Center (CXC)	43.RD	2,978,564	-
			Total for Smithsonian Inst. - Astrophysical Observatory		**3,911,004**	**-**

Lunar Resources

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6945609	AWARD EFFECTIVE 09/01/2020	Molten Regolith Electrolysis: The Extraction of Oxygen from Lunar Regolith	43.RD	37,479	-
			Total for Lunar Resources		**37,479**	**-**
Center for the Advancement of Science in Space						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6944595	GA-2020-1071	Active Deployment of first Aerospace Electronic Textile	43.007	2,306	-
			Total for Center for the Advancement of Science in Space		**2,306**	**-**
Center for Advancement of Science in Space						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6945185	GA-2021-9806	Analysis of Cartilage, Bone, Synovium, and Medium Samples from Spaceflight	43.RD	68,476	-
			Total for Center for Advancement of Science in Space		**68,476**	**-**
Michigan Technological University						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6937520	NNX17AJ32G	Institute for Ultra-Strong Composites By Computational Design (US-COMP)	43.012	69,840	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6937089	SUB 1607060Z6 / PO P0100197	Institute for Ultra-Strong Composites By Computational Design (US-COMP)	43.012	264,901	-
			Total for Michigan Technological University		**334,742**	**-**
Blue Origin, LLC						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6942327	PO 15-000002	Descent Element Mars Extensibility Study	43.RD	-314	-
			Total for Blue Origin, LLC		**-314**	**-**
University of Arizona						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6935314	PO 363458	REXIS - REgolith X-ray Imaging Spectrometer Phase E Operations	43.RD	199,894	147,229
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6938420	PO NO. 440148	GUSTO: Gal/Xgal U/LDB Spectroscopic/Stratospheric THz Observatory	43.RD	270,580	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6924918	PURCHASE ORDER 6473	OSIRIS-REx Near-Earth Asteroid Sample Return	43.RD	91,252	-
			Total for University of Arizona		**561,726**	**147,229**
Georgia Institute of Technology						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6940429	RK617-G5	Oceans Across Space and Time (OAST)	43.001	1,801	-
			Total for Georgia Institute of Technology		**1,801**	**-**

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
California Institute of Technology						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6945482	S504499	Probing the accretion physics of black holes through spectral-timing data analysis	43.001	2,155	-
			Total for California Institute of Technology		**2,155**	**-**
Combustion Research & Flow Technology, Inc.						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6943776	SBIR UNDER 80NSSC20C00195	MULTIPHASE CLOSURE MODELING DEVELOPMENT FOR APPLICATION TO CRYOGENIC BOILING (SBIR Phase II)	43.RD	121,702	-
			Total for Combustion Research & Flow Technology, Inc.		**121,702**	**-**
Princeton University						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6943298	SUB0000318	MIT Participation in NASA's Interstellar Mapping and Acceleration Probe (IMAP) project (Bridge/Phase B)	43.RD	16,146	-
			Total for Princeton University		**16,146**	**-**
Univ. Corporation For Atmos. Research						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6941885	SUBAWD001618	Analysis of Halogen Heterogeneous Chemistry in the Stratosphere and Near Tropopause Regions Using Satellite Observations and Model Information	43.001	25,867	-
			Total for Univ. Corporation For Atmos. Research		**25,867**	**-**
University of Michigan						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6941524	SUBK00011438/3005617618	Europa Clipper Facility Magnetometer Phases C&D	43.001	54,175	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6943100	SUBK00012276	Responsive multimodal human-automation communication for augmenting human situation awareness in nominal and off-nominal scenarios	43.001	62,024	-
			Total for University of Michigan		**116,199**	**-**
University Space Research Assoc.						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6942336	SUBK-20-0006	ODM and UTM Synergies	43.RD	34,826	-
			Total for University Space Research Assoc.		**34,826**	**-**
National Institute of Aerospace						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6941317	T13-6500-MIT/TASK ORDER 601054	Analysis of Operational Aspects of On Demand Air Mobility: Vertiports, Airspace and Concepts	43.RD	56,302	-
			Total for National Institute of Aerospace		**56,302**	**-**

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
University of Texas - Austin						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6934349	UTA16-000512	Evolving global ocean state estimation to the SWOT era	43.001	38,119	-
			Total for University of Texas - Austin		**38,119**	**-**
Washington University in St. Louis						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6942400	WU-20-302	Revealing the Relation between Hard and Soft Quiescent X-ray Spectra in Cen X-4 (NuSTAR 5220)	43.001	20,246	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6943244	WU-20-335	Development of the High Performance Version of GEOS-Chem (GCHP) to Enable Broad Community Access to High-Resolution Atmospheric Composition Modeling and Chemical Data Assimilation	43.001	28,773	-
			Total for Washington University in St. Louis		**49,019**	**-**
			TOTAL for National Aeronautics and Space Administration		**12,000,614**	**266,820**

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NATIONAL SCIENCE FOUNDATION						
University of California - Berkeley						
NATIONAL SCIENCE FOUNDATION	6934142	00007444	Center for Energy Efficient Electronics Science (E3S)	47.041	776,108	-
NATIONAL SCIENCE FOUNDATION	6935339	00009391	HERA: Illuminating Our Early Universe	47.049	-2,572	-
NATIONAL SCIENCE FOUNDATION	6945469	00010001	HERA: Unveiling the Cosmic Dawn	47.049	21,504	-
NATIONAL SCIENCE FOUNDATION	6944407	10434	QLCI - CL: Present and Future Quantum Computation	47.049	8,496	-
NATIONAL SCIENCE FOUNDATION	6944675	10462	Collaboration on the Theoretical Foundations of Deep Learning.	47.079	14,992	-
NATIONAL SCIENCE FOUNDATION	6929285	SUBAWARD 00008317/MCB-1330914	Synthetic biology of yeast	47.074	20,239	-
			Total for University of California - Berkeley		**838,767**	**-**
University of California, Los Angeles						
NATIONAL SCIENCE FOUNDATION	6937849	0160 G VB426	EFRI ACQUIRE: A chip-scale high-dimensional entanglement and quantum memory module for secure communications	47.041	207,310	-
NATIONAL SCIENCE FOUNDATION	6939941	0285 G WA158	Network Sovereignty: A Comparative Study of Local Network Initiatives in Rural, Low-income Communities	47.075	7,208	-
			Total for University of California, Los Angeles		**214,517**	**-**
University of Illinois-Urbana Champaign						
NATIONAL SCIENCE FOUNDATION	6942057	092992-17667	Atomic Beam Source (ABS) Development	47.049	181,686	-
NATIONAL SCIENCE FOUNDATION	6931375	2014-05135-01	Atomic Beam Source (ABS) Development	47.049	-686	-
			Total for University of Illinois-Urbana Champaign		**181,001**	**-**
Columbia University						
NATIONAL SCIENCE FOUNDATION	6931173	1(GG008891) / PO G05323	CNH: Competing Demands and Future Vulnerability of Groundwater: Drinking Water Quality and Food Security in Arsenic-Impacted South and Southeast Asia	47.050	-22,855	-
NATIONAL SCIENCE FOUNDATION	6935295	46(GG009393)	Participation of David T. Wang on Expedition 370	47.050	6,765	-
			Total for Columbia University		**-16,090**	**-**
Purdue University						
NATIONAL SCIENCE FOUNDATION	6945041	10001779-012	Collaborative Research: An in situ Closure Study of Mixed Phase Clouds at Storm Peak	47.050	15,262	-
NATIONAL SCIENCE FOUNDATION	6922873	SUBAWARD #10000686-015	Emerging Frontiers of Science of Information	47.070	161,212	-
			Total for Purdue University		**176,474**	**-**

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Internet2						
NATIONAL SCIENCE FOUNDATION	6943616	1042-B-1	Investigating Large Scale Heterogeneous computing with the Large Hadron Collider	47.070	533,104	-
			Total for Internet2		**533,104**	**-**
Carnegie-Mellon University						
NATIONAL SCIENCE FOUNDATION	6933964	1122183-333057	CIF21: DIBBS: Building a Scalable Infrastructure for Data-Driven Discovery and Innovation in Education	47.070	113,878	-
			Total for Carnegie-Mellon University		**113,878**	**-**
University of Wisconsin-Madison						
NATIONAL SCIENCE FOUNDATION	6944936	1174	Market-Level Effects of Competition in Agricultural Input Markets: Prices, Quality, and Mechanisms	47.075	8,503	-
			Total for University of Wisconsin-Madison		**8,503**	**-**
University of Rhode Island						
NATIONAL SCIENCE FOUNDATION	6941838	12202018/0007337	Minions: A low-cost float for distributed, Lagrangian observations of the biological carbon pump	47.050	-7,811	-
			Total for University of Rhode Island		**-7,811**	**-**
Harvard University						
NATIONAL SCIENCE FOUNDATION	6944183	123826	Varnivides Billing Agreement B	47.083	10,190	-
NATIONAL SCIENCE FOUNDATION	6941998	123826-5056263	Center for Integrated Quantum Materials	47.049	1,488,968	-
NATIONAL SCIENCE FOUNDATION	6940826	124127-5110072	RAISE: TAQS - Towards a Quantum Cloud	47.041	328,440	-
NATIONAL SCIENCE FOUNDATION	6942548	124189-5112398	DMREF: Hydrogel-actuated cellular soft robotic materials with programmable mechanical properties	47.049	27,483	-
NATIONAL SCIENCE FOUNDATION	6943444	134367	Billing Agreement: Seetharam, Kushai Collaborative Research: Understanding Subatomic Quantum Matter using Machine Learning Tools	47.070	11,145	-
NATIONAL SCIENCE FOUNDATION	6942678	AGMT DATED 2/25/2020	Understanding Interstellar Aromatic Chemistry: An Integrated Experimental, Theoretical, and Astronomical Approach	47.049	0	-
NATIONAL SCIENCE FOUNDATION	6943694	AGMT DTD 8/03/2020	Billing Agreement: Lu Mi, Collaborative Research: Formation of a High Flux Student Research Network (HF-SRN) as a Laboratory for Enhancing Interaction in the PoLS SRN	47.049	30,080	-
NATIONAL SCIENCE FOUNDATION	6943696	AGMT EFF 9/1/20	Billing Agreement: Lu Mi, Ideas Lab Collaborative Research: Using natural odor stimuli to crack the olfactory code	47.074	30,080	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NATIONAL SCIENCE FOUNDATION	6939677	BA DTD. 10/18/2018	Billing Agreement – George Varnavides Fall19 Incoming	47.083	6,756	-
			Total for Harvard University		**1,933,141**	**-**
Washington State University						
NATIONAL SCIENCE FOUNDATION	6937644	132249-G003779	Engineering Synthetic Symbiosis Between Pland and Bacteria to Deliver Nitrogen to Crops	47.074	23,469	-
			Total for Washington State University		**23,469**	**-**
George Washington University						
NATIONAL SCIENCE FOUNDATION	6935442	16-S08	PIRE: Promoting Urban Sustainability in the Arctic	47.083	16,183	-
			Total for George Washington University		**16,183**	**-**
University of Massachusetts - Amherst						
NATIONAL SCIENCE FOUNDATION	6937426	18-010023 A	CCI: Center for Autonomous Chemistry	47.049	1,104	-
			Total for University of Massachusetts - Amherst		**1,104**	**-**
University of California/Davis						
NATIONAL SCIENCE FOUNDATION	6936421	201601893-02	High-Performance, High-Level Tools for Statistical Inference and Unsupervised Learning	47.049	3,467	-
NATIONAL SCIENCE FOUNDATION	6941718	A19-3499-S001	Leveraging in-context online discussion of course materials to enhance student engagement and learning	47.076	101,422	-
			Total for University of California/Davis		**104,888**	**-**
University of Oklahoma (Norman, OK)						
NATIONAL SCIENCE FOUNDATION	6940566	2019-46	TIME (Thwaites Interdisciplinary Margin Evolution) - The Role of Shear Margin Dynamics in the Future Evolution of Thwaites Drainage Basin	47.050	31,317	-
			Total for University of Oklahoma (Norman, OK)		**31,317**	**-**
West Virginia University						
NATIONAL SCIENCE FOUNDATION	6945310	20-494-MIT	MRI: Development of a CHIME Outrigger Telescope	47.049	5,483	-
			Total for West Virginia University		**5,483**	**-**
Stevens Institute of Technology						
NATIONAL SCIENCE FOUNDATION	6943990	2103115-02	SII Planning: SPECTRA: Spectrum Policies, Economics, Coexistence, and Technological Research Advancements	47.049	50,006	-
			Total for Stevens Institute of Technology		**50,006**	**-**

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Duke University						
NATIONAL SCIENCE FOUNDATION	6939634	333-2439	Center for the Chemistry of Molecularly Optimized Networks	47.049	228,558	-
NATIONAL SCIENCE FOUNDATION	6939582	333-2457	STAQ: Software-Tailored Architecture for Quantum co-design	47.049	265,983	-
			Total for Duke University		**494,542**	**-**
National Bureau of Economic Research, Inc.						
NATIONAL SCIENCE FOUNDATION	6943720	36373.00.00.00.7700	COVID-19: RAPID: COVID19 Information Campaigns for Vulnerable Populations	47.075	83,483	-
			Total for National Bureau of Economic Research, Inc.		**83,483**	**-**
University of Rochester						
NATIONAL SCIENCE FOUNDATION	6932946	416750G	PIRE: DUST stimulated drawn-down of atmospheric CO2 as a trigger for Northern Hemisphere Glaciation	47.083	28,245	-
NATIONAL SCIENCE FOUNDATION	6935164	416929G/GR510498	EFRI AQUIRE: A Scalable Integrated Quantum Photonic Interconnect	47.041	67,471	-
NATIONAL SCIENCE FOUNDATION	6944701	417873-G / UR FAO GR511147	Center for Matter at Atomic Pressures	47.049	40,825	-
			Total for University of Rochester		**136,541**	**-**
Boston University						
NATIONAL SCIENCE FOUNDATION	6938043	4500002547	CIF21 DIBBs: EI: North Eastern Storage Exchange	47.070	49,255	-
NATIONAL SCIENCE FOUNDATION	6940191	4500002879	RAISE Integrating machine learning and biological neural networks	47.041	18,328	-
			Total for Boston University		**67,582**	**-**
Virginia Polytechnic Institute & State University						
NATIONAL SCIENCE FOUNDATION	2389595	479590	An in silico Tool to Predict Chemical Stability of Active Pharmaceutical Ingredients	47.070	31,750	-
NATIONAL SCIENCE FOUNDATION	2389710	479590	Reaction Mechanism Generator for Liquid Phase Reactions (RMG-Liquid)	47.070	36,651	-
NATIONAL SCIENCE FOUNDATION	2389429	479590	S212: Impl: The Molecular Sciences Software Institute (Postdoctoral Fellowship for Fang Liu)	47.070	4,483	-
NATIONAL SCIENCE FOUNDATION	6944790	480458-19825	Spectrum Innovation Initiative: National Center for Wireless Spectrum Research (SII-Center) – Planning Grant	47.049	17,332	-
			Total for Virginia Polytechnic Institute & State University		**90,216**	**-**

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Stanford University						
NATIONAL SCIENCE FOUNDATION	6937285	61602537-126273	CCI Phase I: Center for First Principles Design of Quantum Processes	47.049	32,583	-
			Total for Stanford University		**32,583**	**-**
University of Maryland						
NATIONAL SCIENCE FOUNDATION	6941887	81350-Z3438201	QII-TAQS:Quantum machine learning with photonics	47.049	45,323	-
			Total for University of Maryland		**45,323**	**-**
University of Maryland - College Park						
NATIONAL SCIENCE FOUNDATION	6944724	93943-Z3687203	NSF Convergence Accelerator - Track C Interconnecting Quantum Computers for the Next-generation Internet	47.083	26,229	-
			Total for University of Maryland - College Park		**26,229**	**-**
Kansas State University						
NATIONAL SCIENCE FOUNDATION	6937873	A00-0361-S002	PIRE: High Temperature Ceramic Fibers: Polymer-Based Manufacturing, Nanostructure, and Performance	47.079	10,702	-
			Total for Kansas State University		**10,702**	**-**
Emory University						
NATIONAL SCIENCE FOUNDATION	6941878	A221080	CCI Center in Selective C-H Functionalization	47.049	64,985	-
NATIONAL SCIENCE FOUNDATION	6944300	A375897	CCI Center in Selective C-H Functionalization	47.049	128,097	-
			Total for Emory University		**193,082**	**-**
National Radio Astronomy Observatory						
NATIONAL SCIENCE FOUNDATION	6944856	AGMT DTD 2/23/2021	Exploring RML Reconstruction for Stellar Imaging with the ngVLA II: Assessment of Calibration Effects	47.049	8,103	-
NATIONAL SCIENCE FOUNDATION	6937959	PO 359999	Enabling New Science with the ALMA Phasing System "Phase 2"	47.049	179,294	-
NATIONAL SCIENCE FOUNDATION	6944190	PO 370764	Beyond Black Hole Images: Extending New Imaging Techniques from EHT to ALMA	47.049	74,672	-
			Total for National Radio Astronomy Observatory		**262,068**	**-**
Transaera, Inc.						
NATIONAL SCIENCE FOUNDATION	6944840	AGREEMENT EFFECTIVE 1/1/2021	Using Metal-Organic Framework Materials to Increase Sustainability of Indoor Farming	47.041	42,768	-
			Total for Transaera, Inc.		**42,768**	**-**

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NEROC						
NATIONAL SCIENCE FOUNDATION	6937109	AGS-1726377	MRI Collaborative: Development of Monitors for Alaskan and Canadian Auroral Weather in Space (MACAWS)	47.050	8,535	-
NATIONAL SCIENCE FOUNDATION	6945054	AST-2034306	The Event Horizon Telescope: Resolving Black Holes in Time and Space	47.049	218,108	-
			Total for NEROC		**226,643**	**-**
Arizona State University						
NATIONAL SCIENCE FOUNDATION	6942459	ASUB00000433	Mid-Scale RI-1 (M1:DP): Compact X-ray Free-Electron Laser Project (CXFEL)	47.074	12,939	-
NATIONAL SCIENCE FOUNDATION	6942199	ASUB00000443	Center to Center (C2C) International Collaboration on Advanced Photovoltaics: Electrode Manufacturing and Indoor Power Applications	47.041	149,011	-
NATIONAL SCIENCE FOUNDATION	2748781	SUBAWARD NO: 17-096	QESST: ERC for Quantum Energy and Sustainable Solar Technologies	47.041	22,174	-
			Total for Arizona State University		**184,125**	**-**
Georgia Institute of Technology						
NATIONAL SCIENCE FOUNDATION	6944226	AWD-001496-G1	A Hybrid Programmable Biological-Nanoelectric System	47.041	62,009	-
			Total for Georgia Institute of Technology		**62,009**	**-**
Florida A&M University						
NATIONAL SCIENCE FOUNDATION	6937333	C-4979	CREST Center for Complex Materials Design for Multidimensional Additive Processing (CoMan)	47.076	112,427	-
			Total for Florida A&M University		**112,427**	**-**
Computing Research Association						
NATIONAL SCIENCE FOUNDATION	2749233	CIF2020-MIT-17	Computing Innovation Fellows 2020 Project	47.070	70,035	-
NATIONAL SCIENCE FOUNDATION	2749161	CIF2020-MIT-48	Computing Innovation Fellows 2020 Project	47.070	95,145	-
			Total for Computing Research Association		**165,180**	**-**
New York University						
NATIONAL SCIENCE FOUNDATION	6937547	F0394-03	Science And Integrated Language Plus Computational Thinking and Modeling with English Learners (SAIL +CTM with ELs)	47.076	65,686	-
			Total for New York University		**65,686**	**-**
Montana State University						

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NATIONAL SCIENCE FOUNDATION	6929216	G111-14-W4576	Engineering Synthetic Symbiosis between Plant and Bacteria to Deliver Nitrogen to Crops	47.074	-64,651	-
			Total for Montana State University		**-64,651**	**-**
University of California-San Diego						
NATIONAL SCIENCE FOUNDATION	6945410	KR 704225	US Global Ocean Repeat and Hydrography Program (US GO-SHIP)	47.050	29,911	-
NATIONAL SCIENCE FOUNDATION	6937009	SUB # 89409643 PO#S9001704	PFI:BIC: Smart Factories: An Intelligent Material Delivery System to Improve Human-Robot Workflow	47.041	74,637	-
NATIONAL SCIENCE FOUNDATION	6941882	SUB 123526011 PO S9002484	RAISE: C-Accel Pilot - Track A1 (Open Knowledge Network): Knowledge of Internet Structure: Measurement, Epistemology, and Technology (KISMET)	47.083	9,277	-
NATIONAL SCIENCE FOUNDATION	6939284	SUBAWARD AGREEMENT #106786383 ; PO S9002094	Platform for Applied Network Data Analysis (PANDA)	47.070	18,072	-
			Total for University of California-San Diego		**131,897**	**-**
New York University Medical Center						
NATIONAL SCIENCE FOUNDATION	6940520	PO #M160000461 - #14-A0-00-003420-01	Interactions of Radiofrequency Electromagnetic Fields with Biological Tissue: New Tools to Address Challenges and Exploit Opportunities	47.041	25,458	-
			Total for New York University Medical Center		**25,458**	**-**
University of Colorado Boulder						
NATIONAL SCIENCE FOUNDATION	6945274	PO 1001483847	QLCI-CI: Enhanced Sensing and Distribution Using Quantum States	47.RD	29,732	-
			Total for University of Colorado Boulder		**29,732**	**-**
Rice University						
NATIONAL SCIENCE FOUNDATION	6944167	R3K023	EFRI DCheM: Electrifying CO2 From Point Sources into Pure Liquid Fuels	47.041	99,260	-
			Total for Rice University		**99,260**	**-**
Lunar Resources						
NATIONAL SCIENCE FOUNDATION	6943656	RESEARCH AGREEMENT EFFECTIVE 06/01/2020	SBIR Phase I: Protoflight Design and Validation of Molten Regolith Electrolysis Facility For Lunar In-Situ Resource Utilization	47.041	31,781	-
			Total for Lunar Resources		**31,781**	**-**
UNAVCO						

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NATIONAL SCIENCE FOUNDATION	6939638	S18-EAR1724794-S2	National Geophysical Observatory for Geoscience Analysis Center Coordinator and GNSS Data Processing Support for the UNAVCO community	47.050	100,710	-
			Total for UNAVCO		**100,710**	**-**
Oregon State University						
NATIONAL SCIENCE FOUNDATION	2748887	S2114A-C	The Circuit: A Platform for Increasing Access and Participation in Public Engagement in Science	47.076	21,033	-
			Total for Oregon State University		**21,033**	**-**
University of Massachusetts-Lowell						
NATIONAL SCIENCE FOUNDATION	6944280	S52100000048202	FMNet: A Network for Rapid Execution for Scaling Production of Needed Designs (RESPOND)	47.075	81,921	-
			Total for University of Massachusetts-Lowell		**81,921**	**-**
Smithsonian Inst. - Astrophysical Observatory						
NATIONAL SCIENCE FOUNDATION	6943629	SAO PO# 448574	Understanding Interstellar Aromatic Chemistry: An Integrated Experimental, Theoretical, and Astronomical Approach	47.049	9,651	-
NATIONAL SCIENCE FOUNDATION	6933768	SV6-86002	The Event Horizon Telescope Experiment	47.049	341,510	-
			Total for Smithsonian Inst. - Astrophysical Observatory		**351,161**	**-**
Tufts University						
NATIONAL SCIENCE FOUNDATION	6941932	SF0069/PO EP0190879	Convergence Accelerator Phase I (RAISE): Network Science of Census Data	47.083	38,750	-
			Total for Tufts University		**38,750**	**-**
Princeton University						
NATIONAL SCIENCE FOUNDATION	6933021	SUB0000092	Hazards SEES: Risk Assessment and Risk Management: An Integrated Approach for Responding to Multiple Hazards from Tropical Cyclones	47.050	-87	-
NATIONAL SCIENCE FOUNDATION	6935980	SUB0000178	US CMS Software & Computing Subsystem (Year 2017)	47.049	614,687	-
NATIONAL SCIENCE FOUNDATION	6939873	SUB0000276	Institute for Research and Innovation in Software for High Energy Physics (IRIS-HEP)	47.070	111,795	-
NATIONAL SCIENCE FOUNDATION	6945111	SUB0000478	The Science of Deep Specication: Formalizing The Hardware-Software Interface	47.070	54,176	-
			Total for Princeton University		**780,571**	**-**
Educational Testing Service						

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NATIONAL SCIENCE FOUNDATION	6945050	SUB-AWARD #0901046/723	The Online Practice Suite: Practice Spaces, Simulations and Virtual Reality Environments for Preservice Teachers to Learn to Facilitate Argumentation Discussions in Mathematics and Science	47.076	162,162	-
			Total for Educational Testing Service		**162,162**	**-**
Southwest Research Institute						
NATIONAL SCIENCE FOUNDATION	6937788	SUBAWARD J99093LW	Titan from Many Angles: 3D Methane & Haze Distributions and Surface Spectra	47.049	5,811	-
			Total for Southwest Research Institute		**5,811**	**-**
California Institute of Technology						
NATIONAL SCIENCE FOUNDATION	6941437	SUBAWARD NO. S458042	LIGO Operations FY19 through FY23	47.049	4,393,717	-
			Total for California Institute of Technology		**4,393,717**	**-**
The Smithsonian Astrophysical Observatory						
NATIONAL SCIENCE FOUNDATION	6942136	SV0-09003	Mid-scale RI-1 (M1:DP): Next Generation Event Horizon Telescope Design	47.049	659,331	-
			Total for The Smithsonian Astrophysical Observatory		**659,331**	**-**
University of Alaska-Fairbanks						
NATIONAL SCIENCE FOUNDATION	6944274	UA 21-0033	Collaborative Research: US GEOTRACES PMT: Pb and Cr isotopes	47.050	86,654	-
			Total for University of Alaska-Fairbanks		**86,654**	**-**
University of Texas - Austin						
NATIONAL SCIENCE FOUNDATION	6939541	UTA18-001151	Dimensions: Ordering the microbial world into natural genetic, ecological, and functional units	47.074	95,807	-
NATIONAL SCIENCE FOUNDATION	2748915	UTA19-001091	Workshop on Energy Storage for the CBET Electrochemical Systems Program	47.041	8,161	-
			Total for University of Texas - Austin		**103,968**	**-**
University of Washington						
NATIONAL SCIENCE FOUNDATION	6934495	UWSC6200 (BPO39607)	NSF Engineering Research Center for Sensorimotor Neural Laboratory of Electronics	47.041	39,508	-
NATIONAL SCIENCE FOUNDATION	6934497	UWSC6200 (BPO4405)	NSF Engineering Research Center for Sensorimotor Neural Laboratory of Electronics	47.041	130,587	-
			Total for University of Washington		**170,096**	**-**

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
			TOTAL for National Science Foundation		**13,718,485**	**-**
			TOTAL Federal Research Support - Passthrough - On Campus		**$119,848,211**	**$1,265,223**

Appendix A4
Massachusetts Institute of Technology
Highway Planning and Construction Cluster - Passthrough
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
U.S. Department of Transportation						
Massachusetts Department of Transportation						
U.S. Department of Transportation	6928559	CONTRACT #81074	Kendall Square Value Pricing Pilot Project	20.205	45	-
			Total for Massachusetts Department of Transportation		**45**	**-**
			TOTAL for U.S. Department of Transportation		**45**	**-**
			TOTAL Highway Planning and Construction Cluster - Passthrough		**$45**	**-**

Appendix B
Massachusetts Institute of Technology
Federal Non-Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE					
Navy					
12.300					
Navy	N00014-18-1-2890	Competency, Community, Career: A technician apprenticeship certificate for advanced manufacturing	12.300	524,725	477,400
Navy	N00014-19-1-2753	Virtual Manufacturing Lab (VM-Lab):A Multimedia Design House for Digital Learning in Manufacturing-USA Workforce Education	12.300	1,479,330	354,602
		Total for AL # 12.300		*2,004,055*	*832,002*
		Total for Navy		**2,004,055**	**832,002**
Other DOD					
12.U08					
NSA	H98230-19-C-0292	MIT Center for Quantum Engineering (MIT-CQE)	12.U08	51,492	-
		Total for AL # 12.U08		*51,492*	-
12.U39					
NSA	H98230-19-C-0292	MIT Center for Quantum Engineering (MIT-CQE)	12.U39	88,142	-
		Total for AL # 12.U39		*88,142*	-
12.U40					
NSA	H98230-19-C-0292	MIT Center for Quantum Engineering (MIT-CQE)	12.U40	94,471	-
		Total for AL # 12.U40		*94,471*	-
12.U41					
NSA	H98230-19-C-0292	MIT Center for Quantum Engineering (MIT-CQE)	12.U41	90,154	-
		Total for AL # 12.U41		*90,154*	-
12.U56					
NSA	H98230-19-C-0292	MIT Center for Quantum Engineering (MIT-CQE)	12.U56	49,929	-
		Total for AL # 12.U56		*49,929*	-

Appendix B
Massachusetts Institute of Technology
Federal Non-Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
12.U63					
NSA	H98230-19-C-0292	MIT Center for Quantum Engineering (MIT-CQE)	12.U63	16,313	-
		Total for AL # 12.U63		*16,313*	-
		Total for Other DOD		**390,501**	**-**
		TOTAL for Department of Defense		**2,394,556**	**832,002**

Appendix B
Massachusetts Institute of Technology
Federal Non-Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF COMMERCE					
11.417					
DOC	NA17OAR4170243	2017 NMFS Grad Fellowship - Megan Winton	11.417	22,317	22,317
DOC	NA18OAR4170320	2018 NMFS Grad Fellowship- Robert P. Wildermuth	11.417	11,991	16,987
DOC	NA20OAR4170061	FY2020 Knauss Fellow-Brianna Shaughnessy	11.417	3,004	-
DOC	NA21OAR4170031	FY 2021 Knauss Fellowship - Catherine Tobin	11.417	24,841	-
DOC	NA21OAR4170047	FY2021 Knauss Fellowship - Lucila Houttuijn Bloemendaal	11.417	51,576	-
		Total for AL # 11.417		*113,728*	*39,304*
		Total for Department of Commerce		**113,728**	**39,304**
		TOTAL for Department of Commerce		**113,728**	**39,304**

Appendix B
Massachusetts Institute of Technology
Federal Non-Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF ENERGY					
81.049					
DOE	DE-SC0014478	MIT Outreach for Plasma Science and Fusion	81.049	88,818	-
DOE	DE-SC0018354	Convergence QL: NSF/DOE Quantum Science Summer School	81.049	15,033	5,805
		Total for AL # 81.049		*103,851*	*5,805*
81.121					
DOE	DE-NE0000102	MIT Nuclear Energy University Fellowship Program	81.121	46,982	-
		Total for AL # 81.121		*46,982*	-
81.U03					
DOE	652574	2019 LPC Distinguished Researcher Program of Mariarosaria D'Alfonso	81.U03	16,125	-
		Total for AL # 81.U03		*16,125*	-
		Total for Department of Energy		**166,958**	**5,805**
		TOTAL for Department of Energy		**166,958**	**5,805**

Appendix B
Massachusetts Institute of Technology
Federal Non-Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF HEALTH & HUMAN SERVICES					
Other HHS					
93.647					
HHS	90PD0310-01-00	Mindfulness and Behavioral Economics: Evaluating the Effects of Meditation on Wellbeing and Decision-Making	93.647	2,152	-
		Total for AL # 93.647		*2,152*	-
		Total for Other HHS		**2,152**	**-**
		TOTAL for Department of Health & Human Services		**2,152**	**-**

Appendix B
Massachusetts Institute of Technology
Federal Non-Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF TRANSPORTATION					
20.215					
DOT	693JJ32145055	Zhongxia Yan - DDETFP Student Fellowship	20.215	5,075	-
		Total for AL # 20.215		*5,075*	-
		Total for Department of Transportation		**5,075**	**-**
		TOTAL for Department of Transportation		**5,075**	**-**

Appendix B
Massachusetts Institute of Technology
Federal Non-Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
MISCELLANEOUS FEDERAL GOVT					
Department of Education					
84.047A					
ED	P047A170618	MIT/Wellesley Upward Bound Program	84.047A	254,860	-
		Total for AL # 84.047A		*254,860*	-
84.425E					
ED	P425E205907	COVID-19: Higher Education Emergency Relief Funds II - Student Aid under the Coronavirus Response and Relief Supplemental Appropriation Act, 2021	84.425E	10,000	-
		Total for AL # 84.425E		*10,000*	-
		Total for Department of Education		**264,860**	**-**
Other Agencies					
45.024					
Misc.	1858271-44-20	NEA Art Works application for List Projects	45.024	30,000	-
Misc.	1865772-44-21	Museums: Support for the ongoing exhibition series List Projects	45.024	7,854	-
		Total for AL # 45.024		*37,854*	-
45.149					
Misc.	PW-253800-17	History from Chicago's Former Steel Mill Neighborhoods: Digitizing and Providing Access to the Southeast Chicago Historical Museum Collection	45.149	54,541	-
		Total for AL # 45.149		*54,541*	-
45.169					
Misc.	DR-278094-21	Haddad/Effective Advocacy 13475: Open Access edition	45.169	550	-
		Total for AL # 45.169		*550*	-
45.301					
Misc.	MA-245643-OMS-20	IMLS Archive Digitization Project	45.301	27,755	-
		Total for AL # 45.301		*27,755*	-

Appendix B
Massachusetts Institute of Technology
Federal Non-Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
45.313					
Misc.	RE-246380-OLS-20	Building Library Professionals' Creative Learning Competency for Facilitating STEM Programming	45.313	68,426	-
		Total for AL # 45.313		*68,426*	-
77.008					
Misc.	31310018M0021	NRC Fellowship Program	77.008	25,000	-
Misc.	31310018M0038	MIT Nuclear Education Faculty Development Program	77.008	49,160	-
		Total for AL # 77.008		*74,160*	-
98.001					
Misc.	72026319CA00003	Center of Excellence in Energy Research, Education and Entrepreneurship	98.001	196,563	-
Misc.	AID-OAA-A-12-00095	CITE and IDIN	98.001	0	-
		Total for AL # 98.001		*196,563*	-
		Total for Other Agencies		**459,849**	**-**
		TOTAL for Miscellaneous Federal Govt		**724,708**	**-**

Appendix B
Massachusetts Institute of Technology
Federal Non-Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION					
43.001					
NASA	80NSSC18K1324	Tectonic and climatic controls on changing continental river networks	43.001	39,076	-
NASA	80NSSC20K0713	Apophis T-9 Years: Knowledge Opportunities for the Science of Planetary Defense Workshop	43.001	1,960	-
NASA	80NSSC20K1366	Determining the Structure of a Primitive Achondrite Parent Body Using Paleomagnetism	43.001	43,113	-
NASA	80NSSC20K1367	Effects of rotation and magnetic fields in the weakly conducting regions of gas giant planets.	43.001	18,127	-
NASA	80NSSC20K1510	Multiscale Dynamics of Magnetic Flux Tubes in the Heliosphere and Beyond	43.001	42,568	-
NASA	NNA13AA90A	Foundations of Complex Life: Evolution, Preservation & Detection on Earth & Beyond	43.001	0	-
		Total for AL # 43.001		*144,844*	-
43.003					
NASA	NNX17AB13G	NASA Participation in MIT Innovation Lab	43.003	57,100	-
		Total for AL # 43.003		*57,100*	-
43.008					
NASA	80NSSC20M0048	Massachusetts Space Grant Proposed Opportunities in NASA STEM 2020-2024, Year 1 Augmentation	43.008	764,211	44,588
		Total for AL # 43.008		*764,211*	*44,588*
43.012					
NASA	80NSSC17K0077	Enhancing Docking and Manipulation Capability for Microgravity Robotic Free Flyers	43.012	60,046	-
NASA	80NSSC17K0081	2D Materials for Energy Harvesting and Sensing	43.012	107,593	-
NASA	80NSSC17K0082	Additive Manufacturing of Low Work Function Oxides for Spaceborne Thermionic Emission Applications	43.012	88,161	-
NASA	80NSSC17K0083	A Ground-Based Analog for CNS Exposure to Space Radiation: A System for Integrating Microbeam Technology and Neuronal Culture	43.012	68,200	-
NASA	80NSSC17K0090	Modeling Oxygen Production on Mars and Extension to a Human-Scale Mission	43.012	61,243	-

Appendix B
Massachusetts Institute of Technology
Federal Non-Research Support - On Campus
FY 2021 Expenditures

Federal Agency	Government Contract Number	Master Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NASA	80NSSC18K1141	Optimal Trajectory Design for Innovative Low-Thrust Spacecraft Missions	43.012	60,216	-
NASA	80NSSC18K1182	Optical Technology for Exoplanet Characterization	43.012	64,366	-
NASA	80NSSC18K1185	Commercial Feasibility of In-Space Manufacturing Applications with Technology Development Targets	43.012	59,000	-
NASA	80NSSC18K1186	Guidance and Control of Electrospray Thruster Actuated CubeSat	43.012	68,726	-
NASA	80NSSC19K1154	Calcium-based Battery Development for Space Technology Applications	43.012	90,430	-
NASA	80NSSC19K1173	Controlling and imaging electronic fluids for radiation-resistant high-speed logic in graphene (Student: Sarah Muschinske)	43.012	59,000	-
NASA	80NSSC20K1178	Development and Optimization of a Bimodal Ion-Chemical Thruster System Using Novel Ionic Liquid Monopropellants	43.012	60,094	-
NASA	80NSSC20K1180	Bayesian Uncertainty Propagation Using Multi-Fidelity Subsystem Models in Design of Precision-Pointed Space Telescopes	43.012	56,750	-
NASA	80NSSC20K1201	A diamond nanophotonics platform for quantum communication with multiplexed qubit repeaters	43.012	55,940	-
NASA	NNX16AM72H	Development and Testing of Autonomous On-Orbit Assembly and Servicing Systems Using the SPHERES Testbed	43.012	951	-
NASA	NNX16AM75H	Quantum Networking and Sensing using a Diamond Nanophotonic Circuit (Student: Eric Bersin)	43.012	7,641	-
		Total for AL # 43.012		*968,357*	-
43.U07					
NASA	NNX16AH49H	National Space Grant College and Fellowship Program (Space Grant)	43.U07	1,639	-
		Total for AL # 43.U07		*1,639*	-
		Total for National Aeronautics and Space Administration		**1,936,152**	**44,588**
		TOTAL for National Aeronautics and Space Administration		**1,936,152**	**44,588**
		TOTAL Federal Non-Research Support - On Campus		**5,343,330**	**921,699**

Appendix C
Massachusetts Institute of Technology
Federal Non-Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE						
SUNY: AIM Photonics						
DEPARTMENT OF DEFENSE	2749346	AGMT. DTD. 3/22/2016	IP-IMI	12.800	914,101	-
			Total for SUNY: AIM Photonics		**914,101**	**-**
Lincoln Laboratory						
DEPARTMENT OF DEFENSE	2748761	PO# 7000456125	Support of the MIT Security Studies Program	12.U59	-6,437	-
DEPARTMENT OF DEFENSE	2749066	PO# 7000483560	Support of the MIT Security Studies Program	12.U61	19,849	-
			Total for Lincoln Laboratory		**13,411**	**-**
Florida State University						
DEPARTMENT OF DEFENSE	2748751	R02117	A SUMMER PROGRAM TO INTRODUCE ENGINEER RESEARCH TO UNDERGRADUATES	12.300	5,616	-
			Total for Florida State University		**5,616**	**-**
Advanced Functional Fabrics of America (AFFOA)						
DEPARTMENT OF DEFENSE	2749285	EXHIBIT 1-A	Shape-Shifting Climate-Adaptive Garments	12.U62	6,761	-
			Total for Advanced Functional Fabrics of America (AFFOA)		**6,761**	**-**
National Center for the Advancement of STEM Education						
DEPARTMENT OF DEFENSE	2749281	NP000	Plan to stand up an Open edX platform and develop a policy study	12.560	310,091	-
			Total for National Center for the Advancement of STEM Education		**310,091**	**-**
Draper Laboratory Incorporated						
DEPARTMENT OF DEFENSE	2748060	PO 0010001045564	Draper Fellow Reporting Parent FY 17/18	12.U57	-1,286	-
DEPARTMENT OF DEFENSE	2748446	PO001-0001050334	Draper Fellow Reporting Parent FY 18/19	12.U58	0	-
DEPARTMENT OF DEFENSE	2389475	PO001-0001054506	Draper Fellow Reporting Parent FY19/20	12.U01	-11,859	-
DEPARTMENT OF DEFENSE	2389483	PO001-0001054514	Draper Fellow Reporting Parent FY19/20	12.U02	-13,119	-
DEPARTMENT OF DEFENSE	2389485	PO001-0001054515	Draper Fellow Reporting Parent FY19/20	12.U03	-13,119	-
DEPARTMENT OF DEFENSE	2389487	PO001-0001054614	Draper Fellow Reporting Parent FY19/20	12.U04	0	-
DEPARTMENT OF DEFENSE	2389503	PO001-0001054626	Draper Fellow Reporting Parent FY19/20	12.U06	0	-
DEPARTMENT OF DEFENSE	2389504	PO001-0001054628	Draper Fellow Reporting Parent FY19/20	12.U07	-12	-
DEPARTMENT OF DEFENSE	2389488	PO001-000105617	Draper Fellow Reporting Parent FY19/20	12.U05	0	-
DEPARTMENT OF DEFENSE	2389623	PO001-0001058085	Draper Fellow Reporting Parent FY20/21	12.U32	53,559	-

Appendix C
Massachusetts Institute of Technology
Federal Non-Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE	2389610	PO001-0001058208	Draper Fellow Reporting Parent FY20/21	12.U19	71,507	-
DEPARTMENT OF DEFENSE	2389603	PO001-0001058212	Draper Fellow Reporting Parent FY20/21	12.U13	68,567	-
DEPARTMENT OF DEFENSE	2389618	PO001-0001058216	Draper Fellow Reporting Parent FY20/21	12.U27	71,315	-
DEPARTMENT OF DEFENSE	2389620	PO001-0001058217	Draper Fellow Reporting Parent FY20/21	12.U29	10,184	-
DEPARTMENT OF DEFENSE	2389617	PO001-0001058219	Draper Fellow Reporting Parent FY20/21	12.U26	71,554	-
DEPARTMENT OF DEFENSE	2389609	PO001-0001058222	Draper Fellow Reporting Parent FY20/21	12.U18	69,753	-
DEPARTMENT OF DEFENSE	2389648	PO001-0001058224	Draper Fellow Reporting Parent FY20/21	12.U38	71,315	-
DEPARTMENT OF DEFENSE	2389619	PO001-0001058232	Draper Fellow Reporting Parent FY20/21	12.U28	71,315	-
DEPARTMENT OF DEFENSE	2389604	PO001-0001058241	Draper Fellow Reporting Parent FY20/21	12.U14	57,276	-
DEPARTMENT OF DEFENSE	2389606	PO001-0001058252	Draper Fellow Reporting Parent FY20/21	12.U16	71,315	-
DEPARTMENT OF DEFENSE	2389627	PO001-0001058253	Draper Fellow Reporting Parent FY20/21	12.U34	55,650	-
DEPARTMENT OF DEFENSE	2389615	PO001-0001058255	Draper Fellow Reporting Parent FY20/21	12.U24	53,450	-
DEPARTMENT OF DEFENSE	2389611	PO001-0001058257	Draper Fellow Reporting Parent FY20/21	12.U20	4,087	-
DEPARTMENT OF DEFENSE	2389605	PO001-0001058264	Draper Fellow Reporting Parent FY20/21	12.U15	71,381	-
DEPARTMENT OF DEFENSE	2389626	PO001-0001058271	Draper Fellow Reporting Parent FY20/21	12.U33	53,450	-
DEPARTMENT OF DEFENSE	2389612	PO001-0001058272	Draper Fellow Reporting Parent FY20/21	12.U21	71,677	-
DEPARTMENT OF DEFENSE	2389601	PO001-0001058287	Draper Fellow Reporting Parent FY20/21	12.U11	68,391	-
DEPARTMENT OF DEFENSE	2389608	PO001-0001058290	Draper Fellow Reporting Parent FY20/21	12.U17	67,599	-
DEPARTMENT OF DEFENSE	2389602	PO001-0001058292	Draper Fellow Reporting Parent FY20/21	12.U12	53,450	-
DEPARTMENT OF DEFENSE	2389613	PO001-0001058319	Draper Fellow Reporting Parent FY20/21	12.U22	37,625	-
DEPARTMENT OF DEFENSE	2389631	PO001-0001058359	Draper Fellow Reporting Parent FY20/21	12.U35	53,450	-
DEPARTMENT OF DEFENSE	2389622	PO001-0001058425	Draper Fellow Reporting Parent FY20/21	12.U31	53,450	-
DEPARTMENT OF DEFENSE	2389616	PO001-0001058429	Draper Fellow Reporting Parent FY20/21	12.U25	53,450	-
DEPARTMENT OF DEFENSE	2389614	PO001-0001058470	Draper Fellow Reporting Parent FY20/21	12.U23	71,315	-
DEPARTMENT OF DEFENSE	2389621	PO001-0001058499	Draper Fellow Reporting Parent FY20/21	12.U30	57,276	-
DEPARTMENT OF DEFENSE	2389634	PO001-0001058726	Draper Fellow Reporting Parent FY20/21	12.U36	57,276	-
DEPARTMENT OF DEFENSE	2389642	PO001-0001058842	Draper Fellow Reporting Parent FY20/21	12.U37	53,450	-
DEPARTMENT OF DEFENSE	2389744	PO001-0001061954	Draper Fellow Reporting Parent FY21/22	12.U49	3,936	-
DEPARTMENT OF DEFENSE	2389734	PO001-0001061983	Draper Fellow Reporting Parent FY21/22	12.U42	4,028	-
DEPARTMENT OF DEFENSE	2389746	PO001-0001061990	Draper Fellow Reporting Parent FY21/22	12.U50	4,028	-
DEPARTMENT OF DEFENSE	2389737	PO001-0001061991	Draper Fellow Reporting Parent FY21/22	12.U44	3,837	-
DEPARTMENT OF DEFENSE	2389736	PO001-0001061993	Draper Fellow Reporting Parent FY21/22	12.U43	3,837	-
DEPARTMENT OF DEFENSE	2389741	PO001-0001061994	Draper Fellow Reporting Parent FY21/22	12.U48	3,837	-
DEPARTMENT OF DEFENSE	2389738	PO001-0001062000	Draper Fellow Reporting Parent FY21/22	12.U45	3,837	-

Appendix C
Massachusetts Institute of Technology
Federal Non-Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE	2389739	PO001-0001062004	Draper Fellow Reporting Parent FY21/22	12.U46	3,505	-
DEPARTMENT OF DEFENSE	2389740	PO001-0001062006	Draper Fellow Reporting Parent FY21/22	12.U47	3,837	-
DEPARTMENT OF DEFENSE	2389756	PO001-0001062011	Draper Fellow Reporting Parent FY21/22	12.U53	5,295	-
DEPARTMENT OF DEFENSE	2389755	PO001-0001062045	Draper Fellow Reporting Parent FY21/22	12.U52	4,836	-
DEPARTMENT OF DEFENSE	2389759	PO001-0001062081	Draper Fellow Reporting Parent FY21/22	12.U55	5,295	-
DEPARTMENT OF DEFENSE	2389754	PO001-0001062111	Draper Fellow Reporting Parent FY21/22	12.U51	3,570	-
DEPARTMENT OF DEFENSE	2389758	PO001-0001062145	Draper Fellow Reporting Parent FY21/22	12.U54	5,295	-
			Total for Draper Laboratory Incorporated		**1,643,662**	**-**
			TOTAL for Department of Defense		**2,893,642**	**-**

Appendix C
Massachusetts Institute of Technology
Federal Non-Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF COMMERCE						
U Delaware: National Institute for Innovation in Manufacturing Biopharmaceuticals (NIIMBL)						
DEPARTMENT OF COMMERCE	2749115	AGREEMENT EFFECTIVE 5/4/17	The National Institute for Innovation in Manufacturing Biopharmaceuticals (NIIMBL) - Memberships	11.619	38,650	-
DEPARTMENT OF COMMERCE	2748701	PC1.0-007	NIIMBL Projects	11.619	87,573	-
DEPARTMENT OF COMMERCE	2749050	PC2.2-160	Building Cooperative Biomanufacturing Workforce Training Network (NE Bioworks)	11.619	44,987	-
		Total for U Delaware: National Institute for Innovation in Manufacturing Biopharmaceuticals (NIIMBL)			**171,210**	**-**
			TOTAL for Department of Commerce		**171,210**	**-**

Appendix C
Massachusetts Institute of Technology
Federal Non-Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF ENERGY						
Jefferson Science Associates, LLC						
DEPARTMENT OF ENERGY	2389559	20-D0103	Development of streaming readout at the Electron-Ion Collider Center at Jefferson Lab - Ivica Friscic	81.U05	15,000	-
DEPARTMENT OF ENERGY	2389690	21-D0142	Pybus-EIC JLab	81.U06	12,999	-
DEPARTMENT OF ENERGY	2389534	AGRMT DATED 06/11/20	Installation, Commissioning and Calibration of the full GlueX DIRC detector (for the GlueX experiment at Hall D of Jefferson Laboratory)	81.U04	6,916	-
DEPARTMENT OF ENERGY	2389702	AGRMT DATED 09/14/20	Absolute Cross Section Measurement of Deeply Virtual Pion Production - JSA Grad Fellowship - Robert Johnston	81.U07	11,000	-
			Total for Jefferson Science Associates, LLC		**45,915**	**-**
SURA / Jefferson Lab						
DEPARTMENT OF ENERGY	2389346	AGMT DATED 6/18/18	Jefferson Science Lab Graduate Fellowship Award - Reynier Cruz Torres	81.U02	0	-
DEPARTMENT OF ENERGY	2389347	AGMT DATED 6/18/18	Jefferson Science Lab Graduate Fellowship Award - Yunjie Yang	81.049	0	-
			Total for SURA / Jefferson Lab		**0**	**-**
Krell Institute						
DEPARTMENT OF ENERGY	2389384	AGREEMENT EFF. 09/01/2016	DOE NNSA SSGF fellowships	81.112	997	-
DEPARTMENT OF ENERGY	2225900	FELLOWSHIP COMMITMENT	DOE-CSGF Krell Institute	81.049	4,796	-
			Total for Krell Institute		**5,794**	**-**
Battelle Energy Alliance, LLC						
DEPARTMENT OF ENERGY	2749082	RELEASE 00003/CONTRACT 00112583	INL-NUC Collaboration Activities at Massachusetts Institute of Technology	81.U08	209,644	-
			Total for Battelle Energy Alliance, LLC		**209,644**	**-**
			TOTAL for Department of Energy		**261,353**	**-**

Appendix C
Massachusetts Institute of Technology
Federal Non-Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
MISCELLANEOUS FEDERAL GOVT						
The Center for Effective Public Policy						
MISCELLANEOUS FEDERAL GOVT	2747773	378-00-MIT-451	Enhancing Campus Sexual Assault Prevention Efforts through Situational Interventions	16.203	-40	-
			Total for The Center for Effective Public Policy		**-40**	**-**
Ashesi University						
MISCELLANEOUS FEDERAL GOVT	2748627	AGMT DTD 9/1/18	Accelerating Local Potential	98.U01	91,380	-
			Total for Ashesi University		**91,380**	**-**
Institute of International Education, Inc.						
MISCELLANEOUS FEDERAL GOVT	2389548	HHH1901_MIT_7.1.19	Hubert H. Humphrey Fellowship Program (SPURS) 2019-2020	19.010	39,427	-
MISCELLANEOUS FEDERAL GOVT	2389685	SUBAWARD DATED 7/1/2020	Hubert H. Humphrey Fellowship Program (SPURS) 2020-2021	19.010	187,194	-
			Total for Institute of International Education, Inc.		**226,622**	**-**
Atlas Research LLC						
MISCELLANEOUS FEDERAL GOVT	2749268	SC-HCATS-U-IDIQ-MIT	Catalyst Spring Program 2021	64.U01	197,336	-
			Total for Atlas Research LLC		**197,336**	**-**
Aspen Network for Development Entrepreneurs, The Aspen Institute						
MISCELLANEOUS FEDERAL GOVT	2749261	SUBAWARD DATED MARCH 4, 2021 UNDER COOP AGMT 7200AA19CA00016	Scale-up Financing-Inclusive acceleration to close participation, knowledge and connectivity gaps for women-led SGB's in South Asia	98.001	72,377	-
			Total for Aspen Network for Development Entrepreneurs, The Aspen Institute		**72,377**	**-**
American Council on Education						
MISCELLANEOUS FEDERAL GOVT	2749120	SUZ800-18-CA-0001	Co-Development and Cross-Pollination of Effective, Hands-On Nuclear Physics Educational Activities	19.U01	106	-
			Total for American Council on Education		**106**	**-**
			TOTAL for Miscellaneous Federal Govt		**587,780**	**-**

Appendix C
Massachusetts Institute of Technology
Federal Non-Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION						
University of Arizona						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	2747876	AGRMT DATED 11/13/16	REXIS - REgolith X-ray Imaging Spectrometer Phase E Operations	43.U08	6,172	-
			Total for University of Arizona		**6,172**	**-**
Space Telescope Science Institute						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	2389368	HST-HF2-51410.001-A	Fundamental Physics in the Era of Gravitational Wave Astronomy (Fellow: Maximiliano Isi)	43.U03	85,148	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	2389367	HST-HF2-51421.001-A	Radiation Signatures of the First Galaxies and Supermassive Black Holes (Fellow: Aaron Smith)	43.U02	81,083	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	2389528	HST-HF2-51434.001-A	The Formation and Growth of Supermassive Black Holes at Early Cosmic Epochs (HST-HF2-51434; Postdoc Christina Eilers)	43.U05	84,431	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	2389524	HST-HF2-51438.001-A	Bridging the gap between galaxy and star formation with star clusters (HF2-51438; Fellow: Hui Li)	43.U04	11,583	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	2749157	HST-HF2-51452.001-A	Cosmology and Astrophysics with Gravitational-Waves from Stellar-Mass Compact Binary Mergers (HF2-51452; Fellow: Hsin-Yu Chen)	43.U09	83,345	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	2389707	HST-HF2-51470.001-A	Dark sectors in highredshift observations (HF2-51470; Fellow: Katelin Schutz)	43.U06	35,250	-
			Total for Space Telescope Science Institute		**380,841**	**-**
Baylor College of Medicine						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	2748341	PO# 7000000554	Dean of Science Education	43.003	35,195	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	2389522	PO# 7000000937	In Situ Expression Analysis of Therapeutic Microbes with Gastrointestinal Devices	43.003	58,500	-
			Total for Baylor College of Medicine		**93,695**	**-**
CalTech - Jet Propulsion Lab						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	2748989	RSA NO. 1643310	Concurrent Engineering & Lifecycle Product Development: Research Opportunities for the next Generation of Space Systems Engineers	43.001	23,366	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	2749243	RSA NO. 1657148	Concurrent Engineering & Lifecycle Product Development: Research Opportunities for the next Generation of Space Systems Engineers	43.001	30,050	-
			Total for CalTech - Jet Propulsion Lab		**53,416**	**-**

Appendix C
Massachusetts Institute of Technology
Federal Non-Research Support - Passthrough - On Campus
FY 2021 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	Assistance Listing #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
TOTAL for National Aeronautics and Space Administration					**534,124**	**-**
TOTAL Federal Non-Research Support - Passthrough - On Campus					**$4,448,110**	**-**

SECTION III

REPORTS ON INTERNAL CONTROL AND COMPLIANCE AND SCHEDULE OF FINDINGS AND QUESTIONABLE COSTS

Page intentionally left blank

Report of Independent Auditors on Internal Control Over Financial Reporting and on Compliance and Other Matters Based on an Audit of Financial Statements Performed in Accordance with *Government Auditing Standards*

To the Members of the Corporation of the
Massachusetts Institute of Technology:

We have audited, in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, the consolidated financial statements of the Massachusetts Institute of Technology and its subsidiaries (the "Institute"), which comprise the consolidated statement of financial position as of June 30, 2021 and the related consolidated statements of activities and of cash flows for the year then ended, and the related notes to the financial statements, and have issued our report thereon dated October 13, 2021, which included an emphasis of matter paragraph related to the Institute changing the manner in which it accounts for leases in 2021 as discussed in Note A.

Internal Control Over Financial Reporting

In planning and performing our audit of the financial statements, we considered the Institute's internal control over financial reporting ("internal control") as a basis for designing the audit procedures that are appropriate in the circumstances for the purpose of expressing our opinion on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of the Institute's internal control. Accordingly, we do not express an opinion on the effectiveness of the Institute's internal control.

A *deficiency in internal control* exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A *material weakness* is a deficiency, or a combination of deficiencies, in internal control such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected on a timely basis. A *significant deficiency* is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

Compliance and Other Matters

As part of obtaining reasonable assurance about whether the Institute's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts and grant agreements, noncompliance with which could have a direct and material effect on the financial statements. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests

disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.

Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the entity's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the entity's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

PricewaterhouseCoopers LLP

Boston, Massachusetts
October 13, 2021

Report of Independent Auditors on Compliance with Requirements That Could Have a Direct and Material Effect on Each Major Program and on Internal Control Over Compliance in Accordance with the Uniform Guidance

To the Members of the Corporation of the
Massachusetts Institute of Technology:

Report on Compliance for Each Major Federal Program

We have audited the Massachusetts Institute of Technology and its subsidiaries' (the "Institute") compliance with the types of compliance requirements described in the *OMB Compliance Supplement* that could have a direct and material effect on each of the Institute's major federal programs for the year ended June 30, 2021. The Institute's major federal programs are identified in the summary of auditors' results section of the accompanying schedule of findings and questioned costs.

Management's Responsibility

Management is responsible for compliance with federal statutes, regulations and the terms and conditions of its federal awards applicable to its federal programs.

Auditors' Responsibility

Our responsibility is to express an opinion on compliance for each of the Institute's major federal programs based on our audit of the types of compliance requirements referred to above. We conducted our audit of compliance in accordance with auditing standards generally accepted in the United States of America; the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States; and the audit requirements of Title 2 U.S. *Code of Federal Regulations* Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (Uniform Guidance). Those standards and the Uniform Guidance require that we plan and perform the audit to obtain reasonable assurance about whether noncompliance with the types of compliance requirements referred to above that could have a direct and material effect on a major federal program occurred. An audit includes examining, on a test basis, evidence about the Institute's compliance with those requirements and performing such other procedures as we considered necessary in the circumstances.

We believe that our audit provides a reasonable basis for our opinion on compliance for each major federal program. However, our audit does not provide a legal determination of the Institute's compliance.

Opinion on Each Major Federal Program

In our opinion, the Massachusetts Institute of Technology and its subsidiaries complied, in all material respects, with the types of compliance requirements referred to above that could have a direct and material effect on each of its major federal programs for the year ended June 30, 2021.

Report on Internal Control Over Compliance

Management of the Institute is responsible for establishing and maintaining effective internal control over compliance with the types of compliance requirements referred to above. In planning and performing our audit of compliance, we considered the Institute's internal control over compliance with the types of

requirements that could have a direct and material effect on each major federal program to determine the auditing procedures that are appropriate in the circumstances for the purpose of expressing an opinion on compliance for each major federal program and to test and report on internal control over compliance in accordance with the Uniform Guidance, but not for the purpose of expressing an opinion on the effectiveness of internal control over compliance. Accordingly, we do not express an opinion on the effectiveness of the Institute's internal control over compliance.

A *deficiency in internal control over compliance* exists when the design or operation of a control over compliance does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, noncompliance with a type of compliance requirement of a federal program on a timely basis. A *material weakness in internal control over compliance* is a deficiency, or combination of deficiencies, in internal control over compliance, such that there is a reasonable possibility that material noncompliance with a type of compliance requirement of a federal program will not be prevented, or detected and corrected, on a timely basis. A *significant deficiency in internal control over compliance* is a deficiency, or a combination of deficiencies, in internal control over compliance with a type of compliance requirement of a federal program that is less severe than a material weakness in internal control over compliance, yet important enough to merit attention by those charged with governance.

Our consideration of internal control over compliance was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control over compliance that might be material weaknesses or significant deficiencies. We did not identify any deficiencies in internal control over compliance that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

The purpose of this report on internal control over compliance is solely to describe the scope of our testing of internal control over compliance and the results of that testing based on the requirements of the Uniform Guidance. Accordingly, this report is not suitable for any other purpose.

PricewaterhouseCoopers LLP

Boston, Massachusetts
March 23, 2022

Massachusetts Institute of Technology
Schedule of Findings and Questioned Costs
Year Ended June 30, 2021

Section I Summary of Auditors' Results

Financial Statements

Type of auditors' report issued	Unmodified opinion	
Internal control over financial reporting		
Material weakness(es) identified	___ Yes	_X_ No
Significant deficiency (ies) identified that are not considered to be material weaknesses	___ Yes	_X_ None Reported
Noncompliance material to financial statements noted?	___ Yes	_X_ No

Federal Awards

Internal control over major programs		
Material weakness (es) identified?	___ Yes	_X_ No
Significant deficiency (ies) identified that are not considered to be material weaknesses?	___ Yes	_X_ None Reported
Type of auditors' report issued on compliance for major programs	Unmodified	
Any audit findings disclosed that are required to be reported in accordance with 2 CFR 200.516(a)?	___ Yes	_X_ No

Identification of major programs

AL Number	**Name of Federal Program or Cluster**
Various	Research & Development Cluster
12.300	Virtual Manufacturing Lab (VM-Lab): A Multimedia Design House for Digital Learning in Manufacturing-USA Workforce Education and Competency, Community, Career: A technician apprenticeship certificate for advanced manufacturing

Dollar threshold used to distinguish between Type A and Type B programs	$4,897,967	
Auditee qualifies as a low-risk auditee?	_X_ Yes	___ No

Section II Financial Statement Findings

There are no matters to report.

Section III Federal Award Findings and Questioned Costs

There are no matters to report.

Massachusetts Institute of Technology
Summary Schedule of Prior Audit Findings and Status
Year Ended June 30, 2021

There are no findings from prior years that require an update in this report.