Harvard University

Report on Federal Awards in Accordance with the OMB Uniform Guidance
June 30, 2017
EIN #042103580

Harvard University
Report on Federal Awards in Accordance with the OMB Uniform Guidance
Index
June 30, 2017

Part I

Financial Statements and Schedule of Expenditures of Federal Awards

Report of Independent Auditors

To the Joint Committee on Inspection of the Governing Boards of Harvard University:

Report on the Consolidated Financial Statements

We have audited the accompanying consolidated financial statements of Harvard University (the "University"), which comprise the consolidated balance sheet as of June 30, 2017, and the related consolidated statements of changes in net assets with general operating account detail, changes in net assets of the endowment and cash flows for the year then ended, 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 audit. We conducted our audit 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 University'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 University's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the consolidated financial position of Harvard University as of June 30, 2017, and the changes in its net assets and its cash flows for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Other Matters

We previously audited the consolidated balance sheet as of June 30, 2016, and the related consolidated statements changes in net assets with general operating account detail, changes in net assets of the endowment and of cash flows for the year then ended (not presented herein), and in our report dated November 1, 2016, 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, 2016 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, 2017 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. Such 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 as a whole.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated October 26, 2017 on our consideration of the University'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. 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 University's internal control over financial reporting and compliance.

PricewaterhouseCoopers LLP

Boston, Massachusetts
October 26, 2017

BALANCE SHEETS

with summarized financial information as of June 30, 2016

In thousands of dollars	June 30 2017	2016
ASSETS:		
Cash	**$ 139,896**	$ 113,738
Receivables, net *(Note 6)*	**261,841**	248,204
Prepayments and deferred charges	**130,701**	151,053
Notes receivables, net *(Note 7)*	**383,063**	381,191
Pledges receivables, net *(Note 8)*	**1,948,026**	2,134,220
Fixed assets, net *(Note 9)*	**7,125,898**	6,529,540
Interests in trusts held by others *(Note 4)*	**397,161**	355,835
Investment portfolio, at fair value *(Notes 3, 4 and 5)*	**43,275,926**	47,068,312
Securities pledged to counterparties, at fair value *(Notes 3, 4 and 5)*	**57,551**	15,357,995
TOTAL ASSETS	**53,720,063**	**72,340,088**
LIABILITIES:		
Accounts payable	**$ 346,322**	$ 343,289
Deposits and other liabilities	**930,439**	824,244
Securities lending and other liabilities associated with the investment portfolio *(Notes 3, 4, 5 and 12)*	**920,558**	21,479,179
Liabilities due under split interest agreements *(Note 11)*	**840,736**	791,202
Bonds and notes payable *(Note 12)*	**5,431,090**	5,176,702
Accrued retirement obligations *(Note 13)*	**1,092,275**	1,243,846
Government loan advances *(Note 7)*	**72,564**	70,296
TOTAL LIABILITIES	**9,633,984**	29,928,758
NET ASSETS	**44,086,079**	42,411,330
TOTAL LIABILITIES AND NET ASSETS	**$ 53,720,063**	$ 72,340,088

	Unrestricted	Temporarily restricted	Permanently restricted	June 30 2017	2016
NET ASSETS:					
General Operating Account (GOA) *(Note 10)*	$ 3,924,841	$ 2,432,666	$ 98,216	$ 6,455,723	$ 6,243,721
Endowment *(Note 10)*	6,148,173	23,032,044	7,916,257	37,096,474	35,665,743
Split interest agreements *(Note 11)*		53,838	480,044	533,882	501,866
TOTAL NET ASSETS	**$ 10,073,014**	**$ 25,518,548**	**$ 8,494,517**	**$ 44,086,079**	**$ 42,411,330**

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

STATEMENTS OF CHANGES IN NET ASSETS WITH GENERAL OPERATING ACCOUNT DETAIL

with summarized financial information for the year ended June 30, 2016

In thousands of dollars	Unrestricted	Temporarily Restricted	Permanently Restricted	For the year ended June 30 2017	2016
OPERATING REVENUE:					
Student income:					
Undergraduate program	$ 313,224			**$ 313,224**	$ 300,691
Graduate and professional degree programs	559,474			**559,474**	530,978
Board and lodging	184,732			**184,732**	183,185
Continuing education and executive programs	410,664			**410,664**	381,068
Scholarships applied to student income *(Note 14)*	(413,870)			**(413,870)**	(397,524)
Total student income	1,054,224	0	0	**1,054,224**	**998,398**
Sponsored support *(Note 15)*					
Federal government – direct costs	452,852			**452,852**	435,778
Federal government – indirect costs	165,253			**165,253**	161,458
Non-federal sponsors – direct costs	93,064	$ 139,382		**232,446**	212,817
Non-federal sponsors – indirect costs	22,477	12,507		**34,984**	35,402
Total sponsored support	733,646	151,889	0	**885,535**	**845,455**
Gifts for current use *(Note 16)*	152,532	297,407		**449,939**	421,169
Investment income:					
Endowment returns made available for operations *(Note 10)*	311,169	1,476,248		**1,787,417**	1,706,244
GOA returns made available for operations	164,893			**164,893**	133,351
Other investment income	13,578	4,884		**18,462**	16,572
Total investment income	489,640	1,481,132	0	**1,970,772**	**1,856,167**
Other income *(Note 17)*	638,310			**638,310**	655,700
Net assets released from restriction	1,838,262	(1,838,262)		**0**	0
TOTAL OPERATING REVENUE	**4,906,614**	**92,166**	**0**	**4,998,780**	**4,776,889**
OPERATING EXPENSES:					
Salaries and wages	1,885,692			**1,885,692**	1,806,280
Employee benefits *(Note 13)*	569,030			**569,030**	530,047
Services purchased	591,135			**591,135**	582,583
Space and occupancy	371,349			**371,349**	345,345
Depreciation *(Note 9)*	348,885			**348,885**	338,173
Supplies and equipment	253,163			**253,163**	256,826
Interest *(Note 12)*	202,547			**202,547**	235,303
Scholarships and other student awards *(Note 14)*	147,555			**147,555**	142,070
Other expenses *(Note 18)*	515,229			**515,229**	463,598
TOTAL OPERATING EXPENSES	**4,884,585**	**0**	**0**	**4,884,585**	**4,700,225**
NET OPERATING SURPLUS	**22,029**	**92,166**	**0**	**114,195**	**76,664**
NON-OPERATING ACTIVITIES:					
Income from GOA Investments	14,630			**14,630**	18,707
GOA realized and change in unrealized (depreciation)/appreciation, net *(Note 3)*	303,751			**303,751**	(115,457)
GOA returns made available for operations	(164,893)			**(164,893)**	(133,351)
Change in pledge balances *(Note 8)*		(136,928)		**(136,928)**	(67,866)
Change in interests in trusts held by others		(413)		**(413)**	(8,430)
Gifts for facilities and loan funds *(Note 16)*		109,748	$ 330	**110,078**	117,224
Change in retirement obligations *(Note 13)*	209,981			**209,981**	(245,722)
Charges related to debt redemption	(229,357)			**(229,357)**	0
Other changes	(970)			**(970)**	5,245
Transfers between GOA and endowment *(Note 10)*	(49,964)	25,751	937	**(23,276)**	91,228
Transfers between GOA and split interest agreements *(Note 11)*		15,180	24	**15,204**	11,027
Non-operating net assets released from restrictions	80,757	(79,699)	(1,058)	**0**	0
TOTAL NON-OPERATING ACTIVITIES	**163,935**	**(66,361)**	**233**	**97,807**	**(327,395)**
GENERAL OPERATING ACCOUNT NET CHANGE DURING THE YEAR	**185,964**	**25,805**	**233**	**212,002**	**(250,731)**
Endowment net change during the year	300,794	549,168	580,769	**1,430,731**	(1,949,802)
Split interest agreements net change during the year *(Note 11)*		2,198	29,818	**32,016**	43,320
NET CHANGE DURING THE YEAR	**486,758**	**577,171**	**610,820**	**1,674,749**	**(2,157,213)**
Net assets, beginning of year	9,586,256	24,941,377	7,883,697	**42,411,330**	**44,568,543**
NET ASSETS, END OF YEAR	**$ 10,073,014**	**$ 25,518,548**	**$ 8,494,517**	**$ 44,086,079**	**$ 42,411,330**

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

STATEMENTS OF CHANGES IN NET ASSETS OF THE ENDOWMENT

with summarized financial information for the year ended June 30, 2016

In thousands of dollars	Unrestricted	Temporarily Restricted	Permanently Restricted	For the year ended June 30 2017	2016
Investment return *(Note 3)*:					
Income from general investments	$ 14,688	$ 70,777		**$ 85,465**	$ 131,075
Realized and change in unrealized appreciation/(depreciation), net	432,980	2,133,546		**2,566,526**	(757,067)
Total investment return	447,668	2,204,323	0	**2,651,991**	(625,992)
Endowment returns made available for operations	(311,169)	(1,476,248)		**(1,787,417)**	(1,706,244)
Net investment return	136,499	728,075	0	**864,574**	(2,332,236)
Gifts for endowment *(Note 16)*	1,028	165,898	$ 383,603	**550,529**	491,983
Transfers between endowment and the GOA *(Note 10)*	49,964	(25,751)	(937)	**23,276**	(91,228)
Capitalization of split interest agreements *(Note 11)*	0	3,593	25,650	**29,243**	20,971
Change in pledge balances *(Note 8)*	0	(108,217)	59,325	**(48,892)**	(42,878)
Change in interests in trusts held by others *(Note 10)*	0	(2,428)	44,167	**41,739**	1,090
Other changes	(994)	(96,765)	68,021	**(29,738)**	2,496
Net assets released from restrictions	114,297	(115,237)	940	**0**	0
NET CHANGE DURING THE YEAR	**300,794**	**549,168**	**580,769**	**1,430,731**	**(1,949,802)**
Net assets of the endowment, beginning of year	5,847,379	22,482,876	7,335,488	**35,665,743**	37,615,545
NET ASSETS OF THE ENDOWMENT, end of year	**$ 6,148,173**	**$ 23,032,044**	**$ 7,916,257**	**$ 37,096,474**	**$ 35,665,743**

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

STATEMENTS OF CASH FLOWS

with summarized financial information for the year ended June 30, 2016

In thousands of dollars	For the year ended June 30 2017	2016
CASH FLOWS FROM OPERATING ACTIVITIES:		
Change in net assets	**$ 1,674,749**	$ (2,157,213)
Adjustments to reconcile change in net assets to net cash (used in) operating activities:		
Depreciation	**348,885**	338,173
Amortization of premium and discount related to bonds and notes payable	**(55,748)**	(5,211)
Realized and change in unrealized (appreciation)/depreciation, net	**(2,956,361)**	905,297
Change in fair value of interest rate exchange agreements	**(14,212)**	19,118
Change in interests in trusts held by others	**(41,326)**	7,340
Change in liabilities due under split interest agreements	**49,534**	(118,882)
Gifts of donated securities	**(149,964)**	(200,806)
Proceeds from the sales of gifts of unrestricted securities	**47,615**	80,363
Gifts of donated securities in other investments		5,882
Gifts for restricted purposes	**(590,189)**	(501,319)
Loss on redemption of debt	**50,797**	
Loss on disposal of assets	**32,274**	11,408
Gain on sale of property	**(3,003)**	(10,347)
Change in accrued retirement obligations	**(151,571)**	286,844
Changes in operating assets and liabilities:		
Receivables,net	**(13,637)**	(8,242)
Prepayments and deferred charges	**20,352**	(18,570)
Pledges receivable, net	**186,194**	110,979
Accounts payable	**13,198**	18,556
Deposits and other liabilities	**106,195**	16,926
NET CASH (USED IN) OPERATING ACTIVITIES	**(1,446,218)**	**(1,219,704)**
CASH FLOWS FROM INVESTING ACTIVITIES:		
Loans made to students, faculty, and staff	**(50,122)**	(51,311)
Payments received on student, faculty, and staff loans	**46,210**	47,423
Change in other notes receivable	**2,040**	534
Proceeds from the sales and maturities of investments	**70,540,252**	88,023,222
Purchase of investments	**(59,712,601)**	(91,802,151)
Change associated with repurchase agreements	**828,320**	(94,950)
Additions to fixed assets	**(979,169)**	(692,798)
Proceeds from sale of property	**3,649**	10,790
NET CASH PROVIDED BY/(USED IN) INVESTING ACTIVITIES	**10,678,579**	**(4,559,241)**
CASH FLOWS FROM FINANCING ACTIVITIES:		
Change in overdrafts included in accounts payable	**(9,159)**	8,582
Proceeds from issuance of debt	**3,331,926**	5,707
Debt repayments	**(3,072,587)**	(367,192)
Proceeds from the sales of gifts of restricted securities	**102,349**	120,443
Gifts for restricted purposes	**590,189**	501,319
Affiliated entity contributions and distributions, net	**(15,411)**	(38,293)
Change in repurchase and reverse repurchase agreements	**(10,135,778)**	5,551,555
Change in government loan advances	**2,268**	864
NET CASH (USED IN)/PROVIDED BY FINANCING ACTIVITIES	**(9,206,203)**	**5,782,985**
NET CHANGE IN CASH	**26,158**	**4,040**
Cash, beginning of year	**113,738**	**109,698**
CASH, end of year	**$ 139,896**	**$ 113,738**
Supplemental disclosure of cash flow information:		
Accounts payable related to fixed asset additions	$ 71,468	$ 72,474
Cash paid for interest	$ 203,778	$ 246,464

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

1. UNIVERSITY ORGANIZATION

Harvard University (the "University") is a private, not-for-profit institution of higher education with approximately 6,645 undergraduate and 13,270 graduate students. Established in 1636, the University includes the Faculty of Arts and Sciences, the John A. Paulson School of Engineering and Applied Sciences, the Division of Continuing Education, ten graduate and professional Schools, the Radcliffe Institute for Advanced Study, a variety of research museums and institutes, and an extensive library system to support the teaching and research activities of the Harvard community. The President and Fellows of Harvard College (the "Corporation"), a governing board of the University, has oversight responsibility for all of the University's financial affairs. The Corporation delegates substantial authority to the Schools and departments for the management of their resources and operations.

The University includes Harvard Management Company (HMC), a wholly owned subsidiary founded in 1974 to manage the University's investment assets. HMC is governed by a Board of Directors that is appointed by the Corporation.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Basis of presentation

The accompanying consolidated financial statements have been prepared on the accrual basis of accounting and include the accounts of the University and affiliated organizations controlled by the University. Significant inter-affiliate accounts and transactions have been eliminated.

Funds transferred to the University on behalf of specific beneficiaries (agency funds) are recorded as assets and liabilities in the *Balance Sheets* and are not included in the *Statement of Changes in Net Assets with General Operating Account Detail*.

The financial statements include certain prior year summarized comparative information in total, not by net asset classification. This information is not presented in sufficient detail to conform to generally accepted accounting principles (GAAP). Accordingly, such information should be read in conjunction with the University's financial statements for the year ended June 30, 2016, from which the summarized information is derived.

Net asset classifications

For the purposes of financial reporting, the University classifies resources into three net asset categories pursuant to any donor-imposed restrictions and applicable law. Accordingly, the net assets of the University are classified in the accompanying financial statements in the categories that follow:

UNRESTRICTED net assets are not subject to donor-imposed restrictions. Funds invested in fixed assets and unrestricted endowment funds comprise 98% of the University's unrestricted net assets as of June 30, 2017. In addition, this category includes unrestricted gifts and endowment income balances, University-designated loan funds, and other unrestricted current funds.

TEMPORARILY RESTRICTED net assets are subject to legal or donor-imposed stipulations that will be satisfied either by actions of the University, the passage of time, or both. These net assets include gifts donated for a particular purpose, amounts subject to time restrictions such as funds pledged for future payment, or amounts subject to legal restrictions such as portions of otherwise unrestricted capital appreciation and income, which must be reported as temporarily restricted net assets until appropriated for spending in accordance with Massachusetts law.

PERMANENTLY RESTRICTED net assets are subject to donor-imposed stipulations that they be invested to provide a perpetual source of income to the University. Generally, donors of these assets require the University to maintain and invest the original contribution in perpetuity, but permit the use of some or all investment returns for general or specific purposes.

Revenues from sources other than contributions are generally reported as increases in unrestricted net assets. Expenses are reported as decreases in unrestricted net assets. Gains and losses on investments are reported as increases or decreases in unrestricted net assets, unless their use is restricted by donor stipulations or by law. Investment returns earned by restricted donor funds are initially classified as temporarily restricted net assets and then reclassified to unrestricted net assets when expenses are appropriated or incurred for their intended purpose. Expirations of temporary restrictions on net assets are reported as reclassifications from temporarily restricted to unrestricted net assets and appear as "Net assets released from restrictions" and "Non-operating net assets released from restrictions" in the *Statements of Changes in Net Assets*.

Unconditional pledges are reported as increases in the appropriate categories of net assets in accordance with donor restrictions.

Net operating surplus

Revenues earned, expenses incurred, and returns made available for operations for the purpose of teaching, conducting research, and the other programs and services of the University are the components of "Net operating surplus" in the *Statement of Changes in Net Assets with General Operating Account Detail.*

Collections

The University's vast array of museums and libraries contains priceless works of art, historical treasures, literary works, and artifacts. These collections are protected and preserved for public exhibition, education, research, and the furtherance of public service. They are neither disposed of for financial gain nor encumbered in any manner. Accordingly, such collections are not recorded for financial statement purposes.

Insurance programs

The University, together with the Harvard-affiliated teaching hospitals, has formed a captive insurance company, Controlled Risk Insurance Company (CRICO), to provide limited professional liability, general liability, and medical malpractice insurance for its shareholders. The University self-insures a portion of its professional liability and general liability programs and maintains a reserve for incurred claims, including those related to Harvard Medical School activities occurring away from the affiliated teaching hospitals. CRICO provided malpractice coverage applies with no deductible for medical professionals practicing within Harvard's University Health Services department, the School of Dental Medicine, and the T.H. Chan School of Public Health. The University also maintains reserves for the self-insured portion of claims related to automobile liability, property damage, and workers' compensation; these programs are supplemented with commercial excess insurance above the University's self-insured limit. In addition, the University is self-insured for unemployment, the primary retiree health plan, and all health and dental plans for active employees. The University's claims liabilities are recognized as incurred, including claims that have been incurred but not reported, and are included in operating expenses.

Tax-exempt status

The University is a tax-exempt organization under Section 501(c)(3) of the Internal Revenue Code.

Use of estimates

The preparation of financial statements in accordance with GAAP in the United States of America requires management to make estimates and assumptions that affect reported amounts and disclosures. Actual results could differ from those estimates.

New accounting pronouncements

In January 2016, the Financial Accounting Standards Board (FASB) issued ASU 2016-01, *Recognition and Measurement of Financial Assets and Financial Liabilities,* which address certain aspects of recognition, measurement, presentation and disclosure of financial instruments. This guidance allows an entity to choose, investment-by-investment, to report an equity investment that neither has a readily determinable fair value, nor qualifies for the practical expedient for fair value estimation using NAV, at its cost minus impairment (if any), plus or minus changes resulting from observable price changes in orderly transactions for the identical or similar investment of the same issue. Impairment of such investments must be assessed qualitatively at each reporting period. Entities must disclose their financial assets and liabilities by measurement category and form of asset either on the face of the statement of financial position or in the accompanying notes. The ASU is effective for fiscal year 2020 for the University. The provision to eliminate the requirement to disclose the fair value of financial instruments measured at cost (such as the fair value of debt) has been early adopted by the University for fiscal year 2016. The University is currently evaluating the impact of the remaining new guidance on the consolidated financial statements.

Effective July 1, 2016, the University elected to retroactively adopt ASU No. 2017-02, *Not-for-Profit Entities – Consolidation (Subtopic 958-810): Clarifying When a Not-for-Profit Entity That Is a General Partner or a Limited Partner Should Consolidate a For-Profit Limited Partnership or Similar Entity,* which impacts consolidation for not-for-profit entities. As a result of adopting this guidance, certain previously consolidated limited liability investment entities are no longer consolidated. Other assets associated with these investment entities amounted to $343 million in the 2016 *Statement of Financial Position* and are now included in investment assets for that year, rather than included in other assets. The liabilities associated with these investment entities amounted to $3,659 million in the 2016 *Statement of Financial Position* and are now netted against investment assets for that year, rather than shown separately as liabilities. In addition, certain non-controlling interests are no longer shown as assets, net assets, and changes in net assets in the *Statement of Financial Position* and in the *Statement of Activities*. Therefore, $213 million of the change in net assets attributable to non-controlling interests for fiscal 2016, as well as $905 million of non-controlling interests as of June 30, 2016 are no longer shown in the related 2016 comparative statements. These changes have also been appropriately reflected in the investment notes.

In August 2016, the FASB issued ASU 2016-14, *Presentation of Financial Statements for Not-for-Profit Entities*, which makes targeted changes to the not-for-profit financial reporting model. Under the new ASU, net asset reporting will be streamlined and clarified. The ASU is effective for fiscal year 2019 for the University. The University is evaluating the impact of the new guidance on the consolidated financial statements.

In May 2014, the FASB issued ASU 2014-09, *Revenue from Contracts with Customers* at the conclusion of a joint effort with the International Accounting Standards Board to create common revenue recognition guidance for U.S. GAAP and international accounting standards. This framework ensures that entities appropriately reflect the consideration to which they expect to be entitled in exchange for goods and services, by allocating transaction price to identified performance obligations, and recognizing that revenue as performance obligations are satisfied. Qualitative and quantitative disclosures will be required to enable users of financial statements to understand the nature, amount, timing, and uncertainty of revenue and cash flows arising from contracts with customers. The ASU is effective for fiscal year 2019 for the University. The University is evaluating the impact this will have on the consolidated financial statements.

In February 2016, the FASB issued ASU 2016-02, *Leases*, which, requires a lessee to recognize a right-of-use asset and a lease liability, initially measured at the present value of the lease payments, in its balance sheet. The guidance also expands the required quantitative and qualitative disclosures surrounding leases. The ASU is effective for fiscal year 2020 for the University. The University is evaluating the impact of the new guidance on the consolidated financial statements.

In March 2017, the FASB issued final guidance on ASU 2017-07, *Compensation – Retirement Benefits (Topic 715): Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost*. Presently, net benefit cost is reported as an employee cost within operating income (or capitalized into assets where appropriate). The amendment requires the bifurcation of net benefit cost. The service cost component will be presented with other employee costs in operating income (or capitalized in assets). The other components will be reported separately outside of operations, and will not be eligible for capitalization. The ASU is effective for fiscal year 2020 for the University. The University is evaluating the impact of the new guidance on the consolidated financial statements.

3. INVESTMENTS

Investments are presented at fair value in accordance with GAAP. The University's investment valuation policies and procedures are discussed in detail in *Note 4*.

Cash and short-term investments are recorded at cost, which approximates fair value, and include cash in bank accounts, institutional money market funds, and other temporary investments held for working capital purposes with maturities of three months or less. Cash and short-term investments do not include cash balances held as collateral by the University. Cash and short-term investment balances designated for investment purposes are included in the "Investment portfolio, at fair value" in the *Balance Sheets*.

Dividend income is recognized net of applicable withholding taxes on the ex-dividend date. Non-cash dividends are recorded at the fair value of the securities received. Interest income and expenses are recorded net of applicable withholding taxes on the accrual basis of accounting. The University amortizes bond premiums and accretes bond discounts using the effective yield method and when cash collection is expected.

The University utilizes a number of wholly owned subsidiary entities to support its investment activities. The consolidated financial statements include all assets, liabilities, income, and expenses associated with these entities and intercompany accounts and transactions have been eliminated during consolidation.

The University separately reports the fair value of assets for which counterparties have the right to pledge or exchange the collateral they have received; investment portfolio assets that are unencumbered are included in "Investment portfolio, at fair value" in the *Balance Sheets*.

The majority of the University's investments are managed by HMC in the GIA, a pooled fund that consists primarily of endowment assets. Certain other investments are managed separately from the GIA. These other investments consist primarily of cash, short-term investments, and fixed income securities (principally US government securities) held for the University's working capital and liquidity needs; publicly traded securities associated with split interest agreements; and public and private investments donated to the University.

The University's investment holdings as of June 30, 2017 and 2016 are summarized in the following table (in thousands of dollars):

	2017	2016
Investment portfolio, at fair value:		
Pooled general investment account assets[1]	**$ 41,796,466**	$ 60,430,331
Other investments[2]	**1,537,011**	1,995,976
Investment assets[3]	**43,333,477**	62,426,307
Pooled general investment account liabilities	**898,614**	21,443,023
Interest rate exchange agreement	**21,944**	36,156
Investment liabilities	**920,558**	21,479,179
TOTAL INVESTMENTS, NET	**$ 42,412,919**	**$ 40,947,128**

[1] *Includes securities pledged to counterparties of $57,551 and $15,357,995 at June 30, 2017 and 2016, respectively.*

[2] *As of June 30, 2017, other investments consisted primarily of repurchase agreements and US government securities of $630,488 and split interest agreement assets outside of the GIA of $581,696. As of June 30, 2016, other investments consisted primarily of repurchase agreements and US government securities of $1,025,559 and split interest agreement assets outside of the GIA of $535,218.*

[3] *Investment assets include cash and cash equivalents that consist principally of deposits that have maturities of 90 days or less. Cash and cash equivalents classified as investments were $3,422,154 and $1,001,104 at June 30, 2017 and 2016, respectively.*

A summary of the University's total return on investments for fiscal years 2017 and 2016 is presented below (in thousands of dollars):

	2017	2016
Return on pooled general investment account:		
Realized and change in unrealized appreciation/(depreciation), net	**$ 2,923,828**	$ (945,217)
Net investment income	**98,912**	150,843
Total return on pooled general investment account[1]	**3,022,740**	(794,374)
Return on other investments:		
Realized and change in unrealized appreciation, net	**32,533**	39,920
Net investment income	**32,944**	27,816
Total return on other investments	**65,477**	67,736
Realized and change in unrealized appreciation/(depreciation) on interest rate exchange agreement, net	**11,234**	(22,767)
TOTAL RETURN ON INVESTMENTS	**$ 3,099,451**	**$ (749,405)**

[1] *Net of all internal and external management fees and expenses.*

The University's investment strategy incorporates a diversified asset allocation approach and maintains, within defined limits, exposure to the movements of the global equity, fixed income, real estate, commodities, and private equity markets. The pooled GIA assets and liabilities on page 22 have been disaggregated based on the exposure of the investment to these markets. Exposure to each asset class is achieved through investments in individual securities, direct investments in special purpose vehicles, and/or through vehicles advised by external managers.

The pooled GIA assets and liabilities as of June 30, 2017 and 2016 are summarized as follows (in thousands of dollars):

	2017	2016
POOLED GENERAL INVESTMENT ACCOUNT ASSETS:[1]		
Investment assets:		
Domestic equity	**$ 4,517,932**	$ 4,545,144
Foreign equity	**1,425,863**	1,199,078
Global equity	**1,239,346**	993,935
Domestic fixed income	**1,585,222**	12,006,907
Foreign fixed income		3,625,651
Emerging market equity and debt	**1,310,664**	2,842,114
High yield	**861,706**	333,037
Absolute return	**7,964,080**	6,575,034
Private equity	**7,467,640**	7,125,969
Natural resources	**2,867,835**	3,950,295
Real estate	**5,377,910**	6,438,004
Inflation-indexed bonds	**804,841**	1,950,290
Due from brokers[2]	**67,608**	430,715
Total investment assets	**35,490,647**	52,016,173
Repurchase agreements	**1,600,102**	6,938,860
Cash and short-term investments	**3,285,096**	861,949
Other assets[3]	**1,420,621**	613,349
POOLED GENERAL INVESTMENT ACCOUNT ASSETS	**41,796,466**	**60,430,331**
POOLED GENERAL INVESTMENT ACCOUNT LIABILITIES:[1]		
Investment liabilities:		
Equity securities sold, not yet purchased		94,104
Fixed income securities sold, not yet purchased		4,520,021
Due to brokers[4]	**12,903**	254,798
Total investment liabilities	**12,903**	4,868,923
Reverse repurchase agreements		14,900,986
Other liabilities[5]	**885,711**	1,673,114
POOLED GENERAL INVESTMENT ACCOUNT LIABILITIES	**898,614**	**21,443,023**
POOLED GENERAL INVESTMENT ACCOUNT NET ASSETS [1,6]	**$ 40,897,852**	**$ 38,987,308**

[1] *Certain prior year amounts have been reclassified to conform to current year presentation and reflect the University's early adoption of ASU 2017-02.*
[2] *Includes collateral advanced under securities borrowing agreements of $100,848 as of June 30, 2016.*
[3] *As of June 30, 2017, other assets consisted primarily of receivables for transactions that settled subsequent to the balance sheet date of $1,390,858, before eliminating inter-company balances, and consolidated assets of $116,361. As of June 30, 2016, other assets consisted primarily of receivables for transactions that settled subsequent to the balance sheet date of $480,039, before eliminating inter-company balances, and consolidated assets of $142,455.*
[4] *Includes collateral held under securities lending agreements of $55,029 as of June 30, 2016.*
[5] *As of June 30, 2017, other liabilities consisted primarily of payables for the purchase of securities of $102,479, before eliminating inter-company balances, and consolidated liabilities of $348,323. As of June 30, 2016, other liabilities consisted primarily of payables for the purchase of securities of $721,172, before eliminating inter-company balances, and consolidated liabilities of $462,935.*
[6] *The cost of the total investment assets was $31,972,479 and $42,062,076 as of June 30, 2017 and 2016, respectively.*

As of June 30, 2017 and 2016, the GIA was comprised of the following components (in thousands of dollars):

	2017	2016
POOLED GENERAL INVESTMENT ACCOUNT		
Endowment[1]	**$ 35,399,801**	$ 33,863,945
General Operating Account	**4,066,488**	3,788,288
Split interest agreements	**789,972**	755,923
Other internally designated funds	**641,591**	579,152
TOTAL POOLED GENERAL INVESTMENT ACCOUNT NET ASSETS	**$ 40,897,852**	**$ 38,987,308**

[1] *Includes only the portion of the endowment invested in the GIA and excludes pledges, interests in trusts held by others, other non-GIA investments, and GIA income.*

The asset allocation of the University's investment portfolio involves exposure to a diverse set of markets. The investments within these markets involve various risks such as price, interest rate, market, sovereign, currency, liquidity, and credit risks. Additionally, the GIA's direct investments in natural resources and real estate expose the University to a unique set of risks such as operational, environmental, and geopolitical risks. Uncertain national policies and social, political and economic instability increase the potential for expropriation of assets and imposition of governmental restrictions. As of June 30, 2017, 19% of the GIA NAV was made up of four diversified fund managers

and one direct investment manager. The University anticipates that the value and composition of its investments may, from time to time, fluctuate substantially in response to any or all of the risks described herein.

The University has various sources of liquidity at its disposal within its investment pools, including approximately $4.4 billion in cash and cash equivalents (including repurchase agreements of $1.9 billion) at June 30, 2017 in the GIA and the GOA. In addition, the University estimates that as of June 30, 2017, it could liquidate additional unencumbered US government securities of $3.2 billion within one business day (typical settlement terms, unaudited) to meet any immediate short-term needs of the University.

The University *Balance Sheets* display both the assets and corresponding liabilities generated by repurchase, reverse repurchase, securities borrowing, and securities lending transactions. The University enters into these transactions under agreements containing master netting arrangements. The University requires the fair value of the collateral exchanged under these agreements to be equal to or in excess of the total amount of the agreement, including interest where applicable. Collateral is exchanged as required by fluctuations in the fair value of these instruments. In the event of a counterparty default, the University generally has the right to close out all transactions traded under such agreements and to net amounts owed or due across all transactions and offset such net payable or receivable with collateral posted by one party or the other.

The following table presents information about the offsetting of these instruments and related collateral amounts as of June 30, 2017 and 2016 (in thousands of dollars):

	As of June 30, 2017			As of June 30, 2016		
	Gross asset amounts[1]	Collateral	Net exposure[2]	Gross asset amounts[1]	Collateral	Net exposure[2]
Repurchase agreements	$ 1,850,245	$ 1,850,245	**$ 0**	$ 7,443,773	$ 7,443,773	**$ 0**
Securities borrowing agreements			**0**	100,848	100,848	**0**
TOTAL REPURCHASE AND SECURITIES BORROWING AGREEMENTS	**$ 1,850,245**	**$ 1,850,245**	**$ 0**	**$ 7,544,621**	**$ 7,544,621**	**$ 0**
	Gross liability amounts[1]	Collateral	Net exposure[2]	Gross liability amounts[1]	Collateral	Net exposure[2]
Reverse repurchase agreements			**$ 0**	$ 14,900,986	$ 14,900,986	**$ 0**
Securities lending agreements			**0**	55,029	55,029	**0**
TOTAL REVERSE REPURCHASE AND SECURITIES LENDING AGREEMENTS			**$ 0**	**$ 14,956,015**	**$ 14,956,015**	**$ 0**

[1] *The University does not offset repurchase and securities borrowing agreements and reverse repurchase and securities lending agreements that are subject to master netting arrangements or similar arrangements on the University's* Balance Sheets. *Refer to* Note 5 *for information related to offsetting of derivatives.*

[2] *Net exposure excludes any over-collateralized amounts.*

As of June 30, 2017, the University did not have reverse repurchase and securities lending agreements. The following table presents information about the collateral pledged and maturity dates for reverse repurchase and securities lending transactions as of June 30, 2016:

	As of June 30, 2016		
	Remaining contractual maturity of agreements		
	Overnight and Continuous	Up to 30 days	Total
Reverse repurchase agreements:			
Domestic fixed income	$ 3,292,021	$ 7,228,071	**$ 10,520,092**
Foreign fixed income		3,531,153	**3,531,153**
High yield	59,550		**59,550**
Inflation-indexed bonds	68,846	721,345	**790,191**
TOTAL REVERSE REPURCHASE AGREEMENTS	**3,420,417**	**11,480,569**	**14,900,986**
Securities lending agreements:			
Emerging market equity and debt	27,564		**27,564**
High yield	27,465		**27,465**
TOTAL SECURITIES LENDING AGREEMENTS	**55,029**		**55,029**
TOTAL REVERSE REPURCHASE AND SECURITIES LENDING AGREEMENTS	**$ 3,475,446**	**$ 11,480,569**	**$ 14,956,015**

4. FAIR VALUE OF INVESTMENT ASSETS AND LIABILITIES

The University endeavors to utilize all relevant and available information in measuring fair value. Investments are valued in accordance with ASC 820, and under the guidelines prescribed by the HMC investment valuation policy, which is reviewed and approved by the HMC Board of Directors on an annual basis.

Instruments listed or traded on a securities exchange are valued at the last quoted price on the primary exchange where the security is traded. Where there is no readily available closing price on the valuation date, long positions are valued at the bid price and short positions are valued at the ask price. Restrictions that are attached to a security are factored into the valuation of that security, reflective of the estimated impact of those restrictions. Investments in non-exchange traded debt and equity instruments are primarily valued using inputs provided by independent pricing services or by broker/dealers who actively make markets in these securities.

Over the counter (OTC) derivative products classified as due to/from brokers include option, swap, credit default, interest rate, and forward contracts. These types of instruments are primarily valued using industry standard models with independent market inputs, or by broker quotes. Inputs such as prices, spreads, curves, and/or broker quotes are evaluated for source reliability and consistency with industry standards. Counterparty marks obtained and utilized to determine daily collateral requirements are also used to corroborate input reasonability. The University considers current market conditions including interest rate and credit risks in its evaluation of inputs, pricing methodologies, and models utilized to determine fair values.

Investments managed by external advisors include investments in private equity, real estate, natural resources, absolute return, and other externally managed funds. The majority of these investments are not readily marketable and are reported at fair value utilizing the most current information provided by the external advisor, subject to assessments that the information is representative of fair value and in consideration of any additional factors deemed pertinent to the fair value measurement. The University evaluates its external advisors through a manager due-diligence program executed by HMC, which includes an analysis of an advisor's use of and adherence to fair value principles. In situations where the information provided by the external advisor is deemed to not be representative of fair value as of the measurement date, the University will evaluate specific features of the investment and utilize supplemental information provided by the external advisor along with any relevant market data to measure the investment's fair value as of that date.

Direct investments in real estate, natural resources, specifically timberland and agriculture, as well as private equity are primarily valued using a combination of independent appraisals and/or one or more industry standard valuation techniques (e.g., income approach, market approach, or cost approach). The income approach is primarily based on the investment's anticipated future income using one of two principal methods: the discounted cash flow method or the capitalization method. Inputs and estimates developed and utilized in the income approach may be subjective and require judgment regarding significant matters such as estimating the amount and timing of future cash flows, forward pricing assumptions and the selection of discount and capitalization rates that appropriately reflect market and credit risks. The market approach derives investment value through comparison to recent and relevant market transactions with similar investment characteristics. The cost approach is utilized when the cost of the investment is determined to be the best representation of fair value. This method is typically used for newly purchased or undeveloped assets. The valuation process encompasses a wide range of procedures that in the aggregate allow the University to assert as to the adequacy of the fair values reported as of the measurement date. The HMC Board of Directors discusses the valuation process and results with HMC management, and makes determinations on significant matters impacting valuation that may arise from time to time.

The University's investments have been categorized based upon the fair value hierarchy in accordance with ASC 820, which prioritizes the inputs to valuation techniques used to measure fair value of investment assets and liabilities into three levels:

LEVEL 1 Unadjusted quoted prices in active markets that are accessible at the measurement date for identical, unrestricted assets or liabilities;

LEVEL 2 Quoted prices in markets that are not considered to be active or financial instruments for which all significant inputs are observable, either directly or indirectly;

LEVEL 3 Prices or valuations that require inputs that are significant to the fair value measurement, unobservable and/or require the University to develop its own assumptions.

Per ASU No. 2015-07 investments measured at net asset value, as reported by external managers, as a practical expedient for the fair value, are excluded from the fair value hierarchy.

The level of an asset or liability within the fair value hierarchy is based on the lowest level of any input that is significant to the fair value measurement. Transfers between levels are recognized at the beginning of the year.

The following is a summary of the levels within the fair value hierarchy for those investment assets and liabilities subject to fair value measurement as of June 30, 2017 and 2016 (in thousands of dollars):

	2017				2016			
	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
INVESTMENT ASSETS:[1]								
Cash and short-term investments	$ 3,422,154			**$ 3,422,154**	$ 1,001,104			**$ 1,001,104**
Domestic equity	68,002			**68,002**	86,354			**86,354**
Foreign equity	167,300			**167,300**	119,179			**119,179**
Domestic fixed income	2,038,354	$ 29,325		**2,067,679**	12,561,479	$ 53,242	$ 10,000	**12,624,721**
Foreign fixed income	28,378			**28,378**	778,927	2,874,363		**3,653,290**
Emerging market equity and debt	1,612	33,901		**35,513**	1,687,492	66,367		**1,753,859**
High yield	865,474	25	$ 425	**865,924**	132,983	197,236	6,624	**336,843**
Absolute return			89,471	**89,471**			98,929	**98,929**
Private equity			880,530	**880,530**			185,372	**185,372**
Natural resources	2,119		2,778,134	**2,780,253**	1,393		3,632,472	**3,633,865**
Real estate			4,292,544	**4,292,544**	37,840		3,279,174	**3,317,014**
Inflation-indexed bonds	825,719			**825,719**	1,966,233			**1,966,233**
Due from brokers		62,968	4,640	**67,608**	7,839	154,281	184,282	**346,402**
Other investments	13,550	3,379	2,559	**19,488**	21,621	3,306	3,147	**28,074**
Repurchase agreements		1,850,245		**1,850,245**		7,443,773		**7,443,773**
Interests in trusts held by others[2]			397,161	**397,161**			355,835	**355,835**
INVESTMENT ASSETS SUBJECT TO FAIR VALUE LEVELING	**$ 7,432,662**	**$ 1,979,843**	**$ 8,445,464**	**$ 17,857,969**	**$ 18,402,444**	**$ 10,792,568**	**$ 7,755,835**	**36,950,847**
Investments measured using the practical expedient				**24,328,333**				**24,949,883**
Securities borrowing agreements								**100,848**
Other assets not subject to fair value				**1,544,336**				**797,101**
TOTAL ASSETS[3]				**$ 43,730,638**				**$ 62,798,679**
INVESTMENT LIABILITIES:[1]								
Equity securities sold, not yet purchased					$ 94,104			**$ 94,104**
Fixed income securities sold, not yet purchased					4,264,293	$ 255,729		**4,520,022**
Due to brokers[4]	$ 2,052	$ 32,795		**$ 34,847**	57,079	176,736	$ 18,646	**252,461**
Reverse repurchase agreements						14,900,986		**14,900,986**
Liabilities due under split interest agreements[2]		840,736		**840,736**		791,202		**791,202**
Other liabilities subject to fair value			$ 177,993	**177,993**			184,196	**184,196**
LIABILITIES SUBJECT TO FAIR VALUE LEVELING	**$ 2,052**	**$ 873,531**	**$ 177,993**	**1,053,576**	**$ 4,415,476**	**$ 16,124,653**	**$ 202,842**	**20,742,971**
Securities lending agreements								**55,029**
Other liabilities not subject to fair value				**707,718**				**1,488,918**
TOTAL LIABILITIES[3]				**$ 1,761,294**				**$ 22,286,918**

[1] *Certain prior year amounts have been reclassified to conform to current year presentation, and reflect the University's early adoption of ASU 2017-02.*
[2] *Amounts excluded from investments and included separately on the University's* Balance Sheets.
[3] *For purposes of reporting by level under the fair value hierarchy, some assets and liabilities are shown gross that are otherwise reported net in the table on page 22.*
[4] *Includes fair value of interest rate exchange agreement on the University's debt portfolio of $21,944 and $36,156 as of June 30, 2017 and 2016, respectively.*

The following is a rollforward of Level 3 investments for the year ended June 30, 2017 (in thousands of dollars):

	Beginning balance as of July 1, 2016	Net realized gains/(losses)	Net change in unrealized appreciation (depreciation)[1]	Purchases/ contributions	Sales/ distributions	Transfers into Level 3[2]	Ending balance as of June 30, 2017
INVESTMENT ASSETS:							
Foreign equity				$ 4,000	$ (4,000)		**$ 0**
Domestic fixed income	$ 10,000	$ 111		83,444	(93,555)		**0**
High yield	6,624	222	$ (418)	3,089	(9,092)		**425**
Absolute return	98,929	174	(4,660)		(4,972)		**89,471**
Private equity	185,372	33,018	(261,045)	30,866	(618,111)	$ 1,510,430	**880,530**
Natural resources	3,632,472	(53,164)	(1,105,762)	298,069	(192,327)	198,846	**2,778,134**
Real estate	3,279,174	220,527	(13,604)	959,156	(1,806,041)	1,653,332	**4,292,544**
Due from brokers	184,282	(193,103)	212,328	9,089	(207,956)		**4,640**
Other investments	3,147	152	(740)				**2,559**
Interests in trusts held by others	355,835		41,326				**397,161**
TOTAL ASSETS SUBJECT TO FAIR VALUE LEVELING	**$ 7,755,835**	**$ 7,937**	**$ (1,132,575)**	**$ 1,387,713**	**$ (2,936,054)**	**$ 3,362,608**	**$ 8,445,464**
INVESTMENT LIABILITIES:							
Due to brokers	$ 18,646	$ (251,390)	$ 257,715	$ (32,189)	$ 7,218		**$ 0**
Other liabilities subject to fair value	184,196		(10,382)	(27,868)	32,047		**177,993**
TOTAL LIABILITIES SUBJECT TO FAIR VALUE LEVELING	**$ 202,842**	**$ (251,390)**	**$ 247,333**	**$ (60,057)**	**$ 39,265**		**$ 177,993**

[1] *Total change in unrealized appreciation/(depreciation) relating to Level 3 investment assets and investment liabilities still held by the University at June 30, 2017 is $(1,117,334) and is reflected in "Realized and change in unrealized appreciation/(depreciation), net" in the* Statements of Changes in Net Assets.
[2] *During the fiscal year, certain transfers into Level 3 represent instances of deviation from the practical expedient whereas certain transfers out of Level 3 represent a return to the practical expedient. Certain securities, included in Private equity, Natural resources and Real estate, were valued using a secondary sale price and were transferred into Level 3.*

The following is a rollforward of Level 3 investments for the year ended June 30, 2016 (in thousands of dollars):

	Beginning balance as of July 1, 2015	Net realized gains/ (losses)	Net change in unrealized appreciation (depreciation)[2]	Purchases/ contributions	Sales/ distributions	Transfers into Level 3[3]	Transfers out of Level 3[3]	Ending balance as of June 30, 2016
INVESTMENT ASSETS:[1]								
Domestic fixed income				$ 10,000				**$ 10,000**
High yield	$ 35,197	$ 165	$ 15,032	40,887	$ (84,657)			**6,624**
Absolute return	175,556	217	(74,544)	2,265	(4,565)			**98,929**
Private equity	278,042	141,859	(234,546)	205,002	(205,002)	$ 17		**185,372**
Natural resources	3,955,287	103,991	(378,379)	210,422	(258,849)			**3,632,472**
Real estate	2,442,222	116,483	327,282	1,026,030	(627,409)		$ (5,434)	**3,279,174**
Due from brokers	103,444	13,638	93,091	155,469	(195,575)	14,326	(111)	**184,282**
Other investments	20,326	296	(17,475)					**3,147**
Interests in trusts held by others	363,175		(7,340)					**355,835**
TOTAL ASSETS SUBJECT TO FAIR VALUE LEVELING	**$ 7,373,249**	**$ 376,649**	**$ (276,879)**	**$ 1,650,075**	**$ (1,376,057)**	**$ 14,343**	**$ (5,545)**	**$ 7,755,835**
INVESTMENT LIABILITIES:[1]								
Due to brokers	$ 462	$ (24,287)	$ 78,662	$ (133,739)	$ 83,222	$ 14,326		**$ 18,646**
Other liabilities subject to fair value	177,004		(34,237)	(16,964)	58,393			**184,196**
TOTAL LIABILITIES SUBJECT TO FAIR VALUE LEVELING	**$ 177,466**	**$ (24,287)**	**$ 44,425**	**$ (150,703)**	**$ 141,615**	**$ 14,326**		**$ 202,842**

[1] *Certain prior year amounts have been reclassified to conform to current year presentation and reflect the University's early adoption of ASU 2017-02.*
[2] *Total change in unrealized appreciation/(depreciation) relating to Level 3 investment assets and investment liabilities still held by the University at June 30, 2016 is $(341,862) and is reflected in "Realized and change in unrealized appreciation/(depreciation), net" in the* Statements of Changes in Net Assets.
[3] *During the fiscal year, certain transfers into Level 3 represent instances of deviation from the practical expedient whereas certain transfers out of Level 3 represent a return to the practical expedient. Certain securities, included in Due from/to brokers, valued using single broker quotes were transferred into Level 3. Certain securities, included in Due from brokers, no longer valued using single broker quotes were transferred out of Level 3.*

Investments that trade in inactive markets, but are valued based on quoted market prices, broker/dealer quotations, or independent pricing services supported by observable inputs are primarily classified within Level 2. These may include non-exchange traded equity and fixed income securities, securities subject to restriction, and certain OTC derivatives. Other investments, including OTC derivatives valued using broker quotes or other industry standard models, where unobservable inputs may have been obtained from third parties, have been classified as Level 3 in accordance with the fair value hierarchy under ASC 820.

The University is a limited partner in private equity and real estate partnerships, and other external investment managers, which include commitments to make periodic contributions in future periods. The amounts of these expected disbursements as of June 30, 2017 and 2016 are disclosed below (in thousands of dollars):

	As of June 30, 2017			As of June 30, 2016		
	Fair value[1]	Remaining unfunded commitments	Estimated remaining life[2]	Fair value[1]	Remaining unfunded commitments	Estimated remaining life[2]
Private equity	$ 5,845,459	$ 4,635,090	4 – 10	$ 5,670,822	$ 4,084,380	4 – 10
Real estate	1,552,640	926,382	4 – 10	2,424,358	1,714,591	4 – 10
Other externally managed funds[3]	2,352,402	1,924,219	2 – 8	2,266,998	1,416,297	2 – 8
TOTAL	**$ 9,750,501**	**$ 7,485,691**		**$ 10,362,178**	**$ 7,215,268**	

[1] *Represents the fair value of the funded portion of investments with remaining unfunded commitments.*
[2] *The estimated remaining lives of these funds, expressed in years, are forward-looking projections based on the University's estimates and could vary significantly depending on the investment decisions of external managers, changes in the University's investment portfolio, and other circumstances.*
[3] *Investments in externally managed funds primarily include exposures to absolute return and natural resources.*

The nature of these partnership interests is that distributions are received through the liquidation of the underlying assets of the partnership over its remaining life. The fair value of the investments in these asset classes has generally been estimated using the University's capital account balance with each partnership, unless the University has deemed the NAV to be an inappropriate representation of fair value. To evaluate the fair value of the University's externally managed investments, the University has assessed factors including, but not limited to, the external advisor's adherence to fair value principles in calculating the capital account balance, the existence of transactions at NAV at the measurement date, and the existence or absence of certain restrictions at the measurement date. Investments in externally managed funds generally have limited redemption options for investors and, subsequent to final closing, may or may not permit subscriptions by new or existing investors. These entities may also have the ability to impose gates, lockups, and other restrictions on an investor's ability to readily redeem out of their investment interest in the partnership.

The valuation procedures performed on direct investments are based on industry standard processes for each respective asset class. The inputs utilized in any valuation model may be significant and unobservable, and require a certain degree of judgment. The University examines market data and collaborates closely with industry experts to attempt to arrive at the best estimation of fair value for each respective asset. While the inputs described below represent the range of inputs utilized as of the measurement date, these inputs may change over time, which may have a material effect on the valuation of these types of investments in the future.

Additionally, there may be interrelationships between the unobservable inputs utilized in any valuation model, and significant changes in any of those inputs, in isolation or in the aggregate, may trigger changes in other inputs or in the estimated fair value for each respective investment asset. The University has not assessed the sensitivity to unforeseeable changes in significant unobservable inputs; rather the range of inputs described below illustrate those inputs utilized by management in arriving at fair value for these direct investments as of the measurement date.

	As of June 30, 2017		As of June 30, 2016	
Significant unobservable input by asset class[1,4]	Level 3 investments subject to fair value (in thousands of dollars)[2]	Range of inputs utilized in valuation model[3]	Level 3 investments subject to fair value (in thousands of dollars)[2]	Range of inputs utilized in valuation model[3]
Natural resources:	$ 2,695,739		$ 3,632,472	
Income approach discount rate		5.0% – 20.0%		5.5% – 18.0%
Price per planted hectare		$2,394 – $168,932		$2,106 – $161,206
Price per gross hectare		$448 – $48,560		$447 – $33,855
Real estate:	3,373,294		3,262,893	
Income approach discount rate		5.3% – 17.8%		5.8% – 19.8%
Capitalization rate		2.3% – 8.5%		2.5% – 10.0%
Recent financing – discount		22.5%		20.0%
Loan to value		12.8% – 83.9%		13.4% – 87.7%
Market interest rate		2.6% – 8.3%		2.0% – 8.5%
Private equity:	46,005		147,571	
Income approach discount rate		6.0% – 8.0%		6.0% – 15.25%
EBITDA multiple		10x		8.0x – 10x
Equity valuation multiple				6.0x – 8.5x
Net income multiple		7.0x		7.0x
Comparable transaction price per unit		$25 – $30		
Revenue per unit				$0.40
Absolute return:	72,717		78,789	
Book value multiplier		0.7x		0.7x
Other liabilities subject to fair value	(177,993)		(184,196)	
Loan to value		3.8% – 42.9%		3.7% – 47.7%
Market interest rate		2.5% – 15.0%		2.5% – 18.7%
NET AMOUNT	**$ 6,009,762**		**$ 6,937,529**	

[1] *The fair value of investments may be determined using multiple valuation techniques.*
[2] *Included within Level 3 investments is $2,257,709 and $615,464 as of June 30, 2017 and 2016, respectively, which were valued using other inputs including, but not limited to single source broker quotations, third party pricing and prior transactions.*
[3] *The range of inputs encompasses a variety of investment types within each asset class.*
[4] *Prior year balances have been adjusted to reflect the University's early adoption of ASU 2017-02.*

5. DERIVATIVES

The University uses a variety of financial instruments with off-balance sheet risk involving contractual or optional commitments for future settlement, which are exchange traded or executed OTC. Certain instruments are cleared and settled through central clearing counterparties, while others are bilateral contracts between two counterparties. These instruments are used to increase or decrease exposure to a given asset class, with the goal of enhancing the returns of these asset classes. The market risk of a particular strategy is influenced by the relationship between the financial instruments with off-balance sheet risk and the offsetting positions recorded in the *Balance Sheets*. The University manages exposure to market risk through the use of industry standard analytical tools that measure the market exposure of each position within a strategy. The strategies are monitored daily, and positions are frequently adjusted in response to changes in the financial markets.

In connection with its derivative activities, the University generally maintains master netting agreements and collateral agreements with its counterparties. These agreements provide the University the right, in the event of default by the counterparty (such as bankruptcy or a failure to pay or perform), to net a counterparty's rights and obligations under the agreement and to liquidate and offset collateral against any net amount owed by the counterparty.

The following table presents information about the University's derivatives by primary risk exposure for the years ended June 30, 2017 and 2016 (in thousands of dollars):

	As of June 30, 2017		For the year ended June 30, 2017	As of June 30, 2016		For the year ended June 30, 2016
Primary risk exposure	Gross derivative assets	Gross derivative liabilities	Net profit/ (loss)[4]	Gross derivative assets	Gross derivative liabilities	Net profit/ (loss)[4]
Equity instruments:						
Equity futures		$ 2,051	$ (22,001)	$ 1,778	$ 11,111	$ (47,007)
Equity options			8,117	157,782	141,404	(41,090)
Equity exchange agreements	$ 94,460	32,898	528,861	195,941	125,851	(231,112)
TOTAL EQUITY INSTRUMENTS	**94,460**	**34,949**	**514,977**	**355,501**	**278,366**	**(319,209)**
Fixed income instruments:						
Fixed income futures			92,925	28,780	83,232	(26,753)
Fixed income options			(2,799)	8,270	2,470	13,067
Interest rate exchange agreements[1]		21,944	57,577	2,103,301	2,078,179	(303,236)
Interest rate caps and floors			9,507	61,628	69,614	(10,547)
TOTAL FIXED INCOME INSTRUMENTS		**21,944**	**157,210**	**2,201,979**	**2,233,495**	**(327,469)**
Commodity instruments:						
Commodity futures			(2,976)	50,233	48,100	(15,476)
Commodity options			(81)	13		(673)
Commodity exchange agreements			(194)	87		1,680
TOTAL COMMODITY INSTRUMENTS			**(3,251)**	**50,333**	**48,100**	**(14,469)**
Currency instruments:						
Currency forwards	1,713,930	1,723,578	(16,658)	10,874,893	10,861,727	26,263
Currency options			(3,251)	35,316	33,441	11,570
Currency exchange agreements			1,300	6,329	3,366	(1,284)
TOTAL CURRENCY INSTRUMENTS	**1,713,930**	**1,723,578**	**(18,609)**	**10,916,538**	**10,898,534**	**36,549**
CREDIT INSTRUMENTS	**4,842**		**56,111**	**70,338**	**42,252**	**30,181**
SUBTOTAL	**1,813,232**	**1,780,471**	**$ 706,438**	**13,594,689**	**13,500,747**	**$ (594,417)**
Counterparty netting[2]						
Exchange traded				(89,271)	(89,271)	
Centrally cleared				(349,572)	(349,572)	
Bilateral OTC	(1,745,624)	(1,745,624)		(12,862,135)	(12,862,135)	
TOTAL COUNTERPARTY NETTING	**(1,745,624)**	**(1,745,624)**		**(13,300,978)**	**(13,300,978)**	
NET AMOUNTS INCLUDED IN THE BALANCE SHEETS[3]	**67,608**	**34,847**		**293,711**	**199,769**	
Collateral						
Cash collateral received/posted		6,009		10,007	129,670	
Securities collateral received/posted[5,6]	114,290	34,818		226,359	329,801	
TOTAL COLLATERAL	**114,290**	**40,827**		**236,366**	**459,471**	
NET AMOUNT	**(46,682)**	**(5,980)**		**57,345**	**(259,702)**	
NET AMOUNT IN ACCORDANCE WITH ASC 210[7]	**$ 0**	**$ 0**		**$ 57,345**	**$ 0**	

[1] *For the year ended June 30, 2017, includes a gross derivative liability of $21,944 and a net gain of $11,234, related to an interest rate exchange agreement on the University's debt portfolio. For the year ended June 30, 2016, includes a gross derivative liability of $36,156 and a net loss of $22,767, related to an interest rate exchange agreement on the University's debt portfolio. These positions are further discussed in* Note 12.

[2] *GAAP permits the netting of derivative assets and liabilities and the related cash collateral received and paid when a legally enforceable master netting agreement exists between the University and a derivative counterparty. Refer to* Note 3 *for information related to offsetting of certain other collateralized transactions.*

[3] *Included within the "Investment portfolio, at fair value" and "Securities lending and other liabilities associated with the investment portfolio" line items of the* Balance Sheets.

[4] *Included within "Realized and change in unrealized appreciation/(depreciation), net" within the* Statements of Changes in Net Assets.

[5] *Includes securities posted to meet initial margin requirements on exchange traded futures and centrally cleared derivatives.*

[6] *Includes collateral in transit of $106,960 as of June 30, 2016, that settled within one to two business days subsequent to the transaction date.*

[7] *Excludes any over-collateralized amounts in accordance with ASC 210.*

The following section details the accounting for each type of derivative contract, as well as the University's intended purpose for entering into each type of derivative instrument.

Options

The University purchases and sells put and call options to take advantage of expected volatility in the price of underlying instruments. When purchasing an option, the University pays a premium, which is recorded as an asset and subsequently marked-to-market to reflect the current value of the option. When the University sells (writes) an option, the premium received is recorded as a liability and subsequently marked-to-market to reflect the current fair value of the option written. Premiums paid or received from options that expire unexercised are treated as realized losses and gains, respectively. When an option is closed before expiration or exercise, the University records a realized gain or loss equal to the difference between the proceeds paid/received upon closing and the original premium paid/received.

During fiscal years 2017 and 2016, the University transacted approximately 600 and 2,100 equity and fixed income option trades with an average transaction size of approximately 78,600 and 108,500 contracts, respectively. During the same period the University transacted approximately 100 and 300 currency option contracts with average USD equivalent notional amounts of approximately $90.4 million and $40.7 million per contract, respectively. Additionally, the University transacted approximately 70 and 100 commodity option trades during fiscal years 2017 and 2016, respectively, with an average transaction size of approximately 300 contracts each year.

Swap contracts

The University enters into swap contracts, which are contracts between two parties to exchange future cash flows at periodic intervals based on a notional principal amount, to increase or decrease its exposure to changes in the level of interest rates, underlying asset values and/or credit risk. Payments are exchanged at specified intervals, accrued daily commencing with the effective date of the contract and recorded as realized gains or losses. Gains or losses are realized in the event of an early termination of a swap contract. Risks of loss may include unfavorable changes in the returns of the underlying instruments or indexes, adverse fluctuations of interest rates, failure of the counterparty to perform under the terms of the agreement, and lack of liquidity in the market.

Collateral in the form of securities or cash may be posted to or received from the swap counterparty in accordance with the terms of the swap contract. Realized gains or losses are recorded relating to periodic payments received or made on swap contracts and with respect to swaps that are closed prior to termination date. When the University enters into a swap transaction, it may make or receive a payment equal to the value of the swap on the entry date and amortizes such payments to realized gain or loss over the outstanding term of the swap. The terms of the swap contracts can vary, and they are reported at fair value based on a valuation model or a counterparty provided price.

The University generally enters into credit default, interest rate, and total return swap contracts.

Credit default contracts

The University enters into credit derivatives to simulate long and short bond exposure that is either unavailable or considered to be less attractively priced in the bond market, or to hedge exposure obtained in the bond market. The University also uses these derivatives to reduce risk where it has exposure to the issuer, or to take an active long or short position with respect to the likelihood of an event of default. The underlying debt security on which the derivative is structured can be based on a single issuer, a "basket" of issuers, or an index. During fiscal years 2017 and 2016, the University transacted approximately 450 and 1,100 credit default contracts, respectively. These contracts had average notional amounts of approximately $14.0 million and $8.0 million in fiscal years 2017 and 2016, respectively.

In instances where the University has purchased credit protection on an underlying debt security, the University is obligated to pay the seller of the credit protection a periodic stream of payments over the term of the contract in return for a contingent payment upon the occurrence of a credit event with respect to the issuer of the debt security. The contingent payment may be a cash settlement or a physical delivery of the debt security in return for payment of the face amount of the obligation. The amount paid for purchased protection is typically a nominal percentage of the notional amount. In instances where the University has sold credit protection on an underlying debt security, the University receives a fixed rate of income throughout the term of the contract, which typically is between one month and five years, and in some instances up to ten years. In the case where the University sold credit protection, if a credit event occurs, the University may cash settle the contract or pay the purchaser of credit protection the full notional value of the contract in exchange for the debt security.

As of June 30, 2017, the University did not have significant purchased or written credit derivatives. As of June 30, 2016, the University's purchased and written credit derivatives had gross notional amounts of $1,157.8 million and $1,565.9 million, respectively, for total net written protection of $408.1 million in notional value. The table below summarizes certain information regarding credit protection purchased and written as of June 30, 2016 (in thousands of dollars):

	As of June 30, 2016							
	Purchased protection		Written protection					
			Years to maturity – notional					
Credit rating on underlying	Purchased notional[1]	Purchased fair value	< 5 years	5-10 years	Total written notional	Offsetting purchased notional[2]	Net written notional	Net written fair value
A- to AAA	$ 221,250	$ (4,278)	$ 65,000		$ 65,000	$ 12,000	$ 53,000	$ 494
BBB- to BBB+	566,524	(8,076)	756,390		756,390	43,000	713,390	11,940
Non-investment grade	218,553	(4,299)	727,000	$ 17,500	744,500	96,500	648,000	4,908
TOTAL	**$ 1,006,327**	**$ (16,653)**	**$ 1,548,390**	**$ 17,500**	**$ 1,565,890**	**$ 151,500**	**$ 1,414,390**	**$ 17,342**

[1] *Amounts shown are net of purchased credit protection that directly offsets written credit protection, as discussed in the note [(2)] below.*

[2] *Offsetting purchased credit derivatives represent the notional amount of purchased credit derivatives to the extent they hedge written credit derivatives with identical underlying debt securities.*

Credit ratings on the underlying debt security, together with the period of expiration, are indicators of payment/performance risk. For example, the seller of credit protection is least likely to pay or otherwise be required to perform where the credit ratings are AAA and the period of expiration is "< 5 years". The likelihood of payment or performance is generally greater as the credit ratings fall and period of expiration increases.

Interest rate contracts

The University enters into interest rate swaps to hedge certain investment positions against interest rate fluctuations; to benefit from interest rate fluctuations; to obtain better interest rate terms than it would have been able to get without the swap; or to manage the interest, cost, and risk associated with its outstanding and/or future debt. Interest rate swaps involve the exchange by the University with another party of its respective commitments to pay or receive interest at specified intervals based on a notional amount of principal. During fiscal years 2017 and 2016, the University transacted approximately 2,800 and 3,200 interest rate swap and cap/floor contracts with average notional amounts of approximately $184.3 million and $248.0 million, respectively.

Total return swaps

The University enters into total return swaps to manage its exposure to market fluctuations in various asset classes. Total return swaps involve commitments to pay interest in exchange for a market linked return, both 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, the University will receive a payment from or make a payment to the counterparty, respectively. During fiscal years 2017 and 2016, the University transacted approximately 25 and 50 commodity swap contracts with average notional amounts of approximately $33.9 million and $1.8 million; 1,400 and 1,800 equity swap contracts with average notional amounts of approximately $9.4 million and $7.9 million; 200 and 100 currency swap contracts with average notional amounts of approximately $17.8 million and $29.0 million; and 100 and 60 credit swaps with average notional amounts of approximately $22.0 million and $27.0 million, respectively.

Forward currency contracts

The University enters into forward currency contracts in connection with settling planned purchases or sales of securities, or to hedge the currency exposure associated with some or all of the University's portfolio securities. A forward currency contract is an agreement between two parties to buy and sell a currency at a set price on a future date. The value of a forward currency contract fluctuates with changes in forward currency exchange rates. Forward currency contracts are marked-to-market daily and the change in fair value is recorded by the University as an unrealized gain or loss. During fiscal years 2017 and 2016, the University transacted approximately 8,200 and 17,700 forward currency contracts with average USD equivalent notional amounts of approximately $5.7 million and $4.6 million, respectively.

Futures contracts

The University uses futures contracts to manage its exposure to financial markets, including hedging such exposures. Buying futures tends to increase the University's exposure to the underlying instrument, while selling futures tends to decrease exposure to the underlying instrument. Upon entering into a futures contract, the University is required to deposit an amount of cash or securities with its prime broker in accordance with the initial margin requirements of the broker or exchange. Futures contracts are marked-to-market daily based on settlement prices established by the board of trade or exchange on which they are traded, and an appropriate payable or receivable for the change in fair value is recorded by the University. Gains and losses are realized when the contracts expire or are closed. During fiscal years 2017 and 2016, the University transacted approximately 49,000 and 15,900 futures trades with an average transaction size of approximately 30 and 160 contracts, respectively.

Counterparty credit exposure

Financial instruments with off-balance sheet risk involve counterparty credit exposure. The policy of the University is to require collateral to the maximum extent possible under normal trading practices. Collateral, generally in the form of debt obligations issued by the US Treasury, is exchanged on a daily basis as required by fluctuations in the market. In the event of counterparty default, the University has the right to use the collateral held to offset any losses ensuing from the default event. Specific credit limits are established for counterparties based on their individual credit ratings. Credit limits are monitored daily by the University and are adjusted according to policy, as necessary. Some of the financial instruments entered into by the University contain credit-risk-related contingency features that allow the parties to the agreement to demand immediate payment for outstanding contracts and/or collateral. If material credit-risk-related contingency features were triggered on June 30, 2017, $8 million in additional collateral would have been due to counterparties whereas at June 30, 2016, no additional collateral would have been due to counterparties for derivative contracts.

6. RECEIVABLES

The major components of receivables, net of reserves for doubtful accounts of $10.6 million and $11.3 million as of June 30, 2017 and 2016, respectively, were as follows (in thousands of dollars):

	2017	2016
Federal sponsored support	**$ 59,730**	$ 63,773
Publications	**52,280**	51,072
Executive education	**46,824**	40,468
Non-federal sponsored support	**21,046**	15,842
Tuition and fees	**19,932**	19,504
Gift receipts	**13,098**	8,333
Other	**48,931**	49,212
TOTAL RECEIVABLES, NET	**$ 261,841**	**$ 248,204**

7. NOTES RECEIVABLE

Notes receivable are recorded initially at face value plus accrued interest, which approximates fair value. Notes receivable, and related allowance for doubtful accounts, were as follows (in thousands of dollars):

	2017			2016		
	Receivable	Allowance	Net	Receivable	Allowance	Net
Student Loans:						
Government revolving	$ 72,712	$ 1,817	**$ 70,895**	$ 77,846	$ 2,033	**$ 75,813**
Institutional	87,027	2,248	**84,779**	88,115	2,207	**85,908**
Federally insured	375		**375**	389		**389**
Total student loans	$ 160,114	$ 4,065	**$ 156,049**	$ 166,350	$ 4,240	**$ 162,110**
Faculty and staff loans	217,069	179	**216,890**	207,096	179	**206,917**
Other loans	24,832	14,708	**10,124**	18,763	6,599	**12,164**
TOTAL	**$ 402,015**	**$ 18,952**	**$ 383,063**	**$ 392,209**	**$ 11,018**	**$ 381,191**

Government revolving loans are funded principally with federal advances to the University under the Perkins Loan Program and certain other programs. These advances totaled $72.6 million and $70.3 million as of June 30, 2017 and 2016, respectively, and are classified as liabilities in the *Balance Sheets*. Interest earned on the revolving and institutional loan programs is reinvested to support additional loans. The repayment and interest rate terms of the institutional loans vary considerably.

Faculty and staff notes receivable primarily consists of mortgage and educational loans. Mortgages include shared appreciation loans, loans that bear interest at the applicable federal rate and interest-free loans. In addition, certain mortgages that bear interest at the current market rate or applicable federal rate may be subsidized for an initial period. The educational loans are primarily zero-interest loans.

The University assesses the adequacy of the allowance for doubtful accounts by evaluating the loan portfolio, including such factors as the differing economic risks associated with each loan category, the financial condition of specific borrowers, the economic environment in which the borrowers operate, the level of delinquent loans, the value of any collateral, and, where applicable, the existence of any guarantees or indemnifications. In addition to these factors, the University reviews the aging of the loans receivable and the default rate in comparison to prior years. The allowance is adjusted based on these reviews. The University considers the allowance at June 30, 2017 and 2016 to be reasonable and adequate to absorb potential credit losses inherent in the loan portfolio.

8. PLEDGES RECEIVABLE

Unconditional promises to donate to the University in the future are initially recorded at fair value (pledge net of discount) and subsequently amortized over the expected payment period, net of an allowance for uncollectible pledges. The University's indicative 1- to 5-year taxable unsecured borrowing rate is used to discount pledges receivable upon receipt. Discounts of $75.7 million and $77.2 million for the years ended June 30, 2017 and 2016, respectively, were calculated using rates ranging from 1.3% to 2.1%.

Pledges receivable included in the financial statements as of June 30, 2017 and 2016 are expected to be realized as follows (in thousands of dollars):

	2017	2016
Within one year	**$ 283,376**	$ 313,278
Between one and five years	**1,133,505**	1,253,113
More than five years	**705,632**	732,062
Less: discount and allowance for uncollectible pledges	**(174,487)**	(164,233)
TOTAL PLEDGES RECEIVABLE, NET	**$ 1,948,026**	**$ 2,134,220**

Pledges receivable as of June 30, 2017 and 2016 have been designated for the following purposes (in thousands of dollars):

	2017	2016
General Operating Account balances:		
Gifts for current use	**$ 550,819**	$ 638,719
Non-federal sponsored awards	**99,623**	131,368
Facilities and loan funds	**222,626**	240,283
Total General Operating Account balances	**873,068**	1,010,370
Endowment	**1,074,958**	1,123,850
TOTAL PLEDGES RECEIVABLE, NET	**$ 1,948,026**	**$ 2,134,220**

Because of uncertainties with regard to realizability and valuation, bequest intentions and other conditional promises are only recognized as assets if and when the specified conditions are met. Non-bequest conditional pledges totaled $49.1 million and $65.8 million as of June 30, 2017 and 2016, respectively.

9. FIXED ASSETS

Fixed assets are reported at cost or, if a gift, at fair value as of the date of the gift, net of accumulated depreciation. Depreciation is computed using the straight-line method over the estimated useful lives of the assets.

The major categories of fixed assets as of June 30, 2017 and 2016 are summarized as follows (in thousands of dollars):

	2017	2016	Estimated useful life (in years)
Research facilities	**$ 2,302,795**	$ 2,235,809	*
Classroom and office facilities	**1,831,097**	1,776,972	35
Housing facilities	**1,757,609**	1,729,232	35
Other facilities	**414,587**	406,626	35
Service facilities	**733,956**	686,274	35
Libraries	**483,836**	479,899	35
Museums and assembly facilities	**783,536**	740,647	35
Athletic facilities	**191,782**	198,559	35
Land	**967,978**	783,864	N/A
Construction in progress	**1,079,120**	680,602	N/A
Equipment	**1,288,717**	1,224,016	**
SUBTOTAL AT COST	**11,835,013**	10,942,500	
Less: accumulated depreciation	**(4,709,115)**	(4,412,960)	
FIXED ASSETS, NET	**$ 7,125,898**	**$ 6,529,540**	

* *Estimated useful lives of components range from 10 to 45 years.*
** *Estimated useful lives of equipment range from 3 to 8 years.*

Certain University facilities are subject to restrictions as to use, structural modifications, and ownership transfer. Included in the fixed asset balances are restricted facilities with a net book value of $260.7 million and $255.6 million as of June 30, 2017 and 2016, respectively.

The costs of research facilities are separated into the shell, roof, finishes, fixed equipment, and services. These components are separately depreciated.

Equipment includes general and scientific equipment, computers, software, furniture, and vehicles.

The University has asset retirement obligations of $132.0 million and $101.3 million, which are included in "Deposits and other liabilities" in the *Balance Sheets* as of June 30, 2017 and 2016, respectively.

10. ENDOWMENT AND GENERAL OPERATING ACCOUNT NET ASSETS

The University's endowment consists of 13,487 separate funds established over many years for a wide variety of purposes. Endowment fund balances, including funds functioning as endowment, are classified and reported as unrestricted, temporarily restricted, or permanently restricted net assets in accordance with donor specifications and state law. Net unrealized losses on permanently restricted endowment funds are classified as a reduction to unrestricted net assets until such time as the fair value equals or exceeds historic dollar value. Unrestricted net assets were reduced by $3.4 million and $5.4 million for such losses in fiscal year 2017 and 2016, respectively. Although funds functioning as endowment are not subject to donor restrictions, decisions to spend their principal require the approval of the Corporation. All but a small fraction of the endowment is invested in the GIA *(Note 3)*.

The University is also the beneficiary of certain irrevocable trusts held and administered by others. The estimated fair values of trust assets, which include the present values of expected future cash flows from outside trusts and the fair value of the underlying assets of perpetual trusts, are recognized as assets and increases in net assets when the required trust documentation is provided to the University.

The fair values of these trusts are provided by the external trustees and are adjusted annually by the University. These are included as Level 3 investments in the fair value hierarchy table in *Note 4*.

The endowment consisted of the following as of June 30, 2017 and 2016 (in thousands of dollars):

	2017				2016
	Unrestricted	Temporarily restricted	Permanently restricted	Total	Total
Endowment funds	$ (3,401)	$ 19,648,050	$ 6,971,295	**$ 26,615,944**	$ 25,505,237
Funds functioning as endowment	6,151,574	2,889,572		**9,041,146**	8,713,969
Pledge balances		480,577	594,381	**1,074,958**	1,123,850
Interests in trusts held by others		13,845	350,581	**364,426**	322,687
TOTAL ENDOWMENT	**$ 6,148,173**	**$ 23,032,044**	**$ 7,916,257**	**$ 37,096,474**	**$ 35,665,743**

The University's endowment distribution policies are designed to preserve the value of the endowment in real terms (after inflation) and generate a predictable stream of available income. Each fall, the Corporation approves the endowment distribution for the following fiscal year.

The endowment distribution is based in part on presumptive guidance from a formula that is intended to provide budgetary stability by smoothing the impact of annual investment gains and losses. The formula's inputs reflect expectations about long-term returns and inflation rates. For fiscal year 2017, the endowment distribution approved by the Corporation (prior to decapitalizations) was equal to 5.3% of the fair value of the endowment invested in the GIA as of the beginning of the fiscal year. The total endowment distribution made available for operations was $1.8 billion and $1.7 billion in fiscal year 2017 and 2016, respectively.

Each year the Corporation also approves certain decapitalizations from the endowment to support strategic, mission-critical activities or objectives that are typically one-time or time-limited and therefore, are excluded from net operating surplus. These decapitalizations totaled $53.5 and $128.4 million in fiscal year 2017 and 2016, respectively. These additional decapitalizations, in combination with the endowment distribution, resulted in an aggregate payout rate of 5.4% and 5.1% in fiscal year 2017 and 2016, respectively.

General operating account

The GOA consists of the general or current funds of the University as well as the assets and liabilities related to student and faculty loans and facilities. The GOA accepts, manages, and pays interest on deposits made by University departments; invests surplus working capital; makes loans; and arranges external financing for major capital projects. It is used to manage, control, and execute all University financial transactions, except for those related to investment activities conducted by HMC.

The GOA consisted of the following as of June 30, 2017 and 2016 (in thousands of dollars):

	2017				2016
	Unrestricted	Temporarily restricted	Permanently restricted	Total	Total
General Operating Account	$ 3,924,841	$ 2,432,666	$ 98,216	**$ 6,455,723**	**$ 6,243,721**

The temporarily restricted net assets consist primarily of unexpended income, gifts, and pledges. The permanently restricted net assets are loan funds.

11. SPLIT INTEREST AGREEMENTS

Under split interest agreements, donors enter into trust or other arrangements with the University in which the University receives benefits that are shared with other beneficiaries and institutions. Split interest agreement (SIA) investment assets are invested primarily in the GIA and publicly traded securities, a small segment is managed by an external advisor, and all are recorded in the "Investment portfolio, at fair value" in the University's *Balance Sheets*. Additional disclosures are included in *Notes 3* and *4*. The publicly traded securities are included as Level 1 and externally managed investments are included in investments measured using the practical expedient in the fair value hierarchy table in *Note 4*. Associated liabilities are recorded at the present value of estimated future payments due to beneficiaries and other institutions. These liabilities are calculated using the University's current taxable unsecured borrowing rate of 2.3% and 1.4% as of June 30, 2017 and 2016, respectively.

The changes in split interest agreement net assets for fiscal years 2017 and 2016 were as follows (in thousands of dollars):

	2017			2016
	Temporarily restricted	Permanently restricted	Total	Total
Investment return:				
Investment income	$ 3,205	$ 10,075	**$ 13,280**	$ 12,261
Change in realized and unrealized appreciation, net	23,348	73,400	**96,748**	(55,206)
Total investment return	26,553	83,475	**110,028**	(42,945)
Gifts *(Note 16)* [1]	7,043	12,563	**19,606**	18,832
Payments to annuitants	(15,604)	(49,055)	**(64,659)**	(63,012)
Transfers to endowment	(3,593)	(25,650)	**(29,243)**	(20,971)
Transfers between SIA and the GOA	(15,180)	(24)	**(15,204)**	(11,027)
Change in liabilities and other adjustments	2,979	8,509	**11,488**	162,443
NET CHANGE DURING THE YEAR	**2,198**	**29,818**	**32,016**	**43,320**
Total split interest agreement net assets, beginning of year	**51,640**	**450,226**	**501,866**	458,546
TOTAL SPLIT INTEREST AGREEMENT NET ASSETS, end of year	**$ 53,838**	**$ 480,044**	**$ 533,882**	**$ 501,866**

[1] *Shown at net present value. The undiscounted value of these gifts was $42,217 and $34,597 for the years ended June 30, 2017 and 2016, respectively.*

Split interest agreement net assets as of June 30, 2017 and 2016 consisted of the following (in thousands of dollars):

	2017	2016
Split interest agreement investments *(Note 3)*		
Charitable remainder trusts	**$ 896,451**	$ 847,850
Charitable lead trusts	**123,396**	116,896
Charitable gift annuities	**230,352**	213,262
Pooled income funds	**124,419**	115,060
Total split interest agreement investments	**1,374,618**	1,293,068
Liabilities due under split interest agreements:		
Amounts due to beneficiaries	**(779,885)**	(742,808)
Amounts due to other institutions	**(60,851)**	(48,394)
Total liabilities due under split interest agreements	**(840,736)**	(791,202)
TOTAL SPLIT INTEREST AGREEMENT NET ASSETS, end of year[1]	**$ 533,882**	**$ 501,866**

[1] *Includes an out-of-period adjustment for the year ended June 30, 2016, which is recorded in the "Split Interest Agreements Net Change during the Year" line in the* Statement of Changes in Net Assets *with General Operating Account Detail.*

12. BONDS AND NOTES PAYABLE

Bonds and notes payable as of June 30, 2017 and 2016 were as follows (in thousands of dollars):

	Fiscal year of issue	Years to final maturity[1]	One-year yield[2]	Outstanding principal 2017[3]	Outstanding principal 2016[3]
Tax-exempt bonds and notes payable:					
Variable-rate demand bonds and commercial paper:					
Series R – daily	2000-2006	15	0.4%	$ 131,200	$ 131,200
Series Y – weekly	2000	18	0.7%	117,905	117,905
Commercial paper	2017		0.5%		284,785
Total variable-rate bonds and notes payable			0.5%	249,105	533,890
Fixed-rate bonds:					
Series N (par value, $80,000)	1992	3	6.3%	79,714	79,613
Series 2008B	2008		4.9%		214,772
Series 2009A (par value, $45,290)	2009	1	4.8%	45,513	921,553
Series 2010A (par value, $49,590)	2010	4	4.7%	52,861	483,322
Series 2010B (par value, $110,235)	2011	7	4.8%	117,938	642,900
Series 2016A (par value, $1,539,720)	2017	23	3.8%	1,912,871	
Total fixed-rate bonds			4.2%	2,208,897	2,342,160
Total tax-exempt bonds and notes payable			**3.7%**	**2,458,002**	**2,876,050**
Taxable bonds and notes payable:					
Variable-rate bonds:					
Commercial paper	2012	<1	0.8%	343,341	164,622
Total variable-rate bonds			0.8%	343,341	164,622
Fixed-rate bonds:					
Series 2008A (par value, $243,000)	2008	21	5.6%	242,869	242,862
Series 2008C (par value, $125,205)	2008	1	5.3%	125,205	125,205
Series 2008D (par value, $500,000)	2009	22	6.4%	498,691	998,015
Series 2010C (par value, $300,000)	2011	23	4.9%	298,439	298,373
Series 2013A (par value, $402,000)	2013	20	3.4%	402,000	402,000
Series 2016B (par value, $1,000,000)	2017	39	3.3%	995,521	
Total fixed-rate bonds			4.4%	2,562,725	2,066,455
Total taxable bonds and notes payable			**4.3%**	**2,906,066**	**2,231,077**
Other notes payable	Various	Various	Various	86,773	86,497
Unamortized bond issuance costs				(19,751)	(16,922)
TOTAL BONDS AND NOTES PAYABLE			**4.1%**	**$ 5,431,090**	**$ 5,176,702**

[1] *The weighted average maturity of the portfolio on June 30, 2017 was 18.8 years.*
[2] *Exclusive of interest rate exchange agreement. Inclusive of this agreement, the overall portfolio rate was 0.05% higher (4.12% vs. 4.07%).*
[3] *Balances include original issuance premiums/discounts.*

Interest expense related to bonds and notes payable was $201.1 million and $233.8 million for fiscal year 2017 and 2016, respectively. The interest expense in the *Statement of Changes in Net Assets with General Operating Account Detail* includes additional components related to capital leases. Excluding maturity of commercial paper (due within a year), unamortized discounts and premiums, underwriter's discounts and cost of issuance fees, scheduled principal payments are (in thousands of dollars):

Fiscal year	Principal payments
2018	$ 22,361
2019	147,502
2020	117,999
2021	88,185
2022	109,619
Thereafter	4,245,251
TOTAL PRINCIPAL PAYMENTS	**$ 4,730,917**

In fiscal year 2017, the University issued $1.539 billion of tax-exempt fixed-rate Series 2016A Bonds and $1.0 billion of taxable fixed-rate Series 2016B Bonds. Proceeds from the Series 2016A issue were used to refinance all or a portion of Series 2008B, 2009A, 2010A, 2010B-1 and 2010B-2. Proceeds of Series 2016B were used to refinance all or a portion of Series 2010B-1 and 2008D and to finance capital projects initially funded by the University's commercial paper program. The University also issued $256.7 million of taxable commercial paper to refinance a portion of Series 2009A.

In connection with the issuance of Series 2016A and 2016B, the University's AAA/Aaa credit ratings were affirmed with S&P Global Ratings and Moody's Investors Service, respectively.

In January 2017, the University entered into a $500 million unsecured, revolving credit facility with a syndicate of banks, which expires in January 2020. The University also has a separate $1 billion unsecured, revolving credit facility outstanding, which expires in January 2020. There was no outstanding balance on either of these credit facilities at June 30, 2017.

In February 2017, the University obtained reauthorization of its tax-exempt commercial paper program.

As of June 30, 2017, the University had $249.1 million of variable-rate demand bonds outstanding (excluding commercial paper) with either a daily or weekly interest rate reset, as noted in the bonds and notes payable table on page 36. In the event that the University receives notice of any optional tender on its variable-rate demand bonds, or if the 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, the University will have a general obligation to purchase the bonds tendered with cash on hand.

Interest rate exchange agreements

In fiscal year 2017, the University had in place one interest rate exchange agreement used to manage the interest cost and risk associated with a portion of its outstanding debt.

The fair value of the interest rate exchange agreement was $(21.9) million and $(36.2) million as of June 30, 2017 and 2016, respectively and is recorded in "Securities lending and other liabilities associated with the investment portfolio" on the University's *Balance Sheets*.

13. EMPLOYEE BENEFITS

The University offers current employees a choice of health plans, a dental plan, short-term and long-term disability plans, life insurance, tuition assistance, and a variety of other benefits such as subsidized passes for public transportation and for Harvard athletic facilities. In addition, the University has retirement plans covering substantially all employees.

The University uses a measurement date of June 30 for its pension and postretirement health plans.

Pension benefits

All eligible faculty members and staff are covered by retirement programs that include a defined benefit component, a defined contribution component, or a combination of the two.

In accordance with the Employee Retirement Income Security Act (ERISA) requirements, the University has established a trust to hold plan assets for its defined benefit pension plans. The fair value of the trust's assets was $836.5 million and $803.7 million as of June 30, 2017 and 2016, respectively. During fiscal years 2017 and 2016, the University made cash contributions to the defined benefit pension plan of $13.4 million and $11.4 million, respectively. The University recorded expenses for its defined contribution plans of $135.0 million and $131.2 million for fiscal year 2017 and 2016, respectively.

Postretirement health benefits

The University provides postretirement health coverage and life insurance to substantially all of its employees. As of June 30, 2017, the University had internally designated and invested $633.6 million to fund the postretirement health benefit accrued liability of $853.0 million. As of June 30, 2016, the University had internally designated and invested $571.6 million to fund the postretirement health benefit accrued liability of $941.8 million.

The following table sets forth the pension and postretirement plans' funded status that is reported in the *Balance Sheets* as of June 30, 2017 and 2016 (in thousands of dollars):

	Pension benefits		Postretirement health benefits	
	2017	2016	2017	2016
Change in projected benefit obligation:				
Projected benefit obligation, beginning of year	**$1,105,690**	$ 961,868	**$ 941,815**	$ 809,499
Service cost	**12,274**	10,254	**40,155**	35,292
Interest cost	**42,056**	44,069	**37,872**	39,644
Plan participants' contributions			**3,449**	3,477
Plan change[1]			**(5,094)**	(26,369)
Gross benefits paid	**(40,459)**	(45,388)	**(24,247)**	(25,542)
Actuarial (gain)/loss	**(43,833)**	134,887	**(140,947)**	105,814
PROJECTED BENEFIT OBLIGATION, end of year[2]	**1,075,728**	**1,105,690**	**853,003**	**941,815**
Change in plan assets:				
Fair value of plan assets, beginning of year	**803,659**	814,365		
Actual return on plan assets	**59,832**	23,282		
Employer contributions	**13,424**	11,400		
Gross benefits paid	**(40,459)**	(45,388)		
FAIR VALUE OF PLAN ASSETS, end of year	**836,456**	**803,659**	**0**	**0**
UNFUNDED STATUS	**$ (239,272)**	**$ (302,031)**	**$ (853,003)**	**$ (941,815)**

[1] *The postretirement plan change of $(5.1) million for 2017 and $(26.4) million for 2016 reflects plan changes for union employees, effective January 1, 2016, that increased cost-sharing and the length of service needed for the maximum subsidy.*

[2] *Measurement of the University's pension benefit obligation including assumed salary increases (required by GAAP).*

The accumulated pension benefit obligation (ABO) is a measurement of the University's pension benefit obligation, based on past and present compensation levels and does not include assumed salary increases. The ABO was $908.7 million and $928.3 million at June 30, 2017 and 2016, respectively. The funded status disclosed above has been prepared in accordance with pension accounting rules. When measured on an IRS funding basis, which informs the University's required cash contribution amount, the plan was overfunded at January 1, 2017.

Net periodic benefit cost

Components of net periodic benefit cost recognized in operating activity and other amounts recognized in non-operating activity in unrestricted net assets in the *Statements of Changes in Net Assets with General Operating Account Detail* are summarized as follows for the years ended June 30, 2017 and 2016 (in thousands of dollars):

	Pension benefits		Postretirement health benefits	
	2017	2016	2017	2016
Components of net periodic benefit cost:				
Service cost	**$ 12,274**	$ 10,254	**$ 40,155**	$ 35,292
Interest cost	**42,056**	44,069	**37,872**	39,644
Expected return on plan assets	**(49,030)**	(49,529)		
Amortization of:				
Actuarial loss/(gain)	**15,710**	3,656		(4,604)
Prior service (credit)/cost	**288**	288	**(6,693)**	(4,483)
Total net periodic benefit cost recognized in operating activity	**21,298**	**8,738**	**71,334**	**65,849**
Other amounts recognized in non-operating activity in unrestricted net assets:				
Current year net actuarial (gain)/loss	**(54,635)**	161,134	**(140,947)**	105,814
Current year net prior service cost			**(5,094)**	(26,369)
Amortization of:				
Prior service (cost)/credit	**(288)**	(288)	**6,693**	4,483
Actuarial (loss)/gain	**(15,710)**	(3,656)		4,604
Total other amounts recognized in non-operating activity[1]	**(70,633)**	**157,190**	**(139,348)**	**88,532**
Total recognized in *Statements of Changes in Net Assets with General Operating Account Detail*	**$ (49,335)**	**$ 165,928**	**$ (68,014)**	**$ 154,381**

[1] *These amounts totaling $(210.0) million in fiscal year 2017 and $245.7 million in fiscal year 2016 include gains and losses and other changes in the actuarially determined benefit obligations arising in the current period but that have not yet been reflected within net periodic benefit cost/(income) and are included in the "Change in Retirement Obligations" line in the* Statements of Changes in Net Assets with General Operating Account Detail.

Cumulative amounts recognized as non-operating changes in unrestricted net assets are summarized as follows for the years ended June 30, 2017 and 2016 (in thousands of dollars):

	Pension benefits		Postretirement health benefits	
	2017	2016	2017	2016
Net actuarial loss/(gain)	**$ 157,921**	$ 228,266	**$ (176,612)**	$ (35,665)
Prior service cost/(credit)	**1,756**	2,043	**(60,512)**	(62,111)
Cumulative amounts recognized in unrestricted net assets	**$ 159,677**	**$ 230,309**	**$ (237,124)**	**$ (97,776)**

The estimated net actuarial loss and prior service cost for the defined benefit plan that will be amortized from unrestricted net assets into net periodic benefit (income)/cost in fiscal year 2018 are $10.1 million and $0.3 million, respectively. The estimated net actuarial gain and estimated prior service credit for the postretirement health benefit that will be amortized from unrestricted net assets into net periodic benefit (income)/cost in fiscal year 2018 are ($6.5) million and ($7.1) million, respectively.

Other assumptions and health care cost trend rates used in determining the year end obligation as well as the net periodic benefit (income)/cost of the pension and postretirement health plans are summarized as follows for fiscal years 2017 and 2016:

	Pension benefits		Postretirement health benefits	
	2017	2016	2017	2016
Weighted-average assumptions used to determine benefit obligation as of June 30:				
Discount rate	**4.00%**	3.85%	**4.05%**	3.90%
Compensation increase trend:				
Initial rate	**3.00%**	3.00%	**3.00%**	3.00%
Ultimate rate	**4.00%**	4.00%	**4.00%**	4.00%
Year of ultimate	**2021**	2021	**2021**	2021
Health care cost trend rate:				
Initial rate	**N/A**	N/A	**5.50%**	6.00%
Ultimate rate	**N/A**	N/A	**4.75%**	4.75%
Year of ultimate	**N/A**	N/A	**2023**	2023
Weighted-average assumptions used to determine net periodic benefit (income)/cost:				
Discount rate	**3.85%**	4.65%	**3.90%**	4.75%
Expected long-term rate of return on plan assets	**6.50%**	6.75%	**N/A**	N/A
Compensation increase trend:				
Initial rate	**3.00%**	3.00%	**3.00%**	3.00%
Ultimate rate	**4.00%**	4.00%	**4.00%**	4.00%
Year of ultimate	**2021**	2016	**2021**	2016
Health care cost trend rate:				
Initial rate	**N/A**	N/A	**6.00%**	6.50%
Ultimate rate	**N/A**	N/A	**4.75%**	4.75%
Year of ultimate	**N/A**	N/A	**2023**	2023

As an indicator of sensitivity, a one percentage point change in assumed health care cost trend rate would affect 2017 as shown in the following table (in thousands of dollars):

	1% point increase	1% point decrease
Effect on 2017 postretirement health benefits service and interest cost	$ 26,371	$ (15,896)
Effect on postretirement health benefits obligation as of June 30, 2017	208,808	(135,482)

The expected return on pension plan assets is determined by utilizing HMC's capital markets model, which takes into account the expected real return, before inflation, for each of the pension portfolio's asset classes, as well as the correlation of any one asset class to every other asset class. This model calculates the real returns and correlations and derives an expected real return for the entire portfolio, given the percentage weighting allocated to each asset class. After calculating the expected real return, an assessment is made to accommodate the expected inflation rate for the forthcoming period. The final expected return on assets is the aggregate of the expected real return plus the expected inflation rate.

Plan assets

The actual asset allocation of the investment portfolio for the pension plan at June 30, 2017 and 2016, along with target allocations for June 30, 2018, is as follows:

	2018 Target	June 30, 2017	June 30, 2016
Asset allocation by category for pension plan:			
Equity securities	30-50%	37.7%	34.7%
Fixed income securities	30-50	45.3	46.2
Real estate	0-5	1.0	1.5
Absolute return	10-30	12.9	14.5
Cash	0-10	3.1	3.1
TOTAL OF ASSET ALLOCATION CATEGORIES		**100.0%**	**100.0%**

The University's investment strategy for the pension portfolio is to manage the assets across a broad and diversified range of investment categories, both domestic and international. The objective is to achieve a risk-adjusted return that is in line with the long-term obligations that the University has to the pension plan beneficiaries. During fiscal year 2017, the University maintained its allocation to fixed income securities to manage the interest rate volatility associated with its pension obligations. The University expects to continue this strategy in future years. The investment program is also managed to comply with all ERISA regulations.

The following is a summary of the levels within the fair value hierarchy for the pension plan assets subject to fair value measurement as of June 30, 2017 and 2016 (in thousands of dollars):

	2017				2016			
	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
PLAN ASSETS:								
Cash and short-term investments	$34,158			**$ 34,158**	$ 34,681			**$ 34,681**
Domestic equity	1,061			**1,061**	17			**17**
Foreign equity	95,735			**95,735**	76,015			**76,015**
Domestic fixed income	63,457	$ 273,435		**336,892**	52,460	$ 278,108		**330,568**
Foreign fixed income		20,200		**20,200**		23,126		**23,126**
Emerging market equity and debt	34,323	11,654		**45,977**	29,396	10,035		**39,431**
Private equities			$ 15,445	**15,445**				
Real estate			8,264	**8,264**				
Due from broker	404			**404**	1,123	3		**1,126**
PLAN ASSETS SUBJECT TO FAIR VALUE LEVELING	**$ 229,138**	**$ 305,289**	**$ 23,709**	558,136	**$ 193,692**	**$ 311,272**		504,964
Investments measured using the practical expedient				**268,866**				**294,946**
Other assets not subject to fair value				**9,454**				**3,749**
TOTAL PLAN ASSETS				**$ 836,456**				**$ 803,659**

The following is a rollforward of Level 3 investments for the year ended June 30, 2017 (in thousands of dollars):

	Beginning balance as of July 1, 2016	Net realized gains/ (losses)	Net change in unrealized appreciation (depreciation)	Purchases/ contributions	Sales/ distributions	Transfers into Level 3[1]	Transfers out of Level 3	Ending balance as of June 30, 2017
PLAN ASSETS:								
Private equity	$ 0	$ 4,202	$ (2,867)	$ 64	$ (6,736)	$ 20,782		**$ 15,445**
Real estate	0	210	(10)		(2,891)	10,955		**8,264**
PLAN ASSETS SUBJECT TO FAIR VALUE LEVELING	**$ 0**	**$ 4,412**	**$ (2,877)**	**$ 64**	**$ (9,627)**	**$ 31,737**		**$ 23,709**

[1] *During the fiscal year, certain transfers into Level 3 represent instances of deviation from the practical expedient. Certain securities, included in Private equity, Natural resources and Real estate, were valued using a secondary sale price and were transferred into Level 3.*

The following is a rollforward of Level 3 investments for the year ended June 30, 2016 (in thousands of dollars):

	Beginning balance as of July 1, 2015	Net realized gains/ (losses)	Net change in unrealized appreciation (depreciation)	Purchases/ contributions	Sales/ distributions	Transfers into Level 3	Transfers out of Level 3	Ending balance as of June 30, 2016
PLAN ASSETS:								
Emerging market equity and debt	$ 925						$ (925)	**$ 0**
PLAN ASSETS SUBJECT TO FAIR VALUE LEVELING	**$ 925**						**$ (925)**	**$ 0**

Expected future benefit payments

Employer contributions of $15.5 million are expected for fiscal year 2018 to fund the pension benefit plan.

The following table summarizes expected benefit payments and subsidies for pension and other postretirement benefits for the University (in thousands of dollars):

	Expected benefit payments	
Fiscal year	Pension	Postretirement health
2018	$ 53,555	$ 21,313
2019	54,005	23,623
2020	56,591	25,781
2021	59,183	27,900
2022	61,565	30,063
Thereafter	335,419	188,664

14. STUDENT FINANCIAL AID

Financial aid granted to students is summarized as follows for the years ended June 30, 2017 and 2016 (in thousands of dollars):

	2017	2016
Scholarships and other student awards:		
Scholarships applied to student income	**$ 413,870**	$ 397,524
Scholarships and other student awards paid directly to students	**147,555**	142,070
Total scholarships and other student awards	**561,425**	**539,594**
Student employment	**74,074**	73,723
Student loans	**21,519**	25,975
Agency financial aid*	**19,282**	19,164
TOTAL STUDENT FINANCIAL AID	**$ 676,300**	**$ 658,456**

* *Represents aid from sponsors for which the University acts as an agent for the recipient.*

15. SPONSORED SUPPORT

Total expenditures funded by US government sponsors or by institutions that subcontract federally sponsored projects to the University were $618.1 million and $597.2 million in fiscal year 2017 and 2016, respectively. The University's principal source of federal sponsored funds is the Department of Health and Human Services. The University also has many non-federal sources of sponsored awards and grants, including corporations, foundations, state and local governments, foreign governments, and research institutes.

Sponsored grants and contracts normally provide for the recovery of direct and indirect costs. The University recognizes revenue associated with direct costs as the related costs are incurred. Recovery of related indirect costs is generally recorded at fixed or predetermined rates negotiated with the federal government and other sponsors. Predetermined federal indirect cost rates have been established for the University Area, T.H. Chan School of Public Health and the Medical School (including the School of Dental Medicine) through fiscal year 2019. Funds received for federally sponsored activity are subject to audit.

16. GIFTS

Gifts are classified as unrestricted, temporarily restricted, or permanently restricted net assets in accordance with donor specifications.

Additionally gifts are categorized by purpose as "Current use", "Non-federal sponsored grants", "Endowment funds", "Split interest agreements", or "Facilities and loan funds".

Gifts received for the year ended June 30, 2017 are summarized as follows (in thousands of dollars):

	2017		
	Gifts received	Donor redesignations/ other changes	Total
Current use	$ 450,978	$ (1,039)	**$ 449,939**
Non-federal sponsored grants	153,566	(1,677)	**151,889**
Endowment funds	514,639	35,890	**550,529**
Split interest agreements*	19,606		**19,606**
Facilities and loan funds	142,098	(32,020)	**110,078**
TOTAL GIFTS	**$ 1,280,887**	**$ 1,154**	**$ 1,282,041**

* *Shown at net present value. The undiscounted value of these gifts was $42,217 for the year ended June 30, 2017.*

Gifts received for the year ended June 30, 2016 are summarized as follows (in thousands of dollars):

	2016		
	Gifts received	Donor redesignations/ other changes	Total
Current use	$ 424,685	$ (3,516)	**$ 421,169**
Non-federal sponsored grants	137,900	(2,116)	**135,784**
Endowment funds*	488,599	3,384	**491,983**
Split interest agreements**	18,832		**18,832**
Facilities and loan funds	117,418	(194)	**117,224**
TOTAL GIFTS	**$ 1,187,434**	**$ (2,442)**	**$ 1,184,992**

* *Gift receipts include non-cash gifts of $5.9 million for the year ended June 30, 2016.*
** *Shown at net present value. The undiscounted value of these gifts was $34,597 for the year ended June 30, 2016.*

17. OTHER INCOME

The major components of other income for the years ended June 30, 2017 and 2016 were as follows (in thousands of dollars):

	2017	2016
Publication and royalties from copyrights	**$ 216,377**	$ 215,176
Rental and parking[1]	**134,974**	143,412
Services income	**103,463**	101,660
Health and clinic fees	**53,937**	50,292
Sales income	**31,695**	34,940
Interest income	**10,390**	10,031
Other student income	**5,463**	5,625
Other	**82,011**	94,564
TOTAL OTHER INCOME	**$ 638,310**	**$ 655,700**

[1] *The University is the lessor of space and facilities under operating leases, the income from which is included in rental and parking.*

18. OTHER EXPENSES

The major components of other expenses for the years ended June 30, 2017 and 2016 were as follows (in thousands of dollars):

	2017	2016
Subcontract expenses under sponsored projects	**$ 167,416**	$ 156,286
Travel	**96,199**	94,158
Publishing	**47,671**	47,103
Taxes and Fees	**31,445**	31,263
Advertising	**29,543**	28,099
Postage	**19,047**	18,987
Insurance	**16,977**	12,466
Telephone	**13,942**	13,742
Other	**92,989**	61,494
TOTAL OTHER EXPENSES	**$ 515,229**	**$ 463,598**

19. FUNCTIONAL CLASSIFICATION OF OPERATING EXPENSES

Operating expenses are allocated functionally on a direct basis. Operations and maintenance expenses are allocated based on square footage. During the fiscal year 2017, the University adjusted certain functional expense classifications to better align with industry practice. Fiscal year 2016 were also reclassified for comparative purposes.

Operating expenses by functional classification for the years ended June 30, 2017 and 2016 were as follows (in thousands of dollars):

	2017	2016
Instruction	**$ 1,193,349**	$ 1,143,405
Research	**1,077,541**	1,054,455
Institutional support	**911,811**	852,399
Academic support	**614,877**	586,070
Auxiliary services	**557,406**	544,446
Student services	**203,323**	205,735
Libraries	**178,723**	171,645
Scholarships and other student awards	**147,555**	142,070
TOTAL EXPENSES	**$ 4,884,585**	**$ 4,700,225**

20. COMMITMENTS AND CONTINGENCIES

Lease commitments

The University is the lessee of equipment and space under operating (rental) and capital leases. Rent expense related to leases was $76.5 million and $68.8 million in fiscal year 2017 and 2016, respectively.

Future minimum lease payments under these operating and capital leases (in thousands of dollars):

	Operating	Capital
2018	$ 69,940	$ 9,692
2019	63,855	13,757
2020	54,081	8,930
2021	42,587	8,147
2022	40,145	8,358
Thereafter	262,671	141,801
TOTAL FUTURE MINIMUM PAYMENTS	**$ 533,279**	**$ 190,685**

Fixed asset-related commitments

The University has various commitments for capital projects involving construction and renovation of certain facilities, real estate acquisitions, and equipment purchases, for which the outstanding commitments as of June 30, 2017 totaled approximately $753.3 million.

Environmental remediation

The University is subject to laws and regulations concerning environmental remediation and has established reserves for potential obligations that management considers to be probable and for which reasonable estimates can be made. These estimates may change substantially depending on new information regarding the nature and extent of contamination, appropriate remediation technologies, and regulatory approvals. Costs of future environmental remediation have been discounted to their net present value. Management is not aware of any existing conditions that it believes are likely to have a material adverse effect on the University's financial position, changes in net assets, or cash flows.

Utilities purchase commitments

The University has entered into Power Purchase Agreements (PPAs) with a series of utilities providers to purchase natural gas and electricity for various quantities and time periods. As of June 30, 2017, future obligations under the PPAs are as follows (in thousands of dollars):

2018	$ 21,373
2019	17,352
2020	14,594
2021	14,534
2022	9,824
Thereafter	27,606
TOTAL UTILITY FUTURE PURCHASE OBLIGATIONS	**$ 105,283**

General

The University is a defendant in various legal actions arising from the normal course of its operations. While it is not possible to predict accurately or determine the eventual outcome of such actions, management believes that the outcome of these proceedings will not have a material adverse effect on the University's financial position, changes in net assets, or cash flows.

The University has evaluated subsequent events through October 26, 2017, the date the financial statements were issued. The University has concluded that no material events have occurred that are not accounted for in the accompanying financial statements or disclosed in the accompanying notes.

Schedule of Expenditures of Federal Awards

Harvard University

Schedule of Expenditures of Federal Awards

Year Ended June 30, 2017

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Research and Development Cluster					
Direct Awards					
Agency for International Development					
Alliance for Family Strengthening: A collaboration to test the effectiveness and scalability of the Family Strengthening Intervention for improved early childhood development in Rwanda	98.RD	AID696A1600003		$164,366	$40,000
Rapid diagnosis of frail and sick newborns with a handheld vital sign monitor	98.RD	AID-OAA-F-14-00005		42,187	20,005
Subtotal of 98.RD				**206,553**	**60,005**
Total for Agency for International Development Direct Award				**206,553**	**60,005**
Corporation for National and Community Service					
PFS Government Performance Lab	94.019	16PSHMA001		115,423	-
Subtotal of 94.019				**115,423**	**-**
Harvard Kennedy School SIB Lab	94.024	14PSHMA001		653,410	-
Subtotal of 94.024				**653,410**	**-**
Total for Corporation for National and Community Service Direct Award				**768,833**	**-**
Department of Agriculture					
Developing a Framework for Measuring the Value of Consumer Confidence in the Food Supply	10.250	58-3000-4-0038		5,226	-
Subtotal of 10.250				**5,226**	**-**
A Novel Intervention Nanotechnology For Fresh Produce Surface Disinfection Using Engineered Water Nanostructures	10.310	2013-67021-21075		67,654	-
Understanding the contributions of remotely sensed chlorophyll fluorescence for domestic and international crop monitoring programs	10.310	2016-67012-25208		76,882	-
Subtotal of 10.310				**144,536**	**-**
Total for Department of Agriculture Direct Award				**149,762**	**-**
Department of Commerce					
Estimating convection's moisture sensitivity function using DYNAMO observations	11.431	NA13OAR4310154		40,760	-
Quantifying carbon signatures across urban-to-rural gradients: Advancing the capacity for monitoring, reporting, and verification through observations, models, and remote sensing	11.431	NA14OAR4310180		70,103	-
Subtotal of 11.431				**110,863**	**-**
Aircraft campaign on the North Slope of Alaska	11.Contract	RA-133R-16-SE-1334		20,000	-
IANA Stewardship Transition Review	11.Contract	SB1335-16-SE-0091		348	-
Subtotal of 11.Contract				**20,348**	**-**
Total for Department of Commerce Direct Award				**131,211**	**-**
Department of Defense					
Fast Sparse Coding: A New Approach to Accelerate the Intelligence Cycle Computations	12.300	N00244-15-1-0050		(4,816)	-
A Computational Approach to Human Moral Judgment	12.300	N00014-14-1-0800		142,778	-
Bi-Layer Thermal Barrier Coatings Based on the Yttrium-Tantalate Zirconia System	12.300	N00014-15-1-2715		187,158	-
Biophysiokinetic effect of NIR on cochlear oxidative stress and TTS	12.300	N00014-16-1-2966		270,333	-
Confirmatory GWAS Analysis of the Samples in the Marine Recruit Archive	12.300	N00014-15-1-2518		512,854	-
Custom Super-Resolution Microscope for the Structural Analysis of Nanostructures	12.300	N00014-16-1-2563		285,811	-
Decentralized Perception from Online Learning and Semantic Understanding	12.300	N00014-17-1-2075		44,094	19,879
Designing a Dynamic Platform that Provides Multiple Defense Mechanisms against Fouling	12.300	N00014-16-1-3169		234,476	-
Designing Composite Coatings that Provide a Dual-Defense Against Fouling	12.300	N00014-15-1-2157		(3,460)	-
Efficient Bayesian Computation for Massive Data Sets - Theory and Methods	12.300	P00002		186,170	-
Elements of Causal Learning: Basic Concepts, Theory, Methods, Algorithms and Applications	12.300	N00014-17-1-2131		845	-
Fluidic Powered Soft Fabric-Based Actuators for Wearable Robotic Applications	12.300	N00014-17-1-2121		32,906	-
Genotyping Completion of samples in the Marine Recruit Archive	12.300	N00014-16-1-2866		185,547	-
Integrated NIR test platform for NIHL studies	12.300	N00014-13-1-0794		4,586	-
Kinetic self-assembly of DNA tiles and bricks	12.300	N00014-13-1-0593		(4,378)	-
Measuring and understanding information and behavioral patterns for planning and executing non-kinetic course of actions	12.300	N00014-14-1-0485		15,227	-
Nanostructured Surfaces for Integrated Optoelectronics, Plasmonics, and Quantum Optics	12.300	N00014-16-1-2825		508,052	-
NIR effect on exosome-mediated inflammation in a cellular model of DCS	12.300	N00014-16-1-2411		130,060	-
Optimization for Intelligent Embedded Devices	12.300	N00244-16-1-0018		145,287	-
Pass-through to BCH: Identifying and countering early risk factors for violent extremism among Somali refugee communities resettled in North America	12.300	N00014-13-1-0243		43,482	43,482
Practical and Scalable Quantum Simulators for Chemistry and Materials	12.300	N00014-16-1-2008		428,098	-
Programmable Architected Materials	12.300	N00014-16-1-2823		524,781	-
Programmable synthesis of DNA nanostructures for spatial and temporal control	12.300	N00014-16-1-2410		454,750	-
Protein Sensors for Voltage and magnetism	12.300	N00014-11-1-0549		7,453	-

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Quantifying the efficiency of MCMC methods in High Dimensional Bayesian Problems	12.300	N000141410188		28,504	-
Quantum Opto-Mechanics with Atoms and Nanostructured Diamond: QOMAND	12.300	N00014-15-1-2761		1,521,812	615,047
Quantum Sensing and Metrology: Novel Methods and Applications	12.300	N00014-15-I-2846		608,675	-
Randomized Dimensionality Reduction Methods for Machine Learning	12.300	N00014-15-1-2388		178,020	-
Reprogrammed Cochlear Resilience to Inflammation and Apoptosis	12.300	N00014-16-1-2744		230,848	-
Scalable Bayesian Computation: Using Derandomization to Efficiently Characterize Uncertainty in Probabilistic Models	12.300	FA8750-14-2-0117		31,680	-
Scaling up complexity of DNA brick structures	12.300	N00014-16-1-2182		313,663	-
Seeding cooperation.	12.300	N00014-16-1-2914		115,530	-
Subtotal of 12.300				**7,360,826**	**678,408**
Identification, Characterization, and Utilization of Adult Meniscal Progenitor Cells	12.420	W81XWH-13-1-0244		356,231	-
An Herbal Derivative as the Basis for a New Approach to Treating Post-Traumatic Osteoarthritis	12.420	W81XWH-15-1-0396		330,600	-
An Herbal Derivative as the Basis for a New Approach to Treating Post-Traumatic Osteoarthritis	12.420	W81XWH-15-1-0397		410,106	-
BC120436 A New Cell-Free System to Study BRCA1 Function	12.420	W81XWH-13-1-0063		(5,866)	-
Behavioral-Based Predictors of Workplace Violence in the Army STARRS	12.420	W81XWH-12-2-0113		1,016,011	59,223
Elucidating the Role of Stromal Factors in HER2 Therapy Resistance in Breast Cancer	12.420	W81XWH-14-1-0222		88,437	-
Epigenetic subtypes of triple negative breast cancer	12.420	W81XWH-14-1-0213		64,004	-
Identification of Premotor Parkinson disease	12.420	W81XWH-14-1-0131		785,253	162,785
Inhibition of metastases by disrupting platelet-cancer cell interactions using ex vivo modified platelets	12.420	W81XWH-15-1-0305		146,857	18,327
PC131803 Molecular Epidemiology Investigation of Obesity and Lethal Prostate Cancer	12.420	W81XWH-14-1-0250		10,016	-
Preclinical Evaluation of BCL2/BCLXL Inhibition to Enhance the Efficacy of Antibody-Drug Conjugates (ADCs) for the Treatment of Distinct Breast Cancer Subtypes	12.420	W81XWH-16-1-0340		416,051	-
Role of Klotho in osteoporosis and renal osteodystrophy	12.420	W81XWH-13-1-0200		73,574	-
Sexual Trauma and Post-Traumatic Stress Disorder among Warfighters in Army STARRS	12.420	W81XWH-13-1-0037		305,911	-
A Unique Opportunity for TSC: Repurposing FDA-Approved Drugs Using a Unique Combinatorial Screening Strategy	12.420	W81XWH-16-1-0127		99,774	-
Understanding Microbial Sensing in Inflammatory Bowel Disease Using Click Chemistry	12.420	W81XWH-15-1-0368		485,396	-
Understanding Microbial Sensing in Inflammatory Bowel Disease Using Click chemistry	12.420	W81XWH-15-1-0367		256,524	-
Subtotal of 12.420				**4,838,879**	**240,335**
6.2.3 Quantum Computation and Communication	12.431	W911NF-15-1-0256		272,501	-
A Quantum Microscope for Characterization of Advanced Materials	12.431	W911NF-15-1-0391		(6,881)	-
A scanning laser doppler vibrometer for characterizing and optimizing high performance materials, actuators, and impulsive systems	12.431	W911NF-16-1-0282		275,000	-
Analyzing the Large System Limit of Stochastic Proximal Gradient Methods for Online Estimation	12.431	W911NF-16-1-0265		35,102	-
Causality Graphs, Approximate Kolmogorov Information, Modeling, Prediction, and Network Inference	12.431	W911NF-14-1-0508		442,814	-
Charge Density Waves in Mesoscopic 2-Dimensional Materials for Nanoelecronics	12.431	W911NF-14-1-0638		116,430	-
Contacting the Quantum Anomalous Hall State	12.431	W911NF-16-1-0491		76,815	-
Continuation Study: A Systems Approach to Understanding Post-Traumatic Stress Disorder	12.431	W911NF-16-2-0015		1,576,898	1,275,738
Continuation Study: A Systems Approach to Understanding Post-Traumatic Stress Disorder	12.431	W911NF-17-2-0086		2,374	-
Design of Cellular Blocks, their Programmatic Assembly into Biological Meshes, and the Synthesis of Tissue-Like Structures	12.431	W911NF-17-2-0079		36,459	-
Exploring New Approaches for Coupling Spin Qubits	12.431	W911NF-15-1-0203		118,789	-
Imaging and Control of Biological Transduction using NV-Dlamond	12.431	W911NF-15-1-0548		1,007,289	438,523
Integrated Human Organ-on-Chip Microphysiological Systems	12.431	W911NF-12-2-0036		7,202,018	1,437,374
Low-temperature system for integrated quantum nodes based on atom-like systems in nanophotonic cavities	12.431	W911NF-16-1-0173		508,597	-
Measuring, Understanding, and Responding to Covert Social Networks: Passive and Active Tomography	12.431	W911NF-11-1-0036		680,788	473,861
Mechanically Actuated Peptide-polymer thin films for selective capture and release	12.431	W911NF-13-1-0242		6,823	-
Programmatic modelling for reasoning across complex mechanisms	12.431	W911NF-14-1-0397		1,077,249	252,394
Nano- and Bio-Electronics: CMOS-Enabled Massively-Parallel Intracellular Nanowire Array as a New Neuroscience Tool and its Biotic-Abiotic Hybrid Application for Micro-Neuroprosthesis Technology	12.431	W911NF-15-1-0565		134,098	-
Quantum Sensing of Quantum Materials	12.431	W911NF-17-1-0023		172,970	-
Self-Assembly of RNA Brick Structures	12.431	W911NF-12-1-0238		27,942	-
Shannon Inspired Approach to Limits of Learning	12.431	W911NF-16-1-0561		305,081	-
Statistical Structural Health Monitoring in the Presence of Environmental Variability and Uncertainty	12.431	W911NF-15-1-0172		66,247	-
STIR: Multi-level Hidden Markov Model for Co-translational Protein Targeting	12.431	W911NF-16-1-0286		50,082	-
Subtotal of 12.431				**14,185,485**	**3,877,890**
Diamond-Based High-Power Optical Components	12.630	W911NF-17-1-0226		45,070	-
Subtotal of 12.630				**45,070**	**-**
Active Metasurfaces for Advanced Wavefront Engineering and Waveguiding	12.800	FA9550-14-1-0389		1,355,690	970,876
Catalysts for Lightweight Solar Fuels Generation	12.800	FA9550-13-1-0028		156,357	-
Chiral Nanophotonics	12.800	FA9550-16-1-0156		196,919	-

The accompanying notes are an integral part of this schedule.

Harvard University
Schedule of Expenditures of Federal Awards
Year Ended June 30, 2017

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Cyborgcell: Molecular-Nanoscale Circuits for Active Control of Cells	12.800	FA9550-15-1-0401		471,638	-
Equipment for Laser Cooling of Polyatomic and Diatomic Molecules	12.800	FA9550-16-1-0264		150,731	-
Facility for High Spatial and Spectral Resolution Optical Imaging of Metasurfaces	12.800	FA9550-15-1-0355		20,510	-
Generating Multiple Hypotheses in Non-negative Matrix Factorization and Related Linear Models	12.800	FA9550-17-1-0155		25,463	-
High-Throughput Experimentally and Computationally Guided Discovery of Next Generation High-Temperature Shape Memory Alloys	12.800	FA9550-16-1-0180		147,556	29,962
Laser Cooling of Polyatomic Molecules	12.800	FA9550-15-1-0446		65,289	-
Nano Electronics on Atomically Controlled van der Waals Quantum Heterostructures	12.800	FA2386-15-1-4003		71,726	-
Nanoelectronics Innervated Cells, Cell Networks and Three-Dimensional Biomaterials	12.800	FA9550-14-1-0136		342,024	-
Pump-Probe Study of fs-Laser Hyperdoping and Texturing of Silicon for Advanced Non-equilibrium Materials	12.800	FA9550-14-1-0150		78,629	-
System for time-resolved characterization of light-matter interaction in nanophotonic devices	12.800	FA9550-09-1-0042		(259)	-
The Production and Study of Antiprotons and Cold Antihydrogen	12.800	FA9550-15-1-0275		437,349	-
Ultra-Subwavelength Graphene Plasmonic THz Circuits and Metamaterials	12.800	FA9550-13-1-0211		73,817	-
Ultracold Molecular Assembly and Quantum Chemistry	12.800	FA9550-15-1-0260		157,020	-
Writing and Securing Peer-to-Peer Computation	12.800	FA9550-16-1-0351		141,781	-
Subtotal of 12.800				**3,892,240**	**1,000,838**
Active Context	12.910	W911NF-15-1-0544		1,583,407	730,957
Continuous Directed Evolution of Synthethic Regulatory Elements for Use in Mammalian Cells	12.910	HR0011-11-2-0003		(1,254)	-
DARPA Biological Control: A generalizable approach to engineer ultra-precise cellular control systems with applications to drug resistance	12.910	HR0011-16-2-0049		1,381,802	16,130
Developing New Methods of Multi-Core Statistical Inference Towards Rapid Data Fusion and Information Extraction	12.910	N66001-12-1-4219		(5,234)	
Development of Diamond Nanoscale Magnetometer Using Quantum Assisted Sensing and Readout	12.910	HR0011-11-C-0073		363,567	277,445
Diamond Micro-Combs and Applications	12.910	W31P4Q-15-1-0013		541,272	210,576
Discovery of Tolerance-Mediating Gut Microbial Metabolites	12.910	HR0011-16-2-0013		277,012	-
Engineering Self-Organizing Systems: Investigating Top-Down Synthesis of Resilient Collectives Using an Experimental 1000 Robot Platform	12.910	W911NF-15-1-0078		30,866	-
Engineering Self-Organizing Systems: Theory and Top-down Synthesis Methodology for Resilient Collectives using Kilobot and Molecular Robotics Platforms	12.910	W911NF-17-1-0075		96,413	-
Executable Knowledge	12.910	W911NF-14-1-0367		969,327	179,187
Multiscale Analysis of Spike-Timing Dependent Plasticity in Heterogeneous Circuits of Neurons	12.910	W31P4Q-15-1-0002		49,709	-
Smart Exoskeleton Suit: Biomechanically Synergistic Body Support and Protection System	12.910	W911QX-12-C-0084		(585)	-
Spleen-on-a-Chip Sepsis Therapeutic Device	12.910	N66001-11-1-4180		90,207	68,936
Translation and Selection of Functional Sequence-Defined Synthetic Polymers	12.910	N66001-14-2-4053		1,078,464	-
Ultrahigh-Throughput Virus-Host Cell PicoReactor System for Predictive Modeling of Viral Evolution	12.910	HR0011-11-C-0093		212,674	212,674
Subtotal of 12.910				**6,667,647**	**1,695,905**
Behavioral Approach to Simplified Learning from Space-Time Data	12.Contract	N66001-15-C-4028		242,402	-
Biologically Inspired Soft Smart Exosuit for Injury Prevention and Performance Augmentation	12.Contract	W911NF-14-C-0051		5,257,855	293,647
Continuum Models for Multi-Agent Cooperative Control	12.Contract	W911NF-12-1-0350		163,740	-
DARPA A2P: Connecting the Micro and Meso Scales through Pop-up Book Microelectromechanical Systems MEMs	12.Contract	FA8650-15-C-7548		497,808	-
Examining Individual Differences in the Cognitive Processes and Brain Networks Supporting Social Cognition in the Contextualized Soldier	12.Contract	W911QY-14-C-0009		180,241	-
Fundamental Research: Quantum Communication and Teleportation over long distances	12.Contract	W911NF-14-2-0099		104,870	-
Integrated Microfluidic DLT Device for Sepsis Therapy	12.Contract	HR0011-13-C-0025		1,948,778	370,627
National Cyber Security Summit	12.Contract	FA3300-16-C-0009		71,836	-
New Diagnostic Platform for Biodefense	12.Contract	HDTRA1-14-C-0037		231,411	-
Reverse Engineering Host Resilience	12.Contract	W911NF-16-C-0050		5,032,635	778,823
Towards Re-Programming the Gut Microbiome	12.Contract	HR0011-15-C-0094		1,618,682	719,966
Subtotal of 12.Contract				**15,350,258**	**2,163,063**
Programming Cells to Produce Nanoparticles with Controllable Features	12.RD	No Awrd Nmbr		(909)	-
Subtotal of 12.RD				**(909)**	**-**
Total for Department of Defense Direct Award				**52,339,496**	**9,656,439**
Department of Education					
Partnering in Education Research (PIER): A Predoctoral Interdisciplinary Training Program	84.305	R305B150010-16		528,007	-
Student Outcomes of Integrative Mental Health Services	84.305	R305A140253-16		562,817	9,550
Subtotal of 84.305				**1,090,824**	**9,550**
Developing more effective test-based accountability by improving validity under high-stakes conditions	84.305A	R305A110420-14		29,318	29,318
Digital Messaging for Improving College Enrollment and Success	84.305A	R305A140121-15		769,838	488,162
Subtotal of 84.305A				**799,156**	**517,480**
Understanding and Measuring Treatment Effect Heterogeneity in Large Scale Experiments and Pseudo-Experiments in Education	84.305D	R305D150040-16		131,559	70,802
Subtotal of 84.305D				**131,559**	**70,802**
Project READS: Using Data to Promote Summer Reading and Close the Achievement Gap for Low-SES Students in North Carolina	84.396B	U396B100195		141,549	47,037

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Subtotal of 84.396B				**141,549**	**47,037**
Total for Department of Education Direct Award				**2,163,088**	**644,869**
Department of Energy					
Brazil-USA Collaborative Research: Modifications by Anthropogenic Pollution of the Natural Atmospheric Chemistry and Particle Microphysics of the Tropical Rain Forest During the GoAmazon IOPs	81.049	DE-SC0011115		108,358	-
Correlated Electrons in Graphene at the Quantum Limit	81.049	DE-SC0012260		99,067	-
Dynamic Self-Assembly, Emergence, and Complexity	81.049	DE-FG02-00ER45852		339,123	-
Early Career: Catalyst design for small molecule activation of energy consequence	81.049	DE-SC0008313		129,742	-
Fluxes of CO2, CH4, CO, BVOCs, NOx, and O3 in An Old Growth Amazonian Forest: Ecosystem Processes, Carbon Cycle, Atmospheric Chemistry, and Feedbacks on Climate	81.049	DE-SC0008311		65	65
Harnessing Chemo-mechanical Energy Transduction to Create Systems that Selectively Catch and Release Biomolecules	81.049	DE-SC0005247		338,287	166,142
Harnessing the power of ab initio calculations, distributed computing and machine learning to efficiently locate extreme molecules for use in Carbon-based solar cells	81.049	DE-SC0015959		55,808	-
Imaging Electron Motion in Two-Dimensional Materials	81.049	DE-FG02-07ER46422		159,375	-
Imaging Electrons in Atomically Layered Materials	81.049	DE-FG02-07ER46422		(47,005)	-
Integrated Mesoscale Architectures For Sustainable Catalysis (IMASC)	81.049	DE-SC0012573		2,889,272	518,538
Jet physics and quantum field theory for the Large Hadron Collider	81.049	DE-SC0013607		112,518	-
Microbial Ecology, Proteogenomics and Computational Optima	81.049	DE-FG02-02ER63445		2,515,168	59,082
Modeling the temporal dynamics of nonstructural carbohydrate pools in forest trees	81.049	DE-SC0012416		116,840	-
Molecular-scale Understanding of Selective Oxidative Transformations of Alcohols Promoted by Au and Au-based Alloys	81.049	DE-FG02-84ER13289		777	-
Physical and Thermodynamic Properties of Secondary Organic Materials for Modeling	81.049	DE-SC0012792		283,920	-
Proton-Coupled Electron Transfer Mechanisms of Small Molecule Activation	81.049	DE-SC0009758		161,032	-
Pursuing Dark Energy with Large Galaxy Redshift Surveys: Baryon Acoustic Oscillations and Beyond	81.049	DE-SC0013718		92,093	-
Research in High Energy Physics	81.049	DE-SC0007881		1,406,783	-
Research Theoretical in High Energy Physics	81.049	DE-SC0007870		195,866	-
SISGER: Transport and Imaging of Mesoscopic Phenomena in Single and Bilayer Graphene	81.049	DE-SC0001819		243,797	147,116
SISGR: Room Temperature Single-Molecule Detection and Imaging by Stimulated Raman Scattering Microscopy	81.049	DE-SC0001548		42,372	-
Unravel lipid accumulation mechanism in oleaginous yeast through single cell systems biology study	81.049	DE-SC0012411		555,502	310,053
Water Splitting by Thin Film Metal-Oxo Catalysts	81.049	DE-SC0009565		60,105	-
Subtotal of 81.049				**9,858,865**	**1,200,996**
From Z to Planets: Phase II	81.112	DE-NA0002937		395,488	104,252
High Pressure Metallic Hydrogen	81.112	DE-NA0003346		134,814	-
Hydrogen and its Isotopes at Ultra-High Pressure	81.112	DE-FG52-10NA29656		(151)	-
Pressing for Metallic Hydrogen	81.112	DE-NA0001990		14,093	-
Subtotal of 81.112				**544,244**	**104,252**
Novel slippery coatings for extreme energy-savings associated with fluid handling in oil pipelines and water circulation systems	81.135	DE-AR0000326		74,575	74,575
Organic Acid Flow Battery for Grid Storage	81.135	DE-AR0000348		995,052	139,461
Transistor-less Power Supply Technology Based On UWBG Nonlinear Transmission Line	81.135	DE-AR0000858		3,593	-
Subtotal of 81.135				**1,073,220**	**214,036**
IC Fellowship (Kehaylas) Research Advisor stipend and lab allowance	81.RD	No Awrd Nmbr		16,110	-
Subtotal of 81.RD				**16,110**	**-**
Total for Department of Energy Direct Award				**11,492,439**	**1,519,284**
Department of Homeland Security					
Non-Invasive Identification of LVH/Cardiomegaly in Firefighters	97.044	EMW-2011-FP-00663		162,572	100,559
Subtotal of 97.044				**162,572**	**100,559**
TSA Meta Leadership Training	97.Contract	2116206TWE018		225,641	-
Subtotal of 97.Contract				**225,641**	**-**
Feeding America's Bravest: Mediterranean Diet-Based Interventions to Change Firefighter's eating Habits and Improve Cardiovascular Risk Profiles	97.RD	EMW-2014-FP-00612		416,333	238,107
Subtotal of 97.RD				**416,333**	**238,107**
Total for Department of Homeland Security Direct Award				**804,546**	**338,666**
Department of Housing & Urban Development					
Prospective Evaluation of a Comprehensive Smoke-Free Public Housing Policy in a Multi-State Setting	14.902	MAHHU0025-14		198,267	11,911
Subtotal of 14.902				**198,267**	**11,911**
Total for Department of Housing & Urban Development Direct Award				**198,267**	**11,911**
Department of Justice					

The accompanying notes are an integral part of this schedule.

Harvard University

Schedule of Expenditures of Federal Awards

Year Ended June 30, 2017

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Community Corrections: An Executive Session on the Future of Correctional Policy	16.560	2012-R2-CX-0048		213,416	-
Evaluation of the Peer to Peer (P2P): Challenging Extremism Initiative	16.560	2016-ZA-BX-K001		9,591	-
Research Assistantship Program, VAIW	16.560	2015-IJ-CX-0014		71,433	-
Subtotal of 16.560				**294,440**	**-**
Total for Department of Justice Direct Award				**294,440**	**-**
Department of Labor					
The Real Effects of Electronic Wage Payments: An Experiment with Salaried Factory Workers in Bangladesh	17.791	EO-30274-17-60-5-25		32,207	-
Subtotal of 17.791				**32,207**	**-**
Total for Department of Labor Direct Award				**32,207**	**-**
Department of State					
Building University Capacity in Responsible Science in a Scientific Collaboration Context for the BMENA BioScience Forum	19.033	S-LMAQM-14-CA-1182		125,985	-
Subtotal of 19.033				**125,985**	**-**
Total for Department of State Direct Award				**125,985**	**-**
Department of the Interior					
Collaborative Research: Activity and earthquake potential of the Wilmington blind thrust, Los Angeles, CA	15.807	G17AP00008		13,903	-
Digitization of Harvard-Adam Dziewonski Analog Seismograms from 1933 to 1953 for Improved Seismicity Constraints in the Northeastern United States	15.807	G16AP00021		13,696	-
Digitization of Harvard-Adam Dziewonski Analog Seismograms from 1933 to 1953 with a Focus on Caribbean Earthquakes	15.807	G17AP00007		1,927	-
Subtotal of 15.807				**29,526**	**-**
Algorithms for Representation and Inference informed by the Acquisition of Data from Neuroscience Experiments (ARIADNE)	15.Contract	D16PC00002		7,639,609	3,068,183
Cortical architecture and algorithms for machine listening	15.Contract	D16PC00008		3,994,212	2,658,834
Subtotal of 15.Contract				**11,633,821**	**5,727,017**
Total for Department of the Interior Direct Award				**11,663,347**	**5,727,017**
Department of Transportation					
Rapid Identification of Crude Oil Properties Using W-Ink (Follow-On)	20.Contract	DTFR5315C00025		237,752	90,084
Subtotal of 20.Contract				**237,752**	**90,084**
Total for Department of Transportation Direct Award				**237,752**	**90,084**
DHHS					
Impact Evaluation of Combination HIV Prevention Interventions in Botswana	93.067	5U01GH000447-04Revised		637,492	637,492
Impact Evaluation of Combination HIV Prevention Interventions in Botswana	93.067	5U2GGH001911-02 REVISED		4,278,508	2,763,113
Implementation of Programs for the Prevention, Care and Treatment of HIV/AIDS in the United Republic of Tanzania under the President's Emergency Plan for AIDS Relief (PEPFAR)	93.067	5U2GPS001966-05Revised		182,274	63,719
Subtotal of 93.067				**5,098,274**	**3,464,324**
E-Cigarette Vaping in Advertising Portrayals and Behavioral Outcomes Research (E-VAPOR Study)	93.077	1R03CA212544-01A1		299	-
Subtotal of 93.077				**299**	**-**
Prevention Policy Modeling Lab	93.084	6NU38PS004644-03-02		1,289,398	527,536
Subtotal of 93.084				**1,289,398**	**527,536**
The Mdepinet Medical Counter Measures Study	93.103	1U01FD004493-01 REVISED		338,100	88,118
Subtotal of 93.103				**338,100**	**88,118**
Epidemiological MCH/SPH Institute	93.110	6T03MC07648-11-01		13,500	-
Training Grant in Maternal and Child Health	93.110	5T76MC00001-62-00		358,271	-
Subtotal of 93.110				**371,771**	
28th Annual Conference International Society for Environmental Epidemiology	93.113	1R13ES027337-01		11,701	-
Air Pollution and Autism in Israel: A Population-Wide Study	93.113	1R21ES026900-01		100,577	34,448
Air pollution and Parkinson Disease: a GIS-based approach	93.113	5K01ES019183-05		(1,183)	-
Arsenic Exposure, ER stree and Type 2 Diabetes	93.113	5R01ES022230-05		350,998	-
BPA, Phthalates and Stress: Mechanisms and Interactions for Childhood Obesity	93.113	3R01ES021357-04S1Revised		59,009	59,009
Cardiovascular Health and Air Pollution: A National Study	93.113	5R01ES024332-03		427,532	45,774
Causal Inference with Interference for Evaluating Air Quality Policies	93.113	5R01ES026217-02		385,684	-
Chronic effects of weather fluctuations: population susceptibility and adaptation over time and space	93.113	5R21ES024012-02		47,176	-
Comprehensive Translational Science Analytics Tools for the Global Health Agenda	93.113	5DP1ES025459-03		1,061,115	10,656
COPD and Response to Traffic Related Particles	93.113	4R01ES019853-05		345,469	162,228
Crossover Study on Human Exposure to Phthalates and Male Fertility	93.113	5R01ES017285-05Revised		15,978	13,551
Data-Driven identification of environmental factors in cardiovascular diseaase	93.113	5R00ES023504-04		161,797	-
Dioxins and Male Pubertal Growth and Development	93.113	3R01ES014370-10S1		132,009	36,051
DNA Methylation as a Biomarker of Exposure and Effect for Particles and Metals	93.113	5R01ES015172-09		100,183	4,451

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Early and late-life metal exposures and Alzheimer's disease	93.113	5R01ES024165-04		530,704	79,921
Effects of Arsenic on Adolescent Growth and Metabolic Health	93.113	5R03ES024907-02		34,749	-
Effects of Environmental Phthalates and Chemical Mixtures on Male Puberty and Semen Quality	93.113	2R01ES014370-11A1REVISED		188,700	87,001
Effects of environmental stressors on mitochondrial-cellular cross-talk	93.113	5R21ES025615-02 REVISED		172,467	-
Engineered Nanomaterial Synthesis, Characterization and Method Development Center for Nano-safety Research	93.113	1U24ES026946-01REVISED		561,753	140,223
Environmental Chemicals, Exosomal miRNAs in Ovarian Follicles, and IVF Success	93.113	5R21ES024236-02REVISED		156,439	31,185
Environmental Obesogens and Weight Change in the POUNDS LOST Trial	93.113	5R01ES022981-04		497,732	20,450
Epidemiology of Immunotoxicant Exposure in Children	93.113	5R01ES012199-10		167,222	167,222
Epigenetic Regulation by Large Non-Coding RNAs in the p53 Mediated DNA Damage Response	93.113	5R01ES020260-05		33,280	8,255
Epigenomic drivers of human muscle progenitor cells in development and disease	93.113	5R01ES024935-02		174,653	-
Flame Retardants, Thyroid Function, and Psychomotor Skills in Children	93.113	1R21ES024841-01A1-REVISED		16,089	16,089
Glucose Metabolism in Adults Prenatally Exposed to Diabetogenic Pollutants	93.113	5R01ES021477-05REVISED		752,577	510,976
Graduate Training in Biostatistics	93.113	5T32ES007142-35		437,463	-
Gut Microbiome in Adults with Early Life Exposures to Environmental Chemicals	93.113	5R21ES023376-03		80,128	10,915
HSPH NIEHS Center for Environmental Health	93.113	5P30ES000002-54		1,666,651	40,656
Human Exposure to Bisphenol A, Phthalates and Fertility, Pregnancy Outcomes	93.113	5R01ES009718-19		621,738	18,401
Immunotoxicity in Humans with Lifetime Exposure to Ocean Pollutants	93.113	4R01ES021993-05		117,117	64,201
Impact of Obesity on Airway Responses to Air Pollution	93.113	5R01ES013307-13		344,999	32,429
Increasing the power of GxE detection by using multi-locus genome-wide predictors	93.113	5R21ES025052-03		143,120	65,467
Integrative genomic analysis on the role of lncRNAs in the DNA damage response to environmental toxins	93.113	4K25ES022984-04 REVISED		(18,719)	-
Interdisciplinary Training in Genes and the Environment	93.113	3T32ES016645-08S1		364,913	-
Lipoprotein Corona Fingerprints: Implications for Pulmonary Clearance and Toxicity of Engineered Nanoparticles	93.113	1K99ES025813-01A1		76,581	-
Manganese Transport and Toxicity	93.113	5R01ES014638-12		708,366	-
Maternal and Paternal Flame Retardant Exposure, Impact on Fertility and Pregnancy	93.113	5R01ES022955-04		614,895	250,281
Maternal Exposure to Air Pollution and Early Pregnancy Outcomes	93.113	1K99ES026648-01A1		29,149	-
Molecular and Epigenetic Mitochondriomics of Air Particles, Lead and Cognition	93.113	5R01ES021733-04REVISED		(5,621)	-
New Tools for the interpretation of Pathogen Genomic Data with a focus on Mycobacterium tuberculosis	93.113	7K01ES026835-03		118,139	-
Obesity and asthma: microbiome-metabolome interactions	93.113	5R21ES024032-02		179,727	-
Organ on chip technology to evaluate engineered nanomaterial toxicity	93.113	1U01ES027272-01		164,611	-
Phthalates, Gestational Diabetes, and Markers of Type 2 Diabetes Risk in Women	93.113	7R01ES026166-02- Revised		456,843	34,243
Pollutant-related diabetes in the Nurses' Health Study II	93.113	5R01ES021372-05		534,810	119,311
Population-Based Study of Environmental Risk Factors for ALS	93.113	5R01ES019188-05		65	-
Semiparametric Methods for Gene-environment Interaction	93.113	5R01ES020337-04		215,601	-
Summer Intern Program (SIP) in Environmental Health Sciences	93.113	5R25ES020722-05 REVISED		24,300	-
The role of beta-endorphin in cutaneous inflammation	93.113	1F31ES027301-01		25,546	-
The roles of UV, neoantigens, and epitope spreading in vitiligo and melanoma	93.113	5F30ES025626-02		43,572	-
Theory and methods for interaction	93.113	2R56ES017876-06A1		57,093	-
Theory and Methods for Sufficient Cause Interactions	93.113	5R01ES017876-05REVISED		8,215	-
Training Program in Environmental Epidemiology	93.113	5T32ES007069-35		3,329	-
Training Program in Environmental Epidemiology	93.113	5T32ES007069-37		474,142	-
Transgenerational Susceptibility to Asthma from Air Pollution Exposure	93.113	5R21ES023281-02		(11,189)	-
Subtotal of 93.113				**13,959,994**	**2,063,394**
A Cognitive Approach to Refine and Enhance Use of a Dental Diagnostic Terminology	93.121	5R01DE021051-05 REVISED		27,488	27,354
A whole systems approach to implementing standardized dental diagnostic terms	93.121	4R01DE023061-04 REVISED		44,797	38,429
Anti-Inflammatory Mesenchymal Stem Cell Therapy for Dental Applications	93.121	5K08DE025292-02		132,884	-
Dynamics of the bacterial type IX secretion system and its effect on subgingival biofilm formation by bacteria of the human oral microbiome	93.121	1K99DE026826-01		23,730	-
Engineering Skeletal Muscle With Biodegradable Hydrogels	93.121	4R01DE013349-16		625,263	58,757
Epigenetic Regulation of HSV Infection of Oral Cells	93.121	5R56DE023909-02 REVISED		131,884	-
Gas-Hedgehog signaling in intramembranous bone formation and expansion	93.121	5R01DE025866-02		470,137	-
Leveraging Novel Multivariate Methods of Subphenotypes in Genetic Association Studies of Sjogren¿s Syndrome	93.121	1R03DE025665-01A1Revised		78,616	35,617
Polymeric Matrices With Defined Cell Adhesion	93.121	5R01DE013033-20		490,536	-
Probing the cAMP signaling microdomain of the primary cilium	93.121	5R21DE025921-02 REVISED		101,207	-
Role of a Novel Secreted Protein Tyrosine Kinase in Development	93.121	5R21DE024312-02		24,492	-
The Role of Salivary Mucin in Preventing Cariogenic Streptococcus Biofilm Formation	93.121	5F30DE024917-03		29,960	-
Tooth Movement derived by PDL Cellular Manipulations	93.121	5K99DE025053-02 REVISED		103,803	-
Subtotal of 93.121				**2,284,797**	**160,157**

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Safety and Health Management of Hazards Associated with Emerging Technologies	93.143	5R25ES023635-03		30,582	13,450
Safety and Health Management of Hazards Associated with Emerging Technologies	93.143	5R25ES023635-05		134,584	1,606
Subtotal of 93.143				**165,166**	**15,056**
Causal Transcriptional Consequences of Human Genetic Variation (CTCHGV)	93.172	5P50HG005550-05 REVISED		(651)	-
Center for Genomically Engineered Organs	93.172	5RM1HG008525-03		1,613,379	143,373
Electronic Sequencing in Graphene Nanopores	93.172	5R01HG003703-10 REVISED		(2,833)	-
Fast and accurate phasing using the positional Burrows-Wheeler transform (PBWT)	93.172	1R21HG009513-01		37,713	-
Fast and powerful extensions of mixed model methods for GWAS	93.172	5F32HG007805-03Revised		56,957	-
Flybase: A Drosophila Genomic and Genetic Database	93.172	5U41HG000739-25 REVISED		3,262,128	1,042,927
Functionally specialized components of disease heritability in ENCODE data	93.172	1U01HG009379-01		59,964	-
Global measurement of splicing kinetics	93.172	5R21HG009264-02		216,763	-
HMMER and Infernal: Finding distant homologs of sequences and RNA structures	93.172	5R01HG009116-02		56,638	-
Identifying Genome-scale Interaction Effects in Human Traits and Diseases	93.172	5R21HG007687-02		247,990	43,777
Large-Scale High-Confidence Binary Protein Interaction Network for Drosophila	93.172	5R01HG007118-05		877,806	695,150
Leveraging Tissue-Specific Regulatory Grammar to Interpret Human Evolution and Non-coding Variation	93.172	3F32HG009226-01S1		24,218	-
Massively Parallel Phenotypic Characterization of Non-coding Genetic Variation	93.172	5K99HG008179-02 REVISED		55,766	-
Mechanisms of Transcriptional Control Revealed by Nascent Transcript Sequencing	93.172	5R01HG007173-05 REVISED		433,584	-
Methods for disease mapping in multi-ethnic populations	93.172	2R01HG006399-06A1		23,394	-
Methods for Genome-wide Association Studies in Admixed Populations	93.172	5R01HG006399-05		264,899	57,850
Multi-allelic copy number variation of the human genome	93.172	5R01HG006855-04 REVISED		65,392	-
Pathway Commons: Research Resource for Biological Pathways	93.172	5U41HG006623-06 REVISED		956,674	578,536
Patient-Centered Information Commons (PIC)	93.172	3U54HG007963-04S1		5,064,042	1,030,699
Population-Based Approaches to Genome Structure and Structural Variation	93.172	5R01HG006855-06		501,420	-
Powering whole genome sequence-based genetic discovery for common human diseases	93.172	5U01HG009088-02		768,630	521,476
Preparing Association Analysis Software Tools for Next Generation Sequencing Data	93.172	1R01HG008976-01REV		122,126	-
Systematic Exploration of the Human Interactome	93.172	5U41HG006673-05 REVISED		671,074	-
The Flybase Diversity Action Plan	93.172	5R25HG007630-03 REVISED		226,903	214,982
Training in Bioinformatics and Integrative Genomics	93.172	4T32HG002295-14 REVISED		990,363	-
Visualization of (Epi)Genomic Data for Discovery of Disease-Associated Variants	93.172	5R00HG007583-05		226,299	-
Subtotal of 93.172				**16,820,638**	**4,328,770**
Characterizing the Functional Architecture of the Necklace Olfactory System	93.173	1R01DC016222-01		81,055	-
Afferent-efferent interactions in the developing cochlea	93.173	1R01DC015974-01		245,464	-
Atomic Structure of Sensory Transduction Proteins	93.173	1F32DC016210-01		22,529	-
Characterizing Odor Maps in the Olfactory Bulb and Cortex	93.173	5R01DC011558-05		133,990	-
Dissecting sensory to motor transformations in Drosophila melanogaster	93.173	1F31DC015701-01A1		5,844	-
Examining behavioral and neural links between speech delay and literacy skills	93.173	1F31DC015919-01		23,598	-
Force Dependent Unbinding of Mammalian Inner Ear Tip Link Proteins	93.173	1F31DC016199-01 REVISED		7,792	-
Functional characterization of Netrin-1 in the spiral ganglion	93.173	5F31DC014603-02		30,442	-
Functional integration of adult-born neurons into the mammalian brain	93.173	5R01DC013329-05		233,530	-
Genetic Dissection of Auditory Circuit Assembly	93.173	5R01DC009223-08 REVISED		476,094	-
Improved binaural stimulation strategy for bilateral cochlear implants	93.173	5F31DC014873-02 REVISED		11,861	-
Improving round window stimulation via moldable coupler and impedance modeling	93.173	1F31DC015911-01 REVISED		30,253	-
Information Coding in Individual Olfactory Sensory Axons	93.173	1F32DC015938-01A1		12,622	-
Mechanisms of apraxia of speech in primary progressive aphasia	93.173	1F31DC015703-01		31,267	-
Molecular and anatomical correlates of spiral ganglion neuron heterogeneity	93.173	5F32DC014371-02		53,428	-
Molecular And Cellular Mechanisms Of A Neuronal Network For Olfactory Learning	93.173	5R01DC009852-09		455,007	-
Molecular Basis of Inherited Deafness	93.173	5R01DC002281-20		254,285	32,554
Molecular Mechanisms of Auditory Transduction	93.173	5R01DC000304-32 REVISED		436,110	80,470
Network anatomy of olfactory processing	93.173	5R03DC013622-03		(18,965)	-
Neural Mechanisms for Olfactory and Gustatory Integration in the Drosophila Larva	93.173	1F31DC015704-01		31,267	-
Neuromodulation of sensory processing by the serotonin system	93.173	5R01DC014453-03 REVISED		249,048	-
Non-sensory cells as a potential source for signaling molecules in the cochlea	93.173	5R21DC014916-02		194,202	-
Olfactory circuits that control behavior	93.173	5R01DC013289-04 REVISED		247,199	-
Optogenetic Stimulation in a Model of the Auditory Brainstem Implant	93.173	5F31DC014871-02		29,404	-
Optogenetic studies of mouse olfaction	93.173	5R01DC011291-05 REVISED		23,764	-
Sensory processing of social and defensive chemosignals	93.173	5R01DC013087-05 REVISED		246,673	-
Subcortical auditory feedback mechanisms in speech: Function and structure	93.173	1F31DC015695-01		31,267	-

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Synaptic and Circuit Mechanisms of Olfactory Processing	93.173	5R01DC008174-10		66,600	-
The mechanism of inner ear pressure homeostasis by the endolymphatic sac	93.173	1R01DC015478-01A1		186,317	-
The role of short-term plasticity at the calyx of Held for auditory processing	93.173	4F30DC013716-04 REVISED		4,775	-
Training for Speech and Hearing Sciences	93.173	4T32DC000038-25 REVISED		809,712	-
Use of new measurements to develop a model of bone conduction in animal and human	93.173	1F31DC015915-01		29,253	-
Subtotal of 93.173				**4,675,687**	**113,024**
Sensory receptors of the vagus nerve	93.212	1DP1AT009497-01		541,524	-
Subtotal of 93.212				**541,524**	**-**
Identification and characterization of gut microbial bioactive molecules that determine predisposition to autoimmune disease and atopy	93.213	1R01AT009708-01A1		153,448	-
Neurobiological and Clinical Phenotypes in OEF OIF OND Veterans with mTBI or Blast	93.213	5R21AT009430-02		157,857	26,034
Sensory Neuron-Bacteria Interactions in Modulating Pain and the Host Microbiota	93.213	1DP2AT009499-01 REVISED		613,207	-
Subtotal of 93.213				**924,512**	**26,034**
Health Policy Training Program	93.225	5T32HS000055-23		382,280	-
Subtotal of 93.225				**382,280**	**-**
Engineering highly reliable learning lab	93.226	5P30HS024453-02		943,878	626,366
Identifying Cascades of Low-Value Care and the Organizational Practices that Prevent Them	93.226	1R01HS023812-01A1		28,518	-
Measuring Effects of Antihypertensive Medication Adherence on BP levels through Bayesian Dynamic Linear Models	93.226	7R03HS022112-02 REVISED		5,053	-
Medicaid Policy, Coverage, and Access to Care Among Low-Income Americans Under Health Reform	93.226	5K02HS021291-05		102,511	-
Payment Increases and Physician Supply of Care for Medicaid Beneficiaries	93.226	1R36HS024455-01		25,807	-
Subtotal of 93.226				**1,105,767**	**626,366**
Genetics of Sleep in Zebrafish	93.233	5R01HL109525-08 REVISED		349,208	-
Subtotal of 93.233				**349,208**	**-**
In situ transcriptional analysis of brain circuits at single cell resolution	93.242	5R01MH111502-02		1,480,963	191,746
Assessing causality Is post-traumatic stress disorder cardio-toxic	93.242	5R01MH101269-03		822,876	149,270
Basal forebrain purinergic P2 receptor mechanisms of sleep-wake regulation	93.242	5R03MH107650-02		60,192	-
Comparative Safety of commonly prescribed Psychotropic Drugs in pregnant Women	93.242	5R01MH100216-03		450,945	218,101
Comprehensive Classification Of Neuronal Subtypes By Single Cell Transcriptomics	93.242	5U01MH105960-03 REVISED		1,484,334	881,425
Context dependent modulations of dopamine signaling	93.242	5R01MH110404-02 REVISED		478,391	-
Developing Risk Algorithms of Internalizing Disorder Etiology and Course	93.242	5K01MH106710-02 REVISED		64,368	-
Dissecting the assembly of vertebrate neurotransmitter release sites	93.242	1R01MH113349-01		62,420	-
Dissecting the role of anterior cingulate cortex projections to the amygdala in observational learning	93.242	1F31MH107151-01A1 REVISED		6,228	-
Effects of a single-session implicit theories of personality intervention on recovery from social stress and long-term psychological functioning in early adolescents.	93.242	5F31MH108280-02 REVISED		31,076	-
Event-related Neuroimaging of Human Memory Formation	93.242	5R01MH060941-17		457,323	-
Experimental examinations of the mechanisms that generate the responses of midbrain dopamine neurons	93.242	5R01MH101207-05 REVISED		370,876	-
Exploring a Novel Paradigm of Schizophrenia and Bipolar Disorder	93.242	5R01MH113279-02		435,187	-
Functional roles of long noncoding RNAs during neuronal development	93.242	5R01MH102416-04 REVISED		358,609	-
Health Policy Training Program	93.242	5T32MH019733-23 REVISED		317,495	-
Healthy Options: Group psychotherapy for HIV-positive depressed perinatal women	93.242	5R01MH100338-05		324,165	228,852
Identifying critical functions of DISC1 disrupted in major mental illness	93.242	5F30MH103890-02		4,408	-
Identifying Risk Factors for PTSD by Pooled Analysis of Current Prospective Studies	93.242	5R01MH101227-03 REVISED		1,003,471	558,321
Imprinting a Connectome: Developmental Circuit Approach to Mental Ilness	93.242	5P50MH094271-05		166,774	-
In situ transcriptome imaging in single cells	93.242	5R01MH113094-02		1,038,603	-
Influences on Psychiatrist Prescribing of Antipsychotics	93.242	5R01MH093359-03 REVISED		(638)	(638)
Mental Health Coverage and Payment in Private Health Plans	93.242	5R01MH094290-04		411,705	34,849
METTL23 is essential for human cognitive function	93.242	4F30MH102909-04		31,353	-
Molecularly defining the neural circuitry of fear in the amgydala	93.242	5R21MH104785-02		373,704	-
Neural circuits that regulate dopamine neuron activity	93.242	4R01MH095953-05		175,917	-
Neuronal mechanisms of attention: changes in sensitivity and decision criterion	93.242	5F31MH103895-03 REVISED		11,642	-
Neuropsychiatric Genome Scale and RDOC Individualized Domians (N-GRID)	93.242	5P50MH106933-03 REVISED		3,719,394	1,814,850
New approaches to understand neuronal microcircuit dynamics for working memory	93.242	5R01MH107620-03		502,269	-
Optimizing Delivery of ART/PrEP for HIV Prevention through Qualitative Research	93.242	4R01MH101027-04		499,459	169,705
Peptide Modulation of Striatal Patch and Matrix Subdivisions	93.242	5R01MH100568-05		542,521	-
Ph.D. Training in Neuroscience	93.242	5T32MH020017-20		651,382	-
Physiological Genomics of Central Vasopressin Circuits Across Gender	93.242	5K01MH109712-02		160,477	-
Posttraumatic Stress Disorder and Cognitive Decline in Women	93.242	7R21MH102570-02Revised		103,087	61,560
Real time fMRI feedback and auditory processing in schizophrenia	93.242	5R21MH094509-02 REVISED		35,627	-

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Social Capital and Late HIV Diagnosis in the United States	93.242	1K01MH111374-01A1		16,875	-
Synaptic Basis of Sleep Cycle Control	93.242	5R01MH039683-31		425,622	-
Technology Diffusion Pathways	93.242	5U01MH103018-05		694,736	-
The algorithms used by the genome to interpret neural activity	93.242	5R01MH101528-05		696,537	-
The biochemical correlates of sleep homeostasis	93.242	4R01MH099180-04		292,671	-
Training Program in Psychiatric Genetics and Translational Research	93.242	5T32MH017119-31		265,992	-
Ventricles, Corpus Callosum, Symptoms And Mir137 In Large N Study Of Schizophrenia	93.242	1R21MH109819-01A1		70,597	33,700
Youth FORWARD: Capacity Building in Alternate Delivery Platforms and Implementation Models for Bringing Evidence-Based Behavioral Interventions to Scale for Youth Facing Adversity in West Africa	93.242	1U19MH109989-01Revised		312,717	109,239
Subtotal of 93.242				**19,412,350**	**4,450,980**
Lung Disease in Chinese Textile Workers	93.262	5R01OH002421-22REV		189,757	-
The Harvard School of Public Health Center for Work, Health and Wellbeing	93.262	5U19OH008861-09REV		618,731	571,846
The Harvard TH Chan School of Public Health Center for Work, Health and Wellbeing	93.262	2U19OH008861-10 REVISED		714,984	496,386
The HSPH Education and Research Center of Occupational Safety and Health	93.262	5T42OH008416-12 REVISED		1,285,486	-
Subtotal of 93.262				**2,808,958**	**1,068,232**
Alcohol and Cell Adhesion	93.273	4R01AA012974-15		186,712	38,307
The gut microbiota and ethanol	93.273	5R21AA023207-02		177,556	-
Subtotal of 93.273				**364,268**	**38,307**
Behavioral Couples Therapy for Female Drug-Abusing Patients	93.279	5R01DA025618-05 REVISED		27,865	-
Developmental gene networks of 5HT neurons in addiction, aggression, and anxiety	93.279	5R01DA034022-04		659,256	50,814
Drug abuse and jobs: racial disparities in labor force participation and outcomes	93.279	5R03DA038697-02		43,799	-
Function-specific serotonergic neurons, discrete brain targets, and addiction	93.279	5R21DA036056-02		16,559	10,061
Generation and characterization of tools for target-specific de novo DNA methylation	93.279	5R01DA036898-05		297,276	-
Integration and Dynamics of Neuromodulator Action in the Striatum	93.279	5F32DA035543-02		(1)	-
Intergenerational impacts of parent marijuana use on adolescent health behavior	93.279	5F31DA039586-03REVISED		32,971	-
Monitoring Neural Activity in Freely Behaving Zebrafish Larvae with Bioluminescence	93.279	5R01DA030304-04		(97)	-
Substance Abuse at the Schizophrenia International Research Congress	93.279	5R13DA036925-04		7,452	-
Substance Use Disorder Treatment under New Payment and Delivery System Models	93.279	5R01DA035214-03 REVISED		363,703	114,340
Syringe Injectable Electronics Platform for Chronic Mapping and Modulation of Neural Circuits in Addiction	93.279	1R21DA043985-01		62,164	-
Subtotal of 93.279				**1,510,947**	**175,215**
Mentoring in Qualitative Methods for Patient-Oriented Research on HIV Care	93.281	5K24MH090894-05		9,953	9,953
Subtotal of 93.281				**9,953**	**9,953**
Evaluation of a community-based psychosocial intervention for war-affected youth	93.282	5F31MH097333-02Revised		(2,169)	-
Subtotal of 93.282				**(2,169)**	**-**
Automated Procedure Guidance with Ultrasound Imaging Catheters	93.286	5R21EB018938-02		99,837	22,739
Biomaterial based breast cancer vaccine	93.286	4R01EB015498-04		357,479	-
Building the Hematopoietic Stem Cell Niche	93.286	5R01EB014703-04		26,528	-
Continuous Evolution of Proteins with Novel Therapeutic Potential	93.286	5R01EB022376-11 REVISED		86,374	-
In vivo Handheld Coherent Raman Scattering (CRS) Microscopy for Glioma Imaging	93.286	5R01EB017254-04		458,259	249,496
Mechanotransduction analysis in a microengineered lung-on-a-chip	93.286	5R01EB020004-03		762,406	451,183
Subtotal of 93.286				**1,790,883**	**723,418**
Addressing Mental Health Disparities in Refugee Children Through Family and Community-based Prevention: A CBPR Collaboration and Hybrid Implementation Effectiveness Trial	93.307	1U01MD010613-01 REVISED		132,680	27,231
Addressing Mental Health Disparities in Refugee Children Through Family and Community-based Prevention: A CBPR Collaboration and Hybrid Implementation Effectiveness Trial	93.307	7U01MD010613-02REVISED		91,370	-
Addressing Mental Health Disparities in Refugee Children: A CBPR Collaboration	93.307	5R24MD008057-03REVISED		257,745	120,423
Disparities in Exposure and Health Effects of Multiple Environmental Stressors Across the Life Course	93.307	5P50MD010428-03REVISED		662,339	291,254
Harvard School of Public Health MHIRT Training Program Grant	93.307	5T37MD001449-20REVISED		271,126	-
Understanding Disparities in Patient-Centered Hospital Care	93.307	5R01MD006230-03Rev		36,543	-
Subtotal of 93.307				**1,451,803**	**438,908**
A Road Map to the Neocortex	93.310	5DP1MH099906-05		539,775	-
Artificially modulating memories to alleviate psychiatric disease-like states	93.310	1DP5OD023106-01 REVISED		247,338	-
Biocompatible Chemistry for In Vivo Metabolite Modification	93.310	1DP2GM105434-01		563,500	-
Biomedical Data Science Online Curriculum on HarvardX	93.310	5R25GM114818-03		269,303	99,934
Biophysical approaches to complex navigational behaviors in larval Drosophila melanogaster	93.310	8DP1GM105383-05 REVISED		139,643	-
Coordinating Center for the Undiagnosed Diseases Network	93.310	5U01HG007530-04 REVISED		2,572,931	381,127
Dissecting bacterial cell wall synthesis using in vivo single molecule tracking	93.310	1DP2AI117923-01		513,185	-

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Dynamic cellular architecture of bacteria by system-wide super-resolution imaging	93.310	5R01GM096450-05		58,120	-
High Resolution Connectomics of Mammalian Neural Circuits	93.310	5R01NS076467-05		148,568	148,568
Innovative reporters to characterize heterogeneous states among cells	93.310	5R21DA039582-02		72,647	-
Investigating Organ Formation and the Emergence of Complexity in the Visual System Using Comparative Developmental Approaches	93.310	1DP5OD023111-01		159,604	-
Investigating the Role of Alternative Splicing Regulatory Networks in Nervous System Development and Function	93.310	5DP5OD009153-05		69,156	-
Mechanisms of arousal threshold and sleep homeostasis	93.310	1DP2AT009498-01 REVISED		229,852	-
Modeling the Aging Epigenome	93.310	5DP1AG044161-05 REVISED		720,767	-
Molecular mechanisms of adiponectin signaling and PAQR function	93.310	5DP5OD021345-02		379,996	-
New tools for understanding the blood brain barrier	93.310	5DP1NS092473-04		940,242	-
Pharmaco Response Signatures and Disease Mechanism	93.310	5U54HL127365-03 REVISED		1,976,191	193,335
Physician Determinants of Health Care Spending, Quality, and Patient Outcomes	93.310	4DP5OD017897-04 REVISED		396,598	-
Probing Dynamics of The Human Genome by Single Cell Sequencing	93.310	5DP1CA186693-05		599,831	-
Quantification and prediction of treatment efficacy for HIV cure strategies	93.310	5DP5OD019851-03		381,180	-
Single cell analysis of metabolism using genetically-encoded fluorescent sensors	93.310	4DP1EB016985-05		561,466	-
Small-Molecule Catalysts for the Stereoselective Synthesis of Oligosaccharides	93.310	5U01GM116249-02 REVISED		471,271	-
Super-resolution imaging via programmable autonomous blinking	93.310	4R01EB018659-04		628,169	222,579
The inheritance of position: It's not just who you are, it's where you are	93.310	4DP1GM106412-05		673,063	-
Transporting established insights from classical experimental design to address causal questions in environmental epidemiology, including the understanding of biological mediating mechanisms	93.310	5DP5OD021412-02		261,131	-
Using mobile phones for social and behavioral sensing of mood disorder patients	93.310	1DP2MH103909-01REVISED		540,603	2,613
Watching a vertebrate brain learn and behave in a virtual environment	93.310	5DP1NS082121-05 REVISED		375,072	-
Subtotal of 93.310				**14,489,202**	**1,048,156**
Harvard Clinical and Translational Science Center	93.350	5KL2TR001100-05		1,503,177	1,503,177
Harvard Clinical and Translational Science Center	93.350	5TL1TR001101-05		593,932	-
Harvard Clinical and Translational Science Center	93.350	5UL1TR001102-05		25,614,252	15,818,170
Human Cardio-Pulmonary System on a Chip	93.350	3UH3TR000522-05S1		788,954	-
Subtotal of 93.350				**28,500,315**	**17,321,347**
ARC-GT in situ transcriptome sequencer for tissue FISSEQ	93.351	1S10OD021692-01		449,100	-
ARC: Building Awareness, Respect, and Confidence through Genetics	93.351	5R25OD021895-02		278,942	9,883
Drosophila resources for modeling human diseases	93.351	5R24OD021997-02		280,946	-
Subtotal of 93.351				**1,008,988**	**9,883**
Novel Epigenomic Biomarkers of Prenatal Risk Factors, and Childhood Obesity	93.361	5R01NR013945-03Revised		45,882	34,860
Subtotal of 93.361				**45,882**	**34,860**
4D Nucleome Network Data Coordination and Integration Center	93.393	5U01CA200059-02 REVISED		3,222,342	127,473
Bone metabolism and bone metastases in prostate cancer	93.393	4R01CA179129-04		253,930	16,615
Cancer Epidemiology Cohort in Male Health Professionals	93.393	4UM1CA167552-05 REVISED		2,470,940	719,318
Circadian Disruption and Risk of Prostate Cancer in a Multiethnic Cohort	93.393	5R01CA202690-02REVISED		310,881	78,114
Clustered semi-competing risks analysis in quality of end-of-life care studies	93.393	5R01CA181360-04REVISED		381,348	130,353
Comparative and Cost-Effectiveness of Preventing HPV-Related Diseases	93.393	5R01CA160744-04		93,651	-
Comparative Modeling to Inform Cervical Cancer Control Policies	93.393	5U01CA199334-02REVISED		1,130,729	798,874
Conferences on Emerging Statistical Issues in Biomedical Research	93.393	5R13CA124365-10		14,060	-
Discovery, Biology and Risk of Inherited Variants in Breast Cancer	93.393	5U19CA148065-04REV		15,097	4,844
Early life risk factors and risk of colorectal neoplasia	93.393	5R03CA197879-02		84,297	-
Explaining Variations in End-of-Life Care Intensity	93.393	5R01CA164021-03		3,451	3,054
Genomic targets of oncoproteins and tumor suppressors	93.393	5R01CA107486-10 REVISED		539,310	-
Gut microbiota and inflammatory monocytes in colorectal cancer	93.393	5R01CA154426-05		15,814	-
Leveraging GxE interaction to understand pancreatic cancer and altered metabolism	93.393	5UH2CA191284-02- Revised		236,705	96,357
Life Course Cancer Epidemiology Cohort in Women	93.393	5UM1CA176726-05		3,793,331	2,213,706
Long-term trends in breast cancer DNA copy number alterations and disparities	93.393	5R03CA193078-02REVISED		97,149	7,620
Long-Term Trends in Breast Cancer Tumor Profiles and Disparities	93.393	5R21CA166115-02		(114)	(114)
Measuring and Improving Colonoscopy Quality Using Natural Language Processing	93.393	5R01CA168959-05		304,848	198,606
Molecular Biology of Oncogenic Papillomaviruses	93.393	5R35CA197262-02 REVISED		891,238	-
Reducing Skin Cancer Risk in Childhood Cancer Survivors	93.393	5R01CA175231-05REVISED		713,923	338,040
Risk Factors for Breast Cancer in Younger Nurses	93.393	5R01CA050385-25Revised		(20,982)	-
Risk Factors for Breast Cancer in Younger Nurses	93.393	5R01CA050385-28REVISED		1,030,675	802,275
Social Networks and the Spread of Cancer Care Practices	93.393	4R01CA174468-04		483,082	-
Statistical Informatics for Cancer Research	93.393	5P01CA134294-10		633,866	18,265

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Statistical Methods for Analysis of Massive Genetic and Genomic Data in Cancer Research	93.393	5R35CA197449-03		779,709	35,350
Statistical methods for analysis of pooled continuous biomarker data arisen from multiple studies	93.393	1R03CA212799-01		30,713	-
The Obesity Paradox in Renal Cell Carcinoma	93.393	5R03CA195098-02		91,111	25,572
Understanding the Mechanism of a Gut Microbial Genotoxin Involved in Colorectal Carcinogenesis	93.393	5R01CA208834-02		335,654	14,714
Validity of Diet and Activity Measures in Men	93.393	5U01CA152904-04Rev		48,002	48,002
Weight cycling and total and site-specific cancer incidence and mortality	93.393	1R03CA204825-01A1		29,669	-
Whole Genome Amplification and Sequencing of Single Cancer Cells	93.393	5R33CA174560-03		43,810	8,496
Subtotal of 93.393				**18,058,239**	**5,685,534**
Droplet microfluidic technology for single cell cancer genomics	93.394	1R33CA212697-01		80,858	-
Effective Training Models for Implementing Health-Promoting Practices Afterschool	93.394	5R21CA201567-02		188,311	-
Subtotal of 93.394				**269,169**	**-**
A p53/NFkB-mediated metabolic mechanism for chemotherapy protection	93.395	5R01CA183074-04		403,496	-
Mechanistic Pharmacology of Anti-Mitotics and Apoptosis Regulation	93.395	5P01CA139980-05		(2)	-
Modulation of p53 function by tyrosine kinase networks	93.395	4R01CA167814-05		358,905	-
Regulation of Apoptotic Priming and Competence in Healthy and Cancerous Cells	93.395	4R00CA188679-03		35,417	-
Synthesis and Study of Natural and Non-natural Antiproliferative Agents	93.395	5R01CA047148-28		334	-
Synthesis and Study of Natural and Non-natural Antiproliferative Agents	93.395	5R01CA047148-30 REVISED		1,005,589	-
Subtotal of 93.395				**1,803,739**	**-**
3D Models of Immunotherapy	93.396	1U01CA214369-01		16,624	-
Analysis of Intratumoral Crosstalk in Clonal Populations of OvarianTumor Cells	93.396	5R01CA181543-04 REVISED		406,305	-
Decoding and targeting the PI3K-mTOR signaling network in cancer	93.396	5R35CA197459-02 REVISED		1,179,161	34,745
Epithelial layer jamming in breast cancer cell migration	93.396	5U01CA202123-02 REVISED		612,426	197,745
MDM2 and MDMX function together as the p53 E3 ligase	93.396	5R01CA085679-14		18,812	-
Regulatory mechanisms and role of the PI3K-TSC-mTOR signaling network in tumors	93.396	2R01CA122617-10Rev		(1,954)	-
Roles of Eukaryotic Translation Initiation Factors in Gene Expression	93.396	5R01CA200913-02		370,133	-
SCH: INT: Collaborative Research: Intelligent Information Sharing: Advancing Teamwork in Complex Care	93.396	5R01CA204585-02		295,155	90,386
Structural and Mechanistic Studies of Regulation of let-7 biogenesis by Lin28'	93.396	4R01CA163647-05		252,345	-
Structure and function in Notch Signaling	93.396	5R01CA092433-14		473,916	18,496
Visual Analysis of Genomic and Clinical Data from Large Patient Cohorts	93.396	5U01CA198935-03		527,773	66,981
Visualizing healthcare system dynamics in biomedical Big Data	93.396	5U01CA198934-03		466,481	159,767
Subtotal of 93.396				**4,617,177**	**568,120**
Harvard Transdisciplinary Research in Energetics and Cancer	93.397	5U54CA155626-05Revised		649,402	341,801
Subtotal of 93.397				**649,402**	**341,801**
Adaptive regulation of cancer cell fate following oncogene inhibition	93.398	5K99CA194163-02 REVISED		134,403	-
Alternative End-Joining in DNA Repair and Chromosomal Translocations	93.398	5F30CA189740-04		30,404	-
Androgen receptor expression and signaling and breast cancer risk and progression	93.398	5F31CA192462-02		28,438	-
Behavioral Economics and Improving Chemotherapy Decisions for Advanced Cancer	93.398	5K24CA181510-04		179,035	-
Biostatistics/Epidemiology Training Grant in Biostatistics	93.398	5T32CA009337-35		26,043	-
Characterization of a novel RNA-guided endoRNAse and applications towards genome-wide screening for non-coding RNA roles in melanoma resistance	93.398	1F30CA210382-01 REVISED		22,845	-
Characterization of GATOR1 signaling to mTORC1 and its role in cancer	93.398	7F30CA189333-03 REVISED		5,844	-
Characterization of organ wasting/cachexia mechanisms	93.398	1F32CA213805-01		28,836	-
Characterizing Cell Survival Pathways Downstream of mTORC1 in Cancer	93.398	5F31CA186295-03		30,442	-
Chemical suppressors of the neural crest lineage for the treatment of melanoma	93.398	5F31CA180313-03		1,910	-
Collective cellular migration, cell jamming, and matrix adhesion in breast cancer model systems	93.398	5F32CA210447-02		52,100	-
Computational Analysis of Subclonal Evolution in Chronic Lymphocytic Leukemia	93.398	5F31CA206236-02		34,102	-
Defining and manipulating quiescence associated DNA damage resistance in single cells	93.398	5K99CA207727-02		158,482	-
Defining the CD44-STAT3 axis in the pathogenesis of triple-negative breast cancer	93.398	4F30CA180340-04 REVISED		46,590	-
Dissect regulation of RNA translation in human cancers	93.398	5K99CA207865-02		79,865	-
Dissecting CRBN-substrate interactions in the mechanism of lenalidomide	93.398	5F30CA199988-02		35,895	-
Dissecting response and resistance to CDK4/6 inhibition in ER+ breast cancer	93.398	5F31CA195751-03 REVISED		28,335	-
Dissecting the Functional Roles of Two BH3-Binding Sites on Pro-Apoptotic BAX	93.398	5F31CA189651-03		30,516	-
EGFR T790M-mediated drug resistance in non-small cell lung cancer	93.398	5F31CA192623-03		30,442	-
Elucidating the role of bisphosphonates in the inhibition of breast cancer	93.398	5F31CA195797-02 REVISED		36,034	-
Elucidation of the impact of commonly co-altered genes on chemosensitivity using a novel model of high-grade serous ovarian cancer	93.398	5F32CA196008-03		56,056	-
Estrogen signaling and epigenetics in breast tumorigenesis	93.398	5F30CA192477-03		48,576	-
Evaluation of dynamic strategies of cancer care	93.398	1K99CA207730-01A1		32,492	-

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Harvard Education Program in Cancer Prevention Control	93.398	5R25CA057711-23REVISED		512,586	13,356
Hemizygous deletion of esential genes enables a novel therqpeutic vulnerability in cancer	93.398	5F30CA192725-03		65,709	-
High resolution measures of behavioral cancer risk factors from mobile technology	93.398	1K99CA201542-01REVISED		104,906	-
Induction of tumor suppressor p16INK4A by human papillomavirus 16 E7 oncoprotein	93.398	5F31CA180012-03		27,330	-
Inflammation and gynecologic cancer: the role of prostaglandins in ovarian cancer	93.398	1F99CA212222-01		29,080	-
Investigating Branched Chain Amino Acid Metabolism in Pancreatic Cancer	93.398	5F30CA183474-03		46,590	-
Investigating host protein interactions of the Human Papillomavirus E2 protein	93.398	5F31CA189512-03		30,035	-
Investigating Merkel Cell Polyomavirus Small T Antigen-Host Interactions	93.398	5F31CA177274-03		1,910	-
Investigating metabolic adaptations of Myc-dependent cancers	93.398	1F31CA210310-01A1		7,792	-
Investigating the Mechanism of B-myb Dependent Gene Expression	93.398	5F31CA189328-03		29,366	-
Investigating the Novel Function of ATR Checkpoint Kinase in R-Loop Responses	93.398	1F31CA210311-01		25,546	-
Investigating the role of ARID1A inactivation in colon cancer pathogenesis	93.398	5F31CA199994-02 REVISED		27,141	-
Linking oncogenic signaling to tumor metabolism	93.398	5K99CA194192-02 REVISED		88,339	-
Nutritional Epidemiology of Cancer Education and Career Development Program	93.398	5R25CA098566-10Revised		(1,069)	-
Oncolytic Herpes Simplex Virus Interactions with Glioblastoma Stem Cells	93.398	5F31CA192453-02		30,236	-
Perturbation of a cellular microRNA by human papillomavirus type 16.	93.398	5F31CA180516-03		2,678	-
Program for Training in Cancer Epidemiology	93.398	3T32CA009001-41S1		542,279	-
Proinflammatory and hyperinsulinemic dietary patterns and colorectal cancer risk: role of the metabolome	93.398	5K99CA207736-02		115,616	-
Regulation of arginine metabolism as a therapeutic target in breast cancer	93.398	1F31CA213460-01A1		5,844	-
Role of Akt isoforms in PTEN-deficient breast cancer	93.398	5F31CA195701-02		25,722	-
T antigens inhibit Notch to promote Merkel cell carcinoma in skin stem cells	93.398	1F31CA213464-01		10,725	-
The Molecular Atlas Project	93.398	5F32CA204038-02		58,987	-
The Role of Driver Mutations in Lung Cancer Response to Anti-PD-1 Therapy	93.398	5F31CA196035-03		28,603	-
The role of Folliculin, tumor suppressor mutated in BHD, in mTOR nutrient sensing	93.398	5F30CA180754-02 REVISED		5,619	-
The role of Lin28/let 7 pathway in Wilms' tumor	93.398	5F99CA212487-02		26,755	-
The Role of SWI/SNF Alternative Splicing in Cancer	93.398	5F31CA183558-03		5,730	-
Training Grant in Quantitative Sciences for Cancer Research	93.398	5T32CA009337-37		490,377	-
Subtotal of 93.398				**3,502,117**	**13,356**
A defend and destroy approach to curing HIV	93.837	5U19HL129903-03		2,116,530	1,709,092
A ubiquitin-conjugating enzyme critical for terminal erythroid differentiation	93.837	5F30HL124980-02		22,978	-
Assessing the effects of antihypertensive medication adherence through bayesian dynamic linear models	93.837	7R21HL121366-03		20,392	-
Biasing Myocardial Neuregulin Signaling with Engineered Ligands	93.837	7R01HL117986-05		287,173	-
CVD Epidemiology Training Program in Behavior, the Environment and Global Health	93.837	5T32HL098048-08		328,473	-
Deconstructing Roles of Sensory Neuron Subtypes in Respiration and Airway Defense	93.837	5F31HL132645-02		36,032	-
Defining Genetic Architecture and Pathways of DCM	93.837	5R01HL080494-07 REVISED		(108)	-
Defining Genetic Architecture and Pathways of DCM	93.837	5R01HL080494-10		234,968	-
Developing integrative methods to improve GWAS inference using epigenomic data	93.837	5F31HL126581-03 REVISED		30,494	-
Developing Standardized Intraoperative Process Models to Enhance Surgical Safety	93.837	5R01HL126896-02		283,438	197,549
Diet quality and cardiometabolic disparities among Latino ethnic subgroups	93.837	5K01HL120951-03		125,723	-
Dietary Etiologies of Heart Disease	93.837	5R01HL035464-27		642,091	158,954
Dietary Patterns and Risk of Cardiovascular Disease	93.837	5R01HL060712-14		565,740	208,893
Genetic Determinants of Chagas Cardiomyopathy	93.837	1R01HL133165-01A1		63,942	-
Genetic Signals in Ventricular Hypertrophy	93.837	5R01HL084553-08		293,721	-
Global Cardiovascular Disease Policy Model for Screening Prevention and Treatment	93.837	5R01HL104284-04		11,425	-
HDL Proteins and Coronary Heart Disease	93.837	5R01HL123917-04		858,121	60,387
HIV-induced transcriptional changes in alveolar macrophages in susceptibility to M. tuberculosis infection	93.837	1F30HL134566-01		29,953	-
Human Pluripotent Stem Cell and Progenitor Models of Cardiac and Blood Diseases	93.837	7U01HL100408-07 REVISED		(33,067)	-
Mechanism and inhibition of SREBP-dependent cholesterol/lipid metabolism	93.837	4R01HL116391-04		634,623	330,930
Mechanisms of DNA interstrand cross-link repair	93.837	5R01HL098316-06		477,944	-
Mediterranean diet, Metabolites, and cardiovascular Disease	93.837	4R01HL118264-04		444,000	249,664
Modulation of vascular permeability by shear stress via Notch signaling	93.837	1F32HL129733-01A1		48,479	-
Molecular Architecture Of The Mitochondrial Calcium Uniporter	93.837	1R01HL130143-01A1		241,601	57,393
NHLBI Summer Training Experience to Increase Diversity in Health-Related Research	93.837	5R25HL121029-04		91,920	-
Preterm delivery and risk of maternal cardiovascular disease in the Nurses' Health Study II	93.837	5F31HL131222-02		33,036	-
Regulation of Cardiac Development in Health and Disease	93.837	5UM1HL098166-09		406,948	338,147
Reprogramming Non-myocytes to Cardiomyocytes in vivo	93.837	5R01HL119230-02		392,679	65,264
Sensory biology of respiratory control neurons in the vagus nerve	93.837	5R01HL132255-02		258,941	-

The accompanying notes are an integral part of this schedule.

Harvard University
Schedule of Expenditures of Federal Awards
Year Ended June 30, 2017

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Statistical and Computational Methods for Large-Scale Sequencing Studies	93.837	1K99HL130593-01REVISED		39,634	-
Statistical methods for analysis of single-cell variability	93.837	5R01HL131768-03		314,739	163,153
The role of immunometabolic pathways in atherosclerosis	93.837	5R01HL125753-03		374,123	-
The Role of Inflammation and Inflammatory Mediators in Hematopoiesis	93.837	1F31HL132410-01A1		5,844	-
Training in Interdisciplinary Pulmonary Sciences	93.837	5T32HL007118-42		313,095	-
Vitamin D supplementations as adjunct to anti-tuberculosis drugs in Mongolia	93.837	5R00HL089710-06Revised		7,895	-
Subtotal of 93.837				**10,003,520**	**3,539,426**
Mechanics of Monolayer Migration	93.838	5R01HL107561-05Revised		262,488	-
Mechanism and Function of Beta-2 Adrenergic Receptor Degradation in the Lung	93.838	4R01HL114769-04		346,980	72,219
Molecular Epidemiology of ARDS	93.838	5R01HL060710-13		5,548	(1,031)
Physics of collective cellular migration in lung health and disease	93.838	5P01HL120839-02		2,481,393	895,475
Plasma Gelsolin and Host Defense After Lung Injury	93.838	5R01HL115778-03		107,802	-
The resident cell in the asthmatic airway: a victim of its physical microenvironment	93.838	5R01HL102373-04rev		55	-
Training in Interdisciplinary Pulmonary Sciences	93.838	3T32HL007118-40S1REV		208,626	-
Trial of Vitamin D Supplementation to Prevent TB Infection in Schoolchildren	93.838	5R01HL122624-04		678,643	480,289
Whole Blood MicroRNAs as Risk and Survival Biomarkers for ARDS	93.838	1R56HL134356-01		274,446	-
Subtotal of 93.838				**4,365,981**	**1,446,952**
11,12-Epoxyeicosatrienoic acid regulation of hematopoietic stem cell engraftment	93.839	5F31HL129517-02		30,044	-
A novel program of ubiquitination in global remodeling of the erythroid proteome	93.839	5R01HL125710-03		526,734	164,158
A synthetic biology approach to targeting erythropoietin-based therapeutics	93.839	5F32HL122007-03 REVISED		2,735	-
Functional analysis of red blood cell determinants of Plasmodium invasion	93.839	1R01HL139337-01		71,318	-
Identifying factors that promote clonal dominance in zebrafish hematopoiesis	93.839	5F31HL126338-03		29,891	-
Integrin-Based Mechanisms in Terminal Erythroid Maturation	93.839	5R01HL116327-04		(16,235)	-
Subtotal of 93.839				**644,487**	**164,158**
11th International BMP Meeting	93.846	1R13AR070636-01		18,000	-
Adult Bone Mass Regulation by Type 2 BMP Receptors	93.846	5R01AR064227-04 REVISED		483,596	-
Assessment and Evaluation of Hill-type Muscle Models for Predicting In Vivo Force	93.846	5R01AR055648-08		338,425	65,606
Biogenesis of Extracellular Matrix	93.846	4R01AR036819-32		449,962	-
BMP2 signaling of the development of osetoarthritis	93.846	5R21AR063955-02		(77)	-
Characterization of the Insulin to Autophagy Pathway in Muscles	93.846	5R01AR057352-08		324,241	-
Epigenetic regulation of skeletal patterning and morphogenesis during development	93.846	5K01AR069197-02		114,241	-
Hypertrophy and Inflammation in Osteoarthritis: epistasis or synergy	93.846	5R01AR069671-02		394,649	-
Igf signaling control of chondrocyte hypertrophy in bone development and repair	93.846	5F32AR067097-03		56,715	-
Interdependence of lineages within the mammalian skin	93.846	1R01AR070825-01		252,404	-
Mechanisms and function of the microtubule podosome connection in osteoclasts	93.846	4R01AR062054-05		441,056	-
Molecular Mechanism of Wnt/Planar Cell Polarity Signaling	93.846	1R01AR070877-01		187,810	-
Muscle Tregs in health and disease	93.846	5R01AR070334-02 REVISED		395,428	-
R-Spondin3 as a target for anabolic bone therapy	93.846	5R01AR064724-04 REVISED		576,531	-
Regulation of Quiescence and Activation in Skin Stem Cells	93.846	5R00AR063127-05		250,226	-
Regulation of Skin Inflammation by Nociceptive Sensory Neurons	93.846	5R01AR068383-03 REVISED		397,834	-
Role of GATA6 in regulating hedgehog signaling in the growth plate	93.846	5R01AR060735-05 REVISED		326,267	-
Role of the first secreted tyrosine kinase in bone development, homeostasis, and repair.	93.846	5R01AR066717-03 REVISED		508,788	-
Role of Zfp521 in bone formation and anabolic responses	93.846	5R01AR057769-05		(27,566)	-
Transcriptomics in synoviocytes defines pathogenesis of rheumatoid arthritis	93.846	1F31AR070582-01		25,546	-
Subtotal of 93.846				**5,514,076**	**65,606**
A novel pathway for small molecule delivery to Peyer's patch follicles	93.847	5F31DK105596-03		30,402	-
Adipose-tissue Tregs: important players in immunological control of metabolism	93.847	5R01DK092541-07		274,886	-
Aire, a zinc-finger protein that controls autoimmunity	93.847	5R01DK060027-17		485,326	-
Biomarkers for diabetes using stem cell-derived beta cells	93.847	1UC4DK104159-01		728,378	-
Cell and Molecular Dynamics of Hematopoiesis In Vivo	93.847	5R24DK103074-03		885,486	260,192
Charting vagal circuits containing glucagon-like peptide 1 receptor	93.847	5R01DK103703-02 REVISED		378,610	-
Chemosensory tuft cells and intestinal homeostasis	93.847	1K01DK113041-01		31,190	-
Control of metabolic homeostasis in diabetes by sirtuins	93.847	5R01DK103295-03 REVISED		532,772	-
Deciphering CD160 contribution in intestinal homeostasis and inflammation	93.847	1F31DK105624-01A1		28,374	-
Deciphering the molecular basis of T1D in human cells using functional genomics	93.847	1DP3DK111898-01 REVISED		392,028	181,377
Developmental processes shaping the luminal surface and stem cell zones in the gut	93.847	5F32DK103563-03		53,963	-
Developmental Regulation of Bone Morphogenesis	93.847	5P01DK056246-15		93,647	88,232

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Dietary Interventions, Metabolites, and Risk of Type 2 Diabetes	93.847	5R01DK102896-03		326,855	222,613
Dissecting Yap Activity in the Regulation of Adult Liver Ductal Progenitors	93.847	5F31DK107049-02		30,096	-
Elucidating mechanisms of SIRT1 activation	93.847	5R01DK100263-02		577,311	-
Empowerment as a mechanism for change in childhood obesity prevention	93.847	5R01DK108200-02		657,801	281,883
GLP1R neurons in the subfornical organ and integration of thirst and satiety cues	93.847	1K01DK113047-01		36,777	-
Human Cell-Based Models of Primary Adipocyte Disorders	93.847	4R01DK095384-05		272,864	-
Identification of Novel Regulators of Fetal Hemoglobin Expression	93.847	5F30DK103359-03 REVISED		48,557	-
Identifying the Neural circuit for presystemic control of vasopressin release	93.847	1F31DK109575-01A1		5,844	-
Immune signaling in skeletal muscle oxidative metabolism	93.847	5F31DK107256-02REVISED		36,361	-
Inflammatory and stress signaling networks in metabolic disease	93.847	5R01DK052539-20		596,325	-
Investigating the physiological mechanisms that allow the blind cavefish Astyanax mexicanus to thrive in a low nutrient environment	93.847	5F32DK108495-02		51,965	-
Investigating the role of natural and engineered curli fibers in mediating interactions with the gut epithelium	93.847	1R01DK110770-01A1		9,270	-
Islet on a chip	93.847	1UC4DK104165-01		1,088,802	300,049
Linking hypothalamic and amygdalar circuits underlying attention to food cues	93.847	5F31DK105678-02		29,328	-
Mechanisms of dietary control of the transsulfuration pathway and increased endogenous hydrogen sulfide production	93.847	5R01DK090629-06		292,103	-
Metabolomics and Type 2 Diabetes in a Cohort of Older Puerto Ricans	93.847	5K01DK107804-02		110,329	-
NKT cell mediated immunoregulation by symbiotic gut microbial glycosphingolipids	93.847	5K01DK102771-02		119,233	-
Obesity Genes, Energy Regulation in Response to Weight-Loss Diets	93.847	5R01DK091718-04Revised		(12,664)	-
Pediatric Artificial Pancreas System for Enhanced Diabetes Management In Young Children with Type 1 Diabetes	93.847	7DP3DK104057-02 REVISED		625,578	187,856
Physiology of Lipid Droplets and Triglyceride Storage	93.847	5R01DK101579-05 REVISED		452,765	-
PPAR Delta Functions in Liver	93.847	5R01DK075046-09		(1,994)	-
PTH resistance and marrow adipogenesis-R56 Bridge	93.847	1R56DK112374-01		84,245	-
Quantification of genetic circuits for detection of intestinal inflammation	93.847	1F32DK112640-01A1		9,292	-
Radial patterning of smooth muscle in the vertebrate gut	93.847	1F31DK111059-01		26,546	-
Reducing disparities in diabetes through expanded insurance coverage	93.847	5R01DK090435-04Revised		18,696	-
Regulation of de novo lipogenesis through BAD-dependent glucose signaling	93.847	5F31DK105595-03		30,374	-
Regulation of Fructose Transport by Thioredoxin-Interacting Protein	93.847	5R01DK107396-02		421,121	-
Reprogram gastric tissue to functional insulin-secreting cells	93.847	5R01DK106253-02 REVISED		480,131	85,500
Resolving the role of nicotine-mediated phosphorylation on pancreatic fibrosis	93.847	4K01DK098285-04		120,297	-
Role of DGAT in Triacyglycerol Metabolism	93.847	7R01DK056084-13REVISED		92,037	-
Role of DN T cells in colonic microbiota-immune system maturation	93.847	1F32DK111126-01A1		12,107	-
The Effect of Autophagy on the Generation and Function of Gut Regulatory T Cells	93.847	5F31DK105653-02		30,442	-
The Regulation of the Parathyroid Gland	93.847	5R01DK097105-04		4,975	-
The role of adipocyte alpha-arrestin ARRDC3 in obesity	93.847	7F32DK105682-02		50,608	-
Training Grant in Academic Nutrition	93.847	3T32DK007703-23S1		286,467	-
Trial of Vitamin D in HIV Progression	93.847	5R01DK098075-05REVISED		895,254	809,982
Subtotal of 93.847				**11,831,160**	**2,417,684**
Molecular Controls over Neurogenesis, Subtype Development, and Diversity of Cortical Output Projection Neurons	93.853	5R01NS045523-13		323,547	-
Action and interaction of ionotropic and metabotropic neurotransmission	93.853	4R01NS046579-13		572,128	-
Big data screening for associations between medication use and ALS	93.853	1R21NS099910-01		7,683	-
C9ORF72 in Motor System Biology and ALS	93.853	5R01NS089742-04		578,738	-
Cellular mechanisms of dietary therapy for epilepsy	93.853	4R01NS055031-09		191,801	-
Cerebellar Outputs	93.853	1F32NS101889-01		13,848	-
Core Facilities for Analysis of Neural Circuit Structure and Function	93.853	5P30NS062685-09 REVISED		673,454	-
Defining Synapse-Regulatory Functions of the Microtubule +TIP TACC in Drosophila	93.853	1F31NS101756-01		5,844	-
Defining the cellular metabolic responses to brain activity using fluorescent biosensors	93.853	1F32NS100331-01A1		14,556	-
Development of novel transsynaptic tracers for use in the central nervous system	93.853	5R01NS083848-05 REVISED		132,366	-
Dopaminergic modulation of brain circuits that control movement	93.853	5K99NS087098-02 REVISED		(308)	-
Dynamic control of sensory processing by an active network of interneurons	93.853	5F32NS087708-03		59,502	-
Electrical Stimulation of Immediate Early Genes	93.853	4R37NS028829-28		487,556	-
Elucidating cutaneous mechanosensory circuits, from development to disease	93.853	1R35NS097344-01 REVISED		823,671	-
Exploring the Regenerative Capacity of Neurons in the Axolotl Brain	93.853	5F31NS089336-03 REVISED		29,262	-
Exploring the role of neuronal activity-dependent enhancers in brain development and plasticity	93.853	5F32NS086270-03		55,016	-
Extracellular matrix dependent maintenance of cortical neuron identity	93.853	1F31NS098539-01		31,488	-
Functional Genomic Analysis of Neural Activity-Regulated Enhancer Deactivation	93.853	5F30NS095458-02 REVISED		36,941	-
Fundamental Neurobiology	93.853	5T32NS007484-15		13,817	-
Genetic Dissection of Direct and Indirect Touch Pathways	93.853	1F32NS095631-02		56,757	-

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Genetic Modeling for SMA Therapeutic Pathways	93.853	5P01NS066888-05		24,979	21,667
Genome-Wide Light-Inducible Tuning of Transcriptional Network Dynamic	93.853	5R01NS073124-06 REVISED		(4,643)	-
HMS/CHB Center for Neuroscience Research	93.853	5P30NS072030-05 REVISED		306,414	-
Imaging cellular energy metabolism in vivo using fluorescent biosensors	93.853	5F32NS093784-03		54,698	-
Investigating Genomic Alterations in Neurons of the Mammalian Cerebral Cortex	93.853	5F30NS095520-02		36,089	-
Investigating the mechanism of TNFalpha mediated cell death in oligodendrocytes	93.853	5R01NS082257-05		516,035	-
Investigating the Role of Long Gene Misregulation in Rett Syndrome	93.853	1F32NS101739-01		9,354	-
Lagging or Leading Linking Substantia Nigra Activity to Spontaneous Motor Sequences	93.853	5U01NS094191-02		898,238	-
Local synaptosis mechanisms target developing synapses for elimination	93.853	1F31NS100221-01		16,180	-
Mammalian circadian clock: genetics of PERIOD complex composition and structure.	93.853	5R01NS095977-02		619,804	-
Mechanisms and functions of synapses and circuits	93.853	1R35NS097284-01 REVISED		204,431	-
Mechanisms Underlying the Suppression of Transcytosis at the Blood Brain Barrier	93.853	5F31NS090669-03		29,328	-
Metabolomics and risk of Parkinson's Disease	93.853	5R01NS089619-02		575,549	282,721
MicroRNA-Dependent Regulation of Synaptic and Behavioral Plasticity in Drosophila	93.853	5P01NS090994-02 REVISED		1,327,829	853,067
Molecular development and diversity of callosal projection neurons	93.853	1R56NS093376-01A1		257,795	-
Molecular Dissection of Active Zone Functions in Neurotransmitter Release	93.853	5R01NS083898-04		348,434	-
Molecular Mechanisms of CTIP2 Function in Corticospinal Motor Neuron Development	93.853	4R01NS075672-05		181,973	-
Molecular mechanisms of neuron motility and axon guidance	93.853	5R01NS069913-07 REVISED		441,541	-
Neural circuits in zebrafish: form, function and plasticity	93.853	5U01NS090449-02 REVISED		1,693,042	246,024
Neural circuits underlying the acquisition and control of motor skills	93.853	5R01NS099323-02		260,483	-
Neuroimaging and Neuropsychological Biomarkers of Vascular Risk Factors	93.853	5R01NS086882-04		430,365	54,600
Neuronal Activity-Dependent Regulation of MeCP2	93.853	5R01NS048276-13		710,383	-
Neurotrophic Factor Regulation of Gene Expression	93.853	5R01NS045500-30		621,391	-
Novel lipoprotein particles, brain abnormalities, and risk of dementia and stroke	93.853	5R01NS089638-03REVISED		755,160	166,303
Novel optrodes for large-scale electrophysiology and site-specific stimulation	93.853	3U01NS094190-02S1		502,956	104,372
OGlcNAc as a regulator of mitochondrial motility in diabetic neuropathy	93.853	5F31NS084629-03		1,910	-
Optogentic dissection of basal forebrain neurons involved in sleep homeostasis	93.853	5R21NS079866-02 REVISED		30,209	-
Parietal cortex networks for sensorimotor processing during navigation	93.853	5R01NS089521-03 REVISED		400,699	-
Projection neuron control over interneuron positioning into neocortical circuitry	93.853	5R01NS078164-05		458,590	-
Prospective study of biomarkers and risk factors for ALS incidence and progression	93.853	4R01NS045893-11		252,598	72,560
Prospective Study of Vitamin D and Multiple Sclerosis	93.853	5R01NS046635-07REV		(7,834)	-
Quantifying Synaptic Reorganization in the Developing Cerebellum Using Serial- Section Scanning Electron Microscopy Data	93.853	5F31NS089223-02		15,389	-
Regulation of Cortical Circuit Development by Sonic Hedgehog Signaling	93.853	5K01NS089720-03		187,664	-
Regulation of Synapse Morphogenesis in Drosophila	93.853	5R01NS069695-08 REVISED		356,782	-
Regulation of synaptic specificity by two Ig-domain containing families	93.853	5K01NS094545-02		256,421	-
Regulation of Synchrony and Input Layer Excitability by Purkinje Cell Collaterals	93.853	5R01NS092707-02 REVISED		258,366	-
Role of nNOS cortical neurons in slow wave activity production and cognition	93.853	5R21NS092926-02		148,763	-
Sensory-motor processing in a developing nervous system	93.853	5R01NS082525-03		423,657	205,435
Short-Term Synaptic Plasticity in the CNS	93.853	2R01NS032405-22 REVISED		497,430	-
Short-Term Synaptic Plasticity in the CNS	93.853	5R01NS032405-21		(1,088)	-
Signal Transduction in Axon Guidance	93.853	5R01NS069913-05		(3,015)	-
Statistical methods for censored and dependently truncated data	93.853	1R01NS094610-01A1Rev		177,881	8,564
Synaptic Choices in the Retinotectal System	93.853	4R37NS029169-26 REVISED		154,565	-
Systematic discovery and functional analysis of the PARKIN modified proteome	93.853	4R37NS083524-12		465,013	-
Training in Neurostatistics and Neuroepidemiology	93.853	5T32NS048005-14		233,170	-
Transgenic zebrafish for neurobiology	93.853	5R24NS086601-04		284,600	-
Tuning of Inhibitory Synaptic Transmission at the Presynaptic Active Zone	93.853	5F31NS089077-03		30,442	-
Using silk as a biocompatible viral delivery system in the brain	93.853	5R21NS093498-02		250,772	-
vGLUT2-Tomato mice: a novel tool to study Basal Forebrain Glutamate Neurons	93.853	5R21NS093000-02		137,391	-
Vitamin D, Epstein-Barr virus infection, and cigarette smoking and risk of multiple sclerosis among women in the Finnish Maternity Cohort and their offspring	93.853	5R01NS073633-05		8,459	-
Voltage-Dependent Ion Channels Controlling Firing Patterns of Central Neurons	93.853	5R01NS036855-20 REVISED		451,198	-
Subtotal of 93.853				**20,395,507**	**2,015,313**
2017 Boston Bacterial Meeting (BBM)	93.855	1R13AI131601-01		2,902	-
Accurate and Efficient Measures for HIV Incidence	93.855	5R01AI097015-04Revised		325,032	-
Analytic Methods for HIV Treatment and Co-Factor Effects	93.855	5R37AI032475-23REV		152,179	-
Bacterial Meeting 2016-2021	93.855	1R13AI124565-01		5,475	-

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Biostatistics/Epidemiology Training Grants in AIDS	93.855	5T32AI007358-29Revised		493,821	-
Botswana-Harvard School of Public Health AIDS Initiative Partnership CTU	93.855	5UM1AI069456-11		1,187,444	945,252
Characterization of 3.47, a NPC1-targeting inhibitor of Ebola GP-mediated entry	93.855	1F31AI131452-01		3,896	-
Chemical genetic screening to identify synergistic inhibitors of malaria parasite cell cycle regulators	93.855	1R21AI128480-01		85,416	-
Chemical Tools for the Study of Dengue Virus Entry	93.855	5R01AI095499-03		342,825	44,692
Control of macrophage activation by Akt signaling and metabolic input	93.855	5R21AI119763-02		232,790	-
Coordinate Regulation of Bacterial Virulence Factors	93.855	5R01AI026289-29		580,829	-
Cytotoxic T Cell Mediated Immunity to Chlamydia	93.855	4R01AI039558-20 REVISED		755,441	-
Decoding the roles of critical genes of unknown function in M. tuberculosis	93.855	5U19AI107774-05		2,436,261	1,593,512
Defining physiological correlates of the human malaria infectious reservoir	93.855	5R21AI117304-02REVISED		165,208	46,222
Defining the role of ClpX in mycobacterial cell cycle progression	93.855	5F31AI120616-02		42,102	-
Detecting Infection at Its Onset: The Site of RIG-I Signaling	93.855	1F31AI131469-01		5,844	-
Developing a microfluidic platform for single virus genomics and virus discovery	93.855	1R21AI128623-01		97,078	-
Developing in vitro assays to identify small molecules that inhibit human prions	93.855	1F31AI122592-01A1		31,538	-
Discovery of antibiotics active against multidrug resistant bacteria	93.855	5R21AI117025-02		188,507	-
Dissecting the role of Escherichia coli peptidoglycan synthase activators	93.855	5F31AI122363-02		34,068	-
Doctoral Training Program in Tropical Diseases	93.855	5T32AI049928-14REVISED		174,873	-
Dynamic Strategies for the clinical management of HIV disease	93.855	4R01AI102634-04		472,953	-
Early Infant Treatment	93.855	5U01AI114235-04		1,048,121	808,830
Ecological and genetic contributions to the spread of resistance in pneumococcus	93.855	5R01AI106786-05		511,712	-
Elucidating a role for Calcium signaling in activation of the Nlrp3 inflammasome	93.855	5R01AI102964-05		390,962	-
Elucidating the role of cis-regulatory elements in mediating V(D)J recombination	93.855	5F31AI117920-03		31,678	-
Elucidation of structure and dynamics of bacterial biofilms by particle tracking	93.855	5F30AI110053-04		47,896	-
Epidemiology of Infectious Diseases	93.855	5T32AI007535-18		179,767	-
Evolutionary medicine in the development of antimalaria drugs	93.855	5R01AI106734-04		496,970	-
Factors Mediating Host Resistance to Chlamydia trachomatis	93.855	5R01AI062827-09		68	-
Function and mechanism of the HCV p7 channel and its therapeutic potential	93.855	1R56AI112960-01		(79)	-
Functional analysis of erythrocyte determinants of malaria infection	93.855	5R01AI091787-05		18,094	-
Functional analysis of Plasmodium vivax drug resistance polymorphisms	93.855	5R21AI126154-02		212,160	-
Functional characterization of Trypanosoma cruzi-host cytoskeletal interactions	93.855	5R21AI113121-02		184,542	-
Generation and Function of NK Cell Memory (Project 1 - Disaggregated project)	93.855	4R01AI111595-04		662,265	-
Genetic Analysis of Toxinogenesis in Vibrio Cholerae	93.855	5R01AI018045-37		648,495	-
Genetic Analysis of Vibrio parahaemolyticus Pathogenicity	93.855	5F31AI120665-03		30,057	-
Genetic screens for erythrocyte determinants of protein trafficking in malaria parasites	93.855	5R21AI126889-02		251,870	-
Genetic Variation and Evolution of Artemisinin Resistance	93.855	4R01AI099105-04		626,289	-
Genetically modified HSC-HPC for management of aggressive demyelinating diseases	93.855	5R21AI103701-02		119,575	-
Genomic epidemiology of Neisseria gonorrhoeae with elevated MICs to cefixime	93.855	5K08AI104767-04		67,446	13,361
Harvard University Center for AIDS Research	93.855	5P30AI060354-12 REVISED		4,217,156	2,613,880
HIV cure studies: risk, risk perception, and ethics	93.855	3R01AI114617-03S1REVISED		904,379	518,944
Human Cytomegalovirus Nuclear Egress: Molecular Mechanisms and Drug Targeting	93.855	5R01AI026077-30		774,388	-
Identification and Inference for Longitudinal Causal Mediation Analysis in HIV Research	93.855	5R01AI104459-05		506,664	152,828
Identifying and validating new antibiotic targets in cell wall synthesis pathways	93.855	4R01AI099144-05		342,264	-
Identifying the ligand for the activating NK cell receptor KIR3DS1 and its protective role in HIV-1 disease progression	93.855	5F31AI116366-03		52,776	-
ImmGen: Gene Expression and Regulation in Immune Cells	93.855	4R24AI072073-10 REVISED		1,237,244	245,982
Improving Maternal and Newborn Health Using the HIV/AIDS Program Platform in Tanzania (MNH+)	93.855	7R01AI093182-06		469,049	119,235
In Vivo Function of the B7 Family of Costimulators	93.855	5R37AI038310-21		40,795	-
In vivo role of CTLA-4 in Costimulation and Autoimmunity	93.855	5R01AI040614-19		293,720	-
Inactivation of ambient virues using Engineered Water Nanostructures	93.855	5R21AI119481-02		205,130	-
Innovative Platforms for Antimicrobial Therapy and Vaccine Development	93.855	5U19AI109764-04 REVISED		5,618,554	111,462
Integrated discovery and development of innovative TB Diagnostics	93.855	5U19AI109755-04		5,139,740	3,251,395
Interferon-induced IFITM recruitment of ZMPSTE24 blocks viral endocytic entry	93.855	5R01AI121288-02		328,568	190,707
International Herpes Vaccine Project	93.855	5R01AI057552-09 REVISED		133,574	-
Interrogating the Cellular Mechanisms of Host-Pathogen Interactions during IBD	93.855	5F32AI108144-03 REVISED		33,690	-
Knowledge-based Vaccines Built on Paradigm Changes in Antigen Presentation	93.855	5R01AI089915-06		113,079	-
Listeria Monocytogenes Infection of the Brain	93.855	5R21AI103806-02		70,641	-
Mechanisms and Immunological consequences of Host-Virus Interactions	93.855	5P01AI112521-04		1,642,694	483,854
Mechanisms and Population Genomics of Pneumococcal Antigenic Diversity	93.855	4R01AI048935-15		619,893	54,574

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Mechanisms by which DNA sequence directs AID-mediated mutagenesis of Ig loci	93.855	5F30AI114179-03		56,722	-
Mechanisms of ARF6 function in Shigella entry	93.855	5F31AI112272-03 REVISED		32,568	-
Methods to Advance the HIV Prevention Research Agenda	93.855	5R37AI051164-15		417,256	108,094
Methods to find and model predictors of the causal effect of HAART	93.855	5R01AI100762-04REVISED		31,797	-
Molecular Basis of Viral Infectivity	93.855	5T32AI007245-34		429,702	-
Molecular Genetics of HSV DNA Polymerase Gene	93.855	2R56AI019838-31 REVISED		39,567	-
Molecular Genetics of HSV DNA Polymerase Gene	93.855	5R01AI019838-30		178,573	-
Mycobacterial single cell drug susceptibility	93.855	5F32AI104287-03Revised		9,838	-
Naive T cell homeostasis: Treg selection and survival	93.855	5R37AI051530-15		364,538	-
Natural Wolbachia infections for the control of Anopheles mosquitoes	93.855	5R21AI117313-02		147,172	-
New methods for the design and evaluation of large HIV prevention interventions	93.855	5R01AI112339-03REVISED		460,492	83,752
Next generation missing data methods in HIV research	93.855	1R01AI127271-01A1		52,442	-
Novel Strategy for HIV Drug Resistance Monitoring in Developing Countries	93.855	5R01AI089350-04		5,985	5,864
Nuclear Sensing of Herpesviral DNA	93.855	5R01AI106934-04		475,749	-
Outer Membrane Biogenesis: New Antibiotic Targets	93.855	5R01AI081059-09		503,040	-
Peptidoglycan Biogenesis in Escherichia Coli	93.855	5R01AI083365-07		540,152	-
Plasma Gelsolin as Immunotherapeutic for Antibiotic-Resistant Pneumonia	93.855	5R01AI125152-02		743,978	425,014
Poliovirus Cell Entry Pathways	93.855	5R01AI020566-33		638,314	-
Probing with a panel of beta-lactams to find genetic resistance factors in MRSA	93.855	1F31AI114131-01A1 REVISED		159	-
Program for AIDS Clinical Research Training (PACRT)	93.855	3T32AI007433-24S1Revised		388,347	-
Randomized Trial of High-Dose Rifampin in Patients with New Smear-Positive TB	93.855	5U01AI091429-03 REVISED		78,402	27,640
Regulation of P. aeruginosa fitness by small non-coding RNAs	93.855	5R21AI125972-02		269,360	-
RNA Processing in Non-Segmented Minus-Strand RNA Viruses	93.855	5R37AI059371-13		643,554	-
Role of host fatty acid metabolism in Trypanosoma cruzi amastigote growth	93.855	5R01AI114622-03		377,110	-
Role of TBK1 polyubiquitination in innate antiviral immunity	93.855	5R01AI089829-05		275,180	-
SDMC - IMPACT Leadership Group	93.855	5UM1AI068616-11 REVISED		8,546,943	3,981,527
Sensory Transduction in Bacterial Chemotaxis	93.855	5R01AI016478-38		836,473	-
Small Molecule Inhibitors of Enveloped Virus Entry	93.855	5U19AI109740-04 REVISED		5,381,657	2,236,876
Specification of Treg cells: FOXP3 functional facets	93.855	3R01AI116834-03S1		450,883	-
Staphylococcus Aureus Carriage and the Nasal Microbiome	93.855	5R21AI112991-02		103,918	-
Statistical and Data Management Center (SDMC), AIDS Clinical Trials Group	93.855	5UM1AI068634-11		14,749,012	6,958,463
Statistical and Data Management Center for the AIDS Clinical Trials Group	93.855	5UM1AI068634-07revised		(1,524)	(1,524)
Statistical and Data Management Center-Pediatric, Adolescent, and Maternal CTG	93.855	5UM1AI068616-07REVISED		(8,981)	-
Structural Basis of Immune Cell Receptor Function	93.855	2R01AI037581-21A1		270,232	-
Structural Basis of Immune Cell Receptor Function	93.855	5R01AI037581-20		949	-
Structure and Mechanism of Programmed Ribosomal Frameshifting in SARS coronavirus	93.855	5R01AI104711-05		170,505	-
T Cell Activation in Lymph Nodes	93.855	5R01AI069259-11		209,586	-
T Cell Costimulatory Pathways: Functions and Interactions	93.855	5P01AI056299-13		1,780,736	1,138,604
T regulatory cell subsets at the microbial interface: determinism and function	93.855	1R01AI125603-01A1		120,329	-
Targeting cell separation systems of gram-negative bacteria	93.855	5R21AI111713-02		9	-
Targeting cell separation systems of gram-negative bacteria	93.855	5R33AI111713-04		416,934	-
Targeting steroid hormone signaling in Anopheles mosquitoes for malaria control	93.855	5R01AI124165-02		528,414	55,521
Targeting the Mitochondrion of P. falciparum	93.855	5R01AI93716-06		478,638	117,860
Targeting the reproductive interactome of the malaria vector Anopheles gambiae	93.855	5R01AI104956-05		481,203	-
The molecular mechanism of Aire	93.855	2R01AI088204-06		39,143	-
The molecular mechanism of Aire: partnering with DNA-PK	93.855	5R01AI088204-05		15,334	-
The processes mediating capsid transport during HCMV nuclear egress	93.855	5F31AI120651-02		28,494	-
The role of fatty acid binding protein aP2 in the pathogenesis and treatment of asthma	93.855	5R01AI116901-03		572,611	-
The role of nociceptor neurons in bacterial host defense and inflammation	93.855	5K22AI114810-02		82,165	-
The Role of PI3K in the Maintenance and Function of T Follicular Regulatory Cells	93.855	1F31AI126687-01A1 REVISED		16,869	-
The translation apparatus of Leishmania: from basic analysis to pursuit of novel drug targets	93.855	5R01AI108718-04		314,806	100,121
Training Program in Immunological Tolerance and Autoimmunity	93.855	5T32AI118692-03		187,365	-
Using genome engineering to study mosquito biology and combat malaria	93.855	1F31AI120480-01A1		28,302	-
Viral and host mechanisms that tilt the HSV lytic/latent balance	93.855	5P01AI098681-05		1,589,719	598,743
Subtotal of 93.855				**80,639,089**	**27,031,285**
Mapping the pathway of membrane beta-barrel protein folding by the Bam complex.	93.859	5F31GM116210-02 REVISED		30,855	-
Accelerated Determination of 3D Structures of Proteins and Complexes	93.859	7R01GM106303-04 REVISED		423,195	-

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Advanced Tools for Reconstructing Population History	93.859	5R01GM100233-06 REVISED		372,773	140,233
Aggression in Drosophila: circuitry involved; learning and memory accompanying aggression; and establishing the circuitry of high-level aggression in the brain	93.859	5R35GM118137-02		623,153	-
Amyloid aggregation and prion formation in bacteria	93.859	5R01GM115941-02 REVISED		544,233	-
Application of Asymmetric Anion Binding to Palladium-Catalyzed Alkene Functionalization	93.859	5F32GM110951-02 REVISED		37,880	-
Atomic Resolution in Biological Electron Microscopy	93.859	4P01GM062580-15		1,194,233	554,850
BAX Activation and Oligomerization	93.859	5F32GM113406-02		58,010	-
Bayesian Methods for Comparative Effectiveness Research with Observational Data	93.859	5R01GM111339-03 REVISED		565,340	-
Biochemical characterization of LMW PBPS with novel transpeptidase activity	93.859	1F32GM123579-01		9,292	-
Biochemical Studies of Mitosis	93.859	5R01GM026875-40 REVISED		840,390	-
Bmal1 and Hif1alpha partition metabolic regulation in inflammatory macrophages	93.859	5F31GM117854-02		30,442	-
BMAL1 Complexes of the Circadian Clock	93.859	5R01GM095945-04		849	-
Calibration and Simulation of the Botswana Combination Prevention Project	93.859	5R01GM116525-02		472,886	110,494
Catalyst-Controlled Stereo- and Regioselective Glycosidation Reactions	93.859	3F32GM117787-01S1		55,922	-
Cell Cycle proteomics in Xenopus	93.859	3R01GM103785-04S1 REVISED		202,399	-
Cell Cycle Regulation	93.859	5R01GM039023-30		532,468	-
Cellular and Developmental Biology	93.859	4T32GM007226-41		609,809	-
Cellular functions of plasma membrane organization by eisosomes	93.859	5R01GM095982-05Rev		(187)	-
Characterizing the Co-evolution of Protein-protein and Regulatory Interactions	93.859	5F32GM116217-03		59,164	-
Characterizing the regulation of co-transcriptional splicing rates in human cells	93.859	1F31GM122133-01		16,869	-
Chemical Biology of Ant-Associated Defensive Bacteria	93.859	5F32GM117661-02 REVISED		56,598	-
Chemical biology of bacterial symbionts	93.859	4R01GM086258-08		173,022	20,768
Chemical Biology of Microbial Interspecies Signaling	93.859	5R01GM082137-08		234,337	-
Chemical Genetic and Biochemical Studies of Mitotic Proteolysis	93.859	4R01GM066492-13 REVISED		68,532	-
Chiral Catalysts Designed to Catalyze Organic Reactions	93.859	5R01GM043214-25 REVISED		(17,452)	-
Chiral Catalysts Designed to Catalyze Organic Reactions	93.859	5R01GM043214-27 REVISED		628,730	-
Chromosome Dynamics in Bacillus Subtills	93.859	5R01GM086466-08		471,080	-
Correlation of electronic structure to iron catalyzed C-H bond functionalization	93.859	5R01GM115815-03 REVISED		218,421	-
Deciphering GPCR signal transduction through NMR structure and dynamics studies	93.859	5K99GM115814-02		87,912	-
Defining the cellular functions of the conserved transcription complex Spt6/Iws1 in the control of gene expression	93.859	5F32GM119291-02		56,350	-
Designing Biological Circuits	93.859	4R01GM036373-32		310,733	-
Determination of the molecular basis of choanoflagellate multicellularity induction by bacteria	93.859	3F32GM116205-02S1		55,215	-
Determining the source of missing heritability	93.859	1R01GM120122-01		197,889	-
Development and Application of Disiloxanes as a New Class of Hard Anion-Binding Organocatalysts	93.859	5F32GM113414-02 REVISED		11,026	-
Development and validation of a precision genome editing platform	93.859	5F32GM112366-03		53,944	-
Development of modern late-stage fluorination reactions with [18F]	93.859	5R01GM088237-07		573,404	-
Dissecting the establishment and regulation of human pluripotency	93.859	2P01GM099117-06A1		247,577	-
Dissecting the establishment and regulation of human pluripotency	93.859	5P01GM099117-05 REVISED		527,858	263,799
Diversity in Biomedical Sciences Via Personalized Research and Education Programs for Post-Baccalaureates	93.859	5R25GM109436-02 REVISED		239,548	-
Drosophila Transgenic RNAi Resource Project	93.859	5R01GM084947-08		96,908	-
Drosophila Transgenic RNAi Resource Project	93.859	5R01GM084947-10		743,875	-
Dynamic regulatory mechanisms of robust pattern formation in the neural tube	93.859	5R01GM107733-03 REVISED		266,621	-
Dynamics of Cellular Senescence in Single Cells	93.859	1R01GM116864-01A1		109,362	-
Dynamics of Signaling Pathways: Mechanism and Function	93.859	4R01GM083303-09 REVISED		267,477	-
Elucidating the function of mammalian autophagy receptors in selective autophagy	93.859	5K99GM117218-02		75,350	-
Enantioselective Prins-type cyclizations via small molecule H-bonding catalysis	93.859	5F32GM116405-03		58,583	-
Engineering Protein Stability Through Phage-Assisted Continuous Evolution	93.859	3F32GM119228-01S1		53,815	-
Enhancing Diversity in Academic Medicine through Faculty Networks	93.859	5R01GM111563-04		364,243	13,580
Facile Access to Quaternary Stereocenters Through Anion Binding Catalysis	93.859	5F32GM116421-03		58,125	-
Factors Controlling Transcription and Chromatin in Yeast	93.859	5R01GM032967-34		571,084	-
Feedback Control of the Cell Cycle	93.859	5R01GM043987-26 REVISED		405,867	-
Fine-mapping heritability at known disease loci with correlated markers	93.859	5F32GM106584-02		(22)	-
Function and mechanism of the HCV p7 channel and its therapeutic potential	93.859	5R01GM116898-02		554,186	-
Functional analysis of systemic factors regulating germline stem cells	93.859	5F32GM113395-03		56,521	-
Functional analysis of the conserved transcription elongation factor Spn1	93.859	5F31GM112370-03		29,366	-
Functional characterization of an insulin-like peptide network that regulates learning	93.859	5R01GM108962-03		495,901	286,358
Functional Coupling of Steps in Genes Expression	93.859	5R01GM043375-25		251,919	-

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Functional Genomic Analysis by RNAi Screening in Drosophila Cells	93.859	2R01GM067761-14		686,871	-
Genetic Mechanisms of Axis Formation in Vertebrates	93.859	5R37GM056211-19		423,347	-
Genetics and Genomics PhD Training Grant	93.859	5T32GM096911-07		276,636	-
Genome-wide validation of posttranscriptional variation in selection and disease	93.859	5F30GM114940-03		27,648	-
Global characterization of ubiquitin information networks with mass spectrometry	93.859	4R01GM067945-13 REVISED		323,947	-
Harvard Chemical Biology Graduate Program	93.859	2T32GM095450-06		322,743	-
Harvard Systems Biology Graduate Program	93.859	3T32GM080177-07S1		358,844	-
High Resolution Analysis of Transcription-Splicing Coupling	93.859	5R01GM117333-02		472,891	-
HMS Laboratory of Systems Pharmacology	93.859	5P50GM107618-03 REVISED		2,018,739	157,641
Hormonal Modulation of Aggression in Drosophila	93.859	5R01GM074675-08		(7,665)	-
How do Amine Neurons Work	93.859	5R01GM099883-04		(8,792)	-
Identification and Characterization of Systems that Limit Transgenerational Epigenetic Inheritance (TEI)	93.859	1F32GM120919-01A1		15,534	-
Illegitimate Recombination by Drug Resistance Elements	93.859	5R01GM025326-37 REVISED		768,484	-
Illuminating molecular mechanisms of cellular functions by single-molecule and super-resolution imaging	93.859	1R35GM122487-01		55,530	-
Information Integration and Energy Expenditure in Eukaryotic Gene Regulation	93.859	1R01GM122928-01 REVISED		85,764	-
Information Processing by Post-translational Modification	93.859	5R01GM105375-03 REVISED		429,218	94,144
Integrating Chemistry and Evolution to Illuminate Biology and Enable Novel Therapeutics	93.859	5R35GM118062-02 REVISED		489,182	-
Interdisciplinary training: Statistical Genetics/Genomics and Computational Biology	93.859	5T32GM074897-13REVISED		340,906	-
Joint Program in Molecules, Cells and Organisms	93.859	5T32GM007598-40		929,964	-
Kinetics of macromolecular complex assembly and regulation	93.859	5F32GM116231-02		56,095	-
Limits and trade-offs of feedback control	93.859	5R01GM081563-07		287,630	-
Mapping vertebrate differentiation hierarchies with high-throughput single cell transcriptomics	93.859	1K99GM121852-01		20,922	-
Mechanism and Inhibition of Bacterial Transglycosylases and Transpeptidases	93.859	5R01GM076710-08 REVISED		(161)	-
Mechanism and Inhibition of Enzymes that Assemble Bacterial Cell Wall	93.859	5R01GM076710-10 REVISED		559,522	-
Mechanism of Divalent Metal Transport By Nramp-Family Transporters	93.859	1R01GM120996-01A1		171,979	-
Mechanisms of Lipid Droplet Protein Targeting	93.859	2R01GM097194-07		117,057	-
Mechanisms of Lipid Droplet Protein Targeting	93.859	5R01GM097194-06Revised		173,258	-
Mechanisms of Selective Autophagy	93.859	5R01GM095567-07 REVISED		321,931	140,346
Mechanisms of yeast transcriptional initiation	93.859	5R01GM030186-35		883,335	-
Mechanistic analysis of post-translation membrane protein insertion into the ER	93.859	4R01GM099943-05		121,675	-
Medical Scientists Training Program	93.859	3T32GM007753-38S1		2,569,218	-
Meiotic Chromosome Synapsis and Recombination in Yeast	93.859	5R01GM044794-28		914,424	85,000
Membrane protein structures by solution NMR	93.859	5U54GM094608-05		(59,119)	-
Microbial adaptation and the statistics of epistasis and pleiotropy	93.859	5R01GM104239-05		351,302	-
Microbial Diversity in Mechanisms of Disulfide Bond Formation and Reduction	93.859	5R01GM041883-25 REVISED		71,125	-
Microtubule Dynamics and Mitotic Mechanism	93.859	5R01GM039565-29		535,795	-
MIDAS Center for Communicable Disease Dynamics	93.859	5U54GM088558-08 REVISED		1,981,688	410,984
Modeling individual-to-collective behavior in mound-building termites	93.859	5R01GM112633-03		479,074	172,592
Modeling scientific workforce dynamics using social network analysis	93.859	5U01GM112623-03 REVISED		366,784	98,109
Molecular Biophysics Training Grant	93.859	5T32GM008313-29 REVISED		737,697	-
Molecular Chaperones and Protein Degradation	93.859	2R01GM051923-21		189,239	-
Molecular Chaperones and Protein Degradation	93.859	4R01GM051923-20		308,695	-
Molecular Genetic Analysis of Extracellular RNAs in C. elegans	93.859	5R01GM089795-08 REVISED		434,394	-
Molecular Genetics of Biofilm Formation	93.859	5R01GM058213-19		478,489	-
Molecular Genetics of the Bithorax Complex	93.859	5R01GM028630-30		308,346	-
Molecular mechanisms of germline DNA repair and DNA damage response	93.859	5R01GM105853-04 REVISED		454,565	-
Molecular Mechanisms of SCUBE2-Mediated Sonic Hedgehog Release and Delivery	93.859	1F31GM120833-01		31,267	-
mRNA Capping Enzyme	93.859	5R01GM056663-19		422,535	-
Multi-generational epigenetic inheritance and germline immortality	93.859	5R01GM104232-05 REVISED		112,757	-
New and Disruptive Technologies to Study Ubiquitin Biology through Sample Multiplexing	93.859	2R01GM067945-14		76,829	-
New Tools for the Study of O-GlcNAc Transferase in Disease	93.859	5F32GM117704-02 REVISED		51,001	-
NMR and Computational Studies of Biomolecules	93.859	5P01GM047467-25		1,750,470	648,075
Novel mechanisms for oxysterols in cell-cell signaling	93.859	5R01GM110041-04		356,733	-
Novel platforms for development of optimized genetically encoded fluorescent biosensors	93.859	1F32GM123577-01		17,802	-
Organogenesis of the Pharynx in C Elegans	93.859	5R37GM056264-19		(10,345)	-
Organogenesis of the Pharynx in C Elegans	93.859	5R37GM056264-21		443,876	-
Phages and Genomic Variation in Vibrio Cholerae Evolution	93.859	5R01GM068851-12		131,828	51,199

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Pipelines into Biostatistics: Training in Quantitative Public Health	93.859	5T36GM093773-05		166,691	-
Polynuclear iron complexes as functional mimics of the nitrogenase FeMo-cofactor	93.859	5R01GM098395-05		2,825	-
Predictive biophysical models of evolution	93.859	2R01GM068670-13		448,959	-
Protein Transport Across Membranes	93.859	5R01GM052586-23		471,524	-
Protein/Protein Interactions in Prokaryotic Gene Control	93.859	3R01GM044025-25S1		168,787	-
Proton Coupled Electron Transfer Mechanism of Ribonucleotide Reductase	93.859	2R01GM047274-25A1		121,694	-
Proton-Coupled Electron Transfer in Biomimetic and Natural Systems	93.859	5R01GM047274-24 REVISED		113,767	-
Quantitative methods for systems-level analyses of regulation and signaling dynamics	93.859	5R01GM096193-05 REVISED		143,051	-
Regulation of Cytoplasmic Dynein	93.859	5R01GM107214-02 REVISED		6,436	-
Regulation of translesion synthesis by the bacterial replisome	93.859	5R01GM114065-03 REVISED		321,355	-
Reprogramming using small molecules	93.859	5R01GM096067-04		(62)	-
RNA Processing Machines in Biology and Disease	93.859	1R35GM122524-01		126,550	-
RNAi-Mediated Heterochromatin Assembly	93.859	4R01GM072805-12		367,353	-
Robust Approaches to the Development and Evaluation of Prognostic Classifiers	93.859	5R01GM079330-07		5,275	-
Role of RNA polymerase in bacterial differentiation	93.859	5R01GM018568-45 REVISED		692,801	-
Semi-supervised learning with electronic medical records	93.859	1F31GM119263-01A1Revised		29,041	-
Single-molecule studies of ATP-dependent chromatin remodeling	93.859	4R01GM105637-04		229,639	-
Small regulatory RNA functions in the nucleus	93.859	5R01GM088289-09 REVISED		548,890	-
Stochastic Partitioning and Degradation of Macromolecules	93.859	5R01GM095784-04		(7)	-
Structure, Function and Inhibition of Human O-GlcNAc Transferase	93.859	3R01GM094263-04S1 REVISED		523	-
Structure, Function and Inhibition of Human O-GlcNAc Transferase	93.859	5R01GM094263-06 REVISED		522,497	-
Studies on the Biological Mechanisms of Antibiotics	93.859	3R01GM066174-14S1		590,864	-
Study of phenotypic and fitness effects of non-functional protein interactions in crowded cellular milieu	93.859	5R01GM111955-04		419,459	-
Substrate recognition and processing by the proteasome	93.859	2R01GM043601-24		244,017	-
Synaptonemal complex assembly and function in meiosis	93.859	5R01GM072551-11		401,450	-
Synthesis and Discovery Enabled by Small Molecule-Nucleic Acid Conjugates	93.859	5R01GM065865-12		714	714
The Effects of Glucokinase Polymerization During Metabolic Transitions	93.859	5F31GM116441-03		29,974	-
The first secreted Tyrosine kinase	93.859	5R01GM115417-02		396,487	7,160
The genetic mechanisms and dependent pathways of insulin/IGF-like signaling that contribute to ovariole number in the Drosophila ovary	93.859	1F32GM119299-01A1		27,494	-
The mechanism of vertebrate DNA replication termination	93.859	5R01GM080676-10 REVISED		327,564	-
The Mechanisms of Lipid Droplet Formation and Regulation	93.859	3R01GM099844-05S1 REVISED		157,577	-
The RNA polymerase II transcription complex	93.859	2R01GM046498-26A1		73,900	-
The RNA polymerase II transcription complex	93.859	3R01GM046498-25S1 REVISED		306,980	-
The role of fitness epistasis and gene network interactions in bacterial evolution	93.859	3F32GM120839-01S1		49,192	-
Training in Pharmacological Sciences	93.859	5T32GM007306-42		404,919	-
Uncovering kinase cascade mechanisms that target organelles for destruction by selective autophagy	93.859	1R01GM121419-01		142,089	-
Using Quantitative Proteomics to Elucidate the Signaling Consequences of Microtubule Disruption	93.859	5F31GM117882-02 REVISED		34,286	-
Using Quantitative Proteomics to Understand Mitotic Spindle Composition and Function	93.859	5F31GM116451-02		42,570	-
Visualizing DNA break repair: single-molecule studies of non-homologous end joining	93.859	5R01GM115487-02		351,560	-
Visualizing the Bacterial Replisome at Single-Molecule Resolution	93.859	5F32GM113516-02		61,649	-
Subtotal of 93.859				**48,113,717**	**3,256,046**
A Cohort Study of Preterm Delivery in Relation to Partner Abuse, Mood and Anxiety	93.865	5R01HD059835-05Revised		133,797	27,896
A gesture training for low-income parents to improve child vocabulary development	93.865	5R21HD078771-03 REVISED		177,477	-
A population-based online study of the transition of young adults with perinatal HIV infection to adult clinical care	93.865	5R01HD089853-02		261,286	31,469
Absolute risks of adverse of pregnancy outcomes according to maternal age and inter-pregnancy interval: interpretable results to guide clinical practice and patient decision-making	93.865	1F31HD086970-01A1		26,634	-
Birth Outcomes Surveillance in Botswana	93.865	5R01HD080471-04 REVISED		579,447	336,503
Causal Event Categories in Infancy: The Origins and Consequences of Causal Perception	93.865	3F32HD089595-01S1		48,006	-
Control of placental infection by decidual NK cell secreted granulysin	93.865	5R21HD087689-02 REVISED		244,276	103,239
Creation of Public Use Datasets for the Pediatric HIV/AIDS Cohort Study	93.865	1R03HD092138-01		1,553	-
Culling the human genome of disease variants using ultraconserved elements	93.865	1R01HD091797-01 REVISED		619,261	-
Effects of linguistic input on the neural capacity for language development	93.865	1F31HD086957-01		24,598	-
Embryonic gene regulatory networks from spatially resolved transcriptomes	93.865	5R01HD085905-02 REVISED		545,976	-
Error Correction in Early Embryos	93.865	1K99HD091291-01		17,661	-
Finding Genes for Infertility through the Developmental Genome Anatomy Project	93.865	1F31HD090780-01 REVISED		5,844	-
Forces in Asymmetric Spindle Positioning in Mouse Oocytes	93.865	5R21HD080057-02		37,301	-
Functional neuroanatomy of circuits governing parental behavior	93.865	1K99HD085188-01A1		124,634	-

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Genetic regulation of ovariole development in Drosophila	93.865	5R01HD073499-05		358,339	-
Genetics of long non-coding RNAs in zebrafish	93.865	5R01HD076708-04		251,270	-
Hedgehog Signaling and Organogenesis of the Limb	93.865	5R37HD032443-20 REVISED		(1,624)	-
Impact of supplemental immunization activity campaigns on health systems	93.865	5R03HD082443-02		61,221	-
In toto Image Analysis of Tissue Mechanics during Vertebrate Ear Development	93.865	4K25HD071969-04 REVISED		66,470	-
Integrating Forces and Signals in Tissue-Level Patterning of the Developing Digestive Tract	93.865	5R01HD087234-02 REVISED		506,622	-
Integration of Mechanical Forces and Signaling in the Morphogenesis of the Gut	93.865	1R01HD089934-01		201,769	-
Intergenerational impact of war: A prospective longitudinal study	93.865	4R01HD073349-05Revised		595,775	237,540
Lineage and cell migration in patterning the limb primordium	93.865	5R01HD045499-10 REVISED		(101)	-
Lopinavir/ritonavir + zidovudine to prevent perinatal HIV in Thailand	93.865	5R01HD056953-05Revised		19,734	-
Maternal Traumatic Stress and Child Development: Epigenetic Links	93.865	5R21HD085849-02		179,602	96,776
Microcircuits underlying murine parental behavior	93.865	5R01HD082131-02		255,198	-
Neural Mechanisms Controlling Infant-Directed Behavior	93.865	5F32HD078040-02 REVISED		(107)	-
Patterning and Morphogenesis of the Vertebrate Gut	93.865	5R01HD047360-10 REVISED		(890)	-
Pediatric HIV/AIDS Cohort Study (PHACS) Data and Operations Center	93.865	3U01HD052102-12S1Rev		17,728,551	14,463,912
PHACS - Data and Operations Center	93.865	5U01HD052102-09		(14,104)	(14,104)
Predoctoral Training Program in Reproductive Epidemiology, Perinatal and Pediatric Epidemiology	93.865	5T32HD060454-05Revised		1,746	-
Proteomics of Cell Signaling in Embryogenesis	93.865	9R01HD091846-05A1		111,939	-
SCH: Flexible Electronics For Assessment fo Planning By Children Born Prematurely	93.865	5R01HD090985-02		381,595	37,276
Short Breastfeeding and Cotrimoxazole among HIV-Exposed Infants in Botswana	93.865	5R01HD061265-05		11,271	(308)
Studies of Direct Pluripotent Stem Cell Programming	93.865	5R21HD087723-02 REVISED		259,253	-
Systems analysis of cell type differentiation in xenopus development	93.865	4R01HD073104-05		610,899	1,909
The genetics and neurobiology of parental care in wild mice	93.865	5K99HD084732-02		150,860	-
The Impact of Microfinance on Health: Experimental Evidence from India	93.865	5R01HD069546-05		597,985	51,843
The Ventral Medulla and the Sudden Infant Death Syndrome	93.865	5P01HD036379-20		1,713,119	1,179,006
Toddler and Apelin Signaling During Zebrafish Gastrulation	93.865	5F31HD081925-03 REVISED		30,810	-
Trial of Vitamin D in Maternal HIV Progression and Child Health	93.865	5R01HD083113-03		652,857	588,637
Subtotal of 93.865				**27,577,810**	**17,141,594**
(R37 Merit Extension) SIRT1 as a regulator of health and lifespan of mammals	93.866	4R37AG028730-11		225,417	-
A New Pathway for Reversing Cardiac Aging	93.866	5R01AG047131-04 REVISED		376,265	-
A scalable multi-level physical activity intervention for elderly persons with chronic obstructive pulmonary disease: First steps	93.866	1R56AG052580-01		416,633	322,860
Aging Memory	93.866	4R01AG008441-25		119,994	-
Aging, Stress Resistance and REST/spr transcription factors	93.866	5K99AG050830-02		84,277	-
An Innovative Language Controlled Tablet-Based Cognitive Test: Harmonizing Dementia Screening across High and Low Literacy Countries	93.866	3R01AG051144-02S1		360,806	118,283
AP1-Dependent Regulation of Bone Mass and Energy Expenditure in the Hypothalamus	93.866	5R01AG040222-05		(60,036)	-
Archiving the occupational cohorts in the Work, Family, and Health Network	93.866	5R03AG046393-02Revised		60,390	-
Associative learning and brain structure in individuals at risk for dementia	93.866	5K23AG034258-05 REVISED		5,107	-
ATPIF1 inhibition as a therapeutic strategy for mitochondrial dysfunction	93.866	5F30AG046047-03		3,888	-
Circulating FSTL3 and Age-related Cardiac Hypertrophy	93.866	7R03AG049657-03		139,204	-
Comparative Effectiveness of Treatment Regimens in Lung Cancer	93.866	5R21AG047175-02 REVISED		59,922	-
Deciding about Dialysis: Improving Decision-Making Among Older Adults with ESRD	93.866	5K23AG049088-03		111,568	-
Defining the Essential Function of Heat Shock Factor and the Consequences of its Age-Associated Decline	93.866	5R21AG050134-02		174,236	-
Disability among Older Low-Skilled Workers	93.866	5R01AG056239-02		132,152	36,524
Dissociating Intrinsic and Extrinsic Motor Learning in Alzheimer's Disease	93.866	4R01AG041878-05		245,789	100,210
Epidemiology of Alzheimer's Disease and Cognition: Innovative Approaches to Global Harmonization	93.866	1R56AG054066-01 REVISED		96,854	-
Estimating the Potential Medicare Savings from Comparative Effectiveness Research	93.866	4R37AG036791-06		308,445	296,813
GDF11: an age-variant hormonal regulator of tissue homeostasis and repair	93.866	1R56AG052979-01		169,182	-
Genome Engineering an IPSC Model of Alzheimer's Disease	93.866	1RF1AG048056-01 REVISED		300,881	20,391
Health and Aging in Africa: Longitudinal Studies of INDEPTH Communities	93.866	5P01AG041710-03REVISED		340,387	6,521
Health and Human Capital over the Life Course	93.866	5R01AG056238-02		205,741	110,113
Human Capital of Disabled Workers	93.866	5R01AG046290-04		555,441	146,160
Impact of social cohesion on functional recovery after earthquake and tsunami	93.866	5R01AG042463-05		560,932	192,766
Investigating the neuroinflammatory role of RIP1 kinase	93.866	5R01AG047231-04		383,890	-
Low-Value Medical Care: The Role of Provider Organizations	93.866	5F30AG044106-03 REVISED		46,552	-
Mapping Progranulin's Bioactivity: Implications for Disease and Potential Therapies	93.866	5K99AG047339-02Revised		31,015	-
MD-PhD Training Program in Aging and the Social/Behavioral Sciences	93.866	5T32AG051108-03		151,967	-
Mechanisms Specific to the Beneficial Effects of Dietary Restriction	93.866	5R01AG044346-05		432,387	(83)

The accompanying notes are an integral part of this schedule.

Harvard University
Schedule of Expenditures of Federal Awards
Year Ended June 30, 2017

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Medicare in a Restructured Delivery System	93.866	5P01AG032952-07		1,621,472	63,468
Optimism and Exceptional Longevity	93.866	5R01AG053273-02		191,832	74,642
Protection against renal ischemic injury by short term dietary restriction	93.866	5R01AG036712-05		(17,807)	-
Regulation and function of Growth Differentiation Factor 11 during development and aging	93.866	5R01AG048917-02 REVISED		724,808	76,638
Regulation of Skeletal Muscle Regeneration During Aging by Growth Differentiation Factor 11	93.866	5F32AG050395-03		47,988	-
Requirement of hydrogen sulfide for the benefits of dietary sulfur amino acid restriction	93.866	5K99AG050777-02		61,447	-
Reversing age-related dysfunction of skeletal muscle stem cells	93.866	5R01AG033053-06		5,899	-
SIRT1 as a regulator of health and lifespan of mammals	93.866	4R37AG028730-10 REVISED		175,820	-
Social protection, work and family strain: cumulative disadvantage effects in the US and Europe	93.866	5R01AG040248-05Revised		158,001	8,740
Specialization in Nursing Home Care	93.866	5R01AG047194-03 REVISED		227,728	-
Targeting a Novel Regulator of Brain Aging and Alzheimer's Disease	93.866	5R01AG046174-04		1,189,656	463,731
Targeting mechanisms of inter-organelle communication to promote healthy aging	93.866	5K99AG052666-02		76,556	-
The Center for the Global Demography of Aging	93.866	5P30AG024409-12REVISED		685,454	-
The Impact of Employee Wellness Programs	93.866	5R01AG050329-02		589,505	-
The Longitudinal Aging Study in India	93.866	4R01AG042778-04 REVISED		780,653	384,133
The Role of Aging in Regulatory T cells during Skeletal Muscle Regeneration	93.866	4F30AG046045-04 REVISED		42,317	-
Training in the Molecular Biology of Neurodegeneration	93.866	3T32AG000222-25S1		616,509	-
Ubiquitin-mediated proteolysis and cell cycle control	93.866	5R01AG011085-24 REVISED		358,456	149,592
Welfare Effects of Balancing the Federal Social Security and Health Care Budgets	93.866	5R01AG048037-04		692,736	231,412
Subtotal of 93.866				**14,268,316**	**2,802,914**
Screen for determinants of synaptic specificity in outer retina.	93.867	5R21EY025421-02		110,669	-
Cell-Cell Signaling in Development and Regeneration of Visual Connections	93.867	4R01EY011559-24		324,047	-
Characterization of a newly-discovered cell type family in the retina	93.867	5F32EY025119-02 REVISED		17,871	-
Characterizing training-related neuroplasticity in developmental prosopagnosia	93.867	1R01EY026057-01 REVISED		310,250	13,002
Combinatorial roles of cadherins in retinal circuit assembly	93.867	5R01EY022073-06		602,618	-
Core Grant For Vision Research	93.867	5P30EY012196-20		936,611	272,248
Cortico-Cortical Feedback	93.867	5R01EY011379-20		416,690	-
Development of Category-Selective Domains in Inferotemporal Cortex	93.867	5F32EY024187-03		58,341	-
Dissecting sensory and circadian circuitry that control the timing of sleep	93.867	1F31EY027252-01		31,136	-
Functional Effects of Cortico-cortical Feedback	93.867	5F32EY025523-02		59,492	-
Gene therapy to support cone metabolism in retinitis pigmentosa	93.867	5R01EY023291-03		(18,083)	-
Internal Signals in the Parietal Visual Pathway	93.867	5R01EY012106-15		284,544	-
Linking sequence and copy number variation to eye diseases by regulatory genomics	93.867	7R01EY024230-03		237,732	-
Mechanisms of Morphogen Secretion in Visual System Development and Disease	93.867	5R01EY024093-04		394,838	-
Molecular control of neuronal shape and connectivity in the developing retina	93.867	5R01EY024884-02		540,176	-
Physiological Mechanisms of Intensity Encoding in Ganglion Cell Photoreceptors	93.867	5F31EY025466-03		30,480	-
Representing object ensembles in the human brain: Where, when and what	93.867	5R01EY022355-03		5,460	-
Research Training in Visual Neuroscience	93.867	5T32EY007110-28		191,327	-
Reverse Correlation Mapping in Face Patches	93.867	2R01EY016187-11A1		201,573	-
Reverse Correlation Mapping in Face Patches	93.867	5R01EY016187-10 REVISED		131,033	-
The normal development of inferotemporal cortex	93.867	5R01EY025670-02		570,331	-
Transcriptional Control of Retinal Bipolar Neuron Diversification	93.867	5F32EY024833-02		3,862	-
Subtotal of 93.867				**5,440,998**	**285,250**
Boston-Area Research Training Program in Biomedical Informatics	93.879	3T15LM007092-25S1		1,104,762	-
Development of a Best Practices in Research Data Management Massive Open Online Course (MOOC)	93.879	1R25LM12284-01		40,217	13,049
On the Origins of Therapies: Innovation, Imagination, and the Evolution of Coronary Artery Surgery, 1910-1970	93.879	5G13LM012053-02		36,105	-
Predictive optimal anticlotting treatment for segmented patient populations	93.879	4R01LM011566-04		170,577	108,915
Statistical and Quantitative Training in Big Data Health Science	93.879	5T32LM012411-02REVISED		254,175	-
Subtotal of 93.879				**1,605,836**	**121,964**
Academic Units for Primary Care Training and Enhancement	93.884	5 UH1HP29962--02--00		393,495	140,873
Primary Care Training and Enhancement Program	93.884	6 T0BHP29997-01-01		343,579	123,776
Subtotal of 93.884				**737,074**	**264,649**
Ryan White HIV/AIDS Program 2016	93.924	1 T22HA304110100		7,234	-
Subtotal of 93.924				**7,234**	**-**
2/2-Air Pollution and Health GeoHealth Hub Research and Capacity Building-US	93.989	5U2RTW010108-02		131,090	-
Building Research Capacity to Improve Mental Health in China across the Lifespan	93.989	5D43TW009081-05 REVISED		120,309	8,850
Development Initiative for Ethical Review and Oversight of Health Research Involving Human Subjects in Rwanda	93.989	5R25TW010298-02		88,829	-

The accompanying notes are an integral part of this schedule.

Harvard University
Schedule of Expenditures of Federal Awards
Year Ended June 30, 2017

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Employing genetic and genomic surveillance to reveal mechanisms of malaria parasite persistence	93.989	1K01TW010496-01REVISED		114,270	-
Fogarty HIV Research Training Program for Low and Middle-Income Countries	93.989	5D43TW009610-05		379,809	-
Novel therapeutic agents from the bacterial symbionts of Brazilian invertebrates	93.989	5U19TW009872-03		947,127	452,688
Partnership for Global Health Research Training Program	93.989	1D43TW010543-01 REVISED		23,365	-
Tanzania AIDS and TB ICOHRTA	93.989	5U2RTW008254-05		(585)	-
Tanzania Infectious Disease Research Training Program	93.989	5D43TW007886-09		136,381	10,362
Training Tanzanian Researchers for HIV/AIDS Implementation Science	93.989	5D43TW009775-03		214,970	73,500
Subtotal of 93.989				**2,155,565**	**545,400**
A Systems Approach to Measuring and Modeling Toxic Responses	93.Contract	HHSF223201400052C		495,665	-
An Examination of Behavioral Healthcare Integration in Medicare Accountable Care Organizations	93.Contract	HHSP23320130051C		20,695	-
Application of Statistical Methods and Standardization of Circulating Vitamin D Data from 21 cohorts in the Pooling Project of Breast and Colorectal Cancer	93.Contract	HHSN261201500386P		23,432	-
Center for Food Safety and Applied Nutrition (CFSAN) United States Population Longitudinal Data and Specialized Analytic Support	93.Contract	HHSF223201610080C		85,605	-
Diabetes Risk Across Womens Lifespan: A Study of Long-Term Health Implications of Glucose Intolerance in Pregnancy	93.Contract	HHSN275201000020C		104,847	104,847
Diabetes Risk Across Womens Lifespan: A Study of Long-Term Health Implications of Glucose Intolerance in Pregnancy	93.Contract	HHSN275201500003C		489,267	405,126
Environmental Health and Safety Implications from engineered nanomaterials (ENMs) released from nano-enabled products (NEPs) during consumer use: Case study of printer emitted engineered nanoparticle	93.Contract	200-2016-89213		16,697	-
Inter-professional Case-based Pain Medicine Curriculum for Students of Dentistry, Medicine, Pharmacy, Psychology, and Nursing in Boston, MA	93.Contract	HHSN271201500075C		120,743	-
Long-term transgenerational health impacts of maternal obesity and gestational diabetes and their determinants	93.Contract	HHSN275201600003I		332,242	168,344
Organ-on-Chips Tools for Testing of Radiation Countermeasures	93.Contract	HHSF223201310079C		1,481,494	354,907
Ovarian cancer risk factors in the Ovarian Cancer Cohort Consortium (OC3)	93.Contract	HHSN261201600783P		24,998	-
Participatory Mapping to Identify and Support at-Risk Populations in Emergency Preparedness	93.Contract	200-2016-92417		79,992	-
Physico-Chemical, Pharmacokinetic and Toxicological Studies of Engineered Nanoparticles emitted from Photocopiers and Printing Equipment	93.Contract	200-2015-M-87419		114,968	-
Subtotal of 93.Contract				**3,390,645**	**1,033,224**
Functional analysis of schizophrenia-associated genes	93.RD	1K99MH110603-01A1		25,677	-
Meta Leadership Training CDC	93.RD	No Awrd Nmbr		4,169	-
Synaptic Choices in the Retinotectal System	93.RD	4R37NS029169-27		702,974	-
Subtotal of 93.RD				**732,820**	**-**
Total for DHHS Direct Award				**386,022,473**	**105,472,314**
EPA					
Air Pollution Mixtures: Health Effects Across Life Stages	66.509	RD-83479801-6		329,044	32,933
Assessing the Potential Impact of Global Warming on Indoor Air Quality and Human Health at two US Cities: Boston, MA and Atlanta, GA	66.509	83575501-0		274,345	71,354
Disparities in Exposure and Health Effects of Multiple Environmental Stressors Across the Life Course	66.509	83615601		298,184	130,462
Effects of Changes in Climate and Land Use on U.S. Dust and Wildfire Particulate Matter	66.509	83587501		191,703	37,500
Integrated Modeling Approaches to Support Systems-Based Ecological Risk Assessment	66.509	RD-83579501-0		197,311	75,576
Regional Air Pollution Mixtures: The Past and Future Impacts of Emission Controls and Climate Change on Air Quality and Health	66.509	83587201		1,548,800	118,695
Subtotal of 66.509				**2,839,387**	**466,520**
EPA Fellowship for Katherine Travis	66.514	FP-91761601-1		9,777	-
Immunotoxicity Risks Associated with Exposures to Perflourinated Compounds (PFCs)	66.514	FP-91765101-2		9,307	-
Subtotal of 66.514				**19,084**	**-**
Total for EPA Direct Award				**2,858,471**	**466,520**
Institute of Museum and Library Services					
Peabody Museum Archaeological Collections Digital Imaging and Cataloguing Project	45.301	MA-05-11-0312-11		(1,107)	-
Subtotal of 45.301				**(1,107)**	**-**
Total for Institute of Museum and Library Services Direct Award				**(1,107)**	**-**
Medicare Payment Advisory Commission (MedPAC)					
Phase 2 of development of healthy days at home population-level quality measure	99.Contract	MED17P0035		13,709	-
Subtotal of 99.Contract				**13,709**	**-**
Total for Medicare Payment Advisory Commission (MedPAC) Direct Award				**13,709**	**-**
NASA					
A Tropospheric Chemistry Module for Earth System Models and Data Assimilation Systems: Application to Chemical Data Assimilation of Satellite Observations in the GEOS DAS	43.001	NNX11AN17G		233,830	-
Advancing Tidal Tomography for Study of Earth's Interior	43.001	NNX17AE42G		13,974	-
Air Quality Applied Sciences Team Membership	43.001	NNX11AI40G		86,237	-
Analytic models for outcomes of collisions between icy bodies for outer solar system planet formation and evolution	43.001	NNX12AK25G		22,581	22,582

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Astrophysical Probes of Dark Matter Interactions	43.001	NNX16AI12G		165,485	-
Atmospheric Collapse and Volatile Transport on Rocky M-Star Planets	43.001	NNX16AR86G		38,459	-
Atmospheric Loss During High Angular Momentum Giant Impacts	43.001	NNX13AO67H		1,505	-
Atmospheric Tomography Mission (ATom): Imaging the Chemistry of the Global Atmosphere	43.001	NNX15AJ23G		526,189	-
Chandra Cycle 16 GO Program: Rapid Observations of Short-Duration Gamma-Ray Bursts: Accurate Positions Hold the Key to the Progenitor Population	43.001	G05-16053X		25,460	-
Chandra Cycle 16 GO Program: X-Ray Production in the Unique Relativistic Tidal Disruption Event Sw1644+57	43.001	GO5-16111X		45,433	-
Chandra Cycle 17: A Search for X-ray Emission from the First Magnetically Active T Dwarf	43.001	GO6-17012X		39,298	-
Chandra Cycle 17: Understanding the Rotation/Activity Relation: A New Low-Mass, Extreme-Spin Sample	43.001	GO6-17020X		47,605	-
Chandra Survey of the Oldest Open Clusters	43.001	GO3-14098X		39,254	-
Characterizing Small K2 Planets with the HARPS-N Spectrograph	43.001	NNX16AE69G		100,000	-
Characterizing Small Planets with K2 and HARPS-N	43.001	NNX16AJ13G		23,294	-
Characterizing the Cooler KOIs: Studying the Planet Population around Mid-M Dwarfs	43.001	NNX15AW50G		66,973	-
Coastal Upwelling in a Warmer World: Understanding Interannual Variability and Predicting Future Response to Atmospheric Warming	43.001	NNX14AH39G		109,952	-
Cosmological Hydrodynamics on a Moving Mesh	43.001	NNX12AC67G		52,435	-
Cycle 15 GO Program: Measuring the Explosion Geometry of Short GRBs:Implications for Energetics and Rates	43.001	GO4-15055X		23,520	-
Cycle 15 GO Program: The Energetics and Environments of Type Ibc Supernovae	43.001	GO4-15078X		23,684	-
Development and deployment of an Autonomous Biogeochemical Instrument for In Situ Studies (the ABISS)	43.001	NNX17AB31G		212,417	18,815
Elemental and isotopic fractionations and mixing in the proto-lunar disk	43.001	NNX15AH66G		235,745	-
Evolution of sub-cellular metabolism in photosynthetic eukaryotes: Isotopic investigation of the partitioning of nitrogen between chloroplasts and mitochondria	43.001	NNX16AJ52G		222,454	56,050
Extracting distances from WFIRST/AFTA light curves and spectra	43.001	NNX15AJ55G		73,870	-
FERMI GI Program - Cycle 7: Rapid Spectroscopy of FERMI GRBS: Redshifts, Energetics, and Host Galaxies	43.001	NNX14AQ20G		(84)	-
Fermi GI program Cycle 8: RAPID SPECTROSCOPY OF FERMI GRBS: REDSHIFTS, ENERGETICS, AND HOST GALAXIES	43.001	NNX16AC22G		29,309	-
Field Measurements of Atmospheric Trace Species: Airborne/Balloon in situ and Ground-Based Remote Sensing of CO2, CH4, CO, N2O, and C2H6	43.001	NNX17AF54G		92,909	-
Following the Kepler Planets with the HARPS-N Spectrograph to Determine the Transition from Rocky to Neptune-like Worlds	43.001	NNX15AC90G		215,657	75,442
Gamma-Ray Bursts: Progenitors to Probes	43.001	NNX15AE50G		127,029	-
High Accuracy Measurements of CO2, CH4, N2O, and CO From Suborbital Platforms, and Related Measurements	43.001	NNX13AH36G		252,351	-
High Resolution Energetic X-ray Imager (HREXI)	43.001	NNX14AD59G		598,754	28,099
High-resolution constraints on North American and global methane sources using satellites	43.001	NNX14AO74G		342,118	-
Improving predictions of terrestrial carbon, water, and energy cycling using novel plant phenology observation and modeling	43.001	NNX13AL24H		3,872	-
Improving terrestrial biosphere model predictions of coupled carbon, water, and energy fluxes using remotely sensed surface and vegetation temperatures	43.001	NNX16AO21H		23,025	-
Investigation of Tropospheric Chemistry-Climate Interactions in Hindcasts of the Recent Past	43.001	NNX13AO08G		107,931	-
Linking Terrestrial Biosphere Models with Imaging Spectrometry Measurements of Ecosystem Composition, Structure, and Function	43.001	NNX12AP33G		33,627	-
Management of the GEOS-Chem Chemical Transport Model and Application to Improve Understanding of Tropospheric Ozone	43.001	NNX15AB09G		182,654	-
Measuring the IMF and Detailed Abundance Patterns from the Integrated Light of Old Stellar Systems	43.001	NNX15AK14G		89,755	-
Merging and Observing Massive Black Hole Binaries: interactions with a gas disk	43.001	PF6-170151		77,261	-
Miniature Light-weight X-ray Optics for Solar System Exploration	43.001	NNX16AL75G		135,475	43,556
Mobilization of water during planetary collisions: Shock thermodynamics experiments on icy mixtures and hydrated minerals	43.001	NNX11AQ24G		(2,770)	-
Moving Mesh Cosmology with Magnetohydrodynamics	43.001	NNX15AR88H		29,351	-
Multi-Scale Data Assimilation and Model Comparison for ABoVE to Identify Processes Controlling CO2 and CH4 Exchange and Influencing Seasonal Transitions in Arctic Tundra Ecosystems	43.001	NNX17AE75G		49,259	18,191
Multi-Scale Plasma Flows around Black Holes (Harvard node)	43.001	NNX14AB47G		128,461	-
New Frontiers for Turbulence in the Intercluster Medium: A Multiwavelength Study of the Velocity Power Spectrum with Chandra, Hubble, and Astro-H	43.001	PF4-150119		98,786	-
New Laboratory Bromine Kinetics for Improving Models and Projections of Stratospheric Ozone	43.001	NNX15AD87G		205,485	-
Radiative Forcing of Climate Using A-Train Data and Infrared Spectral Fingerprinting	43.001	NNX15AC29G		277,766	-
Reducing the Effect of Stellar Jitter to Enable RV Measurements of Earth-Like Exoplanets.	43.001	NNX16AD42G		109,497	47,362
Regolith X-ray Imaging Spectrometer (REXIS)	43.001	NNX12AG65G		22,449	-
Study of the Madden-Julian Oscillation with isotope-enabled regional and global models	43.001	NNX13AN47G		393,495	321,093
The ADS All Sky Survey	43.001	NNX12AE11G		48,196	34,305
The isotopic consequences of microbial sulfur disproportionation	43.001	NNX15AP58G		141,863	-
The plasma phase transition in hydrogen for gas giants: structure and formation	43.001	NNX14AP17H		49,403	-
Unravelling the Formation History of the Milky Way	43.001	NNX15AR83H		27,006	-

The accompanying notes are an integral part of this schedule.

Harvard University
Schedule of Expenditures of Federal Awards
Year Ended June 30, 2017

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Use of OMI Formaldehyde (HCHO) and Glyoxal (CHOCHO) Observations to Quantify and Map Emissions of Nonmethane Volatile Organic Compounds (NMVOCs)	43.001	NNX14AE83G		299,785	-
Using Aircraft Stratospheric Water Vapor Measurements Coupled with Complementary Satellite Data, Ground-based Radar and Model Results to Study the Influence of Deep Convection over North America	43.001	NNX14AR33G		191,497	-
Using NASA aircraft observations to improve understanding of biogenic VOC chemistry and aerosols over the eastern US, and to increase the value of related satellite observations	43.001	NNX14AP42G		175,651	-
UV Absorption Cross Sections and Equilibrium Constant of ClOOCl Determined from New Laboratory Spectroscopy Studies of ClOOCl and ClO	43.001	NNX15AF60G		118,527	-
Validation and Application of OCO-2 data in the Northeastern United States	43.001	NNX15AG91G		171,202	-
Wavelength-dependent refractive indices of secondary organic material	43.001	NNX13AM94H		10,330	-
Subtotal of 43.001				**7,286,536**	**665,495**
Crowd Innovation Laboratory at Harvard University NASA Open Innovation Research	43.003	NNX16AC77A		207,108	-
Subtotal of 43.003				**207,108**	**-**
Physics of Colloids in Space	43.007	NNX13AQ48G		203,791	-
Subtotal of 43.007				**203,791**	**-**
Innovative undergraduate flight instrument design and build linking science and engineering to explore coupling between climate and atmospheric chemistry	43.008	NNX16AI72A		155,406	-
Pulsed Laser Spectroscopies for Investigating Questions of Astrobiology	43.008	NNX13AM67H		65,481	-
Subtotal of 43.008				**220,887**	**-**
Augmentation of the Glue Visualization System, with Special Emphasis on Spectral-Line Data Cubes	43.Contract	NAS5-03127		136,727	-
Augmentation of the Glue Visualization System, with Special Emphasis on Spectral-Line Data Cubes	43.Contract	NAS5-03127		122,407	-
Study Of Low-Temperature Shape Memory Alloys Using Combinatorial Nanocalorimetry	43.Contract	NNX17ED02P		3,115	-
Subtotal of 43.Contract				**262,249**	**-**
A Year in the Whirlpool	43.RD	HST-GO-14704.001-A		21,812	-
Atmospheric Escape from the Closest Super-Earth	43.RD	HST-GO-14461.002-A		1,368	-
Cycle 21 Program GO-13401: A 3D view of the SN 1987A Ejecta	43.RD	HST-GO-13401.001-A		13,818	-
Cycle 21 Program: Zooming In on the Progenitors of Ultra-Luminous Supernovae with HST	43.RD	HST-GO-13326.02-A		6,391	-
Cycle 23 Program GO-14216: RAISIN2: Tracers of cosmic expansion with SN IA in the IR	43.RD	HST-GO-14216.001-A		105,881	-
Establishing a Network of Next Generation SED standards with DA White Dwarfs	43.RD	HST-GO-13711.010-A		3,770	-
Hydrogen Escape from an Earth-size Exoplanet: a Reconnaissance Study	43.RD	HST-GO-14462.002-A		11,146	-
Initial Reconnaissance of a Transiting Rocky Planet in a Nearby M-Dwarf's Habitable Zone.	43.RD	HST-GO-14888.002-A		423	-
Measuring the Star Formation History of the Local Universe	43.RD	HST-AR-14557.001-A		29,664	-
SAINTS: Images of SN 1987A	43.RD	HST-GO-13405.001-A		1,308	-
SN 1987A -- Bridging the Gap for HST's Legacy	43.RD	HST-GO-13181.01-A		36	-
Subtotal of 43.RD				**195,617**	**-**
Total for NASA Direct Award				**8,376,188**	**665,495**
National Endowment for the Humanities					
Medicine at Ground Level: State Medical Societies, State Medical Journals, and the Development of American Medicine.	45.149	PW-228226-15		164,763	24,309
Women's Worlds in Qajar Iran (NEH HCRR)	45.149	PW-234647-16		119,148	-
Subtotal of 45.149				**283,911**	**24,309**
Learning Experiences about the Declaration of Independence	45.164	MD-253224-17		30,000	-
Subtotal of 45.164				**30,000**	**-**
Automating Data Extraction from Chinese Texts	45.169	HJ-50173-14		59,150	-
Subtotal of 45.169				**59,150**	**-**
Total for National Endowment for the Humanities Direct Award				**373,061**	**24,309**
National Science Foundation					
I/UCRC: Collaborative Research: Center for Spatiotemporal Thinking Computing and Applications	47.041	CNS-1338914		117,239	-
Alan T. Waterman Award	47.041	CMMI-1251729		56,254	-
CAREER: BuckliOrigami: Soft, Active and Foldable Structures Through Instabilities and Large Deformation	47.041	CMMI -1149456		3,971	-
CAREER: Optimization, Control, and Incentive Design for Power Networks with High Levels of Distributed Energy Resources	47.041	ECCS-1553407		93,226	-
Casting Inorganic Nanostructure Arrays with 3D DNA Crystal Molds	47.041	CMMI-1333215		60,836	-
Collaborative Research: A Combustion Powered, Flapping, Wing Micro Air Vehicle	47.041	CMMI-1537715		70,961	-
Collaborative Research: Approximate Computing on Real World Data Using Representation and Coding	47.041	ECCS-1609605		33,086	-
Collaborative Research: Geometric Shape Error Control for High-Precision Additive Manufacturing	47.041	CMMI-1334178		12,234	-
Collaborative Research: Mechanistic and Predictive Genotoxicity Assessment of Nanomaterials	47.041	CBET-1437209		22,711	-
Collaborative Research: Quantum cascade laser sources of high-power, coherent frequency combs	47.041	ECCS-1614631		73,588	-

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Collaborative Research: Towards Communication-Cognizant Voltage Regulation and Energy Management for Power Distribution Systems	47.041	ECCS-1608509		62,940	-
Data-Driven Management of Post-Transplant Medications	47.041	CMMI-1562645		37,937	-
EAGER: Limited Communications Demand Control in Power Grid	47.041	ECCS-1548204		78,116	-
EFRI 2-DARE: Quantum Optoelectronics, Magnetolectronics and Plasmonics in 2-Dimensional Materials Heterostructures	47.041	EFMA-1542807		776,243	-
Experimental Electro-Mechanics of Dielectric Elastomers	47.041	CMMI-1333835		83,817	-
GOALI: Stable Nanomechanical Oscillators with Large fQ Product	47.041	ECCS-1507508		140,939	-
NNCI: The Center for Nanoscale System (CNS) at Harvard University	47.041	ECCS-1541959		1,026,933	-
NRI: Achieving selective kinematics and stiffness in flexible robotics	47.041	CMMI-1637838		59,984	-
NSF 15-022 Fate of aerosolized Nanoparticles: the influence of surface active substances on lung deposition and respiratory effects (NANOaers)	47.041	1530767		58,698	-
NSF EAGER: High-Throughput Bioprinting of Vascularized Living Tissues	47.041	CMMI-1548261		123,913	-
OP Collaborative Research: Taking lithium-niobate to the nanoscale: shaping revolutionary material onto photonic microchips for developing next-generation light sources	47.041	ECCS-1609549		140,243	-
PFI:AIR - TT: High-Reliability Robot Grasping for Per-Item Distribution	47.041	IIP-1500178		91,708	-
Principles of DNA-Like Self-Assembly at Macroscopic Scales	47.041	CMMI-1434560		76,671	-
Stretchable, Tough, Water-Retaining Hydrogels for Non-Traditional Applications	47.041	CMMI-1404653		148,259	-
SUSCHEM: Aquous organic redox chemistry for renewal energy storage	47.041	CBET-1509041		56,928	-
Understanding How Motile Cells Make Decisions When Subject to Multiple Chemical and Physical Cues	47.041	CMMI-1536616		147,002	-
Subtotal of 47.041				**3,654,437**	**-**
Collaborative Research: A field-experimental test for evolutionary trait-mediated indirect effects in food webs	47.047	DEB-0949531		56,023	-
Subtotal of 47.047				**56,023**	**-**
Algebraic geometric approaches to biological complexity	47.049	DMS-1462629		307,388	-
Analysis, Geometry and Mathematical Physics	47.049	DMS-1607871		107,874	-
Antihydrogen and Antiproton Studies	47.049	PHY-1310079		913,392	-
Arithmetic Geometry	47.049	DMS-1601054		120,345	-
CAREER: Chemically-Enabled Strategies for the Discovery and Characterization of Novel Enzymatic Function	47.049	CHE-1454007		105,515	-
CAREER: Dynamics of neural circuits governing locomotory decisions in C. elegans	47.049	PHY-0952766		58,377	-
CAREER: Quantum field theory in diverse dimensions, supersymmetry, and quantum gravity	47.049	PHY-1352084		123,895	-
CAREER: Sharing Deep CMB Maps for Cosmological Discovery	47.049	AST-1255358		148,603	-
Center for Integrated Quantum Materials	47.049	DMR-1231319		4,374,534	2,386,541
Charge Tunneling in Organic Matter	47.049	CHE-1506993		224,918	-
Chiral Molecular Beams, Quantum Tunneling and Improved Microwave Spectroscopy	47.049	CHE-1506868		87,176	-
Classical and Quantum Aspects of Black Holes, Horizons and Asymptotic Symmetries	47.049	PHY-1606536		39,388	-
Classical and Quantum Geometric Langlands Correspondence	47.049	DMS-1063470		100,886	-
Collaborative Research: Abacus: A New State-of-the-Art Cosmological N-body Code	47.049	AST-1313285		117,943	-
Collaborative Research: Biophysical Analysis of Magnetosome Development in Magnetotactic Bacteria Under Ambient Conditions	47.049	PHY-1504610		139,263	-
Collaborative Research: Combined Theoretical/Experimental approach to understanding irradiation-induced morphology evolution	47.049	DMR-1409700		76,328	-
Collaborative Research: Connecting Atomistic and Continuum Amorphous Solid Mechanics via Non-equilibrium Thermodynamics	47.049	DMR-1409560		94,469	-
Collaborative Research: Detailed Elemental Abundance Patterns in Early-Type Galaxies	47.049	AST-1524161		5,675	-
Collaborative Research: DMREF: Designing, Understanding and Functionalizing Novel Superconductors and Magnetic Derivatives	47.049	DMR-1435487		641	-
Collaborative Research: Geometric Analysis for Computer and Social Networks	47.049	DMS-1418252		1,420	-
Collaborative Research: Institute for Theoretical, Atomic, Molecular and Optical Physics	47.049	PHY-1205635		126,111	-
Collaborative Research: Large-Aperture Experiment to Detect the Dark Age (LEDA)	47.049	AST-1106059		7,653	-
Collaborative Research: Perception and Use of Infrared Radiation by Insects	47.049	PHY-1411123		104,419	-
Collaborative Research: Principled Science-Driven Methods for Massive, Intricate, and Multifaceted Data in Astronomy and Astrophysics	47.049	DMS-1513492		33,910	-
Collective Ecophysiology and Physics of Social Insects	47.049	PHY-1606895		84,241	-
Colloids as Models for Crystals and Glasses	47.049	1611089		169,072	-
Colloids as Models for Crystals and Glasses	47.049	DMR-1206765		(4,218)	-
Compact wave function methods for chemical systems	47.049	CHE-1464862		191,411	-
Complex Dynamics and Moduli Spaces	47.049	DMS-1305116		9,850	-
Complex Dynamics and Moduli Spaces	47.049	DMS-1608432		145,186	-
Concluding conference of the Special Program on Nonlinear Equations: Progress and Challenges in Nonlinear Equations	47.049	DMS-1600414		13,776	-
Criticality and Order in Quantum Matter	47.049	DMR-1360789		123,386	-
Current Developments in Mathematics Conference	47.049	DMS-1443462		11,930	-
Design and Analysis of Optimization Experiments with Internal Noise to Maximize Alignment of Carbon Nanotubes	47.049	DMS-1612901		20,155	-
Detecting hydrogen in early universe using the Large Aperture Experiment to Detect the Dark Age (LEDA) telescope	47.049	AST-1616709		206,731	-
DMREF: Biologically Inspired Optimized Materials And Technologies Transformed by Evolutionary Rules (BIOMATTER)	47.049	DMR-1533985		344,811	22,764

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
DMREF: Self Assembly with DNA-Labeled Colloidal Particles and DNA Nanostructures	47.049	DMR-1435964		447,552	191,991
DMREF/Collaborative Research: Graphene Based Origami and Kirigami Metamaterials	47.049	DMR-1435999		98,757	-
DMREF/GOALI/Collaborative Research: High-Throughput Simulations and Experiments to Develop Metallic Glasses	47.049	DMR-1435820		143,058	-
Electron Magnetic Moment, Fine Structure Constant, Mass Ratios, Laser Spectroscopy and QED	47.049	PHY-1068219		37,184	-
Elliptic Fibrations and String Theory	47.049	DMS-1406925		5,816	-
Exploring the Galaxy: 3-Dimentional Structure and Stellar Streams	47.049	AST-1614941		31,332	-
Fiber-laser Astro-comb as a Robust Wavelength Calibrator for Astrophysical Spectrographs	47.049	AST-1310981		8,806	-
Fluctuations and Control in Cells	47.049	DMS-1517372		89,806	-
Fractional Quantum Hall Physics with Ultracold Atoms	47.049	PHY-1506203		186,197	-
FRG Collaborative Research: Generalized Geometry, String Theory and Deformations	47.049	DMS-1159412		26,132	-
FRG: Collaborative Research: Stability of Structures Large and Small	47.049	DMS-1564473		43,029	-
Fundamental Physics from Primordial Seeds	47.049	PHY-1650217		51,184	-
Gamma-Ray Bursts: From Progenitors to Probes	47.049	AST-1411763		148,717	-
Gauge theory and spatial graphs	47.049	DMS-1405652		121,217	-
Geometric PDEs and Algebraic Geometry	47.049	DMS-1506652		47,480	-
Geometric structures in field and string theory	47.049	PHY-1306313		168,515	-
Hidden Particles in Weak Scale Physics and Beyond	47.049	PHY-1415548		35,182	-
Hydrogen at Ultra-High Pressure	47.049	DMR-1308641		99,377	-
In-sequence coding of stochastic gene expression via synonymous mutations	47.049	PHY-1409321		58,142	-
Institute for Theoretical, Atomic, Molecular and Optical Physics	47.049	PHY-1521560		443,009	166,836
Integrated photonic chips for generating entangled photon triplets	47.049	PHY-1415236		180,594	-
Interactions of Particles, Fields and Strings	47.049	PHY-1418114		308,910	-
Interference Selection and the Statistics of Evolution in Microbes	47.049	PHY-1313638		105	-
L-functions and Arithmetic	47.049	DMS-1601028		27,248	-
Lepton Magnetic Moments and Fine Structure Constant	47.049	PHY-1607565		291,509	-
Low-Loss, Impedance-Matched Dirac-Cone Metamaterials for Integrated Optics	47.049	DMR-1360889		(3,001)	-
Mapping Dust in 3-D with Pan-STARRS	47.049	AST-1312891		16,863	-
Materials Research Science and Engineering Center	47.049	DMR-0820484		(389)	-
Materials Research Science and Engineering Center	47.049	DMR-1420570		2,068,717	-
Mathematical methods to infer mechanisms from single cell data	47.049	DMS-1562497		97,075	-
Mechanistic Studies of the Photoactivation of Metal- Hydride, Halide and Oxo Bonds	47.049	CHE-1464232		216,369	-
Microfluidic Printing of Interspersed and Interpenetrating Multicomponent Ceramic Architectures	47.049	DMR-1305284		96,903	-
MINERVA: A dedicated observatory for exoplanet science	47.049	AST-1516242		130,108	-
MINERVA: Purchase of Kiwispec, a robotic precision RV spectrograph	47.049	AST-1608203		788,281	-
Nanoporous Hybrid Photo-catalysts for Sustainable Chemical Processes	47.049	CHE-1362616		221,932	-
Nanoscale Imaging of Topological Superconductivity in Heterostructures	47.049	DMR-1410480		119,735	-
New Algebraic Structures in Topology	47.049	DMS-1510417		274,279	-
Non- equilibrium dynamics of quantum many - body systems	47.049	DMR-1308435		113,913	-
Nonequilibrium Physics of Spindle Assembly: Understanding the Response of the Spindle to Perturbations	47.049	PHY-1305254		(4,700)	-
Nonlinear Analysis on Sympletic, Complex Manifolds, General Relativity, and Graphs	47.049	DMS-1308244		68,735	-
Novel statistical models for text mining with applications to Chinese history and texts	47.049	DMS-1208771		46	-
NSF Frontiers of Experimental Condensed Matter Physics (CMP) Principal Investigators Workshop on Materials for the Quantum Revolution	47.049	DMR-1743724		35,594	-
Number Theory and Geometry	47.049	DMS-1100511		6,545	-
Number Theory and Geometry	47.049	DMS-1502161		56,304	-
Number Theory and Related Fields	47.049	DMS-1302409		9,530	-
Observational Studies of Magnetic Fields in Very Low Mass Stars	47.049	AST-1614770		60,404	-
OP: Quantum Physics with Nanaophotonics Systems	47.049	PHY-1506284		211,325	-
Optimal Shrinkage Estimation for Heteroscedastic Data	47.049	DMS-1510446		70,231	-
Particle Physics in the Era of Data	47.049	PHY-1216270		77,890	-
Particle Physics in the Era of Data	47.049	PHY-1620806		137,695	-
Physics with New Molecular Systems: Quantum Interactions, Cooling and Applications	47.049	PHY-1505961		49,608	-
Random Matrices and Disordered Systems	47.049	DMS-1307444		26,340	-
Random Matrix Theory and Applications	47.049	DMS-1606305		78,160	-
Research and Education in Physical Mathematics	47.049	DMS-1411694		150,136	-
REU Site Team Research in Computational and Applied Mathematics (TRiCAM)	47.049	DMS-1460870		(29,525)	-
REU Site: Biomaterials Research Initiative Dedicated to Gateway Experiences	47.049	DMR-1559890		29,292	-

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
REU Site: Biomaterials Research Initiative Dedicated to Gateway Experiences (BRIDGE)	47.049	DMR-1262895		80,277	-
SAVI: Student Research Network in the Physics of Living Systems (PoLS)	47.049	PHY-1219334		378,482	-
Scanning-releasing the full-sky-century database to DASCH for TDA	47.049	AST-1313370		285,768	-
Set Theory	47.049	DMS-1460238		137,964	-
Shimura Varities and Galois representations	47.049	DMS-1301921		19,773	-
Soft Materials: Synthesis and Properties	47.049	DMR-1310266		120,595	-
Structural transitions, energetics, and folding pathways of colloidal clusters	47.049	DMR-1306410		99,779	-
Studies in Representation Theory	47.049	DMS-1300185		26,352	-
Study of Plasmon-Assisted Cell Transfection	47.049	PHY-1205465		98,927	-
SusChEM: Engineered protein-based biofilms as functional advanced materials	47.049	DMR-1410751		139,254	-
The MEarth Project: An All Sky Survey of the Closest Low-mass Stars to Uncover the Very Best Terrestrial Exoplanets for Further Study	47.049	AST-1616624		263,825	67,588
Theoretical Problems in Soft Matter and Quantitative Biology	47.049	DMR-1306367		44,988	-
Theoretical Problems in Soft Matter and Quantitative Biology	47.049	DMR-1608501		92,070	-
Three-Dimensional Radiation GRMHD Simulations of Accretion Flows Around Black Holes	47.049	AST-1312651		77,382	-
Topology, Geometry and Physics	47.049	DMS-1401192		121,170	-
Towards a Predictive Theory of Galaxy Formation: Cosmological Gas Accretion and Galactic Outflows	47.049	AST-1312095		8,553	-
Understanding Supernovae for Cosmology and for Themselves	47.049	AST-1211196		66,102	-
Understanding Supernovae for Cosmology and for Themselves	47.049	AST-1516854		239,427	-
Variable Selection via Inverse Modeling for Detecting Nonlinear Relationships	47.049	DMS-1613035		74,537	-
Visualizing flagella while tracking bacteria	47.049	PHY-1057408		64,287	-
Whole Genome Sequencing Analysis: Comprehensive Capture of Genetic Variants	47.049	DMS-1649847		22,825	-
Workshop on a Systematic Approach to Robustness, Reliability, and Rigor in Research February 24-26, 2017 in Atlanta, GA	47.049	PHY-1650892		33,358	-
Subtotal of 47.049				**19,505,402**	**2,835,720**
A Comprehensive Coupled Model for Tropospheric Halogen Chemistry: Evaluation of Impacts on Tropospheric Ozone, Hydroxyl Radical (OH), and Mercury	47.050	AGS-1643217		69,612	-
A window on ancient systems: Understanding the environmental distributions of hopanoids using compound-specific multi-isotope analysis and metagenomics	47.050	EAR-1349126		59,468	-
Anthropogenic Influence on Oxidative Capacity and BVOC Oxidation During GoAmazon 2014	47.050	AGS-1628491		100,858	-
Atmospheric blocking: dynamics and responses to climate change	47.050	AGS-1552385		201,150	41,362
CAREER: Quantifying the flux and isotope effects associated with sulfur-bearing intermediate species within dissimilatory sulfate reduction	47.050	EAR-1149555		26,644	-
Collaborative Research: Combined Influence of Snow Cover and El Nino/Southern Oscillation (ENSO) on North African/Mediterranean Temperature and Precipitation	47.050	AGS-1303604		80	-
Collaborative Research: A multidimensional approach to understanding microbial carbon cycling beneath the seafloor during cool hydrothermal circulation	47.050	OCE-1635365		11,776	-
Collaborative Research: Coupled Ocean-Atmosphere Recycling of Refractory Dissolved Organic Carbon in Seawater	47.050	OCE-1536608		55,591	-
Collaborative Research: Deep eastern ocean boundary currents from local submesoscale potential vorticity dynamics to global climate implications	47.050	OCE-1535800		150,571	-
Collaborative Research: Developing a Three-Dimensional Seismic Reference Earth Model (REM-3D) in Collaboration with the Community	47.050	EAR-1345101		15,096	15,096
Collaborative Research: Do symmetric and asymmetric segments on the Mid-Atlantic Ridge have distinct geochemical signatures	47.050	EAR-1061264		92,560	-
Collaborative research: Dynamics of unsaturated downdrafts, cold pools, and their roles in convective initiation and organization	47.050	1649819		21,948	-
Collaborative Research: Ecosystem dynamics of Western Pacific hydrothermal vent communities associated with polymetallic sulfide deposits	47.050	OCE-1536653		171,237	-
Collaborative Research: Experimental calibration of the isotopic content of marine sulfate	47.050	OCE-1536574		37,268	-
Collaborative Research: Functional evolution of the mammalian backbone; insights from the forerunners of mammals	47.050	EAR-1524523		147,568	-
Collaborative Research: Imaging the Beginning of Time from the South Pole: The next Stage of the BICEP Program	47.050	OPP-1638957		407,875	-
Collaborative Research: P2C2--Recent Northeastern United States Temperature Records in the Context of the Late Holocene	47.050	AGS-1460795		45,719	-
Collaborative Research: P2C2: Re-assessing Pliocene and Miocene warm climates and identifying the 'missing physics' to explain them	47.050	OCE-1602864		8,632	-
Collaborative Research: Phylogenomics of palaeognathous birds and the genomic basis of flightlessness	47.050	1355343		138,713	-
Collaborative Research: Science Observation with BICEP3 CMB Polarization Experiment	47.050	PLR-1313287		6,415	-
Collaborative research: Sea level responses to sediment erosion and deposition over the past 3 million years	47.050	EAR-1527351		28,919	-
Collaborative Research: Testing proposed rapid true polar wander in the Neoproterozoic Zavkhan Volcanics of Mongolia and the Banxi Group of South China	47.050	EAR-1547537		43,367	-
Collaborative Research: The role of iron-oxidizing bacteria in the sedimentary iron cycle: ecological, physiological and biogeochemical implications	47.050	OCE-1459252		156,407	-
Collaborative Research: Using a hierarchy of models to constrain the temperature dependence of climate sensitivity	47.050	AGS-1622985		1,234	-
CSEDI Collaborative Research: Anelastic properties of the Earth from seismic to tidal timescales	47.050	EAR-1464033		45,968	-
DESCEND2: A workshop to address the future of deep sea research	47.050	OCE-1551838		3,174	-

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Dynamic Exchange and Reactivity in Secondary Organic Aerosol	47.050	AGS-1640378		8,698	-
EAGER: Development of a Novel Double-resonance Fiber-laser-induced Fluorescence Instrument for Long-term, High-sensitivity, Interference-free Measurements of Hydroxyl Radical (OH)	47.050	AGS-1625380		3,549	-
FESD Type I: VOICE - Volcano, Ocean, Ice, and Carbon Experiments	47.050	AGS-1338832		476,743	294,526
Field and Laboratory Study of Rural Volatile Organic Compounds (VOCs) Oxidation and Secondary Organic Aerosol (SOA) Formation Utilizing Measurements of Formaldehyde and Glyoxal	47.050	AGS-1628530		(2,325)	-
Hydrologic controls on temperature extremes in managed landscapes	47.050	EAR-1521210		64,667	-
Immunotoxicity in Humans with Lifetime Exposure in Ocean Pollutants	47.050	OCE-1321612		284,369	166,556
INSPIRE Track 1: Microbial Sulfur Metabolism and its Potential for Transforming the Growth of Epitaxial Solar Cell Absorbers	47.050	OCE-1344241		195,093	-
INSPIRE: Statistical State Dynamics of Turbulent Systems	47.050	AGS-1246929		66,406	-
Materials physics of rapidly sheared faults and consequences for earthquake rupture dynamics	47.050	EAR-1315447		62,707	-
P2C2: Paleo Perspectives on Temperature Extremes	47.050	AGS-1304309		104,827	-
Petrogenetic Studies of Young Volcanic Rocks	47.050	OCE-1634421		32,980	-
RAPID: Formaldehyde Measurements as Tracer of Local Processing of Reactive Volatile Organic Carbon During the Atmospheric Measurements of Oxidants in Summer Study	47.050	AGS-1643306		72,373	-
Semisolidity and Reactivity of Atmospheric Organic Aerosol Particles	47.050	AGS-1249565		2,594	-
The Eighth International GEOS-Chem Meeting (IGC8); Cambridge, Massachusetts; May 1-4, 2017	47.050	AGS-1659903		6,696	-
Thermo-Mechanics and Hydrology of Western Antarctic Ice Stream Margins	47.050	PLR-1341499		124,297	8,479
Subtotal of 47.050				**3,551,524**	**526,019**
AF: Large: Collaborative Research: Algebraic Proof Systems, Convexity, and Algorithms	47.070	CCF-1565264		75,285	-
AF: Medium: Algorithmic Complexity in Computation and Biology	47.070	CCF-1509178		86,140	-
AF: Medium: Algorithmic Crowdsourcing Systems	47.070	CCF-1301976		369,033	-
AF: Small: Algebraic Tools for Coding, Complexity and Combinatorics	47.070	CCF-1565641		190,255	-
AF: SMALL: Complexity Assumptions for Cryptographic Schemes	47.070	CNS-1618026		7,601	-
AF: Small: Data Synchronization : Theory, Algorithms, and Practice	47.070	CCF-1320231		91,412	-
AF:Chaining methods and their applications to computer science	47.070	CCF-1618373		7,301	-
AF:Small:Pseudorandomness for Space-Bounded Computation and Cryptography	47.070	CCF-1420938		132,051	-
AitF: FULL: Collaborative Research: Better Hashing for Applications: From Nuts and Bolts to Asymptotics	47.070	CCF-1535795		12,156	-
BD Spokes: SPOKE: NORTHEAST: Collaborative Research: Integration of environmental factors and causal reasoning approaches for large-scale observational health research	47.070	IIS-1636870		47,420	-
BIGDATA: F: DKA: Randomized methods for high-dimensional data analysis	47.070	IIS-1447471		81,632	-
BIGDATA: IA: DKA: Collaborative Research: High-Throughput Connectomics	47.070	IIS-1447344		164,809	-
BSF:2014389: Networked Markets	47.070	CCF-1540428		33,526	-
CAREER: Algorithmic Foundations for Social Data	47.070	CCF-1452961		87,072	-
Career: Evolutionary Data Systems	47.070	IIS-1452595		129,790	-
CAREER: Practical, expressive, language-based information security	47.070	CCF-1054172		92,434	-
CAREER: Programming Nucleic Acids Self-Assembly	47.070	CCF-1054898		(2,352)	-
CAREER: Quantifying diffusion and dynamics on healthcare, innovation and communication networks	47.070	IIS-1149662		8,065	-
CAREER: Sketching Algorithms for Massive Data	47.070	CCF-1350670		127,297	-
CER: Factors Influencing College Success in Information Technology (FICSIT)	47.070	CNS-1339200		57,523	564
CIF: Small: Sampling and Inference Methods for Spatiotemporal Single-Photon Imaging	47.070	CCF-1319140		143,375	-
CIF21 DIBBs: EI: North East Storage Exchange	47.070	ACI-1640831		127,663	45,407
Citation++: Data citation, provenance, and documentation	47.070	ACI-1448123		111,695	-
Collaborative Research: Molecular Programming Architectures, Abstractions, Algorithms, and Applications	47.070	CCF-1317291		301,715	100,429
CPS: Synergy: Multi-Robot Cyberphysical System for Assisting Young Developmentally-Delayed Children in Learning to Walk	47.070	CNS-1329363		261,379	67,182
CPS: TTP Options: Synergy: Human-Machine Interaction with Mobility Enhancing Soft Exosuits	47.070	CNS-1446464		193,712	81,499
CSR: Medium: Collaborative Research: Fast and Simple Concurrency Through Data-Abstraction Transactions	47.070	CNS-1513416		59,225	-
CSR: Medium: Collaborative Research: The Commutativity Rule for Scalable System Software	47.070	CNS-1302359		115,125	-
CSR: Medium: Collaborative Research: Workload-Aware Storage Architectures for Optimal Performance and Energy Efficiency	47.070	CNS-1302334		126,348	-
Deep Annotation: Measuring Human Vision to Improve Machine Vision	47.070	IIS-1409097		52,193	-
EXP: Collaborative Research: Extracting Salient Scenarios from Interaction Logs (ESSIL)	47.070	IIS-1623124		8,517	-
ICES: Small: Using Web Crawling and Complex Network Analysis to Understand Institutional Activity and Connectivity	47.070	CCF-1216028		1,206	-
III: Medium: Design and analysis of experiments on networked populations	47.070	IIS-1409177		56,126	-
INDP: Collaborative Research: Coding for All: Interest-Driven Trajectories to Computational Fluency	47.070	IIS-1348898		74,007	-
InTrans: A virtualized SoC platform architecture for mini autonomous drones	47.070	IIS-1551044		31,054	-
NRI-Large: Collaborative Research: Soft Compliant Robotic Augmentation for Human-Robot Teams	47.070	IIS-1226075		47,711	-
NRI-Small: Rapid on site development of soft disposable robots	47.070	IIS-1317744		188,672	-

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
NRI: Instructional Materials for Soft Co-Robot Design to Improve Motivation and Learning in STEM Classrooms	47.070	IIS-1526327		134,671	-
RI: Large: Collaborative Research: Reconstructive Recognition: Uniting statistical scene understanding and physics-based visual reasoning	47.070	IIS-1212928		2,606	2,606
RI: Medium: Collaborative Research: Novel microLIDAR Design and Sensing Algorithms for Flapping-Wing Micro-Aerial Vehicles	47.070	IIS-1514306		108,133	-
RI: Small: Collaborative Research: Structured Inference for Low-level Vision	47.070	IIS-1618227		20,991	-
RI: Small: Parallel Methods for Large-Scale Probabilistic Inference	47.070	IIS-1421780		715	-
RI: Small: Workshop for Women in Machine Learning	47.070	IIS-1649706		19,725	-
Scalable Bayesian Inference for Interpretable Time-Series Models	47.070	ACI-1544628		407	-
SHF: Small: Higher-order Contracts for Distributed Applications	47.070	CCF-1421770		160,943	-
SHF:Medium:Collaborative Research:Scaling Up Programmable and Algorithmic DNA Self-Assembly	47.070	CCF-1162459		2,052	-
SI2-SSI: Collaborative Research: Bringing End-to-End Provenance to Scientists	47.070	ACI-1450277		463,211	-
STAR Metrics Workshop on Software and Data Citation and Attribution	47.070	ACI -1621324		19,366	-
TWC: Frontier: Privacy Tools for Sharing Research Data	47.070	CNS-1237235		1,308,342	37,449
TWC: Large: Collaborative: Computing Over Distributed Sensitive Data	47.070	CNS-1565387		282,904	-
TWC: Medium: Collaborative: Privacy-Preserving Distributed Storage and Computation	47.070	CNS-1228598		104,224	-
TWC: Small: Language-level Control of Authority	47.070	CNS-1524052		185,199	-
US-Israel Collaboration: Collaborative Research: New Tools for Extracting Neuronal Phenotypes from a Volumetric Set of Cerebral Cortex Images	47.070	IIS-1607800		21,613	-
Workshop on Formal Methods for Security (November 2015)	47.070	CNS-1551249		478	-
XPS: FULL: CCA: Collaborative Research: Automatically Scalable Computation	47.070	CCF-1533737		124,333	-
Subtotal of 47.070				**6,658,086**	**335,136**
Designing and analyzing multi-generational switching in gene circuits for single cell biology	47.074	1615487		277,798	-
Adolescent And Adult Outcomes Of Early Life Lactocrine Programming Of Temperament: Neuroenergetics And Social Behavior	47.074	IOS-1456174		1,902	1,902
BRAIN EAGER: Functional dynamics of whole brain activity, behavior, and development from birth to adulthood	47.074	IOS-1452593		46,185	-
CAREER: Developmental network architecture underlies patterning precision and robustness	47.074	IOS-1452557		131,042	-
CAREER:Quantitative principles of multi-input signaling in eukaryotic cells	47.074	MCB-1349248		63,174	-
CNH-L:Assessing the potential for climate change and forest insects to drive land-use regime shifts	47.074	DEB-1617075		104,820	44,074
Collaborative Proposal: A New Model for Chemical Ecology: Integrating Chemistry, Genetics and Behavior to Understand the Role of Individual Scent in a Colonial Nesting Seabird	47.074	IOS-1258784		147,130	-
Collaborative Research and NEON: MSB Category 2: PalEON - a PaleoEcological Observatory Network to Assess Terrestrial Ecosystem Models	47.074	EF-1535623		48,571	19,853
Collaborative Research: A Functional Perspective on Adaptive Radiation: Explaining Differences in the Adaptive Radiations of Mainland and Island Anolis Lizards	47.074	IOS-1354620		105,756	-
Collaborative Research: ABI Development: Kurator: A Provenance-enabled Workflow Platform and Toolkit to Curate Biodiversity Data	47.074	DBI-1356438		311,099	-
COLLABORATIVE RESEARCH: AN INTEGRATIVE APPROACH TO THE PERFORMANCE AND EVOLUTION OF HIGH PERFORMANCE SUCTORIAL DISKS IN FISHES	47.074	IOS-1257946		410	-
Collaborative Research: ButterflyNet--an integrative framework for comparative biology	47.074	DEB-1541560		107,204	-
Collaborative Research: Continental-Scale Monitoring, Modeling and Forecasting of Phenological Responses to Climate Change	47.074	EF-1065029		55,893	32,081
Collaborative Research: Digitization TCN: Fossil Insect Collaborative: A Deep-Time Approach to Studying Diversification and Response to Environmental Change	47.074	DBI-1304992		176,738	-
Collaborative Research: Digitization TCN: InvertEBase: Reaching Back to See the Future: Species-rich Invertebrate Faunas Document Causes and Consequences of Biodiversity Shifts	47.074	EF-1401450		9,400	-
Collaborative Research: Digitization TCN: Mobilizing New England Vascular Plant Specimen Data to Track Environmental Changes	47.074	EF-1208835		44,817	-
Collaborative Research: forecasting and Forestalling Tipping Points in an Aquatic Ecosystem	47.074	DEB-1144056		12,259	-
Collaborative Research: IDBR: TYPE A: Development of Squishy Robot Hands for a Delicate, Effective and Non-Intrusive Approach to Studying Deep Coral Reefs	47.074	DBI-1556164		227,203	-
Collaborative Research: Interacting influences of climate, land use, and other disturbances on regime shifts in forest ecosystems: Holocene dynamics in the northeastern US	47.074	DEB-1146207		(192)	-
Collaborative Research: Phylogeny and diversification of the orb weaving spiders (Araneae)	47.074	DEB-1457539		150,651	-
Collaborative Research: Phylogeny and Floral Evolution of Malpighiaceae	47.074	DEB-1355064		12,481	-
Collaborative Research: Physiology of Long Distance Assimilate Transport	47.074	IOS-1456845		87,937	-
Collaborative Research: The Aquilegia Petal as a Model for the Elaboration and Evolution of Organ Shape	47.074	IOS-1456217		85,745	-
Collaborative Research: The Genetics of Convergence at Multiple Levels: Evolution of Colorful Dewlaps in Anolis	47.074	DEB-1119731		45,805	-
Collaborative Research: Understanding the potential for a climate change-driven critical transition from forest to chaparral	47.074	DEB-1353301		144,541	-
Comparative Genomics of a Species Radiation: Sequencing the Apple Tribe	47.074	IOS-1416825		1,258	-
Computational rapid identification and putative characterization of understudied microbial community gene products	47.074	MCB-1453942		9,450	-
Digitization PEN: Facilitating a Shared Image Library and Occurrence Database for Ants of the Southwest as Part of the SCAN TCN	47.074	DBI-1305024		4,037	-
Digitization TCN: Collaborative Research: Lepidoptera of North America Network: Documenting Diversity in the Largest Clade of Herbivores	47.074	DBI-1601124		59,023	-

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Digitization TCN: Collaborative Research: North American Lichens and Bryophytes: Sensitive Indicators of Environmental Quality and Change	47.074	EF-1114957		(3,178)	-
Digitization TCN: Collaborative: The Macrofungi Collection Consortium: Unlocking a Biodiversity Resource for Understanding Biotic Interactions, Nutrient Cycling and Human Affairs	47.074	EF-1206216		4,591	-
Digitization TCN: Collaborative: The Microfungi Collections Consortium: A Networked Approach to Digitizing Small Fungi with Large Impacts on the Function and Health of Ecosystems	47.074	DBI-1502767		45,127	-
DIMENSIONS: Collab. Res:The climate cascade: functional and evolutionary consequences of climatic change on species, trait, and genetic diversity in a temperate ant community	47.074	DEB-1136646		138,283	-
DIMENSIONS: COLLABORATIVE RESEARCH: The phylogenetic and functional diversity of extracellular electron transfer across all three domains of life	47.074	DEB-1542506		112,581	-
Discovering the Mechanistic Basis of Individual Differences in Sensory Representation and their Effects on Preference Behavior	47.074	IOS-1557913		167,407	-
Dissecting the Molecular Mechanisms Underlying Organization of the Bacterial Chromosome	47.074	MCB-1148818		79,294	-
DISSERTATION RESEARCH: Evolution of Angiosperm Seed Development: perspectives from Nymphaea thermarum (Nymphaeales)	47.074	DEB-1500963		16,863	-
DISSERTATION RESEARCH: Exploring convergence within pitcher plant microcosms	47.074	DEB-1400982		2,962	-
DISSERTATION RESEARCH: Genomic signatures of pathogen-mediated selection in diachronic populations of the House Finch	47.074	DEB-1501554		21,929	-
DISSERTATION RESEARCH: Integrative research in gastropods: Phylogeny and shell shape evolution	47.074	DEB-1701648		6,151	-
Dissertation Research: Molecular mechanisms underlying striking craniofacial variation in New World Leaf-Nosed bats (Phyllostomidae)	47.074	DEB-1501690		6,197	-
Dissertation Research: Mutant models reveal latent developmental potential with roles in evolutionary change	47.074	DEB-1600920		3,214	-
DISSERTATION RESEARCH: The Evolution of Crocodylian Cranial Development	47.074	DEB-1701745		2,190	-
DISSERTATION RESEARCH: The phylogenetic consequences of mutualism and antagonism in the coevolution of palm flower weevils	47.074	DEB-1601356		12,109	-
DISSERTATION RESEARCH: Validation of positive selection on gene regulation at the genome-wide scale	47.074	DEB-1401237		3,493	-
EAGER-NEON: Scaling up terrestrial plant phenology from individuals to Continental scale	47.074	DEB-1550740		131,393	-
EAGER: A novel mechanism regulating leaf water transport: Reversible collapse of xylem conduits	47.074	IOS-1659918		46,614	-
ERA SynBio: A Unified Nucleic Acid Computation System (UNACS) for Organisms	47.074	MCB-1540214		137,636	-
ERASynBio: Intensification of the Synthetic Biology Design Cycle	47.074	MCB-1445570		271,704	-
Functional significance of the competition between vapor and liquid transport in transpiring leaves	47.074	IOS-1456836		62,032	-
HFR LTER V: New Science, Synthesis, Scholarship, and Strategic Vision for Society	47.074	DEB-1237491		994,288	276,656
IDBR TYPE A: Definitive Chemical Analysis of Microbial Volatile Mixtures via Microwave Spectroscopy	47.074	DBI-1555781		142,008	19,315
Ideas Lab Collaborative Research: Using natural odor stimuli to crack the olfactory code	47.074	IOS-1555914		42,537	-
Inductive Mechanisms in Arthropod Germ Line Specification	47.074	IOS-1257217		167,987	-
Microbial control of carbon fixation	47.074	MCB-1409586		(80)	-
PAPM EAGER: Identifying Small Molecule Inhibitors that Manipulate	47.074	MCB-1650086		151,027	-
Physiological Adaptations for a Deadly Diet: Bioaccumulation Mechanisms of Defensive Chemicals in a Poison Frog	47.074	IOS-1557684		219,812	-
RCN-SEES: Integrating Land-Use Scenarios, Ecosystem Services, and Linkages to Society (Scenarios, Services, and Society - S3)	47.074	DEB-1338809		92,183	-
RCN: EDEN (Evo-Devo-Eco Network): A research coordination network to promote technique and community development across the Evo-Devo-Eco field	47.074	IOS-0955517		9,261	-
RCN: MicroMORPH: Microevolutionary Molecular and Organismic Research in Plant History	47.074	DEB-1449863		85,622	-
Recombination and the Dynamics of Adaptation in Experimental Saccharomyces Cerevisiae (yeast) Populations	47.074	DEB-1655960		15,366	-
Resources for mixed model association mapping of complex traits	47.074	1349449		84,425	-
REU Site: A forest full of Big Data: the Harvard Forest Summer Research Program in Ecology 2015-2019	47.074	DBI-1459519		140,083	-
REU Site: Cellular and Molecular Biology and Genetics	47.074	DBI-1263215		20,911	-
The distributed regulatory network that integrates local and systemic signals to regulate heat shock response	47.074	MCB-1413134		317,963	-
The interplay of genes and ecology in the social behavior of a halictid bee	47.074	IOS-1257543		(2,826)	-
Subtotal of 47.074				**6,221,296**	**393,881**
2014 Cooperative Election Study	47.075	SES-1430505		35,246	20,895
2016 Cooperative Congressional Election Study	47.075	SES-1559125		400,636	319,500
A Life History Perspective on Social Integration after Prison	47.075	SES-1424089		3,913	-
A new history and geography of human genes informed by ancient DNA	47.075	BCS-1032255		250,623	175,434
CAREER: Dynamic Decision Theory and Bounded Rationality	47.075	SES-1255062		83,846	-
CAREER: Flexible Resource Allocation and Efficient Coding in Human Vision	47.075	BCS-0953730		487	-
CAREER: Psychological and Neurodevelopmental Mechanisms of Social Influence on Adolescent Decision-Making	47.075	BCS-1452530		158,087	-
CAREER: The Developmental Origins of Human Cooperation	47.075	BCS-1253676		66,994	-
CAREER: Using Field Experiments to Identify Barriers to Labor Market Success and Human Capital Accumulation	47.075	SES-1454476		207,100	-
Catalyzing a Cross-disciplinary, Cross-university Urban Research Agenda in the Age of Digital Data	47.075	SMA-1338446		2,112	-
Collaborative Research: A New Design for Identifying Persuasion Effects and Selection in Media Exposure Experiments via Patient Preference Trials	47.075	SES-1526953		2,757	-
Collaborative Research: Experimental Research on Religious Scripture and Political Behavior in the Muslim World	47.075	SES-1324157		44,666	-

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Collaborative Research: Increasing Tax Compliance: Experimental Evidence from Pakistan	47.075	1559419		129,624	58,388
Collaborative Research: Lay Deployment of Professional Legal Knowledge	47.075	SES-1423729		28,892	-
Collaborative Research: The Psychological Difficulties and Benefits of Deliberative Reflection	47.075	BCS-1423755		55,952	-
Collaborative Research: Typology and Theory of Anaphora	47.075	BCS-1424054		38,206	-
Conference on the Cognitive Penetrability of Perception	47.075	SES-1353782		136	-
DDR: The Process and Consequence of the Work of 911 Dispatchers	47.075	SES-1539822		3,380	-
Detection and Impact of Industrial Subsidies: the Case of World Shipbuilding	47.075	SES-1701898		56,360	-
Doctoral Dissertation Improvement: Unwelcome guests - rodent-human cohabitation and disease transfer in sedentary human populations	47.075	BCS-1413050		1,990	-
Doctoral Dissertation Research in Economics: ETFs and Arbitrage under Liquidity Mismatch	47.075	SES-1628986		21,125	-
Doctoral Dissertation Research: Disconnected and Uninformed: Dissecting and Dismantling India's Political Gender Gap	47.075	SES-1560668		18,657	-
Doctoral Dissertation Research: The Rise of Iron in the Land of the Golden Fleece: The Technology and Organization of Metal Production in Late Bronze Age and Early Iron Age Colchis	47.075	BCS-1338893		3,998	-
Doctoral Dissertation: The Political Effects of Rule-Based Social Policies	47.075	SES-1560659		18,419	-
Dynamic Choice in an Uncertain World	47.075	SES-1258665		17,444	-
Emergent Forms of Expression in Postsocialist Contexts	47.075	BCS-1420937		37,467	-
Endangered species as food; interdisciplinary approaches to stemming biodiversity loss and food security	47.075	1557834		101,494	-
Erbil Plain Archaeological Survey	47.075	BCS-1261118		41,718	-
From Missing Persons To Critical Biography: Reframing Minority Identity in the History of Science, Technology, and Medicine	47.075	SES-1556531		24,999	-
IBSS: Global Urbanization and Housing Affordability: Poverty, Property, and the City	47.075	SMA-1520103		194,177	-
Identifying cross-disciplinary pathways to translational science	47.075	SMA-1360042		95,792	-
INSPIRE:Executive Function and Conceptual Change	47.075	BCS-1247396		52,681	-
Learning-based motivation of intergroup aggression	47.075	BCS-1551559		123,312	-
Preferences in Matching Market Design	47.075	SES-1459912		37,457	-
RAPID: Characterizing El Nino Runoff And Sedimentation in Small Drainage Basins: A Geoarcheological Study	47.075	BCS-1611881		1,334	-
RIDIR: Collaborative Research: Portal to Data and Analysis Tools: Enabling Data-Intensive Research in the Urban Sciences on Linked, Large-Scale Records	47.075	SES-1637136		1,956	-
Standard Research Grant: A Comparitive Study of Three Models of Innovation in Their Transnational Implementation	47.075	SES-1457011		33,126	-
Standard Research Grant: The Fukushima Disaster and the Politics of Nuclear Power in the United States and Japan	47.075	SES-1257117		21,102	-
Statistical decisions and policy choice	47.075	SES-1354144		57,220	-
Statistical Methods for Causal Inference in Geographic Regression Discontinuity Designs	47.075	SES-1461435		59,787	-
Subject Preference and Ergativity	47.075	BCS-1144223		(10)	-
Territory management in organizations: Modeling an intergroup phenomenon	47.075	SES-1560916		65,734	-
The Boston Reentry Study - Analysis and Preparation of Public Use Data	47.075	SES-1627693		55,486	-
The developmental genetic basis for evolutionary variation in the hominin shoulder	47.075	BCS-1518596		109,938	24,916
The Effects of Sadness Versus Gratitude on Economic Decision Making and Addictive Behavior	47.075	SES-1559511		86,807	-
The importance of confidence in predicting labor market outcomes	47.075	SES-1713752		1,193	-
The Psycholinguistics of Morality	47.075	SMA-1513815		113,576	-
We walk where the devil dances: Security and rescue on the U.S. - Mexico border	47.075	BCS-1724749		19,922	-
Workshop: Historical and Social Scientific Perspectives on Life and its Cycles	47.075	SES-1632300		2,803	-
Subtotal of 47.075				**2,989,721**	**599,133**
Bringing Team-Based, Project-Based Learning to Scale	47.076	DUE-1504664		97,823	10,431
CAREER: Soft Robotics for Upper Extremity Rehabilitation	47.076	CBET-1454472		47,631	-
CAREER:Statistical Modeling of Single Cell States Informative	47.076	DBI-1452964		74,967	-
Collaborative Research: A Study of How Pre-College Informal Activities Influence Female Participation in STEM Careers	47.076	DRL-1612375		73,738	-
Collaborative Research: From knowledge consumers to knowledge producers: A scalable experiential learning approach for psychology and related disciplines	47.076	DUE-1625130		172,948	-
Collaborative Research: Innovative Technology-Enabled Astronomy for Middle Schools II (TEAMS II)	47.076	DRL-1433431		52,717	21,872
Collaborative Research: Leveraging Comparison and Explanation of Multiple Strategies (CEMS) to Improve Algebra Learning	47.076	1561283		198,293	-
Collaborative Research: Thinking Spatially About the Universe- A Physical and Virtual Model for Middle School Science	47.076	DRL-1503395		343,626	112,526
Core Systems for Learning Mathematics	47.076	DRL-1348140		217,772	-
Developing Common Core Classrooms Through Rubric-Based Coaching	47.076	DRL-1348144		164,720	49,229
EAGER: Assessing Established and Alternative Citation, Attribution and Impact Metrics for Scientific Software through Data Mining and Direct Tracking Methods	47.076	ACI-1448069		57,118	-
EAGER: Collaborative Research: Framing Learning for MOOC Student Success: Using Pre-Course Survey Interventions to Support Student Persistence and Performance in MOOCs	47.076	DUE-1646978		44,319	-
EAGER: Student Outcomes in a Computer Science MOOC (SOCSMOOC)	47.076	DUE-1352696		95,137	656

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
EcoMOBILE: Blended real and virtual immersive experiences for learning complex causality and ecosystems science	47.076	DRL-1118530		77,801	-
EcoXPT: Affordances for experimentation in an immersive world to support the learning of ecosystem science and complex causality	47.076	DRL-1416781		936,169	10,523
Effects of ADVANCE in the STEM Disciplines: Faculty Diversity, Women in Leadership, and Institutional Transformation	47.076	DGE-1444586		121,582	12,363
Graduate Research Fellowship Program	47.076	DGE-1144152		10,721,124	-
Integrating Computational Thinking in Ecosystem Science Education via Modeling in Immersive Virtual Worlds	47.076	DRL-1639545		334,980	-
Investigating the Effect of Professional Development, Mathematical Knowledge for Teaching, and Instruction on Student Outcomes	47.076	DRL-0918383		137,687	49,037
IUSE: A Pedagogical Framework for Undergraduate Project-Based Engineering Design Courses	47.076	DUE-1524902		195,317	-
MOSART HSLS: Misconceptions Oriented Standards-based Assessment Resource for Teachers of High School Life Science	47.076	DRL-1316645		377,850	-
MOSART HSPS: Misconceptions Oriented Standards-Based Assessment Resource for Teachers of High School Physical Sciences	47.076	DRL-1621210		256,105	-
Outcome Predictions of Students in Massive Open Online Courses (OPSMOOC)	47.076	DRL-1337166		120,177	1,063
Outreach Programs and Science Career Intentions (OPSCI)	47.076	DUE-1161052		126,173	9,279
Professional Development Models and Outcomes for Science Teachers (PDMOST)	47.076	DRL-1417438		309,699	96,637
Strengthening the Research Base that Informs STEM Workforce and Curriculum Improvement Efforts	47.076	DRL-1348669		18,824	-
Survey Of U.S. Middle School Mathematics Teachers And Teaching	47.076	DRL-1417731		453,258	90,373
The Mathematical Knowledge for Teaching Measures: Refreshing the Item Pool	47.076	DRL-1620914		484,267	25,346
Visualizing Protein Interactions and Dynamics: Evolving a visual language to support learning in undergraduate science education	47.076	DUE-1220512		130,209	33,436
Subtotal of 47.076				**16,442,031**	**522,771**
Collaborative Research: Evaluating the Competing Impacts of Global Emissions Reductions and Climate Change on the Distribution and Retentior of selected POPs in the Arctic Ocean	47.078	1203496		12,103	-
Collaborative Research: Imaging the Beginning of Time from the South Pole: Observations with the Full SPUD Array	47.078	PLR-1145172		396,303	280,972
Subtotal of 47.078				**408,406**	**280,972**
BIGDATA: Mid-Scale: ESCE: DCM: Collaborative Research: DataBridge - A Sociometric System for Long-tail Science Data Collections	47.080	OCI-1247602		16,766	-
CDI Type II: Bridging the Computational Semantic Gap: A Demand-Driven Framework for Portal-Based Chemistry, Astronomy and Neurobiology	47.080	OIA-1125087		3,465	-
Subtotal of 47.080				**20,231**	**-**
CCSP Collaboration Plan for Harvard University: Development of a Unified Structural Representation for Central California	47.Contract	172625-1		50,001	-
Thermal Decomposition/incineration of Nano-Enabled Productos (NEPs): Environmental Health and Safety Implications	47.Contract	1436450		118,967	-
Subtotal of 47.Contract				**168,968**	**-**
Epistemic Uncertainties in Ground Motion Prediction from Virtual Earthquakes	47.RD	No Awrd Nmbr		23,638	-
Loomis Student Observing Support (SOS) ALMA Cycle 3	47.RD	AST-0836064		29,360	-
PhenoCam Network proposal to archive, process, and serve NEON digital camera imagery	47.RD	4010-0392-000		41,413	5,482
Subtotal of 47.RD				**94,411**	**5,482**
Total for National Science Foundation Direct Award				**59,770,536**	**5,499,114**
Total for Research and Development Cluster Direct Award				**538,021,257**	**130,176,027**
Research and Development Cluster					
Pass-through Program					
Agency for International Development					
College of William & Mary - Transparency in the Distribution of Food Aid: Two Social Experiments in Indonesia	98.001		740681-V	13,587	-
International Medical Corps - Building a Better Response: Strengthening Non-Governmental Organization (NGO) Capacity and Engagement in the International Humanitarian Architecture	98.001		AID-OFDA-A-12-00002/2017	285,804	118,119
Tufts University - Feed the Future Innovation Lab for Collaborative Research on Nutrition - Africa	98.001		AID006	95,338	-
Tufts University - Feed the Future Innovation Lab for Collaborative Research on Nutrition - Asia	98.001		AID-OAA-L-10-00005	38,216	-
Subtotal of 98.001				**432,945**	**118,119**
Deloitte Consulting, LLP - Health Financing and Economics Course Curriculum Development with the Academy of Ukraine (HFEC)	98.Contract		101506	71,043	-
University of Washington - Evaluating antiretroviral (ARV)-based prevention In HIV-1 serodiscordant couples In Kenya and Uganda	98.Contract		UWSC7068	7,186	-
Subtotal of 98.Contract				**78,229**	**-**
South Africa Partners, Inc. - Albertina Susulu Executive Leadership Program in Health (ASELPH)	98.RD		AID-674-A-13-00002	137,916	-
University Research Co., LLC - Applying Science to Strengthen and Improve Systems (ASSIST)	98.RD		FY13-S04-8800-00	130,874	-
University Research Co., LLC - Translating Research into Action (TRAction)	98.RD		FY10-S01-6990	(71,299)	-
Subtotal of 98.RD				**197,491**	**-**
Total for Agency for International Development Sub Award				**708,665**	**118,119**
Department of Agriculture					
Duke University - A pilot program to increase selection of frequently consumed healthier SNAP-eligible ready to heat foods	10.253		343-0550	30,976	7,506
Subtotal of 10.253				**30,976**	**7,506**
University of New Hampshire - Cracking the code of a northern forest carbon cycle: an integrated analysis using data, models and assessment of uncertainties	10.652		15-055	6,215	-

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Subtotal of 10.652				**6,215**	-
Woods Hole Research Center - Integrated Belowground Greenhouse Gas Flux Measurements and Modeling	10.RD		WHRC-EGO566-01	39,174	-
Subtotal of 10.RD				**39,174**	-
Total for Department of Agriculture Sub Award				**76,365**	**7,506**
Department of Commerce					
Georgetown University - Formal Privacy Models and Title 13	11.016		AWD-7772402/GR205353	11,471	-
Subtotal of 11.016				**11,471**	-
University of Texas - Austin - South West Academy of Nanoelectronics (SWAN) 2.0	11.RD		UTA13-000445	63,232	-
Subtotal of 11.RD				**63,232**	-
Total for Department of Commerce Sub Award				**74,703**	-
Department of Defense					
University of Pittsburgh - Stimuli Responsive, Reloadable, Drug Eluting, Smart Hydrogels for Graft Targeted Immunosuppression in Vascularized Composite Allotransplantation	12.240		0046763 (411417-1)	226,756	-
Subtotal of 12.240				**226,756**	-
Columbia University - Imaging how a neuron computes	12.300		1 (GG008784)	72,456	-
Drexel University - Neuromechanics of sensory-mediated gait control in fish swimming	12.300		204135-Harvard	122,169	-
Massachusetts Institute of Technology - Global Vulnerability Markets: Using Dynamic Simulations	12.300		5710004084	14,010	-
Massachusetts Institute of Technology - Provably-Stable Vision-Based Control of High-Speed Flight through Forest and Urban Environments	12.300		5710002910	9,418	-
Naval Research Laboratory - Innervated Blood-Brain-Barrier Tissue for the Study of Neuroinvasion by VEEV	12.300		N00173-16-2-C007	351,032	-
Princeton University - MURI: Slippery Liquid-Infused Porous Surfaces (SLIPS) for Turbulent Drag Reduction at High Reynolds Number	12.300		2060	64,704	-
Regents of the University of California - Berkeley - Carbon-based Hierarchically Integrated Synthetic Electronics (CHISEL)	12.300		9294	67,174	-
Regents of the University of Minnesota - Roll-to-Roll, High Speed Printing of Multi-functional, Distributed Sensor Networks for Enhancing the Brain-Machine Interface	12.300		A002181206-DOD35CAP	104,557	-
Trustees of Boston University - Utilizing Synthetic Biology to Create Programmable Micro-Bio-Robots	12.300		4500000551	137,503	-
University of Maryland, College Park - SEA-STAR: Soft Echinoderm-Inspired Appendages for Strong Tactile Amphibious Robots	12.300		43637-Z8665002	68,448	-
University of Pittsburgh - Nanoscale Terahertz, Infrared and Plasmonics Platform Using Graphene - Complex Oxide Heterostructures	12.300		0035700 (409185-1)	205,070	-
University of Pittsburgh - Nanoscale Terahertz, Infrared and Plasmonics Platform using Graphene-Complex Oxide Hetereostructures	12.300		0035700(409185-5)	(58,935)	-
University of Virginia - EN-MAE Bio-Inspired Flexible Propulsors for Fast, Efficient Swimming: What Physics are we missing	12.300		GG13311 146905	123,822	-
Subtotal of 12.300				**1,281,428**	-
Brigham and Women's Hospital, Inc - Extremity regeneration of soft tissue lijury using growth factor impregnated gels	12.420		115662	158,639	-
Children's Hospital Boston - Development of novel local analgesics for management of acute tissue injury pain	12.420		RSTFD0000651291	139,543	-
Children's Hospital Boston - Rapidly Deployable Device for Minimally Invasive Dynamic Augmentation of the Ventricular Ejection	12.420		GENFD0001190511	24,565	-
Dana-Farber Cancer Institute - Identify the metabolic dependencies of obesity- associated aggressive prostate cancer to develop tailored imaging and therapeutic approaches	12.420		3083201	5,018	-
Florida State University - New Approach to the Measurements of Suicide-Related Cognition	12.420		R01671	24,338	910
Johns Hopkins School of Medicine - Developing a PTEN-ERG Signature to Improve Molecular Risk Stratification in Prostate Cancer	12.420		2003162452	4,034	-
Johns Hopkins School of Public Health - Realizing the translational potential of telomere length variation as a tissue-based prognostic marker for prostate cancer	12.420		2001706122	27,828	-
The Metis Foundation - A New Platform for Burn Treatment and for Delayed Evacuation of Service Members	12.420		S-W81XWH-16-1-0784-001	61,600	-
Subtotal of 12.420				**445,565**	**910**
Arizona State University - Translating Biochemical Pathways to Non-Cellular Environment	12.431		13-951	198,362	152,321
Board of Regents of the University of Wisconsin - Madison - OPTION 1: Qubits in Gate-Defined Silicon Quantum Dots	12.431		752K205	38,926	-
Board of Trustees of the University of Illinois - Adaptive Exploitation of Non-Commutative Multimodal Information Structure	12.431		2015-05174-02	143,548	-
Duke University - Evolutionary Mechanics of Impulsive Biological Systems: Guiding Scalable Synthetic Design	12.431		313-0588	197,248	-
Massachusetts Institute of Technology - Managing Uncertainty: Principles for Robust and Dextrous Continuum Mechanics	12.431		5710003877	94,993	-
Massachusetts Institute of Technology - Multi- Qubit Enhanced Sensing and Metrology	12.431		5710003135	207,613	-
Massachusetts Institute of Technology - Novel States of Light and Matter Mediated by Collective Rydberg Excitations	12.431		5710003824	59,835	-
Princeton University - The Physics of Surface States with Interactions mediated by Bulk Properties, Defects and Surface Chemistry	12.431		SUB0000145	71,473	-
Regents of the University of California - San Diego - Dynamic Artificial Cells Composed of Synthetic Bioorthogonal Membranes	12.431		28401353	244,479	-
Regents of the University of California - Santa Barbara - Continuation Study: A Systems Approach to Understanding Post-Traumatic Stress Disorder	12.431		KK1620-a	75,565	-
Regents of the University of California - Santa Barbara - Quantum BioImaging with Diamond Spins (QuBIDS)	12.431		KK1201	(10,267)	-
Regents of the University of Minnesota - MURI: Multiscale Mathematical Modeling and Design Realization of Novel 2D Functional Materials	12.431		A004135001	914,818	-
Trustees of Boston University - Synthetic Mammalian Gene Regulatory Circuits for In Vivo Biomedical Applications	12.431		4500000572	83,157	-
University of Chicago - Fundamental Issues in Non-equilibrium Dynamics (MURI)	12.431		FP054294-B	133,635	-

The accompanying notes are an integral part of this schedule.

Harvard University
Schedule of Expenditures of Federal Awards
Year Ended June 30, 2017

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
University of Maryland, College Park - Center for Distributed Quantum Information	12.431		26234-Z8401003	449,066	-
University of Maryland, College Park - MURI:Atomtronics: Material and Device Physics of Quantum Gases	12.431		Z841802	26,292	-
University of Pittsburgh - Four-dimensional Printing: Design, Assembly, and Modeling of Responsive, Temporally Programmable Materials	12.431		0036744 (409347-1)	37,558	-
University of Southern California - Closed-Loop Multisensory Brain-Computer Interface for Enhanced Decision Accuracy	12.431		79575749	114,932	-
Yale University - High-Resolution Quantum Control of Chemical Reactions	12.431		C13J11491(J00210)	325,399	-
Subtotal of 12.431				**3,406,632**	**152,321**
Henry M. Jackson Fndn for the Advancement of Military Med - Army Study to Assess Risk and Resilience in Service Members (STARRS 2)	12.750		2878	1,271,761	29,776
Subtotal of 12.750				**1,271,761**	**29,776**
Cornell University - Plant-mimetic functional materials for thermal management and suppression of freezing	12.800		70777-10397	56,536	-
Georgia Institute of Technology/Georgia Tech Research Corporation - Multi-functional Light-Matter Interfaces based on Neutral Atoms and Solids	12.800		RC413-G4	7,941	-
Massachusetts Institute of Technology - Advanced Quantum Materials: A New Frontier for Ultracold Atoms	12.800		5710003646	483,047	-
Massachusetts Institute of Technology - FATE: Foldable and Adaptive Two-Dimensional Electronics	12.800		5710003988	175,394	-
Massachusetts Institute of Technology - Optimal Measurements for Scalable Quantum Technologies	12.800		5710003649	231,344	-
Regents of the University of California - San Diego - Applications of Quantum Computing in Aerospace Science and Engineering	12.800		10323836 - SUB	44,537	-
Regents of the University of California - Santa Barbara - Quantum Memories in Photon - Atomic - Solid - State Systems	12.800		KK1225	250,960	-
Rice University - Science and Emerging Technology of 2D Atomic Layered Materials and Devices	12.800		R18644	7,136	-
Stanford University - Integrated Hybrid Nanophotonic Circuits	12.800		29017980-51649-A	98,850	-
Stanford University - Large Scale Integrated Nanophotonics	12.800		29676680-51649-E	44,403	-
University of Illinois at Urbana - Champaign - TEMPLATE-DIRECTED DIRECTIONALLY SOLIDIFIED EUTECTIC METAMATERIALS	12.800		2012-02298-04 (A0080)	141,500	-
University of Maryland, College Park - Photonic Quantum Matter	12.800		42692-Z8183002	291,693	-
University of Pennsylvania - Geometry and Topology of Complex Networks	12.800		561009	131,163	-
University of Texas - Austin - Ultralow power, Ultrafast, Integrated Nano-Optoelectronics	12.800		UTA16-001252	262,440	-
Subtotal of 12.800				**2,226,944**	**-**
Columbia University - Development and Application of Silicon-Chip-Based Mid-infrared Frequency Combs	12.910		1-GG012379-03	439,805	-
Regents of the University of Michigan - An Algorithm for Cellular Reprogramming	12.910		3003810373	(6,895)	-
Regents of the University of Michigan - An Algorithm for Cellular Reprogramming	12.910		3004211572	18,000	-
The J. David Gladstone Institutes - Engineering Therapies that Evolve to Autonomously Control Epidemics (seedling)	12.910		R02116-A	45,777	-
University of Illinois at Urbana - Champaign - Cognitively-Based Unsupervised Grammar Induction for Low-Resource Languages	12.910		2015-03967-02 (15608)	24,568	-
Subtotal of 12.910				**521,255**	**-**
Beth Israel Deaconess Medical Center - Development of Ultrasound to Measure In-vivo Dynamic Cervical Spine Mechanics for Injury Prevention	12.Contract		1026018	5,234	-
Charles River Analytics Inc. - Enabling Large-Scale Social Analysis with Games (ELSA)	12.Contract		SC1604701	5,229	-
Charles River Analytics Inc. - Probabilistic Representation of Intent Commitments to Ensure Software Survival (PRINCESS)	12.Contract		SC1512202	248,315	-
Charles Stark Draper Laboratory, Inc. - Nano-Litz: Braided Nano-wires for High Performance RF Components	12.Contract		SC001-0000000949	532,085	-
Charles Stark Draper Laboratory, Inc. - Nano-Litz: Braided Nano-wires for High Performance RF Components	12.Contract		SC001-0000000950	243,623	-
Griffiss Institute - Understanding Alternating Minimization for Generalized Low-Rank Models: Theory, Analysis and Applications	12.Contract		ICA2016-08-PIA3-025EXT	10,000	-
International Business Machines Corporation - DARPA-BAA-12-24, Power Efficiency Revolution For Embedded Computing Technologies (PERFECT)	12.Contract		A20314	497,030	-
Kitware, Inc. - The Visualization Design Environment	12.Contract		A19029	32,911	-
Lincoln Laboratory - Covert Anomalous Network DIscovery and Detection	12.Contract		7000299977	10,062	-
Lincoln Laboratory - Machine Learning applications to the classical processing challenges of quantum error correction	12.Contract		7000381754	17,506	-
Lincoln Laboratory - Materials Development for 3D Printing of Low-Loss RF Devices	12.Contract		7000297417	7,439	-
Lincoln Laboratory - Photonic Device Development at Harvard University	12.Contract		7000136946	51,355	-
Lincoln Laboratory - Precursor and film growth development for the deposition of superconducting plugs	12.Contract		7000335656	47,149	-
Massachusetts General Hospital - Species Inspired Research For Innovative Treatments (SPIRIT)	12.Contract		227668	109,078	-
Nano Terra - A Novel Strategy for Treating Peripheral Nerve Injury	12.Contract		20160229	200,115	-
Nano Terra - Simple Real-time Detectors for VX	12.Contract		No Awrd Nmbr	66,290	-
Nano Terra - Using Magnetic Levitation for Non-Destructive Detection of Defective and Counterfeit Material	12.Contract		No Awrd Nmbr	51,521	-
NVIDIA Corporation - MATCH: Modular Approach To Circuits and Hardware	12.Contract		No Awrd Nmbr	216,638	-
Regents of the University of California - Santa Barbara - Task 27: Bio-Inspired Synchronization and Sensors for Distributed Mobile Gunfire Detection Enhancing Situational Awareness	12.Contract		KK1635	128,183	-
Regents of the University of Michigan - Unlocking the Promise of Near-memory Computing with Rapid Co-design of Data/Hardware Systems	12.Contract		3004212102	165,869	-
Southern Methodist University - Obtaining Multipath and Non-line-of-sight Information by Sensing Coherence and Intensity with Emerging Novel Techniques	12.Contract		G001534-7510	125,243	-
Trustees of Boston University - Topological Methods for Design and Control of Adaptive Stochastic Complex Systems	12.Contract		4500002156	104,752	-

The accompanying notes are an integral part of this schedule.

Harvard University
Schedule of Expenditures of Federal Awards
Year Ended June 30, 2017

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
UES, Inc. - Printed Flexible Electronics	12.Contract		S-999-122-002	22,551	-
Universal Technology Corporation - Determining the elastic constants of a material using micro-scale measurements	12.Contract		14-S7133-01-C1	60,606	-
University of Utah - CRA: Computationally-Guided Design of Energy Efficient Electronic Materials (CDE3M)	12.Contract		10028801-HARVARD-APP	8,588	-
Subtotal of 12.Contract				**2,967,372**	**-**
Johns Hopkins University - Fusion and Inference from Multiple and Massive Disparate Distributed Dynamic Data Sets	12.RD		2001907410	76,430	-
Subtotal of 12.RD				**76,430**	**-**
Total for Department of Defense Sub Award				**12,424,143**	**183,007**
Department of Education					
Regents of the University of California - Berkeley - Investigating How and Under What Conditions Effective Professional Development Increases Student Achievement in Elementary Science	84.305		8819	33,896	-
University of Virginia - Efficacy of the Core Knowledge Language Arts Listening and Learning Read Aloud Program in Kindergarten through Second Grade Classrooms	84.305		GM10157 152225	27,383	-
Subtotal of 84.305				**61,279**	**-**
Northwestern University - Contexts Inside and Outside of School Walls as Predictors of Differential Effectiveness in Preschool Professional Development	84.305A		SP0034839-PROJ0009316	85,734	-
Subtotal of 84.305A				**85,734**	**-**
Brown University - Using Teacher Evaluation Data to Drive Instructional Improvment: Evidence from the Evaluation Partnership Program in Tennessee	84.305E		815	96,401	-
Subtotal of 84.305E				**96,401**	**-**
Strategic Education Research Partnership - Catalyzing comprehension through discussion and debate	84.305F		No Awrd Nmbr	127	-
Subtotal of 84.305F				**127**	**-**
Tennessee Department of Education - Setting Students Up for Success	84.372A		33145-01417	91,787	-
Subtotal of 84.372A				**91,787**	**-**
ICF International, Inc - A Randomized Experiment Using Report Card Content to Nudge Attendance	84.Contract		14TJSK0003	(18,120)	-
Manpower Demonstration Research Corporation - Impact Evaluation of Multi-tiered Systems of Support for Behavior	84.Contract		No Awrd Nmbr	105,649	-
Manpower Demonstration Research Corporation - Supporting Early Learning from Preschool Through Elementary School Grades: Research Network Proposal	84.Contract		No Awrd Nmbr	284,514	-
University of Colorado at Boulder - Center for the Study of Interactive Knowledge Utilization	84.Contract		1551538	215,435	-
Subtotal of 84.Contract				**587,478**	**-**
Total for Department of Education Sub Award				**922,806**	**-**
Department of Energy					
Board of Regents of the University of Arizona - The utility of multiple ecological data streams in constraining the Community Land Model	81.049		173307	77,426	-
California Institute of Technology - DOE EFRC: Light-Materials Interactions in Energy Conversion	81.049		67N-1095805	261,100	-
Johns Hopkins University - Systems Biology of Autotrophic-Heterotrophic Symbionts for Bioenergy	81.049		2002373313	98,782	-
Massachusetts Institute of Technology - Center for Excitonics	81.049		5710003733	392,005	-
Northwestern University - Center for Bio-Inspired Energy Science (CBES)	81.049		SP0027267-PROJ0007134	256,314	-
Subtotal of 81.049				**1,085,627**	**-**
Clemson University - All-Digital Plug and Play Passive RFID Sensors for Energy Efficient Building Control	81.086		1883-219-2021621	28,284	-
Subtotal of 81.086				**28,284**	**-**
California Institute of Technology - Real-time optimization and control of next-generation	81.135		81-1097358	94,557	-
International Business Machines Corporation - An Intelligent Multi-modal CH4 Measurement System (AIMS)	81.135		4915012643	23,898	-
Massachusetts Institute of Technology - Engineering high yield pathways for methane activation and conversion to liquid fuels	81.135		5710003630	236,283	-
Subtotal of 81.135				**354,738**	**-**
Argonne National Laboratory - Femtosecond Fabrication	81.Contract		6F-32021	42,253	-
Battelle Memorial Institute - Mid-Atlantic Offshore Carbon Storage Resource Assessment Project	81.Contract		516545	60,796	-
Brookhaven National Laboratory - LSST Science Rafts	81.Contract		270164	83,155	-
Brookhaven National Laboratory - Upgrade Construction Project for WBS 1.2.4.1 New Small Wheel Subsystem	81.Contract		319134	91,163	-
Brookhaven National Laboratory - WBS 1.2.1 NSW ATLAS Phase I upgrade project	81.Contract		304913	9,400	-
Fermi National Accelerator Laboratory - NOvA Experiment Operations	81.Contract		621383	13,534	-
International Business Machines Corporation - Improving the Efficiency of Copper Zinc Tin Sulfide Solar Cells	81.Contract		4913900074	(4,503)	-
Lawrence Berkeley National Lab - Investigating the Nature of Dark Energy using Type Ia Supernovae with the WFIRST-AFTA Space Mission	81.Contract		7341745	1,349	-
Lawrence Berkeley National Lab - Operation of the Harvard Forest Core Site in the AmeriFlux Network Management Project (ANMP)	81.Contract		7086573	332,393	-
Lawrence Berkeley National Lab - Scalable Statistics and Machine Learning for Data-Centric Science	81.Contract		7086227	70,545	-
Lawrence Livermore Laboratory - Development of a Virtual Human Heart to Predict the Pharmacology of Novel Drugs	81.Contract		B618243	133,843	-

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Lawrence Livermore Laboratory - Direct ink writing of multifunctional materials and sensors	81.Contract		B606991	41,153	-
Lawrence Livermore Laboratory - Fabrication and Scale-up of Capsules for Carbon Capture	81.Contract		B612803	84,869	-
Lawrence Livermore Laboratory - Guiding the design of vaccination strategies aimed toward generating broadly neutralizing antibodies against highly mutable pathogens: HIV and Influenza as case studies	81.Contract		B620984	94,678	-
National Renewable Energy Laboratory - Center for Next Generation of Materials by Design: Incorporating Metastability	81.Contract		ZGJ-4-42246-01	288,416	-
Oak Ridge National Laboratory - Adaptive biosystems imaging	81.Contract		4000132153	(20)	-
Pacific Northwest National Laboratory - Aqueous Soluble Organic Molecule and Electrode Development	81.Contract		304500	154,802	-
SLIPS Technology - Fuel Saving SLIPS Non-Toxic Foul Impede Coating on Ship Hulls	81.Contract		STI DE-AR0000759-01	261,460	-
Stanford Linear Accelerator Center - LSST Corner Rafts and Integration and Testing	81.Contract		150854	872,100	-
UChicago Argonne, LLC - Joint Center for Energy Storage Research (JCESR)	81.Contract		3F-31143	168,689	-
Subtotal of 81.Contract				**2,800,075**	**-**
Brookhaven National Laboratory - Upgrade Construction Project for WBS 1.2 New Small Wheel Subsystem	81.RD		241383	84,448	-
Subtotal of 81.RD				**84,448**	**-**
Total for Department of Energy Sub Award				**4,353,172**	**-**
Department of Homeland Security					
Skidmore College - Understanding and Preventing SCD in the Fire Service	97.044		32164-6121-01	101,860	-
Subtotal of 97.044				**101,860**	**-**
University of Southern California - Communicating Probability in Intelligence Analysis and Homeland Security	97.061		65796630	10,637	-
Subtotal of 97.061				**10,637**	**-**
Total for Department of Homeland Security Sub Award				**112,497**	**-**
Department of Housing & Urban Development					
Neighborhood Reinvestment Corporation - The Edward M. Gramlich Fellowship in Community and Economic Development Summer Fellowship Program	14.RD		No Awrd Nmbr	21,709	-
Neighborhood Reinvestment Corporation - The Edward M. Gramlich Fellowship in Community and Economic Development Summer Fellowship Program - Summer 2017	14.RD		No Awrd Nmbr	10,000	-
Subtotal of 14.RD				**31,709**	**-**
Total for Department of Housing & Urban Development Sub Award				**31,709**	**-**
Department of Transportation					
Massachusetts Institute of Technology - The Experience with Managed Toll Lanes	20.701		5710003788	48,458	-
Subtotal of 20.701				**48,458**	**-**
Weidlinger Associates Inc. - Defect Growth Characterization in Modern Steel	20.Contract		Harvard-21612000-151	6,882	-
Subtotal of 20.Contract				**6,882**	**-**
Massachusetts Institute of Technology - Recreating Livable Communities after Catastrophe: Managing the Recovery from Japans Earthquake, Tsunami, and Nuclear Disaster of 2011	20.RD		5710003789-003	60,768	-
Massachusetts Institute of Technology - Teaching Case Study on Resilient Cities and Transportation	20.RD		5710003790	5,651	-
Massachusetts Institute of Technology - The Local Effects of the American Recovery and Reinvestment Act on Economic Activity and Traffic Safety	20.RD		5710003792	81,615	-
Massachusetts Institute of Technology - Transforming Urban Transport, a Set of Case Studies	20.RD		5710003791	72,758	-
Massachusetts Institute of Technology - Transportation Stimulus Spending and Long Term Unemployment	20.RD		5710003793	39,802	-
Massachusetts Institute of Technology - UTC 25 The Politics of Transport Policy in the Greater Copenhagen Region, Part 2	20.RD		5710003794	42,256	-
Subtotal of 20.RD				**302,850**	**-**
Total for Department of Transportation Sub Award				**358,190**	**-**
Department of Veterans Affairs					
Price Waterhouse Coopers - Perceptive Reach	64.Contract		PO0400072	61,700	-
VA Health Services Research and Development Service - IPA - Boris Hejblum	64.Contract		No Awrd Nmbr	13,717	-
Subtotal of 64.Contract				**75,417**	**-**
Total for Department of Veterans Affairs Sub Award				**75,417**	**-**
DHHS					
AIDS Prevention Initiative in Nigeria, Ltd/Gte. - Engaging Indigenous Organizations to Sustain and Enhance Comprehensive Clinical Services for the Prevention, Care and Treatment of HIV/AIDS in Nigeria under PEPFAR	93.067		HSPH-01	665,344	146
Beth Israel Deaconess Medical Center - Building Capacity of the Vietnam Health System through Provision of HIV/AIDS Clinical Care Mentorship and Technical Assistance	93.067		1028816	7,448	-
Beth Israel Deaconess Medical Center - Building Capacity of Vietnamese Health Systems	93.067		1028816	29,135	-
Botswana Harvard AIDS Institute Partnership - 2-year Infant Mortality by HIV Exposure, PMTCT Prophylaxis Strategy, and Feeding	93.067		No Awrd Nmbr	3,620	-
Jos University Teaching Hospital - Reaching 90 percent target of HIV viral suppression: The role of point of care VL monitoring in resources constrained settings	93.067		SPH	18,111	-

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Nigerian Institute of Medical Research - HIV Drug Resistance: Implications for Optimizing Antiretroviral Therapy	93.067		HSPH	(6,734)	-
Subtotal of 93.067				**716,924**	**146**
Health Research, Inc. - Models for Tobacco Product Evaluation	93.077		100-05	23,584	-
Subtotal of 93.077				**23,584**	**-**
Harvard Pilgrim Health Care, Inc - Epicenter IV: CLUSTER Trial for Outbreak Detection and Response	93.084		No Awrd Nmbr	62,201	-
Subtotal of 93.084				**62,201**	**-**
Weill Medical College of Cornell University - Creating National Surveillance Infrastructure for Priority Medical Devices	93.103		15111825-02	42,348	-
Subtotal of 93.103				**42,348**	**-**
Boston University School of Public Health - Endocrine Disrupting Chemicals and Risk of Uterine Fibroids: A Prospective Study	93.113		4500001944	27,535	-
Boston University School of Public Health - Validation of Portable XRF for Invivo Measurement of Heavy Metal Exposures	93.113		4500002203	77,521	-
Brigham and Women's Hospital, Inc - Cardiovascular Response to CAP Microbial Components in Controlled Human Exposures	93.113		111789	15,953	-
Brigham and Women's Hospital, Inc - Environmental Risk Factors for Autistic Behaviors in a Cohort Study	93.113		112900	8,444	-
Brown University - Ambient Air Pollution and Incident Stroke	93.113		545	108,320	-
Brown University - Residential Air Pollution and Preeclampsia	93.113		628	5,677	-
Children's Hospital Boston - Does Arsenic Increase Risk of Neural Tube Defect in a Highly-exposed Population	93.113		RSTFD0000689034	103,008	-
Columbia University - BPA, Phthalates and Stress: Mechanisms and Interactions for Childhood Obesity	93.113		3(GG010656-01)	22,475	-
Columbia University - Circulating microRNAs in Extracellular Vesicles, Air Particulate Pollution, and Lung Function in an Aging Cohort	93.113		1(GG010691-01)	9,697	-
Columbia University - Early Exposure to Persistent Organic Pollutants, Breast Milk Extracellular Vesicles and Abnormal Cardiometabolic Programming	93.113		1(GG010657-01)	3,693	-
Harvard Pilgrim Health Care, Inc - Longitudinal Associations of PFCs with Obesity Diabetes, and Metabolic Syndrome	93.113		PH000552C	36,497	-
Icahn School of Medicine at Mount Sinai - Neurologic Function in Children Exposed to Ambient Manganese	93.113		0255-0182-4609	5,044	-
Icahn School of Medicine at Mount Sinai - Stress-Lead Interactions and Child Development	93.113		0255-5541-4609	10,239	-
Icahn School of Medicine at Mount Sinai - Stress-Lead Interactions and Child Development	93.113		0255-5542-4609	1,464	-
Mount Sinai Medical Center - Novel Biomarker to Identify Critical Windows of Susceptibility to Metal Mixtures: Resubmission	93.113		0255-1871-4609	5,297	-
Northeastern University - Impact of Air Pollution, Weather and Lifestyle on Health in Older Americans	93.113		500323	3,568	-
Oregon State University - Developmental Exposure to Arsenic, PAHs, and Immune Function in Children	93.113		P0388A-B	43,532	-
Silent Spring Institute - Data Sharing and Privacy Protection in Digital-Age Environmental Health	93.113		7511-SEAS	55,552	-
University of Southern California - Mitochondrial susceptibility to traffic-related pollution and neonatal health	93.113		65108860	(4,085)	-
Yale University - Effects of Fine Particle (PM2.5) Composition on Birth Outcomes	93.113		M12A11203(A08478)	(9,084)	-
Yale University - Indoor Nitrogen Dioxide Exposure and Children with Asthma: An Intervention Trial	93.113		M15A11946-A09959	33,835	-
Subtotal of 93.113				**564,182**	**-**
Case Western Reserve University - Developing a Measure of Illness Perception for Dental Use in Older Adults	93.121		RES509690	3,832	-
Case Western Reserve University - Family Intervention with Caregivers of Children with Dental Needs	93.121		RES511285	12,518	-
Johns Hopkins School of Medicine - Neuronal subtype-specific plasticity in the acute to chronic pain transition	93.121		2003043507	191,890	-
Regents of the University of California - San Francisco - Evaluating Standardized Preventive Care to Reduce Dental Disparities in Children	93.121		9027sc	51,267	-
University of South Florida - The Oral Microbiome in Type 1 Diabetes and Sub-Clinical Cardiovascular Disease	93.121		6403-1081-00-A	1,537	-
University of Texas Health Science Center at Houston - Developing a Patient Safety System for Dentistry	93.121		11414	94,969	-
University of Texas Health Science Center at Houston - Implementing Dental Quality Measures in Practice	93.121		0010816A	52,999	-
Subtotal of 93.121				**409,012**	**-**
Indiana University - NIEHS Worker Trainer Grant	93.142		BL-4645510-HARV	22,338	-
Subtotal of 93.142				**22,338**	**-**
University of Miami - Environmental Risk Factors and Gene-Environment Interactions in ALS Risk and Progression	93.161		668328	35,838	-
Subtotal of 93.161				**35,838**	**-**
California Institute of Technology - WormBase: a core data resource for C. elegans and other nematodes	93.172		18B-1097519	319,781	-
Columbia University - An Integrated System for Single Molecule Electronic Sequencing by Synthesis	93.172		1(GG007874-03)	53,016	-
Dana-Farber Cancer Institute - Computational Methods for Genome-Wide CRISPR Screens	93.172		1283801	54,863	-
Dana-Farber Cancer Institute - Overcoming Bias and Unwanted Variability in Next Generation Sequencing	93.172		1228007	76,796	-
Regents of the University of California - Los Angeles - Integrative approaches for mapping the genetic risk of complex traits	93.172		1625GUE724	9,609	-
The Broad Institute - A Catalog of Cell Types and Genomic Elements in Tissues, Organoids and Disease	93.172		5000311-5500000958	35,042	-
The Broad Institute - Center for Cell Circuits	93.172		5000337-5500000889	139,247	-
The Broad Institute - Reconstruction of the Protein and Non-coding RNA circuits that control and maintain ES cell chromatin	93.172		7010035-5500000585	(486)	-
The Jackson Laboratory - An Integrative Analysis of Structural Variation for the 1000 Genomes Project	93.172		207322	253,478	-
University of Pittsburgh - Center for Causal Discovery	93.172		53374	18,078	-
University of Pittsburgh - Center for Causal Modeling and Discovery of Biomedical Knowledge from Big Data	93.172		0049345 (126868-1)	92,193	-
Subtotal of 93.172				**1,051,617**	**-**
Brigham and Women's Hospital, Inc - Risk Factors for Hearing Loss	93.173		107066	30,085	-

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Northwestern University - Genetic Determinants of Taste Preferences and Risk of Metabolic Disease	93.173		60039446H	24,603	-
Subtotal of 93.173				**54,688**	**-**
Beth Israel Deaconess Medical Center - Clinical and Autonomic Effects of Mind-Body Exercise in COPD	93.213		1024577	5,107	-
Beth Israel Deaconess Medical Center - Tai Chi after Pulmonary Rehabilitation in Patients with COPD: A Randomized Trial	93.213		1029129	56,892	-
Tufts Medical Center - Investigation of a shipworm endosymbiont compound with activity against the AIDS-associated pathogens Cryptosporidium and Toxoplasma	93.213		5013516-SERV	11,914	-
Washington State University - Investigation of a shipworm endosymbiont compound with activity against the AIDS-associated pathogens Cryptosporidium and Toxoplasma	93.213		131398 G003748	15,326	-
Subtotal of 93.213				**89,239**	**-**
Brigham and Women's Hospital, Inc - Development Validation And Implementation Of Customized Checklists For Safe Surgery	93.226		105077	(19,961)	-
Brigham and Women's Hospital, Inc - Methods for studying treatment heterogeneity using large observational databases	93.226		111988	4,876	-
Children's Hospital Boston - Improving Child Health and Healthcare through Dissemination and Implementation of Pediatric Quality Measures	93.226		1180292	18,693	-
Harvard Pilgrim Health Care, Inc - Decision Making Challenges and Needs for Health Insurance Exchange Enrollees	93.226		No Awrd Nmbr	29,630	-
Massachusetts General Hospital - Medicaid Payment Policy and Access to Care for Dual-Eligible Beneficiaries	93.226		229188	10,017	-
Massachusetts General Hospital - To screen or not to screen: Preventions Decisions and Competing Risks	93.226		224410	25,305	-
National Bureau of Economic Research - Measuring the Clinical and Economic Outcomes Associated with Delivery Systems	93.226		41610.01.13.00-HMS	839,006	-
Rand Corporation - Understanding the role of organizational integration in PCOR implementation	93.226		9920160048	204,900	-
Trustees of Dartmouth College - Accelerating the Use of Evidence-based Innovations in Healthcare Systems	93.226		R817-Project 2	128,745	-
University of Texas Health Science Center at Houston - Measuring Occurrence of and Disparities in Dental Clinic Adverse Events	93.226		0011289A	123,532	-
Yale University - Consumer Assessment of Healthcare Providers and Systems (CAHPS IV)	93.226		M13A11549 (A09063)	129,392	-
Subtotal of 93.226				**1,494,135**	**-**
Beth Israel Deaconess Medical Center - Mechanisms of Arousal in Sleep Apnea	93.233		1028965	278,710	-
Subtotal of 93.233				**278,710**	**-**
Beth Israel Deaconess Medical Center - A Psychobiological Follow-up Study of Transition from Prodrome to Early Psychosis	93.242		1029400	12,746	-
Beth Israel Deaconess Medical Center - Predictors and Mechanisms of Conversion to Psychosis	93.242		1029098	22,986	-
Beth Israel Deaconess Medical Center - Validating Biomarkers for the Prodrome and Transition to Psychosis in Shanghai	93.242		1026851	(2,068)	-
Brigham and Women's Hospital, Inc - Statistical methods for studies of rare variants	93.242		114559	260,479	-
Butler Hospital - Behavioral and Ecological Suicide Tracking: Attention, Interpretation and Memory	93.242		9026-8331	73,022	-
Children's Hospital Boston - ¿ Somatic mosaicism and autism spectrum disorder	93.242		GENFD0001218387	455,617	-
Cold Spring Harbor Laboratory - Genetic Targeting of Cortical Pyramidal Neuron Subtypes	93.242		55310412	235,070	-
Desmond Tutu HIV Foundation - Design and delivery of combination HIV prevention in young South African women	93.242		NIH-3P-HC-01	23,295	-
DRVision Technologies LLC - An automated and adaptive 3D particle tracking tool for next generation neuroscience microscopy	93.242		DRV002	78,451	-
Icahn School of Medicine at Mount Sinai - Somatic Mosaicism in Schizophrenia and Control Brains	93.242		0255-0422-4609	163,944	-
Johns Hopkins University - Carryforward - Implementation of Federal Mental Health Parity	93.242		2001584345	46,545	-
Johns Hopkins University - Mixed Methods Research Training Program	93.242		2002362059	62,451	-
Massachusetts General Hospital - 2/7 Psychiatric Genomics Consortium: Finding actionable variation	93.242		228900	31,141	-
Massachusetts General Hospital - Genetic Determinants of Schizophrenia Intermediate Phenotypes	93.242		221522	19,352	-
Massachusetts General Hospital - Real-World Adherence to HIV PrEP In Serodiscordant African Couples	93.242		227997	98,987	-
Massachusetts Institute of Technology - Ultra-Multiplexed Nanoscale In Situ Proteomics for Understanding Synapse Types	93.242		5710004146	224,319	-
Princeton University - CRCNS: Representational foundations of adaptive behavior in natural and artificial agents	93.242		SUB0000110	150,960	-
Rand Corporation - Improving Value of Publicly Funded Mental Health Care	93.242		9920160099	469,800	-
Regents of the University of California - San Diego - Efficacy of ART to interrupt HIV transmission networks	93.242		58328838	18,652	-
Regents of the University of California - San Diego - Psychiatric Genomics Consortium for PTSD	93.242		78931958	44,689	-
Rehabilitation Institute of Chicago - Recording Neural Activities onto DNA	93.242		3024	845,517	-
San Diego State University - Enhanced Linkage to HIV Care and Treatment following Home-Based HIV testing in Rural Uganda	93.242		SA0000486	27,123	-
The Broad Institute - Methods for linking GWAS peaks to function in psychiatric disease	93.242		5216293-5500000809	169,316	-
The Broad Institute - Network-based prediction and validation of causal schizophrenia genes and variants	93.242		5000310-5500000861	89,877	-
The Broad Institute - Network-based prediction and validation of causal schizophrenia genes and variants	93.242		5000310-5500000909	137,022	-
University of Chicago - Conte Center for Computational Systems Genomics of Neuropsychiatric Phenotypes (Projects 2 and 4)	93.242		FP046983-D	28,289	-
University of Georgia - Reducing Violence and HIV Risk Among War-Exposed Liberian Youth	93.242		RR766-059/4944966	(24,694)	-
University of Hawaii - Maraviroc and NeuroAIDS Pathogenesis	93.242		KA1082	30,139	-
University of North Carolina - Chapel Hill - Longitudinal Assessment of Post-traumatic Syndromes	93.242		5106105	188,216	-
University of North Carolina - Chapel Hill - Longitudinal Assessment of Post-traumatic Syndromes	93.242		5106113	53,574	-
University of North Carolina - Chapel Hill - Multilevel Biomarkers for Suicidal Behavior: From Interpersonal Stress to Gene Expression in a Longitudinal Study of Adolescent Girls	93.242		5101900	77,472	-
University of Rochester - Neurocircuitry of OCD: Effects of Modulation - Core C and Project 3	93.242		416629-G	383,682	-

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Washington University - Mapping the Human Connectome During Typical Development	93.242		WU-18-2	507,087	-
Subtotal of 93.242				**5,003,058**	**-**
Children's Hospital Boston - Advancing Treatment and Services for Refugee Children Adolescents: Boston Children's Hospital Center for Refugee Trauma and Resilience	93.243		RSTFD0000660408	12,268	-
Children's Hospital Boston - Refugee Trauma and Resilience Center at Boston Children¿s Hospital: A Treatment and Service Adaptation Center for Refugee Children and Families	93.243		GENFD0001161521	6,270	-
Subtotal of 93.243				**18,538**	**-**
Brigham and Women's Hospital, Inc - Novel Circadian Exposure Metrics for Shift Workers	93.262		115367	11,309	-
Dana-Farber Cancer Institute - Organizational Approaches to Total Worker Health for Low-Income Workers	93.262		1282702	21,039	-
Icahn School of Medicine at Mount Sinai - Biomarkers of Psychological Risk and Resilience in World Trade Center Responders	93.262		0254-5744-4609	13,466	-
New York Center for Agricultural and Medical Health - Northeast Fisheries Winch Safety Improvement Project	93.262		No Awrd Nmbr	32,599	-
Subtotal of 93.262				**78,413**	**-**
International Agency for Research on Cancer - A pooling project on alcohol use and risk of cancers with inconsistent prior evidence, with an emphasis in non-smokers	93.273		NMB/16/01	173,573	-
San Diego State University Research Foundation - Administrative Core of the CIFASD (U24)	93.273		53253M P1660 7802 211	44,596	-
Subtotal of 93.273				**218,169**	**-**
Boston Medical Center - Simulation Modeling to Improve HIV/HCV Screening, Treatment and Care	93.279		2764	(7,500)	-
Brandeis University - Center to Improve System Performance of Substance Use Disorder Treatment: Administrative Core	93.279		403416 (formerly 403202)	33,292	-
Brandeis University - Center to Improve System Performance of Substance Use Disorder Treatment: Research Core	93.279		403417 (formerly 403203)	216,598	-
California Institute of Technology - Deciphering the function and mechanisms of lncRNA-mediated organization of nuclear compartments	93.279		18B-1096549	254,654	-
Subtotal of 93.279				**497,044**	**-**
National Public Health Information Coalition - Planning and Management of a Public Health Comm and Community Engagement Project	93.283		1349-01	16,494	-
Subtotal of 93.283				**16,494**	**-**
Brigham and Women's Hospital, Inc - Using mHealth technology to identify and refer surgical site infections in Rwanda	93.286		115533	20,173	-
Columbia University - Integrated heart-liver-vascular systems for drug testing in human health and disease	93.286		2(GG012366-07)	453,235	-
Massachusetts General Hospital - A Universal Handheld Electrochemical Reader for Early Detection and Monitoring of Chronic Kidney Disease	93.286		224648	1,328	-
Massachusetts General Hospital - Novel laser-processed scintillation detector for high-resolution PET scanners	93.286		227615	16,026	-
Massachusetts General Hospital - Quantitative Methods for Clinical Whole Body Dynamic PET	93.286		220050	(159)	-
Regents of the University of California - San Diego - Rapid 3D bioprinting of biomimetic vascularized tissue constructs	93.286		76644261	73,012	20,336
Subtotal of 93.286				**563,615**	**20,336**
Massachusetts General Hospital - Mechanisms underlying racial/ethnic disparities in mental disorders	93.307		227351	151,032	-
Massachusetts General Hospital - Medicare Policy Effects on Mental Health Care Disparities	93.307		230084	10,112	-
Subtotal of 93.307				**161,144**	**-**
Board of Regents of the University of Wisconsin - Madison - U.S. Childhood Respiratory and Environment Workgroup (CREW)	93.310		706K801	19,775	-
Harvard Pilgrim Health Care, Inc - Common and distinct early environmental influences on cardiometabolic and respiratory health: Mechanisms and methods	93.310		PH000615C	58,589	-
Icahn School of Medicine at Mount Sinai - ECHO Consortium on Perinatal Programming of Neurodevelopment	93.310		0255-2291-4609	18,874	-
Massachusetts General Hospital - Designer probiotics for the treatment of intestinal infection and inflammation	93.310		229595	20,187	-
Massachusetts General Hospital - Molecular prostheses for mitochondrial disorders	93.310		219702	8,997	-
Mount Sinai Medical Center - CHEAR Center for Data Science	93.310		0255-0241-4609	176,378	-
Regents of the University of California - San Diego - Single-cell sequencing and in situ mapping of transcriptional activities in human brains	93.310		33972980	198,798	-
The Broad Institute - Isogenic human pluripotent stem cell-based models of human disease mutations	93.310		5210841-5500000509	1,068,768	-
The University of Sheffield - H3ABioNet: a sustainable African Bioinformatics Network for H3Africa	93.310		No Awrd Nmbr	14,089	-
Westat Corporation - Children's Health Exposure Analysis Resource (CHEAR): Coordinating Center	93.310		6366-S04	(2,304)	-
Subtotal of 93.310				**1,582,151**	**-**
Boston University School of Medicine - A National iPS Cell Network with Deep Phenotyping for Translational Research	93.350		4500002230	169,000	-
Johns Hopkins University - Institute for Clinical and Translational Research	93.350		2003175163	55,917	-
Ohio State University - N-lighten	93.350		60059048	112,483	-
Trustees of Dartmouth College - SYNERGY: The Dartmouth Center for Clinical and Translational Science	93.350		1595R53	(490,824)	-
University of Pittsburgh Medical Center - ACT Supplement	93.350		0055353 (129324-1)	392,805	-
University of Washington - A Tissue Engineered Human Kidney Microphysiological System	93.350		UWSC7799	123,470	-
Subtotal of 93.350				**362,851**	**-**
Brigham and Women's Hospital, Inc - A Community Zebrafish Resource for Modeling GWAS Biology	93.351		110560	304,587	-
The Jackson Laboratory - Teaching the Genome Generation: Professional Development for Genomics Instruction in Rural and Urban High Schools	93.351		TBI	9,322	-

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Subtotal of 93.351				**313,909**	-
Northeastern University - Nurse Education, Practice, Quality and Retention (NEPQR) Program Interprofessional Collaborative Practice	93.359		500501-78050	26,613	-
Subtotal of 93.359				**26,613**	-
Massachusetts General Hospital - Cerebrovascular Contributions to Brain Aging and Dementia	93.361		228190	12,752	-
Regents of the University of California - San Francisco - Interventions for Symptom Management in Older Patients with HAND	93.361		8591sc	47,157	-
Subtotal of 93.361				**59,909**	-
Brigham and Women's Hospital, Inc - A prospective analysis of peripheral blood cytokines and nonoHodgkin lymphoma	93.393		107288	18,769	-
Brigham and Women's Hospital, Inc - Circulating Fatty Acids and Breast Cancer Risk: A Prospective Study	93.393		108049	(1,039)	-
Brigham and Women's Hospital, Inc - Dietary and Hormonal Determinants of Cancer in Women (Core C)	93.393		105845	(4,293)	-
Brigham and Women's Hospital, Inc - Dietary and Hormonal Determinants of Cancer in Women (Core C)	93.393		112787	28,525	-
Brigham and Women's Hospital, Inc - Long term multidisciplinary study of cancer in women: The Nurses Health Study	93.393		111048	179,179	-
Brigham and Women's Hospital, Inc - Mammographic Density and Texture features in relation to breast cancer risk	93.393		114918	30,532	-
Brigham and Women's Hospital, Inc - Psychological stress, associated biologic mediators, and ovarian cancer risk	93.393		108667	4,688	-
Brown University - Psoralens and melanoma	93.393		809	38,710	-
Dana-Farber Cancer Institute - Accelerating Transdisciplinary Epidemiology: Colorectal Cancer Omics and Immunity	93.393		1261101	132,001	-
Dana-Farber Cancer Institute - Statistical methods for tumor expression data from archival tissues in clinical and epidemiologic research	93.393		1234802	29,097	-
Dana-Farber Cancer Institute - Tools for genomic analysis of tumor and stromal pathways in cancer	93.393		1217105	14,301	-
Emory University - A Pooled Analysis of 25-hydroxyvitamin D and Colorectal Cancer Survival	93.393		T253589	16,473	-
Indiana University - Genome-wide Gene-Caffeine Interactions on Risk of Skin Basal Cell Carcinoma	93.393		IN4679713HC	(1,227)	-
Lawrence Berkeley National Lab - Structural Cell Biology of DNA Repair Machines	93.393		7337766	46,912	-
Massachusetts General Hospital - Improving Esophageal Adenocarcinoma Prevention, Screening and Treatment	93.393		226629	4,112	-
Massachusetts General Hospital - Inflammation and Colorectal Neoplasia	93.393		226172	138,754	-
Massachusetts General Hospital - Screening for Free: A Value-Based Insurance Design Natural Experiment	93.393		220715	29,760	-
Mayo Clinic - Risk and penetrance of mutations from breast cancer testing panels	93.393		HAR-195385-05	89,136	-
Memorial Sloan Kettering Cancer Center - (PQB6) Genetics of Subclonal Evolution in Pancreatic Cancer	93.393		BD517123A	103,078	-
Michigan State University - Effect of the presence of e-cigarette vapor on processing for anti-vaping PSAs	93.393		RC105781Harvard	32,816	-
Regents of the University of Michigan - Linking State Registry and All Payer Claims Data to Study Cancer Care	93.393		3002831917	62,508	-
St. Jude Children's Research Hospital - Analysis of the role of the SWI/SNF complex in tumor suppression	93.393		112260050-7735344	85,814	-
St. Jude Children's Research Hospital - The Function of Snf5, an Epigenetic Tumor Suppressor	93.393		112261130-7708507	67,067	-
Trustees of Boston University - A Prospective Investigation of the Oral Microbiome and Pancreatic Cancer	93.393		4500002161	185,218	-
University of North Carolina - Resolving the obesity paradox in kidney cancer	93.393		5106676	2,770	-
University of Southern California - Genome wide Sequencing of Prostate Cancer in Men of African Ancestry	93.393		34968337	16,947	-
University of Washington - Quantifying and Characterizing the shared genetic contribution to common cancers	93.393		UWSC9239	175,536	-
Vanderbilt University Medical Center - Effects of Expanded Coverage on Access, Health Care and Health in the South	93.393		VUMC56386	125,614	-
Subtotal of 93.393				**1,651,758**	-
Beth Israel Deaconess Medical Center - Harvard/Michigan/Cornell Prostate Cancer Biomarker Clinical Validation Center	93.394		1024500	(1,552)	-
Brigham and Women's Hospital, Inc - MRI-guided focused ultrasound for drug delivery and ablation of brain tumors (Project 3)	93.394		114165	50,120	-
Brigham and Women's Hospital, Inc - MRI-guided focused ultrasound for drug delivery and ablation of brain tumors ¿ Project 3	93.394		114167	50,630	-
Brigham and Women's Hospital, Inc - MRI-guided focused ultrasound for drug delivery and ablation of brain tumors (project 1)	93.394		114166	48,347	-
Dana-Farber Cancer Institute - Circulating Biomarker Consortium for Pancreatic Cancer Early Detection	93.394		1283201	26,564	-
Emory University - Emory/Harvard/Univ of Washington Prostate Cancer Biomarker Center	93.394		T639687	64,219	-
Massachusetts General Hospital - Quantitative Analysis of Pharmacological Mechanism by Intravital Imaging	93.394		219649	18,832	-
Massachusetts Institute of Technology - Optical Biopsy Using Optical Coherence Tomography	93.394		5710003780	137,991	-
University of Massachusetts Medical School - Weight Management Counseling in Medical School: A Randomized Controlled Trial	93.394		OSP2016161	32,355	-
Subtotal of 93.394				**427,506**	-
Massachusetts General Hospital - Dietary sulfur, the gut microbiome, and colorectal cancer	93.395		227950	328,129	-
Subtotal of 93.395				**328,129**	-
Beth Israel Deaconess Medical Center - A multi-faceted approach to identifying K-Ras synthetic lethal relationships	93.396		1029424	202,304	-
Beth Israel Deaconess Medical Center - Basic and translational studies of Ras-mutant colorectal cancer	93.396		1027625	15,752	-
Beth Israel Deaconess Medical Center - Modeling KRAS genetic heterogeneity in mouse models	93.396		1028632	54,664	-
Beth Israel Deaconess Medical Center - Molecular wiring and therapeutic targeting of EGFR and PDGFR signaling	93.396		1029110	172,552	-
Brigham and Women's Hospital, Inc - Molecular Pathogenesis of the Hamartoma Syndromes	93.396		114746	226,637	-
Brigham and Women's Hospital, Inc - Molecular Pathogenesis of the Hamartoma Syndromes P01 Project 1: Molecular wiring and therapeutic targeting of the TSC-Rheb signaling network	93.396		114746	126,467	-
Brigham and Women's Hospital, Inc - Oncogenic NOTCH Signaling - Project 3	93.396		114516	307,086	-
Brigham and Women's Hospital, Inc - Oncogenic NOTCH Signaling - Project 3 - Supplement	93.396		114518	58,330	-

The accompanying notes are an integral part of this schedule.

Harvard University
Schedule of Expenditures of Federal Awards
Year Ended June 30, 2017

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Children's Hospital Boston - Lymphocyte Function Associated Antigens	93.396		RSTFD0000705642	10,119	-
Dana-Farber Cancer Institute - Cyclin-dependent kinases in oncogenesis	93.396		1032615	33,949	-
Massachusetts General Hospital - Highly Multiplexed FISH for In Situ Genomics	93.396		226226	7,256	-
Regents of the University of California - San Francisco - Genetic Models of exRNA Communication	93.396		7798sc	598,109	-
Tufts Medical Center - Molecular Wiring and Therapeutic Targeting of EGFR and PDGFR Signaling	93.396		5010814-SERV	(22,851)	-
University of Pittsburgh - Pathogenesis of Cancer - Role of EGF Receptor Endocytosis	93.396		21626	43,686	-
Whitehead Institute for Biomedical Research - Mechanisms of Breast Development and Carcinogenesis	93.396		11-1786-1804	258,875	-
Subtotal of 93.396				**2,092,935**	**-**
Beth Israel Deaconess Medical Center - DF/HCC Kidney Cancer SPORE	93.397		1029281	46,894	-
Dana-Farber Cancer Institute - A programmatic Intervention to Improve Access to Timely Oncology Care for HIV-Inf	93.397		1274053	9,995	-
Dana-Farber Cancer Institute - Cancer Center Support Grant	93.397		HSPH-51	138,354	-
Dana-Farber Cancer Institute - Cancer Center Support Grant	93.397		HSPH-52	158,127	-
Dana-Farber Cancer Institute - Dana-Farber/Harvard Cancer Center Support Grant	93.397		HMS-51	355,869	-
Dana-Farber Cancer Institute - Dana-Farber/Harvard Cancer Center Support Grant	93.397		HMS-52	486,714	-
Dana-Farber Cancer Institute - Defining transcriptional targets of proliferative signaling pathways in intestinal stem cells	93.397		1138808	10,061	-
Dana-Farber Cancer Institute - Developing novel models for revealing spatial and temporal variation in racial/ethnic and socioeconomic cancer mortality: a pilot study.	93.397		2013-LCD-002	17,376	-
Dana-Farber Cancer Institute - DF-HCC SPORE in Prostate Cancer - Project 1	93.397		1225414	152,476	-
Dana-Farber Cancer Institute - Neutralization of BCL2/BCL-XL enhances the cytotoxic effectiveness of T-DM1 in vivo	93.397		9617846	9,425	-
Dana-Farber Cancer Institute - SPORE: Dana-Farber/Harvard SPORE in Breast Cancer	93.397		1230004	19,474	-
Dana-Farber Cancer Institute - Synthetic screening to identify novel drug targets within the NF1 signaling network	93.397		1276153	51,140	-
Instituto Nacional De Salud Publica - Mesoamerican Center for Population Health Research on Non-Communicable Disease	93.397		1	13,540	-
The University of New Mexico - Population-based Research Optimizing Screening	93.397		3RF82	12,714	-
Univ of TX M.D. Anderson Cancer Ctr - Regulatory T Cell Compartment (Project 2)	93.397		5U54CA163125	(3,161)	-
Subtotal of 93.397				**1,478,998**	**-**
Beth Israel Deaconess Medical Center - A National Curriculum in Cancer Genomics for Pathology Residents	93.398		1029309	7,505	-
Subtotal of 93.398				**7,505**	**-**
Association of State and Territorial Health Officials - Medical Countermeasure Distribution- State Level	93.424		1077	91,603	60,000
Association of State and Territorial Health Officials - Technical Assistance for State, Territorial, and Federal Communication during Public Health Emergencies - Zika Virus	93.424		63-11754	481,833	441,000
Subtotal of 93.424				**573,436**	**501,000**
Commonwealth of Massachusetts/Department of Public Health - Mass in Motion: Community-Clinical Partnerships to Reduce Childhood Obesity	93.535		NTF4123H78500224037	(3,457)	-
Subtotal of 93.535				**(3,457)**	**-**
Partners in Health - Policy, System and Environmental Change for Health Navajo Communities	93.738		40	30,465	-
Subtotal of 93.738				**30,465**	**-**
Beth Israel Deaconess Medical Center - EPVent 2 - A Phase II Trial of Esophageal Pressure Guided Ventilation	93.837		1027407	5,220	-
Beth Israel Deaconess Medical Center - Immune Functions of the Vascular Endothelium in Health and Disease	93.837		1028417	25,084	-
Beth Israel Deaconess Medical Center - Mechanisms of Prosthetic Arterial Graft Failure	93.837		1029633	12,624	-
Boston Biomedical Innovation Center - Silencing airway nociceptors for treatment of cough and airway inflammation	93.837		116096	2,183	-
Boston University School of Medicine - Epigenenomic and transcriptomic networks in normal and defective lung development	93.837		4500001945	75,272	-
Brigham and Women's Hospital, Inc - Adipose Dependent Mechanisms of Dietary Protein Restriction Protective Effects on Vein Graft	93.837		115081	16,084	-
Brigham and Women's Hospital, Inc - Adult Tissue Morphogenesis: Functional Regulation of Intussuceptive Angiogenesis	93.837		114207	89,512	-
Brigham and Women's Hospital, Inc - Boston Biomedical Innovation Center	93.837		114756	79,528	-
Brigham and Women's Hospital, Inc - Disease and Health: Asthma Resilience through MicroRNA Attributes (DHARMA)	93.837		113158	26,008	-
Brigham and Women's Hospital, Inc - Genetics of gene expression in human left ventricular myocardium	93.837		113965	19,566	-
Brigham and Women's Hospital, Inc - MicroRNAs in Circulation: Ontologies of Asthma Severity and Treatment (microCOAST)	93.837		113090	243,277	-
Brigham and Women's Hospital, Inc - Optimizing Revascularization of Coronary Artery Disease in Chronic Kidney Disease	93.837		110015	39,918	-
Brigham and Women's Hospital, Inc - Protection of the heart by PD-1 and PD-L1	93.837		110259	60,006	-
Brigham and Women's Hospital, Inc - RISK FACTORS FOR CVD IN WOMEN	93.837		110620	17,858	-
Brigham and Women's Hospital, Inc - Risk Factors for Ischemic Stroke in Women	93.837		113892	13,435	-
Brigham and Women's Hospital, Inc - Sleep, Circadian and Respiratory Neurobiology	93.837		109278	(525)	-
Brigham and Women's Hospital, Inc - Targeted Clot-busting Nanotherapeutic	93.837		116979	21,871	-
Brigham and Women's Hospital, Inc - Targeting erythropoietin-based therapeutics	93.837		116479	36,002	-
Children's Hospital Boston - Megakaryocyte Transcription Factor Activation to Enhance In Vitro Platelet Production from Human IPSCs	93.837		RSTFD0000709518	3,574	-
Cincinnati Children's Hospital Medical Center - Administrative Coordinating Center: Cardiovascular Development and Pediatric Cardiac Genomics Consortia.	93.837		138275	28,815	-

The accompanying notes are an integral part of this schedule.

Harvard University
Schedule of Expenditures of Federal Awards
Year Ended June 30, 2017

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Cincinnati Children's Hospital Medical Center - CVDC Steering Committee Chair Support	93.837		138275 CHAIR	11,501	-
DRVision Technologies LLC - Efficient Patient-Specific Cell Generation by Image-Guidance	93.837		A15268	(11,864)	-
Duke University - Novel Mechanisms and Therapies in Heart Failure	93.837		2034806	103,642	-
Emory University - Worksite lifestyle program for reducing diabetes and CVD risk in India	93.837		T649150	13,342	-
Icahn School of Medicine at Mount Sinai - BD2K Microscopy Imaging Commons	93.837		0255-7878-4609	202,720	-
Joslin Diabetes Center - Metabolic Pathways of Increased Cardiovascular Risk in Type 2 Diabetes	93.837		100046	16,560	-
Massachusetts General Hospital - Human Pluripotent Stem Cell and Progenitor Models of Cardiac and Blood Diseases	93.837		215420	(2,653)	-
Massachusetts General Hospital - Intregrating Lipid Genotypes and Phenotypes in iOS-derived Hepatocyes / Adipocytes	93.837		218179	(3,196)	-
Massachusetts General Hospital - Primary prevention of vascular events in HIV	93.837		224846	143,729	-
Massachusetts General Hospital - Promoting employee health through the worksite food environment	93.837		226216	34,803	-
Massachusetts General Hospital - Reducing Environmental Tobacco Smoke Exposure in Public Housing	93.837		220402	40,483	-
Massachusetts General Hospital - Systematic cell-based functional screening for LDL and triglyceride genes	93.837		229071	175,218	-
Massachusetts General Hospital - The Impact of anti-inflammatory treatment with low dose methotrexate	93.837		224883	3,279	-
Regents of the University of California - San Francisco - Effect of low dose methotrexate on endothelial function and inflammation on HIV	93.837		7455sc	42,266	-
Regents of the University of Minnesota - Diffusion of Clinical Evidence into Practice: Physician Networks, Delivery Organizations, and Markets	93.837		P006001153	6,316	-
Stanford University - Statistical Methods for Optimizing Personalized Treatment Selection	93.837		60552401-44738	137,415	-
Trustees of Dartmouth College - Proximity to Food Establishments and BMI in the Framingham Heart Study	93.837		1396	(410)	-
Tufts University - Diet and Metabolic Risks: Joint Drivers of Global Epidemiologic Transition	93.837		101467-00001	4,288	-
Tufts University - Diet and metabolic risks: joint drivers of global epidemiologic transition	93.837		K99HL124321	2,213	-
Tulane University - Genome-wide interactions with diet patterns on long-term weight change	93.837		553979-15/16	34,480	-
University of Chicago - Preclinical development of myosolvins, a new class of medicine	93.837		FP056317-E	31,920	-
University of Maryland, Baltimore - Bioinformatics Core Proposal for the NHBLI Progenitor Cell Biology Consortium	93.837		101330A	13,951	-
University of Massachusetts - Amherst - Statistical methods for large-scale, prospective, epidemiologic studies	93.837		15-008650-A00	20,810	-
University of Massachusetts Medical Center - Pediatric Practice-based Obesity Intervention to Support Families: FITLINE	93.837		OSP2017060	34,031	-
University of Pennsylvania - Personalization of Therapeutics Efficacy and Risk	93.837		569016	77,976	-
University of Pittsburgh - The Role of Physician Networks in the Adoption of New Prescription Drugs	93.837		0034064 (127352-3)	53,956	-
Vanderbilt University - Outcome Dependent Sampling Studies of Longitudinal Data: Design and Analysis	93.837		VUMC58615	37,760	-
Washington University - A Multi-Ethnic Study of Gene-Lifestyle Interactions in Cardiovascular Traits	93.837		WU-16-252	1,515	-
Subtotal of 93.837				**2,041,363**	-
Brigham and Women's Hospital, Inc - COPD Clinical Research Network: STATCOPE protocol	93.838		108228	(43,860)	-
Brigham and Women's Hospital, Inc - Early Life DNA Methylation and Childhood Allergic Disease	93.838		113444	13,341	-
Brigham and Women's Hospital, Inc - Genetic Epidemiology of COPD: Genome-Wide Analysis	93.838		114739	255,524	-
Brigham and Women's Hospital, Inc - Identifying Genetic Determinants of Severe Early Onset COPD	93.838		113837	88,526	-
Brigham and Women's Hospital, Inc - Leveraging Family Data to Identify Genetic Variants for Sleep Apnea	93.838		113855	103,918	-
Brigham and Women's Hospital, Inc - Lung Vitamin D and Omega-3 Trial	93.838		105859	(31)	-
Emory University - Household air pollution and health: a multi-country LPG intervention trial	93.838		T702541	49,070	-
University of Colorado Denver - Data Fusion-A Self-Scaling, Open Source Registry Advancing Pediatric Pulmonary Vascular Disease Research	93.838		FY17.369.006	72,742	-
Subtotal of 93.838				**539,230**	-
Beth Israel Deaconess Medical Center - In Situ Regeneration of Bioactive Surfaces: Rechargeable Anti-thrombogenic Films	93.839		1026762	131,634	-
Beth Israel Deaconess Medical Center - Targeting the Endothelium in Sepsis	93.839		1027662	186,733	-
Brigham and Women's Hospital, Inc - Cytoskeletal Mechanisms of Platelet Formation	93.839		116938	2,636	-
Brigham and Women's Hospital, Inc - Genetic and Environmental Risk Factors for Venous Thromboembolism	93.839		113440	109,982	-
Children's Hospital Boston - Immune Receptor Recognition and Signaling in Cell Membrane	93.839		641180	(10,484)	-
Daktari Diagnostics, Inc. - Self-assembling Density Gradients for Sickle Cell Diagnosis in Low Resource Areas	93.839		No Awrd Nmbr	31,446	-
Massachusetts General Hospital - Functional dissection of clonal hematopoiesis	93.839		230441	29,741	-
Subtotal of 93.839				**481,688**	-
Brigham and Women's Hospital, Inc - Sociodemographic Disparities in SLE Incidence: Behavioral and Psychosocial Factors	93.846		113176	86,507	-
Brigham and Women's Hospital, Inc - Xanthine oxidase inhibitors and risks of myocardial infarction and diabetes	93.846		114235	13,052	-
Massachusetts General Hospital - Identifying gene and regulatory networks underlying postnatal tendon growth	93.846		230508	3,193	-
Massachusetts General Hospital - Impact of Cardiovascular and Weight Loss Diets on Uric Acid and Gout Risk	93.846		224821	34,147	-
Massachusetts General Hospital - VEGF-dependent control of osteoblast/adipocyte differentiation.	93.846		224532	(118)	-
Subtotal of 93.846				**136,781**	-
Beth Israel Deaconess Medical Center - Mapping brainstem control of urine storage and voiding in conscious mice	93.847		1027576	(15,777)	-
Beth Israel Deaconess Medical Center - Memory Advancement by Intranasal Insulin in Type 2 Diabetes (MemAiD)	93.847		1028191	7,721	-
Beth Israel Deaconess Medical Center - Role of Macrophages in Impaired Wound Healing in Diabetes	93.847		1028521	243,642	-

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Boston Medical Center - Anti-Inflammatory diet and gene expression on type 2 diabetes progression in overweight/obese adults	93.847		5756	6,289	-
Boston Medical Center - Boston Obesity Nutrition Research Center	93.847		2137	111,732	-
Boston Medical Center - Feeding America¿s Bravest: Mediterranean Diet-Based Interventions to change Firefighters¿ Eating Habits and Improve Cardiovascular Risk Profiles	93.847		475501	2,085	-
Boston Nutrition Obesity Research Center - Integrating mHealth Approaches to Assess Contextual Exposures, Physical Activity, Sleep, and Obesity in a Prospective Cohort Study	93.847		4860	18,337	-
Brigham and Women's Hospital, Inc - Human Studies on Blood Levels of Glycated CD59 as a Biomarker in Diabetes	93.847		110959	29,282	-
Brigham and Women's Hospital, Inc - Identifying Risk Factors and Improving Risk Assessment for Nephrolithiasis	93.847		114528	25,059	-
Brigham and Women's Hospital, Inc - Physiology of Thyroid Hormone-Dependent Gene Expression	93.847		114846	31,021	-
Brigham and Women's Hospital, Inc - Risk Factors for and Tissue Biomarker Expression in Primary Hyperparathyroidism	93.847		110397	31,829	-
Children's Hospital Boston - Customized Stem Cells for Clinical Applications in Blood Disorders	93.847		RSTFD0000649675	332,857	-
Children's Hospital Boston - Development of Silk Fibroin Grafts for Reconstruction of Esophageal Defects	93.847		RSTFD0000704338	14,042	-
Children's Hospital Boston - The neuropilin 2 axis in smooth muscle contractility	93.847		RSTFD0000708636	26,263	-
Children's Hospital Boston - Transcriptional Reprogramming in Podocyte Injury	93.847		GENFD0001216039	73,143	-
Dana-Farber Cancer Institute - Control of Adipocyte Gene Expression and Physiology	93.847		1032935	3,857	-
Duke University - Microbial regulation of host nutrient metabolism	93.847		2034784	37,980	-
Emory University - Association of persistent organic pollutants with incident diabetes in India	93.847		T623046	52,169	-
Harvard Pilgrim Health Care, Inc - Impact of Emerging Health Insurance Designs on Diabetes Complications	93.847		AH000527	39,863	-
Joslin Diabetes Center - Activin regulation of glucagon action: a novel therapeutic opportunity for type 2 diabetes	93.847		P30DK03683629Perrimon.HMS	(334)	-
Kaiser Foundation Health Plan of Washington - Long-Term Benefits and Risks of Bariatric Surgery in Integrated Care Systems	93.847		2016179763	18,029	-
Massachusetts General Hospital - A Human-Centered Pharmacogenomic Screen of Metformin Action	93.847		225209	69,001	-
Massachusetts General Hospital - Deconvoluting the hematopoietic niche under stress	93.847		227794	178,294	-
Massachusetts General Hospital - Effects of caloric restriction on post-operative complications in sarcoma patients treated with pre-operative radiation therapy	93.847		227005	4,325	-
Massachusetts General Hospital - Examining Sleep Disparities in a Birth Cohort	93.847		229046	59,646	-
Massachusetts General Hospital - Infant Sleep Characteristics and Accelerated Growth Trajectories from Birth to 24 months	93.847		229046	175,085	-
Massachusetts General Hospital - Inflammation and Risk of Diverticulitis	93.847		224804	238,870	-
Regents of the University of California - Santa Barbara - Ambulatory Artificial Pancreas: merging physiology, behavior and control design	93.847		KK1648-a	13,010	-
Regents of the University of California - Santa Barbara - An Implanted Intraperitoneal (IP-IP) Artificial Pancreas: A Quantum Leap Forward	93.847		KK1651	121,707	-
San Diego State University Research Foundation - Type 2 Diabetes and Sexual Orientation Disparities in Women	93.847		SA0000379	54,200	-
Symbiotix Biotherapies, Inc. - Therapeutics for Inflammatory Bowel Disease from the Microbiome	93.847		SYMBI-04	75,974	-
The Broad Institute - Autophagy genes and the microbiome in Crohn's Disease	93.847		5230113-5500000510	28,152	-
Tufts University School of Dental Medicine - iPSC-derived Repair-Responsive Fibroblasts to Heal Diabetic Foot Ulcers	93.847		002777-00001	15,370	-
Tulane University - Obesity Genes, Energy Regulation in Response to Weight-Loss Diets	93.847		HSC-553996-15/16	18,049	-
Tulane University - Weight-Loss Diet Intervention on Cardiometabolic Factors of Gut Microbiota	93.847		TUL-HSC-55400-16-17	70,120	-
University of Alabama - Effect of Pitavastatin on Kidney Function in HIV-infected Persons	93.847		000509533-005	36,464	-
University of Massachusetts Medical School - Humanized Mouse Avatars for T1D	93.847		WA00239846-RFS2015105	61,805	-
University of Southern California - 3D bioprinting of vascularized, convoluted renal proximal tubules	93.847		84071314	58,306	-
University of Virginia - MD-PSCH Clinical Acceptance of the Artificial Pancreas: The International Diabetes Closed Loop (iDCL) Trial	93.847		GB10282 151300	396,203	147,792
Xeris Pharmaceuticals, Inc. - Closed-Loop Glucagon Pump for Treatment of Post-Bariatric Hypoglycemia	93.847		123953	114,228	-
Subtotal of 93.847				**2,877,898**	**147,792**
Brigham and Women's Hospital, Inc - Identification of Presenilin downstream targets in neuronal survival	93.853		116846	20,174	-
California Institute of Technology - Functional Mapping of Pathways for Sensory-Motor Integration	93.853		21B-1095833	133,958	-
Children's Hospital Boston - Cell Identity Determination In Cerebral Cortex: Genetic analysis of cell lineage	93.853		705379	96,475	-
Children's Hospital Boston - TRP channels as drug portals to block calcium channels and synaptic transmission	93.853		RSTFD0000657456	77,145	-
Dana-Farber Cancer Institute - Metabolic control of neuronal activity by fuel substrate switching	93.853		1218804	132,613	-
Johns Hopkins School of Medicine - Targeting a SMN antisense transcript for the treatment of SMA	93.853		2002916726	107,520	-
Massachusetts General Hospital - Micro-Coil Implants for Cortical Activation	93.853		229585	29,411	-
Massachusetts General Hospital - mRNA Splicing Modulation in Familial Dysautonomia	93.853		228844	154,968	-
Massachusetts General Hospital - Phase 3 trial of inosine for Parkinson's disease CCC	93.853		226396	25,781	-
Pennsylvania State University - Statins, statin-related gene, and Parkinson's disease risk	93.853		5228-PFHC-DHHS-7235	2,840	-
Posit Science Corporation - Amplified attention training (AAT) for the treatment of hemispatial neglect	93.853		PSC-1004-13	9,467	-
University of Massachusetts - Lowell - The Gut Microbiome In Parkinson Disease	93.853		S51110000036435	27,016	-
University of Pittsburgh - Integrating EHR and Genomics to Predict Multiple Sclerosis Drug Response	93.853		0055152(128815-3)	11,462	-
Subtotal of 93.853				**828,830**	**-**
Beth Israel Deaconess Medical Center - Combined Immunologic Approaches to Cure HIV-1	93.855		1029237	72,336	-
Beth Israel Deaconess Medical Center - SLAM gene family controlled pathways to SLE	93.855		1029191	231,478	-

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Board of Regents of the University of Wisconsin - Madison - Antimicrobial Drug Discovery from Coevolved Symbiotic Communities	93.855		732K745	414,023	-
Boston University School of Medicine - Phase 2 Pharmacodynamic Study of High-Dose Levofloxacin In MDR-TB Treatment	93.855		4500002132	47,179	-
Brandeis University - Unraveling the polymodal behavior of sensory transduction receptors	93.855		403164	154,570	-
Brigham and Women's Hospital, Inc - A Pilot Clinical Trial for HIV-1 Eradication	93.855		114094	21,789	-
Brigham and Women's Hospital, Inc - ACTG Leadership and Operations Center	93.855		110298	527,325	-
Brigham and Women's Hospital, Inc - AIDS Clinical Trials Group (ACTG)	93.855		115113	15,526	-
Brigham and Women's Hospital, Inc - Antiretroviral Drug Resistance in KwaZulu Natal	93.855		114727	4,780	-
Brigham and Women's Hospital, Inc - Core A: Metabolic factors that control the spectrum of human tuberculosis [TBRU]	93.855		111846	33,476	-
Brigham and Women's Hospital, Inc - Core B: Metabolic factors that control the spectrum of human tuberculosis [TBRU]	93.855		111896	11,231	-
Brigham and Women's Hospital, Inc - Finding and Treating TB to Reduce Transmission in Hospitals	93.855		111945	895	-
Brigham and Women's Hospital, Inc - Finding and Treating Unsuspected and Resistant TB to Reduce Hospital Transmission	93.855		111945	24,559	-
Brigham and Women's Hospital, Inc - Project 1: Metabolic Factors that control the spectrum of Human Tuberculosis [TBRU]	93.855		111899	31,166	-
Brigham and Women's Hospital, Inc - Project 3: Metabolic factors that control the spectrum of human tuberculosis [TBRU]	93.855		111903	19,578	-
Brigham and Women's Hospital, Inc - Protection of organ transplant from ischemia reperfusion injuries	93.855		115242	17,849	-
Brigham and Women's Hospital, Inc - Role of tuberculosinyl metabolites in M. tuberculosis virulence	93.855		111839	84,479	-
Brigham and Women's Hospital, Inc - The Fetal and Childhood Environment, Oxidative Balance, Inflammation and Asthma	93.855		114196	48,141	-
Brigham and Women's Hospital, Inc - TIM Family of Genes: Role in T Cell Immunity and Tolerance (Core C)	93.855		112676	37,035	-
Chapman University - Adaptive Aging: Psychological Well-Being and Favorable Cardiovascular Health	93.855		2014-001	(398)	-
Children's Hospital Boston - Molecular mechanisms of the RAG recombinase in V(D)J recombination and disease	93.855		RSTFD0000702034	186,560	-
Children's Hospital Boston - School Inner-City Asthma Intervention Study	93.855		RSTFD0000672134	308,901	-
Children's Hospital Boston - Structure-function of the membrane-interacting domains of HIV-1 Env spike	93.855		GENFD0001164272	391,287	-
Dana-Farber Cancer Institute - Eliciting B Cells to Produce Anti-HIV gp41 MPER-specific Neutralizing Antibodies	93.855		1238305	26,252	-
Dana-Farber Cancer Institute - Targeting Immunogenicity to the MPER Hinge and C-helix for BNAb Elicitation	93.855		1282101	162,830	-
Duke University - Antibacterial Resistance Leadership Group (ARLG)	93.855		2038408	1,129,454	-
Family Health International - CTU HPTN 052 P	93.855		FCO793-ID0080.0227	386	(6)
Family Health International - The role of religious involvement, social support, and excessive alcohol use on antiretroviral therapy (ART) adherence among HIV-infected individuals across diverse international regions.	93.855		PO16002757	80,209	-
FHI Development 360 - HPTN 081 A phase 2b study to evaluate the safety and the efficacy of VRC01	93.855		PO15004266	591,305	591,305
Harvard Pilgrim Health Care, Inc - Conjugate vaccine impact of pneumococcal carriage, disease, and population (SPARC2)	93.855		PH000391A	7,636	-
Health Research, Inc. - A Community Mycobacterial Systems Resource	93.855		4468-01	374,219	-
Johns Hopkins University - International Maternal Pediatric Adolescent AIDS Clinical Trials Group	93.855		2002419394	712,845	-
Johns Hopkins University - Johns Hopkins University Kampala-Nanning Clinical Trial Unit	93.855		2003241705	20,838	-
Johns Hopkins University - LOC-IMPAACT Leadership Group	93.855		2002419854	148,517	-
Johns Hopkins University - Statistical Designs and Methods for Double-Sampling for HIV/AIDS	93.855		2002962625	40,334	-
KwaZulu-Natal Research Institute for Tuberculosis and HIV - Fate of M. tuberculosis Antibiotic Survivors	93.855		5R21AI116442-02	96,011	-
Massachusetts Eye and Ear Infirmary - Compounds and Strategies for Treating MRSA and VRE	93.855		2300158-01	316,974	-
Massachusetts Eye and Ear Infirmary - Harvard Wide Program on Antibiotic Resistance	93.855		5P01AI083214-08	80,883	-
Massachusetts Eye and Ear Infirmary - Harvard wide Program on Antibiotic Resistance	93.855		5P01AI083214-08	73,616	-
Massachusetts General Hospital - Anti-inflammatory promoting commensal E. coli	93.855		223002	(1)	-
Massachusetts General Hospital - Cardiovascular Disease Risk in HIV-infected Women: Sex-Specific Mechanisms of Risk and Risk Reduction among REPRIEVE Trial Participants	93.855		227111	47,532	-
Massachusetts General Hospital - Cost Effectiveness of Preventing HIV Complications	93.855		226292	73,751	-
Massachusetts General Hospital - Evolution of Gut Flora in HIV-exposed Uninfected Infants	93.855		226820	36,823	-
Massachusetts General Hospital - Gut microbiome evolution among HIV-exposed uninfected infants in Botswana	93.855		226820	2,903	-
Massachusetts General Hospital - Immune responses to Vibrio cholerae Infection and vaccination in Haiti	93.855		228579	21,219	-
Massachusetts General Hospital - Inflammation and the Vaginal Microbiome in HIV Acquisition	93.855		224082	163,285	-
Massachusetts General Hospital - Novel Methods to Inform HIV/TB Clinical Trial Development	93.855		226434	25,715	-
Massachusetts General Hospital - Optimizing HIV Care in Less Developed Countries	93.855		224628	90,810	-
Massachusetts General Hospital - Project 3 - Induced tolerogenic dendritic cell therapy of allergic diseases	93.855		219483	71,147	-
Regents of the University of California - San Francisco - Harvard University CFAR: 20th Annual National CFAR Meeting	93.855		9796sc	15,000	-
Texas A&M Research Foundation - Structure-based Discovery of Critical Vulnerabilities of Mycobacteria	93.855		99-S130608	50,335	-
The Broad Institute - Elucidating Genetic Determinants of Resistance to Lassa Hemorrhagic Fever	93.855		5700161-5500000755	67,680	-
The Broad Institute - Infectious Disease Genomics: Pathogen Evolution, Emergence and Host Interactions	93.855		5035423-5500000970	20,816	-
The Broad Institute - Infectious Disease Genomics: Pathogen Evolution, Emergence, and Host Interactions	93.855		5035418-5500000848	72,775	-
The Broad Institute - Targeting the Mitochondrion of P. falciparum	93.855		6220094-5500000502	341	-
The University of New Mexico - Stimulating protective CD4+ T cell immunity to Chlamydia trachomatis	93.855		3RT66	372,328	-
Tulane University - Population-based Approach to malaria Research and Control	93.855		TUL-HSC-554287-15/16	109,718	-

The accompanying notes are an integral part of this schedule.

Harvard University
Schedule of Expenditures of Federal Awards
Year Ended June 30, 2017

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
University of Massachusetts Medical School - Tuberculosis and T cell recognition	93.855		OSP2016182	105,975	-
University of North Carolina - Chapel Hill - Structural models for Treatment and exposure effects in Clinical HIV Cohorts	93.855		5103997	24,830	-
University of Pennsylvania - Molecular Basis for Activity by Membrane Bound O-Acyltransferases.	93.855		568945	77,088	-
University of Pittsburgh - Core D: Synergies among Inhibitory Receptors in Tolerance Cancer and Antiviral Immunity	93.855		9011704 (126208-1)	14,931	-
University of Pittsburgh - Exploring viral infection with single cell transcriptomics	93.855		0051361 (127755-1)	95,636	-
University of Pittsburgh - HIV-TB Co-infection: Tracking TB emergence after asymptomatic (latent) infection	93.855		0038654 (124296-1)	67,823	-
University of Pittsburgh - Project 3: Synergies among Inhibitory Receptors in Tolerance Cancer and Antiviral Immunity	93.855		9011705 (126209-1)	395,277	-
University of Pittsburgh - Simplified Assays of Latent But Inducible HIV	93.855		0040738-125128-1	3,044	-
University of Pittsburgh - The Consequences of Reinfection with M. tuberculosis	93.855		46965	218,046	-
University of Washington - A Point-of-Care Assay to Measure Tenofovir for Monitoring PrEP and ART Adherence	93.855		UWSC9214	18,969	-
University of Washington - Malaria Evolution in South Asia	93.855		UWSC7748	207,290	-
Yale University - Costimulatory Mechanisms of Autoimmunity (Composite)	93.855		A10901 (M17A12552)	586,012	-
Yale University - Evaluating health and economic effects of targeted strategies in TB/HIV	93.855		M15A12042-A10052	86,753	-
Subtotal of 93.855				**9,689,925**	**591,299**
Baylor College of Medicine - A Comprehensive Resource for Manipulating the Drosophila Genome	93.859		5601104954	246,322	-
Brandeis University - Core Account : Genetic and Physiological Mechanisms of Temperature Detection and Compensation	93.859		403235	158,172	-
Brandeis University - Genetic and Physiological Mechanisms of Temperature Detection and Compensation	93.859		403233	148,395	-
Brandeis University - Genetic and Physiological Mechanisms of Temperature Detection and Compensation (Project 3)	93.859		403234	430,258	-
Brigham and Women's Hospital, Inc - Improving polygenic prediction using large next-generation data sets	93.859		110757	203,676	-
Brigham and Women's Hospital, Inc - New Methods and Enhanced Software for Predicting Functional SNPs	93.859		114832	28,228	-
Brigham and Women's Hospital, Inc - Optical Microresonator Biosensors for High-Throughput, Real-Time Analysis of Cell	93.859		107337	39,851	-
Columbia University - Influenza Outbreak Prediction: Applying Data Assimilation Methodologies to Make Skillful Forecasts of an Inherently Chaotic, Nonlinear System	93.859		1-GG006277	1,829	-
Cornell University - Super-resolution EM snapshots of Type I CRISPR interference	93.859		76899-10744	51,792	-
Fred Hutchinson Cancer Research Center - Statistical Methods for Prospective Evaluation of Biomarkers	93.859		901695	58,973	-
Iowa State University - Highly simplified model of a mammalian intestinal community	93.859		430-23-08	30,625	-
Massachusetts General Hospital - Competitive Antagonists for General Anesthetics: Novel Drugs for Improving Patient Care and Advancing Scientific Research	93.859		230354	8,318	-
Massachusetts General Hospital - Core C: Protein Chemistry	93.859		224991	304,760	-
Massachusetts General Hospital - Project 1: Locating General Anesthetic Binding Sites in GABAA and Glycine Receptors	93.859		224993	292,644	-
Northwestern University - Regulation and Function of Intermediate Filaments in Cell Mechanics	93.859		60029185 HC	39,096	-
Regents of the University of California - Berkeley - Molecular Regulation of Choanoflagellate-Bacteria Signaling Interactions	93.859		7893	80,516	-
Regents of the University of California - San Diego - Microscopy and Image Analysis of Unstained Macromolecules	93.859		53926897	19,674	-
Regents of the University of California - Santa Cruz - Control of cell growth and size by a novel cell cycle checkpoint mechanism	93.859		A00-0433-S001-S0184248	61,077	-
Regents of the University of Michigan - Translation frameshift and regulation	93.859		3004135043	176,037	-
Rockefeller University - A minimally invasive synthetic biology-driven approach for natural products discovery	93.859		5U01GM110714-03	685,222	-
Rosalind Franklin University of Medicine and Science - Structure and function of the ATP synthase	93.859		212159HMS MUELLER	118,789	-
University of Georgia - Collaborative Research: Statistical Approaches for Deciphering the Regulatory Role of Small RNAs on Alternative Splicing	93.859		RR193-658/S001241	70,414	-
University of Georgia Research Foundation, Inc. - Novel statistical tools for cell line specific epigenetic analysis	93.859		RR193-157/4945416	86,397	-
University of Pennsylvania - Non-Parametric Bayesian Methods for Causal Inference	93.859		565220	26,470	-
University of Southern California - Multi-scale modeling of genetic variation in a developmental network	93.859		63664069	141,997	-
University of Texas Health Science Center at Houston - Unified Methods for Sequence-based Association Studies	93.859		0009574A	30,615	-
Virginia Institute of Marine Science - The impacts of host vaccination and selective breeding for disease resistance on pathogen transmission and ecology in freshwater aquaculture	93.859		718792-712684	158,224	-
Subtotal of 93.859				**3,698,371**	**-**
Dana-Farber Cancer Institute - Assessing parent-of-origin transcriptional effects in Xenopus laevis	93.865		1228202	9,978	-
Harvard Pilgrim Health Care, Inc - Pre- and Peri- Natal Predictors of Childhood Health and Obesity	93.865		AH000630	4,021	-
Icahn School of Medicine at Mount Sinai - Advancing use of hair and salivary cortisol in stress-asthma research	93.865		0255-8001-4609	11,932	-
Institut de Recherche pour le Developpment-Program for HIV Prevention and Treatment - Antiviral prophylaxis to prevent perinatal transmission of HBV in Thailand	93.865		303223-3	33,470	-
Johns Hopkins University - Preterm Birth, Maternal and Cord Blood Metabolome, and Child Metabolic Risk	93.865		2003250340	68,724	-
Massachusetts General Hospital - Improving Outcomes for HIV-infected children in South Africa and Cote d'Ivoire	93.865		224642	38,807	-
Massachusetts General Hospital - Natural Experiment of Value-Based Incentives for Preventative Services	93.865		228182	88,845	-
Queen's University - Comparative Safety of Buprenorphine vs. Methadone in Pregnancy	93.865		2	2,399	-
Regents of the University of California - Los Angeles - Impact of HIV PMTCT Interventions on HBV Disease in HIV/HBV Co-infected Women and Infants	93.865		1560GUB041	7,261	-

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Regents of the University of Michigan - Triggered escalating real-time adherence intervention to promote rapid HIV viral suppression among youth living with HIV failing first line antiretroviral therapy¿the TERA intervention	93.865		3004282650	77,708	-
Swedish Medical Center Foundation - Triggers of Abruptio Placentae - A Case Crossover Study of an Ischemic Placental Disorder	93.865		803033-C-Yr-1	(737)	-
Temple University - Snacking in young children: parental definitions, goals, and approaches to feeding	93.865		252272	23	-
Tulane University - Disparities in Recovery from Hurrican Katrina: NOLA@10	93.865		TUL-HSC-554776-16/17	136,073	-
University of Texas - San Antonio - Epimutations in Offspring Produced by Assisted Reproductive Technologies (ART)	93.865		1000000442	230,139	-
Subtotal of 93.865				**708,643**	**-**
Boston University School of Medicine - Identifying epigenetic mechanisms underlying age-related disease risk in CHARGE	93.866		4500002101	6,921	-
Brigham and Women's Hospital, Inc - Boston OAIC: A Translational Approach to Function Promoting Anabolic Therapies	93.866		115900	10,908	-
Brown University - Changing Long-Term Care in America	93.866		669	38,811	-
Hebrew SeniorLife - Cerebrovascular Mechanisms of Slow Gait and Falls	93.866		10.10.90072	85,891	-
National Bureau of Economic Research - Constructing U.S. Life Tables by Educational Status from 1990 through 2011	93.866		5R03AG050902-02	24,530	-
National Bureau of Economic Research - Evaluating Changes in Pharmaceutical Therapies for Medicare and Other Payers	93.866		41490 HMS	57,688	-
National Bureau of Economic Research - Universal Health Care Insurance and the Adequacy and Efficiency of Health Care	93.866		4100A.01-HMS	66,041	-
National Bureau of Economic Research - What Does Health Insurance Do Evidence from the Oregon Health Insurance Lottery	93.866		HSPH-33-4126A	325,480	-
Northwestern University - Optimal Older Donor and Recipient Matching to Enhance Liver Transplant Outcomes	93.866		60040706-HC	25,695	-
Posit Science Corporation - Amplified Attention Training (AAT) for Age-related Cognitive Decline	93.866		PSC- 1006-14	129,465	-
Regents of the University of California - Cumulative Stress and Cardiovascular Risk in Middle Aged and Older Women	93.866		8783SC	13,906	-
Regents of the University of Michigan - Employment Trajectories Across the Life Course and Later-life Cognitive Health	93.866		3004315088	9,222	-
Rush University Medical Center - MIND Diet Intervention to Prevent Alzheimers Disease	93.866		15052004-HARV	899,084	-
Stanford University - Link between epigenetic and fat metabolism	93.866		61396029-122992	121,198	-
The University of New Mexico - Biodemography of Aging in Wild Chimpanzees	93.866		045446-87D7	67,548	-
Trustees of Dartmouth College - Causes and Consequences of Health Care Efficiency	93.866		R140	14,688	-
University of Colorado Denver - Pitavastatin to REduce Physical Function Impairment and FRailty in HIV (PREPARE)	93.866		2-5-A4588	47,707	-
University of Massachusetts - Amherst - Treatment of randomly censored covariates in Alzheimer's disease studies	93.866		17-009565 A01	35,496	-
University of Southern California - Dietary Restriction, GH/IGF-I and Mechanisms of Differential Cellular Protection	93.866		82275935	96,352	-
University of Southern California - Harmonized Diagnostic Assessment of Dementia (DAD) for Longitudinal Aging Study of India	93.866		66924119	3,675	-
University of Wisconsin - Integrative Pathways to Health and Illness Project 1 - Psychosocial Contributors	93.866		618K214	1,928	-
University of Wisconsin - Integrative Pathways to Health and Illness Project 1 - Psychosocial Contributors	93.866		694K665	21,223	-
Yale University - Developing a method for estimating the overall impact of behavioral interventions in a social network using egocentric network samples	93.866		C14A11852 (A10334)	(4,578)	-
Subtotal of 93.866				**2,098,879**	**-**
Massachusetts Eye and Ear Infirmary - The NEIGHBORHOOD: POAG Heritable Overall Operational Database	93.867		2300142-01-01	25,040	-
Northwestern University - The Mechanical basis of Primary Open Angie Glaucoma	93.867		SP0004560/PROJ0001557	(35)	-
Northwestern University - The Mechanical Basis of Primary Open Angle Glaucoma	93.867		SP0028943-PROJ0007599	166,168	-
University of Rochester - Accelerating vision restoration through in-vivo cellular imaging of inner and outer retina	93.867		416635-G	98,523	-
Subtotal of 93.867				**289,696**	**-**
University of Washington - Prioritizing follow-up of GWAS loci using genetic and functional annotation data	93.893		UWSC9126	10,488	-
Subtotal of 93.893				**10,488**	**-**
Brigham and Women's Hospital, Inc - Innovative Interdisciplinary Approaches to Sustainable Airborne Infection Control	93.989		114925	60,950	-
College of Medicine of the University of Lagos - Building Research And Innovation in Nigeria's Science - (BRAINS)	93.989		Harvard-TW010134	120,866	-
Institute for Clinical Effectiveness and Health Policy - Promoting Capacity Building in Chronic Diseases Research in South America	93.989		E0047	39,794	-
Johns Hopkins School of Public Health - Multilevel Program and Policies to Reduce Chronic Disease for American Indians	93.989		2003231673	10,662	-
Northwestern University - Fogarty HIV Research Training Program for Low and Middle Income Country Institution	93.989		60042025	9,183	-
University of Ibadan - Medical Education Partnership in Nigeria	93.989		Harvard-TW010140	56,963	-
University of Jos - Support of Training and Mentoring in Nigeria for Academics [STAMINA]	93.989		UJHVD-STAMINA-Y1	91,999	-
Subtotal of 93.989				**390,417**	**-**
Abt Associates, Inc. - Evaluation of the Oncology Care Model	93.Contract		46244	693,783	-
Boston Public Health Commission - Boston Partners in Community Health (PICH)	93.Contract		1U58DP005788-01	188,710	-
Brigham and Women's Hospital, Inc - The Long-term Oxygen Treatment Trial	93.Contract		101949	(2,694)	-
Children's Hospital Boston - Adjuvant Discovery Program	93.Contract		RSTFD0000661189	21,148	-
Commonwealth of Massachusetts/Department of Public Health - Commonwealth of Massachusetts Department of Public Health Hospital Preparedness Program 2014 Exercise Series	93.Contract		502718	661,236	-
Commonwealth of Massachusetts/Department of Public Health - Nutrition standards baseline data collection- (MDPH Healthy Hospitals Evaluation)	93.Contract		INTF4120HH2500224047	14,526	-
Commonwealth of Massachusetts/Center for Health Information and Analysis - DPH-OPEM Infectious Disease Emergency Response Plan	93.Contract		INTF6208HH4300522160	92,427	-
Commonwealth of Massachusetts/Department of Public Health - Joint Use Activity Toolkit Technical Assistance	93.Contract		INTF4120HH2500224045	15,025	-

The accompanying notes are an integral part of this schedule.

Harvard University
Schedule of Expenditures of Federal Awards
Year Ended June 30, 2017

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Entropia Biosciences Inc. - iWISE, a PCR-based ctDNA testing platform ready for clinical adoption	93.Contract		No Awrd Nmbr	3,114	-
Health Research and Educational Trust - Development and Demonstration of a Surgical Unit-based Safety Program in Ambulatory Surgery (SUSP-AS)	93.Contract		80801	199,986	-
ICF International, Inc - Mapping Executive Function: Translating Research Evidence for Application	93.Contract		15JTPO0217	22,392	-
J. Craig Venter Institute - Bioinformatics Resource Centers for Infectious Diseases - Viral	93.Contract		JCVI-14-003	19,462	-
Johns Hopkins University - Johns Hopkins Center of Excellence for Influenza Research and Surveillance	93.Contract		121623	11,506	-
Johns Hopkins University - Johns Hopkins Center of Excellence for Influenza Research and Surveillance	93.Contract		2003331479	60,000	-
Kaiser Permanente - Evidence-based Practice Centers (EPCs) IV Program	93.Contract		Task order 6	188,246	45,169
Management and Development for Health - Provision of HIV/AIDS Treatment Services by Local Indigenous in the United Republic of Tanzania under the President's Emergency Plan for AIDS Relief	93.Contract		No Awrd Nmbr	538	-
Rand Corporation - Implementation of the CAHPS Surveys for the Medicare Shared Savings Program, Physician Quality Reporting System and Other Physician Quality Programs	93.Contract		9920150141	70,018	-
Rand Corporation - Implementation of the Medicare PDP and MA Plan Disenrollment Reasons Survey	93.Contract		9920140154	65,010	-
Rand Corporation - National Implementation of Medicare Advantage and Prescription Drug Plan CAHPS Surveys	93.Contract		9920140165	676,450	105,789
Rand Corporation - National Implementation of the CAHPS Hospice Survey	93.Contract		400076	14,326	-
Social + Scientific Systems, Inc. - A Randomized Double Blind Study Comparing Oseltamivir versus Placebo for the Treatment of Influenza in Low Risk Adults	93.Contract		CRB-SSS-S-16-004788	32,768	-
Social + Scientific Systems, Inc. - IRC002: A Randomized, Open-Label, Phase 2, Multicenter Safety and Exploratory Efficacy Study of Investigational anti-Influenza Immune Plasma for the Treatment of Influenza and IRC003: A Randomized D	93.Contract		CRB-SSS-S-15-004750	257,345	-
Social + Scientific Systems, Inc. - IRC005 - Randomized Double-Blind Phase 3 Study Comparing Efficacy and Safety of Anti-Influenza Immune Plasma	93.Contract		CRB-SSS-S-15-004704	81,766	-
Social + Scientific Systems, Inc. - Oxidative Stress as a Mediator of Environmental Exposure Impacts on Fertility Endpoints	93.Contract		PHR-SSS-S-17-005146	27,020	-
The Broad Institute - Targeting the Mitochondrion of P. Falciparum	93.Contract		2015-Harvard-8	(48)	-
The Wistar Institute - Protective Immunity in Special Populations	93.Contract		29902-06-307	(8,297)	-
Ultivue, Inc. - Proximity DNA Exchange Imaging	93.Contract		No Awrd Nmbr	13,494	-
Vanderbilt University - Tracking the Impact of Ownership Changes in Hospice Care Provided to Medicare Beneficiaries	93.Contract		VUMC 56681	34,952	-
Westat Corporation - CDISC HIV Standards	93.Contract		8989-PO027	23,355	-
Westat Corporation - Prospective Cohort Study of HIV and Zika in Infants and Pregnancy Study (HIV-ZIPS)	93.Contract		6101-S079	110,516	-
Subtotal of 93.Contract				**3,588,080**	**150,958**
Association of Schools of Public Health, Inc. - The Evidence Based Preparedness Project - Synthesis and Translation of Public Health Preparedness and Response Research	93.RD		S5045	331,517	-
Association of Schools of Public Health, Inc. - Translation, Dissemination and Implementation of Evidence-Based Public Health Preparedness Tools and Trainings	93.RD		S5052	633,358	-
Brigham and Women's Hospital, Inc - Testing Novel Interventions to Protect Workers from Airborne Infections	93.RD		111069	32,420	-
Children's Hospital Corporation - Clinical Hematology Research Career Development Award	93.RD		RSTFD0000657104	(1)	-
University of Ibadan - Medical Education Partnership Initiative in Nigeria	93.RD		7/225/27/HSPH-06	70	-
Westat Corporation - P1081- A Phase Iv Randomized Trial To Evaluate The Virologic Response And Pharmacokinetics Of Two...	93.RD		6101-S073	130,694	-
Subtotal of 93.RD				**1,128,058**	**-**
Total for DHHS Sub Award				**48,842,346**	**1,411,531**
Director of National Intelligence					-
Allen Institute for Brain Science - The Functional Connectome: A Roadmap for Cortically Inspired Computational Architectures	99.Contract		2016-0060	404,118	-
Massachusetts Institute of Technology - Knowledge Representation in Neural Systems (KRNS): A Modern Approach to Compositional Knowledge Employment and Representation, Enhanced by Learning (MACKEREL)	99.Contract		5710004015-1	22,102	-
Subtotal of 99.Contract				**426,220**	**-**
Total for Director of National Intelligence Sub Award				**426,220**	**-**
EPA					
Health Effects Institute - Assessing Adverse Health Effects of Long-Term Exposure to Low Levels of Ambient Air Pollution	66.511		4953-RFA14-3/16-4	515,188	26,112
Health Effects Institute - Chemical and Physical Characterization of Non-Tailpipe and Tailpipe Emissions at 100 Locations near Major Roads in the Greater Boston Area	66.511		4948-RFPA14-1-15-2	150,171	-
Subtotal of 66.511				**665,359**	**26,112**
Boston Public Health Commission - Environmental Scoring System (ESS) Standardization	66.RD		16956	9,969	-
Subtotal of 66.RD				**9,969**	**-**
Total for EPA Sub Award				**675,328**	**26,112**
NASA					
Lunar and Planetary Institute - Occurrence and Duration of Potentially Habitable Liquid Water Environments on a Cold Early Mars	43.001		02261-01	24,569	-
Massachusetts Institute of Technology - Foundations of Complex Life: Evolution, Preservation, and Detection on Earth and Beyond	43.001		5710003359	263,531	-
Regents of the University of California - Berkeley - Using Galaxies to Probe Stars and Dust at 0.5 x 2.0	43.001		9546	100,000	-

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Regents of the University of California - San Diego - Gravitational Tests via Lunar Laser Ranging: APOLLO Analsys and Acquisition	43.001		10323360	85,149	-
Smithsonian Astrophysical Observatory - Participation in CubeSat X-ray Telescope (CubeX) for Elemental Abundance Mapping of Airless Bodies and X-ray Pulsar Navigation	43.001		SV7-87017	1,860	-
Smithsonian Astrophysical Observatory - pyTrax: an Efficient System for Discovering Near-Earth Objects (NEOs) under the Minor Planet Center Operations Program	43.001		SV6-86014	89,575	-
Smithsonian Astrophysical Observatory - Resolving the High Energy Universe with Gravitational Lensing	43.001		PF5-160132	97,237	-
Smithsonian Astrophysical Observatory - Stellar Homicide - The Forensics of Tidal Disruption	43.001		PF3-140108	21,418	-
Smithsonian Astrophysical Observatory - Studying binary evolution in the oldest open clusters: Collinder 261	43.001		GO0-11110X	20,816	-
Trustees of Boston University - 4-D Modeling of the Regional Carbon Cycle in and Around Urban Environments: An Interdisciplinary Study to Advance Observational and Modeling Foundations	43.001		4500001065	425	-
University Corporation for Atmospheric Research - Socioeconomic Benefits of Improved Forecasts on Decision-Making in Public Health and Air Quality	43.001		Z16-20895	42,430	-
University of Chicago - Ocean and cryosphere dynamics and the habitable zone: through thick and thin ice	43.001		FP062796-A	2,864	-
Subtotal of 43.001				**749,874**	**-**
Arizona State University - High dimensional biology to understand the functional response of Salmonella to long-term multigenerational growth in the chronic stress of microgravity	43.007		17-034	12,876	-
Subtotal of 43.007				**12,876**	**-**
Atmospheric and Environmental Research, Inc - Prototype Monitoring, Reporting, and Verification System for the Boston-D.C. Corridor	43.Contract		P1864-004	63,519	-
Atmospheric and Environmental Research, Inc - Prototype regional carbon monitoring systems for urban regions	43.Contract		P2088-003	45,375	-
Jet Propulsion Laboratory - A Search for Sub-Earth Sized Transiting Planets 12 Parsecs from the Sun	43.Contract		1545796	9,999	-
Jet Propulsion Laboratory - CARVE Airborne Observations of Carbon Dynamics in the Vulnerable Arctic-Boreal Ecosystems of Northwestern Canada - CARVE-CAN	43.Contract		1511969	24,989	-
Jet Propulsion Laboratory - Consortium for Ultracold Atoms in Space	43.Contract		1554317	67,632	-
Jet Propulsion Laboratory - Constraining Dark Energy and Modified Gravity with Euclid	43.Contract		1541976	25,697	-
Jet Propulsion Laboratory - EVI-2 Multi-Angle Image for Aerosols (MAIA) Proposal	43.Contract		1558557	6,450	-
Jet Propulsion Laboratory - High Operational Temperature MWIR Detectors with Optical Concentrators	43.Contract		1539053	31,590	-
Jet Propulsion Laboratory - High Operational Temperature MWIR Detectors with Optical Concentrators	43.Contract		1564182	26,944	-
Jet Propulsion Laboratory - Investigating the origin of the far-IR emission of Cygnus X-1 with Herschel	43.Contract		1475595	(447)	-
Jet Propulsion Laboratory - LHS 6343C: Precise Constraints on the Atmospheric Parameters of an Effectively Isolated Brown Dwarf	43.Contract		1519632	3,406	-
Jet Propulsion Laboratory - Mars Exploration Rover (MER) Athena Payload and Science Investigation	43.Contract		1537048	45,143	-
Jet Propulsion Laboratory - Measuring Atmospheric Abundances and Rotation of a Brown Dwarf with a Measured Mass and Radius	43.Contract		1538244	3,599	-
Jet Propulsion Laboratory - Measuring Atmospheric Abundances and Rotation of a Brown Dwarf with a Measured Mass and Radius	43.Contract		1557178	2,796	-
Jet Propulsion Laboratory - Measuring the Frequency of Massive Planets around M Dwarfs with Microlensing	43.Contract		1510383	15,339	-
Jet Propulsion Laboratory - New Tools for Understanding Exoplanet Atmospheres from Spectroscopy	43.Contract		1557615	92,920	-
Jet Propulsion Laboratory - Science With the Euclid Mission	43.Contract		1566700	2,803	-
Jet Propulsion Laboratory - The Beasts' Lair: A Spitzer Survey of the Host Galaxies of Superluminous Supernovae	43.Contract		1518879	1,751	-
Johns Hopkins University - Resolving the Milky Way and Nearby Galaxies with WFIRST	43.Contract		2003064015	18,421	-
Massachusetts Institute of Technology - REXIS for OSIRIS-Rex Mission Phase E	43.Contract		5923-001	37,652	-
Radiation Monitoring Devices, Inc. - High Efficiency Semiconductor Arrays for Hard X-Ray Imaging	43.Contract		C17-01	23,366	-
Southwest Research Institute - Juno Project	43.Contract		699042X	144,585	-
Subtotal of 43.Contract				**693,529**	**-**
Space Telescope Science Institute - UV Studies of a Core Collapse Supernova	43.RD		HST-GO-12540.01-A	5,408	-
Board of Regents of the University of Arizona - JWST Near Infrared Camera (NIRCam)	43.RD		152977	71,806	-
Jet Propulsion Laboratory - The Giant Planet Playground: Towards the Characterization of Earth Analogues	43.RD		1504839	86,656	-
University of Southern California - AirMOSS: Science Data Analysis and Science Data Assimilation	43.RD		Y88242	(34,409)	-
Subtotal of 43.RD				**129,461**	**-**
Total for NASA Sub Award				**1,585,740**	**-**
National Endowment for the Humanities					
Columbia University - Relocating Heart Disease in the Tropics: Race, Risk and Modernization Post-Independence India	45.161		1(GG008407-01)	56,645	-
Subtotal of 45.161				**56,645**	**-**
Total for National Endowment for the Humanities Sub Award				**56,645**	**-**
National Science Foundation					
Boise State University - SNM: Atomically Precise, Defect Free, DNA Masks with Embedded Metrology	47.041		5923-A	105,607	-
Massachusetts Institute of Technology - DMREF: Computational Design Principles for Functional DNA-Based Materials	47.041		5710003576	125,158	-
Massachusetts Institute of Technology - EFRI ACQUIRE: Scalable Quantum Networks with Error-Corrected Semiconductor Qubits	47.041		5710004174	147,041	-
Massachusetts Institute of Technology - EFRI-ODISSEI: Programmable Origami for Integration of Self-assembling Systems in Engineered Structures	47.041		5710003264	34,247	-

The accompanying notes are an integral part of this schedule.

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Perceptive Automata, Inc. - SBIR Phase I:Machine Vision for Content-based Video Marketing Analytics	47.041		No Awrd Nmbr	7,071	-
Regents of the University of California - Berkeley - SynBERC: Synthetic Biology Engineering Research Center	47.041		SA5283-11210	517	-
Subtotal of 47.041				**419,641**	**-**
Association of Universities for Research in Astronomy, Inc. - LSST Atmospheric Calibration	47.049		N67177C-L	82,608	-
Board of Regents, NSHE, obo, University of Nevada, Reno - AMO Physics in Parahydrogen Matrices	47.049		UNR 17-18	5,715	-
Columbia University - Columbia MRSEC	47.049		2GG008600	91,782	-
Columbia University - NEB-Novel Quantum Switches using Hetereogeneous Atomically Layered Nanostructures	47.049		1 (GG006107-02)	3,649	-
Johns Hopkins University - Postdoctoral and Graduate Fellowships, LHC Theory Initiative - Andrew Larkoski	47.049		2002708478	12,490	-
Massachusetts Institute of Technology - Center for Ultracold Atoms	47.049		5710003095	1,240,551	-
Northwestern University - Quantum Information and Quantum Computation for Chemistry: Challenges and Opportunities	47.049		SP0040115-PROJ0011214	26,928	-
Northwestern University - Surfaces of Secondary Organic Aerosol Particles	47.049		SP0036066-PROJ0009763	13,102	-
Yale University - ACME: Advanced Cold Molecule Electron Electric Dipole Moment Search	47.049		C15D11959(D02087)	549,214	-
Subtotal of 47.049				**2,026,039**	**-**
Center for Dark Energy Biosphere Investigations - Investigating the Bioavailability and Degradation of Sedimentary Organic Matter	47.050		76197013	87,707	-
Columbia University - PLIOcene MAXimun sealevel (PLIOMAX): Dynamic ice sheet-Earth response in a warmer world	47.050		1 (GG006124)	67,708	-
Massachusetts Institute of Technology - INSPIRE: Search for Records of the Hadean Dynamo in Detrital Zircons	47.050		5710004192	18,978	-
Southern California Earthquake Center - Geoinformatics: Community Computational Platforms for Developing Three-Dimensional Models of Earth Structure, Phase II	47.050		53898061	2,698	-
University of Southern California - SCEC4	47.050		Y86595	94,141	-
Subtotal of 47.050				**271,232**	**-**
Clemson University - Advanced Cyberinfrastructure - Research and Educational Facilitation: Campus-Based Computational Research Support	47.070		1716-206-2009949	(144)	-
Massachusetts Institute of Technology - A Center for Brains, Minds, and Machines: The Science and the Technology of Intelligence	47.070		5710003525	777,458	158,386
Massachusetts Institute of Technology - Printable Robots: An Expedition in Computing for Compiling Functional Physical Machines	47.070		5710003169	114,617	-
Subtotal of 47.070				**891,931**	**158,386**
Arizona State University - Collaborative Research: Southwest Collections of Arthropod Network (SCAN): A Model for Reciprocally Enhancing Heterogeneous Collections to Promote Taxonomic, Ecological, and Evolution	47.074		12-902	1,327	-
Cary Institute of Ecosystem Studies - Long-Term Ecological Research at the Hubbard Brook Experimental Forest	47.074		3298/200201814	15,257	-
Regents of the University of California - Berkeley - Synthetic biology for yeast	47.074		8319	126,233	-
The University of Memphis - Phylogeny and diversification in the uniquely diverse beetle family Curculionidae (true weevils)	47.074		S-40300	2,126	-
University of New Hampshire - Collaborative Research: Digitization TCN: The Macroalgal Herbarium Consortium: Accessing 150 Years of Specimen Data to Understand Changes in the Marine/Aquatic Environment	47.074		14-014	41,317	-
University of Notre Dame - Overcoming uncertainty to enable estimation and forecasting of Zika virus transmission	47.074		202799HC	12,305	-
Subtotal of 47.074				**198,565**	**-**
University of Massachusetts - Amherst - Cooperative Congressional Election Study, 2010 to 2014 Panel Survey	47.075		15-008309A	11,015	-
Subtotal of 47.075				**11,015**	**-**
University of Massachusetts - Boston - Supporting Large Scale Science Education Change: Understanding Online Professional Development and Adoption Variation Related to the Revised Advanced Placement Curriculum	47.076		S2013 20541	83,931	-
Subtotal of 47.076				**83,931**	**-**
California Institute of Technology - Powering the Planet: A CCI Center for the Direct Conversion of Sunlight into Chemical Fuel	47.Contract		68D-1094592	178,406	-
Subtotal of 47.Contract				**178,406**	**-**
Smithsonian Astrophysical Observatory - The Event Horizon Telescope Experiment (MSIP)	47.RD		SV5-85010	75,416	-
Subtotal of 47.RD				**75,416**	**-**
Total for National Science Foundation Sub Award				**4,156,176**	**158,386**
Social Security Administration					
National Bureau of Economic Research - Disability Insurance and Treatment for Pain	96.007		51010.05:DRC17-15	20,757	-
National Bureau of Economic Research - Geographic Variation in SSDI Receipt: The Role of Claimants Representatives - Continued	96.007		51010.05:DRC17-18	23,355	-
National Bureau of Economic Research - Geographic Variation in SSDI Receipt: The Role of Claimants' Representatives	96.007		51010.04:DRC16-15	9,032	-
National Bureau of Economic Research - The Effect of the Great Recession on the Flow of SSDI Claims to ALJ's	96.007		51010.04-HMS	28,810	-
Subtotal of 96.007				**81,954**	**-**
Total for Social Security Administration Sub Award				**81,954**	**-**
U.S. Institute of Peace					
Consortium of Humanitarian Agencies - Post-War Resettlement of Women IDPs in Northern Sri Lanka	91.002		USIP-191-12F CHA-HSPH	10	-
Subtotal of 91.002				**10**	**-**

The accompanying notes are an integral part of this schedule.

Harvard University
Schedule of Expenditures of Federal Awards
Year Ended June 30, 2017

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Total for U.S. Institute of Peace Sub Award				**10**	-
Total for Research and Development Cluster Sub Award				**74,962,086**	**1,904,661**
Total for Research and Development Cluster				**612,983,343**	**132,080,688**
Student Financial Assistance Cluster					
Direct Awards					
Department of Education					
Federal SEOG 2016-2017	84.007	P007A161874		2,213,859	-
Subtotal of 84.007				**2,213,859**	-
Federal Work-Study Program (On-Campus)	84.033	N/A		1,278,738	-
Federal Work-Study Program (Off-Campus)	84.033	N/A		1,110,711	-
Subtotal of 84.033				**2,389,449**	-
Federal Pell Grant 2016-2017	84.063	P063P160187		5,381,278	-
Subtotal of 84.063				**5,381,278**	-
Teacher Education Assistance for College and Higher Education Grant (TEACH) 2016-2017	84.379	P379T170187		14,896	-
Subtotal of 84.379				**14,896**	-
Federal Family Education Loans	84.032				
Outstanding Loans as of July 1, 2016	84.032			377,338	-
New Loans Issued during 2017	84.032			**0**	
Administrative Cost Allowance	84.032			**0**	
Subtotal of 84.032				**377,338**	-
Federal Perkins Loans	84.038				
Outstanding Loans as of July 1, 2016	84.038			65,515,924	-
New Loans Issued during 2017	84.038			7,283,204	-
Administrative Cost Allowance	84.038			0	-
Subtotal of 84.038				**72,799,128**	-
Federal Direct Student Loans	84.268			132,997,595	-
Subtotal of 84.268				**132,997,595**	-
Total for Department of Education Direct Award				**216,173,543**	-
DHHS					
Health Professions Student Loans including Primary Care Loans/Loans for Disadvantaged Students					-
Outstanding Loans as of July 1, 2016	93.342	4 E36HP148640300		11,452,959	-
New Loans Issued during 2017				2,687,569	-
Administrative Cost Allowance				0	-
Subtotal of 93.342				**14,140,528**	-
Total for DHHS Direct Award				**14,140,528**	-
Total for Student Financial Assistance Cluster Direct Award				**230,314,071**	-
Total for Student Financial Assistance Cluster				**230,314,071**	-
Other Programs					
Direct Awards					
Agency for International Development					
The Lower Mekong Public Policy Initiative	98.U01	AID-OAA-A-13-00033		1,489,141	867,402
Subtotal of 98.U01				**1,489,141**	**867,402**
Total for Agency for International Development Direct Award				**1,489,141**	**867,402**
Department of Defense					
Chaining Methods and their Applications to Computer Science (Conference)	12.300	N00014-16-1-2646		4,760	-
Mechanics-Looking Ahead	12.300	N00014-16-1-2552		5,000	-
Pass-through to BWH: 2014 DURIP: Ambulatory monitoring and biospecimen storage equipment for research on the brain restoration function of sleep to maintain waking performance	12.300	N00014-15-1-2917		109,640	109,640
Pass-through to BWH: 2015 DURIP: Real-time Analysis of Breath Biomarkers Using Selected Ion Flow Tube Mass Spectrometry for Research on the Restorative Effects of Sleep	12.300	N00014-16-1-2965		291,445	291,445
Subtotal of 12.300				**410,845**	**401,085**
DURIP: 330-GHz Vector Network Analyzer for Ultrafast 2D Material Electronics	12.800	FA9550-16-1-0353		575,490	-
Subtotal of 12.800				**575,490**	-
Curriculum Development for the National Guard Homeland Security Institute, Phase IV	12.Contract	W912SV -14-P-0201		185	-
Curriculum Development for the National Guard Homeland Security Institute, Phase V	12.Contract	W912SV-15-P-0143		21,296	-
General and Flag Officer Homeland Security Executive Seminar	12.Contract	W912SV-16-P-0037		(2,114)	-

The accompanying notes are an integral part of this schedule.

Harvard University
Schedule of Expenditures of Federal Awards
Year Ended June 30, 2017

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
General and Flag Officer Homeland Security Executive Seminar	12.Contract	W912SV-17-P-0033		140,592	-
Leadership in Homeland Security	12.Contract	W912SV-16-P-0094		153,255	-
Subtotal of 12.Contract				**313,214**	**-**
Total for Department of Defense Direct Award				**1,299,549**	**401,085**
Department of Education					
Foreign Language and Area Studies Fellowships	84.015	P015B140085-16		222,084	-
Foreign Language and Area Studies Fellowships	84.015	P015B140089-17		140,569	-
Foreign Language and Area Studies for Davis Center for Russian and Eurasian Studies	84.015	P015B140087 - 17		252,200	-
National Resource Centers for the Committee on African Studies	84.015	P015A140089 - 16		287,720	-
Subtotal of 84.015				**902,573**	**-**
National Resource Centers for Davis Center for Russian and Eurasian Studies	84.015A	P015A140087 - 16		184,547	-
Subtotal of 84.015A				**184,547**	**-**
Total for Department of Education Direct Award				**1,087,120**	**-**
Department of Homeland Security					
State and Local Homeland Security National Training Program	97.005	EMW-2013-CA-K00067		32,551	-
Subtotal of 97.005				**32,551**	**-**
Evaluation of the Greater Boston Countering Violent Extremism (CVE) Pilot Program	97.108	2015-ST-108-FRG005		224,827	-
Subtotal of 97.108				**224,827**	**-**
Total for Department of Homeland Security Direct Award				**257,378**	**-**
Department of Justice					
Passageway Health Law Collaborative on Domestic Violence (Re-Submission)	16.U01	2014-WL-AX-0037		108,415	-
Subtotal of 16.U01				**108,415**	**-**
Total for Department of Justice Direct Award				**108,415**	**-**
Department of State					
Development of Fulbright University Vietnam and Transition of Vietnam Fulbright School of Public Policy and Management	19.011	S-ECAGD-15-GR-1061		1,733,266	32,278
Subtotal of 19.011				**1,733,266**	**32,278**
Disability Civil Society, Human Rights and Law in China	19.345	S-LMAQM-14-GR-1031		216,137	-
Internet Freedom Monitor	19.345	S-LMAQM-12-GR-1025		595,583	-
Subtotal of 19.345				**811,720**	**-**
FY2015 Vietnam Fulbright Economics Teaching Program (FETP)	19.400	S-ECAGD-15-GR-1023		(14,367)	-
FY2016 Vietnam Fulbright Economics Teaching Program (FETP)	19.400	S-ECAGD-16-GR-1025		578,049	-
Subtotal of 19.400				**563,682**	**-**
Total for Department of State Direct Award				**3,108,668**	**32,278**
Department of the Interior					
NAGPRA Consultation/Documentation Grant for Maricopa County, Arizona Collections at the Peabody Museum of Archaeology and Ethnology at Harvard University	15.922	P12AP10354		563	-
Subtotal of 15.922				**563**	**-**
Total for Department of the Interior Direct Award				**563**	**-**
Department of the Treasury					
Low Income Taxpayer Clinic	21.008	16-LITC0231-01-01		100,000	-
Low Income Taxpayer Clinic	21.008	17-LITC0231-02-02		64,059	-
Subtotal of 21.008				**164,059**	**-**
Total for Department of the Treasury Direct Award				**164,059**	**-**
Department of Veterans Affairs					
IPA - Cai, Tianxi	64.Contract	6007023		13,839	-
Subtotal of 64.Contract				**13,839**	**-**
Total for Department of Veterans Affairs Direct Award				**13,839**	**-**
EPA					
Reduce and Recover: Save Food for People	66.808	X196275416-0		33,947	-
Subtotal of 66.808				**33,947**	**-**
Total for EPA Direct Award				**33,947**	**-**
Institute of Museum and Library Services					
Evaluation at HMSC: Capacity Building	45.301	MA-10-16-0200-16		63,062	-
Evolving Curricula: Collaborating with Middle School Teachers on the Next Generation Science Standards	45.301	MA-10-15-0039-15		58,397	-
Preserving an American Treasure: A New Storage System for the Mineral Collection at Harvard Universitys Mineralogical and Geological Museum	45.301	MA-30-15-0159-15		115,968	-

The accompanying notes are an integral part of this schedule.

Harvard University
Schedule of Expenditures of Federal Awards
Year Ended June 30, 2017

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
The Peabody Museum Collections Documentation and Digitization Project	45.301	MA-30-14-0115-14		50,538	-
What's in a Name: Species, Naming and the Process of Science	45.301	MA-10-14-0113-14		58,152	4,770
Subtotal of 45.301				**346,117**	**4,770**
Scaling Up Perma. cc: Ensuring the Integrity of the Digital Scholarly Record	45.312	LG-70-16-0023-16		208,515	-
Subtotal of 45.312				**208,515**	**-**
Foundations to Actions: Extending Innovations in Digital Libraries in Partnership with NDSR Learners	45.313	RE-40-16-0082-16		162,215	15,190
Testing the National Digital Stewardship Residency (NDSR) Model in Boston, MA	45.313	RE-06-13-0055-13		(48,308)	-
Subtotal of 45.313				**113,907**	**15,190**
Total for Institute of Museum and Library Services Direct Award				**668,539**	**19,960**
Japan - United States Friendship Commission					
Japanese Art Workshop for Students (JAWS)	90.U01	17-03		40,769	-
Subtotal of 90.U01				**40,769**	**-**
Total for Japan - United States Friendship Commission Direct Award				**40,769**	**-**
NASA					
The 8th International GEOS-Chem Meeting (IGC8)	43.001	NNX17AD86G		15,547	-
Subtotal of 43.001				**15,547**	**-**
Total for NASA Direct Award				**15,547**	**-**
National Endowment for the Humanities					
The Giza Project: Consolidated Archaeological Reference Database II	45.149	PW-234775-16		205,123	-
Subtotal of 45.149				**205,123**	**-**
What Happened to the Civil Rights Movement	45.163	EH-250874-16		139,006	-
Subtotal of 45.163				**139,006**	**-**
Digital Giza: A New Portal to the Pyramids	45.164	MT-234139-16		76,117	-
Pages from the Past: Illuminated Manuscripts in Boston-Area Collections	45.164	GI-228479-15		242,179	-
Subtotal of 45.164				**318,296**	**-**
Total for National Endowment for the Humanities Direct Award				**662,425**	**-**
National Security Agency					
STARTALK: Bridges to Russia	12.900	H98230-16-1-0110		59,775	-
STARTALK: Bridges to Russia	12.900	H98230-17-1-0075		19,138	-
Subtotal of 12.900				**78,913**	**-**
Total for National Security Agency Direct Award				**78,913**	**-**
Total for Other Programs Cluster Direct Award				**9,028,872**	**1,320,725**
Other Programs					
Pass-through Program					
Agency for International Development					
Brigham and Women's Hospital, Inc - Health Advancement In Vietnam (HAIVN)	98.001		AID-440-A-16-00002	34,258	-
Concern Worldwide U.S. Inc - Humanitarian Leadership Program: Developing the Next Generation of Humanitarian Leaders	98.001		BBE-HVD-001	111,391	-
Subtotal of 98.001				**145,649**	**-**
Total for Agency for International Development Sub Award				**145,649**	**-**
Department of Agriculture					
University of New England - Supermarket Science: Multipronged Approaches to Increasing Fresh, Frozen and Canned Fruit and Vegetable Purchases	10.310		230060-05	76,913	-
Subtotal of 10.310				**76,913**	**-**
Total for Department of Agriculture Sub Award				**76,913**	**-**
Department of Defense					
Okaloosa County School District - Okaloosa S.C.I.E.N.C.E.(Science; Community-Involvement; Engagement; Networking; Capacity-Enhancement)	12.557		HH601014RCPER13	(23)	-
Okaloosa County School District - Okaloosa S.C.I.E.N.C.E.(Science; Community-Involvement; Engagement; Networking; Capacity-Enhancement)	12.557		MIS2124	90,981	-
Subtotal of 12.557				**90,958**	**-**
Abt Associates, Inc. - Support and Development to the Corps Alternative Financing Program	12.Contract		47170	15,315	-
Abt Associates, Inc. - Support and Development to the Corps Alternative Financing Program- Phase II	12.Contract		47667	14,300	-
Subtotal of 12.Contract				**29,615**	**-**
Total for Department of Defense Sub Award				**120,573**	**-**
Department of Education					

The accompanying notes are an integral part of this schedule.

Harvard University
Schedule of Expenditures of Federal Awards
Year Ended June 30, 2017

Federal Grantor/Pass-through Grantor/Program or Cluster Title	CFDA Number	Award Number	Pass-through Entity Identification Number	Federal Expenditures	Passed to Sub-Recipients
Boston Plan for Excellence - Boston Teacher Residency - Preparing and Supporting Effective Teachers in and for Boston's Turnaround Schools	84.Contract		No Awrd Nmbr	(180)	(180)
Subtotal of 84.Contract				**(180)**	**(180)**
Total for Department of Education Sub Award				**(180)**	**(180)**
Department of Energy					
Los Alamos National Laboratory - Genomics Capacity Building for Rapid Disease Detection and Diagnosis: Strengthened by Responsible Science, Bioethics, and Mentorship	81.Contract		420632	8,722	-
Subtotal of 81.Contract				**8,722**	**-**
Krell Institute - Krell Institute DOE Computational Science Graduate Fellowship	81.U01		No Awrd Nmbr	32,365	-
Subtotal of 81.U01				**32,365**	**-**
Total for Department of Energy Sub Award				**41,087**	**-**
Department of Housing & Urban Development					
Neighborhood Reinvestment Corporation - A Shared Future: Fostering Communities of Inclusion in an Era of Inequality - Neighborworks	14.U01		No Awrd Nmbr	8,800	-
Neighborhood Reinvestment Corporation - Achieving Excellence in Community Development	14.U01		No Awrd Nmbr	288,312	-
Subtotal of 14.U01				**297,112**	**-**
Total for Department of Housing & Urban Development Sub Award				**297,112**	**-**
Institute of Museum and Library Services					
New York Botanical Garden - BHL Expanding Access to Biodiversity Literature	45.312		NYBG-LG70-15-0138-02	117,063	-
Subtotal of 45.312				**117,063**	**-**
Total for Institute of Museum and Library Services Sub Award				**117,063**	**-**
National Endowment for the Humanities					
Bryn Mawr College - College Women: Documenting the Student Experience at the Seven Sisters Colleges	45.149		43125	10,898	-
Subtotal of 45.149				10,898	-
Total for National Endowment for the Humanities Sub Award				**10,898**	**-**
Total for Other Programs Cluster Sub Award				**809,115**	**(180)**
Total for Other Programs Cluster				**9,837,987**	**1,320,545**
Grand Total for SEFA				**$ 853,135,401**	**$ 133,401,233**

The accompanying notes are an integral part of this schedule.

Harvard University
Notes to Schedule of Expenditures of Federal Awards
Year Ended June 30, 2017

1. Basis of Presentation

The accompanying Schedule of Expenditures of Federal Awards (the "Schedule") summarizes the expenditures of Harvard University (the "University") under programs of the federal government for the year ended June 30, 2017 The information in this schedule is presented in accordance with the Title 2 U.S. *Code of Federal Regulations* Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (Uniform Guidance). Therefore, some amounts presented in this schedule may differ from amounts presented in, or used in the preparation of, the basic financial statements of the University. Negative amounts represent adjustments or credits to amounts reported as expenditures in prior years in the normal course of business. CFDA numbers and pass-through numbers are provided when available.

For purposes of the Schedule, Federal awards include all grants, contracts and similar agreements entered into directly between the University and agencies and departments of the Federal government and all subawards to the University by nonfederal organizations pursuant to Federal grants, contracts and similar agreements.

The term "Revised" accompanying the award numbers on the Schedule represents a revised Notice of Grant Award (NGA).

2. Summary of Significant Accounting Policies

Expenditures reported in the Schedule are reported on the accrual basis of accounting. Such expenditures are recognized following the cost principles contained in the Uniform Guidance and OMB Circular A-21, *Cost Principles for Educational Institutions*, as applicable, wherein certain types of expenditures are not allowable or are limited to reimbursement.

3. Facilities and Administrative Costs

The University 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 University recovers facilities and administrative costs associated with sponsored agreements pursuant to separate arrangements negotiated with the University's Federal cognizant agency by each of the Medical School, School of Public Health, and the University Area. Predetermined facilities and administrative rates have been established for the University Area and Medical School (including the School of Dental Medicine) through June 30, 2019. The School of Public Health has had provisional indirect cost rates since the beginning of fiscal year 2014.

Facilities and administrative cost recoveries associated with training programs generally represent the maximum administrative overhead allowance allowed by the sponsors. The University also recovers administrative cost allowances from certain campus-based student financial assistance programs.

4. Federal Student Loan Programs

The Federal student loan programs listed below are administered directly by the University and balances and transactions relating to these programs are included in the University's consolidated financial statements. Loans outstanding at the beginning of the year, the administrative cost

allowance and loans made during the year are included in the federal expenditures presented in the Schedule. The balance of loans outstanding at June 30, 2017 consists of:

	CFDA #		Amount
Perkins	84.038	$	59,869,288
FFEL (includes FISL, Sub Stafford, Unsub Stafford, and SLS)	84.032L		364,990
HPSL/LDS/PCL	93.342		12,040,881
Total Federal Student Loans		$	72,275,159

The University participated in the School as Lender program (CFDA# 84.032L) beginning in 1977 until the program was ended in June 2010. There were no new loans distributed to students in connection with this program during the year ended June 30, 2017.

Loans made by the University to eligible students under the Federal student loan programs and Federally guaranteed loans issued to students during the year ended June 30, 2017 are summarized as follows:

	CFDA #		Amount
Perkins	84.038	$	7,283,204
Direct Subsidized Stafford	84.268		1,024,929
Direct Unsubsidized Stafford	84.268		70,860,025
Direct PLUS	84.268		3,909,084
Direct Grad PLUS	84.268		57,023,557
HSPL/PCL/LDS	93.342		2,687,569
		$	142,788,368

Part II

Reports on Internal Control and Compliance

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 Joint Committee on Inspection of the Governing Boards of Harvard University:

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 Harvard University (the "University"), which comprise the consolidated balance sheet as of June 30, 2017 and the related consolidated statements of changes in net assets with general operating account detail, changes in net assets of the endowment and cash flows for the year then ended, and the related notes to the financial statements, and have issued our report thereon dated October 26, 2017.

Internal Control Over Financial Reporting

In planning and performing our audit of the financial statements, we considered the University'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 University's internal control. Accordingly, we do not express an opinion on the effectiveness of the University'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 University'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.

PricewaterhouseCoopers LLP

Boston, Massachusetts
October 26, 2017

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 Joint Committee on Inspection of the Governing Boards of Harvard University:

Report on Compliance for Each Major Federal Program

We have audited Harvard University's (the "University") 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 University's major federal programs for the year ended June 30, 2017. The University's major federal programs are identified in the summary of auditor's 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 University'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 University'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 University's compliance.

Opinion on Each Major Federal Program

In our opinion, the University 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, 2017.

Report on Internal Control Over Compliance

Management of the University 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 University'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 University'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
February 14, 2018

Part III

Audit Findings and Questioned Costs

Harvard University
Schedule of Findings and Questioned Costs
Year Ended June 30, 2017

I. Summary of Auditors' Results

Financial statements

Type of audit report issued	Unmodified
Internal control over financial reporting:	
▪ Material weaknesses identified?	No
▪ Significant deficiency(ies) identified that are not considered to be material weaknesses?	None reported
▪ Noncompliance which is material to the financial statements noted?	No

Federal awards

Internal control over major programs:	
▪ Material weaknesses identified?	No
▪ Significant deficiency(ies) identified that are not considered to be material weaknesses?	None reported
Type of auditor's report issued on compliance for student financial assistance programs:	Unmodified
Any audit findings disclosed that are required to be reported in accordance with 2 CFR 200.516(a)?	No

Identification of major programs

CFDA Number	Name of Federal Program or Cluster
Various	Research and Development Cluster
98.Unknown	The Lower Mekong Public Policy Initiative
Various	Student Financial Assistance Cluster
84.032L	FFEL – School as a Lender

Dollar threshold to distinguish between Type A and Type B programs	$3,000,000
Auditee qualifies as a low-risk auditee?	Yes

II. Financial Statement Findings
None noted.

III. Findings and Questioned Costs for Federal Awards
None noted.

2016-001 Equipment and Real Property Management

Cluster: Research and Development Cluster and Other Programs
Grantor: Various
Award Name: Various
Award Year: Various
Award Numbers: Various
CFDA Number: Various

During PwC's equipment inventory testing procedures, 40 items were selected from the equipment inventory listing and traced to the floor and 40 items from the floor were selected and traced to the equipment inventory listing (80 selections in total across the University). Through PwC's testing, they identified one selection that was not inventoried in accordance with applicable requirements and as a result remained on the equipment listing, however, this item was no longer in use and should have been labelled as disposed. Upon further analysis of this exception performed by management, it was determined that as of August 2016, 731 out of the 3,690 pieces of equipment with a net book value totaling $17.9 million had not yet been inventoried within the two year period from the last equipment observation.

We implemented a new equipment inventory system in fiscal year 2015 and fiscal year 2016 was the first required physical inventory after the conversion. There were several complexities and issues relating to this system change including the need for a custom written inventory report that was not available until well into the inventory year. Additionally, there was a shift of equipment management to a shared responsibility between Sponsored Programs and Finance at each school. Lastly, we do not utilize tools for equipment management, such as an electronic tagging system, therefore resulting in an extremely manual process. Management did not fully anticipate the time and resources needed to complete the equipment observation on time.

PwC recommended that the University complete a full inventory observation for all Federally funded equipment that was not inventoried timely. Additionally, PwC recommended that we should implement a formal training program for financial and operational managers of Federal equipment to ensure appropriate personnel have an understanding of OMB Uniform Guidance requirements specific to equipment inventory. It was recommended that we should investigate and potentially invest in technological tools to assist with the burden of a fully manual inventory system. PwC recommended that management continue to develop a program and reasonable timelines to allow the federal equipment observation to be performed by the required due dates.

Current Year Update

The University completed the full inventory observation of all federally funded equipment as of November 2016.

Each school within the University identified the individuals who are responsible for the financial and operational management of Federal equipment. Those individuals were assigned revised equipment training, including training intended to develop an enhanced understanding of the equipment management duties required by OMB's Uniform Guidance. Schools are monitoring completion of the training through the Harvard Training Portal. In addition to training, schools send representatives to monthly equipment meetings where issues and concerns related to Harvard's equipment management program are discussed and resolved.

The University is exploring the use of RFID tags for equipment tracking. Three schools are moving forward with a pilot during fiscal year 2018. If the pilot is successful and results in lower costs, higher compliance, and better inventories, requests for funding for a broader implementation will be considered.

Equipment managers across the University have agreed to perform rolling inventories where specific departments or locations are inventoried throughout the 2-year inventory cycle. The schedules for inventories are shared at the monthly meetings and progress toward inventory completion is tracked.