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, 2019

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, 2019

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SECTION I

FINANCIAL REPORTS

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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, 2019 and 2018, and the related consolidated statement of activities for the year ended June 30, 2019, and the statements of cash flows for the years ended June 30, 2019 and 2018, 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 financial position of the Massachusetts Institute of Technology and its subsidiaries as of June 30, 2019 and 2018 and the changes in their net assets for the year ended June 30, 2019 and their cash flows for the years ended June 30, 2019 and 2018 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 presents net assets and reports certain aspects of its consolidated financial statements as a not-for-profit entity in 2019. 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, 2018, 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 14, 2018, 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, 2018 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, 2019 is 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 is 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 is 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 September 13, 2019 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, 2019. 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
September 13, 2019

Massachusetts Institute of Technology

Consolidated Statements of Financial Position

as of June 30, 2019 and 2018

(in thousands of dollars)	2019	2018
Assets		
Cash	$ 405,678	$ 428,030
Accounts receivable, net	283,196	263,549
Pledges receivable, net, at fair value	583,383	560,142
Contracts in progress, principally US government	103,307	98,921
Deferred charges and other assets	201,131	184,767
Investments, at fair value	22,083,156	20,766,548
Net asset position - retiree welfare plan	97,716	124,686
Land, buildings, and equipment (at cost of $5,878,485 for June 2019; $5,409,653 for June 2018), net of accumulated depreciation	3,993,253	3,684,377
Total assets	**$ 27,750,820**	**$ 26,111,020**
Liabilities and Net Assets		
Liabilities:		
Accounts payable, accruals, and other liabilities	$ 596,255	$ 547,549
Deferred revenue and other credits	157,372	122,564
Advance payments	440,110	449,230
Liabilities due under life income fund agreements, at fair value	209,611	187,449
Borrowings, net of unamortized issuance costs	3,168,422	3,259,389
Net liability position - defined benefit pension plan	410,045	28,058
Total liabilities	**4,981,815**	**4,594,239**
Net Assets:		
Without donor restrictions	9,175,946	8,852,960
With donor restrictions	13,593,059	12,663,821
Total net assets	**22,769,005**	**21,516,781**
Total liabilities and net assets	**$ 27,750,820**	**$ 26,111,020**

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, 2019

(with summarized financial information for the year ended June 30, 2018)

(in thousands of dollars)	2019 Without Donor Restrictions	2019 With Donor Restrictions	Total 2019	Total 2018
Operating Revenues				
Tuition and similar revenues, exclusive of financial aid of $365,954 in 2019 and $347,039 in 2018	$ 383,736	$ -	$ 383,736	$ 353,721
Research revenues:				
Campus	728,153	-	728,153	672,162
Lincoln	1,059,384	-	1,059,384	981,292
SMART	45,300	-	45,300	42,183
Total research revenues	1,832,837	-	1,832,837	1,695,637
Contributions	386,433	19,105	405,538	344,008
Fees and services	216,619	-	216,619	212,666
Other programs	79,632	-	79,632	76,926
Support from investments:				
Endowment	699,333	-	699,333	663,203
Other investments	176,095	-	176,095	162,914
Total support from investments	875,428	-	875,428	826,117
Auxiliary enterprises	138,132	-	138,132	131,840
Total revenues	$ 3,912,817	$ 19,105	$ 3,931,922	$ 3,640,915
Operating Expenses				
Salaries and wages	$ 1,527,709	$ -	$ 1,527,709	$ 1,450,804
Employee benefits	516,790	-	516,790	499,216
Supplies and services	1,069,183	-	1,069,183	1,032,889
Subrecipient agreements	177,168	-	177,168	148,006
Utilities, rent, and repairs	229,755	-	229,755	217,497
Total expenses before depreciation and interest	3,520,605	-	3,520,605	3,348,412
Results of operations before depreciation and interest	392,212	19,105	411,317	292,503
Depreciation	198,242	-	198,242	178,630
Interest expense	125,492	-	125,492	120,749
Results of operations	68,478	19,105	87,583	(6,876)
Net periodic benefit (cost) income other than service cost	133,542	-	133,542	111,391
Net results	$ 202,020	$ 19,105	$ 221,125	$ 104,515
Other Revenues, Gains and Losses				
Contributions	$ -	$ 196,558	$ 196,558	$ 137,809
Net return on investments	1,058,134	912,758	1,970,892	2,503,435
Distribution of accumulated investment gains	(355,309)	(520,119)	(875,428)	(826,117)
Other changes	138,290	10,683	148,973	88,336
Postretirement plan changes other than net periodic benefit cost	(409,896)	-	(409,896)	383,745
Net asset reclassifications and transfers	(310,253)	310,253	-	-
Total other revenue, gains and losses	120,966	910,133	1,031,099	2,287,208
Increase in net assets	322,986	929,238	1,252,224	2,391,723
Net assets at the beginning of the year	8,852,960	12,663,821	21,516,781	19,125,058
Net assets at the end of the year	**$ 9,175,946**	**$ 13,593,059**	**$ 22,769,005**	**$ 21,516,781**

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, 2019 and 2018

(in thousands of dollars)	2019	2018
Cash Flow from Operating Activities		
Increase in net assets	$ 1,252,224	$ 2,391,723
Adjustments to reconcile change in net assets to net cash used in operating activities:		
Net gain on investments	(1,776,949)	(2,376,474)
Change in retirement plan asset, net of accrued benefit liability	408,956	(365,159)
Depreciation	198,242	178,630
Net gain on life income funds	(14,960)	(23,386)
Amortization of bond premiums and discounts and other adjustments	(17,508)	3,176
Change in operating assets and liabilities:		
Pledges receivable	(23,241)	(26,915)
Accounts receivable	(23,705)	(7,420)
Contracts in progress	(4,386)	(16,587)
Deferred charges and other assets	(13,635)	(14,241)
Accounts payable, accruals, and other liabilities, excluding building and equipment accruals	51,385	17,386
Liabilities due under life income fund agreements	40,090	49,138
Deferred revenue and other credits	34,470	13,796
Advance payments	(9,120)	22,668
Reclassify donated securities	(43,286)	(10,147)
Reclassify investment income	(4,404)	(3,835)
Reclassify contributions restricted for long-term investment	(185,885)	(195,538)
Net cash used in operating activities	(131,712)	(363,185)
Cash Flow from Investing Activities		
Purchase of land, buildings, and equipment	(495,164)	(486,413)
Purchases of investments	(8,220,554)	(32,952,998)
Proceeds from sale of investments	8,693,127	33,663,989
Student notes issued	(5,038)	(5,439)
Collections from student notes	10,478	11,694
Net cash (used in) provided by investing activities	(17,151)	230,833
Cash Flow from Financing Activities		
Contributions restricted for long-term investment	185,885	195,538
Payments to beneficiaries of life income funds	(17,928)	(16,159)
Proceeds from sale of donated securities restricted for endowment	43,286	10,147
Increase in investment income for restricted purposes	4,404	3,835
Repayment of borrowings	(89,474)	(26,500)
Increase (decrease) in government advances for student loans	338	(6,304)
Net cash provided by financing activities	126,511	160,557
Net (decrease) increase in cash	(22,352)	28,205
Cash at the beginning of the year	428,030	399,825
Cash at the end of the year	**$ 405,678**	**$ 428,030**

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, research, contributions (expendable gifts and pledge payments), fees and services, other programs, 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 all components of our annual retirement benefit costs 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 other than service costs, and results of operations before depreciation and interest, which is a valuable measure for the Institute as it eliminates the impacts of financing and capital development activities.

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.

On December 22, 2017, the Tax Cuts and Jobs Act (the "Act") was enacted. The Act impacts the Institute in several ways, including by imposing excise taxes on certain executive compensation and net investment income, and establishing new rules for calculating unrelated business taxable income. MIT has reflected the tax assets, liabilities, and payables in the financial statements based on reasonable estimates under the currently available regulatory guidance on the Act. The Institute continues to evaluate the impact of the Act on current and future tax positions.

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, 2019, there are no significant uncertain positions taken or expected to be taken, apart from those impacted by the Act.

Cash

Certain cash balances, totaling $70.4 million and $97.8 million as of June 30, 2019 and 2018, respectively, are restricted for use under certain sponsored research agreements or are held on behalf of a related party.

The Institute had approximately $393.5 million and $418.5 million as of June 30, 2019 and 2018, 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 $49.1 million and $46.2 million during 2019 and 2018, respectively. Land, buildings, and equipment as of June 30, 2019 and 2018 are shown in Table 1 below.

Table 1. Land, Buildings, and Equipment

(in thousands of dollars)	2019	2018
Land	$ 107,557	$ 107,557
Land improvements	84,374	73,815
Educational buildings	4,682,090	4,127,736
Equipment	377,377	306,364
Software	60,408	68,328
Total	5,311,806	4,683,800
Less: accumulated depreciation	(1,885,232)	(1,725,276)
Construction in progress	562,740	723,249
Software projects in progress	3,939	2,604
Net land, buildings, and equipment	**$ 3,993,253**	**$ 3,684,377**

Depreciation expense was $198.2 million in 2019 and $178.6 million in 2018. Net interest expense of $17.9 million and $22.1 million was capitalized during 2019 and 2018, 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)	2019	2018
Undergraduate and graduate programs*	$ 303,593	$ 291,044
Executive and continuing education programs	80,143	62,677
Tuition and similar revenues	**$ 383,736**	**$ 353,721**

** Undergraduate and graduate programs at published rates totaled $669,547 and $638,083 in 2019 and 2018, respectively, and financial aid applied to undergraduate and graduate programs was $365,954 and $347,039 in 2019 and 2018, 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. Tuition support from MIT sources is shown as tuition financial aid.

Table 3. Student Support

	2019			2018		
(in thousands of dollars)	Institute Sources	External Sponsors	Total Student Support	Institute Sources	External Sponsors	Total Student Support
Undergraduate tuition support	$ 128,365	$ 18,956	$ 147,321	$ 120,352	$ 17,584	$ 137,936
Graduate tuition support	237,589	63,437	301,026	226,687	61,747	288,434
Fellowship stipends	28,509	16,470	44,979	26,199	16,110	42,309
Student employment	48,978	83,322	132,300	46,329	79,555	125,884
Total	**$ 443,441**	**$ 182,185**	**$ 625,626**	**$ 419,567**	**$ 174,996**	**$ 594,563**

A. Accounting Policies (continued)

Research Revenues and Advance Payments

Direct and indirect categories of research revenues are shown in Table 4 below.

Table 4. Research Revenues

(in thousands of dollars)	2019	2018
Direct:		
Campus	$ 538,350	$ 510,254
Lincoln	1,017,344	947,295
SMART	44,980	41,988
Total direct	1,600,674	1,499,537
Total indirect	232,163	196,100
Total research revenues	**$ 1,832,837**	**$ 1,695,637**

Almost all of Lincoln and SMART research revenue, and a portion of campus research revenue, come from exchange contracts. Research 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 research revenue, and a portion of Lincoln and SMART research revenue, come from non-exchange contracts. Research revenue associated with non-exchange contracts is recognized as the qualified expenditures are incurred. Research activities at Lincoln, for which the contractual performance obligations have not yet been met, totaled $757.4 million as of June 30, 2019. Research activities on campus, which are contractually authorized by the sponsor, but for which costs have not yet been incurred, totaled $249.6 million as of June 30, 2019.

Advance payments are amounts received by MIT from the US government, corporations, industrial sources, foundations, and other non-MIT 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.

The capital costs of buildings and equipment are depreciated over their estimated life cycle, and the sponsored research recovery allowance for depreciation is treated as indirect research revenue. MIT has recorded reimbursement of indirect costs relating to sponsored research at negotiated fixed billing rates.

The revenue generated by the negotiated rates is adjusted each fiscal year to reflect any variance between the negotiated fixed rates and rates based on actual cost. 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 received. Gifts of securities are recorded at their fair value at the date of contribution. Donated securities received totaled $116.9 million and $66.8 million in 2019 and 2018, 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 $0.7 million in 2019 and $2.2 million in 2018. 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.

Fees and Services, Auxiliary Enterprises, and Other Programs

For the majority of the revenue streams included in fees and services and auxiliary enterprises, revenue is recognized over the period during which the services are provided. Other program revenue primarily consists of non-research sponsored activities. Other program revenue related to exchange contracts is recognized as MIT fulfills the terms of the agreements, which generally span less than five years, and other program revenue related to non-exchange contracts is recognized as the related costs are incurred. Non-research sponsored activities, for which the contractual performance obligations have not yet been met, totaled $81.8 million as of June 30, 2019.

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 on the Consolidated Statements of Financial Position. A rollforward of liabilities due under life income fund agreements is presented in Table 5 below.

Table 5. Liabilities Due Under Life Income Funds

(in thousands of dollars)	2019	2018
Balance at the beginning of the year	$ 187,449	$ 154,470
Addition for new gifts	19,785	28,768
Termination and payments to beneficiaries	(22,682)	(17,782)
Net investment and actuarial gain	25,059	21,993
Balance at end of the year	**$ 209,611**	**$ 187,449**

Recently Adopted Accounting Standards

On July 1, 2018, the Institute adopted ASU No. 2018-08 - *Not-for-Profit Entities* (Topic 958): *Clarifying the Scope and Accounting Guidance for Contributions Received and Contributions Made,* which amends the accounting guidance related to (1) evaluating whether transactions should be accounted for as contributions or exchange transactions, and (2) determining whether a contribution is conditional. The Institute has evaluated and applied the guidance on a modified prospective basis to the financial statements and added the required additional revenue disclosures. The adoption of this standard did not have a significant impact on the Institute's financial statements.

On July 1, 2018, the Institute adopted ASU No. 2014-09 - *Revenue from Contracts with Customers* (Topic 606), which outlines a single comprehensive standard for revenue recognition across all industries and supersedes most existing revenue recognition guidance. In addition, ASU 2014-09 requires new and enhanced disclosures. These changes do not have a material impact on MIT's financial statements and have been applied to the Institute's financial statements and footnotes on a modified retrospective basis.

On July 1, 2018, the Institute adopted ASU No. 2017-07 - *Compensation - Retirement Benefits* (Topic 715): *Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost.* This guidance requires the service cost component of net periodic benefit costs for pension and other postretirement benefits be presented as a component part of employee benefit expense. The other components of net periodic benefit costs, such as interest, expected return on plan assets, and amortization of net actuarial gains and losses, are required to be presented outside of operating activities. This change is reflected in the Institute's Statement of Activities and has been applied retrospectively.

On July 1, 2018, the Institute adopted ASU No. 2016-14 - *Not-for-Profit-Entities* (Topic 958): *Presentation of Financial Statements of Not-for-Profit-Entities.* This guidance is intended to improve the net asset classification requirements and the information presented in the financial statements and notes about a not-for-profit entity's liquidity, financial performance, and cash flows. Main provisions of this guidance include presentation of two classes of net assets versus the previously required three, and recognition of underwater endowment funds as a reduction in net assets with donor restrictions. The guidance also enhances disclosures for board-designated amounts, composition of net assets without donor restrictions, liquidity, and expenses by both their natural and functional classifications. These changes are reflected in the Institute's financial statement and footnotes and have been applied retrospectively, where applicable.

On July 1, 2018, the Institute adopted ASU 2018-13 - *Fair Value Measurement* (Topic 820): *Disclosure Framework - Changes to the Disclosure Requirements for Fair Value Measurement.* Following this new guidance, the Institute is no longer required to disclose the amount of and reasons for transfers between Level 1 and Level 2 of the fair value hierarchy. Additionally, the Institute has added to the disclosures in the Level 3 Valuation Techniques table to include the weighted average of the unobservable inputs presented therein. Lastly, for investments in certain entities that calculate net asset value, the requirement to disclose the estimated period of time over which the underlying assets might be liquidated is modified to only require disclosure if the investee has communicated the timing to the Institute or announced the timing publicly.

A. Accounting Policies (continued)

Non-Cash Items

Non-cash transactions excluded from the Consolidated Statements of Cash Flows include $34.9 million and $39.5 million of accrued liabilities related to plant and equipment purchases as of June 30, 2019 and 2018, 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, 2018, balances and amounts previously reported have been reclassified to conform to the June 30, 2019 presentation. While implementing the new accounting guidance, the Institute took the opportunity to reorganize and reclassify certain Statement of Activities and Statements of Financial Position line items in order to improve reporting. Where applicable, changes to financial reporting and presentation have been applied to the prior period comparatives shown throughout MIT's financial statements.

Subsequent Events

MIT has evaluated subsequent events through September 13, 2019, the date on which the financial statements were issued. There were no subsequent events that occurred after the balance sheet date that have a material impact on MIT's financial statements.

Summarized Information

The Consolidated Statement of Activities include 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, 2018, 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.

MIT values its investments at fair value on the Consolidated Statements of Financial Position in accordance with the principles of accounting standards that establish 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 cash equivalents 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.

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 and equity and industry risk premiums. 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, through some of its direct and indirect subsidiaries, 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 6. The liabilities associated with real estate investments were $606.3 million and $768.6 million in fiscal years 2019 and 2018, 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 6 are reflected in the Consolidated Statement of Activities. Cumulative unrealized gains related to Level 3 investments totaled $1,766.6 million and $1,812.1 million as of June 30, 2019 and 2018, 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 and real estate 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. MIT does have various sources of liquidity at its disposal. Refer to footnote E for further details.

B. Investments (continued)

Table 6 presents MIT's investments at fair value as of June 30, 2019 and 2018, respectively, grouped by the valuation hierarchy as defined earlier in this note.

Table 6. Investments

(in thousands of dollars)	Level 1	Level 2	Level 3	NAV	Total Fair Value
Fiscal Year 2019					
Cash and cash equivalents	$ 1,346,557	$ -	$ -	$ -	$ 1,346,557
US Treasury	1,303,772	-	-	-	1,303,772
US government agency	635	119,688	-	-	120,323
Domestic bonds	17,923	363,871	108,735	-	490,529
Foreign bonds	6,016	89,831	-	-	95,847
Common equity:					
Domestic	24,055	-	234,516	-	258,571
Foreign	361,095	-	-	-	361,095
Equity:**					
Absolute return	-	-	-	2,777,992	2,777,992
Domestic	-	-	-	2,184,287	2,184,287
Foreign	-	-	-	4,423,446	4,423,446
Private	-	-	-	4,973,152	4,973,152
Real estate*	39,903	-	2,377,201	850,402	3,267,506
Real assets**	-	-	384	315,515	315,899
Split-interest agreements	-	-	159,098	-	159,098
Other	26	-	2,923	-	2,949
Derivatives	(274)	2,407	-	-	2,133
Investments, at fair value	**$ 3,099,708**	**$ 575,797**	**$ 2,882,857**	**$ 15,524,794**	**$ 22,083,156**
Fiscal Year 2018					
Cash and cash equivalents	$ 1,354,618	$ -	$ -	$ -	$ 1,354,618
US Treasury	1,159,001	-	-	-	1,159,001
US government agency	554	68,332	-	-	68,886
Domestic bonds	19,612	795,566	104,896	-	920,074
Foreign bonds	2,106	95,154	-	-	97,260
Common equity:					
Domestic	53,262	-	202,840	-	256,102
Foreign	170,023	215	-	-	170,238
Equity:**	-	-	-	-	-
Absolute return	-	-	-	1,948,154	1,948,154
Domestic	-	-	-	2,335,421	2,335,421
Foreign	-	-	-	4,426,017	4,426,017
Private	-	-	-	4,020,787	4,020,787
Real estate*	49,308	-	2,385,683	729,463	3,164,454
Real assets**	-	-	184	687,581	687,765
Split-interest agreements	-	-	156,494	-	156,494
Other	-	200	4,216	-	4,416
Derivatives	(193)	(2,946)	-	-	(3,139)
Investments, at fair value	**$ 2,808,291**	**$ 956,521**	**$ 2,854,313**	**$ 14,147,423**	**$ 20,766,548**

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

*** Include commingled vehicles that invest in these types of investments.*

B. Investments (continued)

Table 7 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, 2019 and 2018.

Table 7. Rollforward of Level 3 Investments

(in thousands of dollars)	Fair Value Beginning	Realized Gains (Losses)	Unrealized Gains (Losses)	Purchases	Sales	Other Changes and Transfers	Fair Value Ending
Fiscal Year 2019							
Domestic bonds	$ 104,896	$ -	$ -	$ 12,929	$ (9,090)	$ -	$ 108,735
Common equity:							
Domestic	202,840	2,366	3,273	27,131	(2,371)	1,277	234,516
Real estate	2,385,683	697,689	(23,269)	759,841	(1,442,262)	(481)	2,377,201
Real assets	184	-	-	200	-	-	384
Split-interest agreements	156,494	(160)	2,407	11	(107)	453	159,098
Other	4,216	(71)	72	-	(1)	(1,293)	2,923
Investments, at fair value	**$ 2,854,313**	**$ 699,824**	**$ (17,517)**	**$ 800,112**	**$ (1,453,831)**	**$ (44)**	**$ 2,882,857**
Fiscal Year 2018							
Domestic bonds	$ 97,554	$ -	$ -	$ 15,123	$ (7,781)	$ -	$ 104,896
Common equity:							
Domestic	199,643	7,525	3,008	6,127	(13,463)	-	202,840
Real estate	2,094,523	179,169	122,784	182,674	(193,467)	-	2,385,683
Real assets	205	-	(21)	-	-	-	184
Split-interest agreements	142,499	169	14,391	163	(728)	-	156,494
Other	3,881	-	(76)	772	(361)	-	4,216
Investments, at fair value	**$ 2,538,305**	**$ 186,863**	**$ 140,086**	**$ 204,859**	**$ (215,800)**	**$ -**	**$ 2,854,313**

Table 8 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, 2019 and 2018.

Table 8. Level 3 Valuation Techniques

(in thousands of dollars)	Fair Value as of June 30, 2019	Fair Value as of June 30, 2018	Valuation Technique	Unobservable Input	2019 Rates	2019 Weighted Average	2018 Rates
Real estate	$ 2,377,201	$ 2,385,683	Discounted cash flow	Discount rate	4.75-8.5%	6.75%	5.0-8.0%
			Capitalization rate	Capitalization rate	4.25-7.0%	5.31%	4.5-7.3%
Equity securities	191,766	183,169	Discounted cash flow	Discount rate	12.5%	12.5%	12.5%
Split-interest agreements	159,098	119,260	Net present value	Discount rate	3.1%	3.1%	3.7%
Real assets	384	184	Discounted cash flow	Discount rate	25.0%	25.0%	25.0%
Other illiquid assets	2,923	650	Varies	Varies	Varies	Varies	Varies
Total assets	**$ 2,731,372**	**$ 2,688,946**					

Certain Level 3 assets totaling $151,485 and $165,367 as of June 30, 2019 and June 30, 2018, respectively, have been valued using unadjusted third party quotations or recent transactions and thus have been excluded from this table.

B. Investments (continued)

Details on the restrictions by asset class and by type of investments, unfunded commitments, and current redemption terms are provided in Table 9 below.

Table 9. Unfunded Commitments

	2019		2018			
(in thousands of dollars)	Unfunded Commitments	Fair Value	Unfunded Commitments	Fair Value	Redemption Terms	Redemption Restrictions
Equity:						
Absolute return[1]	$ 100,834	$ 2,777,992	$ 209,572	$ 1,948,154	Ranges from 45 days to 27 months[4]	30 to 365 days
Domestic[2]	23,152	2,184,287	6,173	2,335,421	Ranges from 1 month to 25 months[4]	15 to 120 days
Foreign[3]	51,675	4,423,446	20,000	4,426,017	Ranges from daily to 38 months[4]	10 to 180 days
Private	2,060,191	4,973,152	1,658,030	4,020,787	Closed-end funds not available for redemption	Not Applicable
Real estate	570,559	850,402	605,483	729,463	Closed-end funds not available for redemption	Not Applicable
Real assets	94,787	315,515	133,174	687,581	Ranges from 1 month to 8 months[4]	7 to 45 days
Total	**$ 2,901,198**	**$ 15,524,794**	**$ 2,632,432**	**$ 14,147,423**		

[1]Absolute return funds include funds that have lock-up provisions up to 24 months and ones that are not available for redemption.
[2]Domestic funds include funds that have lock-up provisions up to 5 years and two funds that are not available for redemption.
[3]Foreign funds include funds that have lock-up provisions up to 5 years.
[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 futures, total return and credit default swaps, and interest rate cap and swaption agreements. The futures are exchange-traded, and the swap, swaptions, and cap agreements are executed over the counter.

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, 2019, 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 10 summarizes the notional exposure and net ending fair value relative to the financial instruments with off-balance sheet risk as of June 30, 2019 and 2018 related to MIT's investment management.

Table 10. Derivative Financial Instruments

(in thousands of dollars)	Notional Exposure Long	Notional Exposure Short	Net Ending Fair Value *	Net Gain (Loss)**
Fiscal Year 2019				
Fixed income instruments:				
Fixed income futures	$ 19,400	$ (10,400)	$ (274)	$ (1,021)
Options on interest rate exchange agreements	839,000	-	26	(1,061)
Equity options	-	-	-	-
Total fixed income instruments	858,400	(10,400)	(248)	(2,082)
Currency and index instruments:				
Equity index swaps	-	-	-	10,366
Index options	299	-	3,010	(343)
Total currency and index instruments	299	-	3,010	10,023
Credit instruments	-	(31,130)	(629)	(276)
2019 Total	**$ 858,699**	**$ (41,530)**	**$ 2,133**	**$ 7,665**
Fiscal Year 2018				
Fixed income instruments:				
Fixed income futures	$ 4,000	$ (29,200)	$ (193)	$ -
Options on interest rate exchange agreements	949,000	-	1,086	(730)
Equity options	134	-	-	(11)
Total fixed income instruments	953,134	(29,200)	893	(741)
Currency and index instruments:				
Equity index swaps	-	(194,583)	(7,293)	14,642
Index options	95,000	-	3,353	(210)
Total currency and index instruments	95,000	(194,583)	(3,940)	14,432
Credit instruments	-	(12,750)	(92)	(332)
2018 Total	**$ 1,048,134**	**$ (236,533)**	**$ (3,139)**	**$ 13,359**

** 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 the other revenue, gain and losses section as net return on investments in the Consolidated Statement of Activities.*

C. Derivative Financial Instruments and Collateral (continued)

Table 11 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, 2019 and 2018.

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 11. Credit Derivative Instruments

	Purchased Protection		
(in thousands of dollars)	Purchased Notional Amounts	Purchased Fair Value*	< 5 Years to Maturity
Fiscal Year 2019			
Credit rating on underlying or index:			
A- to AAA	$ 8,018	$ (226)	$ 8,018
BBB- to BBB+	23,112	(403)	23,112
Non-rated	-	-	-
2019 Total	**$ 31,130**	**$ (629)**	**$ 31,130**
Fiscal Year 2018			
Credit rating on underlying or index:			
A- to AAA	$ 2,250	$ (49)	$ 2,250
BBB- to BBB+	5,500	(2)	5,500
Non-rated	5,000	(41)	5,000
2018 Total	**$ 12,750**	**$ (92)**	**$ 12,750**

** The fair value of all credit derivative 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 12 and 13 below summarize the effect that the offsetting of recognized assets and liabilities could have in the Consolidated Statements of Financial Position.

Table 12. Offsetting of Financial and Derivative Assets and Liabilities

	2019			2018		
(in thousands of dollars)	Gross Amount	Cash/Treasury Collateral Posted/ (Received)	Net Amount	Gross Amount	Cash/Treasury Collateral Posted/ (Received)	Net Amount
Assets						
Derivatives	$ 3,089	$ (3,344)	$ (255)	$ 3,744	$ (2,716)	$ 1,028
Repurchase Agreements	201,176	(206,468)	(5,292)	135,369	(139,165)	(3,796)
Total assets	204,265	(209,812)	(5,547)	139,113	(141,881)	(2,768)
Liabilities						
Derivatives	(682)	420	(262)	(6,690)	956	(5,734)
Total liabilities	(682)	420	(262)	(6,690)	956	(5,734)
Total assets and liabilities, net	**$ 203,583**	**$ (209,392)**	**$ (5,809)**	**$ 132,423**	**$ (140,925)**	**$ (8,502)**

Table 13 below reconciles the net recognized assets and liabilities, as shown in Table 12, to derivative financial instruments as shown in Table 6.

Table 13. Reconciliation of Financial and Derivative Assets and Liabilities

(in thousands of dollars)	2019	2018
Derivatives from Table 6	$ 2,133	$ (3,139)
Repurchase agreements	201,176	135,369
Fixed income futures	274	193
Total	**$ 203,583**	**$ 132,423**

D. Pledges Receivable

Table 14 below shows the time periods in which pledges receivable as of June 30, 2019 and 2018 are expected to be realized.

Table 14. Pledges Receivable

(in thousands of dollars)	2019	2018
In one year or less	$ 304,760	$ 276,883
Between one year and five years	259,400	264,333
More than five years	83,790	80,931
Less: allowance for unfulfilled pledges	(64,567)	(62,005)
Pledges receivable, net	**$ 583,383**	**$ 560,142**

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 $60.3 million and $80.7 million in 2019 and 2018, respectively. The pledge discount rate ranges from fiscal year 2020 at 2.1 percent to fiscal year 2045 at 3.2 percent. MIT has gross conditional pledges, not recorded, for the promotion of education and research of $390.8 million and $86.2 million in 2019 and 2018, respectively. Conditional pledges are categorized as follows: fundraising challenge, building construction progress, foundation grants, and other. As of June 30, 2019, conditional pledge amounts are broken out as follows: fundraising challenge of $207.0 million, building construction progress of $141.1 million, foundation grants of $32.5 million, and other of $10.2 million. As of June 30, 2018, conditional pledge amounts are broken out as follows: fundraising challenge of $7.3 million, building construction progress of $41.5 million, foundation grants of $37.2 million, and other of $0.2 million.

Table 15 below is a rollforward of the pledges receivable as of June 30, 2019 and 2018.

Table 15. Rollforward of Pledges Receivable

(in thousands of dollars)	2019	2018
Balance at beginning of the year	$ 560,142	$ 533,227
New pledges	192,342	206,146
Pledge payments received	(186,960)	(160,213)
Change in pledge discount	20,420	(16,023)
Change in reserve for unfulfilled pledges	(2,561)	(2,995)
Balance at the end of the year	**$ 583,383**	**$ 560,142**

E. Liquidity

Table 16 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 16. Liquidity and Availability of Resources

(in thousands of dollars)		2019
Financial assets:		
Cash and liquid operating investments	$	1,369,292
Accounts and notes receivable		256,773
Contributions receivable		196,310
Investments appropriated for spending in following year		804,041
Total liquidity resources available within one year	**$**	**2,626,416**

As part of 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 operating liquidity, 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 was undrawn as of June 30, 2019.

F. Net Borrowings

MIT's outstanding borrowings as of June 30, 2019 and 2018, are shown in Table 17 below.

Table 17. Net Borrowings

(in thousands of dollars / due dates are calendar based / par values as of 2019)	2019	2018
Educational plant		
Massachusetts Development Finance Agency (MassDevelopment)		
Series I, 5.20%, due 2028, par value $30,000	$ 30,490	$ 30,548
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	183,905	184,512
Series L, 5.0%-5.25%, due 2023-2033, par value $115,670	121,686	148,200
Series M, 5.25%, due 2019-2030, par value $102,325	107,181	108,041
Total MassDevelopment	693,262	721,301
Medium Term Notes Series A, 7.125% due 2026, par value $17,415	17,386	17,382
Medium Term Notes Series A, 7.25%, due 2096, par value $45,604	45,468	45,463
Taxable Bonds, Series B, 5.60%, due 2111, par value $750,000*	747,145	747,113
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 2019-2038, par value $522,410	522,410	522,410
Taxable Bonds, Series E, 3.885%, due 2116, par value $500,000*	500,000	500,000
Notes payable to bank, variable rate, due 2020	113,034	113,034
Total Taxable	2,495,443	2,495,402
Total educational plant	3,188,705	3,216,703
Other		
Notes payable to bank, variable rate, due 2020	-	63,476
Total borrowings	3,188,705	3,280,179
Unamortized bond issuance costs	(20,283)	(20,790)
Total borrowings net of unamortized debt issuance cost	**$ 3,168,422**	**$ 3,259,389**

** The proceeds of Taxable Bonds, Series B, C, and E were in the process of being invested in physical assets in 2018 and 2019 with unused balances held as investments.*

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 18 below.

Table 18. Debt Principal Obligations

(in thousands of dollars)

2020	$ 77,030
2021	11,180
2022	11,765
2023	55,500
2024	51,455

MIT maintains a line of credit with a major financial institution for an aggregate commitment of $500.0 million. As of June 30, 2019, $387.0 million was available under this line of credit (see "Notes payable" on Table 17). The line of credit expires on March 31, 2020.

Cash paid for interest on long-term debt in 2019 and 2018 was $147.8 million and $146.8 million, respectively.

Variable interest rates as of June 30, 2019, are shown in Table 19 below.

Table 19. Variable Interest Rates

(in thousands of dollars)	Amount	Rate
MassDevelopment Series J-1	$ 125,000	1.85%
MassDevelopment Series J-2	125,000	1.70%
Notes payable to bank	113,034	2.90%

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.

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 19 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, 2019, the swap agreement had a fair value of ($48.8) million and as of June 30, 2018, had a fair value of ($38.0) million. This swap had a total net loss for 2019 of $10.8 million and a total net gain of $9.1 million for 2018. The notional amount of this derivative is not recorded on MIT's Consolidated Statements of Financial Position.

G. Commitments and Contingencies

Federal Government Funding

MIT receives funding or reimbursement from federal 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), MIT's cognizant federal agency. MIT's indirect cost reimbursements are based on fixed rates with carryforward of under- or over-recoveries. As of June 30, 2019 and 2018, MIT recorded a net over-recovery of $41.2 million for both years.

The DCAA is responsible for auditing indirect charges to grants and contracts in support of ONR's negotiating responsibility. The Institute has had its rates audited by DCAA through 2015, but we have not negotiated final rates for any years after 2012. MIT's 2019 research revenues of $1,832.8 million include reimbursement of indirect costs of $232.2 million. In 2018, research revenues were $1,695.6 million, which included reimbursement of indirect costs of $196.1 million. Both years include adjustments for the variance between the indirect cost income determined by the fixed rates and actual costs.

Leases

As of June 30, 2019, there were no capital lease obligations. MIT has commitments under certain operating (rental) leases. Rent expense incurred under operating lease obligations was $43.9 million and $47.5 million in 2019 and 2018, respectively. Future minimum payments under operating leases are shown in Table 20 below.

Table 20. Lease Obligations

(in thousands of dollars)

2020	$ 42,155
2021	42,507
2022	39,414
2023	40,090
2024	37,251

Investments

As of June 30, 2019, $12.0 million of investments were pledged as collateral to various suppliers and government agencies.

Future Construction

As of June 30, 2019, MIT had contractual obligations of approximately $368.5 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. As of June 30, 2019, these commitments included approximately $301.6 million of contractual obligations related to the Kendall Square Initiative. 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 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.

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 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 2019				
Compensation	$ 472,471	$ 569,190	$ 869,296	$ 1,910,957
Other operating	137,741	447,433	661,177	1,246,351
Space related	158,830	191,753	202,906	553,489
Total expenses	**$ 769,042**	**$ 1,208,376**	**$ 1,733,379**	**$ 3,710,797**
Fiscal Year 2018				
Total expenses	**$ 983,807**	**$ 1,029,050**	**$ 1,523,543**	**$ 3,536,400**

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 2019 and 2018. MIT designated contributions of $0.7 million and $6.5 million to the retiree welfare benefit plan in 2019 and 2018, respectively.

For the defined contribution plan, the amount contributed and expenses recognized during 2019 and 2018 were $64.0 million and $60.7 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, 2019 and 2018.

Table 22. Components of Net Periodic Benefit Cost

	Defined Benefit Pension Plan		Retiree Welfare Benefit Plan	
(in thousands of dollars)	2019	2018	2019	2018
Components of net periodic benefit cost recognized in net results:				
Service cost	$ 106,779	$ 109,366	$ 26,491	$ 27,153
Interest cost	173,331	162,917	25,761	24,205
Expected return on plan assets	(285,552)	(277,597)	(47,783)	(41,010)
Amortization of net actuarial loss (gain)	4,237	23,610	(1,000)	(1,000)
Amortization of prior service cost (credit)	265	285	(2,801)	(2,801)
Net periodic benefit cost recognized in net results	(940)	18,581	668	6,547
Other amounts recognized in other revenues, gains and losses:				
Current year actuarial loss (gain)	387,429	(288,146)	23,168	(75,505)
Amortization of actuarial (loss) gain	(4,237)	(23,610)	1,000	1,000
Amortization of prior service (cost) credit	(265)	(285)	2,801	2,801
Total other amounts recognized in other revenues, gains and losses	382,927	(312,041)	26,969	(71,704)
Total recognized	**$ 381,987**	**$ (293,460)**	**$ 27,637**	**$ (65,157)**

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 $30.3 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 $1.0 million and $2.2 million, respectively.

Cumulative amounts recognized in net assets without donor restrictions are summarized in Table 23 below for the years ended June 30, 2019 and 2018.

Table 23. Cumulative Amounts Recognized in Net Assets Without Donor Restriction

	Defined Benefit Pension Plan		Retiree Welfare Benefit Plan	
(in thousands of dollars)	2019	2018	2019	2018
Amounts recognized in net assets without donor restrictions consist of:				
Net actuarial loss (gain)	$ 682,445	$ 299,253	$ (95,102)	$ (119,271)
Prior service cost (credit)	2,583	2,848	(2,212)	(5,012)
Total cumulative amounts recognized in net assets without donor restrictions	**$ 685,028**	**$ 302,101**	**$ (97,314)**	**$ (124,283)**

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 $4,468.3 million as of 2019, up $537.1 million from a year earlier. 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 $4,268.3 million and $3,766.6 million as of June 30, 2019 and 2018, 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)	2019	2018	2019	2018
Change in projected benefit obligations:				
Projected benefit obligations at beginning of year	$ 3,931,212	$ 3,921,738	$ 566,642	$ 570,512
Service cost	106,779	109,366	26,491	27,153
Interest cost	173,332	162,917	25,762	24,205
Retiree contributions	-	-	7,443	6,858
Net benefit payments, transfers, and other expenses	(153,584)	(150,456)	(36,127)	(31,223)
Employer Group Waiver Plan (EGWP) reimbursement	-	-	5,057	6,094
Assumption changes and actuarial net loss (gain)	410,524	(112,353)	18,173	(36,957)
Projected benefit obligations at end of the year	4,468,263	3,931,212	613,441	566,642
Change in plan assets:				
Fair value of plan assets at beginning of the year	3,903,154	3,600,221	691,328	623,498
Actual return on plan assets	308,648	453,389	42,788	79,558
Employer contributions	-	-	668	6,543
Employer Group Waiver Plan (EGWP) reimbursement	-	-	5,057	6,094
Retiree contributions	-	-	7,443	6,858
Net benefit payments, transfers, and other expenses	(153,584)	(150,456)	(36,127)	(31,223)
Fair value of plan assets at end of the year	4,058,218	3,903,154	711,157	691,328
(Unfunded) funded status at end of the year	**(410,045)**	**(28,058)**	**97,716**	**124,686**
Amounts recognized in the Consolidated Statements of Financial Position consist of:				
Net (liabilities) assets	**$ (410,045)**	**$ (28,058)**	**$ 97,716**	**$ 124,686**

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)	2019	2018	2019	2018
Assumptions used to determine benefit obligation as of June 30:				
Discount rate	3.77%	4.38%	3.85%	4.44%
Rate of compensation increase*	4.00%	4.00%		
Assumptions used to determine net periodic benefit cost for the year ended June 30:				
Discount rate	4.38%	4.12%	4.44%	4.14%
Expected long-term return on plan assets	7.75%	8.00%	7.50%	7.00%
Rate of compensation increase*	4.00%	4.00%		
Assumed health care cost trend rates:				
Healthcare cost trend rate assumed for next year			5.00%	5.00%
Rate to which the cost trend rate is assumed to decline (the ultimate trend rate)			4.75%	4.75%
Year the rate reaches the ultimate trend rate			2021	2021

** The average rate of salary increase is assumed to be 4.00% for 2020, and thereafter.*

As an indicator of sensitivity, a one percentage point change in the assumed healthcare cost trend rate would affect 2019'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 2019 postretirement service and interest cost	$ 9,547	$ (7,563)
Effect on postretirement benefit obligation as of June 30, 2019	92,561	(75,682)

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 plan net assets/(liabilities) as of June 30, 2019 and 2018, 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 2019					
Cash and cash equivalents	$ 93,000	$ -	$ -	$ -	$ 93,000
US Treasury	329,996	-	-	-	329,996
US government agency	-	40,136	-	-	40,136
Domestic bonds	-	-	-	-	-
Common equity:					
Domestic	11,188	-	74	-	11,262
Foreign	62,546	-	-	-	62,546
Equity:*					
Absolute return	-	-	-	582,438	582,438
Domestic	-	-	-	447,243	447,243
Foreign	-	-	-	1,087,958	1,087,958
Private	-	-	-	1,093,149	1,093,149
Real estate*	12,957	-	-	220,185	233,142
Real assets*	-	-	-	70,126	70,126
Other	-	-	419	-	419
Derivatives	(101)	955	-	-	854
Total plan investments	**$ 509,586**	**$ 41,091**	**$ 493**	**$ 3,501,099**	**$ 4,052,269**
Fiscal Year 2018					
Cash and cash equivalents	$ 164,469	$ -	$ -	$ -	$ 164,469
US Treasury	356,637	-	-	-	356,637
US government agency	-	4,777	-	-	4,777
Domestic bonds	-	45,059	-	-	45,059
Common equity:					
Domestic	842	-	74	-	916
Foreign	18,374	-	-	-	18,374
Equity:*					
Absolute return	-	-	-	417,100	417,100
Domestic	-	-	-	562,843	562,843
Foreign	-	-	-	1,113,636	1,113,636
Private	-	-	-	885,679	885,679
Real estate*	16,016	-	-	213,012	229,028
Real assets*	-	-	-	95,182	95,182
Other	-	-	433	-	433
Derivatives	(90)	817	-	-	727
Total plan investments	**$ 556,248**	**$ 50,653**	**$ 507**	**$ 3,287,452**	**$ 3,894,860**

** 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 2019					
Cash and cash equivalents	$ 22,770	$ -	$ -	$ -	$ 22,770
US Treasury	75,768	-	-	-	75,768
US government agency	-	9,753	-	-	9,753
Domestic bonds	-	-	-	-	-
Common equity:					
Domestic	1,882	-	-	-	1,882
Foreign	10,507	-	-	-	10,507
Equity:*					
Absolute return	-	-	-	98,857	98,857
Domestic	-	-	-	89,602	89,602
Foreign	-	-	-	225,405	225,405
Private	-	-	-	139,971	139,971
Real estate*	1,306	-	-	26,881	28,187
Real assets*	-	-	-	7,778	7,778
Derivatives	(25)	161	-	-	136
Total plan investments	**$ 112,208**	**$ 9,914**	**$ -**	**$ 588,494**	**$ 710,616**
Fiscal Year 2018					
Cash and cash equivalents	$ 47,225	$ -	$ -	$ -	$ 47,225
Domestic bonds	-	76,615	-	-	76,615
Common equity:					
Domestic	142	-	-	-	142
Foreign	3,017	-	-	-	3,017
Equity:*					
Absolute return	-	-	-	61,430	61,430
Domestic	-	-	-	103,724	103,724
Foreign	-	-	-	255,605	255,605
Private	-	-	-	104,799	104,799
Real estate*	1,615	-	-	23,377	24,992
Real assets*	-	-	-	9,635	9,635
Derivatives	-	206	-	-	206
Total plan investments	**$ 51,999**	**$ 76,821**	**$ -**	**$ 558,570**	**$ 687,390**

** 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 investments in various long-lived partnerships, 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 estimated remaining term 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, 2019 and 2018.

Table 28. Unfunded Commitments

	2019		2018			
(in thousands of dollars)	Unfunded Commitments	Fair Value	Unfunded Commitments	Fair Value	Redemption Terms	Redemption Restrictions
Defined Benefit Pension Plan						
Equity:						
Absolute return[1]	$ 29,770	$ 582,438	$ 47,844	$ 417,100	Ranges from 4 months to 27 months[4]	45 to 365 days
Domestic[2]	398	447,243	403	562,843	Ranges from 4 months to 26 months[4]	30 to 90 days
Foreign[3]	37,612	1,087,958	41,705	1,113,636	Ranges from 2 months to 5 years	10 to 91 days
Private	382,755	1,093,149	323,032	885,679	Closed-end funds not available for redemption	Not Applicable
Real estate	142,042	220,185	158,085	213,012	Closed-end funds not available for redemption	Not Applicable
Real assets	22,196	70,126	31,118	95,182	8 months[4]	45 days
Total	**$ 614,773**	**$ 3,501,099**	**$ 602,187**	**$ 3,287,452**		
Retiree Welfare Benefit Plan						
Equity:						
Absolute return[1]	$ 3,962	$ 98,857	$ 6,052	$ 61,430	Ranges from 4 months to 27 months[4]	45 to 365 days
Domestic[2]	44	89,602	45	103,724	Ranges from 4 months to 26 months[4]	30 to 90 days
Foreign[3]	5,688	225,405	6,295	255,605	Ranges from 2 months to 5 years	10 to 91 days
Private	63,518	139,971	50,681	104,799	Closed-end funds not available for redemption	Not Applicable
Real estate	20,345	26,881	22,747	23,377	Closed-end funds not available for redemption	Not Applicable
Real assets	3,667	7,778	5,131	9,635	Closed-end funds not available for redemption	Not Applicable
Total	**$ 97,224**	**$ 588,494**	**$ 90,951**	**$ 558,570**		

[1]Absolute return funds include funds that have lock-up provisions up to 24 months and ones that are not available for redemption.
[2]Domestic funds include funds that have lock-up provisions up to five years and two funds that are not available for redemption.
[3]Foreign funds include funds that have lock-up provisions up to 38 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, 2019 and 2018 are shown in Table 29 below.

Table 29. Plan Investment Allocation

	Defined Benefit Pension Plan			Retiree Welfare Benefit Plan		
	2019 Target Allocation	2019	2018	2019 Target Allocation	2019	2018
Cash and cash equivalents	0-15%	2%	4%	0-15%	3%	7%
Fixed income	3-13%	9%	11%	10-20%	12%	11%
Equities	36-86%	67%	66%	37-87%	66%	68%
Marketable alternatives	7.5-17.5%	14%	11%	9.5-19.5%	14%	9%
Real assets	1-11%	2%	2%	0-5.5%	1%	1%
Real estate	2.5-12.5%	6%	6%	0-8%	4%	4%
Total		**100%**	**100%**		**100%**	**100%**

Expected Future Benefit Payments

In fiscal 2020, MIT expects to contribute $24.7 million to its defined benefit pension plan and $1.5 million 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 has elected to adopt mortality tables recently issued by the Society of Actuaries (SOA). Specifically, MIT has selected the employee and retiree Pri-2012 mortality tables outlined in the SOA's May 2019 Exposure Draft report. Mortality rates are projected generationally from the base year of 2012 using Scale MP-2018.

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, 2019.

Table 30. Expected Future Benefit Payments

(in thousands of dollars)	Pension Benefits	Other Benefits*
2020	$ 165,809	$ 25,541
2021	178,334	28,605
2022	184,600	30,361
2023	190,991	31,836
2024	197,827	33,260
2025-2029	1,095,507	188,669

** Other Benefits reflects 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, 2019 and June 30, 2018, respectively. The amounts listed in the without donor restriction category under endowment funds 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. 2019 Total Net Asset Composition

(in thousands of dollars)	Without Donor Restriction	With Donor Restriction	Total
Endowment Funds			
General purpose	$ 1,080,333	$ 1,659,769	$ 2,740,102
Departments and research	887,685	2,399,708	3,287,393
Library	14,348	59,746	74,094
Salaries and wages	677,594	4,170,306	4,847,900
Graduate general	106,312	286,439	392,751
Graduate departments	204,562	875,364	1,079,926
Undergraduate	283,109	1,861,021	2,144,130
Prizes	10,388	64,775	75,163
Miscellaneous	1,330,006	1,024,265	2,354,271
Investment income held for distribution	448,020	-	448,020
Endowment funds before pledges	5,042,357	12,401,393	17,443,750
Pledges	-	125,578	125,578
Total endowment funds	5,042,357	12,526,971	17,569,328
Other Invested Funds			
Student loan funds	19,018	18,650	37,668
Building funds	201,860	80,530	282,390
Designated purposes:			
Departments and research	423,830	-	423,830
Other purposes	217,280	18,064	235,344
Life income funds and donor advised funds	22,764	185,135	207,899
Pledges	-	457,805	457,805
Other funds available for current expenses	2,539,706	305,904	2,845,610
Funds expended for educational plant	709,131	-	709,131
Total other invested funds	4,133,589	1,066,088	5,199,677
Total net assets	**$ 9,175,946**	**$ 13,593,059**	**$ 22,769,005**

J. Components of Net Assets and Endowment (continued)

Table 31B. 2018 Total Net Asset Composition

(in thousands of dollars)	Without Donor Restriction	With Donor Restriction	Total
Endowment Funds			
General purpose	$ 1,060,947	$ 1,587,512	$ 2,648,459
Departments and research	733,963	2,245,993	2,979,956
Library	13,767	56,759	70,526
Salaries and wages	638,694	3,968,477	4,607,171
Graduate general	102,010	273,574	375,584
Graduate departments	181,410	808,932	990,342
Undergraduate	262,909	1,766,067	2,028,976
Prizes	9,963	61,043	71,006
Miscellaneous	1,372,794	825,321	2,198,115
Investment income held for distribution	429,892	-	429,892
Endowment funds before pledges	4,806,349	11,593,678	16,400,027
Pledges	-	129,405	129,405
Total endowment funds	4,806,349	11,723,083	16,529,432
Other Invested Funds			
Student loan funds	19,403	18,940	38,343
Building funds	80,564	58,934	139,498
Designated purposes:			
Departments and research	401,794	-	401,794
Other purposes	353,171	13,953	367,124
Life income funds and donor advised funds	9,919	172,893	182,812
Pledges	-	430,737	430,737
Other funds available for current expenses	2,427,578	245,281	2,672,859
Funds expended for educational plant	754,182	-	754,182
Total other invested funds	4,046,611	940,738	4,987,349
Total net assets	**$ 8,852,960**	**$ 12,663,821**	**$ 21,516,781**

MIT's endowment consists of approximately 4,200 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 net assets without and with donor restrictions as of June 30, 2019 and 2018, respectively.

Table 32. Changes in Endowment Net Assets

(in thousands of dollars)	Without Donor Restriction	With Donor Restriction	Total
Fiscal Year 2019			
Endowment net assets, July 1, 2018	$ 4,806,349	$ 11,723,083	$ 16,529,432
Investment return:			
Investment income	47,543	117,736	165,279
Net appreciation (realized and unrealized)	376,590	876,100	1,252,690
Total investment return	424,133	993,836	1,417,969
Contributions	-	177,015	177,015
Appropriation of endowment assets for expenditure	(208,439)	(490,894)	(699,333)
Other changes:			
Net asset reclassifications and transfers to create board-designated endowment funds	20,314	123,931	144,245
Endowment net assets, June 30, 2019	**$ 5,042,357**	**$ 12,526,971**	**$ 17,569,328**
Fiscal Year 2018			
Endowment net assets, July 1, 2017	$ 4,355,449	$ 10,612,534	$ 14,967,983
Investment return:			
Investment income	18,829	53,815	72,644
Net appreciation (realized and unrealized)	599,861	1,414,589	2,014,450
Total investment return	618,690	1,468,404	2,087,094
Contributions	-	120,410	120,410
Appropriation of endowment assets for expenditure	(196,908)	(466,295)	(663,203)
Other changes:			
Net asset reclassifications and transfers to create board-designated endowment funds	29,118	(11,970)	17,148
Endowment net assets, June 30, 2018	**$ 4,806,349**	**$ 11,723,083**	**$ 16,529,432**

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 with donor restriction net assets as of June 30, 2019, and June 30, 2018.

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 4.3 percent, or 4.8 percent on a three-year-average basis, and 4.5 percent, or 4.9 percent on a three-year-average basis, for 2019 and 2018, 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 $77.90 and $74.88 per Pool A unit as of June 30, 2019 and 2018, respectively. 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.

SECTION II

SCHEDULE OF EXPENDITURES OF FEDERAL AWARDS

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Massachusetts Institute of Technology
Schedule of Expenditures of Federal Awards For the Year Ended June 30, 2019

Federal Grantor/ Pass Through Grantor/ Program Title	Federal CFDA Number	Total $ Amount Expended	$ Amount Passed to Subrecipients
Research and Development			
U.S. Department of Defense:	12		
Air Force		$ 355,612,835	$ 30,652,983
Army		81,839,294	7,883,955
Classified		185,694,408	19,049,386
Defense Advance Research Project Agency		55,200,532	19,529,813
Missile Defense Agency		93,100,097	1,987,546
National Security Agency		6,754,689	234,034
Navy		72,227,562	8,581,203
Other DOD		175,484,479	5,800,712
Passthrough		44,347,314	362,574
Total Department of Defense		$ 1,070,261,210	$ 94,082,206
U.S. Department of Commerce	11	$ 9,015,770	$ 840,557
U.S. Department of Commerce - Passthrough	11	773,359	39,332
U.S. Department of Energy	81	56,053,722	3,381,810
U.S. Department of Energy - Passthrough	81	15,137,258	-
U.S. Department of Health and Human Services	93	115,657,583	14,905,845
U.S. Department of Health and Human Services - Passthrough	93	22,023,272	-
U.S. Department of Homeland Security	97	34,219,926	3,158,749
U.S. Department of Homeland Security - Passthrough	97	584,976	-
U.S. Department of Transportation	20	29,002,613	309,514
U.S. Department of Transportation - Passthrough	20	140,197	-
Miscellaneous Federal Government	Various	11,365,895	728,561
Miscellaneous Federal Government - Passthrough	Various	1,340,784	-
National Aeronautics & Space Administration	43	63,648,862	20,983,381
National Aeronautics & Space Administration - Passthrough	43	18,706,524	729,357
National Science Foundation	47	83,461,436	7,655,990
National Science Foundation - Passthrough	47	13,673,692	15,667
Total Research and Development	Appendix A	$ 1,545,067,079	$ 146,830,969

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, 2019

Federal Grantor/ Pass Through Grantor/ Program Title	Federal CFDA Number	Total $ Amount Expended	$ Amount Passed to Subrecipients
Student Financial Assistance Cluster Expenditures			
U.S. Department of Education:			
Grants:			
Pell	84.063	$ 3,951,767	
Federal Supplemental Educational Opportunity	84.007	1,875,059	
Federal Work Study	84.033	1,825,122	
Federal Perkins Loan:	84.038		
New Loans		-	
Balance Outstanding at July 1, 2018		21,222,793	
Loan Administrative Cost Allowance		210,001	
William D. Ford Federal Direct Loan Program:	84.268		
Direct Subsidized and Unsubsidized Loans		8,522,128	
Direct Plus Loan for Parents and for Graduate or Professional Students		8,203,164	
Total Student Financial Assistance Cluster Expenditures		$ 45,810,034	
Highway Planning and Construction Cluster			
U.S. Department of Transportation - Passthrough	20.205	$ 133	-
Total Highway Planning and Construction Cluster		$ 133	$ -
Other Federal Expenditures:			
U.S. Department of Commerce	Appendix B	$ 69,444	$ 51,669
U.S. Department of Commerce - Passthrough	Appendix C	50,863	-
U.S. Department of Defense	Appendix B	229,951	25,649
U.S. Department of Defense - Passthrough	Appendix C	4,075,039	-
U.S. Department of Energy	Appendix B	272,191	55,244
U.S. Department of Energy - Passthrough	Appendix C	196,505	-
U.S. Department of Transportation	Appendix B	56,838	-
Miscellaneous Federal Government	Appendix B	1,280,976	10,673
Miscellaneous Federal Government - Passthrough	Appendix C	391,178	-
National Aeronautics & Space Administration	Appendix B	2,213,605	63,110
National Aeronautics & Space Administration - Passthrough	Appendix C	880,599	-
Total Other Federal Expenditures		$ 9,717,189	$ 206,345
Total Federal Expenditures		$ 1,600,594,435	$ 147,037,314

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, 2019

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, 2019. 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. CFDA 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 contained in OMB Circular A-21, *Cost Principles for Educational Institutions,* Federal Acquisition Regulation and OMB's Uniform Guidance. Under those cost principles, certain types of expenditures are not allowable or are limited as to reimbursement. 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 2015 and negotiated fixed rates for indirect costs through the 2020 fiscal year.

3. Federal Student Loan Programs

The Federal Perkins Loan Program (CFDA #84.038) is administered directly by the Institute and balances and transactions relating to this program are included in the Institute's consolidated

3. Federal Student Loan Programs - Continued

financial statements. The balance of loans outstanding for this program at June 30, 2019 is $15,673,006.

The William D. Ford Federal Direct Loan Programs (CFDA #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, 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 Lincoln'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 19 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	$ 22,407,129	$ 333,205,706	$ 198,212	$ 16,026,506	$ 371,837,553
Army	25,742,824	56,096,470	2,730,098	6,691,599	91,260,991
Classified	-	185,694,408	-	-	185,694,408
Defense Advanced Research Project Agency	26,448,068	28,752,464	-	8,732,542	63,933,074
Missile Defense Agency	-	93,100,097	101,534	-	93,201,631
National Security Agency	-	6,754,689	-	-	6,754,689
Navy	19,782,560	52,445,002	105,444	5,854,819	78,187,825
Other Department of Defense	2,440,118	173,044,361	46,956	3,859,604	179,391,039
Total Department of Defense	96,820,699	929,093,197	3,182,244	41,165,070	1,070,261,210
Department of Commerce	3,319,898	5,695,872	522,579	250,780	9,789,129
Department of Energy	52,086,391	3,967,331	248,908	14,888,350	71,190,980
Department of Health & Human Services	115,657,583	-	808,132	21,215,140	137,680,855
Department of Homeland Security	217,663	34,002,263	225,595	359,381	34,804,902
Department of Transportation	3,009,902	25,992,711	-	140,197	29,142,810
Miscellaneous Federal Government:					
Department of Agriculture	80,511	-	-	-	80,511
Department of Education	285,141	-	-	-	285,141
Department of Interior	1,568,361	-	52,212	595,310	2,215,883
Other	2,417,517	7,014,365	-	693,262	10,125,144
Total Miscellaneous Federal Government	4,351,530	7,014,365	52,212	1,288,572	12,706,679
Nat'l Aeronautics & Space Administration	21,135,712	42,513,150	7,412,622	11,293,902	82,355,386
National Science Foundation	83,461,436	-	333,231	13,340,461	97,135,128
Total Federal Sponsors	**$ 380,060,814**	**$ 1,048,278,889**	**$ 12,785,523**	**$ 103,941,853**	**$ 1,545,067,079**

Note for Appendices A-1, A-3, B and C details:
- Contracts without CFDA numbers were shown as ".RD" in the CFDA# 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 2019 Expenditures

Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE					
Air Force					
Air Force	FA2386-17-1-4661	Development of tele-operated quadrupedal robotic platform for disaster response	12.630	130,019	-
Air Force	FA8650-14-C-2472	Computational Aircraft Prototype Syntheses (CAPS)	12.RD	1,111,150	629,065
Air Force	FA8650-15-C-7564	ClearScope: Transparent multi-level inter-process and intra-process information scoping	12.RD	1,949,206	939,988
Air Force	FA8650-17-1-7713	Visible Integrated Photonics Enhanced Reality (VIPER)	12.910	1,118,580	-
Air Force	FA8650-17-C-9113	Nanoscale X-ray Tomosynthesis for Rapid Assessment of IC Dice (NXT-RAID)	12.RD	562,561	126,219
Air Force	FA8650-18-2-7838	Foundations of Scalable Non--Convex Optimization	12.910	649,476	-
Air Force	FA8650-19-2-7921	Discrete Integrated Circuit Electronics	12.910	9,539	-
Air Force	FA8750-14-2-0242	CLIO: A Digital Code Assistant for Big Code Era	12.300	399,002	-
Air Force	FA8750-15-2-0272	Julia: A Fresh Approach to Technical Computing and Data Processing	12.910	94,803	-
Air Force	FA8750-16-2-0141	Development of a Wide-Bandgap Programmable Nanophotonic Processor	12.300	175,005	-
Air Force	FA8750-17-2-0126	Human Data Interaction Project	12.300	818,347	434,500
Air Force	FA8750-17-C-0229	Genetic circuit design for extreme environments enabled by models extracted from petabyte-scale perturbation analyses	12.RD	1,116,787	464,861
Air Force	FA8750-17-C-0239	BayesDB for Data-Centric Scientific Discovery	12.RD	501,512	-
Air Force	FA9453-18-2-0017	Remote-epitaxy of multijunction solar cells on graphene coated III-V substrates	12.114	46,472	-
Air Force	FA9550-12-1-0499	Advanced Photonics: Science, Technologies and Applications	12.800	-48,540	-
Air Force	FA9550-14-1-0031	Categorical approach to agent interaction	12.800	70,592	-
Air Force	FA9550-14-1-0035	Advanced Quantum Material - A New Frontier for Ultracold Atoms	12.800	2,523,564	1,794,653
Air Force	FA9550-14-1-0052	Optimal Measurements for Scalable Quantum Technologies	12.800	2,084,640	1,010,450
Air Force	FA9550-14-1-0060	(BRI FY14) Theory-based Engineering of Biomolecular Circuits in Living Cells	12.800	663,626	293,609
Air Force	FA9550-14-1-0192	Constraining ICME Magnetic Field Orientations using Low Frequency Radio Polarimetric Observations	12.800	-80	-
Air Force	FA9550-14-1-0403	Network Coding for Strong Consistency Semantics in Distributed Shared Memory Networks	12.800	43,653	-
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	1,096,791	538,970
Air Force	FA9550-15-1-0058	VOLUME MODE TRAVELING WAVE TUBE AMPLIFIER	12.800	198,287	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2019 Expenditures

Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Air Force	FA9550-15-1-0135	Molecular Tuning of Interfacial Electrocatalysis	12.800	8,940	-
Air Force	FA9550-15-1-0276	Topology Optimization, Fabrication Adaptivity, and Model-Data Assimilation of Novel Photonic Materials	12.800	101,924	-
Air Force	FA9550-15-1-0310	Phase-change on Nanoporous Graphene for Advanced Thermal Management	12.800	8,495	-
Air Force	FA9550-15-1-0473	Novel optical techniques for investigating cellular and vascular biophysics	12.800	-24,777	-
Air Force	FA9550-15-1-0514	FATE: Foldable and Adaptive Two-Dimensional Electronics	12.800	1,652,801	394,284
Air Force	FA9550-16-1-0012	Bayesian Program Learning and Concept Induction	12.800	93,582	-
Air Force	FA9550-16-1-0108	Dynamic Data Driven Methods for Self-aware Aerospace Vechicles	12.800	376,306	265,774
Air Force	FA9550-16-1-0208	Automated Discovery of Important Chemical Reactions	12.800	165,086	-
Air Force	FA9550-16-1-0214	(YIP) The Hybrid Discontinuous Galerkin Method for Implicit Large Eddy Simulations of Manetohydrodynamic Flows	12.800	231,978	-
Air Force	FA9550-16-1-0228	Energy-Efficient High-Performance Computer Vision Systems	12.800	88,117	-
Air Force	FA9550-16-1-0231	Complementing dynamical equations with data in adaptive reduced-order subspaces	12.800	82,213	-
Air Force	FA9550-16-1-0244	Instrumentation for Vacuum Nano-Electronic Devices High Current & Long Life Cathodes/Ion Sources	12.800	172,625	-
Air Force	FA9550-16-1-0273	Fluoro-Hydrogenated Ionic Liquids (FHIL) for High-Performance Electrospray Propulsion	12.800	2,901	-
Air Force	FA9550-16-1-0324	Quantum Gas Microscopy of Strongly Correlated Fermions	12.800	324,006	-
Air Force	FA9550-16-1-0382	Quantum Optoelectronics and Plasmonics with Novel Van der Waals Heterostructures	12.800	161,598	-
Air Force	FA9550-16-1-0391	High-Speed Quantum Communications using Silicon Photonics	12.800	125,985	-
Air Force	FA9550-16-1-0427	Uncovering and controlling the mechanisms of surface chemical and electrochemical stability on perovskite oxides	12.800	143,151	-
Air Force	FA9550-17-1-0058	Pixel matrices and other compositional analyses of interconnected systems	12.800	197,153	-
Air Force	FA9550-17-1-0081	The Marvin Minsky Institute for Society of Mind Theory	12.800	297,299	-
Air Force	FA9550-17-1-0114	The DDDAS Design of Programmable Mechanical Metamaterials	12.800	57,664	15,105
Air Force	FA9550-17-1-0136	Life-like Self-assembly through Dissipative Adaptation	12.800	252,352	-
Air Force	FA9550-17-1-0165	Learning to Plan in Hybrid Spaces	12.800	203,924	-
Air Force	FA9550-17-1-0192	Spontaneous Computation in Chemical Systems	12.800	29,398	-
Air Force	FA9550-17-1-0288	DNA-Programmed Epitaxy of Nanoparticle Superlattices	12.800	121,682	-
Air Force	FA9550-17-1-0316	High-resolution methods for passive geolocation and navigation	12.800	227,576	-
Air Force	FA9550-17-1-0362	User Interaction for Teaming with Autonomous Systems	12.800	249,849	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2019 Expenditures

Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Air Force	FA9550-17-1-0383	DURIP grant proposal Laser system for entangled-state generation in large atomic ensembles for measurements below the standard quantum limit	12.800	13,371	-
Air Force	FA9550-18-1-0023	Coupling in Uncertain Multi-physics Systems	12.800	146,117	-
Air Force	FA9550-18-1-0080	Remote Sensing of Coronal Mass Ejections using Widefield Low Frequency Imaging Arrays	12.800	277,820	-
Air Force	FA9550-18-1-0341	Low Bandgap, Highly Polarizable, and Intrinsically Conductive Polymers	12.800	210,600	-
Air Force	FA9550-18-1-0436	Empty State Electronics	12.800	863,567	104,593
Air Force	FA9550-19-1-0048	Harnessing Magnons for Hybrid Quantum Information Systems	12.800	18,994	-
Air Force	FA9550-19-1-0063	Competing Orders in Nanostructured High-Tc Superconductors	12.800	59,863	-
Air Force	FA9550-19-1-0065	On-Chip PHz Processing of Optical Fields using Nanostructured Electron Emitters	12.800	78,945	-
Air Force	FA9550-19-1-0104	Electro-Active Polymers for Robust and Flexible Electrospray Propulsion	12.800	29,884	-
Air Force	FA9550-19-1-0113	A Category-Theoretic Approach to Agent Interaction: Information, Communication, Planning, and Learning	12.800	23,001	-
Air Force	FA9550-19-1-0269	Learning to Learn Concepts as Programs: Hierarchical Bayes and Amortised Inference	12.800	18,147	-
		Total for Air Force		**22,407,129**	**7,012,072**
Army					
Army	W31P4Q-16-1-0001	Monolithic terahertz (THz) and long-wave infrared (LWIR) quantum cascade laser (QCL) frequency combs for threat detection	12.910	472,356	341,227
Army	W81XWH-13-1-0151	Nano-siRNA Particles and Combination Therapies for Ovarian Tumor Targeting	12.420	252,488	-
Army	W81XWH-14-1-0240	Extracellular Matrix Biomarkers for Diagnosis, Prognosis, Imaging and Targeting	12.420	1,068,623	581,244
Army	W81XWH-14-1-0544	Cartilage-Penetrating Chondrogenic Nanoparticles for Early Post-Traumatic Osteoarthritis Therapy	12.420	14,831	-
Army	W81XWH-14-C-0111	Prosthetic Knee-Angle-Foot System with Biomechatronic Sensing, Control and Power Generation	12.RD	411,830	-
Army	W81XWH-15-1-0365	The Therapeutic Effect of the Antitumor Drug 11beta and Related Molecules on Polycystic Kidney Disease	12.420	266,689	-
Army	W81XWH-16-1-0452	Tumor Immunotherapy by Gene-circuit Recruited Immunomodulatory Systems (TIGRIS) for Prostate Cancer	12.RD	-96,179	-
Army	W81XWH-16-1-0565	Engineer Synthetic Tumor Recruited Immuno-Cellular Therapy (STRICT)	12.RD	115,094	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2019 Expenditures

Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Army	W81XWH-16-1-0671	Targeting MCL-1 with Unique Peptide Inhibitors Delivered Intracellularly Using a Novel Nanoparticle Formulation	12.420	132,954	-
Army	W81XWH-17-1-0159	Synthetic Tumor Recruited Immuno-Cellular Therapy (STRICT) for Lung Cancer	12.420	255,144	-
Army	W81XWH-17-1-0185	Analysis of toxicant induced translational control through codon-usage bias in lung cancer	12.420	-5,826	-
Army	W81XWH-17-1-0427	Connecting Mechanical to Biomechanical Performance of Prosthetic Feet to Design Customized Passive Devices that Provide Improved Mobility	12.420	153,836	48,688
Army	W81XWH-17-1-0669	Heritably immunizing white-footed mice against tick-borne disease	12.420	110,934	-
Army	W81XWH-18-1-0208	PR172205 Development of a lentiviral display system for highthroughput T cell ligand deorphanization and specificity-based reprogramming	12.420	233,414	-
Army	W81XWH1810513	Modeling of lung adenocarcinoma tumorigenesis using recombinase-driven sequential gene mutations	12.420	46,902	-
Army	W81XWH1810515	Investigating the Oligomerization of TorsinA as a Means to Develop DYT1 Dystonia Theraputics	12.420	379,545	-
Army	W81XWH-18-2-0010	Intravenous Hemostatic Nanoparticles to Stop Bleeding from Noncompressible and Unidentifiable Wounds	12.42	40,382	-
Army	W81XWH-19-1-0151	An Osseo-Neural Transtibial Prosthesis with Efferent-Afferent Neural Control	12.420	33,800	-
Army	W911NF-11-1-0281	Biologically Patterned Amyloid Scaffolds for Multifunctional and Multiscale Materials	12.431	-74,924	-
Army	W911NF-11-1-0400	Multi-Qubit Enhanced Sensing and Metrology	12.431	445,075	300,000
Army	W911NF-12-2-0039	Barrier□Immune□Organ: Microphysiology, Microenvironment Engineered Tissue Construct Systems (BIO□MIMETICS)	12.431	541,241	-
Army	W911NF-13-D-0001, T.O. 1	ISN 3 FY'13 funding	12.RD	665,427	-
Army	W911NF-13-D-0001, T.O. 2	ISN 3 FY'13 funding	12.RD	1,206,117	40,105
Army	W911NF-13-D-0001, T.O. 3	ISN 3 FY'13 funding	12.RD	271	-
Army	W911NF-13-D-0001, T.O. 4	ISN 3 FY'13 funding	12.431	20,808	-
Army	W911NF-13-D-0001, T.O. 5	ISN 3 FY'13 funding	12.431	127,154	-
Army	W911NF-13-D-0001, T.O. 8	ISN 3 FY'13 funding	12.431	699,390	-
Army	W911NF-13-D-0001, T.O. 9	ISN 3 FY'13 funding	12.RD	1,012,565	798,783
Army	W911NF-14-1-0344	Novel states of light and matter mediated by collective Rydberg excitations	12.431	26,714	29,953
Army	W911NF-14-2-0071	Terahertz Nitride Sources (TNS)	12.431	-77,723	-
Army	W911NF-15-1-0128	Realizing Novel Phases of Materials with Light-Matter Interaction	12.431	83,567	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Army	W911NF-15-1-0166	Managing Uncertainty: Principles For Robust And Dexterous Continuum Mechanics	12.431	148,735	133,045
Army	W911NF-15-1-0196	Explaining and Exploiting the Resistive Force Theory - Toward optimal, flexible, locomotor designs: Research Area 1.3.1	12.431	67,404	-
Army	W911NF-16-1-0034	Coupled Synthesis, Transport, and Magnetization Studies to Detect New Topological Phases	12.431	35,375	-
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	313,127	-
Army	W911NF-16-1-0568	Assembling Assemblers with Functional Digital Materials	12.431	357,692	-
Army	W911NF-16-2-0023	Automated System for Knowledge-based Continuous Organic Synthesis (ASKCOS)	12.910	3,257,814	454,025
Army	W911NF-16-2-0176	A Systems Approach for Managing the Health of Force	12.431	425,911	297,527
Army	W911NF-16-2-0192	Superdetectors: Unlocking the Potential of NonEquilibrium Superconductivity at the Nanoscale	12.910	412,266	124,450
Army	W911NF-17-1-0068	Smooth Modeling of Flows on Graphs	12.431	135,921	-
Army	W911NF-17-1-0174	Physical Properties of Materials: Exotic Physical Properties of Electronically Coupled Two-Dimensional Metal-Organic Frameworks	12.431	156,630	-
Army	W911NF-17-1-0223	Improved Ceramic Manufacturability With Electric Field Assisted Sintering: Developing Underlying Principles	12.431	72,579	-
Army	W911NF-17-1-0268	Ultrapure Reactive Ion Etching for Scalable Nanofabrication of Carbon-Based Semiconductor Quantum Devices	12.431	-3,821	-
Army	W911NF-17-1-0433	New Frameworks for Quantum Algorithms	12.431	349,906	-
Army	W911NF-17-1-0435	High-Quality Tunable Graphene Plasmonic Metamaterials	12.431	145,574	-
Army	W911NF-17-1-0508	10.1.2:10.1.1: Low Latency Wireless Networks for Mission Critical Communications	12.431	96,783	-
Army	W911NF-17-1-0521	Polymer Chemistry: Uniform chiral polymers by IEG: synthesis and assembly	12.431	135,041	-
Army	W911NF-17-1-0527	Quantum Machine Learning	12.431	204,807	-
Army	W911NF-17-2-0043	An Osseointegrated Transfemoral Prosthesis Offering Long-Term Bi-Directional Efferent-Afferent Neural Transmission	12.910	877,123	173,560
Army	W911NF-17-2-0077	Programming seed cells to grow and differentiate into defined patterns	12.431	1,119,247	-
Army	W911NF-17-2-0098	FACETS: Fabrication of Autonomously Constructed Engineered Three-dimensional Shapes	12.431	1,334,837	425,196
Army	W911NF-18-1-0063	Research Area 10.3: Reliability and robustness for fast Bayesian inference of complex data	12.431	122,213	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Army	W911NF-18-1-0116	Improving Qubit Performance with Advanced, Novel, & Emerging Materials and Architectures	12.431	526,076	-
Army	W911NF-18-1-0118	Rheological Interaction Physics of Wheeled Locomotion in Soft Substrates for Improved Mobility: MIT Component	12.431	80,085	-
Army	W911NF1810197	Gel Permeation Chromatograph for Complex Polymer Composites	12.431	102,906	-
Army	W911NF-18-1-0407	Towards a Theory of Large-Scale Human Interactions	12.431	110,779	-
Army	W911NF1810411	High Performance Superconducting Qubit Technology Engineering Research (HiPSTER)	12.431	445,033	52,919
Army	W911NF1810432	Ab-Initio Solid-State Quantum Materials: Design, Production, and Characterization at the Atomic Scale	12.431	676,751	207,605
Army	W911NF1810436	Assessment of Nanoparticle Assemblies for Efficient Gene Therapy Vehicles	12.630	39,707	-
Army	W911NF-18-2-0048	ISN 4 Collaborative Agreement Core 6.1 Funding	12.431	4,064,855	-
Army	W911NF-18-2-0055	Synthetic Routes to Graphamid and Grapheylene by High Pressure Control of In-Plane Polymerization and Activation Volume	12.431	188,337	-
Army	W911NF-18-2-0257	SBIML: Synthetic Biology Inspired Machine Learning	12.910	144,023	-
Army	W911NF-19-1-0057	Higher-order geometry and topology of complex networks W911NF-17-S-0002	12.431	109,351	56,762
Army	W911NF-19-1-0098	Parametrized Model Order Reduction for Engineered Coastal and Hydraulic Systems: Component Libraries and Digital Twins	12.431	82,925	-
Army	W911NF1910156	A Wireless Networking Testbed for Low Latency Mission Critical Communications	12.431	529	-
Army	W911NF1910217	Foundations of Decision Making with Behavioral and Computational Constraints	12.431	69,188	-
Army	W911NF-19-1-0311	Research Area 7.2: Catalyzing High Potential Redox of Inert Molecules	12.431	10,531	-
Army	W911NF1920034	Machine Learning for Discovery of Routes to Energetic Materials	12.431	115,522	-
Army	W911NF1920041	Interface Exchange Coupling of TI Dirac Surface States in Proximity with Ferromagnetic Insulator: Towards Exchange Tunable Quantum Coherent Devices	12.431	45,998	-
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	50,836	-
Army	W911NF1920098	Mechanics and Design of Triply Periodic Minimal Surfaces	12.431	5,089	-
Army	W911NF1920105	Engineered biofilms to block arsenic absorption in the small intestine	12.910	43,648	2,437
Army	W911NF1920117	Structural Robotics	12.431	8,740	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Army	W912DW-17-P-0088	Standardization of Polymeric Sampling for Measuring Feeely Dissolved Organic Contaminant Concentrations in Sediment Porewater	12.RD	26,517	-
Army	W912HQ-14-C-0028	Integrated Passive Sampler-Food Web Modeling Framework for Monitoring Remedy Effectiveness	12.RD	60,460	-
Army	W912HQ-14-C-0034	Combining Mass Balance Modeling with Passive Sampling at Contaminated Sediment Sites to Evaluate Continuing Inputs and Food Web Responses to Remedial Actions	12.RD	205,129	-
Army	W912HZ-17-2-0027	Carbon Nanotube Sensors to Enable Real-Time Distributed Sensing of Contaminates in Water	12.630	202,146	-
		Total for Army		**25,742,824**	**4,067,524**
DARPA					
DARPA	HR0011-15-2-0012	MEMS Deuterium Ionizers for Compact Neutron Sources	12.910	12,927	-
DARPA	HR0011-15-2-0033	Technology to Genetically Engineer Otherwise Intractable Bacteria to Manipulate Microbiomes	12.910	21,552	158
DARPA	HR0011-15-2-0047	Computer-Synthesized Protocols for Resilient Networking	12.910	259,479	-
DARPA	HR0011-15-C-0056	Chip-Scale Electronic - Photonic Synthesizer (CS-EPS)	12.RD	734,297	50,490
DARPA	HR0011-15-C-0084	The MIT-Broad Foundry: TA2	12.RD	5,398,482	2,740,387
DARPA	HR0011-15-C-0091	ROBUST: Robust Operation of Bacterial Universes with Synthetic-biology Technologies	12.910	555,534	515,373
DARPA	HR0011-15-C-0155	MAGnetic Neural EXcitation (MAGNEX)	12.RD	175,724	106,798
DARPA	HR0011-16-2-0041	Supporting DARPA Matrix Program via Ab Initio Simulation of Thermoelectric Transport	12.910	282,002	-
DARPA	HR0011-16-C-0030	Principles, Limits, and Methods for Computational Periscopy	12.RD	903,927	206,122
DARPA	HR00111720029	Large-scale, Reconfigurable and Multifunctional 2.5-D Conformal Optics	12.910	986,963	534,902
DARPA	HR00111720061	2D material based layer transfer for maximizing maganetoelectric coupling	12.910	398,733	248,408
DARPA	HR00111810004	Instant & Reversible Barriers through Granular Jamming	12.910	691,277	230,230
DARPA	HR00111820007	Morphing Morphogenesis	12.910	337,577	-
DARPA	HR0011-18-3-0006	Revolutionizing Computing Systems through Dense and Fine-grained Monolithic 3D Integration	12.RD	14,380,056	12,268,219
DARPA	HR001118C0018	The Hardware Security Compiler: A Rapid-Development Workflow with End-to-End Formal Verification	12.RD	1,048,975	164,467
DARPA	HR0011-19-9-0021	Decision Making via Hierarchy of Network Games: Algorithms, Game Theory, Artificial Intelligence, and Learning	12.RD	260,562	23,228

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
		Total for DARPA		**26,448,068**	**17,088,781**
Navy					
Navy	HQ00341810013	ASSESSING VULNERABILITIES IN MODEL-CENTRIC ACQUISITION PROGRAMS: PHASE 2	12.300	109,222	-
Navy	N0001-18-1-2746	Reflection High Energy Electron Diffraction	12.300	59,351	-
Navy	N00014-14-1-0166	ESRDC - DESIGNING AND POWERING THE FUTURE FLEET	12.300	-269	-
Navy	N00014-14-1-0191	A Unified Approach to Passive and Active Ocean Acoustic Waveguide Remote Sensing	12.300	0	-
Navy	N00014-14-1-0476	Long-duration Environmentally-adaptive Autonomous Rigorous Naval Systems (LEARNS)	12.300	213,125	-
Navy	N00014-15-1-2083	Online Optimization and Learning under Uncertainty	12.300	34	-
Navy	N00014-15-1-2213	Multi-Objective COLREGS-Based Collision Avoidance for Unmanned Marine Vehicles	12.300	-7,442	-
Navy	N00014-15-1-2227	Multi-objective Optimization and Mixed-Horizon Decision-Making for Autonomous Vehicles	12.300	4,669	-
Navy	N00014-15-1-2342	Rigorous Modeling and Computation for Sparse Multivariate Statistical Problems	12.300	16,137	-
Navy	N00014-15-1-2381	A probalistic framework for the reduced-order modeling of rare events in water waves and mechanical systems	12.300	157,533	-
Navy	N00014-15-1-2460	Computational Wave Hydromechanics in Support of Model Tests in The MASK Wave Basin	12.300	150,060	-
Navy	N00014-15-1-2483	Surface Structure Enhanced Microchannels for Two-Phase Thermal Management	12.300	-24,074	-
Navy	N00014-15-1-2597	Seamless Multi-scale Forecasting: Hybridizable Unstructured-mesh Modeling and Conservative Two-Way Nesting	12.300	-1	-
Navy	N00014-15-1-2616	Northern Arabian Sea Circulation - autonomous research: Optimal Planning Systems (NASCar-OPS)	12.300	120,798	-
Navy	N00014-15-1-2622	Investigating flow features near abrupt topography in the Mariana Basin	12.300	94,794	23,179
Navy	N00014-15-1-2626	High-Order Multi-Resolution Multi-Dynamics Modeling for FLEAT	12.300	123,339	-
Navy	N00014-15-1-2694	Direct Measurement and Modeling of Glass Under Shock Loading	12.300	-429	-
Navy	N00014-15-1-2763	USING BIO-INSPIRED MATERIAL CROSSLINK DYNAMICS TO ENGINEER ENERGY-DISSIPATIVE POLYMER MECHANICS	12.300	-23,703	-
Navy	N00014-16-1-2090	Time-Resolved Measurement of Physical and Chemical Evolution of Energetic Materials Under Dynamic Shock Loading	12.300	237,529	-
Navy	N00014-16-1-2141	Design and Operation of Efficient and Secure Navigation Networks	12.300	186,182	-
Navy	N00014-16-1-2144	NEPTUNE Pilot Proposal	12.300	-51,058	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Navy	N00014-16-1-2200	4D Modeling of Underwater Acoustics in the Estuarine Environment Using Direct Simulations on HPC Platforms	12.300	106,595	-
Navy	N00014-16-1-2333	Merger of Structure and Material for Materials By Design: Comparative Bottom-up Analysis and Manufacturing of Hierarchical Materials	12.300	119,615	-
Navy	N00014-16-1-2388	Next-generation Genetic Devices: Model-guided Discovery and Optimization of Navy-relevant Cell-based Sensors	12.300	-18,063	884
Navy	N00014-16-1-2432	Synthesis Genome for Novel Oxides: accelerating realization of advanced materials	12.300	210,823	56,384
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	247,876	142,876
Navy	N00014-16-1-2509	Synthetic Biology for Advanced Functional Materials	12.300	122,013	-
Navy	N00014-16-1-2628	Resource Constrained Cooperative Underwater Localization and Mapping	12.300	166,479	-
Navy	N00014-16-1-2657	Investigation of Emerging Quantum Materials and Topological Order	12.300	431,192	-
Navy	N00014-16-1-2783	Ultra-High-Throughput Design and Optimization of Sense-and-Actuate Circuits in Marine and Soil Bacteria	12.300	-107,982	-
Navy	N00014-16-1-2787	persistent Decentralized Online Tasks (pDOT): An Online Optimization Approach to Multi-Agent Persistent Monitoring in Uncertain Environments	12.300	33,528	1,708
Navy	N00014-16-1-2815	Quantum simulators with ultracold atoms - mapping out possibilities for new materials	12.300	584,443	-
Navy	N00014-16-1-2945	Incorporating Distributed Systems in Early-Stage Set-Based Design of Navy Ships	12.300	121,224	-
Navy	N00014-16-1-2953	DNA Origami Scaffolds for Single-particle Cryo-Electron Microscopy of Viral RNA	12.300	249,191	94,194
Navy	N00014-16-1-2998	Lagrangian-based analysis of Kuroshio flow induced transport in the South-China Sea	12.300	6,522	-
Navy	N00014-16-1-3031	Stability of Floating Bodies in a Stochastic Seastate	12.300	129,575	-
Navy	N00014-16-1-3105	Understanding Dynamic Stability of Advanced Ships in Steep Waves by Direct Fully-Nonlinear Computations	12.300	126,361	-
Navy	N00014-16-1-3116	Mapping the spatio-temporal dynamics of perception in the human brain	12.300	574,470	-
Navy	N00014-16-1-3163	A New Paradigm for Analysis of Complex, Networked, Social and Engineering Systems	12.300	414,574	-
Navy	N00014-17-1-2072	Context and Task-aware Active Perception for Multiagent Systems	12.300	635,904	206,013
Navy	N00014-17-1-2077	Simulation-Based Classification for Structural Health Monitoring; A Parametrized Component Model-Order-Reduction Approach	12.300	92,997	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Navy	N00014-17-1-2089	Structures, Mechanisms & Statistics of Air-Entraining Free-Surface Turbulent Flows	12.300	205,570	-
Navy	N00014-17-1-2139	Nanostitched Composites with Improved Interlaminar and Intralaminar Strengths for Advanced Airframes in Sea-based Aviation - Bridge Proposal	12.300	40,487	-
Navy	N00014-17-1-2147	Statistical Learning Theory of Complex Causal Models	12.300	172,207	-
Navy	N00014-17-1-2177	Optimization Over Combinatorial Optimization Polytopes	12.300	110,805	-
Navy	N00014-17-1-2186	Observational Benchmarks for BSION project	12.300	123,964	-
Navy	N00014-17-1-2194	Fast, Exact, and Approximate Algorithms in Network and Combinatorial Optimization	12.300	81,858	-
Navy	N00014-17-1-2197	A Unified Approach to Passive and Active Ocean Acoustic Waveguide Remote Sensing	12.300	581,683	-
Navy	N00014-17-1-2253	Experiments with Trapped Neutral Atoms	12.300	340,945	-
Navy	N00014-17-1-2254	Optical-transition atomic clock beyond the standard quantum limit	12.300	288,783	-
Navy	N00014-17-1-2257	Topologically Protected Quantum States in Superfluid Fermi Gases	12.300	142,359	-
Navy	N00014-17-1-2363	A Micro-Raman Thermography System for High Spatial Resolution Thermal Characterization of Microelectronic Devices and their Thermal Management Solutions	12.300	68,574	-
Navy	N00014-17-1-2379	A System for Efficient and Accurate Network Navigation	12.300	328	-
Navy	N00014-17-1-2474	Environmentally Adaptive Acoustic Communication and Navigation in the new Arctic	12.300	250,241	-
Navy	N00014-17-1-2570	Aquaticus: A Collaborative Human-Machine Robotic Competition	12.300	-7,235	-
Navy	N00014-17-1-2585	Terahertz Transmission Over Dielectric Waveguide for High Speed Communication	12.300	95	-
Navy	N00014-17-1-2598	Inference And Dynamics On Networks	12.300	136,855	-
Navy	N00014-17-1-2609	Hierarchical Nanoscale Materials Programmed using Structured DNA Nanoparticles	12.300	245,258	-
Navy	N00014-17-1-2670	Vision-based Agile Autonomous Navigation in Contested Environments using High-Performance Embedded Computing	12.300	216,906	-
Navy	N00014-17-1-2706	Glass under shock loading: Novel measurements at National Laboratory facilities.	12.300	22,565	-
Navy	N00014-17-1-2744	Strong-field Interactions of Single-cycle Mid-infrared Pulses with Solids and Gases	12.300	321,901	-
Navy	N00014-17-1-2790	Algorithmic Tractability and Computational Limits in High-Dimensional Linear Regression	12.300	163,238	-
Navy	N00014-17-1-2791	High-Dimensional Causal Prediction	12.300	12,913	-
Navy	N00014-17-1-2883	Complex Two-Dimensional Materials for Emergent Electronics	12.300	153,213	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Navy	N00014-17-1-2920	Multi-Sensing Multi-Active Nanocomposite Coating for Quantitatively Characterizing Foulant-Surface Interactions and Controlled Fouling Release	12.300	90,047	-
Navy	N00014-17-1-2956	Computer-aided design of functional transition metal complexes	12.300	120,326	-
Navy	N00014-17-1-2959	Machine Learning Enabled Wall Modeling for LES of Turbulent Boundary Layers including Laminar Precursors	12.300	158,989	-
Navy	N00014-17-1-2977	Bridging the Nano-Macro gap for 3D Optical/Multi-functional Metamaterials	12.300	127,334	-
Navy	N00014-17-1-2985	Support Vector Machine Learning in Marine Hydrodynamic	12.300	95,392	-
Navy	N00014-18-1-2066	Optical Breakdown Acoustic Sources for Broadband Underwater Sensing	12.300	50,345	-
Navy	N00014-18-1-2079	Extended Formulations for Advanced Mixed Integer Convex Optimization	12.300	106,911	-
Navy	N00014-18-1-2085	ONR Graduate Traineeship Special Research Award in Ocean Acoustics Program for Daniel Michael Duane	12.300	94,239	-
Navy	N00014-18-1-2122	Online Optimization and Learning in a Complex Environment	12.300	70,758	-
Navy	N00014-18-1-2177	Fin-based Structures for Increasing Linearity in GaN Transistors	12.300	245,267	-
Navy	N00014-18-1-2187	Design and Metrology Support for High Power Fault Testing Systems	12.300	91,533	-
Navy	N00014-18-1-2210	Mathematical Certification of Mission Success Robustness for Multi-Agent Dynamic Group Action Models with Imperfect Perception	12.300	259,682	-
Navy	N00014-18-1-2258	Epitaxial Growth of Structural Proteins into Hierarchical Mesostructured Materials	12.300	221,826	-
Navy	N00014-18-1-2284	Tracking hydrogen: A multi-scale experimental-computational study of hydrogen influence on dislocations, plasticity, damage	12.300	105,980	-
Navy	N00014-18-1-2290	DNA Synthesizer for the Development of New Modalities for DNA Nanostructures	12.300	262,205	-
Navy	N00014-18-1-2298	Combinatorial Statistical Inference with Mathematical Optimization	12.300	159,923	-
Navy	N00014-18-1-2332	Combat Power Monitor II	12.300	250,000	-
Navy	N00014-18-1-2378	Instrumentation To Enable Novel Real-Time Vibrational Spectroscopy Of Shocked Materials	12.300	313,904	-
Navy	N00014-18-1-2434	Adaptive-resolution chemical discovery strategies for precise and fast computer-aided transition metal complex design	12.300	158,533	-
Navy	N00014-18-1-2436	Thermal Management Technologies for Low-Temperature Undersea Dive Persistence: a Novel Arctic Diving Suit	12.300	224,264	-
Navy	N00014-18-1-2458	Numerical Superintensity of Tropical Cyclones: A Unique Challenge in Atmospheric Modeling	12.300	231,637	-
Navy	N00014-18-1-2496	VAMPIRE 3: A Decentralized Platform for Acoustic Diagnostics	12.300	119,624	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Navy	N00014-18-1-2525	An Algorithmic Theory of Robustness	12.300	122,379	-
Navy	N00014-18-1-2762	Uncovering Lagrangian transport structures associated with oceanic fronts, meanders, eddies and filaments	12.300	19,751	-
Navy	N00014-18-1-2765	Robust Causal Methodology for Planning and Learning from Interventions in the Face of Uncertainty	12.300	113,779	-
Navy	N00014-18-1-2781	Four-Dimensional Lagrangian Analysis, Numerics, and Estimation Systems (4D-LANES)	12.300	82,514	-
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	206,548	-
Navy	N00014-18-1-2832	Technical Proposal: Task-Aware Non-Gaussian Perception and Planning for Distributed Marine Autonomy	12.300	176,541	-
Navy	N00014-18-1-2847	Integration of Physical Domain Knowledge and Machine Learning	12.300	199,036	-
Navy	N00014-18-1-2878	Complex Smart Colloids	12.300	526,007	-
Navy	N00014-18-1-2894	Data-Driven Non-Line-of-Sight Imaging	12.300	29,503	-
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	119,429	-
Navy	N00014-19-1-2091	Combat Power Monitor III	12.300	30,808	-
Navy	N00014-19-1-2180	Algorithms for Distributed and Asynchronous Load Balancing in Multi-Objective Optimization for Robot Autonomy	12.300	62,799	-
Navy	N00014-19-1-2317	A de novo structural biopolymer library to predict, design and control the assembly of hierarchically mesostructured materials	12.300	28,309	-
Navy	N00014-19-1-2359	High Current Experimental and Modeling Targeting Large Scale, Safe, Reliable and Cost-Effective Lithium Ion Battery Systems	12.300	61,914	-
Navy	N00014-19-1-2362	Enabling Crowd-Scale Deliberation For Complex Problems	12.300	15,497	-
Navy	N00014-19-1-2375	Materials By Design: Rational Modeling, Optimization and Synthesis of Heterogeneous Materials	12.300	5,705	-
Navy	N00173-18-1-G011	Broadband Data Communications through Guided T-Ray	12.300	59,719	-
Navy	N00189-14-C-Z082	Engineering Support for the Interagency Correlator	12.RD	102,178	-
Navy	N0018918PZ468	VLBI Storage and Data Validation Depot	12.RD	34,020	-
Navy	N00244-17-1-0011	Assessing Vulnerabilities in Model-Centric Acquisition Programs Using Cause-Effect Mapping	12.300	-1,594	-
Navy	N66001-13-C-4025	INSCyT 2: Phase II Parent	12.RD	670,015	78,737
Navy	N66001-13-C-4025	Integrated and Scalable Cyto-Technologies (INSCyT) for Flexible Microbial Manufacturing	12.RD	28,088	-
Navy	N66001-14-2-4058	Synthetic polymer xenoproteins	12.910	180,438	-

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Navy	N66001-15-C-4030	Multi-Scale Representation and Translation for Complex, Heterogeneous Materials	12.RD	111,004	-
Navy	N66001-16-1-4038	Enhancing Lifetime and Performance of Field Emitter Array Cathodes	12.910	321,113	-
Navy	N66001-16-C-4039	Novel Millimeter Wave Klystron Amplifier	12.RD	555,923	78,408
Navy	N66001-17-1-4039	The Promise of Diversity: Geometry, Probability, Optimization and Machine Learning	12.910	219,130	-
Navy	N66001-17-2-4054	Daisy drive systems for the precise alteration of local populations	12.910	2,856,639	2,108,107
		Total for Navy		**19,782,560**	**2,790,489**
Other DOD					
Other DOD	HDTRA1-13-1-0038	Nucleopore Membrane Mimics As Selective Filters for Biological Agents	12.351	127,315	-
Other DOD	HDTRA1-14-1-0007	Engineered Autonomous Distributed Circuits for Adaptive Threat Elimination	12.351	294,989	-
Other DOD	HDTRA1-14-1-0057	Radiation Effects in III-V MOSFETs for sub-10 nm CMOS	12.351	300,209	139,323
Other DOD	HDTRA1-15-1-0040	Development of Synthetic Probiotics to Detect and Eliminate Biothreat Agents	12.351	456,266	-
Other DOD	HDTRA1-15-1-0050	Deciphering Novel Mechanisms of Antimicrobial Resistance with Massively Parallel Combinatorial Genetics	12.351	468,858	-
Other DOD	HDTRA1-15-1-0051	Gene Duplication and Amplification in the Evolution of Antimicrobial Resistance: Clinical Significance and Diagnostic Potential	12.351	527,479	-
Other DOD	HDTRA1-15-1-0060	Understanding radiation damage mechanisms in MEMS/NEMS through combined optomechanical interrogation and micro-analysis (PerD-Topic 8)	12.351	50,031	62,309
Other DOD	HDTRA1-16-1-0038	Using Coacervates to Maximize Enzymatic Activity at Interfaces for Heavy Metal Detection	12.351	197,228	-
Other DOD	W911NF-19-1-0275	Theoretical Investigation of Mechanically Coupled Chemical Kinetics and Phase Transitions in Energetic Materials	12.431	17,743	-
		Total for Other DOD		**2,440,118**	**201,632**
		TOTAL for Department of Defense		**96,820,699**	**31,160,498**

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF COMMERCE					
DOC	60NANB15D361	Focusing mirrors for novel neutron imaging instruments	11.609	0	-
DOC	70NANB16H164	Measurement Standards to Enable Predictive Synthetic Biology	11.609	-17,262	-
DOC	70NANB17H177	Situational Awareness For Emergencies Through Network-Enabled Technologies (SafeT-N	11.609	343,801	-
DOC	70NANB18H211	Expanding Access to Materials Measurement, Modeling, and Design	11.609	129,396	-
DOC	NA14OAR4170077	2014 Parent Account: Sea Grant College Program	11.417	327,196	301,654
DOC	NA16OAR4310112	Influence of atmospheric ageing on fire-derived carbonaceous particles: laboratory studies and modeling in support of FIREX	11.431	111,682	-
DOC	NA16OAR4310177	Exploring linkages between AMOC and ITCZ variability	11.431	86,049	-
DOC	NA17OAR4170295	Tlusty- Real Time Detection of Vibrio for Oyster Aquaculture	11.417	132,423	81,332
DOC	NA18NWS4680058	New Frameworks for Predicting Extreme Rapid Intensification	11.468	157,629	73,660
DOC	NA18OAR4170105	2018 Omnibus: Sea Grant College Program	11.417	1,988,861	226,789
DOC	NA18OAR4310110	The aging of aerosol nitrate and implications for the global nitrogen cycle	11.431	60,125	-
		Total for Department of Commerce		**3,319,898**	**683,434**
		TOTAL for Department of Commerce		**3,319,898**	**683,434**

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DEPARTMENT OF ENERGY					
DOE	656002	US CMS DAQ Subsystem	81.RD	15,798	-
DOE	DE-AR0000471	Full Spectrum Stacked Solar-Thermal and PV Receiver	81.135	0	-
DOE	DE-AR0000611	Sustainable Travel Incentives with Prediction, Optimization, and Personalization(TRIPOD)	81.135	381,086	99,452
DOE	DE-AR0000625	INTEGRATED MICRO-OPTICAL CONCENTRATOR PHOTOVOLTAICS WITH LATERAL MULTIJUNCTION CELLS	81.135	586,411	-
DOE	DE-AR0000632	Wafer-Level Integrated Concentrating Photovoltaics	81.135	173,867	-
DOE	DE-AR0000713	Generating Realistic Information for Development of Distribution and Transmission Algorithms	81.135	359,667	297,063
DOE	DE-AR0000847	Seamless Hybrid-integrated Interconnect NEtwork (SHINE)	81.135	721,165	254,877
DOE	DE-AR0001005	Thermal Energy Grid Storage (TEGS) Using Multi-Junction Photovoltaics (MPV)	81.135	139,381	-
DOE	DE-EE0007531	Improving Tolerance of Yeast to Lignocellulose-Derived Feedstocks and Products	81.087	399,001	-
DOE	DE-EE0007535	Low Cost (CAPEX and variable): Tool design for cell and module fabrication with thin, free-standing silicon wafers	81.087	218,915	-
DOE	DE-EE0007662	Modeling Photovoltaics Innovation and Deployment Dynamics	81.117	387,206	-
DOE	DE-EE0007810	Self-assembling rechargeable Li batteries from alkali and alkaline-earth halides	81.086	496,268	332,029
DOE	DE-EE0007982	Rapid Construction of Validated Chemistry Models for Advanced Biofuels	81.087	323,334	93,498
DOE	DE-EE0008151	Two-dimensional material based layer transfer (2DLT) for low-cost, high-throughput, high-efficiency solar cells	81.087	17,908	-
DOE	DE-EE0008316	A direct process for wire production from sulfide concentrates	81.086	692,586	-
DOE	DE-EE0008375	Ceramic Castable Cement Tanks and Piping for Molten Salt	81.087	673,013	207,008
DOE	DE-EE0008381	High temperature pumps and valves for molten salt	81.087	462,510	76,016
DOE	DE-EE0008558	Low-cost, high-efficiency III-V photovoltaics enabled by remote epitaxy through graphene	81.087	49,801	-
DOE	DE-EI0003030	Dynamics of Energy Use in China	81.089	74,339	-
DOE	DE-EM0004484	NRI: Extra Robotic Limbs for Body Support in Kneeling and Crouching Works	81.104	15,387	-
DOE	DE-FC02-08ER54966	Center for the Study of Microturbulence	81.049	334,043	-
DOE	DE-FC02-93ER54186	Fusion Development and Technology - Parent	81.049	702,387	-
DOE	DE-FC02-99ER54512	Alcator C-Mod	81.049	-691	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DOE	DE-FE0026109	Self-Regulating Surface Chemistry for More Robust Highly Durable Solid Oxide Fuel Cell Cathodes	81.089	64,240	-
DOE	DE-FE0026489	Electrochemically-Mediated AmineRegeneration In CO2 Scrubbing Processes	81.089	471,604	-
DOE	DE-FE0031668	Robust highly durable solid oxide fuel cell cathodes - Improved materials compatibility & self-regulating surface chemistry	81.089	65,925	-
DOE	DE-FE0031677	AOI 4 Capillary-driven Condensation for Heat Transfer Enhancement in Steam Power Plants	81.089	158,145	-
DOE	DE-FG02-00ER15087	Revealing Nanoscale Energy Flow Using Ultrafast Terahertz to X-Ray Beams	81.049	-7,347	6,678
DOE	DE-FG02-00ER15087	Ultrafast Coherent Soft X-Rays: A Novel Tool for Spectroscopy of Collective Behavior in Complex Materials	81.049	4,593	4,593
DOE	DE-FG02-02ER45977	Fundamental Studies on Heat Conduction in Polymers	81.049	123,943	-
DOE	DE-FG02-03ER46076	Strongly Correlated Electronic Systems: Local Moments and Conduction Electrons	81.049	89,014	-
DOE	DE-FG02-03ER46076	Strongly Correlated Electronic Systems: Local Moments and Conduction Electrons (Renewal)	81.049	24,673	-
DOE	DE-FG02-03ER54700	Physics of High Energy Plasmas	81.049	322,672	-
DOE	DE-FG02-03ER54700	Physics of High Enery Plasmas	81.049	-26,186	-
DOE	DE-FG02-07ER46454	PROBING EXCITONS IN CONFINED ENVIRONMENTS USING PHOTON-RESOLVED METHODS	81.049	260,967	-
DOE	DE-FG02-07ER46474	Bimolecular Interactions in Organic Semiconductors: Hot charge, Hot excitons, Efficiency Droop, and Instability	81.049	270,042	-
DOE	DE-FG02-08ER46488	Materials Exhibiting Biomimetic Carbon Fixation and Self-Repair: Theory and Experiment	81.049	198,826	-
DOE	DE-FG02-08ER46514	Novel Temperature Limited Tunneling Spectroscopy of Quantum Hall Systems	81.049	219,977	-
DOE	DE-FG02-08ER46521	Ultrafast Electronic and Structural Dynamics in Quantum Materials	81.049	311,328	-
DOE	DE-FG02-86ER13564	Metathesis Polymerization by Well-defined Molybdenum and Tungsten Alkylidene Complexes	81.049	81,937	-
DOE	DE-FG02-87ER13671	Dynamics Encoded in Eigenstate-Resolved Spectra of Small, Reactive Molecules	81.049	108,692	-
DOE	DE-FG02-87ER13671	Spectroscopic and Dynamical Studies of Highly Energized Small Polyatomic Molecules	81.049	84,462	-
DOE	DE-FG02-91ER54109	THEORETICAL RESEARCH IN ADVANCED PHYSICS AND TECHNOLOGY	81.049	0	-
DOE	DE-FG02-91ER54109	Theoretical Research in Advanced Physics and Technology (Renewal/Continuation of 6931788)	81.049	1,446,516	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DOE	DE-FG02-94ER40818	RESEARCH IN NUCLEAR PHYSICS, TASK J - MEDIUM ENERGY NUCLEAR PHYSICS	81.049	1,984,929	6
DOE	DE-FG02-94ER54235	APTE Parent	81.049	124,324	-
DOE	DE-FG02-94ER61937	An Integrated Framework for Climate Change Assessment	81.049	753,934	-
DOE	DE-FG02-97ER14760	COLLABORATIVE RESEARCH: EVOLUTION OF PORE STRUCTURE AND PERMEABILITY OF ROCKS UNDER HYDROTHERMAL CONDITIONS	81.049	281,629	-
DOE	DE-FG02-99ER15004	Physics of Channelization: Theory, Experiment, and Observation	81.049	105,788	-
DOE	DE-FG02-99ER54525	PROPAGATION AND DAMPING OF HIGH HARMONIC FAST WAVES AND ELECTRON CYCLOTRON WAVES IN THE NSTX-U-DEVICE	81.049	0	-
DOE	DE-FG02-99ER54563	Fast Particle Wave Interaction and Alfven Eigenmodes in the JET Tokamak Plasma	81.049	-4,881	-
DOE	DE-NA0002788	Uncooled Chipscale Mid-infrared Photothermal Sensor for Ultra-sensitive Chemical Detection	81.113	-50,301	547
DOE	DE-NA0002949	STUDYING HYDRODYNAMICS, KINETIC/MULTI-ION EFFECTS, AND CHARGED-PARTICLE STOPPING IN HED PLASMAS AND ICF IMPLOSIONS AT OMEGA, OMEGA-EP AND AT THE NIF	81.112	425,882	-
DOE	DE-NA0003539	HEDP EXPLORATIONS OF KINETIC PHYSICS, PLASMA STOPPING POWER, HOHLRAUM FIELDS AND NUCLEAR ASTROPHYSICS	81.112	284,576	-
DOE	DE-NA0003868	Center for Advanced Nuclear Diagnostics and Platforms for ICF and HED Physics at Omega, NIF, and Z	81.113	648,687	-
DOE	DE-NE0008285	Integrated FHR Technology Development: Tritium Management, Materials Testing, Salt Chemistry Control, Thermal-Hydraulics and Neutronics with Associated Benchmarking	81.121	181,844	174,067
DOE	DE-NE0008285-001	Integrated FHR Technology Development: Tritium Management, Materials Testing, Salt Chemistry Control, Thermal-Hydraulics and Neutronics with Associated Benchmarking	81.121	159,020	56,211
DOE	DE-NE0008413	Multilayer Composite Fuel Cladding for LWR Performance Enhancement and Severe Accident Tolerance	81.121	120,078	108,048
DOE	DE-NE0008416	Development of Accident Tolerant Fuel Options for Near Term Applications	81.121	558,361	445,697
DOE	DE-NE0008509	University Reactor Upgrades Infrastructure Support for the MITR Research Reactor's Nuclear Instrumentation	81.121	128,588	-
DOE	DE-NE0008578	MULTI-GROUP TRANSPORT CROSS SECTION & DIFFUSION COEFFICIENT GENERATION FOR DETERMINISTIC REACTOR MODELS USING MONTE CAROL CALCULATIONS.	81.121	170,152	-
DOE	DE-NE0008671	Establishing MIT's experimental capabilities for LWR thermal-hydraulics investigations	81.121	-900	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DOE	DE-NE0008693	Determination of Critical Heat Flux and Leidenfrost Temperature on Candidate Accident Tolerant Fuel Materials	81.121	289,569	39,915
DOE	DE-NE0008734	Establishing MIT's Experimental Capabilities for Fuel Performance Investigations	81.121	149,339	-
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	119,280	-
DOE	DE-NE0008752	Evaluation of Economics Benefits of Accident Tolerant Plants Through Risk-Informed Approaches	81.121	132,429	18,437
DOE	DE-NE0008827	Nanodispersion Strengthened Metallic Composites with Enhanced Neutron Irradiation Tolerance	81.121	271,284	-
DOE	DE-SC0001088	Center for Excitonics - Main Operating Account for Deposits & Distributions	81.049	525,161	84,115
DOE	DE-SC0001299	Solid-State Solar-Thermal Energy Conversion Center (S3TEC)	81.049	784,542	181,577
DOE	DE-SC0002626	Electrochemically-Driven Phase Transitions in Battery Storage Compounds	81.049	126,215	-
DOE	DE-SC0002633	SISGR: Chemomechanics of Far-From Equilibrium Interfaces	81.049	677,169	-
DOE	DE-SC0007106	Engineered Protein Nanostructures for Advanced Functional Materials	81.049	144,043	-
DOE	DE-SC0007883	Nonlinear and 3D MHD	81.049	13,908	-
DOE	DE-SC0008737	Partnership for Edge Physics Simulation	81.049	2,080	-
DOE	DE-SC0008739	Unconventional Metals in Strongly Correlated Systems	81.049	118,291	-
DOE	DE-SC0008740	Development of a Polarized 3He Ion Source for RHIC	81.049	18,073	-
DOE	DE-SC0008741	High Intensity Polarized Electron Gun	81.049	22,048	-
DOE	DE-SC0008743	Assembling Resuable Genetic Modules for Efficient Biofuel Production from Marine Macroalgae	81.049	-31,097	2,432
DOE	DE-SC0008744	Optimizing oil production in oleaginous yeast by cell-wide measurements and genome-based models.	81.049	444,095	-
DOE	DE-SC0009297	DiaMonD: An Integrated Multifaceted Approach to Mathematics at the Interfaces of Data, Models, and Decisions	81.049	124,841	-
DOE	DE-SC0009833	Development of an accelerator-based diagnostic for plasma-facing surfaces in magnetic confinement devices	81.049	124,410	-
DOE	DE-SC0010428	Biomimetic Templated Self-Assembly of Light Harvesting Nanostructures	81.049	3,967	-
DOE	DE-SC0010492	Control and Extension of High Performance Scenarios to Long Pulse	81.049	558,798	-
DOE	DE-SC0010495	From Quarks to the Cosmos: Ab initio studies in nuclear physics	81.049	67,008	-
DOE	DE-SC0010497	Gluonic Excitations in Mesons	81.049	-2,210	-

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DOE	DE-SC0010526	Predictive Theory of Topological States of Matter	81.049	-307	-
DOE	DE-SC0010538	Imaging Interfacial Electric Fields on Ultrafast Timescales	81.049	-1,845	-
DOE	DE-SC0010720	Development of long-pulse heating and current drive actuators and operational techniques compatible with a high-Z divertor and first wall	81.049	77,183	-
DOE	DE-SC0010795	Understanding and Controlling Nanoscale Crystal Growth Using Mechanical Forces	81.049	1,431	-
DOE	DE-SC0011088	MIT Relativistic Heavy Ion Group	81.049	2,199,416	-
DOE	DE-SC0011090	FY2017-2019 Task R-Theoretical Nuclear	81.049	967,940	-
DOE	DE-SC0011091	Neutrino Physics – Task W	81.049	386,479	-
DOE	DE-SC0011755	AMS Operations	81.049	2,942,526	-
DOE	DE-SC0011848	AMS Research	81.049	2,215,933	-
DOE	DE-SC0011939	Task A: Particle Physics Collaboration	81.049	953,451	-
DOE	DE-SC0011970	LEPTON QUARK STUDIES, TASK F SUMMARY, FY 2015-17	81.049	65,376	-
DOE	DE-SC0012071	Support of US Burning Plasma Organization	81.049	200,667	-
DOE	DE-SC0012371	Interface-Driven Chiral Magnetism in Ultrathin Metallic Ferromagnets: Towards Skyrmion Spintronics	81.049	61,597	-
DOE	DE-SC0012469	Preservation of Alcator C-Mod data and support of ITER research through ITPA participation	81.049	27,474	-
DOE	DE-SC0012470	MDSPlus Development and Support 2017-20	81.049	619,272	-
DOE	DE-SC0012555	Systems Biology Towards a Continuous Platform for Biofuels Production	81.049	97,805	26,714
DOE	DE-SC0012567	Task C: Theoretical High Energy Physics	81.049	610,455	-
DOE	DE-SC0013307	The Catalytic Reduction of Dinitrogen Under Mild Conditions	81.049	77,626	-
DOE	DE-SC0013499	Compact, low-cost, light-weight, superconducting, ironless cyclotrons for hadron radiotherapy	81.049	-1	-
DOE	DE-SC0013905	Study of Heavy Flavor Mesons and Flavor-Tagged Jets with the CMS Detector	81.049	46,043	-
DOE	DE-SC0013999	Confronting Dark Matter with the Multiwavelength Sky	81.049	165,630	-
DOE	DE-SC0014176	Tunable Oxygen Reduction Electrocatalysis by Phenazine-Modified Carbons	81.049	162,868	-
DOE	DE-SC0014204	Whole-program Adaptive Error Detection and Mitigation	81.049	15,320	-
DOE	DE-SC0014229	Phase Contrast Imaging for Wendelstein 7-X	81.049	393,304	42,371
DOE	DE-SC0014251	Gas-Puff-Imaging for Diagnosis of Boundary and SOL Physics in W7-X	81.049	343,322	-
DOE	DE-SC0014264	MIT Plasma Science and Fusion Center Magnetic Confinement Fusion Experiment Research and Related Activities	81.049	6,154,151	-

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DOE	DE-SC0014901	Computer-Aided Construction of Chemical Kinetic Models	81.049	193,424	-
DOE	DE-SC0015566	High Frequency High Gradient Accelerator Research	81.049	39,935	-
DOE	DE-SC0015566	High Frequency, High Gradient Accelerator Research	81.049	566,611	-
DOE	DE-SC0016154	Measurement of Helicons and Parametric Decay Waves in DIII-D with Phase Contrast Imaging	81.049	287,064	-
DOE	DE-SC0016214	Molecular Understanding of Bifunctional Solid Lewis Acid Zeolites for the C-C Coupling of Alpha Keto Acids	81.049	157,281	-
DOE	DE-SC0016215	Magnetic Reconnection in Strongly-Magnetized, Weakly-Collisional Plasmas: Onset, Turbulence, and Energy-Partition in 3D, Plasmoid-Dominated Regimes	81.049	186,444	-
DOE	DE-SC0016285	AMS THERMAL COOLING SYSTEM	81.049	878,899	-
DOE	DE-SC0016408	Control of the Plasma-Material Interface for Long Pulse Optimization in EAST and KSTAR	81.049	153,743	-
DOE	DE-SC0016409	Disruption Prediction and Avoidance in High Beta Long Pulse KSTAR Plasmas	81.049	15,228	-
DOE	DE-SC0017381	Electron Temperature Fluctuation and n-T Phase Angle Measurements for Validation of Gyrokinetic Transport Models at ASDEX Upgrade	81.049	258,455	90,620
DOE	DE-SC0017936	Collaborative Proposal: R&D Toward CUPID, a Tonne-Scale Bolometric OvBB Experiment	81.049	37,844	-
DOE	DE-SC0018090	Center for Integrated Simulation of Fusion Relevant RF Actuators	81.049	540,714	209,516
DOE	DE-SC0018091	Microparticle Supersonic Impact: A Testbed for the Exploration of Metals under Extreme Conditions	81.049	275,951	-
DOE	DE-SC0018094	Nonequilibrium Properties of Driven Electrochemical Interfaces	81.049	187,716	-
DOE	DE-SC0018095	Development of an Ultrahigh-bandwidth Phase Contrast Imaging System for detection fo Electron scale turbulence and Gigahertz Radiofrequecny Waves	81.049	36,424	-
DOE	DE-SC0018096	Simultaneous mitigation of density and energy errors in approximate DFT for transition metal chemistry	81.049	44,950	-
DOE	DE-SC0018097	Interrogating protein-protein association through spectroscopic studies of model membranes	81.049	195,187	-
DOE	DE-SC0018121	Computing the Properties of Matter with Leadership Computing Resources	81.049	441,507	-
DOE	DE-SC0018229	BATES RESEARCH & ENGINEERING CENTER, TASK L, 3 YEAR FY 2017-19	81.049	1,790,224	-
DOE	DE-SC0018229	MIT-Bates Research and Engineering Center	81.049	540,648	-
DOE	DE-SC0018235	Fundamental studies of thermal and electrical transport in microporous metal-organic frameworks	81.049	185,039	-

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DOE	DE-SC0018357	Nonequilibrium Physics of Multiphase Flow in Porous Media: Wettability and Disorder	81.049	192,041	-
DOE	DE-SC0018652	Quantum simulation: From spin models to gauge-gravity correspondence	81.049	336,583	-
DOE	DE-SC0018934	Exploring Natural Aerosol Formation from DMS Oxidation and Implications for Aerosol Forcing	81.049	28,852	-
DOE	DE-SC0018935	Interplay of Magnetism and Superconductivity in van der Waals Heterostructures	81.049	109,004	-
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	92,344	-
DOE	DE-SC0018944	The Black Hole Interior in AdS/CFT and Beyond	81.049	14,395	-
DOE	DE-SC0018945	Predictive Theory of Topological States of Matter	81.049	166,697	-
DOE	DE-SC0018947	Portable Parallel Algorithms and Frameworks for Exascale Graph Analytics	81.049	47,704	-
DOE	DE-SC0019087	Rational Sub-Nanometer Manipulation of Polymer Morphology for Efficient Chemical Separations	81.049	137,490	-
DOE	DE-SC0019089	Feasibility Study: High-k Temperature (HiT) Fluctuation Diagnostic	81.049	5,048	-
DOE	DE-SC0019112	The Center for Enhanced Nanofluidic Transport (CENT)	81.049	1,101,968	448,245
DOE	DE-SC0019126	Novel Terahertz-Induced Quantum States Probed with Ultrafast Coherent X-Rays	81.049	701,858	82,078
DOE	DE-SC0019127	Algebraic Approach Toward Quantum Information in Quantum Field Theory and Holography	81.049	63,431	-
DOE	DE-SC0019128	Quantum Algorithms for Collider Physics	81.049	130,065	-
DOE	DE-SC0019129	Bosonic Dark Matter Search Using Superconducting Nanowire Single-Photon Detectors	81.049	35,843	-
DOE	DE-SC0019295	Investigating Natural Radioactivity in Superconducting Qubits	81.049	44,627	-
DOE	DE-SC0019345	Excitons in Low-Dimensional Perovskites	81.049	378,941	-
DOE	DE-SC0019383	Real-time Measurements of Complex Transition Metal Oxide Nanostructure Growth	81.049	27,010	-
DOE	PO #629763	US CMS Common Operations	81.RD	100,559	-
DOE	PO 101633	Investigation of Nucleate Boiling Suppression in Annular Flow using Advanced Imaging Diagnostics and CFD Simulations	81.RD	146,755	-
DOE	PO 563385-REVISION 9	US CMS DAQ Subsystem	81.RD	226,853	-
DOE	PO NO. 646969	High Luminosity (HL) LHC CMS Detector Upgrade Project Trigger & DAQ: Track Correlator Trig	81.RD	13,374	-
DOE	PO-606667	US CMS HCAL Subsystem	81.RD	49,572	-
DOE	SC-19-487	Center for the Advancement of Topological Semimetals (CATS)	81.RD	69,404	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DOE	SUB NO. 652561	LPC Distinguished Researchers award - Markus Klute	81.RD	10,367	-
DOE	SUBCONTRACT NO. 655714	US CMS Hadron Calorimeter (HCAL) Subsystem	81.RD	6,848	-
		Total for Department of Energy		**52,086,391**	**3,381,810**
		TOTAL for Department of Energy		**52,086,391**	**3,381,810**

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF HEALTH & HUMAN SERVICES					
Other HHS					
HHS	1-R01-FD006584-01	Continuous Viral Vector Manufacturing based on Mechanistic Modeling and Novel Process Analytics	93.103	207,172	-
HHS	1-U01FD006483-01	Smart Data Analytics for Risk Based Regulatory Science and Bioprocessing Decisions	93.103	1,310,223	-
HHS	HHSP233201500054C	Web Accessibility Initiative (WAI) Core	93.RD	123,584	-
HHS	HHSP233201500054C DUNS# 001425594	Web Accessibility Initiative (WAI) Core	93.RD	349,980	-
		Total for Other HHS		**1,990,959**	**-**
NIH					
NIH	1 K99 GM126277-02	Non-cleaved Electro-Mechanical Expansion (NEME) technology for super-resolution imaging of biological samples with conventional optical microscopes	93.859	139,299	-
NIH	1 RF1 MH117809-01	From Electron Microscopy to Neural Circuit Hypotheses: Bridging the Gap	93.242	235,786	52,442
NIH	1-DP1-AT009925-02	Neural Circuit Mechanisms of Social Homeostasis in Individuals and Supraorganismal Social Groups	93.213	255,300	-
NIH	1-DP2-AG044279-01	Early Warning Indicators of Tipping Points in Biological Systems	93.310	-11,400	-
NIH	1DP2AI136597-01	Developing powerful daisy drive systems for the precise alteration of local populations	93.310	362,735	-
NIH	1-DP2-CA195769-01	Imaging Transcription with Single Molecule Resolution in Live Mammalian Cells	93.310	-5,588	-
NIH	1-DP2-DK102256-01	A Novel Strategy for Combating Obesity: Reprogramming Neural Circuits	93.847	-37,651	-
NIH	1DP2ES027992	Proteome-Driven Holistic Reconstruction of Organ-Wide Multi-Scale Networks	93.310	240,309	-
NIH	1-DP2-GM119162-01	Continuous Directed Evolution of Biomolecules in Human Cells for Medical Research	93.310	195,738	-
NIH	1DP2GM119419	"Bottom-up" Profiling of Interacting Cellular Systems	93.310	1,077,752	-
NIH	1DP2GM128200-01	Nanometer distance assay to uncover protein dynamics	93.859	142,244	-
NIH	1-F30-CA236179-01	Regulation by mTORC1 of the lysosomal efflux of essential amino acids	93.398	24,742	-
NIH	1-F31-AI133989-01A1	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	38,513	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	1-F31-AI145181-01	Quadruplet Decoding for Multiplexed Non-Canonical Amino Acid Incorporation	93.855	19,374	-
NIH	1F31CA232340-01	Determining the mechanism of serine sensing by the mTOR pathway	93.398	43,141	-
NIH	1-F31-CA232355-01A1	Defining the mechanism of starvation-induced ribophagy	93.398	2,068	-
NIH	1-F31-MH117886-01	Genome-scale transcription factor screen for neural differentiation - J. Joung	93.242	36,270	-
NIH	1F32CA232386-01	Handheld two-photon microscopy for intra-operative cancer margin assessment	93.398	43,139	-
NIH	1-F32-DK118785-01A1 REVISED	Glycemic Control by Glucose-Responsive Hydrogels Based on Synthetic Lectin Mimics	93.847	42,912	-
NIH	1-F32-EB025688-01A1	Engineering damage associated molecular patterns to promote tissue regeneration	93.286	43,756	-
NIH	1-F32-GM123596-02	Solving the E. coli Class Ia Ribonucleotide Reductase a/b Interface Structure by Magnetic Resonance	93.859	51,675	-
NIH	1-F32-GM126643-01A1	Molecularly Imprinted Polymer-Carbon Nanotube Sensors for the Detection of Magnesium	93.859	45,136	-
NIH	1-F32-GM126645-01 REVISED	Structurally Deformed Phosphorus Catalysis for Amidation, Hydroamination, and Olefin Metathesis Reaction	93.859	52,015	-
NIH	1-F32-GM126844-01A1	A Small-Molecule Mask for Traceless Protein Delivery	93.859	46,613	-
NIH	1F32GM126913-01A1	Efficient Synthesis of Modular Fluorinated Brush- Arm Star Polymers for 19F MRI	93.859	46,707	-
NIH	1-F32-GM129882-01	Taming radical enzymes through directed evolution and structural analysis	93.859	28,757	-
NIH	1-F32-GM130071-01	Materials Approaches for Understanding Biological Energy Transduction and Bifurcation	93.859	48,666	-
NIH	1-F32-GM131633-01	Synthesis of C-Glycosides and a-Aryl Ethers via Metal-Redox Catalysis	93.859	26,467	-
NIH	1-F32-GM133073-01	Site-Selective Modification of Peptides and Proteins through Noncovalent Interactions	93.859	4,167	-
NIH	1-F32-MH117933-01A1	Characterizing Neural Adaptation in Autism Spectrum Disorder	93.242	16,082	-
NIH	1-F32-NS110481-01	Correlation of astrocyte Ca2+ microdomain activity with motor learning and neuronal function	93.853	44,231	-
NIH	1K08MH116135-02	Determining optimal parameters for dynamic cholinergic modulation of associative learning	93.242	182,833	-
NIH	1K99CA218679-01A1 REVISED	Metabolic Constraints on Cancer Cell Proliferation	93.398	67,066	-
NIH	1-K99-CA226396-01	Investigating functional sites in protein kinases as targets for cancer mutations and novel drugs	93.398	112,449	-
NIH	1-K99-CA226400-01	Investigating immune-microbiota interaction in lung cancer	93.398	92,256	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	1-K99-CA234221-01	Understanding metabolic heterogeneity in pancreatic cancer	93.398	101,132	-
NIH	1-K99-EB025254-01A1	High-throughput micro-RNA profiling of single cells and its application in leukemia	93.286	62,159	-
NIH	1-K99-EY029326-01	Synaptic and intrinsic mechanisms underlying visual cortical enhancement following retinal inactivation	93.867	77,353	-
NIH	1-K99-MH116100-01A1	Testing the Mechanisms, Layers, and Frequencies of Prediction Encoding and its Violation	93.242	91,879	-
NIH	1-K99-NS107639-01	Mapping neurochemical activity of the basal ganglia in pathological behaviors	93.853	70,615	-
NIH	1-P41-GM132079 -01	MIT Harvard Center for Magnetic Resonance-Year 1	93.859	183,212	-
NIH	1-P42-ES027707-01	Science and Engineering for Sensors, Mechanisms, and Biomarkers of Exposures	93.143	4,360	-
NIH	1-R01-AG062335-01	Elucidating the Molecular Mechanisms of Neuropsychiatric Symptoms in Alzheimer's Disease	93.866	276,797	-
NIH	1-R01-CA206218-01A1	Reprogramming the tumor microenvironment via self-amplified RNA (SafeR) circuits	93.396	236,412	-
NIH	1-R01-CA207029-01A1	RNA circuits for cell state determination in mammalian cells in vitro and in vivo	93.394	296,095	296,095
NIH	1-R01-CA220468-01	Organic nanoparticles for dual MRI-guided therapeutic selection and ovarian cancer drug delivery	93.394	248,377	176,406
NIH	1-R01-CA226898-01A1	RNA-Binding Proteins as Molecular Integrators that Control the Response of HGSOC to Ant-Cancer Therapies	93.395	204,650	-
NIH	1-R01-DA038642-01A1	Molecular imaging of dopaminergic signaling in rodent brain	93.279	38,360	-
NIH	1-R01-DA045549-01	High-Performance Imaging Through Scattering Living Tissue	93.279	615,228	-
NIH	1-R01-EB024531-01	Computational Design, Fabrication, and Evaluation of Optimized Patient-Specific Transtibial Prosthetic Sockets	93.286	42,236	-
NIH	1-R01-EB024591-01	Synthetic Genetic Controller Circuits to Reprogram Cell Fate	93.286	524,476	-
NIH	1-R01-EB025854-01	Synthetic biology-regulated RNA vaccines	93.286	289,357	-
NIH	1-R01-EB026344-01	Multivalent Nano-conjugates for Targeted Penetration of and Delivery to Dense Extracellular Matrices	93.286	84,633	-
NIH	1-R01-EY029245-01	Using the principles of synaptic plasticity to promote recovery from amblyopia	93.867	530,603	-
NIH	1-R01-EY029666-01	Neural Mechanisms for Feature-Based Attention	93.867	180,996	-
NIH	1-R01-GM104948-01	Redesigning General Anesthesia	93.310	-6,183	-
NIH	1R01GM129007-01	Mapping, modeling and manipulating the interactions of protein domains that bind short linear motifs	93.859	216,593	-
NIH	1-R01-GM131627-01	Structure and function of the monotopic phosphoglycosyl transferase superfamily: Initiators of biosynthesis of complex bacterial glycoconjugates	93.859	46,178	-

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NIH	1R01HD097135-01	Agonist-Antagonist Myoneural Interface for Functional Limb Restoration after Transtibial Amputation	93.865	246,515	-
NIH	1R01HL121386-01A1 REVISED	Characterizing Mechanisms of Sickle Cell Crisis via Dynamic Optical Assay	93.839	49,635	-
NIH	1-R01-HL121386-01A1 REVISED	Characterizing Mechanisms of Sickle Cell Crisis via Dynamic Optical Assay	93.839	52,781	52,781
NIH	1-R01-MH111872-01	Multi-Site Non-Invasive Magnetothermal Excitation and Inhibition of Deep Brain Structures	93.242	518,026	402,668
NIH	1-R01-MH111916-01A1	Development of an Integrated System for Monitoring Home-Cage Behavior in Non-Human Primates	93.242	421,627	-
NIH	1-R01-MH112694-01	Simultaneous multiplexed in situ fluorescence imaging of neuronal proteins and messenger RNAs	93.242	129,730	129,730
NIH	1-R01-MH114031-01	RNA Scaffolds for Cell Specific Multiplexed Neural Observation	93.242	324,754	-
NIH	1-R01-MH115037-01	Elucidating neural substrates that mediate autism-like behaviors	93.242	29,823	-
NIH	1-R01-MH115920-01	Exploring neural circuit mechanisms of social contact and social isolation	93.242	266,017	-
NIH	1-R01-NS089076-01A1	Epigenetic pathology and therapy in Huntington's disease	93.853	270,798	158,657
NIH	1-R21-EB022729-01A1	Multifunctional fibers for high-throughput microfluidics	93.286	82,022	-
NIH	1-R21-EB026008-01	Structured DNA Nanoparticles Therapeutic mRNA and CRISPR/Cas9 Delivery	93.286	261,240	-
NIH	1-R21-EY025863-02	Post-natal development of high-level visual representation in primates	93.867	108,545	-
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	62,880	-
NIH	1-R21-NS102762-01	Improving in vitro generation of human oligodendrocyte lineage cells by mechanical stimulation	93.853	54,750	40,000
NIH	1-R24-MH106075-01	Vascular Interfaces for Brain Imaging and Stimulation	93.242	9,045	-
NIH	1-R24-MH109081-01	Toward functional molecular neuroimaging using vasoactive probes in human subjects.	93.242	-10,511	-
NIH	1R33CA223904-01	Advanced development and validation of microdevices for high-throughput in situ drug sensitivity testing in tumors	93.394	269,867	255,117
NIH	1R35ES028374-02	Protein Kinase Signaling in the Genotoxic Stress Response	93.113	710,603	-
NIH	1-RF1-AG047661-01	Examination of neural circuits underlying mood disorders in Alzheimer's disease	93.866	144,359	-
NIH	1-RF1-AG047661-01 REVISED	Examination of neural circuits underlying mood disorders in Alzheimer's disease	93.866	113,376	-
NIH	1-RF1-AG048029-01 REVISED	Alzheimer's Disease Risk Genes in Human Microglia and Neurons Derived from iPSCs	93.866	-5,596	80,288

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	1-RF1-AG054012-01	Cell type specific epigenetic analysis to understand complex mechanisms underlying Alzheimer's disease phenotypes	93.866	831,346	-
NIH	1-RF1-AG054321-01	Demystifying Microglia in Aging and Alzheimer's Disease	93.866	1,034,007	697,700
NIH	1-RF1-AG058504-01 REVISED	Solid State NMR Studies of Amyloid Proteins	93.866	327,194	-
NIH	1-RF1-AG059661-01 REVISED	Molecular structures of tau aggregates studied by solid-state NMR	93.866	175,266	-
NIH	1-RF1-AG062377-01 REVISED	Dissection of endosomal trafficking mechanisms in Alzheimers Disease	93.866	528,464	-
NIH	1S10OD023513-01A1	New RF Electronics Console and Probes for 900 Mhz NMR Spectrometer	93.351	600,000	-
NIH	1U01CA214381-01A1	Development of Physiologic Tissue Models to Assess Tumor Explant Response to Immune Checkpoint Blockade	93.396	890,248	485,771
NIH	1-U01-CA231079-01	Development of multifunctional probes for profiling microbial glycans	93.31	291,845	-
NIH	1-U01-MH-109129-01	Anterograde monosynaptic tracing - Restricted Parent	93.242	-263,318	-143,861
NIH	1-U01-MH114819-01	A Molecular and Cellular Atlas of the Marmoset Brain	93.242	1,620,843	771,649
NIH	1-U01-MH117072-01	Towards integrated 3D reconstruction of whole human brains at subcellular resolution	93.242	1,002,694	46,519
NIH	1-U01-NS090473-01	Cortical circuits and information flow during memory-guided perceptual decisions	93.853	-1,166	-
NIH	1-U01-NS103470-01	Genetically-targeted hemodynamic functional imaging	93.853	431,047	-
NIH	1-U01-NS110453-01	Single-cell transcriptional and epigenomic dissection of Alzheimer's Disease and Related Dementias	93.853	1,791,191	-
NIH	1-U19-AI131135-01	3D Models of Engineered Human iPS Cells to Investigate Neurotropic Virus Infections	93.855	1,758,893	1,283,274
NIH	1U24OD026638-01	Knockin marmoset reporters for non-invasive measuring of genome-editing efficiency	93.310	851,367	-
NIH	1-U54-CA217377-01	Quantitative and functional characterization of therapeutic resistance in cancer (PARENT)	93.397	133,901	130,628
NIH	1-UF-1NS107712-01	Intracellular calcium sensing with molecular fMRI	93.853	496,837	-
NIH	2-P01-CA026731-35A1	Endogenous Nitrite Carcinogenesis In Man	93.393	334,884	-
NIH	2-P30-CA014051	Cancer Center Support (Core) Grant – (Parent)	93.397	3,046,372	107,600
NIH	2-P30-CA014051-47	Cancer Center Support (Core) Grant – (Parent)	93.397	285,806	-
NIH	2-P30-EY002621-41	Core-Vision Processes	93.867	472,779	-
NIH	2-P41-EB015871-31	MIT Laser Biomedical Research Center	93.286	741,917	310,779
NIH	2-R01-CA168653-06A1	Regulation of glucose metabolism to allow tumor initiation and growth	93.396	225,221	-
NIH	2-R01-EB000244-39	A new high-throughput gastrointestinal tract explant platform for drug formulation discovery and metabolic disease modulation	93.286	231,366	217,616

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	2-R01-EB001965-14	Advanced Instrumentation for Dynamic Nuclear Polarization NMR Research	93.286	125,924	-
NIH	2-R01-EB002804-27	High Field DNP and EPR in Biological Systems	93.286	23,713	-
NIH	2-R01-EB017755-05	Mucin Glycans in the Regulation of Microbial Virulence	93.286	7,393	-
NIH	2-R01-EY011289-29A1	Novel Diagnostics With Optical Coherence Tomography	93.867	79,310	79,310
NIH	2-R01-EY014970-11A1	The role of inferior temporal cortex in core visual object recognition	93.867	3,564	-
NIH	2-R01-EY020517-07	Project Prakash: Development of Object Perception After Late Sight Onset	93.867	171,892	-
NIH	2-R01-GM059426-17	Catalytic Stereoselective Olefin Metathesis Reactions	93.859	227,569	227,569
NIH	2R01GM066976-14A1	Structures and lipid interactions of curvature-inducing membrane peptides by NMR	93.859	8,776	-
NIH	2R01GM066976-14A1S1	Structures and lipid interactions of curvature-inducing membrane peptides by NMR	93.859	52,259	-
NIH	2-R01-GM074825-10A1	Synthesis and Study of Complex Natural Products	93.859	5,177	4,053
NIH	2-R01-GM089732-09	Synthesis and Study of Cyclotryptamine and Diketopiperazine Alkaloids	93.859	179,580	-
NIH	2R01GM105984-06	Investigating Mechanisms of Force Transmission in Tissue Morphogenesis	93.859	60,843	-
NIH	2-R01-MH104536-06	Imaging Synaptic Transmission of Individual Active Zones	93.242	277,424	-
NIH	2R56EB017205-05	Critical Care Informatics	93.286	458,255	-
NIH	2-T32-GM008334-29	Interdepartmental Biotechnology Training Program	93.859	9,704	-
NIH	2-T32-GM008334-30	Interdepartmental Biotechnology Training Program	93.859	580,682	-
NIH	2-T32-GM087237-09	Graduate Training in Computational and Systems Biology	93.859	-4,809	-
NIH	3 R01-MH111872-02S1	Multi-Site Non-Invasive Magnetothermal Excitation and Inhibition of Deep Brain Structures	93.242	61,368	6,266
NIH	3 T32 GM007484-40S1	Integrative Neuronal Systems-Year 40	93.859	13,455	-
NIH	3-P30-ES002109-38S1	MIT Center for Environmental Health Sciences (YR 36-40)	93.113	16,536	-
NIH	3-R01-DC016607-01A1S1	The neural architecture of pragmatic processing	93.173	52,775	-
NIH	3-R01-EB002804-30S1	High Field DNP and EPR in Biological Systems	93.866	230,916	-
NIH	3-R01-EY023037-05S1	Behavioral Consequences and cellular substrates of plasticity in visual cortex	93.867	20,164	-
NIH	3-R01-EY025437-04S1	in vivo imaging of inhibitory circuit remodeling in mouse visual cortex	93.867	105,286	-
NIH	3-R01-EY028219-02S1	Astrocyte-neuron interactions in visual cortex circuits	93.867	680,839	-
NIH	3R01GM074825-12S1	Synthesis and Study of Complex Natural Products	93.859	180,979	-
NIH	3-R01-GM081871-10S1	Structure based Prediction of the interactome	93.859	86,325	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	3-R01-GM097241-05S1	Inhibition of Prokaryote-Specific Saccharide Biosynthesis in Microbial Pathogens	93.859	3,774	-
NIH	3-R01-GM097241-06	Inhibition of Prokaryote-Specific Saccharide Biosynthesis in Microbial Pathogens	93.859	68,845	-
NIH	3-R01-HG008754-03S1	High-Throughput Native Context Mapping and Modeling of Regulatory DNA	93.172	51,440	-
NIH	3-R01-NS089076-01A1S1	Epigenetic pathology and therapy in Huntington's disease	93.853	-19,170	-
NIH	3-R33-AI100190-04S1	MMDx: A rapid multiplexed matrix code diagnostic for real time epidemiology	93.855	14	-
NIH	3T32EB001680-14S1	Neuroimaging Training Program	93.286	36,267	-
NIH	3-U01CA202177-03S1	Quantitative analyses of tumor cell extravasation	93.396	41,007	-
NIH	3-U01-CA202177-04S1	Quantitative analyses of tumor cell extravasation	93.396	172,677	-
NIH	3-U01-MH106018-03S2	Novel technologies for nontoxic transsynaptic tracing	93.242	0	-
NIH	4DP2DK102256-02	A Novel Strategy for Combating Obesity: Reprogramming Neural Circuits	93.310	361,398	-
NIH	4-P41-EB015871-30	MIT Laser Biomedical Research Center (P41-RR02594)	93.286	3,760	-
NIH	4-R01-AG011119-24	Function of SIRT1 in Growth and Reproduction	93.866	-84	-
NIH	4-R01-AR060331-05	Cartilage Repair Using Self Assembling Peptide Scaffolds	93.846	-172	-
NIH	4-R01-CA096504-14	Engineered Antibody EGFR Antagonist Cancer Therapeutics	93.395	104,190	80,515
NIH	4-R01-CA174795-04	Localizing Immunotherapy to Improve Therapeutic Index	93.395	-18,330	-
NIH	4-R01-CA178636-04	Intraoperative real time breast cancer margin assessment with nonlinear microscopy	93.394	25,550	18,796
NIH	4-R01-DC000117-37	Hearing Aid Research	93.173	9,241	-
NIH	4-R01-EB001965-13	High Magnetic Field, Time Domain Magnetic Resonance Spectrometers	93.286	-1,170	-
NIH	4-R01-EB017755-04	Mechanistic analysis of transport through the mucus barrier	93.286	2,295	-
NIH	4R01EB017755-04 REVISED	Mechanistic analysis of transport through the mucus barrier	93.286	151,079	-
NIH	4-R01-ES015818-09	Mechanism of Eukaryotic Environmental Mutagenesis	93.113	4,258	-
NIH	4-R01-EY020517-06	Project Prakash: Development of Object Perception After Late Sight Onset	93.867	-9,868	-
NIH	4-R01-EY023173-05	High-throughput robotic analysis of integrated neuronal phenotypes	93.867	88,513	1,002
NIH	4-R01-GM081393-08	MEIII2_Y_Me_Fe_Mn_Cluster Assembly and Maintenance in Ribonucleotide Reductase	93.859	228,754	-
NIH	4-R01-GM101420-04 REVISED	High throughput microfluidic intracellular delivery platform	93.859	17,606	-
NIH	4-R01-GM104948-05	Redesigning General Anesthesia	93.310	200,310	108,557
NIH	4-R01-MH065252-15	Neural Basis of Categories	93.242	-58	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	4-R01-MH097104-05	Shank3 in Synaptic Function and Autism	93.242	32,344	-
NIH	4-T32-GM007484-40	Integrative Neuronal Systems-Year 40	93.859	-7,973	-
NIH	4-U01-CA164337-05	GI Tract Dysbiosis and Breast Cancer	93.396	-693	-
NIH	4-UH3-TR002186-03	Cartilage-Bone-Synovium MPS: Musculoskeletal Disease Biology in Space	93.350	171,472	16,834
NIH	5 K99 GM118907-02	Effects of Host Metabolic Variation on Antibiotic Susceptibility	93.859	20,445	-
NIH	5 P01 HD061315-05	Maternal and Child Health in Poor Countries: Evidence from Randomized Evaluations	93.865	0	-242
NIH	5 P42 ES027707-02	Science and Engineering for Sensors, Mechanisms, and Biomarkers of Exposures	93.143	758,972	-
NIH	5 U01 CA215798-03	Systems approaches to understanding the relationships between genotype, signaling, and therapeutic efficacy	93.396	67,080	9,833
NIH	5-DP1-HD091947-03	How Does the Functional Organization of the Human Brain Arise in Development?	93.865	1,284,623	313,345
NIH	5-DP1-NS082101-05	Generating Transplantable Neurons by in Vivo Combinatorial Screening of Transcription Regulator RNAs	93.310	0	-
NIH	5-DP1-NS087724-05	Millisecond-Timescale Whole-Brain Neural Activity Mapping in Health and Disease	93.310	33,701	-
NIH	5-F30-CA228229-02	Elucidating the role of GATOR2 in nutrient sensing by mTORC1	93.398	45,324	-
NIH	5-F31-CA224796-02	Development of a novel platform for the identification of synthetic lethal genes in a Kras and Keap1-mutant mouse model of lung adenocarcinoma.	93.398	42,093	-
NIH	5-F31-CA228241-02	Genetic identification of novel mTORC1 regulators and homeostatic signaling mechanisms	93.398	41,125	-
NIH	5F31DK113665-02	Leucine Sensing by the mTORC1 Pathway in the Liver - PDF Cangelosi	93.847	35,792	-
NIH	5F31GM129905-02	Understanding the Starvation Induced Selective Autophagy of Specific mRNAs and lncRNAs	93.859	43,141	-
NIH	5-F32-AG052284-03	The Role of Aging in the Progression of Tendon Degeneration Due to Compressive Mechanical Overload: A Multiscale Approach	93.866	29,022	-
NIH	5-F32-AI136459-02	Characterizing spatio-temporal changes in immune cell landscapes of multiple sclerosis patients in response to B cell depletion with Ocrelizumab	93.855	59,596	-
NIH	5-F32-CA200351-03	Polymeric Nanoparticles for siRNA Delivery to Bone Marrow Endothelium to Disrupt Tumor Cell Adhesion and Bone Metastasis Formation In Vivo - PDF: M. Mitchell	93.398	5,560	-
NIH	5-F32-CA213810-02 REVISED	Understanding metabolic pathways that support redox homeostasis in cancer	93.398	32,772	-
NIH	5-F32-CA213821-02 REVISED	Systematic analysis of RNA binding proteins in modulating drug response- PDF D. Dominguez	93.398	15,771	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	5-F32-DC015163-03	Mechanisms of adaptation in (healthy and aphasic) noisy-channel comprehension	93.173	64,531	-
NIH	5-F32-DE027877-02	Environmentally-responsive, layer-by-layer coatings for the on-demand delivery of therapeutic growth factors and antibiotics to repair craniomaxillofacial bone defects	93.121	54,903	-
NIH	5-F32-DK111116-02	Dynamic Gene Circuit Mapping of Unfolded Protein Response in Type 2 Diabetes	93.847	12,666	-
NIH	5-F32-EB022416-02 REVISED	Fluorescence-based molecular imaging of in vivo release kinetics (PDF: K. McHugh)	93.286	41,884	-
NIH	5-F32-EB023101-02 REVISED	Sequence- and Stereocontrolled Triazolium-containing Precise Polymers for siRNA Complexation and Delivery	93.286	28,302	-
NIH	5-F32-EY028028-03	Contributions of glial neurotransmitter transport in balancing excitation and inhibition in visual cortex	93.867	64,163	-
NIH	5-F32-GM114959-02	Identification of “exosite” contacts in TRAF6, a critical mediator of cancer (PDF: D.Whitney)	93.859	5,381	-
NIH	5-F32-GM120963-03	Investigating Patterns of Cell Interactions During Epithelial Folding – PDF Yevick	93.859	61,360	-
NIH	5-F32-GM122356-02	Magnetic complex colloidal sensors for continuous in vitro measurement of nitric oxide	93.859	60,265	-
NIH	5-F32-GM123710-02	Chiral polymer nanoparticles for probing biological systems	93.859	59,907	-
NIH	5-F32-GM125163-02	Copper-Catalyzed Enantioselective Addition of Styrene-Derived Nucleophiles to Thiocarbenium Ions by Ligand-Controlled Chemoselective Hydrocupration	93.859	61,984	-
NIH	5F32GM125165-02	Identification and Characterization of Ligand Binding Profiles for Human Intelect	93.859	54,667	-
NIH	5-F32-GM126765-02	Investigating the VapBC family of toxin-antitoxin systems in Mycobacterium tuberculosis – PDF Nocedal	93.859	57,279	-
NIH	5-F32-GM128238-02	Catalytic Asymmetric Amine Synthesis using Ni/Photoredox Decarboxylations	93.859	66,348	-
NIH	5-F32-HD059302-03	Neural Substate of Language and Social Cognition - PDF for E. Redcay	93.865	-152	-
NIH	5-F32-HD090833-02	Identification and Functional Dissection of Long Non-Coding RNAs in Genomic Imprinting	93.865	12,849	-
NIH	5-F32-HL134244-02	The Coagulopathy-Inflammation Interface: Integration of Coagulopathy and Complement Activation as a Mechanism for Neutrophil Priming and Tissue Damage	93.859	11,949	-
NIH	5-F32-MH111216-02	Elucidating the role of basolateral amygdala projections to the lateral hypothalamus in associative learning PDF: Siciliano	93.242	-4,143	-
NIH	5-F32-MH114525-02	Adolescent Brain Bases of Intergenerational Risk for Depression	93.242	59,734	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	5-F32-MH115441-02	Development of Line-Scan Temporal Focusing for fast structural imaging of synapse assembly/disassembly in vivo	93.242	60,967	-
NIH	5-F32-MH115446-02	Investigating the Role of Neurotensin on Valence Assignment During Associative Learning in the Basolateral Amygdala	93.242	61,081	-
NIH	5-F32-NS093897-03 REVISED	Therapeutic devices for probing electrical and chemical activity in deep brain disorders_PDF: H. Schwerdt	93.853	12,434	-
NIH	5-F32-NS100356-03 REVISED	Revealing the Functional Role of Theta and Gamma Rhythms in Encoding and Retrieval of Spatial Memory	93.853	55,886	-
NIH	5-K00-CA212227-04	Imaging Cancer Angiogenesis with Acoustic Angiography Ultrasound	93.398	61,210	-
NIH	5-K99-AG055697-03 REVISED	Deciphering cell-type specific mechanisms of APOE4 in Alzheimer's disease	93.866	100,604	-
NIH	5-K99-DA045103-02	Defining the role of cortical circuit dynamics in learning and addiction	93.279	191,033	-
NIH	5-K99-MH112855-02	Prefrontal circuits for attention and motor planning	93.242	123,241	-
NIH	5-P01-AI071195-02	Immune Response Consortium: Integrated In Silico, In Vitro, In Vivo Studies.	93.855	-1,060	-1,060
NIH	5-P01-CA026731-39	Endogenous Nitrite Carcinogenesis In Man	93.393	264,985	-
NIH	5-P01-CA042063-32	Characterization of Pathways Controlling Cancer at the Level of Gene Regulation	93.393	1,481,109	-
NIH	5-P30-CA014051-46	Cancer Center Support (Core) Grant – (Parent)	93.397	254	-
NIH	5P30ES002109-37	MIT Center for Environmental Health Sciences (YR 36-40)	93.113	-20,306	-
NIH	5P30ES002109-38	MIT Center for Environmental Health Sciences (YR 36-40)	93.113	785,774	-
NIH	5P30ES002109-38 REVISED	MIT Center for Environmental Health Sciences (YR 36-40)	93.113	294,173	-
NIH	5P30ES002109-38S2	MIT Center for Environmental Health Sciences (YR 36-40)	93.113	25,544	9,328
NIH	5-P30EY002621-40	Core - Vision Processes	93.867	189,973	7,549
NIH	5-P41-EB002026-42	MIT/Harvard Center for Magnetic Resonance	93.286	14,358	-
NIH	5P41EB002026-43	MIT/Harvard Center for Magnetic Resonance	93.286	661,007	-
NIH	5-P41-EB015871-29	MIT Laser Biomedical Research Center (P41-RR02594)	93.286	-1,510	-
NIH	5-P41-EB015871-32	MIT Laser Biomedical Research Center	93.286	316,305	2,129
NIH	5P42ES027707-02 REVISED	Science and Engineering for Sensors, Mechanisms, and Biomarkers of Exposures	93.143	954,729	-
NIH	5-P50-GM098792-05	MIT Center for Integrative Synthetic Biology	93.859	333,981	-
NIH	5-R00-AG045144-05	Regulation of the Intestinal Stem Cell Niche in Aging	93.866	-279	-
NIH	5-R00-AG050749-05	Quantitation and biochemical characterization of autophagy's role in aging	93.866	138,537	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	5-R00-CA204595-05	Tumor-intrinsic oncogenic alterations and evasion of anti-tumor immunity	93.396	326,972	-
NIH	5-R00-DK102669-04 REVISED	Sculpting the Enteric Microbiota with CRISPR-Cas Systems	93.847	-972	-
NIH	5-R00-GM115765-04	Elucidating how intracellular bacterial pathogens hijack host intercellular communication to promote spread	93.859	286,706	-
NIH	5-R01 EB 016101-5	A New Device for Electrical & Chemical Modulation of Pathological Neural Activity	93.286	254,372	-
NIH	5-R01-AG049897-05	A Randomized Controlled Trial of Health Care Hotspotting	93.866	239,560	-
NIH	5-R01-AG058002-03	Epigenomic, transcriptional and cellular dissection of Alzheimer's variants	93.866	769,071	528,192
NIH	5-R01-AG062335-02	Elucidating the Molecular Mechanisms of Neuropsychiatric Symptoms in Alzheimer's Disease	93.866	110,656	-
NIH	5-R01-AI016892-38	Proteolytic and chaperone machines implicated in virulence and disease	93.855	-116	-
NIH	5-R01-AI016892-40	AAA+ proteolytic machines	93.855	474,888	-
NIH	5-R01-AI055258-15	Synthetic Ligands for Modulating Immune Cell Responses	93.855	359,515	-
NIH	5-R01-AI111395-05	Characterization and Development of a Cross Spectrum Anti-Dengue Antibody	93.855	736,894	-
NIH	5-R01-AI111860-05	T-cell-mediated targeting of therapeutics to HIV reservoirs	93.855	183,127	-
NIH	5-R01-AI126592-04	The Chemistry and Biology of Galactofuranose-Containing Glycans	93.855	440,618	-
NIH	5-R01-AR060331-04	Cartilage Repair Using Self Assembling Peptide Scaffolds	93.846	-28	-
NIH	5-R01-AR065484-05	Structure-Function of the Nuclear Envelope Bridge and its Role in Laminopathies	93.846	218,369	-
NIH	5-R01-AR071443-03	Defining and Modulating Mechanisms of Collagen Proteostasis	93.846	142,241	-
NIH	5-R01-AT008764-05	Antimicrobial discovery from metabolomics of nematode pathogen interactions	93.213	574,118	290,040
NIH	5-R01-CA021615-42	Mutagenesis and Repair of DNA	93.393	287,798	-
NIH	5-R01-CA034992-36 REVISED	Understanding and Improving Platinum Anticancer Drugs	93.395	588,582	-
NIH	5R01CA073808-22 REVISED	Ribonucleases in Cancer Chemotherapy	93.395	200,442	-
NIH	5-R01-CA075289-19	Optical Biopsy Using Coherence Tomography	93.394	52,030	52,030
NIH	5-R01-CA075289-21	Optical Biopsy Using Coherence Tomography	93.394	220,913	-
NIH	5-R01-CA080024-21	Intra and Extra-Chromosomal Probes for Mutagenesis by Carcinogens	93.393	246,568	-
NIH	5-R01-CA096504-15 REVISED	Engineered Antibody EGFR Antagonist Cancer Therapeutics	93.395	7,551	1,166
NIH	5-R01-CA133404-10	Stress and Proliferation States Impact MicroRNA-Mediated Regulation in Cancer	93.393	182,136	-

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NIH	5-R01-CA168653-05	Regulation of glucose metabolism to allow tumor initiation and growth	93.396	80,824	-
NIH	5-R01-CA174795-05	Localizing Immunotherapy to Improve Therapeutic Index	93.395	-5,923	-
NIH	5-R01-CA178636-05	Intraoperative real time breast cancer margin assessment with nonlinear microscopy	93.394	184,749	-
NIH	5-R01-CA184956-02	(PQB6)Elucidating metastasis by real-time monitoring and tagging of CTCs in GEMMs	93.396	7,100	-
NIH	5-R01-CA184956-04	(PQB6)Elucidating metastasis by real-time monitoring and tagging of CTCs in GEMMs	93.396	219,603	-
NIH	5-R01-CA206157-24	Regulation of MITOSIS by Proteolysis in Yeast	93.393	228,567	-
NIH	5-R01-CA206218-04	Reprogramming the tumor microenvironment via self-amplified RNA (SafeR) circuits	93.396	465,099	-
NIH	5-R01-CA207029-04	RNA circuits for cell state determination in mammalian cells in vitro and in vivo	93.394	255,216	-
NIH	5-R01-CA211184-03	Dietary control of stem cells in physiology and cancer	93.396	449,493	-
NIH	5-R01-CA218094-02	Deep learning based antibody design using high-throughput affinity testing of synthetic sequences	93.394	296,913	-
NIH	5-R01-CA220468-02	Organic nanoparticles for dual MRI-guided therapeutic selection and ovarian cancer drug delivery	93.394	291,038	-
NIH	5-R01-DA029639-08	Novel Platforms for Systematic Optical Control of Complex Neural Circuits In Vivo	93.279	304,729	-
NIH	5-R01-DA038642-05	Molecular imaging of dopaminergic signaling in rodent brain	93.279	371,649	-
NIH	5-R01-DA045549-02	High-Performance Imaging Through Scattering Living Tissue	93.279	1,125,789	227,504
NIH	5-R01-DC000238-33	Experimental - Theoretical Studies of Cochlear Mechanisms	93.173	47,941	-
NIH	5-R01-DC000238-34	Experimental - Theoretical Studies of Cochlear Mechanisms	93.173	393,508	-
NIH	5-R01-DC009183-10	Neuronal Mechanisms of Motor Exploration and the Emergence of Structured Behavior	93.173	-831	-
NIH	5-R01-DC014739-03	Auditory Scene Analysis with Complex Sounds	93.173	548,862	-
NIH	5-R01-DC016607-02	The neural architecture of pragmatic processing	93.173	520,678	-
NIH	5-R01-DE013023-20	Novel Polymers for Tissue Engineering	93.121	407,854	-
NIH	5-R01-DE024747-02	Tunable Nanolayer-Polymer Composite Patches for Cell-Free CMF Repair	93.121	226,114	217,617
NIH	5-R01-DE024747-03	Tunable Nanolayer-Polymer Composite Patches for Cell-Free CMF Repair	93.121	228,262	-
NIH	5-R01-DK087984-07 REVISED	HRI-eIF2a Phosphorylation Signaling in Oxidative Stress and Erythropoiesis	93.847	14,456	-
NIH	5-R01-DK115558-02	Macromolecular interactions controlling the ALA synthases, keystone enzymes that initiate heme biosynthesis	93.847	183,951	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	5-R01-EB000244-40	A new high-throughput gastrointestinal tract explant platform for drug formulation discovery and metabolic disease modulation	93.286	973,839	-
NIH	5-R01-EB001960-40	Solid State NMR Studies of Membrane Proteins	93.286	5,071	-
NIH	5-R01-EB001965-15	Advanced Instrumentation for Dynamic Nuclear Polarization NMR Research	93.286	537,153	-
NIH	5-R01-EB002804-30S1	High Field DNP and EPR in Biological Systems	93.286	418,223	-
NIH	5-R01-EB004866-12	Novel Traveling Wave Tubes for CW and Pulsed DNP NMR	93.286	134,119	-
NIH	5-R01-EB016101-5	A New Device for Electrical & Chemical Modulation of Pathological Neural Activity	93.286	109,150	-
NIH	5-R01-EB017205-04	Critical Care Informatics	93.286	36,040	-
NIH	5-R01-EB020740-04	Nipype: Dataflows for Reproducible Biomedical Research	93.286	692,462	180,342
NIH	5-R01-EB022062-02	Tabletop liquid-helium-free, persistent-mode 1.5-T/70-mm osteoporosis MRI magnet	93.286	62,263	-
NIH	5-R01-EB022062-03	Tabletop liquid-helium-free, persistent-mode 1.5-T/70-mm osteoporosis MRI magnet	93.286	758,480	36,324
NIH	5-R01-EB022433-04	Lymph node-targeted molecular vaccines	93.286	407,208	-
NIH	5-R01-EB024261-03	Expansion Microscopy	93.286	641,086	-
NIH	5-R01-EB024531-03	Computational Design, Fabrication, and Evaluation of Optimized Patient-Specific Transtibial Prosthetic Sockets	93.286	351,184	-
NIH	5-R01-EB024591-03	Synthetic Genetic Controller Circuits to Reprogram Cell Fate	93.286	219,633	126,286
NIH	5-R01-EB025256-02	Programmed Differentiation Circuits for Organoids using Meso-Microfluidics	93.286	591,297	-
NIH	5-R01-EB025854-02	Synthetic biology-regulated RNA vaccines	93.286	434,102	-
NIH	5-R01-EB026344-02	Multivalent Nano-conjugates for Targeted Penetration of and Delivery to Dense Extracellular Matrices	93.286	279,634	-
NIH	5-R01-ES015339-10	Protein Kinase Signaling and Cell Cycle Control	93.113	-5,557	-
NIH	5-R01-ES016313-08 REVISED	The Environment as a Variable to Calibrate Mouse Models of Human Disease	93.113	23,406	-
NIH	5-R01-ES022872-25	Eukaryotic DNA Alkylation Repair	93.113	5,456	-
NIH	5-R01-EY007023-28	Cell-specific circuits and contextual modulation in visual cortex	93.867	291,356	-
NIH	5-R01-EY011289-30	Novel Diagnostics With Optical Coherence Tomography	93.867	28,638	28,638
NIH	5-R01-EY011289-33	Novel Diagnostics With Optical Coherence Tomography	93.867	322,482	-
NIH	5-R01-EY014074-21	Developmental Regulation of Glutamate Receptor Function	93.867	244	-
NIH	5-R01-EY023037-06	Behavioral Consequences and cellular substrates of plasticity in visual cortex	93.867	450,084	-
NIH	5-R01-EY023322-06	Neural mechanisms of color	93.867	130,995	-

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NIH	5-R01-EY025437-03	in vivo imaging of inhibitory circuit remodeling in mouse visual cortex	93.867	6,280	-
NIH	5-R01-EY025437-05	in vivo imaging of inhibitory circuit remodeling in mouse visual cortex	93.867	396,300	-
NIH	5-R01-GM024663-42	Genetic Analysis of Nematode Egg Laying and Co-regulated Behavioral Systems	93.859	325,126	-
NIH	5-R01-GM029595-38 REVISED	Ribonucleotide Reductase: Structure and Function	93.859	176,736	-
NIH	5-R01-GM031030-36	Molecular Genetics of Rhizobium Nodulation Plasmids	93.859	132,624	-
NIH	5-R01-GM034277-32	Regulation of mRNA Processing	93.859	2,030	-
NIH	5-R01-GM034277-34	Regulation of mRNA Processing	93.859	542,862	-
NIH	5-R01-GM039334-31	Deciphering Membrane-Associated Glycan Assembly and Transfer	93.859	340,048	-
NIH	5-R01-GM044783-27	Protein Chemistry	93.859	530,001	-
NIH	5-R01-GM046059-25	Catalytic Methods for Organic Synthesis	93.859	-73	-
NIH	5-R01-GM049039-23	Endovascular Devices and Vascular Repair	93.859	879,953	-
NIH	5-R01-GM052339-24	Initiation of DNA Replication of Yeast Chromosomes	93.859	257,271	-
NIH	5-R01-GM058160-19	Late Transition Metal Catalysts for Organic Synthesis	93.859	3,905	-
NIH	5-R01-GM059426-20	Catalytic Stereoselective Olefin Metathesis Reactions	93.859	271,409	-
NIH	5-R01-GM065519-16 REVISED	Imaging Mobile Zinc Biology	93.859	106,789	-
NIH	5-R01-GM066976-15	Structures and lipid interactions of curvature-inducing membrane peptides by NMR	93.859	274,202	-
NIH	5-R01-GM069857-12	Complex Metallocluster Structure and Assembly	93.859	20,778	-
NIH	5-R01-GM074825-13	Synthesis and Study of Complex Natural Products	93.859	321,654	-
NIH	5-R01-GM077537-12	High Resolution Assembly Structure of the Nuclear Pore Complex	93.859	463,847	-
NIH	5-R01-GM081871-11	Structure based Prediction of the interactome	93.859	296,001	-
NIH	5-R01-GM082209-08 REVISED	Computational Design of Inhibitor Specificity	93.859	68,287	-
NIH	5-R01-GM082899-12	Cell cycle regulation and chromosome organization in Caulobacter crescentus	93.859	335,237	-
NIH	5-R01-GM084477-11	Microbial Modulation of Neuroendocrine Physiology and Aging of C. elegans	93.859	387,208	-
NIH	5-R01-GM085319-10	Function of Sequence-specific RNA Binding Proteins	93.859	236,300	-
NIH	5-R01-GM088204-09	Solid-state NMR of the influenza M2 protein in lipid bilayers	93.859	324,785	-
NIH	5-R01-GM089732-08 REVISED	Synthesis and Study of Dimeric Diketopiperazine Alkaloids Years 5 to 8	93.859	6,542	-
NIH	5-R01-GM095843-08 REVISED	Molecules for Dynamic Nuclear Polarization and NMR Structure Determination	93.859	168,841	-
NIH	5-R01-GM101988-41	Sequence Determinants of Protein Structure and Stability	93.859	325,522	-

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NIH	5-R01-GM102311-07	Environmental modulation of microbial conflict and cooperation	93.859	375,302	-
NIH	5-R01-GM105984-05	Investigating the generation of mechanical forces during tissue invagination	93.859	49,762	-
NIH	5-R01-GM108348-06	Compressive Genomics for Large Omics Data Sets: Algorithms, Applications and Tools	93.859	438,652	13,080
NIH	5-R01-GM110048-04	Computationally guided design of helical peptide interaction reagents	93.859	47,082	-
NIH	5-R01-GM110535-04	Cysteine Arylation	93.859	217,162	-
NIH	5-R01-GM114190-05	Polymer models of mitotic and interphase chromosomes	93.859	247,778	-
NIH	5R01GM114547-06	Synthetic Methods based on Biphilic Phosphorus Catalysts	93.859	176,396	-
NIH	5-R01-GM114834-13	Modified Phase 3B of a 3-phase 1.3-GHz LTS/HTS NMR magnet	93.859	391,692	-
NIH	5-R01-GM118695-02	Bioinorganic Explorations of Host-Defense Proteins	93.859	227,048	-
NIH	5-R01GM125646-02	Investigating RhoA GTPase regulation in sculpting tissues	93.859	373,789	-
NIH	5-R01-GM126376-02	Metallobiochemistry of innate immunity and bacterial physiology	93.859	280,773	71,875
NIH	5-R01-HD085866-05	Mitotic exit control	93.865	339,736	-
NIH	5-R01-HD086899-02	NRI: An autonomous curious social robot with a mindset for long-term interaction with children	93.865	9,773	12,274
NIH	5-R01-HG002439-16	Regulation and Function of Alternative mRNA Isoform Expression in Mammals	93.172	268,038	-
NIH	5-R01-HG008363-03 REVISED	High-throughput methods for elucidating the control of chromatin accessibility	93.172	351,009	18,779
NIH	5-R01-HG008754-04	High-Throughput Native Context Mapping and Modeling of Regulatory DNA	93.172	551,106	346,187
NIH	5-R01-HL121386-03	Characterizing Mechanisms of Sickle Cell Crisis via Dynamic Optical Assay	93.839	-28,091	-
NIH	5-R01-HL127174-04	Canonical & non-canonical regulation of the HDL receptor by PDZK1's PDZ domains	93.837	461,073	18,914
NIH	5-R01-HL140471-02	Investigating the role of H2A.Z dynamics in regulating cardiac lineage commitment	93.837	650,328	216,490
NIH	5-R01-MH060379-18	Functional and anatomical characterization of the striosomal system	93.242	330,815	-
NIH	5-R01-MH085802-10	MicroRNA mechanisms of Rett Syndrome	93.242	626,475	-
NIH	5-R01-MH102441-05	Dissecting the Neural Circuits Encoding Positive and Negative Valence	93.242	209,737	-
NIH	5-R01-MH104536-05	Imaging Synaptic Transmission of Individual Active Zones	93.242	355,805	-
NIH	5-R01-MH106469-05	Synaptic pathophysiology of the 16p11.2 microdeletion mouse model	93.242	325,317	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	5-R01-MH106497-05	Delineating the Anatomical and Functional Circuitry Underlying Social Learning	93.242	508,152	-
NIH	5-R01-MH107680-05	The cognitive searchlight: TRN circuit dissection in health and disease	93.077	232,001	-
NIH	5-R01-MH109978-04	Network-based prediction and validation of causal schizophrenia genes and variants	93.242	775,938	144,293
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	1,021,920	-
NIH	5-R01-MH111872-03	Multi-Site Non-Invasive Magnetothermal Excitation and Inhibition of Deep Brain Structures	93.242	578,269	-
NIH	5-R01-MH112694-03	Simultaneous multiplexed in situ fluorescence imaging of neuronal proteins and messenger RNAs	93.242	370,833	-
NIH	5-R01-MH114031-02	RNA Scaffolds for Cell Specific Multiplexed Neural Observation	93.242	820,426	202,015
NIH	5-R01-MH115037-03	Elucidating neural substrates that mediate autism-like behaviors	93.242	652,533	-
NIH	5-R01-MH115592-03	Thalamocortical Dynamics and Consciousness	93.242	464,397	-
NIH	5-R01-NS025529-28	Extrapyramidal Systems	93.853	241,599	-
NIH	5-R01-NS040296-17	Characterization of the Drosophila Synaptotagmin Family	93.853	326,382	-
NIH	5-R01-NS078127-05R	Neural mechanisms of timing in the oculomotor system	93.853	161,730	-
NIH	5-R01-NS086804-05	Fiber Inspired Neural Probes for the Multifunctional Dynamic Brain Mapping	93.853	427,852	-
NIH	5-R01-NS089076-05	Epigenetic pathology and therapy in Huntington's disease	93.853	111,924	-
NIH	5-R01-NS094178-03R	Brainstem mechanism underlying recurrent laryngospasm in Rett syndrome	93.853	103,051	-
NIH	5-R01-NS098505-02	Dissecting the role of thalamic inhibition in neurodevelopmental diseases	93.853	279,677	-
NIH	5-R01-NS098505-03	Dissecting the role of thalamic inhibition in neurodevelopmental diseases	93.853	367,141	-
NIH	5-R01-NS102727-02	Scalable Cell- and Circuit-Targeted Electrophysiology	93.853	78,856	-
NIH	5-R01-NS102727-03	Scalable Cell- and Circuit-Targeted Electrophysiology	93.853	1,101,875	286,610
NIH	5-R01-NS102730-03	Mechanisms underlying DNA double strand break response in Alzheimer?s disease and frontal temporal dementia	93.853	481,852	-
NIH	5-R01-NS104892-03	Neuromodulatory control of collective circuit dynamics in C. elegans	93.853	530,018	-
NIH	5-R01-NS106031-02	A dendritic mechanism for cholinergic neuromodulation of cortical function	93.853	320,302	-
NIH	5R03HD092676-02	High-performance, low-cost, passive prosthetic knees optimized to replicate physiological gait in multiple mobility scenarios	93.865	160,749	39,865

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	5-R21-AG054961-02 REVISED	Aggregate Proximity-Induced, Proteostasis Network-Modulated Destabilization of the Proteome	93.866	-728	-
NIH	5-R21-AI110787-02 REVISED	Multigenerational lineage heterogeneity and metabolic plasticity of CD8 T cells	93.855	27,693	-
NIH	5-R21-AI121613-02	MITOPlas_Scalable characterization of the malaria parasite mitochondrial proteome	93.855	32,975	-
NIH	5-R21-AI126465-02	Siderophore-based antibiotics: consequences for the microbiota and bacterial pathogens	93.855	7,906	10,991
NIH	5-R21-AI130776-02	Development and application of glycan readers for the detection and analysis of bacterial glycoconjugates	93.855	173,857	-
NIH	5-R21-AR068477-02	A C. elegans drug discovery platform for dysferlin-based Muscular Dystrophies	93.846	-42	-
NIH	5-R21-DA044748-02	Nanoprobes for neurotransmitter-sensitive molecular fMRI in addiction research	93.279	194,044	-
NIH	5-R21-EB018924-02	Liquid-helium-free persistent-mode HTS magnets for NMR and MRI applications	93.286	-41	-
NIH	5-R21-EB022729-02 REVISED	Multifunctional fibers for high-throughput microfluidics	93.286	51,553	-
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	124,703	-
NIH	5-R21-HD090346-02	Using fMRI in awake human infants to study functional development of cortex	93.865	164,263	-
NIH	5-R21-NS102762-02	Improving in vitro generation of human oligodendrocyte lineage cells by mechanical stimulation	93.853	162,072	-
NIH	5-R21-NS105070-02	Novel implementation of Temporal Focusing Line Scanning for Fast Imaging of Synaptic Structural Dynamics in vivo	93.853	169,492	-
NIH	5-R21-TW010245-02	Low Cost Mobile Platform for Pulmonary Disease Screening	93.989	124,716	63,694
NIH	5-R24-MH109081-03	Toward functional molecular neuroimaging using vasoactive probes in human subjects.	93.242	11,040	-
NIH	5-R25-GM116705-04	IMPACT Program for Biomedical Researcher Career Development	93.859	517,828	149,913
NIH	5-R33-AI100190-04	MMDx: A rapid multiplexed matrix code diagnostic for real time epidemiology	93.855	1,310	-
NIH	5-R33-AI121669-04	Engineering "Phagebody" Antimicrobials for Carbapenem-Resistant Enterobacteriaceae	93.855	211,256	-
NIH	5-R33-CA191143-03	Single cell growth assay for residual cells in acute lymphoblastic leukemia	93.394	14,059	14,059
NIH	5-R33-CA191143-03 REVISED	Single cell growth assay for residual cells in acute lymphoblastic leukemia	93.394	167,993	-
NIH	5-R33-CA191143-03REVISED	Single cell growth assay for residual cells in acute lymphoblastic leukemia	93.394	20,349	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	5R33CA223904-02	Advanced development and validation of microdevices for high-throughput in situ drug sensitivity testing in tumors	93.394	152,531	-
NIH	5-R34-HL125859-02	Entrainment-based mechanical ventilation to improve patient-ventilator synchrony	93.837	170,632	97,851
NIH	5-R35-ES028303-03	Mechanism of Eukaryotic Environmental Mutagenesis	93.113	537,981	-
NIH	5-R35-GM118066-03	Causes and consequences of aneuploidy	93.859	466,041	-
NIH	5R35GM122483-03	Metal-Catalyzed Methods for Organic Synthesis	93.859	1,009,438	-
NIH	5-R35-GM122538-03	Mechanisms and regulation of replication, the cell cycle, gene expression, and horizontal gene transfer in prokaryotes, focusing on Bacillus subtilis	93.859	628,123	-
NIH	5-R35-GM124732-02	Evolution and Regulation of Bacterial Proteome Composition	93.859	440,834	-
NIH	5-R35-GM126982-02	Metalloenzyme structure, function and assembly	93.859	229,772	-
NIH	5-R37-EB000244-38	Controlled Release of Macromolecules	93.286	28,021	-
NIH	5-R37-GM041934-26	Cell Cycle and Sporulation in Bacillis Subtillis	93.859	-3,506	-
NIH	5-R37-GM057073-21	Structure-Function Relationship of Glycosaminoglycans	93.859	275,438	-
NIH	5-R37-MH087027-10	Cortical Circuits for Attention and Decisions	93.242	656,163	-
NIH	5-R37-NS051874-23	The Cdk5/35 Kinase	93.853	450,540	-
NIH	5-T32-EB001680-13	Neuroimaging Training Program	93.286	25,627	-
NIH	5T32EB001680-14	Neuroimaging Training Program	93.286	155,097	-
NIH	5-T32-EB019940-03 REVISED	Neurobiological Engineering Training Program	93.286	-5,169	-
NIH	5-T32-EB019940-04	Neurobiological Engineering Training Program	93.286	176,816	-
NIH	5T32EB019940-05	Neurobiological Engineering Training Program	93.286	30,200	-
NIH	5-T32-ES007020-43	Training Grant in Environmental Toxicology	93.113	-3,315	-
NIH	5-T32-ES007020-44	Training Grant in Environmental Toxicology	93.113	567,683	-
NIH	5-T32-GM007287-43	Pre-Doctoral Training in Biological Sciences	93.859	-40,177	-
NIH	5-T32-GM007287-44	Pre-Doctoral Training in Biological Sciences	93.859	1,798,655	-
NIH	5-T32-GM087237-10	Graduate Training in Computational and Systems Biology	93.859	269,642	-
NIH	5-U01-CA184897-04	Dynamics of Gene and Isoform Regulation during EMT and tumor progression	93.396	72,477	82,167
NIH	5-U01-CA184897-05	Dynamics of Gene and Isoform Regulation during EMT and tumor progression	93.396	484,889	240,313
NIH	5-U01-CA184898-04	Embryonal Brain Tumor Networks	93.396	80,473	80,030
NIH	5-U01-CA184898-05	Embryonal Brain Tumor Networks	93.396	475,918	275,006
NIH	5-U01CA202177-03	Quantitative analyses of tumor cell extravasation	93.396	153,155	111,077
NIH	5-U01CA202177-04	Quantitative analyses of tumor cell extravasation	93.396	553,134	246,326

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	5U01CA215798-02	Systems approaches to understanding the relationships between genotype, signaling, and therapeutic efficacy	93.396	236,400	15,786
NIH	5-U01-CA215798-02	Systems approaches to understanding the relationships between genotype, signaling, and therapeutic efficacy	93.396	491,938	491,938
NIH	5-U01-EB018813-02	Low-cost microelectronic ultrasound system for unobtrusive ABP measurement	93.286	-3,514	-
NIH	5-U01-MH106018-03	Novel technologies for nontoxic transsynaptic tracing	93.242	-44,372	-
NIH	5-U01-MH108168-03	Connectomes Related to Anxiety and Depression in Adolescents	93.242	189,699	168,626
NIH	5-U01-MH108168-04	Connectomes Related to Anxiety and Depression in Adolescents	93.242	784,944	707,209
NIH	5-U01-MH-109129-02	Anterograde monosynaptic tracing - Restricted Parent	93.242	143,767	143,861
NIH	5-U01-MH-109129-03	Anterograde monosynaptic tracing - Restricted Parent	93.242	-3,674	33,618
NIH	5-U01-MH117072-02	Towards integrated 3D reconstruction of whole human brains at subcellular resolution	93.242	51,694	-
NIH	5-U01-NS090438-03 REVISED	Next generation high-throughput random access imaging, in vivo	93.853	160,061	-
NIH	5-U01-NS090473-03	Cortical circuits and information flow during memory-guided perceptual decisions	93.853	166,484	-
NIH	5-U01-NS103470-03	Genetically-targeted hemodynamic functional imaging	93.853	70,552	-
NIH	5-U19-AI131135-03	3D Models of Engineered Human iPS Cells to Investigate Neurotropic Virus Infections	93.855	204,668	-
NIH	5-U24-TR001951-02	Translational Center of Tissue Chip Technologies for quantitative characterization of Microphysiological Systems	93.350	1,660,213	321,933
NIH	5-U54-CA210180-02	MIT/Mayo Physical Sciences Center for Drug Delivery and Efficacy in Brain Tumors	93.397	614,138	549,891
NIH	5-U54-CA210180-02 REV	MIT/Mayo Physical Sciences Center for Drug Delivery and Efficacy in Brain Tumors	93.397	77,431	77,431
NIH	5-U54-CA210180-03	MIT/Mayo Physical Sciences Center for Drug Delivery and Efficacy in Brain Tumors	93.397	1,395,545	743,034
NIH	5-U54-CA217377-02	Quantitative and functional characterization of therapeutic resistance in cancer (PARENT)	93.397	1,762,068	591,395
NIH	5-U54-CA217377-02 REVISED	Quantitative and functional characterization of therapeutic resistance in cancer (PARENT)	93.397	126,177	-
NIH	5-U54-CA217377-03	Quantitative and functional characterization of therapeutic resistance in cancer (PARENT)	93.397	98,483	-
NIH	5-UG3-TR002186-02	Cartilage-Bone-Synovium MPS: Musculoskeletal Disease Biology in Space	93.350	730,755	75,747
NIH	5-UH3-TR000496-05	All-Human Microphysical Model of Metastasis Therapy	93.350	-518	-
NIH	5UH3TR000496-05 REVISED	All-Human Microphysical Model of Metastasis Therapy	93.350	5,972	-
NIH	5-UH3-TR000496-05S1	All-Human Microphysical Model of Metastasis Therapy	93.350	5,584	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NIH	7-F30-CA210373-04	Determining the mechanism of aspartate sensing by the mTOR pathway	93.398	49,444	-
NIH	7-R01-AG058002-02	Epigenomic, transcriptional and cellular dissection of Alzheimer's variants	93.866	582,116	-
NIH	7-R01-AR044276-22 REVISED	Chemistry and Biology of Collagen	93.846	207,594	-
NIH	7-R01-GM044783-25	Protein Chemistry	93.859	-1,957	-
NIH	7R01HG008155-04	Interpreting non-coding variants using epigenomics, regulatory models, & validation experiments	93.172	455,773	-
NIH	9-R01-GM132997-31	High Field DNP and EPR in Biological Systems	93.859	131,291	-
NIH	R01 AI111860-03	T-cell-mediated targeting of therapeutics to HIV reservoirs	93.855	119,786	119,786
		Total for NIH		**113,666,624**	**14,905,845**
		TOTAL for Department of Health & Human Services		**115,657,583**	**14,905,845**

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF HOMELAND SECURITY					
DHS	2014-DN-077-ARI080-02	ARI-LA: Rapid, Low-Dose Detection of Shielded Special Nuclear Material	97.077	45,187	-
DHS	2014-DN-077-ARI080-04	ARI-LA: Rapid, Low-Dose Detection of Shielded Special Nuclear Material	97.077	172,476	-
		Total for Department of Homeland Security		**217,663**	**-**
		TOTAL for Department of Homeland Security		**217,663**	**-**

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF TRANSPORTATION					
DOT	13-C-AJFE-032	Center of Excellence for Alternative Jet Fuels and Environment	20.109	81,751	-
DOT	13-C-AJFE-042	Center of Excellence for Alternative Jet Fuels and Environment	20.109	26,105	-
DOT	13-C-AJFE-046	Center of Excellence for Alternative Jet Fuels and Environment	20.109	117,903	-
DOT	13-C-AJFE-048	Center of Excellence for Alternative Jet Fuels and Environment	20.109	410,085	-
DOT	13-C-AJFE-MIT-026	Center of Excellence for Alternative Jet Fuels and Environment	20.109	22,506	-
DOT	13-C-AJFE-MIT-030	Center of Excellence for Alternative Jet Fuels and Environment	20.109	23,370	-
DOT	13-C-AJFE-MIT-043	Center of Excellence for Alternative Jet Fuels and Environment	20.109	174,101	-
DOT	13-C-AJFE-MIT-045	Center of Excellence for Alternative Jet Fuels and Environment	20.109	117,918	-
DOT	13-C-AJFE-MIT-047	Center of Excellence for Alternative Jet Fuels and Environment	20.109	82,587	-
DOT	13-C-AJFE-MIT-050	Center of Excellence for Alternative Jet Fuels and Environment	20.109	114,691	-
DOT	13-C-AJFE-MIT-052	Center of Excellence for Alternative Jet Fuels and Environment	20.109	83,335	-
DOT	16-G-011	FAA Joint University Program for Air Transportation Activities	20.108	97,774	-
DOT	693JJ618C000010	Augmented Reality for Railroad Operations Using Head-up Displays	20.RD	61,725	-
DOT	DTFH6115C00033	Future freight and logistics survey: integrated data collection using mobile sensing, wireless communication and machine learning algorithms	20.RD	386,597	-
DOT	DTFR5316P00052	Design and Implementation of a Head-up Display for the Cab Technology Integration Laboratory	20.RD	7,012	-
DOT	DTRT13-G-UTC31	Region 1 University Transportation Center	20.701	1,128,468	173,485
DOT	DTRT5717C10121	Library Services for DOT	20.RD	73,933	-
DOT	PO # DTRT5716P80015	Ductile Fracture in Rail Equipment	20.RD	39	-
		Total for Department of Transportation		**3,009,902**	**173,485**
		TOTAL for Department of Transportation		**3,009,902**	**173,485**

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
MISCELLANEOUS FEDERAL GOVT					
Department of Interior					
DOI	D15PC00242	Quantum Algorithms for Partial Differential Equations	12.RD	-1,672	-
DOI	D18AC00019	Ultrasmall and Ultrafast: Ferrimagnetic Skyrmions Manipulated by Spins and Photons	12.910	385,182	-
DOI	D18AC00037	Many-body atomic clocks based on non-equilibrium correlated quantum matter	12.910	155,979	49,614
DOI	D18AP00039	Adaptive-focus topological features for machine-learning-driven discovery of 2D coordination polymers	12.910	209,464	-
DOI	D18AP00065	Adversarial Machine Learning through the Cryptographic Lens	12.910	282,120	-
DOI	D18AP00070	Reconfigurable Energy-efficient Chip-scale Optical Network beyond the classical Figureof-merit (RECONFig)	12.910	217,390	-
DOI	G18AP00051	Interseismic and post-South Napa earthquake deformation in the Northern San Francisco Bay Region from survey GPS observations: Collaborative Research with MIT and UC Riverside	15.807	47,164	-
DOI	R17AC00135	Tailoring Advanced Desalination Technologies for 21st Century Agriculture	15.506	72,765	-
DOI	R17AC00150	PILOT TESTING COST AND PERFORMANCE OPTIMIZED PHOTOVOLTAIC-POWERED ELECTRODIALYSIS REVERSAL DESALINATION SYSTEMS	15.506	199,970	-
		Total for Department of Interior		**1,568,361**	**49,614**
Department of Education					
ED	P116F150045	Towards Scalable Differentiated Instruction Using Technology-enabled Competency-based Dynamic Scaffolding	84.RD	285,141	193,329
		Total for Department of Education		**285,141**	**193,329**
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	78,016	-
USDA	MRA DTD. 05/22/2018	GHG Benefits of Using Lumber in Construction	10.RD	2,494	-
		Total for Department of Agriculture		**80,511**	**-**
Other Agencies					
Misc.	83618301	The Hawaii Island Volcanic Smog Sensor Network (HI-Vog)	66.509	200,155	48,435
Misc.	AID-OAA-A-12-00095	CITE and IDIN	98.001	1,541,718	104,983
Misc.	AID-OAA-A-16-00058	Ultra-Low Energy Drip Irrigation for MENA Countries	98.RD	675,646	332,200

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
Misc.	CONTRACT DATED 5/7/2017	Development of a Bacteriophage-Based Nanobiosensor for the Rapid and On-site Detection of the Phytopathogen Pseudomonas solanacearum	98.RD	-3	-
		Total for Other Agencies		**2,417,517**	**485,618**
		TOTAL for Miscellaneous Federal Govt		**4,351,530**	**728,561**

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION					
NASA	80MSFC17C0012	Imaging X-ray Polarimetry Explorer - Main Project (Phase B - D)	43.RD	135,841	-
NASA	80MSFC18M0033	Thermally stable nanocrystalline Nickel alloys by powder metallurgy	43.001	71,727	-
NASA	80NSSC17K0125	16-AIST16-0048, Computer Aided Discovery and Algorithmic Synthesis for Spatio-Temporal Phenomena in InSAR	43.001	279,538	-
NASA	80NSSC17K0283	Autonomous Moisture Continuum Sensing Network	43.001	576,226	191,369
NASA	80NSSC17K0330	Development of a Commercial Space Technology Roadmap	43.012	19,176	-
NASA	80NSSC17K0346	CLICK: CubeSat Laser Infrared Crosslink	43.012	87,509	37,730
NASA	80NSSC17K0561	Signatures of the multiple scales of motion in shaping marine phytoplankton biogeography	43.001	380,324	94,510
NASA	80NSSC17K0587	Cost and Risk Modeling of Distributed Missions: Applications for Trade-space Analysis Tool for Constellations (TAT-C)	43.001	114,048	-
NASA	80NSSC17K0612	A NUSTAR & NICER LOOK AT COMPTONIZATION, REFLECTION, AND THERMAL EMISSION IN CYGNUS X-1	43.001	13,662	-
NASA	80NSSC17K0773	Generating mare magmas by lunar magma ocean cumulate remelting: Experiments and models	43.001	147,109	-
NASA	80NSSC17M0075	Exploring Arctic Climate Change with Models and Data	43.001	268,596	-
NASA	80NSSC18K0138	High-Speed, Low-Noise, Radiation-Tolerant CCD Image Sensors for Strategic High-Energy Astrophysics Missions	43.001	300,349	-
NASA	80NSSC18K0162	Dynamic self-assembly driven by time varying fields	43.003	98,856	-
NASA	80NSSC18K0308	The K2 M Dwarf Program: Fields 13-15	43.001	58,534	-
NASA	80NSSC18K0457	Large Geodetic Array Processing and Correlation Impacts	43.001	111,506	-
NASA	80NSSC18K0553	Solar System Planetary Geodesy Research	43.001	1,644	-
NASA	80NSSC18K0623	First Constraint on Galactic Center MeV-GeV Cosmic-rays with Sgr B2 Fe K Emission	43.001	17,072	-
NASA	80NSSC18K0676	MIT Participation in the International Space Station Transient Astrophysics Observatory Mission Phase A Concept Study	43.001	12,061	-
NASA	80NSSC18K0849	The MIT-Hawaii-IRTF Joint Campaign for NEO Spectral Reconnaissance	43.001	155,015	-
NASA	80NSSC18K1004	Earth, Mars or YORP spinup: Isolating the mechanisms for asteroid surface refreshing	43.001	40,959	-
NASA	80NSSC18K1057	ASPECT: Active Shoreline Processes and Evolution of Coasts on Titan	43.001	35,000	-
NASA	80NSSC18K1088	Biosignature Preservation in Sulfate-Dominated Hypersaline Environments	43.001	106,934	35,459

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NASA	80NSSC18K1091	Modeling extreme mass ratio inspirals: How accurate must the models be?	43.001	72,324	-
NASA	80NSSC18K1579	CLICK mission	43.012	122,138	1,023
NASA	80NSSC18K1608	THE FIRST NUSTAR OBSERVATION OF 4U 1907+09	43.001	6,162	-
NASA	80NSSC18K1615	Optimizing Sensitivity to Sterile Neutrino Dark Matter in the Galactic Center	43.001	26,210	-
NASA	80NSSC18K1616	X-RAY FLARES FROM YOUNG STARS AND THE SUN: BRIDGING THE GAP WITH NUSTAR+CHANDRA	43.001	1,486	-
NASA	80NSSC18K1643	Plasma and Energetic Particle Archive for Jovian Magnetospheric Interactions with the Galilean Moons	43.001	15,619	-
NASA	80NSSC18K1677	Auroral Emissions Radio Observer (AERO)	43.001	180,502	7,836
NASA	80NSSC18M0042	SPRINT: Scheduling Planning Routing Intersatellite Network Tool	43.012	171,899	-
NASA	80NSSC18M0045	High SPecific-impulse Electrospray Explorer for Deep-space (HiSPEED)	43.012	164,218	-
NASA	80NSSC19K0078	Ionospheric Response to Super Storms and Its Role in Geospace Coupling	43.001	72,167	-
NASA	80NSSC19K0205	Designing applications to foster the health of terrestrial and wetland ecosystems in the coastal zone of West Africa	43.001	34,106	-
NASA	80NSSC19K0211	Simulating the Operational Local Volume for Electrospray ion Thrusters (SOLVEiT)	43.012	74,880	-
NASA	80NSSC19K0217	MOSAIC: Miniature Optical Steered Antenna for Intersatellite Communication	43.012	82,292	-
NASA	80NSSC19K0262	Ionospheric imprint of regional mesopause variability - a four dimensional study of atmospheric coupling	43.001	22,102	2,403
NASA	80NSSC19K0335	High Resolution and High Efficiency X-ray Transmission Grating Spectrometer	43.001	59,604	-
NASA	80NSSC19K0342	Dynamics and Chemistry of the Summer Stratosphere	43.001	145,318	-
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	44,195	-
NASA	80NSSC19K0469	Microbial Functional and Evolutionary Adaptations to Aridity	43.001	22,439	-
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	11,625	-
NASA	80NSSC19K0634	NICER (Bridge) - Detector Team Support and Legacy Science	43.001	143,692	-
NASA	80NSSC19M0039	Automated Reconfigurable Mission Adaptive Digital Assembly Systems (ARMADAS)	43.012	11,507	-
NASA	NNA13AA90A	Foundations of Complex Life: Evolution, Preservation & Detection on Earth & Beyond	43.001	505,040	286,126
NASA	NNG14FC03C	Transiting Exoplanet Survey Satellite	43.RD	6,317,203	2,450,723

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NASA	NNG14PJ13C	Neutron Star Composition ExploreR (NICER) Project Detector Subsystem	43.RD	159,630	-
NASA	NNG15HZ35C	NASA Mark IV/VLBI Follow-On	43.RD	2,221,940	-
NASA	NNH17CH01C	The Mars Oxygen Isru Experiment (MOXIE) Continuation	43.RD	501,619	5,170
NASA	NNX10AB27G	Exploring the Outer Solar System with Stellar Occultations	43.RD	-255	-
NASA	NNX10AE50G	High Performance Three-Dimensionally Integrated Active Pixel X-Ray Sensors	43.RD	630	-
NASA	NNX12AF22G	Directly-Deposited Blocking Filters for Imaging X-ray Detectors: Technology Development for the International X-ray Observatory	43.001	-2,714	-
NASA	NNX13AJ86G	Mars Reconnaissance Orbiter (MRO) Gravity Field Analysis	43.001	232,122	-
NASA	NNX13AK98G	Rheological behavior of icy mixtures with application to the outer planets	43.001	197	-
NASA	NNX14AC75G	Microwave Radiometer Technology Acceleration (MiRaTA) CubeSat	43.001	35,014	33,941
NASA	NNX14AG47A	Active Wing Shaping Control Concept Using Composite Lattice-based Cellular Materials	43.001	22,704	-
NASA	NNX14AI58A	Field Investigations to Enable Solar System Science and Exploration	43.003	13,572	-
NASA	NNX14AK27G	PPhotochemistry and Spectroscopy of Sulfur Dioxide, Sulfur Monoxide and Elemental Sulfur as Source Reactions for Archean Sulfur Mass-Independent Isotope Fractionation	43.001	44,014	-
NASA	NNX14AP38G	How sensitive are global climate forcing and surface air quality estimates to aerosol properties?	43.001	-41,638	-
NASA	NNX14AQ03G	Geodetic Analysis Enhancements for Real-Time and Millimeter Accuracy Reference Frames	43.001	7,904	-
NASA	NNX14AT22A	Global Environmental Impact of Supersonic Cruise Aircraft in the Stratosphere	43.004	234,385	-
NASA	NNX15AC76G	MIT Participation in Calibration and Ground Software Development for Astro-H	43.001	37,333	-
NASA	NNX15AF85G	The Search for Extra-Terrestrial Genomes (SETG)	43.001	485,239	37,426
NASA	NNX15AH72G	Experimental and Theoretical Investigations of Solar Nebula Magnetic Fields	43.001	190,903	-
NASA	NNX15AK10G	Lunar Orbiter Laser Altimeter Investigation and Associated Science	43.001	92,819	-
NASA	NNX15AK23G	Probing the debris disk-planet connection with collisional cascades	43.001	67,670	48,455
NASA	NNX15AL14G	Continuing Progress in Soft X-ray Polarimetry	43.001	247,076	-
NASA	NNX15AL48G	ROSES: Cassini Data Analysis and Participating Scientists	43.001	51,210	46,446
NASA	NNX15AL62G	Investigating the Ancient Lunar Dynamo	43.001	169,700	28,071

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NASA	NNX15AM35G	Investigating the history of destructive collisions in the asteroid and Kuiper belts	43.001	83,722	-
NASA	NNX15AQ50A	Search and Rescue under the Tree Canopy	43.002	198,559	-
NASA	NNX15AR20G	NRI: Exosuit System Design Parameters as Revealed by an Integrated, Human Musculoskeletal Computational Model	43.012	97,923	-
NASA	NNX15AU41A	Rapid Viscous Aerodynamic Analysis/Design Methodology Utilizing Inviscid Coupling with a 3D Integral Boundary Layer	43.002	251,080	-
NASA	NNX15AU66A	Swept time-space domain decomposition rule for breaking the latency barrier	43.002	79,695	72,105
NASA	NNX15AW03A	BASALT: Biologic Analog Science Associated with Lava Terrains	43.001	67,143	-
NASA	NNX15AW94G	MIT Participation in Scientific Analysis and Interpretation Astro-H Data	43.001	76,737	-
NASA	NNX16AC49A	Robust Autonomy for Extreme Space Environments: Hosting R5 at MIT	43.012	137,252	-
NASA	NNX16AC98G	Advanced Global Atmospheric Gases Experiment [AGAGE] Collaborative Project: MIT Component	43.001	831,877	405,251
NASA	NNX16AD01G	High Precision Assembly of Thin Mirror X-ray Telescopes	43.001	386,602	-
NASA	NNX16AD29G	Experimental and Petrologic Investigations of Chemical Differentiation on the Ureilite Parent Body	43.001	109,271	-
NASA	NNX16AE93G	Raising the Technology Readiness Level of 4.7-THz local oscillators	43.001	48,659	-
NASA	NNX16AG82G	Electron Hole Instabilities in the Plasma Wake of Moons, Asteroids and Comets	43.001	129,880	42,422
NASA	NNX16AK97G	Applications Lead for the NASA ISRO Synthetic Aperture Radar Mission Science Definition Team	43.001	100,116	-
NASA	NNX16AN15G	Use of Soil-Moisture Retrievals to Refine Global Land Trace Gases Emissions and their Climate Feedbacks	43.001	138,267	36,453
NASA	NNX16AR47G	Assessing Ecosystem Vulnerability to Climate Change through Optics, Imagery and Models	43.001	276,484	72,921
NASA	NNX16AT66A	Smoothing-Based Relative Navigation & Coded Aperture Imaging	43.012	29,210	-
NASA	NNX17AC11G	REVEALING THE COMPACT OBJECT IN NGC 300 X-1 (XMM 2279)	43.001	10,783	-
NASA	NNX17AC25G	Revealing the Compact Object in NGC 300 X-1	43.001	9,451	-
NASA	NNX17AD07G	Laser Guide Star for Large Aperture Segmented Space Telescopes	43.012	161,914	106,162
NASA	NNX17AE47G	Development of High Resolution X-ray Telescope Optics	43.001	873,019	-
NASA	NNX17AG43G	Development of a Critical Angle Transmission Grating Spectrometer	43.001	681,442	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NASA	NNX17AG98G	Improving positioning precision at geodetic core sites through exploration of atmospheric inter-technique synergies	43.001	217,927	81,376
NASA	NNX17AJ90G	Starshade Rendezvous Mission	43.001	1,304	-
NASA	NNX17AL45G	L3 Study Team / LISA Science Team participation	43.001	27,906	-
		Total for National Aeronautics and Space Administration		**21,135,712**	**4,123,380**
		TOTAL for National Aeronautics and Space Administration		**21,135,712**	**4,123,380**

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NATIONAL SCIENCE FOUNDATION					
NSF	ACI-1442997	CIF21 DIBBs: An Infrastructure for Computer-Aided Discovery in Geoscience	47.070	290,500	-
NSF	ACI-1550172	Collaborative Research: SI2-SSI: Jet Energy-loss Tomography with a Statistically and Computationally Advanced Program Envelope (JETSCAPE)	47.070	3,090	-
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	69,282	60,000
NSF	ACI-1640829	CIF21 DIBBs: PD: Metadata Toolkits for Building Multi-faceted Data-relationship Models	47.070	131,675	-
NSF	AGS-1042569	Climate Change in the Upper Atmosphere	47.050	-127	-
NSF	AGS-1242204	The Millstone Hill Geospace Facility	47.050	-4,091	-
NSF	AGS-1343045	Collaborative Research: CEDAR--Study of Storm-time Large Scale Structures in the Subauroral Ionosphere with Coupled First-principles Model and Multi-instrument Observations	47.050	7,457	-
NSF	AGS-1343056	Collaborative Research: CEDAR -- Understanding the High-to-Mid Latitude Ionospheric Response to Stratospheric Warmings	47.050	29,837	-
NSF	AGS-1419667	Linkages of Changes in Ozone to Arctic Climate Change in the Stratosphere and Troposphere	47.050	-2,274	-
NSF	AGS-1461517	Trends and Variability of Temperatures near the Tropical Tropopause Layer and Implications for Tropical Cyclones	47.050	63,612	-
NSF	AGS-1520825	Hazards SEES: Uncovering the hidden skeleton of environmental flows: advanced Langrangian methods for hazards prediction, mitigation and response	47.050	495,504	436,921
NSF	AGS-1523305	Collaborative Research: Lightning Studies in a Polluted Atmosphere	47.050	25,259	-
NSF	AGS-1536551	Collaborative Research: Laboratory Investigations of Particle-Organic Vapor Interactions: Effects on Particle Formation, Growth, and Properties	47.050	124	-
NSF	AGS-1539972	The Influence of Recent Volcanic Eruptions on Stratospheric Ozone Recovery: A Data Analysis and Modeling Study Including Estimated Uncertainties	47.050	178,423	-
NSF	AGS-1547733	Collaborative Research: Stratospheric Age in a Changing Climate: Connecting Theory, Models, and Observations	47.050	33,312	-
NSF	AGS-1552195	Improved understanding of the response of mean and extreme precipitation to climate change	47.050	120,046	12,602
NSF	AGS-1564495	Impacts of the biosphere on global tropospheric chemistry and climate	47.050	169,334	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	AGS-1623218	Collaborative Research: Using a hierarchy of models to constrain the temperature dependence of climate sensitivity	47.050	134,828	-
NSF	AGS-1638672	Collaborative Research: Comprehensive Characterization of Atmospheric Organic Carbon over Multiple Generations of Oxidation	47.050	101,847	-
NSF	AGS-1702691	Collaborative Research: Madagascar Caves and Paleoclimate (MADCAP): Investigating climate variability in the Southern Hemisphere of the Western Indian Ocean	47.050	84,682	-
NSF	AGS-1740533	Collaborative Research: Convection and rainfall enhancement over mountainous tropical islands	47.050	113,957	-
NSF	AGS-1749851	Collaborative Research: An in situ Closure Study of Mixed Phase Clouds	47.050	182,482	-
NSF	AGS-1749986	Improved understanding of changes in convective available potential energy and links to the large-scale circulation	47.050	62,207	-
NSF	AGS-1762141	A Next Generation Geospace Facility at Millstone Hill	47.050	2,277,159	-
NSF	AGS-1804512	Collaborative Research: P2C2: Reconstructing Northeast Mexico Hydroclimate since the Last Interglacial Period	47.050	19,413	-
NSF	AGS-1835576	Collaborative Research: Framework: Software: HDR: Data-Driven Earth System Modeling	47.050	781	-
NSF	AGS-1837033	Support for the 15th International Symposium on Equatorial Aeronomy (ISEA); October 22-26, 2018; Ahmedabad, India	47.050	25,721	-
NSF	AGS-1914920	Collaborative Research: Integrating GEOS-Chem atmospheric chemistry into the NCAR Community Earth System Model (CESM)	47.050	5,089	-
NSF	AST-0907766	SMASS- Next: Next Generation Asteroid Spectroscopic Survey	47.049	34,123	-
NSF	AST-1255160	CAREER: The origin of the metal-poor halo of the Milky Way	47.049	71,910	-
NSF	AST-1343336	Realtime GHz-Wide Spectrum Sensing and Acquisition Using the Sparse FFT	47.049	50,923	-
NSF	AST-1547265	Collaborative Research:Dynamic Exclusion Zones: Balancing Incumbent Protection and Spectrum Utilization Efficiency	47.049	-22,907	-
NSF	AST-1547331	Collaborative Research: Enhancing Access to Radio Spectrum for Real-Time Monitoring and Control	47.049	100,755	-
NSF	AST-1609547	Collaborative Research: EDGES: Detecting First Light and Reionization through the Global 21 cm Signature	47.049	87,666	-
NSF	AST-1614868	Shaping the Narrow Jets of Material from Supermassive Black Holes	47.049	99,392	-
NSF	AST-1659420	REU Site: Astronomy and Informatics at the MIT Haystack Observatory	47.049	148,874	-
NSF	AST-1716251	Establishing the properties of the first stars and supernovae and the origins of the heaviest elements with stellar archaeology	47.049	81,701	-
NSF	AST-1743708	Radio Stars From kHz to THz	47.049	5,420	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	AST-1751096	CAREER: Tracing the Birth and Growth of Galaxy Clusters with the South Pole Telescope 3rd Generation Survey	47.049	201,860	-
NSF	AST-1814053	Collaborative Research: Exploring the physics of galaxy clusters with comprehensive cosmological simulations	47.049	102,813	-
NSF	AST-1814259	Simulating galaxy formation with cosmic dust	47.049	77,819	-
NSF	AST-1824644	Discovery of New Small, Cool Planets Orbiting M-Dwarf Stars	47.049	124,446	-
NSF	AST-1828470	MRI [WINTER]: Development of a Wide-Field Infrared Camera for Robotic Surveys of the Dynamic Astronomical Sky	47.049	140,339	-
NSF	AST-1836002	LLAMAS: A Facility Integral Field Spectrograph for the Magellan Telescopes	47.049	1,577,214	-
NSF	BCS-1534318	The role of noise in information-theoretic models of sentence comprehension and production	47.075	-10,049	-
NSF	BCS-1551866	CompCog: The edge of the lexicon: Productive knowledge and direct experience in the acquisition and processing of multiword expressions	47.075	128,235	-
NSF	BCS-1627068	Neural measures of social reward and information value in infants	47.075	213,000	-
NSF	BCS-1634050	Computational neuroimaging of human auditory cortex	47.075	102,441	-
NSF	BCS-1724135	CRCNS US-German-Israeli Collaborative Research Proposal: Hierarchical Coordination of Complex Actions	47.075	60,264	-
NSF	BCS-1823376	Doctoral Dissertation Research: Vectors of Health: Science and the Making of Modified Mosquitoes in Brazil	47.075	9,890	-
NSF	BCS-1823919	Expanding Access to Webcam-based online data collection for developmental research	47.075	47,039	-
NSF	BCS-1826757	CompCog: Advancing Understanding of Visual Crowding	47.075	113,050	-
NSF	BCS-1827598	Collaborative research: An integrated model of phonetic analysis and lexical access based on individual acoustic cues to features	47.075	77,164	-
NSF	BCS-1829350	Collaborative Research: CompCog: Broad-coverage probabilistic models of communication in context	47.075	89,875	-
NSF	BCS-1841673 000	Doctoral Dissertation Research: Investigating the Universality of the Subject Requirement through a Language With Overt Correspondents for Postulated Null Subjects	47.075	8,530	-
NSF	BCS-1844723	Doctoral Dissertation Research: Extending and testing theories of language production by investigating speaker choice in a classifier language	47.075	804	-
NSF	CBET-0939511	Science and Technology Center: Emergent Behavior of Integrated Cellular Systems (EBICS)	47.041	4,699,893	3,455,198
NSF	CBET-1253228	CAREER: Predicting granular flows: Amorphous continuum modeling with a length-scale	47.041	151,088	-
NSF	CBET-1454299	CAREER: Molecular Catalysis for Waste Valorization	47.041	27,771	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	CBET-1507488	CDS&E: Collaborative Research: A Bayesian inference/prediction/control framework for optimal management of CO2 sequestration	47.041	24,340	-
NSF	CBET-1510768	Collaborative Research: Transport and Chemotaxis of Swimming Cells in Porous Media Flows	47.041	11,027	-
NSF	CBET-1511526	UNS: Modeling and Experimental Studies of the Interactions of 2D Materials with Solvents and Surfactants: Exfoliation, Self-Assembly of Composites, and Wetting.	47.041	98,262	-
NSF	CBET-1554398	CAREER: NANO-PARTICLE SELF-ASSEMBLY OUT OF EQUILIBRIUM	47.041	101,744	-
NSF	CBET-1602406	Polymer Dynamics of Knotted DNA	47.041	190,240	-
NSF	CBET-1605050	Collaborative Research: Dynamic simulation approaches to consequential life cycle assessment to evaluate recycling and substitution in metal and paper	47.041	97,695	-
NSF	CBET-1605406	NSF/CBET-BSF: Effect of Sunlight Intensity on Functional Inhomogeneity and Stability of Organic-Inorganic Perovskite Solar Cells	47.041	33,554	-
NSF	CBET-1605547	Collaborative Research: SusChEM: Air-stable, high-lifetime bismuth compounds as solar absorbers with perovskite-like band structures	47.041	121,482	-
NSF	CBET-1605943	Collaborative Research: Understanding and Controlling Chemo-Mechanical Properties of Metal Coordinating Polymer and Inorganic Nanoparticle Composites	47.041	96,316	-
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	87,999	16,137
NSF	CBET-1703978	Multi-propulsor Hydrodynamics for Water-Air Transition in Archer Fish	47.041	30,032	-
NSF	CBET-1704266	Enabling high-throughput computational discovery of stable and active single-site oxidation catalysts	47.041	67,007	-
NSF	CBET-1705923	Engineering a new family of consensus repeat proteins based on nucleoporins	47.041	51,843	-
NSF	CBET-1706193	Collaborative Research: Hybrid Discrete-Continuum Numerical Simulation of Granular Materials	47.041	20,001	-
NSF	CBET-1729397	DMREF: Computational Design of Next-generation Nanoscale DNA-based Materials	47.041	258,730	157,455
NSF	CBET-1751925	CAREER: Holistic Assessment of the Potential of Byproduct-Derived Alkali-Activated Materials	47.041	58,664	-
NSF	CBET-1804241	Collaborative Research: Dynamic Manipulation of Micro-scale Liquid-Liquid Interfaces within Complex Droplets for Tunable Optics	47.041	14,448	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	CBET-1804247	Chemical and structural design of inorganic-organic layers for stabilized Li anodes	47.041	85,126	-
NSF	CBET-1805566	Collaborative Research: Establishing Design Principles for Molecular Engineering of High Concentration Redox Electrolytes	47.041	120,226	-
NSF	CBET-1846426	CAREER: Revealing spin-state-dependent reactivity in open-shell single atom catalysts with systematically-improvable computational tools	47.041	4,408	-
NSF	CBET-1847541	CAREER: Hybrid Biorobotic Matrices to Simulate Diaphragmatic and Myocardial Biomechanics	47.041	28,184	-
NSF	CBET-1851052	Heat Transfer Across Nanostructured Metal-Semiconductor Interfaces	47.041	33,879	-
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	82,381	-
NSF	CCF-1161626	AF: Medium Collaborative Research General Frameworks for Approximation and Fixed Parameter Algorithms	47.070	-28,662	-
NSF	CCF-1231216	A Center for Brains, Minds, and Machines: The Science and the Technology of Intelligence	47.070	4,801,977	1,565,191
NSF	CCF-1253205	CAREER: Information Theory Beyond Capacity	47.070	216,272	-
NSF	CCF-1253229	CAREER: A Formal Verification Platform Focused on Programmer Productivity	47.070	350	-
NSF	CCF-1314547	SHF: AF: Large: Collaborative Research: Parallelism without Concurrency	47.070	-1,024	-
NSF	CCF-1317348	Collaborative Research: Visual Cortex on Silicon	47.070	34,054	-
NSF	CCF-1438967	XPS: FULL: DSD: Collaborative Research: Moving the Abyss: Database Management on Future 1000-core Processor	47.070	28,216	-
NSF	CCF-1438969	XPS: FULL: FP: Collaborative Research: Model-based, Event Driven Scalable Programming for the Mobile Cloud	47.070	12,445	-
NSF	CCF-1442887	CyberSEES:Type 2: Collaborative Research: Combining Experts and Crowds to Address Challenging Societal Problems	47.070	46,791	-
NSF	CCF-1452616	[Revised Budget] CAREER: Applications of Quantum Information Theory	47.070	75,531	-
NSF	CCF-1452994	CAREER: A Hardware and Software Architecture for Data-Centric Parallel Computing	47.070	110,788	-
NSF	CCF-1453126	CAREER: Resilient Design of Networked Infrastructure Systems: Models, Validation, and Synthesis	47.070	79,663	-
NSF	CCF-1453261	CAREER: Algorithmic Aspects of Machine Learning	47.070	45,650	-
NSF	CCF-1461559	AF: Medium: Distributed Algorithms for Resource-Constrained and Dynamic Settings	47.070	218,192	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	CCF-1512611	SHF: Medium: Fiat: Correct-by-Construction and Mostly Automated Derivation of Programs with an Interactive Theorem Prover	47.070	114,530	-
NSF	CCF-1521584	Collaborative Research: Expeditions in Computing: The Science of Deep Specification	47.070	256,792	-
NSF	CCF-1521759	Collaborative Research: Evolvable Living Computing - Understanding and Quantifying Synthetic Biological Systems' Applicability, Performance, and Limits	47.070	28,686	-
NSF	CCF-1521925	Collaborative Research: Evolable Living Computing: Understanding and Quantifying Synthetic Biological Systems' Applicability, Performance and Limits	47.070	331,751	-
NSF	CCF-1525130	AF: Small: Quantum Algorithms Arising from Ideas in Physics	47.070	51,259	-
NSF	CCF-1525705	CIF:Small: Cooperative Interference Engineering for Network Secrecy	47.070	1,781	-
NSF	CCF-1527270	CIF: Small: Collaborative Research:Towards more Secure Systems: Uniformization for Secrecy	47.070	4,413	-
NSF	CCF-1533644	XPS: FULL: FP: A profile-centric IDE for science-based performance engineering in the cloud	47.070	519,590	-
NSF	CCF-1533753	XPS: FULL: DSD: Scalable High Performance with Halide and Simit Domain Specific Languages	47.070	220,824	-
NSF	CCF-1535851	AitF: FULL: Sparse Fourier Transform: From Theory to Practice	47.070	72,493	-
NSF	CCF-1547999	EAGER: Collaborative Research: Algorithmic design principles for programmed DNA nanocages	47.070	9,941	-
NSF	CCF-1553428	CAREER: Fast Graph Algorithms and Continuous Optimization	47.070	98,145	-
NSF	CCF-1563880	Title: SHF: Medium: Collaborative Research: Run-Time Support for Scalable Concurrent Programming	47.070	51,639	-
NSF	CCF-1564025	AF: Medium: Collaborative Research: Top-down algorithmic design of structured nucleic acid assemblies	47.070	208,418	-
NSF	CCF-1565235	AF:Large:Collaborative Research: Algebraic Proof Systems, Convexity, and Algorithms	47.070	274,471	-
NSF	CCF-1617730	AF: SMALL: Frontiers in Algorithmic Game Theory	47.070	80,837	-
NSF	CCF-1640012	E2CDA: Type I: Collaborative Research: Energy Efficient Computing with Chip-Based Photonics	47.070	114,604	-
NSF	CCF-1650733	Testing Pseudorandom Distributions	47.070	-138,935	-
NSF	CCF-1651838	CAREER:Matrix Products: Algorithms and Applications	47.070	103,255	-
NSF	CCF-1665252	AF: Small: Boolean Functions: Inequalities, Structure, Algorithms & Hardness	47.070	74,986	-
NSF	CCF-1665282	InTrans:TRI-MIT Collaboration on Formal Verification Meets Big Data Intelligence in the Trillion Miles Challange	47.070	60,033	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	CCF-1717610	CIF:Small:Submodular Optimization Techniques for Sensor and Signal Processing	47.070	39,259	-
NSF	CCF-1717842	CIF: Small: Fundamental limits and coding for massive wireless random-access	47.070	28,954	-
NSF	CCF-1723344	AitF: Collaborative Research: Algorithms for Probabilistic Inference in the Real World	47.070	26,042	-
NSF	CCF-1725303	SPX: Collaborative Research: Mongo Graph Machine (MGM): A flash-based appliance for large graph analytics	47.070	99,289	-
NSF	CCF-1729369	Collaborative Research: EPiQC: Enabling Practical-Scale Quantum Computation	47.070	556,690	-
NSF	CCF-1733808	AitF: Collaborative Research: Fast, Accurate, and Practical: Adaptive Sublinear Algorithms for Scalable Visualization	47.070	157,467	-
NSF	CCF-1740184	E2CDA: Type I: Collaborative Research: Energy-Efficient Artificial Intelligence with Binary RRAM and Analog Epitaxial Synaptic Arrays	47.070	79,810	-
NSF	CCF-1740519	AF: Medium: Collaborative Research: Hardness in Polynomial Time	47.070	168,261	-
NSF	CCF-1740525	AF: Small: Graphs and structures for distance estimation	47.070	87,996	-
NSF	CCF-1740751	MIT Institute for Foundations of Data Science	47.070	451,012	-
NSF	CCF-1741615	CAREER: Common Links in Algorithms and Complexity	47.070	106,651	-
NSF	CCF-1751011	CAREER: A Programming Language for Developing Software to Execute Reliably on Unreliable Hardware	47.070	43,200	-
NSF	CCF-1807575	SemiSynBio:Collaborative Research:Very large-scale genetic circuit design automation	47.070	92,225	-
NSF	CCF-1810758	NSF-BSF: AF: Small: An Algorithmic Theory of Brain Networks	47.070	63,220	-
NSF	CCF-1814969	SHF: Small: A Scalable Architecture for Ubiquitous Parallelism	47.070	7,250	-
NSF	CCF-1816209	CIF: Small: Occlusion-Based Computational Imaging and Scene Analysis: Theory, Methods and Applications	47.070	16,050	-
NSF	CCF-1832649	Programming Languages Mentoring Worshop at PLDI 2018	47.070	15,000	-
NSF	CCF-1836712	FMitF: Verifying concurrent system software with Cspec	47.070	93,321	-
NSF	CCF-1845763	CAREER: Parallel Algorithms and Frameworks for Graph and Hypergraph Processing	47.070	3,291	-
NSF	CCR-1822920	SPX: Collaborative Research: Distributed Database Management with Logical Leases and Hardware Transactional Memory	47.070	911	-
NSF	CHE-1351646	CAREER: Stable Carbenes as Surface Anchoring Groups	47.049	103,585	-
NSF	CHE-1351807	CAREER: Using chemistry to probe anthrax toxin protein translocation	47.049	30,605	-
NSF	CHE-1352132	CAREER: Coordination Chemistry of Zinc-Chelating S100 Proteins and Biochemistry Partnership with a Regional University	47.049	7,248	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	CHE-1361865	Mechanisms for the Exchange of Energy between a Rydberg Electron and Its Ion-Core: Free Induction Decay Detected Pure Electronic Spectroscopy	47.049	77,219	-
NSF	CHE-1452857	CAREER: Ligand-Mediated Photothermal Energy Dissipation in Semiconductor Nanocrystals	47.049	128,739	-
NSF	CHE-1454060	CAREER: Oxygen Reduction Catalysis at Tunable Metal Sulfide Nanofilms	47.049	219,856	-
NSF	CHE-1463707	Multiple Metal-Carbon Bonds, Metallacycles and Catalytic Olefin Metathesis Reactions	47.049	129,508	-
NSF	CHE-1464799	New Cycloaddition and Annulation Strategies for Organic Synthesis	47.049	117,110	-
NSF	CHE-1565649	Metal Coordination Compounds as Reporters for Biological NO, HNO, and S□Nitrosothiols	47.049	-8,203	-
NSF	CHE-1629358	DMREF: Analysis and Optimization of Polymer Networks for Emerging Applications	47.049	207,186	-
NSF	CHE-1653289	CAREER: Nanocomposite Structure Control via Nanoparticle Self-Assembly	47.049	500,817	-
NSF	CHE-1654415	CAREER: Characterizing Water's Response to Hydrophilic Surfaces	47.049	138,499	-
NSF	CHE-1664799	Synthesis of d- and p-Block Element Molecules, Reagents, and Precursors	47.049	122,348	-
NSF	CHE-1665383	Coherent Spectroscopy and Coherent Control of Molecules and Materials	47.049	210,873	-
NSF	CHE-1709364	Chemical and biochemical determinants of phosphorothioate stability and location in bacterial genomes	47.049	254,637	95,398
NSF	CHE-1709993	Collaborative Research: Multiphase Reactivity of Atmospheric Organic Radicals: Gas- vs. Liquid- vs. Particle-phase Chemistry	47.049	106,305	-
NSF	CHE-1724505	CAREER: Nonmetal Phosphorus Catalysts for Hydrogen Transfer Reactivity	47.049	-14,323	-
NSF	CHE-1800301	Stochastic Path Integral Formalism and Applications to Coherent Energy Transfer	47.049	80,975	-
NSF	CHE-1800410	Molecular Rydberg Spectra Encode Intramolecular Dynamics	47.049	124,120	-
NSF	CHE-1828570	MRI: Development of a broadband THz electron paramagnetic resonance spectrometer	47.049	342,479	-
NSF	CHE-1836913	EAGER: Analog Quantum Simulation of Dissipative Quantum Dynamics in Condensed-Phase Chemical Systems	47.049	72,336	-
NSF	CHE-1839155	RAISE- TAQS: Room-Temperature Quantum Sensing and Computation using DNA-based Excitonic Circuits	47.049	146,474	-
NSF	CHE-1845464	CAREER: Reprogramming Transcriptional Regulation by Chemical Stabilization of Repressive Homodimers	47.049	20,696	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	CHE-1900109	Exploration of Non-Equilibrium Interfacial Phenomena in Spin Forbidden Oxidation	47.049	20,745	-
NSF	CHE-1900358	Fragment Embedding for Photochemical Electronic Structure Simulations	47.049	41,855	-
NSF	CMMI-1334109	DMREF: Computational Design Principles for Functional DNA-based Materials	47.041	176,650	68,680
NSF	CMMI-1351449	CAREER: Smart Morphable Surfaces for Aerodynamic Drag Control	47.041	32,948	-
NSF	CMMI-1351512	CAREER: Simulation-based optimization techniques for urban transportation problems	47.041	80,528	-
NSF	CMMI-1351619	CAREER: Advanced Mixed Integer Programming Formulations	47.041	36,518	-
NSF	CMMI-1363167	Collaborative Research: Increasing Solar Panel Adoption by Modeling the Interrelated Impacts of Design Decisions, Industry Incentives, Public Policies, and Market Response	47.041	6,363	-
NSF	CMMI-1426799	NRI: Collaborative Research: Models and Instruments for Integrating Effective Human-Robot Teams into Manufacturing	47.041	28,061	-
NSF	CMMI-1452875	CAREER: A Closed Loop Methodology for Investigating Trust, Culture, and Information Sharing in Global Supply Chains	47.041	129,098	-
NSF	CMMI-1462158	Learning Graphical Models: Hardness and Tractability	47.041	67,456	-
NSF	CMMI-1463181	GOALI: Collaborative Research: Nanomanufacturing of Integrated Metal-Carbon Nanotube Contacts for High-Performance MEMS Switches	47.041	-8,943	-
NSF	CMMI-1536233	The Role of Genetic Modifications, Age and Exercise on Cartilage Biomechanics using Genetically Engineered Mice	47.041	85,999	-
NSF	CMMI-1537536	An Innovative Optimization and Computational Framework for Assortment Problems Under Consider-Then-Rank Choice Models	47.041	60,072	-
NSF	CMMI-1547130	EAGER: Cybermanufacturing: A Cybermanufacturing System for the Design and Fabrication of Manufacturing Equipment	47.041	35,641	-
NSF	CMMI-1547154	EAGER: Cybermanufacturing: A WYSIWYG Middleware for Additive Manufacturing	47.041	24,379	-
NSF	CMMI-1548501	EAGER: Collaborative Research: Challenging the Cognitive-Control Divide	47.041	-2,407	-
NSF	CMMI-1562567	Collaborative Research: Ultrasound, oxide, and oxygen: Microscale mechanisms for next-generation alloy casting	47.041	-17,044	-
NSF	CMMI-1562912	Analytical probabilistic traffic models for large-scale network optimization	47.041	91,386	-
NSF	CMMI-1563343	A Data-Driven and Real-time Approach to Personalized Bundle Recommendation and Pricing; from Theory to Practice	47.041	127,515	-
NSF	CMMI-1634259	Revenue Management For Enterprise Users of Cloud Infrastructure	47.041	37,602	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	CMMI-1644558	CM/Collaborative Research: A Computational Approach to Customizing Design	47.041	40,000	-
NSF	CMMI-1661627	Designing Extremely Robust Soft Wet Adhesives by Exploiting Molecular-Scale Reversible Crosslinks and Macro-Scale Instabilities	47.041	167,466	-
NSF	CMMI-1702689	Collaborative Research: Multiscale modeling and measurement of clay aggregate behavior	47.041	85,339	-
NSF	CMMI-1727189	Quasi-integral control for robustness to perturbations of integrated genetic devices in living cells for biotechnology	47.041	75,437	-
NSF	CMMI-1727239	An Optimization Framework for Optimal A-B Testing	47.041	118,159	-
NSF	CMMI-1727565	Boundary interactions in pilot-wave hydrodynamics	47.041	138,185	-
NSF	CMMI-1729304	DMREF:GOALI: Discovery and Design of Additives for Novel Polymer Morphology and Performance	47.041	231,794	-
NSF	CMMI-1752172	CAREER: Directed Epitaxial Assembly of Structural Biopolymers in Hierarchical Mesostructures for Enhanced Mechanical Behavior, Mass Transport and Heat Transfer.	47.041	83,647	-
NSF	CMMI-1760025	Electrochemical separation and recovery of metals from liquid alloys	47.041	10,207	-
NSF	CMMI-1762961	Computational Modeling for Predicting 3D Cancer Cell Invasion into ECM Fiber Network	47.041	195,994	-
NSF	CMMI-1824297	AN INTEGRATED EXPERIMENTAL AND COMPUTATIONAL PLATFORM FOR DISCOVERY AND PROCESSING OF FUNCTIONAL NANO-EMULSIONS	47.041	20,700	-
NSF	CMMI-1825731	Collaborative Research: Nanomanufacturing of Wafer-Scale 2D Materials: From multilayer precisely into monolayers	47.RD	57,434	-
NSF	CMMI-1826097	Collaborative Research: Learning to Control Dynamically Complex Objects	47.041	38,213	-
NSF	CMMI-1826216	Manufacturing USA: Fundamentals and Applications of High-Resolution Flexographic Printing Using Nanoporous Stamps	47.RD	57,881	-
NSF	CMMI-1841231	EAGER: A Systems Approach to Predicting and Preventing Accidents During Operations	47.041	53,772	-
NSF	CMMI-1929465	Equitable Resilience (ER): A Necessary and Under-investigated Aspect of Sustainable Urban Systems (SUS)	47.041	18,150	-
NSF	CNS-1138967	Collaborative Research: An Expedition in Computing for Compiling Functional Physical Machines	47.070	381,861	-
NSF	CNS-1347267	MIT VMS I-Corps Site	47.070	36,710	-
NSF	CNS-1350619	CAREER: Computing on Encrypted Data	47.070	83,833	-
NSF	CNS-1350685	CAREER: Practical Algorithms and Fundamental Limits for Complex Cyber-Physical Systems	47.070	70,976	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	CNS-1407470	NeTS:Medium:Collaborative Research:An App-Centric Transport Architecture for the Internet	47.070	146,528	-
NSF	CNS-1413905	NeTS:Large:Collaborative Research:Mapping Interconnection in the Internet: Colocation, Connectivity and Congestion	47.070	92,596	28,997
NSF	CNS-1413920	TWC: TTP Option: Frontier: Collaborative: MACS: A Modular Approach to Cloud Security	47.070	695,398	-
NSF	CNS-1413973	NeTS Large: Collaborative Research: Location-Independent Networks: Evaluation Strategies and Studies	47.070	253,831	-
NSF	CNS-1446474	CPS: Frontier: Collaborative Research: BioCPS for Engineering Living Cells	47.070	76,163	-
NSF	CNS-1523546	NeTS:Small: Low Latency Scheduling for Data Centers	47.070	89,665	-
NSF	CNS-1523572	STARSS: SMALL: Trapdoor Computational Fuzzy Extractors	47.070	124,608	-
NSF	CNS-1524317	NeTS: Small: A Migration Approach to Optimal Control of Wireless Networks	47.070	134,452	-
NSF	CNS-1526791	NeTS: Small: A Programmable Network Data Plane for Resource Management in Datacenters	47.070	102,320	-
NSF	CNS-1526815	NSFSaTC-BSF: TWC: Small: Enabling Secure and Private Cloud Computing using Coresets	47.070	71,616	-
NSF	CNS-1542970	Track 2 EBP: Toward Using Virtual Identities in Computer Science Learning for Broadening Participation	47.070	84,147	-
NSF	CNS-1544413	CPS: Synergy: Collaborative Research: Design and Control of High-performance Provably-safe Autonomy-enabled Dynamic Transportation Networks	47.070	381,697	-
NSF	CNS-1544751	CPS: TTP Option: Synergy: Collaborative Research: Hardening Network Infrastructures for Fast, Resilient, and Cost-Optimal Wide-Area Control of Power S	47.070	90,266	-
NSF	CNS-1555796	Workshop on Tracking Quality of Experience in the Internet	47.070	30,516	-
NSF	CNS-1563763	CSR:Medium: A high-performance certified file system and applications	47.070	193,057	-
NSF	CNS-1563826	NeTS: Medium: Collaborative Research: Language and Hardware Primitives for Programming the Data Plane in High-Speed Networks	47.070	214,743	-
NSF	CNS-1617091	NeTS: Small: Collaborative Research: Ultrascale WDM-based Datacenter Networks: Architecture Design and Control Algorithms	47.070	87,624	-
NSF	CNS-1617487	CSR: Small: Operating Systems Kernels in High-Level Languages	47.070	215,005	-
NSF	CNS-1617702	NeTS:Small:Collaborative Research: A Fast and Flexible Transport Architecture for High Speed Networks	47.070	43,683	-
NSF	CNS-1639994	Transparency Bridges: Exploring Transparency Requirements in Smartphone Ecosystems	47.070	214,609	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	CNS-1644877	CPS: Breakthrough: Collaborative Research: . Transactive control of smart railway grid.	47.070	93,726	-
NSF	CNS-1650276	EAGER: Securing ICS Systems in the IIoT	47.070	58,713	-
NSF	CNS-1657303	CRII: CSR: End-to-End Approach to Ultra-Low Power IoT: From New Nanotechnologies to New System Architectures	47.070	31,629	-
NSF	CNS-1701964	WiFIUS: Collaborative Research: Ultra-low latency and High Reliability forWireless IoT	47.070	73,474	-
NSF	CNS-1704172	CSR: Medium: Collaborative Research: Soup: Flexible Storage and Processing for On-Line Applications	47.070	252,184	-
NSF	CNS-1713725	NeTS: Small: Optimizing Information Freshness in Wireless Networks	47.070	88,961	-
NSF	CNS-1717199	NeTS: Small: Cognitive Management and Control of Agile Dynamic Optical Networks	47.070	207,754	-
NSF	CNS-1718161	NSF-BSF: Foundations of Lattice-based Cryptography	47.070	272,560	-
NSF	CNS-1730389	CI-New: Collaborative Research: Modeling the Next-Generation Hybrid Cooling Systems for High-Performance Processors	47.070	111,153	-
NSF	CNS-1735463	CRISP Type 2: Collaborative Research: Understanding the benefits and mitigating the risks of interdependence in critical infrastructure systems	47.070	150,289	-
NSF	CNS-1739505	CPS: Small: Recover Algorithms for Dynamic Infrastructure Networks	47.RD	76,185	-
NSF	CNS-1739723	CPS: Small: Scaling Cyber-Physical Systems to the Low-Power Internet of Things	47.070	110,256	-
NSF	CNS-1743605	Free space optical network Workshop	47.070	17,586	-
NSF	CNS-1751009	CAREER: Data-Driven Network Resource Management Systems	47.070	146,608	-
NSF	CNS-1812522	SaTC:CORE:Small: verifying security for data non-interference	47.070	53,389	-
NSF	CNS-1813087	SaTC: CORE: Small: Design of Efficient, Horizontally-Scaling, and Strongly Anonymous Communication Networks	47.070	138,155	-
NSF	CNS-1815221	SaTC: CORE: Small: Towards Adversarially Robust Machine Learning	47.070	62,984	-
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	166,111	-
NSF	CNS-1841562	NSF Student Travel Grant for the ACM Conference on Information-Centric Networking 2018	47.070	6,714	-
NSF	CNS-1844280	CAREER: Wirelesss Sensing for In Vivo Medical Devices	47.070	26,533	-
NSF	CNS-1850937	I-Corps Teams: A Social Platform that Models User Identity Via Interactive Stories	47.070	22,890	-
NSF	CNS-1851293	I-Corps: 6Sensing: Chip-scale Raman sensors	47.041	37,724	-

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NSF	DEB-1655983	NSFDEB-BSF: Ecological networks and ecosystem function in the cow rumen microbiome: a multi-scale approach	47.074	182,956	-
NSF	DGE-1544234	Collaborative Research: The Role of Instructor and Peer Feedback in Improving the Cognitive, Interpersonal, and Intrapersonal Competencies of Student	47.076	1,295	-
NSF	DGE-1736899	Cambridge to Cambridge Competition Support	47.076	41,084	-
NSF	DGE-1745302	Graduate Research Fellowship Program (GRFP)	47.076	14,911,941	-
NSF	DGE-1806815	IGE: Enhancing Graduate Education in Systems Thinking and Multi-Stakeholder Design through a Co-Creation Toolkit	47.076	120,044	-
NSF	DGE-1807086	Collaborative Research: NRT-IGE: Employing Model-Based Reasoning in Environmental Science (EMBeRS)	47.076	45,737	-
NSF	DMR-1253306	CAREER: Self-Assembly of Fusion Proteins to Form Biofunctional Materials	47.049	65,477	-
NSF	DMR-1419807	NSF Materials Research Science and Engineering Centers (MRSEC) - Full Proposal	47.049	2,368,219	44,039
NSF	DMR-1452612	CAREER: Small Molecule Redox Reactivity at MOF Secondary Building Units	47.049	121,162	-
NSF	DMR-1505947	Solid-State Dewetting of Metallic Thin Films	47.049	122,522	-
NSF	DMR-1506475	Entanglement and emergence in new quantum states of matter	47.049	15,041	-
NSF	DMR-1506605	Collaborative Research: Thin film chalcogenide glass materials for high-quality integrated photonics	47.049	19,447	-
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	125,968	-
NSF	DMR-1507806	Spectroscopic Studies on Layered Materials	47.049	-532	-
NSF	DMR-1508072	SusChEM: Material and Morphometric Control of Bacterial Cellulose via Genetic Engineering, Post-Processing and 3D-Printed Molding	47.049	114,618	-
NSF	DMR-1509197	Collaborative Research: Nanostructured Conductive Tin Oxide for High-Efficiency Light Trapping in Thin Films and Photonic Devices	47.049	4,967	-
NSF	DMR-1522575	Physics of Strong Disorder and Correlation	47.049	21,060	-
NSF	DMR-1534340	DMREF: Collaborative Research: The Synthesis Genome: Data Mining for Synthesis of New Materials	47.049	303,751	218,362
NSF	DMR-1554891	CAREER: Geometrical Frustration in Spin Orbit Systems	47.049	121,147	-
NSF	DMR-1606911	Directed Self Assembly of Triblock Terpolymer Films	47.049	-19,399	-
NSF	DMR-1606914	"Accelerated Sintering in "Nano-Duplex" Dual Phase Nanostructured Alloys	47.049	1,095	-
NSF	DMR-1608505	Novel phases of electronic insulators and quantum Hall systems	47.049	122,751	-
NSF	DMR-1645232	2016 Alan T. Waterman Award	47.049	41,487	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	DMR-1651101	CAREER : Development of Fundamental Relationships Between Surface Structu re, Composition, Stability, and Activity of Oxide Electrocatalysts in Aqueou s Environments	47.049	8,983	-
NSF	DMR-1654548	CAREER: Quantifying Radiation Damage in Metals with Wigner Energy Spectral Fingerprints	47.049	192,517	-
NSF	DMR-1700137	Surface/Interface Phenomena and Topological Order in Emerging Quantum Materials	47.049	138,274	-
NSF	DMR-1708280	FORCES & FLUCTUATIONS OUT OF EQUILIBRIUM	47.049	82,721	-
NSF	DMR-1709315	Dynamics of Associative Polymers Revealed by Self-Diffusion	47.049	124,029	-
NSF	DMR-1743059	Convergence QL: NSF/DOE Quantum Science Summer School	47.049	14,137	-
NSF	DMR-1751736	CAREER: Fundamentals of complex chalcogenide electronic materials	47.049	143,134	-
NSF	DMR-1751739	CAREER: FRACTAL ELECTRONIC TEXTURES IN QUANTUM CRITICAL SOLIDS	47.049	148,216	-
NSF	DMR-1808190	Rare earth garnets for spintronics	47.049	290,885	-
NSF	DMR-1809740	Synthesis and Applications of Functional Carbon Nanomaterials	47.049	79,812	-
NSF	DMR-1809802	Tuning the Electronic and Topological Properties of Twisted van der Waals Heterostructures	47.049	116,360	-
NSF	DMR-1809815	Probing Chiral Fermion Dynamics in Topological Semimetals	47.049	169,042	-
NSF	DMR-1847861	CAREER: Strongly correlated systems through the lens of topological phases	47.049	34,920	-
NSF	DMR-1911792	Epitaxial Ceramic Nanocomposites by Design	47.049	1,481	-
NSF	DMS-1255203	CAREER: Super-Resolution and Subwavelength Imaging	47.049	-94	-
NSF	DMS-1312831	Applied Free Probability Theory	47.049	488,151	-
NSF	DMS-1350472	CAREER: Motives: Voevodsky versus Kontsevich	47.049	89,710	-
NSF	DMS-1362326	Random and pseudorandom structures and their applications	47.049	9,937	-
NSF	DMS-1362336	Algebraic Combinatorics and its Applications	47.049	9,349	-
NSF	DMS-1404540	Generic flows, Ricci curvature; Heegaard splittings and nodal sets	47.049	56,646	-
NSF	DMS-1406348	Instantons, low dimensional topology and knotted graphs	47.049	5,546	-
NSF	DMS-1406411	Gaussian Free Field and Conformal Loop Ensemble	47.049	36,158	-
NSF	DMS-1454419	CAREER: Geometric Methods in Hyperbolic PDEs	47.049	82,824	-
NSF	DMS-1462401	FRG: Collaborative Research: Long-term dynamics of nonlinear dispersive and hyperbolic equations: deterministic and probabilistic methods	47.049	55,099	-
NSF	DMS-1500219	Extremal graph theory, graph limits, and algebraic invariants	47.049	58,906	-
NSF	DMS-1500771	Free boundaries and extremal inequalities	47.049	146,840	-

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NSF	DMS-1500954	Lefschetz Fibrations, Mapping Tori, and Dynamics on Moduli Spaces of Objects	47.049	13,322	-
NSF	DMS-1502244	Tensor categories and representation theory	47.049	116,073	-
NSF	DMS-1510305	Flexibility in symplectic and contact geometry	47.049	41,523	-
NSF	DMS-1512925	Three-Dimensional Nonlinear Internal Wave Beams: Mathematical Models and Laboratory Experiments	47.049	72,617	-
NSF	DMS-1517842	Collaborative Research: From Biology to Mechanism: Harnessing Compliance in Locomoting Systems	47.049	-1,315	-
NSF	DMS-1519580	PRIMES: Program for Research In Mathematics, Engineering, and Science for high school Students	47.049	5,585	-
NSF	DMS-1521765	Collaborative Research: Computational methods for ultra-high sensitivity magnetometry of geological samples	47.049	84,293	-
NSF	DMS-1522526	Computational methods in arithmetic geometry	47.049	47,287	-
NSF	DMS-1564458	FRG: COLLABORATIVE RESEARCH: CROSSING THE WALLS IN ENUMERATIVE GEOMETRY	47.049	52,411	-
NSF	DMS-1566618	Mathematical Sciences: Geometric methods in the representation theory of affine Hecke algebras, finite reductive groups and character sheaves	47.049	57,633	-
NSF	DMS-1600375	Quantum algebras, quiver varieties and applications	47.049	56,779	-
NSF	DMS-1601946	Topics in arithmetic geometry	47.049	113,828	-
NSF	DMS-1601953	Wall-crossing and dualities in representation theory	47.049	149,233	-
NSF	DMS-1607901	Integrable probability	47.049	61,159	-
NSF	DMS-1614043	Collaborative Research: Walking droplet interactions and stability	47.049	14,739	-
NSF	DMS-1623977	2017-2019 Talbot Workshops	47.049	55,681	-
NSF	DMS-1651995	CAREER: Gaussian Graphical Models: Theory, Computation, and Applications	47.049	34,040	-
NSF	DMS-1664412	FRG: cQIS: Collaborative Research: Mathematical Foundations of Topological Quantum Computation and its applications	47.049	170,362	-
NSF	DMS-1664619	FRG: Collaborative Research: Integrable Probability	47.049	130,721	-
NSF	DMS-1700127	Dynamics of nonlinear wave equations	47.049	40,871	-
NSF	DMS-1700338	The Probabilistic Method in Combinatorics	47.049	54,780	-
NSF	DMS-1707270	Mean Curvature Flow and Nonlinear Heat Equations	47.049	80,384	-
NSF	DMS-1707857	Gauge theory, Floer homology and invariants of low-dimensional manifolds	47.049	52,178	-
NSF	DMS-1711053	Min-max problems for families of cycles in Riemannian manifolds	47.049	14,020	-
NSF	DMS-1712596	Collaborative Research: Statistical Estimation with Algebraic Structure	47.049	54,893	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	DMS-1712862	Universal randomness in 2D	47.049	141,773	-
NSF	DMS-1719637	Collaborative Research: Overcoming order reduction and stability restrictions in high-order time-stepping	47.049	36,821	-
NSF	DMS-1723011	Collaborative Research: CDS&E-MSS: Stochastic Approximations for the Solution and Uncertainty Analysis of Data-Intensive Inverse Problems	47.049	25,030	-
NSF	DMS-1737944	Algorithms for anomaly detection using graphical models	47.049	141,039	-
NSF	DMS-1749858	CAREER: Classical and quantum chaos	47.049	6,027	-
NSF	DMS-1760264	FRG: Collaborative Research: Algebra and geometry behind link homology	47.049	29,646	-
NSF	DMS-1764176	Graph Theory and Additive Combinatorics	47.049	60,131	-
NSF	DMS-1764370	Combinatorics in Algebra, Geometry, and Physics	47.049	39,058	-
NSF	DMS-1764403	Collaborative Research: Dynamics of Nonlinear PDE: Integrating Deterministic and Probabilistic Methods	47.049	100,630	-
NSF	DMS-1764454	Problems related to Fourier restriction estimates	47.049	15,723	-
NSF	DMS-1801818	Hyper-Kahler geometry via Lagrangian fibrations and symplectic resolutions	47.049	53,123	-
NSF	DMS-1802311	Representations, geometry, and quantization	47.049	50,000	-
NSF	DMS-1808794	Gauge Theory and Trivalent Graphs in Three Manifolds	47.049	108,307	-
NSF	DMS-1810638	Motivic homotopy theory, stable homotopy groups of spheres and the Kervaire invariant	47.049	58,677	-
NSF	DMS-1810645	Singularities in Geometric Variational Problems	47.049	7,935	-
NSF	DMS-1811267	Non-compact solutions to geometric flows	47.049	35,217	-
NSF	DMS-1812142	Evolution equations in geometry	47.049	69,286	-
NSF	DMS-1821177	Graduate Workshop in Algebraic Geometry for Women and Mathematicians of Minority Genders	47.049	-23	-
NSF	DMS-1838118	Arithmetic and geometry around relative trace formulae	47.049	117,366	-
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	5,625	-
NSF	DMS-1841187	Novel Computational and Statistical Approaches to Prediction and Estimation	47.049	48,139	-
NSF	DMS-1845034	CAREER: Higher enumerative geometry via representation theory and mathematical physics	47.049	10,818	-
NSF	DMS-1856457	Geometric PDEs and Algebraic Geometry	47.049	2,944	-
NSF	DMS-1901849	K-stability and higher dimensional geometry	47.049	46,558	-
NSF	DMS-1902645	Geometric Partial Differential Equations and Algebraic Geometry	47.049	51,418	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	DMS-1906072	Classical methods in motivic homotopy theory	47.049	12,188	-
NSF	DRL-1418122	Collaborative Research: Revealing the Invisible: Data-Intensive Research Using Cognitive, Psychological, and Physiological Measures to Optimize STEM Learning	47.076	164,046	-
NSF	DRL-1508911	Collaborative Research: Building Enhanced Scientific Thinking through Modeling Ecosystems	47.076	75,597	-
NSF	DRL-1614548	Collaborative Research: WAVES: A STEM-Powered Youth News Network for the Nation	47.076	702,802	-
NSF	DRL-1639069	DRK-12 Teachers with GUTS (PI Irene Lee)	47.076	925,467	-
NSF	DRL-1644540	Neurocognitive underpinnings of dyslexia and dyscalculia	47.076	591,213	186,875
NSF	DRL-1723459	EAGER: MAKER: Collaborative: Beyond Rubrics: Moving Towards Embedded Assessment in Maker Education	47.076	168,224	88,286
NSF	DUE-1503793	Discovery-Based Student Learning with the Haystack 37-m Radio Telescope	47.076	42,007	-
NSF	DUE-1646976	Collaborative Research: Framing Learning for MOOC Student Success	47.076	20,796	-
NSF	DUE-1709359	Collaborative Research: Student Produced Audio Narratives (SPAN)	47.076	27,233	-
NSF	DUE-1734870	NCS-FO: Collaborative Research: Ground-Truth Analysis and Modeling of Entire Individual C. elegans Nervous Systems	47.076	479,773	-
NSF	DUE-1740143	Collaborative Proposal: Directed Reading Program Network	47.076	18,465	-
NSF	EAR-1361319	CSEDI Collaborative Research: Grand Challenge for Experimental Study of Plastic Deformation Under Deep Earth Conditions	47.050	15,974	-
NSF	EAR-1411552	Collaborative Research: Toward a global timeline of biological and ocean geochemical change during the early Cambrian	47.050	47,467	-
NSF	EAR-1414499	Sediment Transport in Vegetated Channels: Evaluating the Roles of Mean Bed Stress and Turbulent Impulse	47.050	5,043	-
NSF	EAR-1424892	High-precision U-Pb zircon geochronology and intracontinental correlation of terrestrial ecosystems during the zenith of dinosaur diversity in the Late Campanian of North America	47.050	37,115	-
NSF	EAR-1434138	Collaborative Research: Reconstructing interactions between the East Asian Monsoon and Westerly Jet at multiple timescales via the flux and provenance of eolian and fluvial supply	47.050	574	-
NSF	EAR-1439559	Early Career: Technical support for a uranium-series isotope geochemistry laboratory focused on Earth's climate and surface processes	47.050	0	-
NSF	EAR-1451022	Evolution of Microstructure and Creep Strength of Marble	47.050	-17,122	-
NSF	EAR-1464024	Colaborative Research: Anelastic properties of the Earth from seismic to tidal timescales	47.050	-6,547	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	EAR-1520762	Collaborative Research: Changes in river-aquifer exchange induced by groundwater pumping, and their effect on arsenic contamination in the Red River Delta, Vietnam	47.050	55,608	-
NSF	EAR-1520825	Hazards SEES: Uncovering the hidden skeleton of environmental flows: advanced Langrangian methods for hazards prediction, mitigation and response	47.050	142,893	-
NSF	EAR-1521534	Robust earthquake source scaling and seismic efficiency for intermediate-depth and deep earthquakes at global and regional scales.	47.050	118	-
NSF	EAR-1551321	ABR: Experimental Studies of Hydrous Mantle Melting	47.050	72,005	-
NSF	EAR-1551753	Collaborative Research: A Community Velocity Field for East Africa	47.050	8,107	-
NSF	EAR-1552202	Processes and Rates of Arc Crust Growth and Differentiation in the Southern Sierra Nevada Crustal Section	47.050	123,731	-
NSF	EAR-1615426	Collaborative Research: Integrating the geological and genomic records: time-calibrating Earth's dynamic biogeochemical history	47.050	169,562	-
NSF	EAR-1622560	Collaborative Research: GeoGONAF: Analysis of active deformation and strain transfer along the Izmit Bay-Marmara Sea segment of the North Anatolian Fault	47.050	8,001	-
NSF	EAR-1647504	INSPIRE: Search for Records of the Hadean Dynamo in Detrital Zircons	47.050	84,752	28,582
NSF	EAR-1659923	Predictive Models for Wave Damping by Flexible Aquatic Vegetation	47.050	53,758	-
NSF	EAR-1702588	Collaborative Research: Quantifying precipitation changes in the South American subtropics over the late Pleistocene	47.050	70,839	-
NSF	EAR-1722935	Collaborative Research: Relating bulk composition to seismic properties in crustal rocks	47.050	58,016	-
NSF	EAR-1753482	Melt Network Geometry in Stressed, Partially Molten Mantle Rocks: Implications for Seismic Anisotropy	47.050	109,938	-
NSF	EAR-1827715	Collaborative Research: Calibrating the end-Ediacaran extinction at a new boundary site with U-Pb Geochronology & Chemostratigraphy	47.050	57,843	-
NSF	EAR-1833478	Collaborative Research: Community Facility Support: Facilitating Access and Innovation through a Collaborative Organization for Rock Deformation (CORD)	47.050	67,494	-
NSF	EAR-1836304	Development of Multi-Channel Ultrasound Recording System for a High?Pressure, High?Temperature Rock Deformation Apparatus	47.050	4,829	-
NSF	ECCS-1449291	SNM: Knowledge-based Continuous and Scalable Manufacture of Quantum Dots	47.041	105,966	-
NSF	ECCS-1453218	CAREER: Glass-Based Fexible Integrated Photonic Devices	47.041	70,212	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	ECCS-1509486	Collaborative Research: Understanding and Engineering Timing Jitter of Superconducting-Nanowire Single Photon Detectors	47.041	49,376	-
NSF	ECCS-1532591	NCS-FO: Algorithmically explicit neural representation of visual memorability	47.041	57,363	-
NSF	ECCS-1550015	EAGER: Renewables: Market Designs for Distribution Systems with High Renewable Penetration	47.041	37,288	-
NSF	ECCS-1554171	CAREER: Computational toolbox for improved security of power systems	47.041	219,454	-
NSF	ECCS-1607865	Monolithic magneto-optical isolators for on-chip photonic integration	47.041	-14,209	-
NSF	ECCS-1609240	Collaborative Research: Advances in High-Frequency Magnetics for High-Efficiency, High-Density Power Electronic Systems	47.041	107,816	-
NSF	ECCS-1610806	Collaborative Research: Electrochemically driven Mechanical Energy Harvesting	47.041	60,851	-
NSF	ECCS-1639921	E2CDA: Type II: Memory, Logic, and Logic in Memory Using Three Terminal Magnetic Tunnel Junctions	47.041	56,394	-
NSF	ECCS-1644588	EAGER: Theoretic Structures of High Dimensional Data Decomposition	47.041	7,524	-
NSF	ECCS-1653100	CAREER: On-Chip Terahertz Electronic Frequency Combs	47.041	136,927	-
NSF	ECCS-1653553	CAREER: Spin-Orbit Interaction based Spintronics in Superconductors	47.041	108,938	-
NSF	ECCS-1702716	Spectroscopy with Quantum Sensors at the Nanoscale	47.041	160,117	-
NSF	ECCS-1709212	Collaborative Research: Conformal and robust integrated infrared spectroscopic sensors	47.041	191,773	-
NSF	ECCS-1711027	CCSS: Small : Universal Feature Selection in Integrated Monitoring of Large Networks	47.041	61,779	-
NSF	ECCS-1740274	E2CDA: Type I: Collaborative Research: Interconnects Beyond Cu	47.041	34,996	-
NSF	ECCS-1743938	EAGER: Feedback optimization of dynamic nonlinear signal processing systems	47.041	86,069	-
NSF	ECCS-1745547	Spatially Continuous Modeling of Power System Oscillations with Renewable Energy Penetration	47.041	39,434	-
NSF	ECCS-1808692	Model Reduction of High Dimensional Hidden Markov Models and Markov Decision Processes	47.041	93,106	-
NSF	ECCS-1808826	Magnetic Memory Devices Based on Antiferromagnet	47.RD	143,625	-
NSF	ECCS-1808828	Electrical switching of magnetic devices by voltage-controlled proton insertion for low-power, high-performance data storage and computing	47.041	193,996	-
NSF	ECCS-1809314	Collaborative Research: Stability, security and emergency control for reconfigurable networked microgrids	47.041	25,099	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	ECCS-1809917	CMOS THz Molecular Clock With Enhanced Stability And Energy Efficiency	47.041	128,151	-
NSF	ECCS-1824360	Tag-of-Everything: Secured Wireless Powering and Communication Using THz Spectrum for Ultra-Small, Package-Less ID Chips	47.041	55,086	-
NSF	ECCS-1831482	ISCS/IPRM 2018: Compound Semiconductor Week	47.041	7,004	-
NSF	ECCS-1929535	Learning for Dynamics and Control (L4DC)	47.041	240	-
NSF	EF-1137306	Type 2: The Future of Ecosystems and Extremes: Using Diverse Environmental Data Sets in Support of Regional to Global Earth□System Models and Predictions	47.074	102,661	81,993
NSF	EFMA-1641064	EFRI ACQUIRE: Scalable Quantum Communications with Error-Corrected Semiconductor Qubits	47.041	301,041	103,562
NSF	EFMA-1830901	EFRI C3 SoRo: Soft, Strong, and Safe Configurable Robots for Diverse Manipulation Tasks	47.041	129,978	46,337
NSF	EFRI-1240383	EFRI-ODISSEI: Programmable Origami for Integration of Self-Assembling Systems in Engineered Structures	47.041	16,428	1,871
NSF	ICER-1854929	PREEVENTS Track 2: Collaborative Research: Predicting Hurricane Risk along the United States East Coast in a Changing Climate	47.050	5,088	-
NSF	IIP-1640678	A Platform for High Throughput Genetic Transformation of Bacteria	47.041	7,162	-
NSF	IIP-1717362	PFI:BIC - Development, Deployment and Evaluation of an Intelligent Service System for Personalized Early Literacy Learning Using Mobile Devices	47.041	283,449	10,709
NSF	IIP-1735671	Type II: MIT Innovation Corps Site	47.041	21,330	-
NSF	IIP-1741564	I-corps: An Objective Clinical Machine Learning Imaging Technology	47.041	5,558	-
NSF	IIP-1818795	I-Corps Teams: Improving the Energy Efficiency of Transport Refrigeration Units	47.041	5,406	-
NSF	IIP-1820773	I-Corps Teams: Machine Learning Algorithms and Tools for Analysis and Optimization of Infrastructure	47.041	11,175	-
NSF	IIP-1821020	I-Corps Team: A Photonic Crystal Enabled Thermophotovoltaic Portable Power Generator	47.041	16,812	-
NSF	IIP-1821856	I-Corps: Organ-on-a-Chip Technology for Pharmaceutical Testing	47.041	8,753	-
NSF	IIP-1832931	I-Corps New England Regional Innovation Node (NERIN)	47.041	482,744	-
NSF	IIP-1841910	I-Corps Teams: Factor Graph Computing for Data-driven Decision-making	47.041	12,799	-
NSF	IIP-1849518	I-Corps Teams: Mobile Platform for Collecting, Analyzing, and Managing In-Field Data	47.041	30,386	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	IIP-1927929	I-Corps Teams: Acoustic Monitoring of Remote Pumping Equipment	47.041	820	-
NSF	IIP-1928890	I-Corps Teams: Electric Reservoir Stimulation	47.041	30,252	6,667
NSF	IIP-1928909	I-Corps Teams: Robust Filtration Membranes For Harsh Environment Separations	47.041	35,364	-
NSF	IIP-1929013	I-Corps Teams: Synthetic Matrix Solutions for Neurodegenerative Disease Platforms	47.041	10,752	-
NSF	IIS-1053398	CAREER Digital Privacy and Regulation	47.070	6,991	-
NSF	IIS-1161731	CGV: Medium: Collaborative Research: Understanding Translucency: Physics, Perception, and Computation	47.070	47,946	-
NSF	IIS-1226883	NRI-Large: Collaborative Research: Soft Compliant Robotic Augmentation for Human-Robot Teams	47.070	145,262	-
NSF	IIS-1248066	INSPIRE: Kreyol-based Cyberlearning for a New Perspective on the Teaching of STEM in local Languages	47.070	4,947	-
NSF	IIS-1350160	CAREER: Human-Aware Autonomy for Team-Oriented Environments	47.070	108,023	-
NSF	IIS-1350879	CAREER: Gait Transition Principles in Quadruped Robots	47.070	11,033	-
NSF	IIS-1404494	SCH: EXP: Collaborative Research: THink - Inferring Cognitive State From Subtle Behaviors	47.070	44,137	15,492
NSF	IIS-1420316	RI: Small: A Systematic Approach to Robot Task and Motion Planning in Belief Space	47.070	9,973	-
NSF	IIS-1421065	RI: Small: Enabling robust visual intelligence using propagators to model human competence	47.070	2,625	-
NSF	IIS-1427050	NRI: Collaborative: Efficient Algorithms for Contact-Aware State Estimation	47.070	204,066	-
NSF	IIS-1427547	NRI: Collaborative: Modeling and Verification of Language-based Interaction	47.070	14,098	3,228
NSF	IIS-1447476	BIGDATA: F: DKA: Collaborative Research: Structured Nearest Neighbor Search in High Dimensions	47.070	85,714	-
NSF	IIS-1447786	BIGDATA: IA: DKA: Collaborative Research: High-Thoughput Connectomics	47.070	26,170	-
NSF	IIS-1453141	CAREER: Advances in Monitoring Human Performance: Moving Wearable Technology from the Expert to Nonexpert User	47.070	158,863	-
NSF	IIS-1513443	III: Medium: Collaborative Research:DataHub - A Collaborative Dataset Management Platform for Data Science	47.070	18,795	-
NSF	IIS-1523118	EXP: Collaborative Research: A Personalized Storyteller Companion to Promote Preschooler Language Skills	47.070	52,453	-
NSF	IIS-1523767	NRI: Learning to Plan for New Robot Manipulation Tasks	47.070	584,321	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	IIS-1524427	RI: Small: Theory and Algorithms for Learning Perturbation Models	47.050	45,633	-
NSF	IIS-1524817	RI: Small: Advancing Visual Recognition with Feature Visualizations	47.070	241,328	-
NSF	IIS-1527181	RI: Small: Time Resolved Imaging: New Methods for Capture, Analysis and Applications	47.070	8,678	-
NSF	IIS-1546290	BIGDATA: Collaborative Research: F: Making Big Data Accessible on Personal Computers: Big Network Algorithms and Data Streams	47.070	222,897	-
NSF	IIS-1553284	CAREER: Scalable learning with combinatorial structure	47.070	3,654	-
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	16,497	-
NSF	IIS-1607486	US-German Research Proposal: Neurocomputation in the Visual Periphery: Experiments and Models	47.070	109,321	-
NSF	IIS-1617403	CHS : Small: Creating versatile vibrotactile displays	47.070	146,850	-
NSF	IIS-1636766	BD Spokes: SPOKE: NORTHEAST: Collaborative: A Licensing Model and Ecosystem for Data Sharing	47.070	48,761	-
NSF	IIS-1637753	NRI: Collaborative Research: Accelerating Robotic Manipulation with Data-Enhanced Contact Mechanics	47.070	121,225	-
NSF	IIS-1637824	NRI: Collaborative Research: Towards Robots with Human Dexterity	47.070	119,740	-
NSF	IIS-1651190	EAGER: Linguistic Event Extraction and Integration (LEXI): A New Approach to Speech Analysis	47.070	25,882	-
NSF	IIS-1716413	CHS: Small: An Integrated Editing Environment for 3D Printing	47.070	75,873	-
NSF	IIS-1718258	III:Small:A New Perspective on Grouped Variable Selection via Modern Optimization	47.070	78,933	-
NSF	IIS-1723381	S&AS:INT: Integrated Reasoning, Planning and Acting for Household Robots	47.070	171,293	-
NSF	IIS-1723943	S&AS: INT: COLLAB: Autonomy as a Service	47.070	113,867	-
NSF	IIS-1729931	Collaborative Research: Computational Photo-Scatterography: Unraveling Scattered Photons for Bio-imaging	47.070	22,146	-
NSF	IIS-1734443	NRI: INT: COLLAB: Development, Deployment and Evaluation of Personalized Learning Companion Robots for Early Literacy and Language Learning	47.070	187,140	-
NSF	IIS-1738247	III: NSF Student Travel Grant for 2017 International Semantic Web Conference (ISWC 2017)	47.070	4,153	-
NSF	IIS-1741137	BIGDATA: F: Testing high dimensional distributions without the curse of dimensionality	47.070	365,200	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	IIS-1741341	BIGDATA: F: Collaborative Research: Towards automating data analysis: interpretable, interactive, and scalable learning via discrete probability	47.070	40,823	-
NSF	IIS-1744809	Collaborative Research: The cognitive and neural mechanisms of computer programming in young children: storytelling or solving puzzles?	47.070	55,485	-
NSF	IIS-1745125	CAREER: Exact Algorithms for Learning Latent Structure	47.070	38,029	-
NSF	IIS-1750286	CAREER: Robust, scalable, reliable machine learning	47.070	94,295	-
NSF	IIS-1761812	Spokes: MEDIUM: NORTHEAST: Collaborative: Data science foundry: A collaborative platform for computational social science	47.070	91,640	-
NSF	IIS-1763434	III: Medium: Massively Parallel Data Analytics on Heterogeneous Architectures	47.070	88,376	-
NSF	IIS-1815372	CHS: Small: Collaborative Research: Computational Acoustic Design for Digital Manufacturing	47.070	82,026	-
NSF	IIS-1815529	RI:Small:Computational analysis of eye movements in reading: reader characteristics, cognitive state, and natural language processing	47.070	143,573	-
NSF	IIS-1815585	CHS: Small: Collaborative Research: Computational Fine Art Reproduction	47.070	99,853	-
NSF	IIS-1822181	2nd Summer School on Cognitive Robotics	47.070	25,299	-
NSF	IIS-1830282	NRI:INT:COLLAB: Collaborative Task Planning and Learning through Language Communication in a Human-Robot Team	47.070	78,959	-
NSF	IIS-1833154	Workshop for Women in Machine Learning	47.070	11,653	-
NSF	IIS-1838071	BIGDATA:F: Statistical and Computational Optimal Transport for Geometric Data Analysis	47.070	53,871	-
NSF	IIS-1844406	CAREER: Adaptive Physical User Interfaces	47.070	2,318	-
NSF	IIS-1846088	CAREER: Modern nonconvex optimization for machine learning: foundations of geometric and scalable techniques	47.070	19,992	-
NSF	IIS-1923089	Doctoral Mentoring Consortium at the Seventeenth International Conference on Autonomous Agents and Multiagent Systems	47.070	1,000	-
NSF	IIS-1929607	US-German Collaboration: Toward a quantitative understanding of navigational deficits in aging humans	47.070	16,361	-
NSF	IOS-1645061	IOS EDGE: Development of genetic tools for the dominant phototroph in the sea	47.074	294,679	-
NSF	IOS-1845663	CAREER: Dissecting Neural Mechanisms of Behavioral State Control in C. elegans	47.074	28,881	-
NSF	MCB-1350625	CAREER: Deciphering and Engineering Biological State Machines with Synthetic Biology	47.074	79,178	-
NSF	MCB-1517913	Development and Analysis of Autonomous Metabolite Valves	47.074	47,524	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	MCB-1615252	Collaborative research: Development of a platform enabling analysis of membrane protein interactions	47.074	105,862	-
NSF	MCB-1652390	CAREER: Integrating Chem. Biology Methods & RNA Virus Models to Elucidate How the Metazoan Proteostasis Ntwk Modulates Protein Evolutionary Landscapes	47.074	242,623	-
NSF	MCB-1715859	Breaking the Histone Code: Predicting Genome Organization with Chromatin States	47.074	253,076	-
NSF	MCB-1745645	Collaborative Research: EAGER: Dynamically Customized Cancer Immunotherapy Guided by Live Cell, Genetically Encoded, Tumor Sensors	47.074	88,163	-
NSF	MCB-1817708	Multiplexing Autonomous Metabolite Valves	47.074	93,446	-
NSF	MCB-1840257	RoL:FELS:RAISE: Principles of Modular Organization in Resource-Limited Biological Circuits	47.074	215,521	-
NSF	MCB-1844668	CAREER: Cracking the Cleavage Code of RNase Y and Its Associated Y-Complex in Firmicutes	47.074	18,287	-
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	79,502	-
NSF	OAC-1835443	Framework: Software: Next-Generation Cyberinfrastructure for Large-Scale Computer-Based Scientific Analysis and Discovery	47.070	64,208	-
NSF	OAC-1835618	Collaborative Research: Framework: Data: Toward Exascale Community Ocean Circulation Modeling	47.050	35,865	-
NSF	OAC-1839159	RAISE TAQS: Very Large Scale Integrated Electronics and Photonics Platform for Scalable Quantum Information Processing	47.070	96,134	-
NSF	OAC-1841617	Collaborative Research: Community Planning for Scalable Cyberinfrastructure to Support Multi-Messenger Astrophysics	47.070	14,804	-
NSF	OCE-1338814	FESD Type 1:The impact of the ozone hole on the climate of the Southern Hemisphere	47.050	851,956	617,200
NSF	OCE-1356460	Membrane vesicles produced by marine bacteria: origins, distributions, and functions	47.050	25,306	-
NSF	OCE-1434007	Size structure and function of phytoplankton communities in a changing ocean	47.050	29,007	-
NSF	OCE-1459702	Theoretical studies of eddy mixing	47.050	122,462	-
NSF	OCE-1502985	Collaborative Research: Insights into North African climate variability over the last 1.1 million years from dust fluxes and leaf wax isotopes	47.050	13,026	-
NSF	OCE-1536515	Collaborative Research: An Ocean Tale of Two Climates: Modern and Last Glacial Maximum	47.050	85,317	-
NSF	OCE-1558702	Collaborative Research: Predicting the Spatiotemporal Distribution of Metabolic Function in the Global Ocean	47.050	71,150	-

Appendix A1
Massachusetts Institute of Technology
Federal Research Support - On Campus
FY 2019 Expenditures

Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	OCE-1658451	Microbial interactions on particulate organic matter: from community structure to function.	47.050	138,707	-
NSF	OCE-1736109	Collaborative Research: Deep Circulation over the Flanks of a Mid-Ocean Ridge	47.050	62,597	-
NSF	OCE-1736996	Collaborative Research: US GEOTRACES PMT: Pb and Cr isotopes	47.050	276,863	-
NSF	OCE-1756324	Collaborative Research: Bottom Boundary Layer Turbulent and Abyssal Recipes	47.050	34,890	-
NSF	OIA-1231216	A Center for Brains, Minds, and Machines: The Science and the Technology of Intelligence	47.070	1,368	-
NSF	OPP-1542950	Development of an air-droppable geodetic-seismic ice penetrator for response studies of Antarctic ice shelves and icebergs to ocean forcings	47.050	13,356	-
NSF	OPP-1837646	NNA: Collaborative Research: Navigating the New Arctic--Persistent, Long-Range, Autonomous Under-Ice Observations of Arctic Change	47.050	1,301	-
NSF	PHY-1125846	Center for Ultracold Atoms	47.049	-16,979	-16,979
NSF	PHY-1404245	Quantum Optomechanics on Multiple Mass Scales	47.049	-3,544	-
NSF	PHY-1415514	Dynamic Decoupling and Noise Characterization in Superconducting Qubits	47.049	-58	-
NSF	PHY-1433156	Collaborative Research: Construction of the Upstream Tracker for the LHCb Upgrade	47.049	96,192	-
NSF	PHY-1437402	MRI Consortium: Collaborative Research: Development of the Phase-I DarkLight Experiment at Jefferson Laboratory	47.049	37,531	-
NSF	PHY-1454673	CAREER: SELECTIVE TRANSPORT IN BIOLOGICAL HYDROGELS - FROM DESIGN PRINCIPLES TO MECHANISMS	47.049	182,395	-
NSF	PHY-1504942	Physics of Chromosomes	47.049	79,708	-
NSF	PHY-1505678	New Experimental Techniques for Neutrino Experiments	47.049	54,155	-
NSF	PHY-1505855	The EPP-Supported Neutrino Program at MIT	47.049	42,922	-
NSF	PHY-1505858	The PA-Supported Neutrino Program at MIT	47.049	208,995	-
NSF	PHY-1505862	Entangled States of Light and Atoms for Measurements Below the Standard Quantum Limit	47.049	6,138	-
NSF	PHY-1506019	Strongly Interacting Fermi Gases of Ultracold Atoms	47.049	101,504	-
NSF	PHY-1506369	A Program in Ultralow-Temperature Atomic Physics	47.049	359,328	-
NSF	PHY-1541160	INSPIRE: Testing Bell's Inequality with Astrophysical Observations	47.049	73,047	58,277
NSF	PHY-1554875	Career: Next-Generation Liquid Scintillator Detectors: Picosecond Timing and Quantum-Dot-Doped Scintillator	47.049	273,573	65,220
NSF	PHY-1607225	Searching for physics beyond the Standard Model at the LHCb Experiment	47.049	77,681	-

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FY 2019 Expenditures

Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	PHY-1620045	Research in Theoretical Elementary Particle Physics	47.049	-615	-
NSF	PHY-1626069	MRI: Development of the IsoDAR Front-End	47.049	15,872	-
NSF	PHY-1654168	CAREER: Magnetogenesis Revisited: The First Self-consistent Plasma Dynamo	47.049	109,370	-
NSF	PHY-1705940	Measuring Attometer-Scale Thermal Fluctuations in Optical Coatings for Applications in Gravitational Wave Detection	47.049	81,021	-
NSF	PHY-1707549	Studies of strong-gravity binaries and their gravitational waves	47.049	80,798	-
NSF	PHY-1707840	Quantum Optomechanics on Multiple Mass Scales	47.049	204,689	-
NSF	PHY-1707999	Inferring the Physics of mRNA Trafficking in Neuronal Systems	47.049	60,247	-
NSF	PHY-1720311	Dynamical decoupling, error mitigation and noise correlations in multi-qubit systems	47.049	87,030	-
NSF	PHY-1734011	Center for Ultracold Atoms	47.049	923,220	-
NSF	PHY-1743900	RAISE: A phase separation model for transcriptional control in mammals	47.049	390,666	199,691
NSF	PHY-1801996	The EPP-Supported Neutrino Program at MIT	47.049	316,826	-
NSF	PHY-1806251	New Experimental Techniques for Neutrino Physics	47.049	117,473	-
NSF	PHY-1806440	Rare Event Searches at MIT	47.049	178,730	-
NSF	PHY-1806765	Many-body entanglement for precision measurement	47.049	152,394	-
NSF	PHY-1836814	Collaborative Proposal: The Next Generation of Gravitational Wave Detectors	47.049	32,978	-
NSF	PHY-1841699	CAREER: Quark and Gluon Structure of Nucleons and Nuclei	47.049	68,842	-
NSF	PHY-1904160	LHCb operations and computing	47.049	291,376	-
NSF	PLR-1503966	Collaborative Research: The combined influence of sea ice and snow cover on Northern Hemisphere atmospheric climate variability	47.050	72,168	-
NSF	PLR-1542950	Development of an air-droppable geodetic-seismic ice penetrator for response studies of Antarctic ice shelves and icebergs to ocean forcings	47.050	42,408	-
NSF	PLR-1543366	Dynamics of the Antarctic Seasonal Ice Zone	47.050	187,011	-
NSF	PLR-1603557	Collaborative Research: Quantifying the Residual Circulation of the Arctic Ocean	47.050	137,057	-
NSF	PLR-1643761	Collaborative Research: Monitoring Antarctic Ice Sheet Changes with Ambient Seismic Noise Methods	47.050	67,118	-
NSF	SES-1155143	Collaborative Research: The American Mass Public in the Early Cold War Years	47.075	23,400	-
NSF	SES-1427231	Demand Analysis for Matching Markets	47.075	1,113	-

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Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NSF	SES-1528487	Collaborative Research: A New Design for Identifying Persuasion Effects and Selection in Media Exposure Experiments via Patient Preference Trials	47.075	26,513	-
NSF	SES-1558205	Choice, Learning and Equillibrium	47.075	124,125	-
NSF	SES-1559367	Experimental Evidence of the Effectiveness of Mechanisms Designed to Increase Tax Compliance	47.075	38,506	-
NSF	SES-1725235	Policy as a Private Good: Firm-Lobbyist-Politician Networks in the Legislative Process	47.075	104,831	-
NSF	SES-1733899	From School to Work: Experimental Interventions Following A Longitudinal Study of Gender Stratification in Science and Engineering	47.075	48,172	-
NSF	SES-1757198	Information, Attention, and Coordination in Macroeconomics	47.075	128,434	-
NSF	SES-1757199	Inferences in Factor Pricing Models with Many Assets	47.075	107,304	-
NSF	SMA-1415129	SEES Fellowship - PDF - S. Pattinson	47.075	3,649	-
NSF	SMA-1733545	Workshop: Innovation, Cities, and the Future of Work	47.075	-1,259	-
NSF	SMA-1757344	Mapping the Inventor Gender Gap: Analyzing Regional & Organization Variation in the Inclusivity of the Innovation Economy	47.075	237,804	-
NSF	SMMI-1346638	CAREER: High-Speed Continuous Assembly of Nanoparticle Monolayers and Discrete Cluster Arrays	47.041	-4,536	-
		Total for National Science Foundation		**83,461,436**	**7,655,990**
		TOTAL for National Science Foundation		**83,461,436**	**7,655,990**
		TOTAL Federal Research Support - On Campus		**380,060,814**	**62,813,005**

Appendix A-2
Massachusetts Institue of Technology
Schedule of Expenditures of Federal Awards - Lincoln Laboratory
By Sponsor & Contract - FY 2019

Sponsor	Contract Number	Program Name	CFDA #	Total $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE					
AIR FORCE	FA8721-05-C-0002		12.RD	$ 2,600,392	$ 1,843,140
	FA8702-15-D-0001		12.RD	330,605,314	21,797,771
ARMY	FA8721-05-C-0002		12.RD	1,041,229	1,041,229
	FA8702-15-D-0001		12.RD	55,055,241	2,775,202
CLASSIFIED	FA8721-05-C-0002		12.RD	75,558	31,050
	FA8702-15-D-0001		12.RD	185,618,850	19,018,336
DEFENSE ADVANCED RESEARCH PROJECT AGENCY	FA8721-05-C-0002		12.RD	10,715	10,715
	FA8702-15-D-0001		12.RD	28,741,749	2,430,317
MISSILE DEFENSE AGENCY	FA8721-05-C-0002		12.RD	399,100	359,881
	FA8702-15-D-0001		12.RD	92,700,997	1,627,665
NATIONAL SECURITY AGENCY	FA8702-15-D-0001		12.RD	6,754,689	234,034
NAVY	FA8721-05-C-0002		12.RD	265,217	67,761
	FA8702-15-D-0001		12.RD	52,179,785	5,722,953
OTHER DEPARTMENT OF DEFENSE	FA8721-05-C-0002		12.RD	148,097	45,000
	FA8702-15-D-0001		12.RD	172,896,264	5,554,080
TOTAL DEPARTMENT OF DEFENSE				**$ 929,093,197**	**$ 62,559,134**
NON DEPARTMENT OF DEFENSE					
DEPARTMENT OF ENERGY	FA8702-15-D-0001		81.RD	$ 3,967,331	$ -
DEPARTMENT OF HOMELAND SECURITY	FA8721-05-C-0002		93.RD	12,809	262
	FA8702-15-D-0001		93.RD	33,989,454	3,158,487
FEDERAL AVIATION AUTHORITY	FA8721-05-C-0002		20.RD	1,013	-
	FA8702-15-D-0001		20.RD	25,991,698	136,029
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	FA8702-15-D-0001		43.RD	42,513,150	16,860,001
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	FA8702-15-D-0001		11.RD	5,695,872	157,123
OTHER NON DOD	FA8702-15-D-0001		99.RD	7,014,365	-
TOTAL NON-DEPARTMENT OF DEFENSE				**$ 119,185,692**	**$ 20,311,902**
TOTAL DIRECT AWARDS				**$ 1,048,278,889**	**$ 82,871,036**

Appendix A-2
Massachusetts Institue of Technology
Schedule of Expenditures of Federal Awards - Lincoln Laboratory
By Sponsor & Contract - FY 2019 Continued

Prime Sponsor and Sponsor	Passthrough Contract Number	Program Name	CFDA #	Total	$ Amount Passed to Subrecipients
DEPARTMENT OF COMMERCE					
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY					
New Jersey Office of Homeland Security and Preparedness	70NANB17H169	Representative Public Safety Video Testbed	11.RD	$ 522,579	$ 39,332
		Total Department of Commerce		**$ 522,579**	**$ 39,332**
DEPARTMENT OF DEFENSE					
AIR FORCE					
MIT Campus	FA8802-14-C-0001	Design of Reconfigurable Constellation A	12.RD	$ 24,056	$ -
AIM Photonics	FA8650-15-2-5220	Electronic-Photonic Design Automation	12.RD	42,236	-
Arete Associates	FA9451-17-P-0531	Alternative Methods for Creating Sodium Guidestar	12.RD	33,887	-
ASTRA, LLC	FA8750-18-C-0119	Sun-Tracking Millimeter-Wave Radiometer	12.RD	39,843	-
Tau Technologies	FA9451-18-P-0260	Full Mueller Matrix Characterization	12.RD	43,492	-
Charles River Analytics	140D0419C0041	Functional Fabrics for Medical Monitoring	12.RD	14,698	-
ARMY					
Agiltron, Inc.	W911QY-16-P-0068	Ag Nanowire Grid on Amorphous Silicon	12.RD	173,112	-
Advanced Functional Fabrics of America	W15QKN-16-3-0001	Controlled Reflectivity Fabrics	12.RD	2,536,506	-
Si2 Technologies	W911QX-18-P-0178	Additive Manufacturing for RF Materials	12.RD	20,480	-
DEFENSE HEALTH AGENCY					
CREARE	W18XWH-18-C-0108	In-Ear Monitoring for Hearing Protection	12.RD	14,973	-
DEFENSE MICROELECTRONICS ACTIVITY					
Optowares Inc.	HQ0727-17-P-0030	Measurement for Thin Films on Sapphire	12.RD	31,983	-
MISSILE DEFENSE AGENCY					
TelAztec LLC	HQ0147-17-C-7308	AR Nano-Textures for Cool Running Optics in Multipl	12.RD	101,534	-
NAVY					
EOSPACE Inc.	N68335-17-C-0096	Hybrid Laser Modulator Transmitters	12.RD	1	-
Ohio State University	N00014-17-1-2440	Low Excess-Noise Avalanche Photodetector	12.RD	67,140	-
Akita Innovations LLC	N68335-18-C-0366	Additive Manufacturing for Naval Aviation Battery Ap	12.RD	32,030	-
Science Research Laboratory	N68335-18-C-059	Efficient Compact Diode-Pumped High-Power Fiber C	12.RD	6,273	-
		Total Department of Defense		**$ 3,182,244**	**$ -**
DEPARTMENT OF ENERGY					
Triton Systems, Inc.	DE-SC0017884	Photonic Fabrics for Optical Tagging	81.RD	$ 187,031	$ -
Photothermal	DE-SC0018519	Photothermal IR Modulation Microscope	81.RD	60,546	-
University of Rochester	DE-NA0001944	High Power Optical Absorption Measurements	81.RD	1,331	-
		Total Department of Energy		**$ 248,908**	**$ -**
DEPARTMENT OF HOMELAND SECURITY					
RAND Corporation	HSHQDC-16-D-00007	Power System Analysis to Inform HSOAC Puerto Rico	93.RD	$ 225,595	$ -
		Total Department of Homeland Security		**$ 225,595**	**$ -**

Appendix A-2
Massachusetts Institue of Technology
Schedule of Expenditures of Federal Awards - Lincoln Laboratory
By Sponsor & Contract - FY 2019 Continued

Prime Sponsor and Sponsor	Passthrough Contract Number	Program Name	CFDA #	Total	$ Amount Passed to Subrecipients
DEPARTMENT OF INTERIOR					
MIT Campus	D18AP00070	RECONFig	15.RD	$ 52,212	$ -
		Total Department of Interior		**$ 52,212**	**$ -**
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION					
Jet Propulsion Laboratory	NNN12AA01C	Psyche Deep-Space Optical Communications	43.RD	$ 6,504,128	$ 32,000
Jet Propulsion Laboratory	NNN12AA01C	Europa Lander Ladar Design Study	43.RD	110,730	-
Jet Propulsion Laboratory	NNN12AA01C	Uplink Laser Transmitter Study	43.RD	223,747	-
NASA	NAS2-97001	Stratospheric Observatory for Infrared Astronomy	43.RD	58,310	-
Massachusetts General Hospital	1R01EB025145-01	Gated Diffuse Correlation Spectroscopy	43.RD	47,852	-
MIT Campus	NNX17AE47G	High Resolution X-ray Telescope Optics	43.RD	57,432	-
MIT Campus	SV8-88004	Arcus CCD Development Phase 2	43.RD	6,190	-
MIT Campus	80GSFC18C0031	ISS-TAO CCD Development Phase 2	43.RD	60,176	-
MIT Campus	80NSSC18K1677	Auroral Emissions Radio Explorer	43.RD	344,057	-
		Total National Aeronautics and Space Administration		**$ 7,412,622**	**$ 32,000**
NATIONAL INSTITUTE OF HEALTH					
MIT Campus	5-P50-GM098792-05	CISB-Year 5-Project 4	93.859	$ (717)	$ -
MIT Campus	1-R01-EB025256-01A1	Programmable Multi-Step Genetic Difference	93.859	266,728	-
MIT Campus	1-R01-MH111916-01A1	Development of an Integrated Multimodal	93.859	98,037	-
MIT Campus	1-U01-MH117072-01	Integrated Cell Type Brain Mapping	93.859	181,780	-
MIT Campus	2-R01-DA029639-05	Optical Control of Neural Circuits	93.859	163,724	-
MIT Campus	230321	Clin Res for Imprv Prev - Vocal Hyperfunc	93.173	(5,154)	-
MIT Campus	230321	Clin Res for Imprv Prev - Vocal Hyperfunc Yr2	93.173	75,143	-
MIT Campus	230321	Clin Res for Imprv Prev - Vocal Hyperfunc Yr3	93.173	28,591	-
		Total National Institute of Health		**$ 808,132**	**$ -**
NATIONAL SCIENCE FOUNDATION					
University of Southern California	IIS-1514544	Understanding Individual Speech Variability	47.RD	$ 123,751	$ -
MIT Campus	AST-1836002	LLAMAS Optical System Integration	47.070	33,742	-
MIT Campus	EFRI-1332250	Flexible Glucose Fuel Cell	47.070	8,811	-
MIT Campus	CCF-1521759	Evolvable Living Computing	47.070	166,927	-
		Total National Science Foundation		**$ 333,231**	**$ -**
Total Passthrough Awards				**$ 12,785,523**	**$ 71,332**
Total Federal Awards				**$ 1,061,064,412**	**$ 82,942,368**

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2019 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE						
University of New Hampshire						
DEPARTMENT OF DEFENSE	6933544	16-054	Mechanics of Bio-inspired CNT - Modified Hierarchical/ Fractal Interfaces	12.800	49,216	-
			Total for University of New Hampshire		**49,216**	**-**
Old Dominion University						
DEPARTMENT OF DEFENSE	6933167	16-137-300345-010	Nanoelectropulse-induced electromechanical signaling and control of biological systems	12.800	27,987	-
			Total for Old Dominion University		**27,987**	**-**
Universal Technology Corporation						
DEPARTMENT OF DEFENSE	6936095	17-S8401-05-C1	Adaptive Flight Control for Hypersonic Vehicles with Integrated Loops Using High Fidelity Models	12.RD	112,325	-
DEPARTMENT OF DEFENSE	6938155	18-S8401-15-C1	Application of Systems Theory to the Safety and Cybersecurity of UxAS	12.RD	41,540	-
			Total for Universal Technology Corporation		**153,865**	**-**
University of Texas at Arlington						
DEPARTMENT OF DEFENSE	6940726	26-0201-51-65	Next Generation Advances in Ionosphere Thermosphere Coupling at Multiple Scales for Environmental Specification and Prediction	12.800	135,086	-
			Total for University of Texas at Arlington		**135,086**	**-**
University of Michigan						
DEPARTMENT OF DEFENSE	6936329	3004427924	Multi-Fidelity Modeling of Rocket Combustor Dynamics	12.800	139,544	-
DEPARTMENT OF DEFENSE	6933569	3003660082	AN AUTOMATED MEASUREMENT SYSTEM FOR WARFIGHTER PERFORMANCE QUANTIFICATION IN NATURALISTIC SETTINGS	12.RD	147,550	-
DEPARTMENT OF DEFENSE	6938346	3004811123	Applications Driving Architectures (ADA) Center	12.RD	736,111	-
DEPARTMENT OF DEFENSE	6939785	3005210117	Applications Driving Architectures (ADA) Center	12.RD	15,236	-
DEPARTMENT OF DEFENSE	6940785	SUBK00009163 / PO3005498095	Rapid Autopilot Prototyping for Minimally Modeled Aircraft	12.300	6,684	-
			Total for University of Michigan		**1,045,125**	**-**
University of Maryland						
DEPARTMENT OF DEFENSE	6936839	43830-Z8183003	MURI: Photonic Quantum Matter	12.800	158,596	-

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Massachusetts Institute of Technology
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FY 2019 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
			Total for University of Maryland		**158,596**	**-**
Rutgers University						
DEPARTMENT OF DEFENSE	6936564	5562 / PO 467158	Dynamic Integration of Motion and Neural Data to Capture Human Behavior	12.800	-145	-
DEPARTMENT OF DEFENSE	6930216	5298 (W81XWH-14-1-0100)	A theragnostic system solution for optimal nerve repair	12.420	177	-
			Total for Rutgers University		**32**	**-**
Boise State University						
DEPARTMENT OF DEFENSE	6933762	6856-PO124372	Phase-Controlled Magnetron Development	12.800	37,808	-
DEPARTMENT OF DEFENSE	6940736	8583-PO132256	Plasma and Electro-Energetic Physics	12.800	12,108	-
			Total for Boise State University		**49,916**	**-**
Lincoln Laboratory						
DEPARTMENT OF DEFENSE	6937710	7000372082	Low SWaP Reaction Sphere for Precision CubeSat Attitude Control	12.RD	771	-
DEPARTMENT OF DEFENSE	6939912	PO #7000436744	Optimized 3D printed prosthetic foot topologies for improved mobility and customization	12.RD	88,877	-
DEPARTMENT OF DEFENSE	6928241	PO# 7000238989	Concentrated Solar Thermoacoustic Engine for Satellite Power Generation	12.RD	33,322	-
DEPARTMENT OF DEFENSE	6928933	PO# 7000243692	Innovation in Unmanned Air Vehicle Development	12.RD	248,075	-
DEPARTMENT OF DEFENSE	6930859	PO# 7000290592	Coherent Spin Qubits for Quantum-Enhanced Optimization	12.RD	3,739,853	-
DEPARTMENT OF DEFENSE	6931611	PO# 7000306158	Advanced GaN Transistor Technology (AGT2)	12.RD	4,722	-
DEPARTMENT OF DEFENSE	6932764	PO# 7000326660	Platform Device for Non-Invasive Gastrointestinal Disease Monitoring	12.RD	30,449	-
DEPARTMENT OF DEFENSE	6933166	PO# 7000334320	Electro-AeroDynamic (EAD) Unmanned Aerial Vehicle (UAV) Prototype	12.RD	77,951	-
DEPARTMENT OF DEFENSE	6933199	PO# 7000335585	Multimaterial Fiber Devices	12.RD	26,756	-
DEPARTMENT OF DEFENSE	6933645	PO# 7000344422	Development of Aluminum Fueled Electric Vehicle and Submersible Power Systems (Lilypads II)	12.RD	-70,337	-
DEPARTMENT OF DEFENSE	6933706	PO# 7000345331	Program-Analytic Cybersecurity Metrics via Exposure and Non-uniformity (PACMEN)	12.RD	16,123	-
DEPARTMENT OF DEFENSE	6933724	PO# 7000346015	Statistics Without Affirmed Ground Truth (StatSWAG)	12.RD	17,941	-
DEPARTMENT OF DEFENSE	6934759	PO# 7000362193	Low Temperature Magnetic Memory for Superconducting Computation	12.RD	-424	-
DEPARTMENT OF DEFENSE	6935139	PO# 7000367982	Cyber Adversarial SCenario modeling and Automated Decision Engine (CASCADE)	12.RD	19,951	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2019 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE	6935145	PO# 7000368802	Stool Cell - Health Monitoring for the Human Gut	12.RD	-45	-
DEPARTMENT OF DEFENSE	6935279	PO# 7000369000	Microplasmas for Additive Materials Deposition	12.RD	115,433	-
DEPARTMENT OF DEFENSE	6935235	PO# 7000370657	Phase Change Metamaterials	12.RD	134,793	-
DEPARTMENT OF DEFENSE	6935357	PO# 7000371273	Integrated Planar Lens-Based Lidar	12.RD	80,981	-
DEPARTMENT OF DEFENSE	6935316	PO# 7000372082	Low SWaP Reaction Sphere for Precision CubeSat Attitude Control	12.RD	36,236	-
DEPARTMENT OF DEFENSE	6935579	PO# 7000374786	Student Based Development of the Jungle Hawk Owl Long Endurance UAV	12.RD	32,560	-
DEPARTMENT OF DEFENSE	6935553	PO# 7000374874	Graduate Student Research in FY17 in support of Verification and Validation of Autonomous Systems	12.RD	243,208	-
DEPARTMENT OF DEFENSE	6935644	PO# 7000376241	Chip-Scale THz Spectrometer: Miniaturized Molecular Clock and Gas Sensor	12.RD	6,068	-
DEPARTMENT OF DEFENSE	6935784	PO# 7000379430	Lane-keeping with Localizing GPR in Poor Conditions	12.RD	34,025	-
DEPARTMENT OF DEFENSE	6935965	PO# 7000381569	Demonstration of Logical Qubits using 3D Integration	12.RD	288,125	-
DEPARTMENT OF DEFENSE	6936105	PO# 7000383604	Single- and Coupled-Qubit Randomized Benchmarking of Superconducting Qubits	12.RD	19,452	-
DEPARTMENT OF DEFENSE	6936237	PO# 7000385831	Development of A Built-In, Metal-Air, Nano Battery (Lincoln Laboratory Program # TIO2-0126)	12.RD	23,652	-
DEPARTMENT OF DEFENSE	6936301	PO# 7000385936	Design and Characterization of JTWPAs	12.RD	75,309	-
DEPARTMENT OF DEFENSE	6936468	PO# 7000386377	Time-Resolved Observations of Precipitation structure and storm Intensity with a Constellation of Smallsats (TROPICS)	12.RD	36,839	-
DEPARTMENT OF DEFENSE	6936327	PO# 7000386845	Integration of Departure Metering Concepts into Surface Capabilities	12.RD	6,274	-
DEPARTMENT OF DEFENSE	6936395	PO# 7000387954	Integrated QC Collaboration	12.RD	3,812	-
DEPARTMENT OF DEFENSE	6936545	PO# 7000389700	WaferSat	12.RD	138,524	-
DEPARTMENT OF DEFENSE	6936796	PO# 7000391952	Advanced Methods for Sensing, Learning, and Communication	12.RD	239,871	-
DEPARTMENT OF DEFENSE	6937456	PO# 7000396484	Electrochemical Energy Systems Based on Continuous Gas-Solid Conversion	12.RD	4,795	-
DEPARTMENT OF DEFENSE	6937081	PO# 7000397480	Immersive virtual training for enhanced human-exosystem performance	12.RD	16,578	-
DEPARTMENT OF DEFENSE	6937231	PO# 7000398589 / LETTER NO. 16-C-17-0691	Alternatives for FEMA Disaster-Related Housing Assistance	12.RD	724,665	-
DEPARTMENT OF DEFENSE	6937458	PO# 7000399580	ACC 677: Adaptive Magnetic Transmissions	12.RD	49,943	-
DEPARTMENT OF DEFENSE	6937317	PO# 7000399771	MIT Haystack Observatory Engineering Support for The Lincoln Space Surveillance Complex (LSSC)	12.RD	2,556,573	-
DEPARTMENT OF DEFENSE	6937457	PO# 7000401832	Aluminum Powered Electric Vehicle	12.RD	2,424	-

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DEPARTMENT OF DEFENSE	6937455	PO# 7000401982	Low Temperature Superconducting Bolometric Detector Array for Reactor Neutrino Physics and Related Remote Sensing Applications	12.RD	37,685	-
DEPARTMENT OF DEFENSE	6937660	PO# 7000403338	Physics-In-The-Loop Photorealistic Simulation System For High-Throughput Computing Research	12.RD	155,096	-
DEPARTMENT OF DEFENSE	6937669	PO# 7000403439	ERGO: Exploiting Risk-taking in Group Operations	12.RD	27,460	-
DEPARTMENT OF DEFENSE	6937581	PO# 7000403560	Secure Processing Engine for Self-configuring Autonomous Systems	12.RD	48,401	-
DEPARTMENT OF DEFENSE	6937546	PO# 7000404029	Modeling the Electron Filtering Properties of Quantum-Dot Solids	12.RD	52,279	-
DEPARTMENT OF DEFENSE	6937583	PO# 7000404200	Valley Coherence in Monolayer 2D Materials	12.RD	29,357	-
DEPARTMENT OF DEFENSE	6937639	PO# 7000404745	Spinning Aperture (Spin-Ap)	12.RD	22,918	-
DEPARTMENT OF DEFENSE	6938341	PO# 7000407322	Evaluation of Stress Fracture Phenomenology Using Ultrasound	12.RD	76,357	-
DEPARTMENT OF DEFENSE	6937851	PO# 7000408525	Multiphysics Approach to Designing Tunneling Based Post-CMOS Ultra-Low Power Logic Devices	12.RD	79,408	-
DEPARTMENT OF DEFENSE	6937868	PO# 7000408566	Thin Film On-Chip Microbatteries - Li-Garnet Solid State Battery Architectures	12.RD	128,644	-
DEPARTMENT OF DEFENSE	6937963	PO# 7000409620	Unhackable Mission Computer	12.RD	200,332	-
DEPARTMENT OF DEFENSE	6938418	PO# 7000416040	Super Coatings for Precision Sensing	12.RD	26,661	-
DEPARTMENT OF DEFENSE	6938413	PO# 7000416344	Thin Film Microbatteries	12.RD	234,294	-
DEPARTMENT OF DEFENSE	6938424	PO# 7000416579	BeaverCube	12.RD	23,622	-
DEPARTMENT OF DEFENSE	6938440	PO# 7000417636	Fast Semantic Segmentation on Manifold	12.RD	65,370	-
DEPARTMENT OF DEFENSE	6938561	PO# 7000419429	Lincoln Labs ACC Project on Amorphous Germanium Resonators	12.RD	125,033	-
DEPARTMENT OF DEFENSE	6938640	PO# 7000420407	Electrically -Driven Conversion of Carbon Dioxide to Distillate Fuels	12.RD	167,576	-
DEPARTMENT OF DEFENSE	6938802	PO# 7000422783	Cyber Domain Tasks: Study of Methods for Development of a Taxonomical Cyber Operations Task List using Ontology-Based Text Extraction and Interpretation	12.RD	211,924	-
DEPARTMENT OF DEFENSE	6938865	PO# 7000423531	Unsupervised Audio-Visual Learning in the Wild	12.RD	130,147	-
DEPARTMENT OF DEFENSE	6938895	PO# 7000423938	Integrated Textile Systems for Real-Time Physiological Status Monitoring and Toxic Industrial Chemical Sensing	12.RD	84,558	-
DEPARTMENT OF DEFENSE	6939172	PO# 7000424794	Support of the Westford 9M Remote Antenna - Group 64	12.RD	29,054	-
DEPARTMENT OF DEFENSE	6939173	PO# 7000425134	Support of the GROUP 95 Sidecar Program Using the Westford Radio Telescope	12.RD	19,719	-
DEPARTMENT OF DEFENSE	6938988	PO# 7000426059	On-chip dFT-Raman Spectrometers for Chemical and Biological Detection	12.RD	50,044	-

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DEPARTMENT OF DEFENSE	6939056	PO# 7000427377	ACC 721: Knowledge Transfer between Multiple Tasks and Real-Time Learning for Time-Varying Models	12.RD	49,664	-
DEPARTMENT OF DEFENSE	6939164	PO# 7000427652	Secure Multi-Party Computation	12.RD	73,275	-
DEPARTMENT OF DEFENSE	6940185	PO# 7000441640	3D Printed, No-Moving-Parts, Miniature High-Vacuum Pump	12.RD	1,734	-
DEPARTMENT OF DEFENSE	6940197	PO# 7000441730	Miniature Cryocooler as a Platform for Quantum Sensors	12.RD	40,660	-
DEPARTMENT OF DEFENSE	6940414	PO# 7000442717	Quantum Memory Technology Development for Quantum Network Testbed Demonstration	12.RD	35,690	-
DEPARTMENT OF DEFENSE	6940223	PO# 7000443135	Task Execution with Semantic Segmentation	12.RD	5,617	-
DEPARTMENT OF DEFENSE	6940387	PO# 7000443447	Resilient Perception in Degraded Environments	12.RD	39,112	-
DEPARTMENT OF DEFENSE	6940262	PO# 7000443563	Low-defect III-N Devices by Remote Epitaxial GaN	12.RD	50,536	-
DEPARTMENT OF DEFENSE	6940354	PO# 7000445262	Valley Dynamics of Heterogeneous Bilayer Excitons	12.RD	25,263	-
DEPARTMENT OF DEFENSE	6940398	PO# 7000446862	Computational Assessment of Post-CMOS Devices	12.RD	1,377	-
DEPARTMENT OF DEFENSE	6940757	PO# 7000452592	Dynamic Data Driven Long-Range Weather Forecasting	12.RD	4,570	-
DEPARTMENT OF DEFENSE	6939822	PO#7000442873	LL/MIT Research Collaboration on Metal Matrix Composites by SLM	12.RD	68,177	-
DEPARTMENT OF DEFENSE	6940512	PO#7000447700	Research and Development with Open Source Probabilistic Programming Languages	12.RD	38,786	-
DEPARTMENT OF DEFENSE	6940010	PO# 7000436941	Human-Exoskeleton Teaming	12.RD	74,516	-
DEPARTMENT OF DEFENSE	6931068	7000294429	Proposal for A Low-Torque Pan Tilt System for Directional Scanning in a Marine Environment	12.RD	-275	-
DEPARTMENT OF DEFENSE	6940202	PO#7000442474	Neural Control of Exoskeletons	12.RD	82,522	-
			Total for Lincoln Laboratory		**11,721,289**	**-**
BAE Systems						
DEPARTMENT OF DEFENSE	6939994	921019-11	BAE DARPA BRASS	12.RD	190,984	-
DEPARTMENT OF DEFENSE	6937862	SUBCONTRACT NUMBER: 921019	BAE DARPA BRASS	12.RD	124,928	-
			Total for BAE Systems		**315,912**	**-**
Emory University						
DEPARTMENT OF DEFENSE	6939929	A007735	MURI: Molecular Level Studies of Solid-Liquid Interfaces in Electrochemical Processes	12.800	201,287	-
			Total for Emory University		**201,287**	**-**
Aerospace Corporation						
DEPARTMENT OF DEFENSE	6938786	AGMT DTD 3/15/18	Design of Reconfigurable Constellation Architectures	12.RD	115,401	-

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DEPARTMENT OF DEFENSE	6939399	PO# 4600006296	Relative Operations for Autonomous Maneuvers	12.RD	292,506	-
			Total for Aerospace Corporation		**407,907**	**-**
SUNY: AIM Photonics						
DEPARTMENT OF DEFENSE	6937904	AGMT. DTD. 3/22/2016	IP-IMI	12.800	1,725,047	251,884
			Total for SUNY: AIM Photonics		**1,725,047**	**251,884**
National ICT Australia Limited						
DEPARTMENT OF DEFENSE	6931992	AGREEMENT DATED 5/14/15	Negotiating Mission Plans uder Risk Bounds	12.800	-81	-
			Total for National ICT Australia Limited		**-81**	**-**
TIPD, LLC						
DEPARTMENT OF DEFENSE	6930803	AGREEMENT DATED 7/31/14	Holographic Video Display Using Novel Guided-wave Scanning System (HVD-GWSS) - SBIR Phase II	12.RD	5,234	-
DEPARTMENT OF DEFENSE	6941048	SUBCONTRACT UNDER FA8650-19-P-6010	Leaky Waveguide Full Parallax Holographic Video Display (LWFP-HVD)	12.RD	16,523	-
			Total for TIPD, LLC		**21,756**	**-**
Diversified Technologies, Inc.						
DEPARTMENT OF DEFENSE	6935088	AGREEMENT DATED 9-1-2016	A Practical Incoherent Scatter Radar, SBIR Phase 2	12.RD	-11,508	-
			Total for Diversified Technologies, Inc.		**-11,508**	**-**
Utah State University Research Foundation						
DEPARTMENT OF DEFENSE	6934347	CP0039726	UNP CubeSat	12.RD	-639	-
			Total for Utah State University Research Foundation		**-639**	**-**
Lockheed Martin Missiles and Fire Control						
DEPARTMENT OF DEFENSE	6935336	PO 4102738369	Algorithm Development and Experimentation In Support of Human Performance Sensing ? Biomarker/Metric Identification and Sensor Development Learning for Man-Machine Interoperation and Training	12.RD	62,136	-
			Total for Lockheed Martin Missiles and Fire Control		**62,136**	**-**
Lockheed Martin						
DEPARTMENT OF DEFENSE	6937887	PO# 4103067458	STAHMP	12.RD	46,580	-
			Total for Lockheed Martin		**46,580**	**-**

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Leidos, Inc.						
DEPARTMENT OF DEFENSE	6934135	PO10193198	MEMS Mass Spectrometry Project	12.RD	59,330	-
			Total for Leidos, Inc.		**59,330**	**-**
Metis Design Corporation						
DEPARTMENT OF DEFENSE	6936775	SBIR AGMT EFF 8/27/17	Carbon Nanotube Electronics for Radiation-Resilient Hardware	12.RD	125,632	-
DEPARTMENT OF DEFENSE	6939815	STTR AGRMNT DTD. 12/05/2018	Scalable Manufacturing of Composite Components using Nanostructured Heaters	12.RD	63,050	-
			Total for Metis Design Corporation		**188,682**	**-**
Draper Laboratory Incorporated						
DEPARTMENT OF DEFENSE	6937745	SC001-1138	Mechanics of Nanostructure Assemblies (MoNA)	12.RD	24,558	-
DEPARTMENT OF DEFENSE	6937663	SC001-0000000918	Unifying Perception and Control via Fast Approximations for Fast Flight in Cluttered Environments	12.RD	184,120	-
DEPARTMENT OF DEFENSE	6938840	SC-001-1190	System Security Integrated Through Hardware and firmware (SSITH)	12.RD	155,089	-
DEPARTMENT OF DEFENSE	6937353	SUB PO# SC001-0000001187	DARPA - Agile Teams (A-Teams)	12.RD	28,437	-
DEPARTMENT OF DEFENSE	6939970	SUB# SC001-1243	The Sea Whisperer: a co-adaptive self-learning ocean data framework	12.RD	38,356	-
DEPARTMENT OF DEFENSE	6936067	SC001-0000001106	Anticipatory Complex Event Recognition Technology (ACERT)	12.RD	85,755	-
			Total for Draper Laboratory Incorporated		**516,315**	**-**
Securboration						
DEPARTMENT OF DEFENSE	6937354	SUB UNDER AFRL CONTRACT FA8750-17-C-0017	Joint Collaborative Augmentation for Sensemaking Environment (JCAUSE) Phase II	12.RD	43,185	-
			Total for Securboration		**43,185**	**-**
Brown University						
DEPARTMENT OF DEFENSE	6939420	SUBAWARD # 00001240	QuIC-M - A System for Quality-aware Interactive Curation of Models	12.300	206,411	-
DEPARTMENT OF DEFENSE	6933009	00000827	Mathematical Framework for Design Under Uncertainty	12.910	111,156	-
DEPARTMENT OF DEFENSE	6934244	00000921	Mechanism-Driven Discovery of Efficient H2 Production Electrocatalysts	12.300	126,894	-
			Total for Brown University		**444,461**	**-**

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University of Colorado Boulder						
DEPARTMENT OF DEFENSE	6934474	SUBAWARD NO. 1553954	Chemical Reactions of Cold Molecular Ions and Molecular Radicals	12.800	102,006	-
			Total for University of Colorado Boulder		**102,006**	**-**
University of Arizona						
DEPARTMENT OF DEFENSE	6940557	SUBAWARD NO. 506417	Bayesian Light Curve Inversion of Space Objects	12.800	22,737	-
			Total for University of Arizona		**22,737**	**-**
Rice University						
DEPARTMENT OF DEFENSE	6933218	SUBAWARD NO. R19091	Proteus: Controlling Resource-Adaptive Embedded Softward	12.300	310,803	-
			Total for Rice University		**310,803**	**-**
UES, Inc.						
DEPARTMENT OF DEFENSE	6937183	SUBCONTRACT NO. S-114-005-008	Ultrafast Beam Steering/Scanning Based on Photonic Crystals	12.RD	39,069	-
			Total for UES, Inc.		**39,069**	**-**
University of Texas - Austin						
DEPARTMENT OF DEFENSE	6936108	UTA17-000362	Bayesian Optimal Experimental Design for Inverse Scattering	12.800	45,786	-
DEPARTMENT OF DEFENSE	6934067	UTA16-000556	Phonon Hydrodynamics and Spectroscopy in High Thermal Conductivity Materials	12.300	192,301	-
			Total for University of Texas - Austin		**238,087**	**-**
Beth Israel Deaconess Medical Center						
DEPARTMENT OF DEFENSE	6940238	01029123	DAMP-Mediated Innate Immune Failure and Pneumonia after Trauma	12.420	180,783	-
			Total for Beth Israel Deaconess Medical Center		**180,783**	**-**
University of Utah						
DEPARTMENT OF DEFENSE	6939676	10048163-MIT	In-Situ Feature Extraction and Visualization from Discontinuous Galerkin Based High-Order Methods	12.431	29,055	-
DEPARTMENT OF DEFENSE	6935768	10043028-MIT	Design Responding to Engineering Analysis in support of Manufacturing	12.910	197,378	-
DEPARTMENT OF DEFENSE	6935759	10043182-MIT	Augmented Design Through Analysis and Visualization Facilitating Better Designs and Enhanced Designers	12.910	50,780	-

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			Total for University of Utah		**277,213**	**-**
Brigham & Women's Hospital						
DEPARTMENT OF DEFENSE	6933104	112729	Novel Strategies to improve immunomodulation and non-invasive clinical monitoring in VCA	12.420	65,232	-
DEPARTMENT OF DEFENSE	6940336	SUBAWARD 117951	A Novel Approach to Lower Extremity Amputation to Augment Volitional Motor Control and Restore Proprioception	12.420	122,804	-
DEPARTMENT OF DEFENSE	6940338	SUBAWARD 119948	A Novel Approach to Upper Extremity Amputation to Augment Volitional Motor Control and Restore Proprioception	12.420	50,352	-
			Total for Brigham & Women's Hospital		**238,389**	**-**
Harvard University						
DEPARTMENT OF DEFENSE	6936312	134062-5093041	Imaging and Control of Biological Transduction using NV-Diamond	12.431	209,390	-
DEPARTMENT OF DEFENSE	6939434	134119-5110647	Topological Superconductivity using Layered Materials	12.431	53,102	-
DEPARTMENT OF DEFENSE	6936802	167936.0001	Reverse Engineering Host Resilience	12.RD	11,624	-
DEPARTMENT OF DEFENSE	6940390	167936.0003	Reverse Engineering Host Resilience	12.RD	6,183	-
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	3,648	-
DEPARTMENT OF DEFENSE	6940105	168007.0002/W911NF1920027	Time-Tolerant Biostasis Therapeutics	12.910	2,236	-
DEPARTMENT OF DEFENSE	6940300	AGMT DTD 3/19/2019	Diamond Nitrogen Vacancy Magnetometry	12.910	14,164	-
DEPARTMENT OF DEFENSE	6936863	123950-5092634	Quantum Opto-Mechanics with Atoms and Nanostructured Diamond (QOMAND)	12.300	145,310	-
DEPARTMENT OF DEFENSE	6940862	7555498-01	Billing Agreement - Dylan Cable - Harvard	12.300	9,732	-
DEPARTMENT OF DEFENSE	6936929	138076-5093553	Algorithms for Representation and Inference informed by the Acquisition of Data from Neuroscience Experiments (ARIADNE)	12.RD	-4	-
			Total for Harvard University		**455,385**	**-**
Columbia University						
DEPARTMENT OF DEFENSE	6927216	2 (GG008784) / PO G10346	Imaging How a Neuron Computes	12.431	32,412	-
DEPARTMENT OF DEFENSE	6927546	1(GG007792)	Power Grid Vulnerability and Resilience to Geographically Correlated Failures	12.351	76,604	-
			Total for Columbia University		**109,016**	**-**

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North Carolina State University						
DEPARTMENT OF DEFENSE	6937652	2017-0383-01	Algorithms for Exploiting Approximate Network Structure	12.431	18,696	-
			Total for North Carolina State University		**18,696**	**-**
University of Maryland - College Park						
DEPARTMENT OF DEFENSE	6932951	28725-Z8401005	Center for Distributed Quantum Information	12.431	140,322	-
DEPARTMENT OF DEFENSE	6932890	2875-Z8401005	Center for Distributed Quantum Information	12.431	168,610	-
			Total for University of Maryland - College Park		**308,932**	**-**
Duke University						
DEPARTMENT OF DEFENSE	6939801	313-0837	Quantum control based on real-time environment analysis by spectator qubits	12.431	78,769	-
DEPARTMENT OF DEFENSE	6938444	313-0793	An Integrated Nonparametric Bayesian and Deep Neural Network Framework for Biologically-Inspired Lifelong Learning	12.910	193,288	-
DEPARTMENT OF DEFENSE	6928294	13-ONR-1109	Expanding the Limits of Acoustic Metamaterials	12.300	128,730	-
			Total for Duke University		**400,787**	**-**
Northeastern University						
DEPARTMENT OF DEFENSE	6940208	504126-78055	Engineered Materials and Materials Design for Engineered Materials (EMMDEM)	12.431	144,689	-
			Total for Northeastern University		**144,689**	**-**
University of Pennsylvania						
DEPARTMENT OF DEFENSE	6926839	560102	Evolution of Cultural Norms and Dynamics of Socio Political Change	12.431	531,511	-
DEPARTMENT OF DEFENSE	6939089	572622	ARCHES: Autonomous Resilient Cognitive Heterogeneous Swarms	12.RD	1,595,583	-
DEPARTMENT OF DEFENSE	6939752	35206 / PO 4126113	The statistical mechanics of crowds - tools for predictive modeling in the social sciences	12.910	184,321	-
DEPARTMENT OF DEFENSE	6940107	575467 / PO #4174326	The statistical mechanics of crowds - tools for predictive modeling in the social sciences	12.910	179,942	-
DEPARTMENT OF DEFENSE	6935748	568770	New Paradigms for Scalable Online Decentralized Optimization	12.300	76,133	-
DEPARTMENT OF DEFENSE	6937175	572339	New phase change materials for photonics: from in-silico design to novel device concepts	12.300	470,814	-
DEPARTMENT OF DEFENSE	6939157	574340, PO 4268346	Blueprint for design and assembly of multifunctional, adaptive materials using the nanocrystal periodic table	12.300	249,321	-

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			Total for University of Pennsylvania		**3,287,624**	**-**
H. F. Webster Engineering Services						
DEPARTMENT OF DEFENSE	6935773	AGREEMENT DATED 10-1-2016	Unified Description of Critical Velocity: A Pathway Toward Optimized Cold Spray Deposition	12.RD	-6,135	-
DEPARTMENT OF DEFENSE	6940060	AGRMNT DTD. 10/01/2018	Understanding cold spray through single particle impact studies	12.431	73,168	-
			Total for H. F. Webster Engineering Services		**67,033**	**-**
Mimosa Acoustics Inc.						
DEPARTMENT OF DEFENSE	6940745	AWD DTD 5/01/2019	Objective Measurement Tool for Detection and Monitoring of Noise-Induced Hearing Loss	12.RD	25,494	-
DEPARTMENT OF DEFENSE	6939874	SUBCONTRACT DTD. 12/18/2018	Portable Acquisition, Assessment, and Reporting of Middle Ear Function and Hearing - All-in-One Binaural Audiological Test System, Revision D	12.RD	26,033	-
			Total for Mimosa Acoustics Inc.		**51,527**	**-**
University of Washington						
DEPARTMENT OF DEFENSE	6933157	BPO4415, SUB# UWSC7968	Muscle's Energetic Versatility Arises From Its Crystalline and Multi-Component Structure	12.431	43,158	-
			Total for University of Washington		**43,158**	**-**
University of Chicago						
DEPARTMENT OF DEFENSE	6929146	FP054294-C	Fundamental Issues in Non-equilibrium Dynamics (MURI)	12.431	25,311	-
DEPARTMENT OF DEFENSE	6938423	FP067719	Social MIND: Social Machine Intelligence for Novel Discovery	12.910	148,391	-
			Total for University of Chicago		**173,702**	**-**
University of Sydney						
DEPARTMENT OF DEFENSE	6940958	G174385 RESEARCH COLLABORATION AGREEMENT	Quantum Control Engineering	12.431	308,110	-
			Total for University of Sydney		**308,110**	**-**
University of California-Santa Barbara						
DEPARTMENT OF DEFENSE	6932998	KK1622	QUANTA: Quantitative Network-based Models of Adaptive Team Behavior	12.431	196,255	-

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DEPARTMENT OF DEFENSE	6935172	KK1713	Neural foundations of expertise based on optimal decision-making, physical control and responses to stress	12.431	176,120	-
DEPARTMENT OF DEFENSE	6937076	KK1808	From Data-Driven Operator Theoretic Schemes to Predication, Inference, and Control of Systems	12.431	317,488	-
DEPARTMENT OF DEFENSE	6934736	KK9151	Institute for Collaborative Biotechnology (ICB)	12.431	109,567	-
DEPARTMENT OF DEFENSE	6940560	SUBAWARD NO. KK1954	ICB UARC projects - Research Projects	12.431	288,984	-
DEPARTMENT OF DEFENSE	6938347	KK1838	A Center for Converged TeraHertz Communications and Sensing	12.910	313,681	-
			Total for University of California-Santa Barbara		**1,402,096**	**-**
University of California						
DEPARTMENT OF DEFENSE	6938164	KK9151	Institute for Collaborative Biotechnology (ICB)	12.RD	129,613	-
DEPARTMENT OF DEFENSE	6925894	KK9151-24	Institute for Collaborative Biotechnology (ICB)	12.RD	-6,331	-6,374
DEPARTMENT OF DEFENSE	6929256	KK9151-30	Institute for Collaborative Biotechnology (ICB)	12.RD	8,482	-
DEPARTMENT OF DEFENSE	6929257	KK9151-31	Institute for Collaborative Biotechnology (ICB)	12.431	87,336	-
DEPARTMENT OF DEFENSE	6929262	KK9151-33	Institute for Collaborative Biotechnology (ICB)	12.RD	126,711	-
DEPARTMENT OF DEFENSE	6929265	KK9151-35	Institute for Collaborative Biotechnology (ICB)	12.RD	85,944	-
DEPARTMENT OF DEFENSE	6933077	KK9151-44	Institute for Collaborative Biotechnology (ICB)	12.RD	246,232	-
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	196,478	-
			Total for University of California		**874,466**	**-6,374**
BBN Technologies Corporation						
DEPARTMENT OF DEFENSE	6932293	PO 9500012484 : BBN REF ID #14400	Superconducting Nanowire Electronics	12.RD	-5,651	-
DEPARTMENT OF DEFENSE	6937779	PO LBN9512484 : BBN REF ID #14400	Superconducting Nanowire Electronics	12.RD	43,534	-
DEPARTMENT OF DEFENSE	6932243	PO LBN9512779	A Stochastic Network Optimization Approach to Providing Robust Communications Over an Unreliable Underlay Network (TA1)	12.RD	23,489	-
DEPARTMENT OF DEFENSE	6937311	PO LBN9513244	Precision Ocean Interrogation, Navigation and Timing (POINT)	12.RD	83,172	-
			Total for BBN Technologies Corporation		**144,544**	**-**
General Dynamics						
DEPARTMENT OF DEFENSE	6936534	PO# 40279278	General Dynamics Land Systems	12.431	505,192	-

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Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
			Total for General Dynamics		**505,192**	**-**
Georgia Institute of Technology						
DEPARTMENT OF DEFENSE	6938646	RJ736-G1	Seedling: Smarticle ensembles, a testbed for the least rattling framework	12.431	41,195	-
DEPARTMENT OF DEFENSE	6938924	SUBAWARD NO. RK015-G3	Leveraging a New Theoretical Paradigm to Enhance Interfacial Thermal Transport in Wide Bandgap Power Electronics	12.300	181,126	-
			Total for Georgia Institute of Technology		**222,322**	**-**
California Institute of Technology						
DEPARTMENT OF DEFENSE	6939667	S396000	Dynamics in Photo-Doped Metastable States	12.431	9,831	-
			Total for California Institute of Technology		**9,831**	**-**
LongWave Photonics LLC						
DEPARTMENT OF DEFENSE	6940267	STTR AGMT UNDER W911NF18C0097	Tunable Active HEterodyne THz Imager (TAHETI)	12.RD	8,977	-
			Total for LongWave Photonics LLC		**8,977**	**-**
Carnegie-Mellon University						
DEPARTMENT OF DEFENSE	6936649	SUBAWARD NO. 1130207-380280	Cultivating Collective Intelligence in Human-Computer Systems	12.RD	95,247	-
DEPARTMENT OF DEFENSE	6938963	1130222-396910	Towards an Open CommonSense Knowledge Base	12.910	162,347	-
			Total for Carnegie-Mellon University		**257,593**	**-**
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	-1,381	-
			Total for I.R.C.C.S. Istituto Ortopedico Galeazzi		**-1,381**	**-**
Sri International						
DEPARTMENT OF DEFENSE	6931008	SUBCONTRACT 27-001441, REL 2	Mining and Understanding Software Enclaves (MUSE)	12.RD	115,593	-
			Total for Sri International		**115,593**	**-**
New Jersey Institute of Technology						

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Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE	6938105	(NP) 996402	PALISADE: Program obfuscation Advancement with Lattice Implementation for Scalable Application Demonstration of Efficiency	12.RD	217,967	-
			Total for New Jersey Institute of Technology		**217,967**	**-**
University of California - Berkeley						
DEPARTMENT OF DEFENSE	6938520	00009805	Harnessing Parameterization for Fast and Reliable Nonconvex Optimization	12.910	184,983	-
DEPARTMENT OF DEFENSE	6933761	00009042/PO#BB00650967	Helio: Program Synthesis for Efficient, Privacy-Preserving Distributed Computation	12.RD	245,092	-
			Total for University of California - Berkeley		**430,075**	**-**
On Demand Pharmaceuticals Inc						
DEPARTMENT OF DEFENSE	6935008	001	Pharmacy on Demand Technology Transition	12.910	183,947	-
			Total for On Demand Pharmaceuticals Inc		**183,947**	**-**
United Technologies Research Center						
DEPARTMENT OF DEFENSE	6935230	1224171 / PO# 2604891	Scalable Inference for Rare Events (SIRE).	12.RD	117,388	-
			Total for United Technologies Research Center		**117,388**	**-**
Harvard Medical School						
DEPARTMENT OF DEFENSE	6938338	152304.5106735.0006	Surveillance of Passenger Organisms to Record Embarkment	12.910	409,707	-
DEPARTMENT OF DEFENSE	6940234	153283.5110025.0014	Computationally Designed Biostasis Proteins Optimized in High-Throughput Screens	12.910	153,862	-
DEPARTMENT OF DEFENSE	6938925	AGMT. DTD. 6/18/18	Letter Agreement : Chung-Yun George Chao 060118-053119	12.431	67,920	-
DEPARTMENT OF DEFENSE	6940291	325-28721-124078-322771	Understanding the hierarchical self-assembly of biological gels	12.300	55,126	-
DEPARTMENT OF DEFENSE	6939479	45493.2019.0001 / PO 70002752463	Letter Agreement: Li-Wen	12.420	52,780	-
			Total for Harvard Medical School		**739,396**	**-**
SYSTEMS & TECHNOLOGY RESEARCH LLC						
DEPARTMENT OF DEFENSE	6937319	2017-0026	DEEPSONG	12.RD	191,338	-
DEPARTMENT OF DEFENSE	6937966	2017-0031	Deep Intermodal Video Analytics (DIVA)	12.RD	244,015	-
			Total for SYSTEMS & TECHNOLOGY RESEARCH LLC		**435,353**	**-**
University of Tennessee						

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DEPARTMENT OF DEFENSE	6940668	9500074403	Phytosensors 2.0	12.910	288,054	-
			Total for University of Tennessee		**288,054**	**-**
BAE Systems Info & Electronic Systems Integration, Inc						
DEPARTMENT OF DEFENSE	6937008	964193	Bundle Congestion Control for Programmable Network Control Points	12.RD	262,356	-
			Total for BAE Systems Info & Electronic Systems Integration, Inc		**262,356**	**-**
IBM Thomas J. Watson Research Center						
DEPARTMENT OF DEFENSE	6933545	AGREEMENT # 4915012803	IOPS: Improving Obfuscation Practicality and Security	12.RD	-3,060	-
DEPARTMENT OF DEFENSE	6938120	AGREEMENT # 4915012803 / PO# 5005104843	IOPS: Improving Obfuscation Practicality and Security	12.RD	105,102	-
DEPARTMENT OF DEFENSE	6940701	SUBCONTRACT 4917017433/PO 4700059854	DIVA - IBM	12.RD	139,622	-
DEPARTMENT OF DEFENSE	6937580	SUBCONTRACT 4917017433/PO 5005137126	DIVA - IBM	12.RD	444,028	-
			Total for IBM Thomas J. Watson Research Center		**685,691**	**-**
Sandia National Laboratories						
DEPARTMENT OF DEFENSE	6934229	AGREEMENT 1340868 / PO 1685489	Uncertainty Quantification in LES Computations of Turbulent Multiphase Combustion in a SCRAMJET Engine	12.RD	249,068	-
			Total for Sandia National Laboratories		**249,068**	**-**
Aurora Flight Sciences RDC						
DEPARTMENT OF DEFENSE	6936333	AGRMT EFF. 9/27/16	ALASA CubeSat Deformable Mirror Demonstration Mission (DEMI)	12.RD	100,280	-
DEPARTMENT OF DEFENSE	6935749	AMA-17-0001	ALASA CubeSat Deformable Mirror Demonstration Mission (DEMI)	12.RD	10,463	-
			Total for Aurora Flight Sciences RDC		**110,743**	**-**
Ecovative Design LLC						
DEPARTMENT OF DEFENSE	6939026	AGT DATED 6/30/18	Sustainable Biologically Active Modular Building Materials	12.RD	439,583	-
			Total for Ecovative Design LLC		**439,583**	**-**
Applied Physical Sciences Corp.						
DEPARTMENT OF DEFENSE	6938458	APS-18-03	Tactical Exploitation of the Acoustic Channel (TEAC)	12.RD	192,662	-

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Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
			Total for Applied Physical Sciences Corp.		**192,662**	**-**
Raytheon BBN Technologies Corp.						
DEPARTMENT OF DEFENSE	6940318	BBN REF ID # 90065	INSPECT: IN Situ Phenotype Evaluation using CMOS Technology	12.910	46,774	-
DEPARTMENT OF DEFENSE	6938139	LBN9513645	Explainable Question Answering System (EQUAS)	12.910	241,496	-
DEPARTMENT OF DEFENSE	6936196	SLIN 0001 / LBN9513537	Generalized Network Assisted Transport (GNAT)	12.RD	291,337	-
DEPARTMENT OF DEFENSE	6936009	9500013359	(CONQUEST) Communications and Networking with Quantum Operationally-Secure Technology for Maritime Deployment	12.RD	100,885	-
DEPARTMENT OF DEFENSE	6935317	LBN9513359	(CONQUEST) Communications and Networking with Quantum Operationally-Secure Technology for Maritime Deployment	12.RD	158,885	-
DEPARTMENT OF DEFENSE	6936055	LBN9513341	Scientific Advances to Continuous Insider Threat Evaluation Program	12.RD	-2,584	-
DEPARTMENT OF DEFENSE	6938393	LBN9513584	Ultraviolet-Visible Photonic Integrated Circuits (UV-PIC)	12.RD	2,872	-
			Total for Raytheon BBN Technologies Corp.		**839,666**	**-**
Smart Information Flow Technologies						
DEPARTMENT OF DEFENSE	6939369	CPS-MIT-01	MacGyver: Creative Problem Solver	12.RD	158,123	-
			Total for Smart Information Flow Technologies		**158,123**	**-**
University of Virginia						
DEPARTMENT OF DEFENSE	6938713	GG12078.157800	Ultrasmall skyrmion synthesis guided by high throughput computational materials discovery to advance texitronics	12.910	103,999	-
			Total for University of Virginia		**103,999**	**-**
NVIDIA Corporation						
DEPARTMENT OF DEFENSE	6939240	PO 56090640	Symphony: Orchestrating Sparse and Dense Data for Efficient Computation	12.RD	975,962	-
			Total for NVIDIA Corporation		**975,962**	**-**
Perspecta Labs Inc.						
DEPARTMENT OF DEFENSE	6932420	PO-0004102	Distributed Enclave Defense Using Configurable Edges (DEDUCE)	12.RD	18,936	-
DEPARTMENT OF DEFENSE	6934363	PO-0008492	SCATTERED	12.RD	384,716	-
DEPARTMENT OF DEFENSE	6939771	PO-0016764 PRIME HR001117S0035	WILEE: Agent-Based Threat Detection and Adaptive Collection for Cyber Hunting at Scale	12.RD	230,566	-

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Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
			Total for Perspecta Labs Inc.		**634,218**	**-**
Aarno Labs LLC						
DEPARTMENT OF DEFENSE	6939022	SUB UNDER HR001118C0059	Arya: Automatic Injection of Defensive Agents	12.RD	271,479	-
			Total for Aarno Labs LLC		**271,479**	**-**
Princeton University						
DEPARTMENT OF DEFENSE	6940192	SUB0000294	Re-configurable IR frequency comb spectronscopic sending platform for chemical threat detection	12.910	96,740	-
DEPARTMENT OF DEFENSE	6939778	SUBCONTRACT NO: SUB0000266	Physics-Informed Machine Learning via Imposed Constraints (PIMLICo)	12.RD	61,689	-
			Total for Princeton University		**158,429**	**-**
Aptima, Inc.						
DEPARTMENT OF DEFENSE	6937326	SUBCONTRACT NUMBER 1197-2015	Agile Teams (A-Teams) - ThermoTeams: An Energy-Based Approach to the Design of Highly Adaptive Teams	12.RD	-52,890	-
			Total for Aptima, Inc.		**-52,890**	**-**
American Lightweight Materials Manufacturing Innovation Institute						
DEPARTMENT OF DEFENSE	6931266	0001	Sub-Award Agreement 0001: Cross-Cut Pillar Lead - Cost Modeling v.2	12.RD	15,689	-
DEPARTMENT OF DEFENSE	6932706	0002B-11	Sub-Award Agreement 0001: Cross-Cut Pillar Lead - Cost Modeling v.2	12.RD	8,468	-
DEPARTMENT OF DEFENSE	6934651	SUB AWARD NUMBER 0002 LIFT CORE MODELING	Sub-Award Agreement 0001: Cross-Cut Pillar Lead - Cost Modeling v.2	12.RD	13,284	-
DEPARTMENT OF DEFENSE	6934657	SUB AWARD NUMBER 0004A-5	Sub-Award Agreement 0001: Cross-Cut Pillar Lead - Cost Modeling v.2	12.RD	-11,090	-
DEPARTMENT OF DEFENSE	6934653	SUB AWARD NUMBER 0006A-7	Sub-Award Agreement 0001: Cross-Cut Pillar Lead - Cost Modeling v.2	12.RD	4,172	-
DEPARTMENT OF DEFENSE	6934655	SUB AWARD NUMBER 0007A-7	Sub-Award Agreement 0001: Cross-Cut Pillar Lead - Cost Modeling v.2	12.RD	-17,137	-
			Total for American Lightweight Materials Manufacturing Innovation Institute		**13,386**	**-**
University of Southern California						
DEPARTMENT OF DEFENSE	6939922	107215392	Livtronics: Living Electronics for Biologically-Enhanced Sensing, Computing, and Signal Transmission	12.300	508,128	-
DEPARTMENT OF DEFENSE	6937906	90502031	IARPA QEO, Algorithms and Designs for Quantum Annealing	12.RD	206,376	-

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Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE	6937962	NO. 94711981	SARAL: Summarization and domain-Adaptive Retrieval of Information Across Languages	12.RD	119,772	-
			Total for University of Southern California		**834,275**	**-**
University of California-San Diego						
DEPARTMENT OF DEFENSE	6939646	108548654	RAIDER: Resilient Actionable Intelligence for Distributed Environment understanding and Reasoning	12.300	58,513	-
DEPARTMENT OF DEFENSE	6934249	PO #S9000381, SUB #43019208	The Information Content of Ocean Noise: Theory and Experiment - Imaging the Changing Arctic with Ice Noise	12.300	375,256	-
			Total for University of California-San Diego		**433,769**	**-**
Boston University						
DEPARTMENT OF DEFENSE	6935193	4500002204	NEURAL CIRCUITS UNDERLYING SYMBOLIC PROCESSING IN PRIMATE CORTEX AND BASAL GANGLIA	12.300	298,225	-
			Total for Boston University		**298,225**	**-**
Stanford University						
DEPARTMENT OF DEFENSE	6931094	60744752-114407	Role of Bidirectional Computation in Visual Scene Analysis	12.300	354,629	-
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	1,017	-
			Total for Stanford University		**355,646**	**-**
Cornell University						
DEPARTMENT OF DEFENSE	6933365	77497-10576	Dexterous Manipulation Specification Via Language and Context Constraints	12.300	138,734	-
DEPARTMENT OF DEFENSE	6937575	81825-10911	PERISCOPE: Perceptual Representations for Actions, Composition, and Verification	12.300	768,322	-
			Total for Cornell University		**907,057**	**-**
University of Minnesota						
DEPARTMENT OF DEFENSE	6937286	A006141803	Predicting Turbulent Multi-Phase Flows with High Fidelity: A Physics-Based Approach	12.300	167,304	-
			Total for University of Minnesota		**167,304**	**-**
Radiation Monitoring Devices						
DEPARTMENT OF DEFENSE	6938896	C18-11	Hot Wall Epitaxy of Mixed Lead Chalcogenides in Resonant Cavity Structures	12.RD	25,690	-

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Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE	6940326	C19-20	Hot Wall Epitaxy of Mixed Lead Chalcogenides in Resonant Cavity Structures	12.RD	39,316	-
			Total for Radiation Monitoring Devices		**65,007**	**-**
George Mason University						
DEPARTMENT OF DEFENSE	6937200	E2042811	Safety Evaluation of Lithium-ion Batteries Under Combined Mechanical and Electrical Abuse Conditions	12.300	39,770	-
DEPARTMENT OF DEFENSE	6939518	E2045481	Host-based anti-microbial peptides as therapeutic strategies for alphavirus infection	12.351	85,329	-
			Total for George Mason University		**125,098**	**-**
Oasis						
DEPARTMENT OF DEFENSE	6939397	OASIS 18-12 REVISION 4	STTR: Detection Rate Improvements Through Understanding and Modeling Ocean Variability	12.RD	37,448	-
DEPARTMENT OF DEFENSE	6940842	OASIS 19-05	Detection Rate Improvements Through Understanding and Modeling Ocean Stability	12.RD	51	-
			Total for Oasis		**37,499**	**-**
Florida State University						
DEPARTMENT OF DEFENSE	6935158	R01849	ESRDC - FSU and MIT Sea Grant Collaboration	12.300	301,344	-
			Total for Florida State University		**301,344**	**-**
Scientific Systems Company, Incorporated						
DEPARTMENT OF DEFENSE	6940374	SC-1654-01	Real-Time Validation of Machine Intelligence Controlling Unmanned Vehicle Autonomous Operations	12.RD	23,172	-
			Total for Scientific Systems Company, Incorporated		**23,172**	**-**
Battelle Memorial Institute						
DEPARTMENT OF DEFENSE	6935623	SUB NO. 550379/PO US001-0000550379	Passive Sampling Optimization at Apra Harbor and Orote Landfill, Guam	12.RD	39,224	-
			Total for Battelle Memorial Institute		**39,224**	**-**
CREARE, Incorporated						
DEPARTMENT OF DEFENSE	6932855	SUBCONTRACT NO. 78380	Ship Airwake Measurement System	12.RD	36,061	-
			Total for CREARE, Incorporated		**36,061**	**-**
HRL Laboratories, LLC						
DEPARTMENT OF DEFENSE	6938516	15026-503667-DS	Microwave Quantum Engineering for Semiconductor Quantum Dot Qubits	12.RD	367,041	-

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DEPARTMENT OF DEFENSE	6937913	16102-172807-QS/COST ACCOUNT BC2A.101.MIT000	Hybrid Forecasting Competition (HFC): Base Phase 1A Task 1	12.RD	114,072	-
			Total for HRL Laboratories, LLC		**481,114**	**-**
Vanderbilt University						
DEPARTMENT OF DEFENSE	6940344	SUBCONTRACT UNIV60073	Strategic Sensing and Resource Allocation for Infrastructure Resilience	12.RD	163,134	-
			Total for Vanderbilt University		**163,134**	**-**
Siemens Medical Solutions USA, Inc.						
DEPARTMENT OF DEFENSE	6929661	102-01	Knowledge Representation in Neural Systems	12.RD	-43,510	-
			Total for Siemens Medical Solutions USA, Inc.		**-43,510**	**-**
Civil-Military Innovation Institute, Inc.						
DEPARTMENT OF DEFENSE	6939234	1807-001	Development of NSIC Program and End-User Driven/Prototype Development (ED/PD) Course	12.RD	134,707	-
			Total for Civil-Military Innovation Institute, Inc.		**134,707**	**-**
Stevens Institute of Technology						
DEPARTMENT OF DEFENSE	6939449	2102876-03	(SERC) Collaboration Agreement: Systems Engineering Research Center	12.RD	48,811	-
DEPARTMENT OF DEFENSE	6938272	HQ0034-13-D-00004/TO# HQ003418F0097	(SERC) Collaboration Agreement: Systems Engineering Research Center	12.RD	137,233	-
DEPARTMENT OF DEFENSE	6936805	HQ0034-13-D-0004/TO # HQ003417F0283	(SERC) Collaboration Agreement: Systems Engineering Research Center	12.RD	-1,637	-
DEPARTMENT OF DEFENSE	6936008	HQ0034-13-D-0004/TO #0077	(SERC) Collaboration Agreement: Systems Engineering Research Center	12.RD	252	-
DEPARTMENT OF DEFENSE	6938201	HQ0034-13D-0004/TO# HQ003418F0089	(SERC) Collaboration Agreement: Systems Engineering Research Center	12.RD	30,675	-
			Total for Stevens Institute of Technology		**215,335**	**-**
Ohio State University						
DEPARTMENT OF DEFENSE	6931042	60040869/RF01385268	Modeling, Analysis and Control for Robust Interdependent Networks	12.351	100,888	-
			Total for Ohio State University		**100,888**	**-**
ESPACE						
DEPARTMENT OF DEFENSE	6934560	AGMT. DTD. 8/14/13	IMPACT: Validation of iEPS in Space	12.RD	463,086	-

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			Total for ESPACE		**463,086**	**-**
Advanced Functional Fabrics of America (AFFOA)						
DEPARTMENT OF DEFENSE	6938682	EXHIBIT 1-A	Shape-Shifting Climate-Adaptive Garments	12.RD	664,818	117,064
			Total for Advanced Functional Fabrics of America (AFFOA)		**664,818**	**117,064**
Claremont Graduate University						
DEPARTMENT OF DEFENSE	6938949	GR200198	Theory of Deep Networks for Modeling Hierarchical Data Processing	12.RD	17,707	-
			Total for Claremont Graduate University		**17,707**	**-**
Ministry of Defense of Israel						
DEPARTMENT OF DEFENSE	6938047	PO 4440884397	Multifunctional Fiber System for Magnetic Wave Sensing	12.RD	166,730	-
DEPARTMENT OF DEFENSE	6931680	PO 4440949975	Planning and Sensing Algorithms for Underwater Persistent Monitoring	12.RD	27	-
			Total for Ministry of Defense of Israel		**166,757**	**-**
Potomac Institute For Policy Studies						
DEPARTMENT OF DEFENSE	6939559	SUBCONTRACT NUMBER: S18-07	DARPA IPA Study	12.RD	44,238	-
			Total for Potomac Institute For Policy Studies		**44,238**	**-**
			TOTAL for Department of Defense		**41,165,070**	**362,574**

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DEPARTMENT OF COMMERCE						
Aerodyne Research Incorporated						
DEPARTMENT OF COMMERCE	6939657	ARI 11436-1	Developing a robust and scalable calibration approach to low-cost AQ sensing	11.RD	39,481	-
			Total for Aerodyne Research Incorporated		**39,481**	**-**
Total Technology, Inc.						
DEPARTMENT OF COMMERCE	6939456	PO# 18-076	NSWC Crane Innovation Eco-System Case Study	11.RD	70,780	-
			Total for Total Technology, Inc.		**70,780**	**-**
Lincoln Laboratory						
DEPARTMENT OF COMMERCE	6937869	PO# 7000406016	MIT-LL collaborative project: Representative Public Safety Video Testbed	11.609	140,519	-
			Total for Lincoln Laboratory		**140,519**	**-**
			TOTAL for Department of Commerce		**250,780**	**-**

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DEPARTMENT OF ENERGY						
Brown University						
DEPARTMENT OF ENERGY	6939921	00001292	Bridging the time scale in exascale computing of chemical systems	81.049	48,069	-
			Total for Brown University		**48,069**	**-**
University of Alabama-Birmingham						
DEPARTMENT OF ENERGY	6938714	000517656-SC001	Novel, Middle and Long Wave Infrared Laser Sources For Accelerator and X-ray Generation Applications	81.049	86,521	-
			Total for University of Alabama-Birmingham		**86,521**	**-**
University of Illinois-Urbana Champaign						
DEPARTMENT OF ENERGY	6937707	078620-16205	Cyber Resilient Energy Delivery Consortium (CREDC)	81.122	493,150	-
DEPARTMENT OF ENERGY	6939594	078620-16205 (GRANT CODE: AC995)	Cyber Resilient Energy Delivery Consortium (CREDC)	81.122	360,778	-
			Total for University of Illinois-Urbana Champaign		**853,928**	**-**
Washington State University						
DEPARTMENT OF ENERGY	6938562	130616-G003845	UI-ASSIST: US-India collAborative for smart diStribution System wIth STorage	81.122	114,316	-
DEPARTMENT OF ENERGY	6938310	130862-G003801	AGGREGATE: data-driven modeling preserving controllable DER for outage management and resiliency	81.122	104,708	-
			Total for Washington State University		**219,024**	**-**
Harvard University						
DEPARTMENT OF ENERGY	6920743	133512-5028381	Transport and Imaging of Mesoscopic Phenomena in Single and Bilayer Graphene	81.049	109,547	-
DEPARTMENT OF ENERGY	6940505	AGREEMENT NO. 134126-5110101	QPress: Quantum Press for Next-Generation Quantum Information Platforms	81.049	233,468	-
			Total for Harvard University		**343,015**	**-**
Purdue University						
DEPARTMENT OF ENERGY	6939853	14000388-014	Manufacturing of Robust High-Temperature Heat Exchangers	81.087	143,597	-
			Total for Purdue University		**143,597**	**-**
Composite Technology Development, Inc.						
DEPARTMENT OF ENERGY	6934564	16779	Insulation of TSTC for fusion applications	81.049	176,629	-

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			Total for Composite Technology Development, Inc.		**176,629**	**-**
Arizona State University						
DEPARTMENT OF ENERGY	6936487	17-032	DNA Nanostructure Directed Designer Excitonic Networks	81.049	94,766	-
			Total for Arizona State University		**94,766**	**-**
George Washington University						
DEPARTMENT OF ENERGY	6938165	17-S33	Microscale Optimized Solar-Arrays with Integrated Concentration (MOSAIC).	81.135	83,271	-
			Total for George Washington University		**83,271**	**-**
Columbia University						
DEPARTMENT OF ENERGY	6930075	2(GG008553)	Device and Fabrication Technology for the Next Generation of Medium Voltage Vertical Transistors	81.135	227,484	-
			Total for Columbia University		**227,484**	**-**
University of Michigan						
DEPARTMENT OF ENERGY	6931203	3003222367	Consortium for Verification Technology (CVT)	81.113	606,422	-
			Total for University of Michigan		**606,422**	**-**
Brookhaven National Laboratory						
DEPARTMENT OF ENERGY	6934084	312673	Beam Energy Scan Theory Collaboration	81.RD	9,977	-
DEPARTMENT OF ENERGY	6934181	313021	Transverse Momentum Dependent Parton Structure Collaboration	81.RD	84,808	-
DEPARTMENT OF ENERGY	6938035	NO. 343173	Gas Injection and NMR for a Polarized 3He Ion Source at RHIC	81.RD	83,650	-
DEPARTMENT OF ENERGY	6938641	NO. 347538	Time-resolved imaging of sub-10 nm skyrmions in ferrimagnets and synthetic antiferromagnets	81.RD	52,899	-
DEPARTMENT OF ENERGY	6937844	SUBCONTRACT NO. 34510	High Intensity Polarized Electron Source	81.RD	49,614	-
			Total for Brookhaven National Laboratory		**280,948**	**-**
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	113,992	-
			Total for University of New Mexico		**113,992**	**-**
Los Alamos National Security, L.L.C.						

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Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF ENERGY	6935453	334926	Charged Particle Stopping Power Models	81.RD	37,488	-
DEPARTMENT OF ENERGY	6933394	SUBCONTRACT # 365489	Source-independent Converted Phase Imaging of MEQ Data to Provide Fracture Locations	81.RD	27,756	-
DEPARTMENT OF ENERGY	6934723	SUBCONTRACT #399489	Emergency Control of Power System Networks	81.RD	58,052	-
			Total for Los Alamos National Security, L.L.C.		**123,297**	**-**
Brookhaven Science Associates, LLC						
DEPARTMENT OF ENERGY	6939100	351492	Nanonanowire sensor,	81.RD	49,748	-
DEPARTMENT OF ENERGY	6939706	NO. 345800	N3XT: CN-FET logic on (D)RAM Devices	81.RD	102,568	-
DEPARTMENT OF ENERGY	6938901	NO. 349365	Spatio-Temporal Learning Scale-up	81.RD	27,923	-
			Total for Brookhaven Science Associates, LLC		**180,239**	**-**
Battelle-Pacific Northwest Laboratories						
DEPARTMENT OF ENERGY	6937334	378042	Center for Molecular Electrocatalysis - Mediated Reduction Catalysis	81.RD	70,426	-
DEPARTMENT OF ENERGY	6939625	CONTRACT# 428422	Center for Molecular Electrocatalysis	81.RD	113,220	-
			Total for Battelle-Pacific Northwest Laboratories		**183,646**	**-**
UT- Battelle LLC						
DEPARTMENT OF ENERGY	6933214	4000102892	The Consortium for Advanced Simulation of Light Water Reactors (CASL)	81.RD	1,547,218	-
DEPARTMENT OF ENERGY	6934834	4000149783	Development of Next Generation Slicing Software for Additive Manufacturing	81.RD	-779	-
DEPARTMENT OF ENERGY	6936739	4000155797	Coupled Monte Carlo Neutronics and Fluid Flow Simulation of Small Modular Reactors (ExaSMR)	81.RD	506,422	-
DEPARTMENT OF ENERGY	6937665	4000158704	Center for Bioenergy Innovation	81.049	372,385	-
DEPARTMENT OF ENERGY	6937872	4000159358	Development of Next Generation Slicing Software for Additive Manufacturing	81.RD	123,988	-
DEPARTMENT OF ENERGY	6938156	4000160305	Optimization of sensor networks for improving climate model predictions	81.RD	168,730	-
DEPARTMENT OF ENERGY	6939467	4000164925	Behavior-Based Metal Additive Manufacturing	81.RD	86,243	-
DEPARTMENT OF ENERGY	6940671	4000169386	The Effects of Temperature on the Propagation of Nuclear Data Uncertainty in Nuclear Criticality Safety Calculations	81.RD	4,648	-
DEPARTMENT OF ENERGY	6923222	SUBCONTRACT NO. 4000100452	ITER ECH Transmission Line System: Research and Scientific Support	81.RD	8,881	-
			Total for UT- Battelle LLC		**2,817,738**	**-**

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University of Rochester						
DEPARTMENT OF ENERGY	6928068	416107-G	Magnet PTOF	81.049	278,626	-
DEPARTMENT OF ENERGY	6940700	417532G/ UR FAO GR510907	Nuclear-particle Spectroscopy and Analysis at Omega	81.112	390,746	-
			Total for University of Rochester		**669,372**	**-**
Pennsylvania State University						
DEPARTMENT OF ENERGY	6934571	5023-MIT-DOE-2377	Ensemble cell-wide kinetic modeling of anaerobic organisms to support fuels and chemicals production	81.049	17,552	-
DEPARTMENT OF ENERGY	6930592	5028-MIT-DOE-1090	Center for Lignocellulose Structure and Formation (CLSF)	81.049	126,936	-
DEPARTMENT OF ENERGY	6935460	5555-MIT-DOE-6825	Grid Independence and Uncertainty Quantification in Gas-Solid Flow Simulations	81.089	22,993	-
DEPARTMENT OF ENERGY	6936698	5652-MIT-EARPA-0801	Maximizing Fuel Economy through Real-Time, Collaborative, and Predictive Co-Optimization of Routing, Speed, and Powertrain Control	81.135	28,495	-
DEPARTMENT OF ENERGY	6940065	5952-MIT-DOE-1090	Center for Lignocellulose Structure and Formation (CLSF III)	81.049	56,428	-
			Total for Pennsylvania State University		**252,404**	**-**
Northeastern University						
DEPARTMENT OF ENERGY	6939896	503036-78052	Design, Control and Application of Next-Generation Qubits	81.049	134,725	-
			Total for Northeastern University		**134,725**	**-**
Ohio State University						
DEPARTMENT OF ENERGY	6936056	60058746	Alloying Agents to Stabilize Lanthanides Against Fuel Cladding Chemical Interaction: Tellurium and Antimony Studies	81.121	40,373	-
			Total for Ohio State University		**40,373**	**-**
State University of New York						
DEPARTMENT OF ENERGY	6930984	68799	EFRC:NorthEast Center for Chemical Energy Storage (NECCES)	81.049	125,360	-
			Total for State University of New York		**125,360**	**-**
UChicago Argonne, LLC						
DEPARTMENT OF ENERGY	6933395	6F-30461	Simulation of Flow-induced Vibration Using STAR-CCM + for the NuScale SG Design	81.RD	24,613	-

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DEPARTMENT OF ENERGY	6939746	8F-30212	Joint Center for Energy Storage Research (JCESR) Renewal Year 1	81.RD	474,554	-
DEPARTMENT OF ENERGY	6927797	SUBCONTRACT NO. 3F-31144	Joint Center for Energy Storage Research (JCESR)	81.RD	196,157	-
DEPARTMENT OF ENERGY	6937302	SUBCONTRACT NO. 7F-30180	Reaction Mechanism Generator (RMG) Software	81.RD	64,851	-
DEPARTMENT OF ENERGY	6934260	WO 2J-30101-0008A	Task 8: Preliminary SAR Review and Conversion Transition Planning for the MITR-II Research Reactor	81.RD	286,104	-
DEPARTMENT OF ENERGY	6939720	WO 2J-30101-0009A	Task 9: LEU Fuel Specification Impact Assessment for the MITR Research Reactor	81.RD	139,299	-
			Total for UChicago Argonne, LLC		**1,185,578**	**-**
University of Wisconsin						
DEPARTMENT OF ENERGY	6935633	704K303	Sodium cooled fast reactor key modeling and analysis for commercial deployment	81.121	83,968	-
			Total for University of Wisconsin		**83,968**	**-**
University of Minnesota						
DEPARTMENT OF ENERGY	6940178	A004527506	Inorganometallic Catalyst Design Center	81.049	50,092	-
			Total for University of Minnesota		**50,092**	**-**
C.A. Goudey & Associates						
DEPARTMENT OF ENERGY	6939174	AGMT DTD 05/01/2018	AUTONOMOUS TOW VESSELS FOR OFFSHORE MACROALGAE FARMING	81.135	11,738	-
			Total for C.A. Goudey & Associates		**11,738**	**-**
Superconductor Technologies, Inc.						
DEPARTMENT OF ENERGY	6937244	AGMT. DTD. 07/01/2017	Wire Improvement for HTS	81.087	-9,176	-
			Total for Superconductor Technologies, Inc.		**-9,176**	**-**
Advanced Conductor Technologies LLC						
DEPARTMENT OF ENERGY	6937596	AGMT. DTD. 08/01/2017	Stable, low-loss joints for high-temperature fusion magnets	81.049	8,921	-
			Total for Advanced Conductor Technologies LLC		**8,921**	**-**
Sandia National Laboratories						
DEPARTMENT OF ENERGY	6938128	AGREEMENT 1340868 / PO 1874220	Frameworks, Algorithms and Scalable Technologies for Mathematics (FASTMath) SciDAC Institute	81.RD	6,621	-

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DEPARTMENT OF ENERGY	6933746	PO #1630435	Millimeter-wave Thermal Analysis for In-Process Assessment	81.RD	23,417	-
DEPARTMENT OF ENERGY	6933745	PO1619650/ CPA1340868	Utilization of CR39 on Z for DD yield, yield anisotropies, and neutron spectroscopy	81.RD	113,335	-
			Total for Sandia National Laboratories		**143,373**	**-**
Brayton Energy, LLC						
DEPARTMENT OF ENERGY	6940431	AGREEMENT DTD 2/6/19	Reversible Counter-Rotating Turbomachine	81.135	12,729	-
			Total for Brayton Energy, LLC		**12,729**	**-**
Adelphi Technology Inc						
DEPARTMENT OF ENERGY	6938797	AGREEMENT EFFECTIVE 04/27/18	Axisymmetric and Focusing Analyzers to Enable Efficient Powder and Residual Stress Neutron Diffractometers	81.049	84,800	-
			Total for Adelphi Technology Inc		**84,800**	**-**
Lawrence Livermore National Security, LLC						
DEPARTMENT OF ENERGY	6926820	B602126	Chemical Threat Responsive Carbon Nanotube Membranes	81.RD	138,540	-
DEPARTMENT OF ENERGY	6932165	B613027	High Density Implosions on OMEGA and the NIF	81.RD	189,043	-
DEPARTMENT OF ENERGY	6933555	B615534	Multi-Nuclear Burn Diagnostic Development	81.RD	76,120	-
DEPARTMENT OF ENERGY	6938345	B627203	Microscale biophysical analyses of algal bacterial interactions	81.RD	83,196	-
DEPARTMENT OF ENERGY	6940158	B631377	Chemical Threat Responsive Carbon Nanotube Membranes	81.RD	216,815	-
DEPARTMENT OF ENERGY	6935266	NO. B620960	Guiding the design of vaccination strategies aimed toward generating broadly neutralizing antibodies against highly mutable pathogens: HIV and Influenza as case studie	81.RD	78,402	-
DEPARTMENT OF ENERGY	6940134	SUBCONTRACT B631595	High Density Implosions on Omega and the NIF	81.RD	266,919	-
			Total for Lawrence Livermore National Security, LLC		**1,049,034**	**-**
Battelle Energy Alliance, LLC						
DEPARTMENT OF ENERGY	6936498	CONTRACT 112583 - RELEASE #13	LWR CORE ANALYSIS WITH RELAP-7 FLUIDS MODELS	81.RD	82,019	-
DEPARTMENT OF ENERGY	6938386	REL 17 BMC 112583	Development of an Advanced Method for TREAT Modeling and Simulation with Thermal Graphite Model Validation	81.RD	113,562	-

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DEPARTMENT OF ENERGY	6933641	RELEASE 10 / CONTRACT 112583	Implementation and Validation of Radiation Defect Cluster Dynamics in MOOSE	81.RD	6,960	-
DEPARTMENT OF ENERGY	6937536	RELEASE 14 BMC00112583	Safety Margin Evaluation for Experiment Irradiation in ATR	81.RD	46,893	-
DEPARTMENT OF ENERGY	6937503	RELEASE 16 / 00112583	Irradiation of the TREAT LEU Fuel Irradiation Experiment 1 (TIE-1) in MITR	81.RD	130,710	-
DEPARTMENT OF ENERGY	6939000	RELEASE 18 / BMC 112583	ATR Experiment Safety Margin Characterization-Recommendations for Implementation	81.RD	86,018	-
DEPARTMENT OF ENERGY	6939943	RELEASE 19 / BMC 112583	Low temperature Electrochemical Activation of Ethane for Co-production of Chemicals/Fuels and Hydrogen	81.RD	131,731	-
DEPARTMENT OF ENERGY	6937440	RELEASE NO. 15 UNDER BLANKET MASTER NO. 112583	Modeling porous media impedance spectra	81.RD	-1,485	-
			Total for Battelle Energy Alliance, LLC		**596,407**	**-**
Plasma Processes, LLC						
DEPARTMENT OF ENERGY	6936177	DE-SC0011895 / 6028-004-JF-102915REV2	Breakdown Resistant Refractory Metal Coatings for Field-Aligned ICRF Antennas	81.049	10,920	-
DEPARTMENT OF ENERGY	6938695	DE-SC0015931 / PO# 1014-002-JK-050218	Additive Manufacture of Tungsten Armored Plasma Facing Components	81.049	70,472	-
DEPARTMENT OF ENERGY	6940880	PO 1015-002-JK-120618	Advanced Metallic-Silicon Carbide Composite Claddings for Improved Damage Tolerance	81.049	967	-
			Total for Plasma Processes, LLC		**82,360**	**-**
Free Form Fibers LLC						
DEPARTMENT OF ENERGY	6938183	DE-SC0011954	SBIR: AN ADDITIVE MANUFACTURING TECHNOLOGY FOR THE FABRICATION AND CHARACTERIZATION OF NUCLEAR REACTOR FUEL	81.049	197,480	-
			Total for Free Form Fibers LLC		**197,480**	**-**
Oregon State University						
DEPARTMENT OF ENERGY	6932973	G0157A-B	Computational and Experimental Benchmarking for Transient Fuel Testing	81.121	285,469	-
			Total for Oregon State University		**285,469**	**-**
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	4,355	-

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			Total for University of California-Santa Barbara		**4,355**	**-**
Western Research Institute						
DEPARTMENT OF ENERGY	6938492	MIT17-10G663	Consortium for Production of Affordable Carbon Fibers (CPACF) in the U.S.	81.086	513,650	-
			Total for Western Research Institute		**513,650**	**-**
Honeywell						
DEPARTMENT OF ENERGY	6933853	N000189586	Additive Manufacturing of Porous Solids	81.RD	105,495	-
DEPARTMENT OF ENERGY	6935787	N000189586, LINE 1, MOD 2	Additive Manufacturing of Porous Solids	81.RD	16,898	-
DEPARTMENT OF ENERGY	6940342	PO N000302644	MIT idea PDRD	81.RD	55,181	-
			Total for Honeywell		**177,575**	**-**
General Atomics						
DEPARTMENT OF ENERGY	6936502	PO 4500068120	High Temperature Oxidation and Quench Studies of Accident Tolerant LWR Fuels	81.RD	-95	-
DEPARTMENT OF ENERGY	6937870	PO# 4500071909	AToM: Advanced Tokamak Modeling Environment	81.049	158,997	-
			Total for General Atomics		**158,902**	**-**
United Technologies Research Center						
DEPARTMENT OF ENERGY	6940860	Research Agreement No. 1247163	Low-cost Redox-Flow-Battery System with S- and Mn-anion active materials	81.135	28,120	-
			Total for United Technologies Research Center		**28,120**	**-**
Princeton Plasma Physics Laboratory						
DEPARTMENT OF ENERGY	6933435	S014796-H	Transport and Turbulence Physics Studies and Data Analysis Collaboration on NSTX-U	81.RD	98,665	-
DEPARTMENT OF ENERGY	6936363	S015616-H	PF1 Coil Fabrication Support	81.049	5,335	-
DEPARTMENT OF ENERGY	6937617	S015850-H	Partnership Center for High -fidelity Boundary Plasma Simulation	81.RD	32,410	-
			Total for Princeton Plasma Physics Laboratory		**136,410**	**-**
California Institute of Technology						
DEPARTMENT OF ENERGY	6940104	S399795	Quantum Machine Learning and Quantum Computation Frameworks for HEP (QMLQCF)	81.049	1,546	-
			Total for California Institute of Technology		**1,546**	**-**
University of Massachusetts-Lowell						

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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	38,828	-
			Total for University of Massachusetts-Lowell		**38,828**	**-**
University of Arkansas						
DEPARTMENT OF ENERGY	6936709	SA1712153	Cybersecurity Center for Secure Evolvable Energy Delivery Systems (SEEDS)	81.112	27,126	-
			Total for University of Arkansas		**27,126**	**-**
Faraday Technology, Inc						
DEPARTMENT OF ENERGY	6936670	SC 6305-1031	Microfluidic System for CO2 Reduction to Hydrocarbons	81.049	174,755	-
			Total for Faraday Technology, Inc		**174,755**	**-**
Electroformed Nickel, Inc.						
DEPARTMENT OF ENERGY	6939275	STTR AGREEMENT 05/21/18	Demonstration of the technological capability for production of neutron-focusing nickel mirrors	81.049	112,330	-
			Total for Electroformed Nickel, Inc.		**112,330**	**-**
FGC Plasma Solutions						
DEPARTMENT OF ENERGY	6939061	STTR DTD 07/19/2018	Plasma Control of Combustion Instabilities	81.049	46,203	-
			Total for FGC Plasma Solutions		**46,203**	**-**
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	107,802	-
			Total for University of California - Berkeley		**107,802**	**-**
Princeton University						
DEPARTMENT OF ENERGY	6940086	SUB0000289	Bioinspired Light-Escalated Chemistry (BioLEC)	81.049	45,117	-
			Total for Princeton University		**45,117**	**-**
University of Colorado Boulder						
DEPARTMENT OF ENERGY	6937968	SUBAWARD#: 1555955 PO# 1000976258	Design and Engineering of Synthetic Control Architectures	81.049	404,595	-
			Total for University of Colorado Boulder		**404,595**	**-**
Lawrence Berkeley National Laboratory						

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DEPARTMENT OF ENERGY	6931128	SUBCONTRACT # 7204982	Molecular Determinants of Community Activity, Stability and Ecology (MDCASE)	81.RD	609,863	-
			Total for Lawrence Berkeley National Laboratory		**609,863**	**-**
Yellowstone Energy Inc						
DEPARTMENT OF ENERGY	6939928	SUBCONTRACT AGMT 01/01/19	NOVEL REACTIVITY CONTROL ROD FOR YELLOWSTONE ENERGY MOLTEN NITRATE SALT REACTOR	81.135	42,576	-
			Total for Yellowstone Energy Inc		**42,576**	**-**
SURA / Jefferson Lab						
DEPARTMENT OF ENERGY	6935157	SUBCONTRACT JSA-17-C0086	GlueX DIRC Optical Boxes	81.RD	179,351	-
			Total for SURA / Jefferson Lab		**179,351**	**-**
Radiation Monitoring Devices						
DEPARTMENT OF ENERGY	6939332	SUBCONTRACT NO. C18-20	In situ characterization of interfaces between materials and molten salts for molten salt reactors	81.049	47,452	-
			Total for Radiation Monitoring Devices		**47,452**	**-**
National Renewable Energy Laboratory						
DEPARTMENT OF ENERGY	6930868	UGA-0-41029-16/ER392000	Center for Next Generation of Materials by Design: Incorporating Metastablility	81.049	117,732	-
DEPARTMENT OF ENERGY	6933524	UGA-0-41029-18/ST6P1510	Bulk Defect Mitigation in Czochralski and Novel Silicon	81.049	2,635	-
DEPARTMENT OF ENERGY	6938354	UGA-0-41029-19	Economic Expertise to Support 2018 Update of CEMAC Benchmark Project	81.049	5,353	-
DEPARTMENT OF ENERGY	6938789	UGA-0-41029-20	Quantifying the Drivers of Wholesale Energy Prices	81.049	66,251	-
			Total for National Renewable Energy Laboratory		**191,971**	**-**
University of Texas - Austin						
DEPARTMENT OF ENERGY	6931207	UTA14-001222	Nuclear Technology R&D Strategies in an Era of Energy Price Uncertainty	81.121	32,075	-
DEPARTMENT OF ENERGY	6938299	UTA18-000276	Partnership for Multiscale Gyrokinetic (MGK) Turbulence	81.049	856	-
DEPARTMENT OF ENERGY	6940002	UTA18-001328	AEOLUS: Advances in Experimental Design, Optimal Control, and Learning for Uncertain Complex Systems	81.049	20,745	-
			Total for University of Texas - Austin		**53,676**	**-**
University of Washington						

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DEPARTMENT OF ENERGY	6937599	UWSC10120	Ultrafast Control of Emerging Electronic Phenomena in 2D Quantum Materials	81.049	198,556	-
			Total for University of Washington		**198,556**	**-**
			TOTAL for Department of Energy		**14,888,350**	**-**

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DEPARTMENT OF HEALTH & HUMAN SERVICES						
Fred Hutchinson Cancer Research Center						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940946	0000997305	The Syngenic DNA and uPOET Platform: Overcoming Innate Barriers to Genetic Engineering in Bacteria	93.121	7,886	-
			Total for Fred Hutchinson Cancer Research Center		**7,886**	**-**
University of Pittsburgh						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939246	0060623 (131345-1)	Neural Encoding of Impedance for Object Manipulation	93.853	80,247	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6933995	NO. 0048768 (127337-1)	Spatial Segregation of Cell Functioning During Motility	93.859	102,668	-
			Total for University of Pittsburgh		**182,915**	**-**
Beth Israel Deaconess Medical Center						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937621	01029400	A Psychobiological Follow-up Study of Transition from Prodrome to Early Psychosis	93.242	-545	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941041	01061188	The development and human translation of Temporal Interference brain stimulation	93.242	24,860	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937608	2R01GM104987-09	Research, Resource for Complex Physiologic Signals	93.859	-45,315	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940360	SUBAWARD #01028330	Research, Resource for Complex Physiologic Signals	93.859	376,054	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940118	SUBAWARD NO. 01028471	A multi-faceted approach to identifying K-Ras synthetic lethal relationships	93.396	8,215	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937483	SUBAWARD NO. 01029424	A multi-faceted approach to identifying K-Ras synthetic lethal relationships	93.396	-13,944	-
			Total for Beth Israel Deaconess Medical Center		**349,324**	**-**
University of California, Los Angeles						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939958	0125 G VB305	Precision lung cancer therapy design through multiplexed adapter measurement	93.396	117,902	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937422	0125 G VB518	Adapter-Layer RTK Signaling: Basic Understanding & Targeted DrugResistance	93.310	9,731	-
			Total for University of California, Los Angeles		**127,633**	**-**
Icahn School of Medicine at Mount Sinai						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939068	0255-8673-4609	High-throughput immunophenotypic analyses of humoral responses in Lyme Disease	93.855	30,800	-

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			Total for Icahn School of Medicine at Mount Sinai		**30,800**	**-**
Oklahoma Medical Research Foundation						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6933786	0280-04/MIT PO# S1704196-065	Analysis and Characterization of Trauma-Induced Coagulopathy	93.859	-3,128	-
			Total for Oklahoma Medical Research Foundation		**-3,128**	**-**
Columbia University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6934117	1(GG012140)/PO G10545	Analysis of Cancer Cell Metabolism in Diverse Environmental Conditions	93.396	215,148	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937984	1(GG012271-01)	Motor neuron selector genes and mechanism of their action	93.853	34,575	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940022	1(GG012741-03)	The role of stem cells and the microenvironment in gastrointestinal cancers	93.393	2,151	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940407	1(GG014640)	Distal enhancers controlling motor neuron gene expression program	93.853	6,704	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941039	2(GG012789-02)	The Role of the Microenvironment in Barrett's Esophagus	93.397	-509	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938959	2(GG012789-08)	The Role of the Microenvironment in Barrett's Esophagus	93.397	62,400	-
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	50,122	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937907	GG012741-02	The role of stem cells and the microenvironment in gastrointestinal cancers	93.393	27,784	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6927142	PO G11501 AWARD 1 (GG011803)	Motor Neuron Selector Genes and Mechanism of Their Action	93.853	-181	-
			Total for Columbia University		**398,195**	**-**
Dana Farber Cancer Institute						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6928787	1006718	Antigen Presentation and T Cell Programmimg in Human Autoimmune Diseases	93.855	87,783	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6926764	1214503	Assaying GBM growth and therapy response in single cells and tumorspheres (PQ17)	93.394	13,525	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937438	1225411/PO#1034483	DFHCC SPORE in Prostate Cancer - Project 1	93.397	7,612	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939136	1282101	Targeting immunogenicity to the MPER hinge and C-helix for BNAb elicitation	93.855	47,779	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6936865	1282102	Targeting immunogenicity to the MPER hinge and C-helix for BNAb elicitation	93.855	5,944	-

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DEPARTMENT OF HEALTH & HUMAN SERVICES	6939137	1282601	Targeting immunogenicity to the MPER hinge and C-helix for BNAb elicitation-Project 2	93.855	286,364	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6936864	1282602	Targeting immunogenicity to the MPER hinge and C-helix for BNAb elicitation-Project 2	93.855	24,447	-
			Total for Dana Farber Cancer Institute		**473,453**	**-**
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	35,887	-
			Total for Oregon Health and Science University		**35,887**	**-**
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	160,653	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6936867	S9001710	Infection-homing nanosystems as antibacterial therapeutics-delivery platforms	93.855	218,079	-
			Total for University of California-San Diego		**378,731**	**-**
Stowers Institute for Medical Research						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938968	102108 NIH 0070	Integrated Approaches to Understanding Circuit Function in the Nervous System.	93.173	10,262	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6936701	102108 NIH0070	Integrated Approaches to Understanding Circuit Function in the Nervous System.	93.173	9,292	-
			Total for Stowers Institute for Medical Research		**19,555**	**-**
St. Jude Medical						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937719	111942050-7790535	Mechanisms to diversify repertoire and modify T cell activity after infection	93.855	15,030	-
			Total for St. Jude Medical		**15,030**	**-**
Harvard School of Public Health						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6935148	112545-5095784	Safety and Health Management of Hazards Associated with Emerging Technologies	93.143	9,341	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939891	113098-5109806	Epithelial layer jamming in breast cancer cell migration (Supplement #2)	93.396	86,923	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939060	113113-5096677	Engineered Nanomaterial Synthesis, Characterization and Method Development Center for Nano-safety Research	93.113	116,112	-

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DEPARTMENT OF HEALTH & HUMAN SERVICES	6938889	114506-5096447	Powering whole genome sequence-based genetic discovery for common human diseases	93.172	84,445	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939811	114963-5104790	Optimism and Exceptional Longevity	93.866	32,581	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940400	117127-5108050	Multi-Pathway DNA Repair Capacity Measurements in Lung Cancer Patients and Healthy Controls	93.113	39,497	-
			Total for Harvard School of Public Health		**368,899**	**-**
Brigham & Women's Hospital						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939670	112548	Monitoring peripheral blood leukocyte and immune responses in health and disease	93.855	231,612	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6933473	113786	PARP9 and PARP14 in atherosclerosis	93.837	40,464	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6934372	114169	Neuroimaging Analysis Center (NAC)	93.286	3,350	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938401	114237	Mucins and immune cell interactions in ovarian cancer pathogenesis & progression	93.396	245,886	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6936292	116900	Macrophage-derived microcalcificaitons	93.837	21,755	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940370	120368	Neuroimaging Analysis Center	93.286	202,680	-
			Total for Brigham & Women's Hospital		**745,748**	**-**
Harvard University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938207	113098-5106858	Does the cell jamming principle extend from the 2D epithelial sheet to the 3D tumor spheroid?	93.396	19,684	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939816	132692-5106604	Developmental origins of mental illness: evolution and reversibility	93.242	686,706	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939767	151577	Molecular Basis of Viral Infectivity	93.855	48,143	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939227	164647-5107687	Novel Age-Dependent DNA Modifications	93.866	64,527	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938743	167980.0103	Lung-on-a-Chip Disease Models for Efficacy Testing	93.838	2,172	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940320	AGMT DTD 4/11/2019	Syringe Injectable Mesh Electronics for Seamless Integration with the Central Nervous System	93.310	27,563	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940532	BILLING AGRMNT. DTD. 04/29/2019	Sensory-motor processing in a developing nervous system - Lu Mi #1	93.853	11,164	-
			Total for Harvard University		**859,958**	**-**

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Boston Biomedical Innovation Center						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6935091	115622	Minimally invasive tissue engineered therapies for acute airway injury	93.837	55,954	-
			Total for Boston Biomedical Innovation Center		**55,954**	**-**
Seattle Children's Hospital						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937901	11607SUB	Novel Biologic Therapies for BMT: Mechanistic Evaluation in Rhesus Macaques	93.839	-285	-
			Total for Seattle Children's Hospital		**-285**	**-**
Harvard Medical School						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6935932	149855.5100033.0402	Glycan Biomarkers for Rapid and Inexpensive Point-of-Care Diagnosis of Latent and Active Tuberculosis	93.855	-113	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937936	152447.5074647.0407	Neuropsychiatric Genome-Scale and RDOC Individualized Domains (N-GRID)	93.242	11,182	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940261	152447.5074647.0507	Neuropsychiatric Genome-Scale and RDOC Individualized Domains (N-GRID)	93.242	79,856	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6936632	152448.5079089.0408	Patient - Centered Information Commons	93.866	-7,920	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6931022	152754.5068079.0002	Targeting a Novel Regulator of Brain Aging and Alzheimer's Disease	93.866	306,580	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937730	153032.5091220.0302	4D Nucleome Network Data Coordination and Integration Center	93.393	53,640	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939914	153032.5091220.0402	4D Nucleome Network Data Coordination and Integration Center	93.393	82,118	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939223	153094.5106380.0003	Real-time fMRI Neurofeedback as a Tool to Mitigate Auditory Hallucinations in Patients with Schizophrenia	93.242	139,211	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939538	HMS FUND#153049	Letter Agreement : Emily M. Alsentzer 070118 - 053119	93.879	38,297	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938667	RENCSOK-001	Billing Agreement – Emily Rencsok DF-HCC SPORE in Prostate Cancer - Project 1	93.397	2,332	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937138	SUBAWARD 152772.5096243.0305	Center for Genomically Engineered Organs	93.172	16,212	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939386	SUBAWARD 152772.5906243.0105	Center for Genomically Engineered Organs	93.172	131,966	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937980	SUBAWARD NO. 117954	Integrative multi-omic discovery of proximal mechanisms driving age-dependent neurodegeneration	93.866	144,960	-
			Total for Harvard Medical School		**998,321**	**-**

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New York University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937655	17-A0-00-006701-01	Novel Diagnostics for Glaucoma Structure and Function	93.867	51,928	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939036	18-A0-00-1001558-01; PO# M190200494	CRCNS: An Integrative Approach for the Study of Hippocampal-Neocortical Memory Coding during Sleep	93.242	120,945	-
			Total for New York University		**172,873**	**-**
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	190,110	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938652	OSP2016196	Center for Reproducible Neuroimaging Computation (CRNC) - Project 2	93.286	147,787	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939279	OSP2018099/ PO NO.WA00731639	Structural annotation of the human genome	93.172	97,338	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6930349	PO WA00463637 / RFS2015003	Structural annotation of the human genome	93.172	34,002	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938650	WA00434051/OSP2016201	Center for Reproducible Neuroimaging Computation (CRNC)	93.286	-13,655	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940496	WA00803340/OSP2016201	Center for Reproducible Neuroimaging Computation (CRNC)	93.286	6,853	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940498	WA00803347/ OSP2016196	Center for Reproducible Neuroimaging Computation (CRNC) - Project 2	93.286	131,625	-
			Total for University of Massachusetts		**594,060**	**-**
Research Foundation of SUNY-Albany						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938950	19-23-80301	Transational Control of ROS Management	93.113	37,189	-
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	128,990	-
			Total for Research Foundation of SUNY-Albany		**166,179**	**-**
Health Resources in Action						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937415	1R25OD023756	LEAH-Knox Scholars Program in Biomedical Research	93.859	22,603	-
			Total for Health Resources in Action		**22,603**	**-**
Johns Hopkins University						

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DEPARTMENT OF HEALTH & HUMAN SERVICES	6939792	2004089323	CRCNS: MOVE!-MOdeling of fast moVement for Enhancement via neuroprosthetics YR 1	93.853	34,537	-
			Total for Johns Hopkins University		**34,537**	**-**
University of California						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6941042	2016-3340	From structure to therapy: the TRiC Chaperonin network in Huntington's disease	93.855	196,668	-
			Total for University of California		**196,668**	**-**
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	87,321	-
			Total for Allen Institute for Brain Science		**87,321**	**-**
Massachusetts General Hospital						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937019	223253	SPORE: Targeted Therapies for Gliomas	93.397	22,641	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6930051	224256	Stable, High Relaxivity MRI Contrast Agents	93.286	-4,187	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6931354	225360	NIRF-OFDI of inflammation in atheroma progression and stent complications	93.837	14,613	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6932581	226025	MRI-GENetics Interface Exploration (MRI-GENIE) Study	93.286	40,201	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6935740	227296	Optimizing human B and T cell vaccines against HIV using humanized BLT mice	93.855	18,402	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937613	228193	Injury-inducible Activation of Cardiomyocyte Proliferation	93.837	64,493	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939141	228314	Natural language processing for characterizing psychopathology	93.242	67,873	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6936866	228599	Letter Agreement : Antonie Ramier 06/01/2017 - 05/31/2018	93.286	-659	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939662	228599	Letter Agreement : Antonie Ramier 060118 -063018	93.286	2,494	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939294	228599	Letter Agreement : Antonie Ramier 070118 -053119	93.286	45,938	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939544	228601	Billing Agreement - Szu-Yu Lee TRD3: Percutaneous and Interstitial Imaging	93.286	3,211	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939664	228601	Letter Agreement: Szu-Yu Lee 070118 -083118	93.286	6,471	-

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DEPARTMENT OF HEALTH & HUMAN SERVICES	6939682	229172	A systems biology approach to fingerprint HIV immune defense in Elite Controllers	93.839	12,052	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939663	229297	Letter Agreement: Paul Dannenberg 080118-083118	93.310	3,540	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939666	229297	Letter Agreement: Sangyeon Federick Cho 080118 - 083118	93.310	3,857	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939659	229297	Letter Agreement: Sangyeon Federick Cho 090118 - 053119 Fall & Spring	93.310	24,317	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6935377	229354	Improving Human fMRI through Modeling and Imaging Microvascular Dynamics	93.242	11,164	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939469	229386	Billing Agreement - Giorgia Grisot Multimodal mapping of the neurocircuitry of the human prefrontal cortex	93.286	39,431	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6935622	229428	Filtered point process inference framework for modeling neural data	93.286	70,189	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6935800	229825	Role of miR-222 in pathological hypertrophy and heart failure	93.837	72,415	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6935992	229916	Interfering with the macrophage life cycle in atherosclerosis	93.837	127,186	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938704	230321	Clinical Research for the Improved Prevention, Diagnosis and Treatment of Vocal Hyperfunction	93.173	103,073	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937647	230837	Reengineering obesity-induced abnormal microenvironment to improve PDAC Treatment	93.396	150,928	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939510	231297	Letter Agreement: John Samuelsson 060118 - 053119	93.286	56,386	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937579	231367	Harnessing Diverse BioInformatic Approaches to Repurpose Drugs for Alzheimer?s Disease	93.866	15,667	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939894	231409	Letter Agreement : Erica Mason - A magnetic particle imager (MOI) for functional brain imaging in humans	93.286	28,560	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937884	231617	An integrated translational approach to overcome drug resistance	93.353	116,806	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938426	231833	Unique Value of Real Time Shear Stress to Enhance Coronary Disease Management	93.837	97,539	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940711	232073	MRI Corticography: Developing Next Generation Microscale Human Cortex MRI Scanner - Zijing Dong	93.286	59,135	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938653	232432	T cells in HCV/HIV co-infection	93.279	24,173	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939768	232673	Billing Agreement - Olivia Warning Reversal of Immune Failure with Viral Cure in Chronic HCV Infection - Pilot Feasibility Study (Gaiha)	93.855	28,810	-

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DEPARTMENT OF HEALTH & HUMAN SERVICES	6940260	233405	Harnessing Diverse BioInformatic Approaches to Repurpose Drugs for Alzheimers Disease (R01 Resub)	93.866	48,948	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940323	233811	Leveraging Artificial Intelligence for the assessment of severity of depressive symptoms	93.242	87,670	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940103	2R01HL098026-05A1	Multi-Scale Integration of Extracellular Matrix Mechanics in Vascular Remodeling - Iksung Kang	93.837	5,299	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939777	MGH PEOPLESOFT # 230662	Noninvasive Low-cost Biomarkers for Preclinical Diagnosis and Longitudinal Tracking of Alzheimer's Disease Using Sleep and Resting State EEG - Amanda Beck	93.866	38,790	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937425	SUBAWARD 231183	Parallel Excitation Methods for High Field MRI, NIH, PA-16-160	93.286	231,893	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938915	SUBAWARD NO. 230203	Non-Human Primate Studies of Anesthetic Action	93.279	87,397	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937453	SUBAWARD NO. 231125	Sleep-dependent Memory Processing in Schizophrenia	93.279	109,081	-
			Total for Massachusetts General Hospital		**1,935,796**	**-**
La Jolla Institute for Allergy and Immunology						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940706	22496-33-382	Maximizing germinal centers and somatic hypermutation to HIV Env immunogens	93.855	54,460	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938434	22498-33-382	Maximizing germinal centers and somatic hypermutation to HIV Env immunogens	93.855	126,530	-
			Total for La Jolla Institute for Allergy and Immunology		**180,990**	**-**
European Bioinformatics Institute						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938887	2582	GENCODE: comprehensive genome annotation for human and mouse	93.172	139,949	-
			Total for European Bioinformatics Institute		**139,949**	**-**
Board of Regents of the University System of Georgia						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940330	30835-62	Cholera toxin, microbiome and obesity	93.847	70,017	-
			Total for Board of Regents of the University System of Georgia		**70,017**	**-**
University of Kentucky						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938783	3200001830-18-315	Inflammation in human obesity and type 2 diabetes	93.847	132,869	-
			Total for University of Kentucky		**132,869**	**-**

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Georgetown University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6930175	410646-GR409880-MIT	Non-Invasive Evaluation of Transplant Kidney using OCT	93.847	12,573	-
			Total for Georgetown University		**12,573**	**-**
National Bureau of Economic Research, Inc.						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6936576	4117B.MIT	Determinants of Medical Spending for the Elderly: Insurance, Patents, Providers	93.866	256,440	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940132	4126B.MIT	What Does Health Insurance Do? Evidence from the Oregon Health Insurance Lottery	93.866	64,692	-
			Total for National Bureau of Economic Research, Inc.		**321,132**	**-**
University of Rochester						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940288	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	88,933	-
			Total for University of Rochester		**88,933**	**-**
Institut Pasteur						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938474	4300002726	Dynamic 3D folding of the mammalian genome: molecular determinants and impact on gene expression in vivo	93.393	17,315	-
			Total for Institut Pasteur		**17,315**	**-**
Boston University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6933002	4500001922	Engineering Multicellular Tissue Structure, Function, and Vascularization	93.286	264,506	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939954	4500002883	MRI, Genetic and Cognitive Precursors of AD & Dementia	93.866	1,645	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937260	50203805	Letter Agreement: Shoshana Das 110117 - 053118	93.286	0	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939502	50203805.2	Letter Agreement : Hyun Ho Greco Song 060118-053119	93.286	68,167	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939543	50204332	Billing Agreement - Shoshana Das Mechanoelectrical Interactions Between Cardiac Myofibroblasts and Myocytes	93.837	2,579	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939758	50204332.2	Billing Agreement - Shoshana Das Mechanoelectrical Interactions Between Cardiac Myofibroblasts and Myocytes	93.837	16,106	-

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DEPARTMENT OF HEALTH & HUMAN SERVICES	6938063	SUBAWARD NO.4500002555	Integrated compressive sensing microscope for high-speed biological imaging	93.867	223,440	-
			Total for Boston University		**576,443**	**-**
The Broad Institute, Inc.						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939401	5000094-5500000814	SYSTEMATIC IDENTIFICATION OF ONCOGENIC KRAS SYNTHETIC LETHAL INTERACTIONS	93.396	226,670	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937040	5500000814-5000091	SYSTEMATIC IDENTIFICATION OF ONCOGENIC KRAS SYNTHETIC LETHAL INTERACTIONS	93.396	8,463	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937168	5610221-5500000694	There and Back Again: Epigenetic	93.310	-43,904	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939273	5610225-5500000694	There and Back Again: Epigenetic	93.310	349,747	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940011	5610227-5500001212	Deciphering the Role of Kinase Signaling and Epigenetic States in a Down Syndrome Model of Alzheimer's Disease	93.310	64,979	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940346	5700171-5500000731	RNA based diagnostics for rapid pathogen identification and drug resistance	93.855	93,594	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6933531	5700172-5500000731	RNA based diagnostics for rapid pathogen identification and drug resistance	93.855	204,473	-
			Total for The Broad Institute, Inc.		**904,022**	**-**
Northeastern University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6933466	500449-78050	Predictability in Complex Object Control	93.865	-4,573	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6936932	500489-78051	GuMI: New In Vitro Platforms to Parse the Human Gut Epithelial-Microbiome-Immune Axis	93.286	1,133,097	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6935732	500514-78051	Quantification of Predictive Motor Impairments in Individuals with ASD	93.865	42,175	-
			Total for Northeastern University		**1,170,699**	**-**
Tufts Medical Center						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940174	5014371-SERV/U24TR001609	Johns Hopkins-Tufts Trial Innovation Center	93.350	84,501	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939673	PO EP0182273 / 102188-00001-ELAZER_EDELMAN	Clinical and Translational Science Award U54	93.350	752,377	-
			Total for Tufts Medical Center		**836,877**	**-**
The Scripps Research Institute						

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DEPARTMENT OF HEALTH & HUMAN SERVICES	6936745	5-53276	CHAVI-ID: Research Focus 2	93.855	-15,802	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937773	5-53446	S-Nitrosylation-induced posttranslational modification and aberrant cell signaling in sporadic Alzheimer's disease	93.866	-2,748	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938407	5-53517	The Consortium for Viral Systems Biology (CViSB)	93.855	76,332	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938790	5-53702	S-Nitrosylation-induced posttranslational modification and aberrant cell signaling in sporadic Alzheimer's disease	93.866	124,762	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938990	5-53735	CHAVI-ID: Research Focus 2	93.855	388,919	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940241	5-53937	The Consortium for Viral Systems Biology (CViSB)	93.855	18,287	-
			Total for The Scripps Research Institute		**589,750**	**-**
University of Pennsylvania						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938126	565369	A vascularized three-dimensional biomimetic for islet function and physiology	93.847	2,515	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938240	573341	Recording Neural Activities onto DNA	93.242	375,167	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940083	SUB #565369 / PO# PO# TO 4201790	A vascularized three-dimensional biomimetic for islet function and physiology	93.847	10,848	-
			Total for University of Pennsylvania		**388,530**	**-**
Northwestern University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939942	60039739 MIT	Spatio-temporal organization of chromatin and information transfer in cancer	93.397	72,475	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940198	60047352 MIT	Bayesian Generative Methods for Extracting and Modeling Relations in EHR Narratives	93.879	19,885	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940249	SP0046269-PROJ001311	Whole-brain recording into nucleic acids using template-independent polymerases	93.853	281,591	-
			Total for Northwestern University		**373,950**	**-**
Ohio State University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939414	60043772-MIT; PO RF01508164	A model-based examination of behavioral and social science workforce: Improving health outcomes	93.859	14,248	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938231	60064327-MIT; PO RF01508164	A model-based examination of behavioral and social science workforce: Improving health outcomes	93.859	-8,525	-

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			Total for Ohio State University		**5,723**	**-**
Stanford University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939774	61917338-28291	Using a tonsil organoid system to probe conditions for the induction of protective antibody and T cell responses to influenza	93.855	93,022	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940874	62196377-28291	Influenza responses and repertoire in vaccination, infection and tonsil organoids	93.855	30,296	-
			Total for Stanford University		**123,318**	**-**
Cold Spring Harbor Laboratory						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939604	64580127/PO# 921003-SV	A High Resolution Cell Type Atlas of the Mouse Forebrain.	93.242	277,373	-
			Total for Cold Spring Harbor Laboratory		**277,373**	**-**
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	101,071	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6934999	9574SC	PROJECT 1: Defining the unique properties of the distinct signaling machinery used by TCR	93.855	109,627	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6935000	9583SC	PROJECT 2: Defining the unique properties of the distinct signaling machinery used by TCR	93.855	40,024	-
			Total for University of California - San Francisco		**250,722**	**-**
University of Southern California						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937830	96266729	Anatomical characterization of neuronal cell types of the mouse brain	93.242	-20,500	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939012	96266729 ; REFERENCE 105553021	Anatomical characterization of neuronal cell types of the mouse brain	93.242	90,252	-
			Total for University of Southern California		**69,752**	**-**
University of Minnesota						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937571	A006079901	Robotic platform for high-density in vivo intracellular recording from mammalian circuits	93.853	71,653	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939756	P007183803	Genetic Association Meta-Analyses of Smoking and Drinking for the Sequencing Age	93.279	81,561	-
			Total for University of Minnesota		**153,213**	**-**
University of California/Davis						

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DEPARTMENT OF HEALTH & HUMAN SERVICES	6937292	A18-0226-S002	Facile Synthesis of Microbial Polysaccharides	93.310	252,512	-
			Total for University of California/Davis		**252,512**	**-**
Novopyxis, Inc.						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940061	AGMT DTD 11/29/2018	Droplette: A Platform Technology to Deliver Nucleic Acid Therapeutics Deep into Tissue for the Treatment of Epidermolysis Bullosa and Other Genetic Diseases	93.286	10,475	-
			Total for Novopyxis, Inc.		**10,475**	**-**
Praevium Research Inc.						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940040	AGMT DTD 9/17/2018	Low-cost and high performance MEMS-VCSEL technology for next generation swept source optical coherence tomography and microscopy	93.394	37,610	-
			Total for Praevium Research Inc.		**37,610**	**-**
Superconducting Systems, Inc.						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938777	AGMT. DTD. 9/22/15	Compact light weight superconducting bending magnets for gantries	93.395	182,286	-
			Total for Superconducting Systems, Inc.		**182,286**	**-**
Boston Medical Center						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939705	AGREEMENT 4292	Biomarkers and Mechanisms of Paucibacillary and Latent Tuberculosis	93.855	32,569	-
			Total for Boston Medical Center		**32,569**	**-**
LeafLabs, LLC						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938518	AGREEMENT DATED 9/21/17	Ultra-high channel count electrophysiology and data processing for freely-moving animals	93.242	56,067	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6934221	R43MH109332-01	High Speed, Multi-sensor Light Field Deconvolution Microscopy for Whole Brain Recording of Neuronal Activity	93.242	18,437	-
			Total for LeafLabs, LLC		**74,505**	**-**
Boulder Nonlinear Systems Inc.						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6935482	AGREEMENT DATED 9/27/16	A Next-Generation Spatial Light Modulator for Mapping of Neural Networks	93.286	66,091	-
			Total for Boulder Nonlinear Systems Inc.		**66,091**	**-**
Ension, Inc.						

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DEPARTMENT OF HEALTH & HUMAN SERVICES	6935051	AGREEMENT EFFECTIVE 08/15/16	Magnetically-Levitated Motor/Impeller in a Blood Pump-Oxygenator for Extracorporeal Pediatric Life Support	93.837	7,892	-
			Total for Ension, Inc.		**7,892**	**-**
Integrated Laboratory Systems, Inc.						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6930834	AGREEMENT EFFECTIVE 9/26/14	SBIR CometChip: Development of a high throughput DNA damage assay in hepatocytes	93.113	6,473	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939579	SUB UNDER U44ES024698	SBIR: CometChip: Novel Advances in Throughput and Capacity for the in vivo Comet Assay	93.113	135,474	-
			Total for Integrated Laboratory Systems, Inc.		**141,947**	**-**
University of Kansas						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6935990	FY2017-077	Microfluidic Integrative Circulating miRNA Profiling for Cancer Diagnosis	93.286	85,241	-
			Total for University of Kansas		**85,241**	**-**
Children's Hospital Boston						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937612	GENFD0001332333	Customized stem cells for clinical application in blood disorders	93.847	30,863	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937622	GENFD0001351238	Noninvasive Realtime Assessment of Placental Structure and Function with Novel MR Imaging Methods	93.865	69,227	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938552	GENFD0001442726	Advanced Fetal Imaging	93.286	263,764	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939366	GENFD0001510131	Morphology-based forward genetic screens of mammalian cells through integration of Cas9 mutagenesis and image-based cell sorting	93.865	74,693	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939784	GENFD0001538557	Novel Biologic Therapies for BMT: Mechanistic Evaluation in Rhesus Macaques	93.839	92,035	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939961	GENFD0001548986	Noninvasive Realtime Assessment of Placental Structure and Function with Novel MR Imaging Methods	93.865	139,659	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939964	GENFD0001552721	Customized stem cells for clinical application in blood disorders	93.847	134,266	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6936589	PO#0000704243	Gastrointestinal Microflora Changes in Children Treated with Proton Pump	93.847	924	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940032	PO#GENFD0001566187	Gastrointestinal Microflora Changes in Children Treated with Proton Pump	93.847	26,057	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6936340	RSTFD0000689449	Advanced Fetal Imaging	93.286	391	-
			Total for Children's Hospital Boston		**831,878**	**-**

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Yale University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6935083	GK000523 (CON-80000585)	Dynamic Neuroimmune Profiling in Patients with Acute Intracerebral Hemorrhage.	93.853	102,561	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937723	GR100963(CON-80001033)	Costimulatory Mechanisms of Autoimmunity	93.866	163,595	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6928778	M14A11743(A09391)	Modeling human phosphorylation networks through kinome-wide profiling	93.859	-1,814	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940272	M17A12653(A10974)	Systems Immune Profiling of Divergent Responses to Infection	93.855	141,566	-
			Total for Yale University		**405,908**	**-**
Tufts University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939293	HH4977 / PO# EP0159433	Competing Segment: Models to Predict Protein Biomaterial Performance	93.286	125,759	-
			Total for Tufts University		**125,759**	**-**
Janssen Vaccines & Prevention B.V.						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6936202	HHSN272200800056C	Phenotypic and transcriptomic correlates of immunity for filovirus vaccination	93.RD	57,734	-
			Total for Janssen Vaccines & Prevention B.V		**57,734**	**-**
Mayo Clinic Rochester						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939581	MAS-228292 PO#65353103	The Mayo GBM Xenograft National Resource	93.853	57,946	-
			Total for Mayo Clinic Rochester		**57,946**	**-**
Mayo Clinic						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938482	MAS-237886/PO# 65844500	Therapeutic modulation of the phagocytosis axis as a novel glioblastoma immunotherapy	93.853	106,006	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6931830	PO 64653198	Mechanisms of prolonged initial disease-free survival in glioblastoma	93.396	-9	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6936547	PO 65286973	Mechanisms of prolonged initial disease-free survival in glioblastoma	93.396	-6,099	-
			Total for Mayo Clinic		**99,898**	**-**
Forsyth Institute						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938467	MIT027850-2605	The Syngenic DNA and uPOET Platform: Overcoming Innate Barriers to Genetic Engineering in Bacteria	93.121	174,613	-

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			Total for Forsyth Institute		**174,613**	**-**
University of Massachusetts Medical Center						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937122	OSP2018017/PO# WA00597773	Targeting proteotoxic stress responses in liver fibrosis	93.273	7,229	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939645	OSP2018125	Develop combinatorial non-viral and viral CRISPR delivery for lung diseases	93.310	145,219	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6935160	WA00474875/OSP2017051	Center for 3D Structure and Physics of the Genome	93.310	-171	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6936250	WA00540618/OSP2017186	EDAC: ENCODE Data Analysis Center	93.172	-111,528	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937640	WA00620167 / OSP2017050	Center for 3D Structure and Physics of the Genome	93.310	253,211	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937565	WA00620169/OSP2017052	Center for 3D Structure and Physics of the Genome	93.310	3,339	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938367	WA00665463/OSP2017186	EDAC: ENCODE Data Analysis Center	93.172	169,539	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939744	WA00753477/ OSP2017050	Center for 3D Structure and Physics of the Genome	93.310	307,850	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6933357	WA00753479/OSP2017052	Center for 3D Structure and Physics of the Genome	93.310	91,382	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940335	WA00805796/OSP2017186	EDAC: ENCODE Data Analysis Center	93.172	5,653	-
			Total for University of Massachusetts Medical Center		**871,723**	**-**
Texas Biomedical Research Institute						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939522	PO 39803	Defense-in-depth against mucosal HIV clade C invasion	93.855	398,581	-
			Total for Texas Biomedical Research Institute		**398,581**	**-**
University of Florida						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6933008	PRIME 00124227, SUB UFDSP00010950	Complex Modifications of tRNA: Regulatory Roles and Crosstalk with DNA Metabolism	93.859	65,000	-
			Total for University of Florida		**65,000**	**-**
Michigan State University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939973	RC109146MIT	Dynamic Imaging of EMT in the Breast Cancer Microenvironment	93.396	164,071	-
			Total for Michigan State University		**164,071**	**-**

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Case Western Reserve University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6935084	RES511404	Magnetic Resonance Fingerprinting (MRF) for Improved High Field MR	93.286	14,214	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939787	RES513708	The Brainstorm Project: A Collaborative Approach to Developing the Neuroethics of Bioengineered Brain Modeling Research	93.242	56,592	-
			Total for Case Western Reserve University		**70,806**	**-**
Magee-Womens Research Institute & Foundation						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6932950	RSA 3503	Extracellular vesicles and their ncRNAs cargo as markers of trophoblast injury	93.865	764	-
			Total for Magee-Womens Research Institute & Foundation		**764**	**-**
University of California-Riverside						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939893	S-001090	RAPs-mediated post-transcriptional control in Apicomplexan parasites	93.855	103,048	-
			Total for University of California-Riverside		**103,048**	**-**
DeNovX, LLC						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940412	SBIR DTD 03/22/2019	Nucleation Enhanced Crystallization of Pharmaceuticals in Continuous Flow Manufacturing to Mitigate Therapeutic Drug Shortages	93.35	24,014	-
			Total for DeNovX, LLC		**24,014**	**-**
CREARE, Incorporated						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940410	SUB# S633 / PO# 99163	Lab Drone Phase II	93.RD	13,700	-
			Total for CREARE, Incorporated		**13,700**	**-**
Brown University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937534	SUBAWARD 00000624	Multiscale Modeling of Sickle Cell Anemia: Methods and Validation	93.839	69,468	-
			Total for Brown University		**69,468**	**-**
University of California - Irvine						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938824	SUBAWARD NO. 2014-3129	Neuron and Glial cellular signatures from normal and diseased iPS cells	93.853	554,157	-
			Total for University of California - Irvine		**554,157**	**-**

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University of Michigan						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6934493	SUBAWARD NO. 3004053346	An Accessible Toolbox for Comprehensive Analysis of Neural Tissue Architecture	93.242	357,229	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938961	SUBK00009075 / PO#3005013133	Analysis and Characterization of Trauma-Induced Coagulopathy	93.839	220,283	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939952	SUBK00010385	Duffy Antigen Receptor for Cytokines and Early IL-8 Mediated Neurophil Responses to Coagulation in Major Trauma-Project 1	93.839	12,907	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6939963	SUBK00010396	Human Neutrophil Elastase as a Mediator of Fibrinolysis Shutdown (Pilot 2)	93.839	10,589	-
			Total for University of Michigan		**601,008**	**-**
Solid Material Solutions, LLE						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6936916	SUBCONTRACT EFFECTIVE 08/15/2017	SBIR: Persistent-mode, liquid-helium-free, robust Bi2212 magnets for MRI and >1GHz NMR	93.286	10	-
			Total for Solid Material Solutions, LLE		**10**	**-**
University of Connecticut Health Center						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938544	UCHC7-101012378	A Comprehensive Functional Map of Human Protein-RNA Interactions	93.172	27,218	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6938543	UCHC7-101012378 - CORE# 500693	A Comprehensive Functional Map of Human Protein-RNA Interactions	93.172	5,655	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940352	UCHC7-101012378 - CORE# 500784	A Comprehensive Functional Map of Human Protein-RNA Interactions	93.172	18,074	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940351	UCHC7-101012378 - CORE# 500785	A Comprehensive Functional Map of Human Protein-RNA Interactions	93.172	135,664	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6940350	UCHC7-101012378 - CORE# 500786	A Comprehensive Functional Map of Human Protein-RNA Interactions	93.172	7,013	-
DEPARTMENT OF HEALTH & HUMAN SERVICES	6936790	UCHC7-88094960-A3	Comprehensive Analysis of Functional RNA Elements Encoded in the Human Genome	93.172	237,093	-
			Total for University of Connecticut Health Center		**430,718**	**-**
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	113,518	-
			Total for University of Texas - Austin		**113,518**	**-**
Vanderbilt University Medical Center						

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DEPARTMENT OF HEALTH & HUMAN SERVICES	6936710	VUMC 36112	Etiologic Studies of Gastric Carcinoma	93.393	171,898	-
			Total for Vanderbilt University Medical Center		**171,898**	**-**
Washington University in St. Louis-School of Medicine						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6933957	WU-16-329	Role of IL-17 in Protective Vaccine-induced Immune Responses Against Tuberculosis	93.837	-14,916	-
			Total for Washington University in St. Louis-School of Medicine		**-14,916**	**-**
Washington University						
DEPARTMENT OF HEALTH & HUMAN SERVICES	6937711	WU-18-160	Cross-scale interactions between mineral and collagen for tendon-bone attachment	93.286	-6,359	-
			Total for Washington University		**-6,359**	**-**
			TOTAL for Department of Health & Human Services		**21,215,140**	**-**

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DEPARTMENT OF HOMELAND SECURITY						
National Academy of Sciences						
DEPARTMENT OF HOMELAND SECURITY	6939596	2000009447	Post-Hurricane Supply Chain Adaptability Study	97.RD	245,711	-
			Total for National Academy of Sciences		**245,711**	**-**
Lincoln Laboratory						
DEPARTMENT OF HOMELAND SECURITY	6937248	PO# 7000397469	Alternatives for FEMA Disaster-Related Housing Assistance	97.RD	113,670	-
			Total for Lincoln Laboratory		**113,670**	**-**
			TOTAL for Department of Homeland Security		**359,381**	**-**

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DEPARTMENT OF TRANSPORTATION						
University of Maryland - College Park						
DEPARTMENT OF TRANSPORTATION	6937703	53580-Z9090201	Commercial Space Modeling and Analysis	20.RD	47,827	-
DEPARTMENT OF TRANSPORTATION	6937501	53583-Z9089201	NEXTOR II WAKE TURBULENCE RESEARCH: PHASE 4	20.RD	19,935	-
			Total for University of Maryland - College Park		**67,762**	**-**
General Electric Company						
DEPARTMENT OF TRANSPORTATION	6940636	PO# 401122591	Design and Evaluation of a Robust Manual Locomotive Operating Mode	20.RD	14,155	-
			Total for General Electric Company		**14,155**	**-**
Aurora Flight Sciences Corporation						
DEPARTMENT OF TRANSPORTATION	6940024	SUBCONTRACT AMA-18-0030	Monitoring Engineer Fatigue (MEFA) System	20.RD	12,712	-
DEPARTMENT OF TRANSPORTATION	6939421	SUBCONTRACT# AMA-18-0027	External Perception for Locomotives (ExP-L)	20.RD	45,568	-
			Total for Aurora Flight Sciences Corporation		**58,280**	**-**
			TOTAL for Department of Transportation		**140,197**	**-**

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Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
MISCELLANEOUS FEDERAL GOVT						
University of Southern California						
MISCELLANEOUS FEDERAL GOVT	6939291	104480971	SCEC5 Research Collaboration with the Massachusetts Institute of Technology: (18116) Development of merged GPS time series for the Community Geodetic Model	15.807	37,981	-
			Total for University of Southern California		**37,981**	**-**
University of California-San Diego						
MISCELLANEOUS FEDERAL GOVT	6940152	111438341	Nonequilibrium Order Parameter Optoelectronics for Quantum Information Processing (NOPO-QuIP)	12.910	209,159	-
			Total for University of California-San Diego		**209,159**	**-**
Purdue University						
MISCELLANEOUS FEDERAL GOVT	6940314	15200066-022	MCOQA: Mechanically-driven, COherence-enhanced Quantum Angle	12.910	131,354	-
			Total for Purdue University		**131,354**	**-**
Harvard University						
MISCELLANEOUS FEDERAL GOVT	6933698	167937-5093336	Cortical Architecture and Algorithms for Machine Listening	15.RD	71,426	-
			Total for Harvard University		**71,426**	**-**
Dynamic Object Language Labs, Inc.						
MISCELLANEOUS FEDERAL GOVT	6939149	AGREEMENT EFF. 07/01/2016	Context-driven Active-Sensing for Repair Tasks (CART)	12.RD	145,391	-
			Total for Dynamic Object Language Labs, Inc.		**145,391**	**-**
Institut Teknologi Bandung (ITB)						
MISCELLANEOUS FEDERAL GOVT	6938673	0600/I1.B04/PKS-WRRIM/IV/2018	Mechanical Integrity of Electric Vehicle Battery Packs	98.RD	3,408	-
			Total for Institut Teknologi Bandung (ITB)		**3,408**	**-**
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	243,282	-
			Total for Harvard School of Public Health		**243,282**	**-**

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RTI International						
MISCELLANEOUS FEDERAL GOVT	6938644	16-312-0213426-65208L/PO 65208L	Modeling The Economy and The Electricity Sector To Support EPA's Air Regulation	66.RD	149,492	-
			Total for RTI International		**149,492**	**-**
Middlesex County						
MISCELLANEOUS FEDERAL GOVT	6938232	AGMT. DTD. 04/02/18	Justice and Mental Health Collaboration	16.745	15	-
			Total for Middlesex County		**15**	**-**
Agribusiness Associates						
MISCELLANEOUS FEDERAL GOVT	6940227	AGREEMENT DTD 1/16/19	Evaporative cooling collaboration between D-Lab and ABA	98.RD	16,224	-
			Total for Agribusiness Associates		**16,224**	**-**
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	144,509	-
			Total for Yale University		**144,509**	**-**
The QED Group LLC						
MISCELLANEOUS FEDERAL GOVT	6932640	KDAD-15-001	eLearning Assessment	98.RD	-3,090	-
			Total for The QED Group LLC		**-3,090**	**-**
University of Hawaii						
MISCELLANEOUS FEDERAL GOVT	6934636	MA1030	Disaster Management Early Warning and Decision Support Capacity Enhancement within Indonesia's BNPB and BPBD - PARENT	98.001	58,850	-
			Total for University of Hawaii		**58,850**	**-**
FORS MARSH GROUP LLC						
MISCELLANEOUS FEDERAL GOVT	6939292	MIT1801	Improving the Collection and Reporting of Election Administration Data	90.RD	9,376	-
			Total for FORS MARSH GROUP LLC		**9,376**	**-**
The Water Institute of the Gulf						
MISCELLANEOUS FEDERAL GOVT	6938973	NAS-2017-TRAN-CE	Sediment Transport Within Vegetation: Establishing Data Collection Practices to Inform Numerical Modeling	11.RD	66,429	-

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			Total for The Water Institute of the Gulf		**66,429**	**-**
National Academy of Sciences						
MISCELLANEOUS FEDERAL GOVT	6938265	SUBAWARD 2000009130	Water Desalination Using Solar-Powered Capacitive Deionization Technology and Abundant Natural Resources	98.001	4,768	-
			Total for National Academy of Sciences		**4,768**	**-**
			TOTAL for Miscellaneous Federal Govt		**1,288,572**	**-**

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION						
Brown University						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6930189	00000677	SSERVI: Environment and Evolution of Exploration Destinations: Science and Engineering Synergism	43.001	194,257	-
			Total for Brown University		**194,257**	**-**
University of California - Berkeley						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6935635	00009378	High-Order Methods for Fluid Structure Interaction	43.002	171,738	-
			Total for University of California - Berkeley		**171,738**	**-**
ATAC Corporation						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6935423	10-1613-MIT	Assessment of the benefits and costs of integrating arrival, departure, and surface operations with ATD-2	43.RD	-6	-
			Total for ATAC Corporation		**-6**	**-**
Applied Physics Lab of Johns Hopkins						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6931748	126755	Research Opportunities in Space and Earth Sciences 2014	43.001	44,851	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6936841	SUBAWARD 141711	Anatomy of tori: comparing the extremes demonstrated by Jupiter's and Saturn's Magnetospheres	43.001	30,517	-
			Total for Applied Physics Lab of Johns Hopkins		**75,369**	**-**
CalTech - Jet Propulsion Lab						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6899758	1283622	Voyager Interstellar Mission (VIM) Plasma Science	43.RD	373,939	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6932364	1532689	EUROPA - MISE Co-I Subcontract	43.RD	28,977	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6938408	1597152	Ionization and Enrichment of Intergalactic Gas Near the Reionization Epoch	43.001	4,486	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6938679	1601016	CODED APERTURE DEPTH SENSOR	43.RD	10,304	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6932365	CREI 1532602	EUROPA - ICEMAG	43.RD	56,369	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6936100	CREI 1572041	ECCO: Understanding Sea Level, Ice, and Earth's Climate	43.RD	275,345	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6936482	CREI 1576768	Psyche - JPL	43.RD	265,600	-

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6938396	CREI 1598315	MIT CSAIL - JPL Cyber Defense Engineering and Research (CDER)	43.001	24,814	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6940477	CREI 1623249	Theory of thermal transport in nanocomposite materials	43.RD	35,236	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6937443	RSA 1584272	Critical Support Data for Triton Atmosphere Study	43.RD	784	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6937444	RSA 1585980	Recent sea-ice and ice-sheet changes and their relation to the coupled ocean-atmosphere system	43.RD	20,657	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6939413	RSA 1611947	Radial Velocity Confirmation of K2 Warm Jupiter Candidates (PID 24/2018B_N160)	43.RD	6,193	-
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	38,504	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6939828	RSA 1615555	Integration of superconducting detectors and CMOS optical modulators for scalable cryogenic readout	43.001	26,250	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6940456	RSA 1626219	Photometric Performance Validation for the ASTERIA Space Telescope	43.RD	3,473	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6937454	RSA NO. 1572919	Consortium on Ultracold Atoms in Space - Year 4	43.001	436	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6938099	RSA NO. 1592331	High-Time-Resolution Detectors for High-Data-Rate-Deep-Space-Optical-Communications	43.RD	890	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6938775	RSA NO. 1592882	Consortium on Ultracold Atoms in Space - Year 5	43.001	24,760	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6939866	RSA NO. 1608107	Consortium on Ultracold Atoms in Space - Year 6	43.RD	78,966	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6939711	SUB# 1613399	In-Space Assembly of Telescopes (iSAT)	43.RD	59,977	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6940242	SUBCONTRACT 1619845	Specification-guided and Capability-aware Autonomy for Long-endurance Situational Awareness in Subterranean Environments	43.RD	92,428	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6930713	SUBCONTRACT NO. 1510842	Soil Moisture Science and Product Development	43.RD	308,591	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6939956	SUBCONTRACT NO. 1610367	Arcsecond Space Telescope Enabling Research in Astrophysics (ASTERIA) Extended Mission	43.RD	22,076	-
			Total for CalTech - Jet Propulsion Lab		**1,759,054**	**-**
University of Colorado Boulder						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6932162	1552615/ PO #1000510992	Rock Powered Life	43.001	110,411	-
			Total for University of Colorado Boulder		**110,411**	**-**

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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	41,175	-
			Total for University of New Hampshire		**41,175**	**-**
Arizona State University						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6937931	18-391	High Temperature GaN Microprocessor for Space Applications	43.001	123,877	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6937562	SUBCONTRACT NO. 17-257	Psyche: Journey to a Metal World (ASU)	43.RD	317,549	-
			Total for Arizona State University		**441,425**	**-**
Lowell Observatory						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6932482	2015-81520	Occultation Studies of Small Bodies in the Outer Solar System	43.RD	49,702	-
			Total for Lowell Observatory		**49,702**	**-**
Syracuse University						
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	56,502	-
			Total for Syracuse University		**56,502**	**-**
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	76,263	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6938097	K99059JRG	Lucy Phase B	43.RD	18,427	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6939450	L99059JRG	Investigating clouds and fogs on Titan	43.001	19,991	-
			Total for Southwest Research Institute		**114,681**	**-**
University of Michigan						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6933514	3003768337	Scalable Multifidelity Design Optimization: Next Generation Aircraft and their Impact on the Air Transportation System--Phase II	43.002	0	-
			Total for University of Michigan		**0**	**-**
Purdue University						

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6929534	4103-60255	Regional and Global Climate and Societal Impacts of Land-Use and Land-Cover Change in Northern Eurasia: A Synthesis Study Using Remote Sensing Data and An Integrated Global System Model	43.001	-686	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6935856	4103-76778	Constraining lunar crater saturation by modeling GRAIL porosity	43.001	54,896	-
			Total for Purdue University		**54,210**	**-**
Space Telescope Science Institute						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6939755	50998	JWST Telescope Scientist Investigations - 2	43.001	61,240	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6935587	HST-GO-13639.014-A	Resolving Lyman-alpha Emission On Physical Scales < 270 pc at z > 4 (HST-GO-13639)	43.RD	-197	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6933896	HST-GO-14352.009-A	Deep X-ray Observations of 3 exceptional high-z clusters of galaxies (HST GO-14352)	43.RD	3,552	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6935437	HST-GO-14677.006-A	Probing the most distant high-mass galaxy clusters from SPT with HST weak lensing observations	43.RD	1,874	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6937960	HST-GO-14690.001	Identifing the last unkown emission component in the Herbig system HD 163296 (HST GO-14690)	43.RD	713	-
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	5,734	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6937987	HST-GO-14797.015-A	Atmospheric Albedos, Alkalis, and Aerosols of Hot Jupiters (HST 14797)	43.RD	69,301	-
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	1,759	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6937777	HST-GO-15129.010-A	Completing Kepler's Mission to Determine the Frequency of Earth-like Planets (HST 15129)	43.RD	32,850	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6938918	HST-GO-15163.011-A	COS Ultraviolet Baryon Survey (CUBS) (HST 15163)	43.RD	18,741	-
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	3,938	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6938438	HST-GO-15217.001-A	Imaging the predicted asteroid belt analogue around Epsilon Eridani	43.RD	20,927	-
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	21,038	-
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	77,348	-
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	29,489	-

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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	65,432	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6939680	HST-GO-15377.006-A	Does the Brightest Strongly Lensed Galaxy Contain An AGN? (HST 15377)	43.RD	12,174	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6938955	HST-GO-15378.006-A	The Chandra Strong Lens Sample: Revealing Baryonic Physics In Strong Lensing Selected Clusters (HST 15378)	43.RD	29,521	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6938951	HST-GO-15418.002-A	Probing spatially variable Lyman-continuum escape from the brightest lensed galaxy in the universe (HST 15418)	43.RD	18,231	-
			Total for Space Telescope Science Institute		**473,664**	**-**
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	382,652	19,953
			Total for Pennsylvania State University		**382,652**	**19,953**
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	21,904	-
			Total for University of Pennsylvania		**21,904**	**-**
Stanford University						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6934882	61238711-122362	WFIRST - Exoplanet Coronagraphy Science Team	43.001	49,084	-
			Total for Stanford University		**49,084**	**-**
Baylor College of Medicine						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6936096	7000000324 / TRISH PROJ# DS002	Transitional Research Institute	43.003	272,258	219,876
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6937667	NNX16A069A/PO#70000048 3	Gastrointestinal Devices for Long-Term In Situ Delivery of Therapeutic Microbes	43.003	271,376	-
			Total for Baylor College of Medicine		**543,635**	**219,876**
Cornell University						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6939699	83292-11129	Sun Glints on Hydrocarbon Seas: Using Wind-Waves to Constrain Surface Winds on Titan	43.001	59,076	-
			Total for Cornell University		**59,076**	**-**
University of California-San Diego						

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6937442	93687042 (PO# S9001789)	IS THE CYCLOTRON LINE ENERGY OF 4U 1538-522 INCREASING OVER TIME? (NUSTAR 2230, Hemphill transfer)	43.RD	22,523	-
			Total for University of California-San Diego		**22,523**	**-**
Woods Hole Oceanographic Institution						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6935447	A101331	Cooperative Exploration with Under-actuated Autonomous Vehicles in Hazardous Environments	43.001	46,876	-
			Total for Woods Hole Oceanographic Institution		**46,876**	**-**
Cross Trac Engineering, Inc.						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6940038	AGMT DTD 10/19/18	Optical Intersatellite Communications for CubeSat Swarms	43.001	85,743	-
			Total for Cross Trac Engineering, Inc.		**85,743**	**-**
Aerospace Corporation						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6934403	AGREEMENT DATED 6-2-2016	Storm-time Dynamics of the Plasmapause and the Ionosphere/Magnetosphere System	43.001	25,611	-
			Total for Aerospace Corporation		**25,611**	**-**
University of Idaho						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6933536	AMK162-SB-001	Waves and Surface Roughness on Titan from Specular Sun Glints	43.001	2,285	-
			Total for University of Idaho		**2,285**	**-**
Smithsonian Inst. - Astrophysical Observatory						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6936158	AR7-18001X	TRACING THE ACCRETION SHOCK IN YOUNG STARS (Chandra 18200023)	43.RD	390	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6937952	AR8-19001B	Spectral Classification of Massive Stars Based on Their X-ray Spectra (Chandra 19200002)	43.RD	7,381	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6934205	DD5-16077X	The Dim State of RW Aur (Chandra 16208505)	43.001	-70	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6927863	GO3-14003A	Wolf-Rayet Winds at High Spectral Resolution (Chandra 14200176)	43.RD	-164	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6931726	GO4-15008X	Wind Properties in a Very Young Pup (Chandra 15200426)	43.RD	37,669	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6930733	GO4-15040A	SS433 Jet Formation	43.RD	13,855	-

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6929736	GO4-15091B	Monitoring the Tidal Disruption of the Gas Cloud G2 As It Encounters Sgr A* (Chandra 15620853)	43.RD	61,225	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6931519	GO5-16009A	A Deep X-ray look at a very massive star: HETGS spectroscopy of the blue hypergiant HIP 101364 (Chandra 16200225)	43.RD	21,608	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6932415	GO5-16141X	A MASS-LIMITED SURVEY OF GALAXY CLUSTERS AT 1.2 < z < 1.7: PROBING THE PHYSICS OF THE ICM DURING ITS ASSEMBLY (Chandra 16800690)	43.001	-333	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6935501	GO6-17011X	How hot can flares from young stars be? (Chandra 17200180)	43.RD	22,091	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6935186	GO6-17019X	X-rays reveal a new, hot jet component: The case of Sz 102 (Chandra 17200524)	43.RD	4,952	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6935588	GO6-17021X	What are the dust properties around young stars? (Chandra 17200708)	43.RD	2,235	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6934204	GO6-17022X	Heating the Primordial Soup: X-raying the Circumstellar Disk of RY Lupi (Chandra 17200709)	43.RD	541	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6935589	GO6-17032X	Precise Localization of Transient Low-Mass X-ray Binaries (Chandra 17400172)	43.RD	205	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6935013	GO6-17112A	Deep X-ray Observations of 3 exceptional high-z clusters of galaxies (Chandra 17800222)	43.001	-3,590	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6935018	GO6-17128A	SPT-CL J0329-2330: CHARACTERIZING THE X-RAY PROPERTIES OF AN EXCEPTIONAL HIGH-REDSHIFT GALAXY CLUSTER (Chandra 17800659)	43.RD	25,713	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6935007	GO6-17136A	Understanding How a Black Hole Feeds: Sgr A* (Chandra 17620813)	43.001	246	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6936479	GO7-18025X	Precise Localization of Transient Low-Mass X-ray Binaries (Chandra 18400089)	43.RD	20,812	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6936844	GO7-18035X	The Puzzling Nature OF THE YOUNG MICROQUASAR CIR X-1 (Chandra 18400420)	43.RD	8,763	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6937614	GO7-18124X	A Deep, High-Resolution X-ray Analysis of the Phoenix Cluster (Chandra 18800481)	43.RD	84,209	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6936846	GO7-18134X	THE ATOMIC TO DUST ABUNDANCE RATIO OF SILICON TOWARDS THE GALACTIC BULGE (Chandra 18910684)	43.RD	390	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6936843	GO7-18135A	Diagnosing the Black Hole Accretion Physics of Sgr A* (Chandra 18620763)	43.RD	6,621	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6940210	GO8-19036X	Precise Localization of Transient Low-Mass X-ray Binaries (Chandra 19400475)	43.001	4,230	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6938406	GO8-19038X	A Test of Black-Hole Disk Truncation: Thermal Disk Emission in the Bright Hard State (Chandra 19400584)	43.RD	25,890	-

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6938404	GO8-19103X	Chandra observations of an exceptional cluster of galaxies at z=1.7 (Chandra 19800141)	43.RD	19,245	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6938403	GO8-19111X	The Chandra Strong Lens Sample: Revealing Baryonic Physics In Strong Lensing Selected Clusters (Chandra 19800436)	43.RD	124,430	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6939903	GO9-20116X	A Unique Sample of Extreme-BCG Clusters at 0.2 < z < 0.6 (Chandra 20800437)	43.RD	50,156	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6926645	SV2-82023	ACIS Science Support for the Chandra Program	43.RD	267,134	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6895251	SV3-73016	Support of the Chandra X-Ray Center (CXC)	43.RD	3,294,511	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6935585	SV7-87005	Fabrication of x-ray reflecton gratings for the MAGIXS mission	43.RD	5,529	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6937023	SV8-88004	Support of the ARCUS Mission: Exploring the Formation and Evolution of Clusters, Galaxies, and Stars	43.RD	98,211	-
			Total for Smithsonian Inst. - Astrophysical Observatory		**4,204,082**	**-**
University of Hawaii						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6938163	MA1336	Discovery and Characterization of Small Planets from the K2 Mission	43.001	13,807	-
			Total for University of Hawaii		**13,807**	**-**
Michigan Technological University						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6937520	NNX17AJ32G	Institute for Ultra-Strong Composites By Computational Design (US-COMP)	43.012	165,196	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6938436	SUB 1607060Z6 / PO P0100197	Institute for Ultra-Strong Composites By Computational Design (US-COMP)	43.012	505,246	-
			Total for Michigan Technological University		**670,442**	**-**
University of Arizona						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6935314	PO 363458	REXIS - REgolith X-ray Imaging Spectrometer Phase E Operations	43.RD	668,393	457,528
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6938420	PO NO. 440148	GUSTO: Gal/Xgal U/LDB Spectroscopic/Stratospheric THz Observatory	43.RD	469,802	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6924918	PURCHASE ORDER 6473	OSIRIS-REx Near-Earth Asteroid Sample Return	43.RD	99,826	-
			Total for University of Arizona		**1,238,022**	**457,528**
Old Dominion University Research Foundation						

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6933006	RF PROJECT NO.: 16-134-100558-010	Extreme-Scale Parallel Mesh Generation: CFD 2030 Vision	43.002	8,781	-
			Total for Old Dominion University Research Foundation		**8,781**	**-**
LongWave Photonics LLC						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6939454	SBIR UNDER 80NSSC18C0090	Tunable, High-Power Terahertz Quantum Cascade Laser Local Oscillator	43.RD	35,693	-
			Total for LongWave Photonics LLC		**35,693**	**-**
Universities Space Research Association						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6938190	SOF-06-0160	Monitoring Titan's Atmosphere in the Post-Cassini Era with Stellar Occulations	43.RD	16,417	-
			Total for Universities Space Research Association		**16,417**	**-**
Northwestern University						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6935231	SP0037418-PROJ0010518	David Goldfinger - continued support on Micro-X	43.001	185	-
			Total for Northwestern University		**185**	**-**
FGC Plasma Solutions						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6939059	STTR DTD. 08/09/2018	Plasma-Assisted Active Combustion Control as an Enabling Technology for N+3 Combustors	43.RD	39,242	-
			Total for FGC Plasma Solutions		**39,242**	**-**
Vecna Technologies, Incorporated						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6939474	STTR DTD. 09/20/2018	Coordination of Heterogeneous Robot Swarms for Planetary Logistics Operations	43.RD	37,253	-
			Total for Vecna Technologies, Incorporated		**37,253**	**-**
National Institute of Aerospace						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6937296	SUBCONTRACT T13-6500-MIT/TASK ORDER 601009	Further Analysis of the Operational Aspects of On-Demand Mobility	43.RD	79,838	-
			Total for National Institute of Aerospace		**79,838**	**-**
TRACLabs, Inc						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6936594	T0093.01-T037	NASA (STTR): Flight Director In A Box: Using Learning to Develop Planning Agents for Exploration	43.RD	-605	-
			Total for TRACLabs, Inc		**-605**	**-**

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University of Texas - Austin						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6934349	UTA16-000512	Evolving global ocean state estimation to the SWOT era	43.001	128,237	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	6935828	UTA17-000296	Dark Influences at the Threshold of Galaxy Formation	43.001	40,936	-
			Total for University of Texas - Austin		**169,173**	**-**
			TOTAL for National Aeronautics and Space Administration		**11,293,902**	**697,357**

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NATIONAL SCIENCE FOUNDATION						
University of California - Berkeley						
NATIONAL SCIENCE FOUNDATION	6923302	00007444	Center for Energy Efficient Electronics Science (E3S)	47.041	608,205	-
NATIONAL SCIENCE FOUNDATION	6935339	00009391	HERA: Illuminating Our Early Universe	47.049	195,051	-
NATIONAL SCIENCE FOUNDATION	6933483	SUBAWARD 00008317/MCB-1330914	Synthetic biology of yeast	47.074	50,256	-
			Total for University of California - Berkeley		**853,512**	**-**
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	147,384	-
NATIONAL SCIENCE FOUNDATION	6939941	0285 G WA158	Network Sovereignty: A Comparative Study of Local Network Initiatives in Rural, Low-income Communities	47.075	9,300	-
			Total for University of California, Los Angeles		**156,684**	**-**
University of Illinois-Urbana Champaign						
NATIONAL SCIENCE FOUNDATION	2389306	020016-16527	Quantifying Defect Tolerance in Semiconductors	47.070	12,303	-
NATIONAL SCIENCE FOUNDATION	6931375	2014-05135-01	Atomic Beam Source (ABS) Development	47.049	79,789	-
			Total for University of Illinois-Urbana Champaign		**92,093**	**-**
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	833	-
NATIONAL SCIENCE FOUNDATION	6939147	46(GG009393)	Participation of David T. Wang on Expedition 370	47.050	1,247	-
			Total for Columbia University		**2,080**	**-**
Carnegie-Mellon University						
NATIONAL SCIENCE FOUNDATION	6932341	1122145-344388	CSR: Medium: Distributed Inference Algorithms for Machine Learning and Optimization	47.070	27,478	-
NATIONAL SCIENCE FOUNDATION	6933964	1122183-333057	CIF21: DIBBS: Building a Scalable Infrastructure for Data-Driven Discovery and Innovation in Education	47.070	143,612	-
			Total for Carnegie-Mellon University		**171,090**	**-**
University of Rhode Island						
NATIONAL SCIENCE FOUNDATION	6940101	12202018/0007337	Minions: A low-cost float for distributed, Lagrangian observations of the biological carbon pump	47.050	3,228	-

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			Total for University of Rhode Island		**3,228**	**-**
University of Wisconsin						
NATIONAL SCIENCE FOUNDATION	6926610	123405535/144PRJ55WL	Data Handling and Analysis Infrastructure for Advanced LIGO and Beyond	47.049	-1,155	-
			Total for University of Wisconsin		**-1,155**	**-**
Harvard University						
NATIONAL SCIENCE FOUNDATION	6934933	123826-5056263	Center for Integrated Quantum Materials	47.049	1,196,368	-
NATIONAL SCIENCE FOUNDATION	6932660	123937-5096527	Biologically Inspired Optimized Materials And Technologies Transformed by Evolutionary Rules (BIOMATTER)	47.049	96,785	-
NATIONAL SCIENCE FOUNDATION	6940742	BA DTD. 06/03/2019	Development of Nanoscale Magnetometer using Quantum assisted Sensing Readout	47.049	14,164	-
NATIONAL SCIENCE FOUNDATION	6939677	BA DTD. 10/18/2018	Billing Agreement – George Varnavides Fall19 Incoming	47.083	59,026	-
NATIONAL SCIENCE FOUNDATION	6940712	BILLING AGRMNT. DTD 04/20/2019	Sensory-motor processing in a developing nervous system - Lu Mi #2	47.049	11,164	-
			Total for Harvard University		**1,377,507**	**-**
Washington State University						
NATIONAL SCIENCE FOUNDATION	6937644	132249-G003779	Engineering Synthetic Symbiosis Between Pland and Bacteria to Deliver Nitrogen to Crops	47.074	141,977	-
			Total for Washington State University		**141,977**	**-**
Arizona State University						
NATIONAL SCIENCE FOUNDATION	6929429	14-374	FESD Type 1: The Dynamics of Earth System Oxygenation	47.050	87,785	-
NATIONAL SCIENCE FOUNDATION	6938642	17-096	QESST: ERC for Quantum Energy and Sustainable Solar Technologies	47.041	18,034	-
NATIONAL SCIENCE FOUNDATION	6939979	SUBAWARD NO: 17-096	QESST: ERC for Quantum Energy and Sustainable Solar Technologies	47.041	38,867	-
			Total for Arizona State University		**144,685**	**-**
George Washington University						
NATIONAL SCIENCE FOUNDATION	6935442	16-S08	PIRE: Promoting Urban Sustainability in the Arctic	47.083	74,076	-
NATIONAL SCIENCE FOUNDATION	6940635	18-S45	INSPIRE: Expanding Open Innovation Methods to Complex Engineered Systems	47.041	66,355	-
			Total for George Washington University		**140,431**	**-**

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University of Massachusetts - Amherst						
NATIONAL SCIENCE FOUNDATION	6937426	18-010023 A	CCI: Center for Autonomous Chemistry	47.049	145,518	-
			Total for University of Massachusetts - Amherst		**145,518**	**-**
University of Oregon						
NATIONAL SCIENCE FOUNDATION	6936344	2005H0A	Chasing Icebergs: Quantifying Iceberg Motion and Melt in Greenland's Outlet Glacial Fjord	47.050	1,582	-
			Total for University of Oregon		**1,582**	**-**
University of Illinois at Chicago						
NATIONAL SCIENCE FOUNDATION	6933103	2015-04326-01-00	EFRI 2-DARE: Thermal Transport in 2D Materials for Next Generation Nanoelectronics- From Fundamentals to Devices	47.041	90,007	-
			Total for University of Illinois at Chicago		**90,007**	**-**
University of California/Davis						
NATIONAL SCIENCE FOUNDATION	6936421	201601893-02	High-Performance, High-Level Tools for Statistical Inference and Unsupervised Learning	47.049	83,408	-
			Total for University of California/Davis		**83,408**	**-**
University of California - Irvine						
NATIONAL SCIENCE FOUNDATION	6938664	2018-3564	NSFPLR-NERC: PROcesses, drivers, Predictions: Modeling the response of Thwaites Glacier over the next century using ice/ocean coupled models (PROPHET)	47.050	88,841	-
			Total for University of California - Irvine		**88,841**	**-**
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	33,993	-
			Total for University of Oklahoma (Norman, OK)		**33,993**	**-**
Massachusetts General Hospital						
NATIONAL SCIENCE FOUNDATION	6938905	229049	Mechanical Mapping of Neural Stem Cell Differentiation-Bernstein	47.041	6,404	-
NATIONAL SCIENCE FOUNDATION	6939422	229177	Billing Agreement - Collaborative Reserach: Assistive Integrative Support Tool for Retinopathy of Prematurity - Malika Shahrawat	47.070	55,942	-
			Total for Massachusetts General Hospital		**62,346**	**-**

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Concord Consortium						
NATIONAL SCIENCE FOUNDATION	6935511	303-01	DIP: Linking Complex Systems: Promoting reasoning within and across interconnected complex systems	47.070	44,263	-
			Total for Concord Consortium		**44,263**	**-**
University of Kentucky Research Foundation						
NATIONAL SCIENCE FOUNDATION	6937084	3200001352-18-023 / PO#7800003935	PFI-AIR-TT: A Non-Aqueous Redox Flow Battery Prototype	47.041	25,194	-
			Total for University of Kentucky Research Foundation		**25,194**	**-**
Duke University						
NATIONAL SCIENCE FOUNDATION	6939634	333-2439	Center for the Chemistry of Molecularly Optimized Networks	47.049	76,937	-
NATIONAL SCIENCE FOUNDATION	6939582	333-2457	STAQ: Software-Tailored Architecture for Quantum co-design	47.049	5,194	-
			Total for Duke University		**82,130**	**-**
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	84,257	-
NATIONAL SCIENCE FOUNDATION	6935164	416929G/GR510498	EFRI AQUIRE: A Scalable Integrated Quantum Photonic Interconnect	47.041	5,481	-
			Total for University of Rochester		**89,739**	**-**
Boston University						
NATIONAL SCIENCE FOUNDATION	6938043	4500002547	CIF21 DIBBs: EI: North Eastern Storage Exchange	47.070	40,216	-
NATIONAL SCIENCE FOUNDATION	6940191	4500002879	RAISE Integrating machine learning and biological neural networks	47.041	212,120	-
NATIONAL SCIENCE FOUNDATION	6938402	50205759-9500307545	Letter Agreement: Shoshana Das 01/16/18 - 03/31/18	47.041	-41	-
NATIONAL SCIENCE FOUNDATION	6940180	50206610-9500308659	Billing Agreement - Shoshana Das - Nanosystems Engineering Research Center for Directed Multiscale Assembly of Cellular Matamaterials with Nanoscale Precision: CELL-MET (Thrust 3)	47.041	20,107	-
			Total for Boston University		**272,402**	**-**
Virginia Polytechnic Institute & State University						
NATIONAL SCIENCE FOUNDATION	2389429	479590	S212: Impl: The Molecular Sciences Software Institute (Postdoctoral Fellowship for Fang Liu)	47.070	25,000	-

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			Total for Virginia Polytechnic Institute & State University		**25,000**	**-**
Northeastern University						
NATIONAL SCIENCE FOUNDATION	6928496	502076-78050A	EFRI-ODISSEI: Origami and Assembly Techniques for Human-Tissue-Engineering (OATH)	47.041	-9,009	-
			Total for Northeastern University		**-9,009**	**-**
Boston College						
NATIONAL SCIENCE FOUNDATION	6940458	5105841-1	EAGER: Selective biodamage with shaped THz light fields	47.049	64,212	-
			Total for Boston College		**64,212**	**-**
Stanford University						
NATIONAL SCIENCE FOUNDATION	6937285	61602537-126273	CCI Phase I: Center for First Principles Design of Quantum Processes	47.049	15,427	-
			Total for Stanford University		**15,427**	**-**
University of California-San Diego						
NATIONAL SCIENCE FOUNDATION	6935212	80302854	Energy-Efficient Computing: from Devices to Architectures (E2CDA) A Joint Initiative between NSF and SRC	47.041	105,234	-
NATIONAL SCIENCE FOUNDATION	6937009	89409643	PFI:BIC: Smart Factories: An Intelligent Material Delivery System to Improve Human-Robot Workflow	47.041	91,589	-
NATIONAL SCIENCE FOUNDATION	6939284	SUBAWARD AGREEMENT #106786383 ; PO S9002094	Platform for Applied Network Data Analysis (PANDA)	47.070	29,150	-
			Total for University of California-San Diego		**225,973**	**-**
Cornell University						
NATIONAL SCIENCE FOUNDATION	6937589	80497-10951	2D Atomic Membranes for 3D Systems	47.049	124,471	-
			Total for Cornell University		**124,471**	**-**
Emory University						
NATIONAL SCIENCE FOUNDATION	6939438	A022601	CCI Center in Selective C-H Functionalization	47.049	69,225	-
NATIONAL SCIENCE FOUNDATION	6937352	T847519	CCI Center in Selective C-H Functionalization	47.049	41,416	-
			Total for Emory University		**110,641**	**-**
Virtual Collaboration Research						
NATIONAL SCIENCE FOUNDATION	6940411	AGMT DTD 2/1/2019	Spatial Artificial Intelligence System for the Visually Impaired (NavigAid)	47.041	57,133	-

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			Total for Virtual Collaboration Research		**57,133**	**-**
NEROC						
NATIONAL SCIENCE FOUNDATION	6926730	AGS-1229036	MRI: Development of RAPID - Radio Array of Portable | Interferometric Detectors	47.050	266,124	-
NATIONAL SCIENCE FOUNDATION	6934751	AGS-1626041	MRI: Development of a redeployable spread spectrum MIMO meteor radar	47.050	133,072	-
NATIONAL SCIENCE FOUNDATION	6937604	AGS-1726377	MRI Collaborative: Development of Monitors for Alaskan and Canadian Auroral Weather in Space (MACAWS)	47.050	217,142	15,667
			Total for NEROC		**616,338**	**15,667**
Yale University						
NATIONAL SCIENCE FOUNDATION	6932587	C16D12238 (D02172)	EFRI 2-DARE: Few-layer and Thin-film Black Phosphorus for Photonic Applications	47.041	168,285	-
			Total for Yale University		**168,285**	**-**
Florida A&M University						
NATIONAL SCIENCE FOUNDATION	6937333	C-4979	CREST Center for Complex Materials Design for Multidimensional Additive Processing (CoMan)	47.076	47,282	-
			Total for Florida A&M University		**47,282**	**-**
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	126,817	-
			Total for New York University		**126,817**	**-**
Georgetown University						
NATIONAL SCIENCE FOUNDATION	6937928	GR205188/GR205566	A. Cohen Research	47.070	-464	-
			Total for Georgetown University		**-464**	**-**
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	23,506	-
			Total for New York University Medical Center		**23,506**	**-**
National Radio Astronomy Observatory						

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NATIONAL SCIENCE FOUNDATION	6937959	PO 359999	Enabling New Science with the ALMA Phasing System "Phase 2"	47.049	310,664	-
			Total for National Radio Astronomy Observatory		**310,664**	**-**
Georgia Institute of Technology						
NATIONAL SCIENCE FOUNDATION	2746922	RF481-G1	Research Experience for Undergraduates	47.041	1,447	-
			Total for Georgia Institute of Technology		**1,447**	**-**
UNAVCO						
NATIONAL SCIENCE FOUNDATION	6929222	S13-EAR1261833-S4	GAGE Facility GPS Data Analysis and GAMIT/GLOBK Software Support	47.050	85,109	-
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	58,000	-
			Total for UNAVCO		**143,110**	**-**
Kansas State University						
NATIONAL SCIENCE FOUNDATION	6937873	S18078	PIRE: High Temperature Ceramic Fibers: Polymer-Based Manufacturing, Nanostructure, and Performance	47.079	64,518	-
			Total for Kansas State University		**64,518**	**-**
California Institute of Technology						
NATIONAL SCIENCE FOUNDATION	6929097	S398063	Powering the Planet: A Chemical Bonding Center in the Direct Conversion of Sunlight into Chemical Fuel	47.049	44,869	-
NATIONAL SCIENCE FOUNDATION	6917535	SUBAWARD NO. 75ADV-1085563	Advanced LIGO	47.049	5,127	-
NATIONAL SCIENCE FOUNDATION	6932542	SUBAWARD NO. S392385	LIGO Operations	47.049	1,246,307	-
NATIONAL SCIENCE FOUNDATION	6939606	TBD	LIGO Operations FY19 through FY23	47.049	3,191,106	-
			Total for California Institute of Technology		**4,487,408**	**-**
Appia LLC						
NATIONAL SCIENCE FOUNDATION	6940117	SBIR RESEARCH AGREEMENT EFFECTIVE 9-1-2018	SBIR Phase I: Development of a Novel Rubber Recycling Process Not Involving Devulcanization	47.041	75,093	-
			Total for Appia LLC		**75,093**	**-**
Santa Fe Institute						

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NATIONAL SCIENCE FOUNDATION	6935014	SFI20161003	INSPIRE: Thermodynamic tradeoffs in computation: the constraints confronting biochemical networks and post-Moore computers	47.049	70,250	-
			Total for Santa Fe Institute		**70,250**	**-**
Kalion, Inc.						
NATIONAL SCIENCE FOUNDATION	6939575	STTR DTD. MAY 1, 2018	Low-Cost, High-Purity Biobased Glucaric Acid	47.041	19,612	-
			Total for Kalion, Inc.		**19,612**	**-**
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	14,179	-
NATIONAL SCIENCE FOUNDATION	6935980	SUB0000178	US CMS Software & Computing Subsystem (Year 2017)	47.049	476,590	-
NATIONAL SCIENCE FOUNDATION	6939873	SUB0000276	Institute for Research and Innovation in Software for High Energy Physics (IRIS-HEP)	47.070	78,551	-
			Total for Princeton University		**569,321**	**-**
Purdue University						
NATIONAL SCIENCE FOUNDATION	6922873	SUBAWARD #10000686-015	Emerging Frontiers of Science of Information	47.070	227,629	-
			Total for Purdue University		**227,629**	**-**
Research Foundation of CUNY						
NATIONAL SCIENCE FOUNDATION	6933812	SUBAWARD 40F23-A	EFRI 2-DARE - EXCITONICS AND POLARITONICS BASED ON 2D MATERIALS (EXPO-2D)	47.041	101,791	-
			Total for Research Foundation of CUNY		**101,791**	**-**
University of Pennsylvania						
NATIONAL SCIENCE FOUNDATION	2748221	SUBAWARD 572180	BioGraph 2.0 - Online Professional Development for High School Biology Teachers for Teaching and Learning About Complex Systems	47.076	13,428	-
NATIONAL SCIENCE FOUNDATION	6937096	SUBAWARD 572180/PO 4135512	BioGraph 2.0 - Online Professional Development for High School Biology Teachers for Teaching and Learning About Complex Systems	47.076	214,103	-
			Total for University of Pennsylvania		**227,531**	**-**
Johns Hopkins University						
NATIONAL SCIENCE FOUNDATION	2389143	SUBAWARD NO. 2003129511	LHC-TI Postdoctoral Fellowship Program	47.049	15,045	-

Appendix A3
Massachusetts Institute of Technology
Federal Research Support - Passthrough - On Campus
FY 2019 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
			Total for Johns Hopkins University		**15,045**	**-**
Smithsonian Inst. - Astrophysical Observatory						
NATIONAL SCIENCE FOUNDATION	6933768	SV6-86002	The Event Horizon Telescope Experiment	47.049	652,524	-
			Total for Smithsonian Inst. - Astrophysical Observatory		**652,524**	**-**
University of Texas - Austin						
NATIONAL SCIENCE FOUNDATION	6939541	UTA18-001151	Dimensions: Ordering the microbial world into natural genetic, ecological, and functional units	47.074	178,596	-
			Total for University of Texas - Austin		**178,596**	**-**
University of Washington						
NATIONAL SCIENCE FOUNDATION	6934495	UWSC6200 (BPO4405)	NSF Engineering Research Center for Sensorimotor Neural Laboratory of Electronics	47.041	498,756	-
			Total for University of Washington		**498,756**	**-**
			TOTAL for National Science Foundation		**13,340,461**	**15,667**
			TOTAL Federal Research Support - Passthrough - On Campus		**$103,941,853**	**$1,075,598**

Appendix A4
Massachusetts Institute of Technology
Highway Planning and Construction Cluster - Passthrough
FY 2019 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	CFDA #	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	133	-
			Total for Massachusetts Department of Transportation		**133**	**-**
			TOTAL for U.S. Department of Transportation		**133**	**-**
			TOTAL Highway Planning and Construction Cluster - Passthrough		**$133**	**-**

Appendix B
Massachusetts Institute of Technology
Federal Non-Research Support - On Campus
FY 2019 Expenditures

Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE					
Air Force					
12.800					
Air Force	FA9550-18-1-0516	Convergence QL: AFOSR Quantum Science Summer School	12.800	110,262	-
		Total for CFDA # 12.800		*110,262*	-
		Total for Air Force		**110,262**	**-**
Army					
12.431					
Army	W911NF-19-1-0273	ARO - Learning for Dynamics and Control Conference	12.431	17,829	-
		Total for CFDA # 12.431		*17,829*	-
		Total for Army		**17,829**	**-**
Navy					
12.300					
Navy	N00014-18-1-2309	Statistics and Data Science Conference 2018	12.300	676	-
Navy	N00014-18-1-2412	ISCS/IPRM 2018: Compound Semiconductor Week	12.300	9,983	-
Navy	N00014-18-1-2890	Competency, Community, Career: A technician apprenticeship certificate for advanced manufacturing	12.300	56,007	25,649
Navy	N00014-19-1-2370	ONR - Learning for Dynamics and Control Conference	12.300	9,523	-
		Total for CFDA # 12.300		*76,189*	*25,649*
		Total for Navy		**76,189**	**25,649**
Other DOD					
12.431					
Other DOD	W911NF1910219	A workshop on Clays: New Perspectives, Challenges & Opportunities	12.431	25,670	-
		Total for CFDA # 12.431		*25,670*	-
		Total for Other DOD		**25,670**	**-**

Appendix B
Massachusetts Institute of Technology
Federal Non-Research Support - On Campus
FY 2019 Expenditures

Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
		TOTAL for Department of Defense		**229,951**	**25,649**

Appendix B
Massachusetts Institute of Technology
Federal Non-Research Support - On Campus
FY 2019 Expenditures

Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF COMMERCE					
11.417					
DOC	NA17OAR4170243	2017 NMFS Grad Fellowship - Megan Winton	11.417	31,850	31,850
DOC	NA18OAR4170320	2018 NMFS Grad Fellowship- Robert P. Wildermuth	11.417	21,801	19,819
DOC	NA19OAR4170010	FY2019 Knauss Fellowship - Gualtiero Jaeger	11.417	15,793	-
		Total for CFDA # 11.417		*69,444*	*51,669*
		Total for Department of Commerce		**69,444**	**51,669**
		TOTAL for Department of Commerce		**69,444**	**51,669**

Appendix B
Massachusetts Institute of Technology
Federal Non-Research Support - On Campus
FY 2019 Expenditures

Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF ENERGY					
81.049					
DOE	DE-SC0014478	MIT Outreach for Plasma Science and Fusion	81.049	105,536	-
DOE	DE-SC0018354	Convergence QL: NSF/DOE Quantum Science Summer School	81.049	62,001	55,244
		Total for CFDA # 81.049		*167,537*	*55,244*
81.117					
DOE	DE-EE0007152	MIT Clean Energy Prize	81.117	1,289	-
		Total for CFDA # 81.117		*1,289*	-
81.121					
DOE	DE-NE0000102	MIT Nuclear Energy University Fellowship Program	81.121	83,992	-
		Total for CFDA # 81.121		*83,992*	-
81.U03					
DOE	652574	2019 LPC Distinguished Researcher Program of Mariarosaria D'Alfonso	81.U03	19,373	-
		Total for CFDA # 81.U03		*19,373*	-
		Total for Department of Energy		**272,191**	**55,244**
		TOTAL for Department of Energy		**272,191**	**55,244**

Appendix B
Massachusetts Institute of Technology
Federal Non-Research Support - On Campus
FY 2019 Expenditures

Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF TRANSPORTATION					
20.215					
DOT	693JJ31845005	Dwight David Eisenhower Transportation Fellowship - Montgomery	20.215	17,000	-
DOT	693JJ31945009	Dwight David Eisenhower Transportation Fellowship - Wilson	20.215	24,838	-
DOT	693JJ31945023	2018 Dwight David Eisenhower Transportation Fellowship Program: Annie Hudson	20.215	10,000	-
DOT	693JJ31945062	2018 Dwight David Eisenhower Transportation Fellowship Program: Jeffrey Rosenblum	20.215	5,000	-
		Total for CFDA # 20.215		*56,838*	-
		Total for Department of Transportation		**56,838**	**-**
		TOTAL for Department of Transportation		**56,838**	**-**

Appendix B
Massachusetts Institute of Technology
Federal Non-Research Support - On Campus
FY 2019 Expenditures

Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
MISCELLANEOUS FEDERAL GOVT					
Department of Education					
84.047A					
ED	P047A170618	MIT/Wellesley Upward Bound Program	84.047A	324,679	-
		Total for CFDA # 84.047A		*324,679*	-
		Total for Department of Education		**324,679**	**-**
Department of Agriculture					
10.674					
USDA	18-DG-11420004-092	An Engineering Demonstration for a Mass Timber Affordable Housing Prototype for Large-scale Urban Deployment	10.674	193,805	-
		Total for CFDA # 10.674		*193,805*	-
		Total for Department of Agriculture		**193,805**	**-**
Other Agencies					
16.562					
Misc.	2017-IJ-CX-0011	Stop Snitching or Keep Talking? Civilian Information Provision to the Baltimore Police	16.562	25,975	-
		Total for CFDA # 16.562		*25,975*	-
45.024					
Misc.	17-4400-7073	Futurity Island	45.024	7,282	-
		Total for CFDA # 45.024		*7,282*	-
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	40,369	-
		Total for CFDA # 45.149		*40,369*	-
45.312					
Misc.	LG-73-17-0162-17	A National Forum to Develop Principles of Accessibility and Inclusion for the Design of Library Systems	45.312	46,053	-
		Total for CFDA # 45.312		*46,053*	-

Appendix B
Massachusetts Institute of Technology
Federal Non-Research Support - On Campus
FY 2019 Expenditures

Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
77.008					
Misc.	31310018M0021	NRC Fellowship Program	77.008	38,103	-
Misc.	31310018M0038	MIT Nuclear Education Faculty Development Program	77.008	115,663	-
Misc.	NRC-HQ-84-15-G-0045	MIT Nuclear Education Faculty Development Program	77.008	117,738	-
		Total for CFDA # 77.008		*271,504*	-
98.001					
Misc.	72026319CA00003	Center of Excellence in Energy Research, Education and Entrepreneurship	98.001	269,471	-
Misc.	AID-OAA-A-12-00095	CITE and IDIN	98.001	101,839	10,673
		Total for CFDA # 98.001		*371,310*	*10,673*
		Total for Other Agencies		**762,493**	**10,673**
		TOTAL for Miscellaneous Federal Govt		**1,280,976**	**10,673**

Appendix B
Massachusetts Institute of Technology
Federal Non-Research Support - On Campus
FY 2019 Expenditures

Federal Agency	Government Contract Number	Master Project Name	CFDA #	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	38,626	-
NASA	NNA13AA90A	Foundations of Complex Life: Evolution, Preservation & Detection on Earth & Beyond	43.001	130,474	63,110
NASA	NNX16AN92H	Investigating VOC Speciation Measured from Space	43.001	35,435	-
		Total for CFDA # 43.001		*204,536*	*63,110*
43.002					
NASA	NNX17AB22H	Advanced Modeling and Control for Turbo-Electric and Hybrid Electric Propulsion - Fellowship for Aidan Dowdle	43.002	21,747	-
		Total for CFDA # 43.002		*21,747*	-
43.003					
NASA	NNX17AB13G	NASA Participation in MIT Innovation Lab	43.003	64,438	-
		Total for CFDA # 43.003		*64,438*	-
43.007					
NASA	80NSSC17K0688	Genomic and functional analysis of biofilm morphytypes of International Space Station isolated Stapylococcus epidermidis and their pathogenicity in Caenorhabditis elegans	43.007	60,504	-
		Total for CFDA # 43.007		*60,504*	-
43.008					
NASA	NNX16AT26H	NASA AS&ASTAR Application for Cory Frontin on small Modeling for LES	43.008	5,300	-
		Total for CFDA # 43.008		*5,300*	-
43.009					
NASA	NNX14AL47H	Hierarchical Composites with Nanostructured Reinforcement for Multifunctional Aerospace Structures - GF R. Li	43.009	5,984	-
NASA	NNX14AL48H	Superconducting Nanowire Single Photon Detectors for High-Data-Rate Deep-Space Optical Communication	43.009	12,576	-
NASA	NNX14AL61H	Two-Stage Approach to Path and Attitude Planning for Reconfigurable Spacecraft - GF K. Riesing	43.009	960	-

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Massachusetts Institute of Technology
Federal Non-Research Support - On Campus
FY 2019 Expenditures

Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NASA	NNX14AL74H	Developing an Adaptive Robotic Assistant for Close-Proximity Human-Robot Interaction in Space Environments	43.009	11,470	-
NASA	NNX14AM40H	Topological Optimization and Automated Construction for Lightweight Structures - G.F. Benjamin Jenett	43.009	8,932	-
NASA	NNX14AM42H	Quantifying the Value of Resilience in Long-Duration Space Systems- G.F. A. Owens	43.009	35,849	-
NASA	NNX14AM57H	The Micro-X X-ray Imaging Spectrometer - G.F. D. Goldfinger	43.009	12,236	-
		Total for CFDA # 43.009		*88,007*	-
43.012					
NASA	80NSSC17K0077	Enhancing Docking and Manipulation Capability for Microgravity Robotic Free Flyers	43.012	69,739	-
NASA	80NSSC17K0081	2D Materials for Energy Harvesting and Sensing	43.012	83,592	-
NASA	80NSSC17K0082	Additive Manufacturing of Low Work Function Oxides for Spaceborne Thermionic Emission Applications	43.012	56,444	-
NASA	80NSSC17K0083	A Ground-Based Analog for CNS Exposure to Space Radiation: A System for Integrating Microbeam Technology and Neuronal Culture	43.012	67,058	-
NASA	80NSSC17K0090	Modeling Oxygen Production on Mars and Extension to a Human-Scale Mission	43.012	73,823	-
NASA	80NSSC18K1141	Energy Efficient Low-Thrust Spacecraft Trajectory Generation and Control via Reinforcement Learning	43.012	58,769	-
NASA	80NSSC18K1182	Adaptive Optics for Exoplanet Characterization with Space Telescopes	43.012	51,941	-
NASA	80NSSC18K1185	Commercial Feasibility of In-Space Manufacturing Applications with Technology Development Targets	43.012	55,023	-
NASA	80NSSC18K1186	Guidance and Control of Electrospray Thruster Actuated CubeSat	43.012	55,992	-
NASA	NNX15AP50H	Advanced Propellants for Scalable, Multipurpose Electrospray Ion Thrusters	43.012	59,765	-
NASA	NNX16AM70H	Developing Quantum Dot Absorptive Filter Array based Miniaturized Spectrometer for Space Applications	43.012	72,985	-
NASA	NNX16AM71H	Human Performance Metrics for Spacesuit Evaluation	43.012	53,738	-
NASA	NNX16AM72H	Development and Testing of Autonomous On-Orbit Assembly and Servicing Systems Using the SPHERES Testbed	43.012	63,516	-
NASA	NNX16AM73H	Intersatellite Calibration for Constellations of Remote Sensing CubeSats with Microwave Radiometers and Visible Imagers	43.012	69,077	-
NASA	NNX16AM74H	Autonomous Fault Identification and Handling Algorithms for Spacecraft	43.012	18,268	-

Appendix B
Massachusetts Institute of Technology
Federal Non-Research Support - On Campus
FY 2019 Expenditures

Federal Agency	Government Contract Number	Master Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NASA	NNX16AM75H	Quantum Networking and Sensing using a Diamond Nanophotonic Circuit (Student: Eric Bersin)	43.012	57,926	-
		Total for CFDA # 43.012		*967,657*	-
43.U10					
NASA	NNX16AH49H	National Space Grant College and Fellowship Program (Space Grant)	43.U10	801,417	-
		Total for CFDA # 43.U10		*801,417*	-
		Total for National Aeronautics and Space Administration		**2,213,605**	**63,110**
		TOTAL for National Aeronautics and Space Administration		**2,213,605**	**63,110**
		TOTAL Federal Non-Research Support - On Campus		**4,123,004**	**206,345**

Appendix C
Massachusetts Institute of Technology
Federal Non-Research Support - Passthrough - On Campus
FY 2019 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE						
SUNY: AIM Photonics						
DEPARTMENT OF DEFENSE	2748749	AGMT. DTD. 3/22/2016	IP-IMI	12.800	311,300	-
			Total for SUNY: AIM Photonics		**311,300**	**-**
Lincoln Laboratory						
DEPARTMENT OF DEFENSE	2747918	PO 7000384279	Support of the MIT Security Studies Program	12.U05	8,275	-
DEPARTMENT OF DEFENSE	2748510	PO# 7000423020	Support of the MIT Security Studies Program	12.U51	35,000	-
			Total for Lincoln Laboratory		**43,275**	**-**
American Society/Engineering Education						
DEPARTMENT OF DEFENSE	2291100	LETTER DATED 8/11/99	NDSEG Fellowship Program	12.300	1,906,116	-
			Total for American Society/Engineering Education		**1,906,116**	**-**
Draper Laboratory Incorporated						
DEPARTMENT OF DEFENSE	2748410	DRAPER P.O. PARENT	Draper Fellow Reporting Parent FY 18/19	12.U12	-25,321	-
DEPARTMENT OF DEFENSE	2748489	PO 0001050674	Draper Fellow Reporting Parent FY 18/19	12.U50	25,760	-
DEPARTMENT OF DEFENSE	2747661	PO 001 0001039813	Draper Fellow Reporting Parent FY 16/17	12.U02	1,796	-
DEPARTMENT OF DEFENSE	2747687	PO 0010001045492	Draper Fellow Reporting Parent FY 17/18	12.U03	82	-
DEPARTMENT OF DEFENSE	2747689	PO 0010001045504	Draper Fellow Reporting Parent FY 17/18	12.U04	-238	-
DEPARTMENT OF DEFENSE	2748059	PO 0010001045547	Draper Fellow Reporting Parent FY 17/18	12.U06	0	-
DEPARTMENT OF DEFENSE	2748061	PO 0010001045549	Draper Fellow Reporting Parent FY 17/18	12.U07	2,000	-
DEPARTMENT OF DEFENSE	2748071	PO 0010001045726	Draper Fellow Reporting Parent FY 17/18	12.U08	0	-
DEPARTMENT OF DEFENSE	2748072	PO 0010001045771	Draper Fellow Reporting Parent FY 17/18	12.U09	-125	-
DEPARTMENT OF DEFENSE	2748077	PO 0010001045804	Draper Fellow Reporting Parent FY 17/18	12.U10	-1	-
DEPARTMENT OF DEFENSE	2748085	PO 0010001046292	Draper Fellow Reporting Parent FY 17/18	12.U11	27,090	-
DEPARTMENT OF DEFENSE	2748742	PO001-0001050042	Draper Fellow Reporting Parent FY 18/19	12.U55	9,147	-
DEPARTMENT OF DEFENSE	2748420	PO001-0001050045	Draper Fellow Reporting Parent FY 18/19	12.U13	67,129	-
DEPARTMENT OF DEFENSE	2748424	PO001-0001050047	Draper Fellow Reporting Parent FY 18/19	12.U16	69,846	-
DEPARTMENT OF DEFENSE	2748426	PO001-0001050049	Draper Fellow Reporting Parent FY 18/19	12.U17	62,837	-
DEPARTMENT OF DEFENSE	2748427	PO001-0001050050	Draper Fellow Reporting Parent FY 18/19	12.U18	69,527	-
DEPARTMENT OF DEFENSE	2748428	PO001-0001050051	Draper Fellow Reporting Parent FY 18/19	12.U19	53,668	-
DEPARTMENT OF DEFENSE	2748421	PO001-0001050067	Draper Fellow Reporting Parent FY 18/19	12.U14	26,412	-
DEPARTMENT OF DEFENSE	2748429	PO001-0001050068	Draper Fellow Reporting Parent FY 18/19	12.U20	69,923	-

Appendix C
Massachusetts Institute of Technology
Federal Non-Research Support - Passthrough - On Campus
FY 2019 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF DEFENSE	2748434	PO001-0001050101	Draper Fellow Reporting Parent FY 18/19	12.U25	128,468	-
DEPARTMENT OF DEFENSE	2748437	PO001-0001050104	Draper Fellow Reporting Parent FY 18/19	12.U28	77,566	-
DEPARTMENT OF DEFENSE	2748430	PO001-0001050105	Draper Fellow Reporting Parent FY 18/19	12.U21	69,923	-
DEPARTMENT OF DEFENSE	2748436	PO001-0001050109	Draper Fellow Reporting Parent FY 18/19	12.U27	66,017	-
DEPARTMENT OF DEFENSE	2748432	PO001-0001050113	Draper Fellow Reporting Parent FY 18/19	12.U23	64,212	-
DEPARTMENT OF DEFENSE	2748433	PO001-0001050114	Draper Fellow Reporting Parent FY 18/19	12.U24	6,501	-
DEPARTMENT OF DEFENSE	2748431	PO001-0001050122	Draper Fellow Reporting Parent FY 18/19	12.U22	66,118	-
DEPARTMENT OF DEFENSE	2748442	PO001-0001050156	Draper Fellow Reporting Parent FY 18/19	12.U32	25,760	-
DEPARTMENT OF DEFENSE	2748488	PO001-0001050202	Draper Fellow Reporting Parent FY 18/19	12.U49	25,760	-
DEPARTMENT OF DEFENSE	2748439	PO001-0001050254	Draper Fellow Reporting Parent FY 18/19	12.U30	63,315	-
DEPARTMENT OF DEFENSE	2748441	PO001-0001050256	Draper Fellow Reporting Parent FY 18/19	12.U31	66,874	-
DEPARTMENT OF DEFENSE	2748447	PO001-0001050305	Draper Fellow Reporting Parent FY 18/19	12.U36	12,880	-
DEPARTMENT OF DEFENSE	2748446	PO001-0001050334	Draper Fellow Reporting Parent FY 18/19	12.U35	4,712	-
DEPARTMENT OF DEFENSE	2748472	PO001-0001050335	Draper Fellow Reporting Parent FY 18/19	12.U42	16,486	-
DEPARTMENT OF DEFENSE	2748449	PO001-0001050336	Draper Fellow Reporting Parent FY 18/19	12.U38	54,878	-
DEPARTMENT OF DEFENSE	2748448	PO001-0001050355	Draper Fellow Reporting Parent FY 18/19	12.U37	10,089	-
DEPARTMENT OF DEFENSE	2748453	PO001-0001050394	Draper Fellow Reporting Parent FY 18/19	12.U40	19,298	-
DEPARTMENT OF DEFENSE	2748452	PO001-0001050395	Draper Fellow Reporting Parent FY 18/19	12.U39	57,876	-
DEPARTMENT OF DEFENSE	2748473	PO001-0001050406	Draper Fellow Reporting Parent FY 18/19	12.U43	27,686	-
DEPARTMENT OF DEFENSE	2748470	PO001-0001050579	Draper Fellow Reporting Parent FY 18/19	12.U41	62,001	-
DEPARTMENT OF DEFENSE	2748479	PO001-0001050669	Draper Fellow Reporting Parent FY 18/19	12.U44	25,760	-
DEPARTMENT OF DEFENSE	2748480	PO001-0001050670	Draper Fellow Reporting Parent FY 18/19	12.U45	56,661	-
DEPARTMENT OF DEFENSE	2748482	PO001-0001050671	Draper Fellow Reporting Parent FY 18/19	12.U47	38,640	-
DEPARTMENT OF DEFENSE	2748481	PO001-0001050672	Draper Fellow Reporting Parent FY 18/19	12.U46	56,661	-
DEPARTMENT OF DEFENSE	2748483	PO001-0001050673	Draper Fellow Reporting Parent FY 18/19	12.U48	53,488	-
DEPARTMENT OF DEFENSE	2748511	PO001-0001050935	Draper Fellow Reporting Parent FY 18/19	12.U52	25,760	-
DEPARTMENT OF DEFENSE	2748422	PO001-0001051400	Draper Fellow Reporting Parent FY 18/19	12.U15	50,221	-
DEPARTMENT OF DEFENSE	2748613	PO001-0001051788	Draper Fellow Reporting Parent FY 18/19	12.U53	23,039	-
DEPARTMENT OF DEFENSE	2748445	PO001-000105274	Draper Fellow Reporting Parent FY 18/19	12.U34	38,640	-
DEPARTMENT OF DEFENSE	2748443	PO001-000105278	Draper Fellow Reporting Parent FY 18/19	12.U33	55,877	-
			Total for Draper Laboratory Incorporated		**1,810,700**	**-**
Advanced Functional Fabrics of America (AFFOA)						
DEPARTMENT OF DEFENSE	2748720	PO NO. 589	Shape-Shifting Climate-Adaptive Garments	12.U54	3,649	-

Appendix C
Massachusetts Institute of Technology
Federal Non-Research Support - Passthrough - On Campus
FY 2019 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
			Total for Advanced Functional Fabrics of America (AFFOA)		**3,649**	**-**
			TOTAL for Department of Defense		**4,075,039**	**-**

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Massachusetts Institute of Technology
Federal Non-Research Support - Passthrough - On Campus
FY 2019 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF COMMERCE						
U Delaware: National Institute for Innovation in Manufacturing Biopharmaceuticals (NIIMBL)						
DEPARTMENT OF COMMERCE	2748495	AGREEMENT EFFECTIVE 5/4/17	The National Institute for Innovation in Manufacturing Biopharmaceuticals (NIIMBL) - Memberships	11.619	50,863	-
			Total for U Delaware: National Institute for Innovation in Manufacturing Biopharmaceuticals (NIIMBL)		**50,863**	**-**
			TOTAL for Department of Commerce		**50,863**	**-**

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Massachusetts Institute of Technology
Federal Non-Research Support - Passthrough - On Campus
FY 2019 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
DEPARTMENT OF ENERGY						
Jefferson Laboratories						
DEPARTMENT OF ENERGY	2389422	19-D0254	Bowie: a Bayesian Optimization frameWork for Intensity frontier Experiments	81.U02	15,000	-
			Total for Jefferson Laboratories		**15,000**	**-**
SURA / Jefferson Lab						
DEPARTMENT OF ENERGY	2389346	AGMT DATED 6/18/18	Jefferson Science Lab Graduate Fellowship Award - Reynier Cruz Torres	81.U01	11,000	-
			Total for SURA / Jefferson Lab		**11,000**	**-**
Krell Institute						
DEPARTMENT OF ENERGY	2389147	AGREEMENT EFF. 09/01/2016	DOE NNSA SSGF fellowships	81.112	66,406	-
DEPARTMENT OF ENERGY	2225900	FELLOWSHIP COMMITMENT	DOE-CSGF Krell Institute	81.049	31,369	-
			Total for Krell Institute		**97,775**	**-**
Battelle Energy Alliance, LLC						
DEPARTMENT OF ENERGY	2748377	RELEASE 00003/CONTRACT 00112583	INL-NUC Collaboration Activities at Massachusetts Institute of Technology	81.U05	72,730	-
			Total for Battelle Energy Alliance, LLC		**72,730**	**-**
			TOTAL for Department of Energy		**196,505**	**-**

Appendix C
Massachusetts Institute of Technology
Federal Non-Research Support - Passthrough - On Campus
FY 2019 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	CFDA #	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	721	-
			Total for The Center for Effective Public Policy		**721**	**-**
Ashesi University						
MISCELLANEOUS FEDERAL GOVT	2748627	AGMT DTD 9/1/18	Accelerating Local Potential	98.U01	87,985	-
			Total for Ashesi University		**87,985**	**-**
Institute of International Education, Inc.						
MISCELLANEOUS FEDERAL GOVT	2389414	HHH1801_MIT_7.1.18	Hubert H. Humphrey Fellowship Program (SPURS) 2018-2019	19.010	189,629	-
MISCELLANEOUS FEDERAL GOVT	2389277	IIE0138_MIT_7.1.17	Hubert H Humphrey Fellowship Program (SPURS) 2017 -2018	19.010	56,361	-
			Total for Institute of International Education, Inc.		**245,990**	**-**
Population Services International						
MISCELLANEOUS FEDERAL GOVT	2748269	PO 10340-0-600	Co-design Summit in Ethiopia	98.001	56,483	-
			Total for Population Services International		**56,483**	**-**
			TOTAL for Miscellaneous Federal Govt		**391,178**	**-**

Appendix C
Massachusetts Institute of Technology
Federal Non-Research Support - Passthrough - On Campus
FY 2019 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION						
Baylor College of Medicine						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	2748663	7000000324 / TRISH PROJ# DS002	Transitional Research Institute	43.003	45,614	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	2748341	PO# 7000000554	Dean of Science Education	43.003	21,936	-
			Total for Baylor College of Medicine		**67,550**	**-**
University of Arizona						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	2747876	AGRMT DATED 11/13/16	REXIS - REgolith X-ray Imaging Spectrometer Phase E Operations	43.U11	118,653	-
			Total for University of Arizona		**118,653**	**-**
Space Telescope Science Institute						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	2389016	HST-HF2-51354.001-A	A Comprehensive View of the CGM - Hubble, Bordoloi	43.U03	46,993	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	2389125	HST-HF2-51372.001-A	Characterizing Small Planets Around Bright Stars (Hubble Fellowship - Diana Dragomir)	43.U05	100,835	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	2389135	HST-HF2-51384.001-A	A Hybrid Approach to Simulating Galaxy Formation (Hubble Fellowship - Paul Torrey)	43.U06	10,867	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	2389368	HST-HF2-51410.001-A	Fundamental Physics in the Era of Gravitational Wave Astronomy (Fellow: Maximiliano Isi)	43.U08	62,962	-
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.U07	84,291	-
			Total for Space Telescope Science Institute		**305,949**	**-**
Commonwealth of Massachusetts - Miscellaneous						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	2732483	MASSACHUSETTS SPACE GRANT CONSORTUIM	Massachusetts Space Grant Consortium	43.U09	503	-
			Total for Commonwealth of Massachusetts - Miscellaneous		**503**	**-**
Center for Advancement of Science in Space						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	2748227	OA-2017-241	Zero Robotics CASIS Support FY18	43.U12	7,308	-
			Total for Center for Advancement of Science in Space		**7,308**	**-**
Smithsonian Inst. - Astrophysical Observatory						

Appendix C
Massachusetts Institute of Technology
Federal Non-Research Support - Passthrough - On Campus
FY 2019 Expenditures by Prime Sponsor and Sponsor

Prime Sponsor Name	Project WBS id	Passthrough Number	WBS Project Name	CFDA #	TOTAL $ Amount Expended	$ Amount Passed to Subrecipients
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	2388982	PF5-160144	Einstein Postdctoral Fellowship for Dr. James Steiner, "The Nature of Black Holes"	43.U02	26,458	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	2389123	PF6-170156	Quest for the Elusive Intermediate-mass Black Holes (Einstein Fellow - Dheeraj Pasham - yr 3)	43.U04	95,374	-
			Total for Smithsonian Inst. - Astrophysical Observatory		**121,832**	**-**
CalTech - Jet Propulsion Lab						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	2748320	RSA 1591537	Lifecycle Product Development: Research Opportunities for the next Generation of Space Systems Engineers	43.U14	13,223	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	2389330	RSA 1603295	Enabling Technologies for Extreme Precision Radial Velocity Measurements (Sagan Fellowship: Halverson)	43.001	102,776	-
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	2748314	SUBCONTRACT 1593172	Exoplanet Exploration Program Technology Assessment Committee	43.U13	-6,838	-
			Total for CalTech - Jet Propulsion Lab		**109,161**	**-**
Logistics Management Institute						
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	2748588	SB17-00052	Convergence Innovation for ARMD	43.U15	149,643	-
			Total for Logistics Management Institute		**149,643**	**-**
			TOTAL for National Aeronautics and Space Administration		**880,599**	**-**
			TOTAL Federal Non-Research Support - Passthrough - On Campus		**$5,594,184**	**-**

SECTION III

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

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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, 2019, 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 September 13, 2019, which included an emphasis of matter paragraph related to the Institute changing the manner in which it presents net assets and reports certain aspects of its consolidated financial statements as a not-for-profit entity in 2019 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") to determine 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 determination of financial statement amounts. 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.

Boston, Massachusetts
September 13, 2019

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, 2019. 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, 2019.

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 9, 2020

Massachusetts Institute of Technology
Schedule of Findings and Questioned Costs
Year Ended June 30, 2019

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 opinion
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

CFDA Number	**Name of Federal Program or Cluster**
Various	Research & Development Cluster

Dollar threshold used to distinguish between Type A and Type B programs	$4,801,783
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, 2019

Finding 2018-001: Cash Flow Revision (Financial Statement Finding)

Condition

During 2018, MIT revised the Consolidated Statement of Cash Flows for the year ended June 30, 2017, to correct the classification of $254.8 million of cash receipts which are restricted for long-term investment from cash inflows from operating activities to cash inflows from financing activities in accordance with Accounting Standards Codification ("ASC") 230, Statement of Cash Flows. The cause of the revision was the incorrect application of this guidance when preparing the cash flow statement and the amount was primarily attributable to an endowed pledge payment of $175.9 million from one donor. The revision had no impact on the amounts disclosed in the Institute's Statement of Activities or Statement of Financial Position, or the net change in cash and cash balances shown in in the Consolidated Statement of Cash Flows, all of which were accurately stated. PwC recommended that the Institute review the cash flow statement to ensure all cash flows are properly classified in accordance with ASC 230 and other industry-specific accounting guidance and establish additional layers of review similar to the procedures already in place for the Statements of Financial Position and Activities.

Current Year Update

The Institute has implemented new internal controls over the review of the statement of cash flows, including enhanced review controls by management and specific consideration of the impact of unusual transactions on the statement of cash flows.