

114TH CONGRESS
2D SESSION

S. 2784

To ensure that Federal science agencies and institutions of higher education receiving Federal research and development funding are fully engaging the entire national talent pool, and for other purposes.

IN THE SENATE OF THE UNITED STATES

APRIL 12, 2016

Ms. HIRONO (for herself, Mr. PETERS, Mrs. MURRAY, Mrs. GILLIBRAND, Mr. BLUMENTHAL, Mr. MARKEY, Ms. CANTWELL, Mr. BOOKER, Mr. SCHATZ, Mr. MERKLEY, and Ms. MIKULSKI) introduced the following bill; which was read twice and referred to the Committee on Health, Education, Labor, and Pensions

A BILL

To ensure that Federal science agencies and institutions of higher education receiving Federal research and development funding are fully engaging the entire national talent pool, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE; FINDINGS.**

4 (a) SHORT TITLE.—This Act may be cited as the
5 “STEM Opportunities Act of 2016”.

6 (b) FINDINGS.—Congress finds as follows:

1 (1) Utilizing the talent and potential of all sec-
2 tors of the United States population is essential to
3 ensuring the best and brightest minds contribute to
4 our Nation's innovation and global competitiveness.
5 Substantial research has found that increasing diver-
6 sity in the workplace can increase productivity, im-
7 prove decisionmaking, foster creativity, drive innova-
8 tion, and increase economic growth.

9 (2) Research shows that women and minorities
10 who are interested in science, technology, engineer-
11 ing, and mathematics (STEM) careers are dis-
12 proportionately lost at nearly every transition in
13 their career trajectories. If the percentage of women
14 and minorities earning degrees in STEM fields does
15 not keep pace with their share of the population, the
16 United States could face an acute shortfall in the
17 overall number of students who earn degrees in
18 STEM fields. United States companies are increas-
19 ingly seeking students with STEM skills, and the
20 United States will struggle to maintain a competitive
21 edge in the 21st century global economy if it does
22 not maintain its leadership in STEM.

23 (3) In 2012, underrepresented minority groups
24 comprised 36.4 percent of the college-age population
25 of the United States, but only 14.7 percent of stu-

1 dents earning bachelor’s degrees in STEM fields.
2 The Higher Education Research Institute at the
3 University of California, Los Angeles, found that,
4 while freshmen from underrepresented minority
5 groups express an interest in pursuing a STEM un-
6 dergraduate degree at the same rate as all other
7 freshmen, only 22.1 percent of Latino students, 18.4
8 percent of African-American students, and 18.8 per-
9 cent of Native American students studying in STEM
10 fields complete their degree within 5 years, com-
11 pared to approximately 33 percent and 42 percent 5-
12 year completion rates for White and Asian students,
13 respectively.

14 (4) According to 3-year estimates from the
15 2013 American Community Survey, Southeast Asian
16 Americans and Pacific Islanders have higher poverty
17 rates and lower educational attainment rates than
18 the overall population in the United States. Aggre-
19 gated data on Asian Americans and Pacific Island-
20 ers (referred to in this section as “AAPI”), on aver-
21 age, masks educational inequalities that exist for
22 some AAPI members, particularly Southeast Asians,
23 Pacific Islanders, and Native Hawaiians.

24 (5) According to the 2015 Women, Minorities,
25 and Persons with Disabilities in Science and Engi-

1 neering Report developed by the National Science
2 Foundation (referred to in this section as the
3 “NSF”), women earned only 19 percent of all bach-
4 elor’s degrees awarded in engineering and 18 per-
5 cent in computer science. In terms of advancing
6 through higher levels of STEM education, women
7 persist at a similar rate of completion through doc-
8 torate degrees in certain STEM fields. However, in
9 other fields such as the physical sciences, their per-
10 sistence numbers decrease by as much as 1 in 4.

11 (6) Minorities currently make up 37.9 percent
12 of our Nation’s total population, yet Black and His-
13 panic faculty only hold about 6.5 percent of all
14 tenured and tenure-track positions and 5 percent of
15 full professor positions. Many of the numbers for
16 American Indian, Alaskan Native, Native Hawaiian,
17 or other Pacific Islander representation at different
18 faculty ranks are too small for the NSF to report
19 publicly. Women’s participation in STEM similarly
20 drops at the faculty level. While women account for
21 50.8 percent of the Nation’s total population, they
22 hold only 25 percent of all tenured and tenure-track
23 positions and 17 percent of full professor positions
24 in STEM fields in our Nation’s universities and 4-
25 year colleges.

1 (7) Research has found that all women of color,
2 including Asian American women, face a “double
3 bind” in pursuing STEM careers, encountering chal-
4 lenges faced both by women and by ethnic minori-
5 ties, and are underrepresented in upper management
6 and leadership in STEM academia, industry, and
7 government. A 2015 NSF report found that Black
8 and Hispanic women together only hold about 4.4
9 percent of all tenured and tenure-track positions and
10 1.5 percent of full professor positions. While Asian
11 American women make up 6.1 percent of all tenured
12 and tenure-track positions, their representation
13 drops to 1.9 percent at the full professor position.

14 (8) A large body of research has found that
15 both males and females in STEM report facing sig-
16 nificant challenges in balancing their work and life
17 demands on a regular basis. Furthermore, research
18 has found that family characteristics, such as mar-
19 ital status and the presence of children at home, are
20 related to women’s chances of earning tenure or
21 holding other leadership positions. A 2015 NSF re-
22 port found that women scientists and engineers were
23 far more likely than men to cite family responsibil-
24 ities as a reason for unemployment, including 27.2
25 percent of White women, 48.6 percent of Asian

1 women, and 24.4 percent of underrepresented mi-
2 nority women.

3 (9) Decades of cognitive psychology research re-
4 veal that most people carry implicit, or unconscious
5 biases, that can unintentionally influence people's at-
6 titudes, beliefs, behaviors, and decisionmaking proc-
7 esses. Research has shown that these subtle biases
8 can impact classroom experiences, workplace envi-
9 ronment and culture, peer review processes, hiring,
10 promotion and evaluation, and even affect the per-
11 formance of women and minorities in STEM fields.

12 (10) NSF's ADVANCE program was created in
13 2001 under President George W. Bush's Adminis-
14 tration to increase the representation and advance-
15 ment of women in academic science and engineering
16 careers, thereby developing a more diverse science
17 and engineering workforce. The ADVANCE pro-
18 gram has supported comprehensive, institution-wide
19 projects at institutions of higher education to trans-
20 form institutional practices and climate. However,
21 additional funding and mechanisms are needed for
22 ADVANCE to assist in increasing the representation
23 and advancement of other groups that are also
24 underrepresented in STEM fields. In addition, an
25 ADVANCE Center of Excellence could institu-

1 tionalize and scale up the best practices and policies
 2 from United States institutions of higher education
 3 that are receiving ADVANCE grants.

4 (11) NSF currently administers the Presi-
 5 dential Award for Excellence in Science, Mathe-
 6 matics, and Engineering Mentoring (referred to in
 7 this section as “PAESMEM”) on behalf of the Of-
 8 fice of Science Technology and Policy to recognize
 9 individuals and organizations who have dem-
 10 onstrated excellence in mentoring in STEM fields.
 11 While a large body of research has shown that men-
 12 toring is key for the retention and success of under-
 13 represented groups in STEM, underrepresented
 14 STEM academics and professionals are often dis-
 15 proportionately burdened by service and mentoring
 16 responsibilities, which can harm their chances of re-
 17 ceiving tenure or other promotions. Furthermore, ac-
 18 cess to positive mentorship is not always available to
 19 STEM professionals at early stages of their careers.
 20 By recognizing and rewarding exemplary STEM
 21 mentors at earlier points in their careers,
 22 PAESMEM has the potential to encourage profes-
 23 sionals to take on positive mentoring responsibilities
 24 in the context of other career development challenges
 25 and pressures that occur. Furthermore, awards such

1 as PAESMEM can encourage institutions to develop
 2 a culture that prioritizes the development of positive
 3 mentoring relationships.

4 (12) The Federal Government provides more
 5 than 60 percent of research funding at institutions
 6 of higher education and, through its grant-making
 7 policies, has had significant influence on institution
 8 of higher education policies, including policies re-
 9 lated to institutional culture and structure.

10 (13) Throughout United States history, many
 11 leaders have worked to improve opportunities in
 12 STEM for women, minorities, and the public at
 13 large. Those leaders include the following:

14 (A) Florence R. Sabin was a pioneering
 15 medical researcher and an outstanding teacher
 16 and professor of anatomy. In 1917, at Johns
 17 Hopkins University she became the first female
 18 full professor at an American medical college.
 19 She was also the first female president of the
 20 American Association of Anatomists, and the
 21 first permanent female member of the National
 22 Academy of Sciences. Her work shed light on
 23 the bacteria that cause tuberculosis, the origin
 24 of red blood cells, and many other medical ad-
 25 vances.

1 (B) Roland B. Scott was a pediatrician, al-
2 lergist, and pioneer in the research on Sickle
3 Cell Disease, serving as the Chairman of Pedi-
4 atrics at Howard University from 1949 to
5 1973. He founded and ran Howard University's
6 Center for Sickle Cell Disease, and helped enact
7 the Sickle Cell Anemia Control Act to establish
8 research and treatment centers. He mentored
9 many Black medical students and researchers,
10 and continued to make house calls to help
11 Black patients, who were often denied care in
12 segregated hospitals in the District of Colum-
13 bia. He authored more than 250 scientific pa-
14 pers, and his many awards include the Jacobi
15 Award from the American Academy of Pediat-
16 rics.

17 (C) Carl Sagan was an American astron-
18 omer and science writer and popularizer. His
19 early research focused on understanding the
20 physical conditions and atmospheres of the
21 planets, and he helped select the landing sites
22 for the Viking probes sent to explore Mars. He
23 won the 1978 Pulitzer Prize, and he twice re-
24 ceived the National Aeronautics and Space Ad-
25 ministration's Distinguished Public Service

1 Medal. In 1980, he founded the Planetary Soci-
2 ety to promote space exploration, and also
3 began hosting the television series Cosmos,
4 which was seen by hundreds of millions of peo-
5 ple across the globe.

6 **SEC. 2. DEFINITIONS.**

7 In this Act:

8 (1) DIRECTOR.—Except as provided in section
9 4, the term “Director” means the Director of the
10 National Science Foundation.

11 (2) FEDERAL LABORATORY.—The term “Fed-
12 eral laboratory” has the meaning given such term in
13 section 4 of the Stevenson-Wydler Technology Inno-
14 vation Act of 1980 (15 U.S.C. 3703).

15 (3) FEDERAL SCIENCE AGENCY.—The term
16 “Federal science agency” means any Federal agency
17 with not less than \$100,000,000 in research and de-
18 velopment expenditures in fiscal year 2014.

19 (4) INSTITUTION OF HIGHER EDUCATION.—The
20 term “institution of higher education” has the
21 meaning given such term in section 101(a) of the
22 Higher Education Act of 1965 (20 U.S.C. 1001(a)).

23 (5) RACE.—The term “race” refers to the same
24 disaggregated race response categories as the decen-
25 nial census of the population.

1 (6) STEM.—The term “STEM” means the
2 academic and professional disciplines of science,
3 technology, engineering, and mathematics, including
4 computer science.

5 (7) SYSTEMIC FACTORS.—The term “systemic
6 factors” refers to factors that social, behavioral, and
7 organizational research has shown can impede the
8 success of underrepresented groups in STEM. These
9 factors include implicit bias, stereotype threat, and
10 caregiving responsibilities.

11 (8) UNDERREPRESENTED GROUPS.—The term
12 “underrepresented groups” refers to groups of peo-
13 ple who are represented in a STEM discipline at a
14 rate lower than their proportion in the general popu-
15 lation, including Women, Blacks or African-Ameri-
16 cans, Hispanics or Latinos, Native Americans, Alas-
17 kan Natives, Native Hawaiians, Pacific Islanders,
18 subgroups of Asian Americans, and persons with dis-
19 abilities.

20 (9) WORK-LIFE ACCOMMODATION.—The term
21 “work-life accommodation” means institutional poli-
22 cies and practices designed to create healthy and
23 supportive environments to help students, trainees,
24 employees, contractors, or grantees effectively bal-
25 ance their work and personal responsibilities and

1 thereby maximize performance. These include flexi-
2 ble work schedules, leave, and stop-the-clock policies
3 for parents and caregivers, as well as support for
4 mental health and wellness.

5 **SEC. 3. PURPOSES.**

6 The purposes of this Act are as follows:

7 (1) To collect data necessary to increase the un-
8 derstanding of factors that influence the participa-
9 tion and career trajectories of underrepresented
10 groups in STEM fields.

11 (2) To coordinate the development of trainings
12 and policies across Federal science agencies to im-
13 prove inclusion of underrepresented groups in
14 STEM.

15 (3) To identify, implement, and disseminate
16 best practices for addressing the systemic factors
17 that can affect the inclusion of underrepresented
18 groups in STEM.

19 (4) To provide grants for evidence-based efforts
20 to recruit, retain, and advance members from under-
21 represented groups in STEM education and the
22 workforce.

23 (5) To recognize and reward teachers, faculty
24 members, and organizations who demonstrate a com-

1 mitment to encouraging the participation of under-
2 represented groups in STEM fields.

3 **SEC. 4. STEM INCLUSION INTERAGENCY WORKING GROUP.**

4 (a) IN GENERAL.—The Director of the Office of
5 Science and Technology Policy (referred to in this section
6 as the “Director”) shall establish the “STEM Inclusion
7 Interagency Working Group” (referred to in this Act as
8 the “working group”) under the authority of the National
9 Science and Technology Council Committee on Science.
10 The working group shall focus on creating a more diverse
11 and inclusive STEM workforce, and shall be responsible
12 for the following:

13 (1) Collecting and reporting information on
14 Federal funding for STEM.

15 (2) Reviewing and coordinating training efforts
16 across Federal science agencies to address factors
17 that impede inclusion in STEM of underrepresented
18 groups.

19 (3) Reviewing and coordinating policies across
20 Federal science agencies to address factors that can
21 impede the inclusion of underrepresented groups in
22 STEM.

23 (4) Assessing the effectiveness of the trainings
24 and policies implemented by Federal science agencies
25 in increasing the recruitment, retention, and success

1 of underrepresented groups in STEM across the
2 Federal science agencies.

3 (b) MEMBERSHIP.—

4 (1) IN GENERAL.—The working group shall
5 consist of not less than 7 members.

6 (2) APPOINTMENT.—Each agency with a rep-
7 resentative on the National Science and Technology
8 Council Committee on Science shall nominate a rep-
9 resentative to serve on the working group, and the
10 Director shall select not less than 6 of such nomi-
11 nees to serve for not more than 5 years on the work-
12 ing group.

13 (3) EXPERT IN EMPLOYEE TRAINING.—One
14 member of the working group shall be nominated by
15 the Director of the Office of Personnel Management
16 and approved by the Director and shall be an expert
17 in employee training.

18 (4) CHAIR; MEETINGS.—One member of the
19 working group shall be designated by the Director to
20 serve as the Chair of the working group for not
21 more than 2 years. The working group shall meet at
22 such times and places as designated by the Chair.

23 (c) STAKEHOLDER INPUT.—In carrying out the re-
24 sponsibilities under subsection (a), the working group
25 shall take into account input and recommendations from

1 non-Federal stakeholders, including the President’s Coun-
 2 cil of Advisors on Science and Technology, federally fund-
 3 ed and nonfederally funded researchers, institutions of
 4 higher education, scientific disciplinary societies and asso-
 5 ciations, nonprofit research institutions, industry (includ-
 6 ing small businesses), federally funded research and devel-
 7 opment centers, nongovernmental organizations, the Com-
 8 mittee on Science, Technology, Engineering, and Math
 9 Education (CoSTEM), the Interagency Title IX Working
 10 Group, and others with a stake in reducing barriers for
 11 developing a diverse and inclusive Federal STEM work-
 12 force.

13 (d) ACTIVITIES.—The working group shall engage in
 14 the following activities:

15 (1) COLLECTION OF DATA.—

16 (A) IN GENERAL.—Each Federal science
 17 agency shall annually collect standardized
 18 record-level information on demographics, in-
 19 cluding gender, race, ethnicity, disability, citi-
 20 zenship status, age, and years since completion
 21 of degree, as well as primary field, award type,
 22 review rating (as practicable), budget request,
 23 funding outcome, and awarded budget for all
 24 applications for merit-reviewed research and de-
 25 velopment grants to institutions of higher edu-

1 cation and Federal laboratories supported by
2 such agency. The working group shall coordi-
3 nate the collection and reporting of this data
4 gathered by the Federal science agencies with
5 the relevant Federal statistical agencies.

6 (B) UNIFORMITY AND STANDARDIZA-
7 TION.—The working group, with the approval
8 of the Director, shall establish a policy to en-
9 sure uniformity and standardization of the data
10 collection required under subparagraph (A) and
11 interoperability of data reporting as required
12 under subparagraph (D).

13 (C) RECORD-LEVEL DATA.—

14 (i) REQUIREMENT.—Beginning not
15 later than 2 years after the date of enact-
16 ment of this Act and annually thereafter,
17 each Federal science agency shall submit
18 to the working group record-level data col-
19 lected under subparagraph (A) in the form
20 required by the working group and con-
21 sistent with the policy established under
22 subparagraph (B).

23 (ii) PREVIOUS DATA.—As part of the
24 first submission under clause (i), each
25 Federal science agency, to the extent prac-

1 ticable, shall also submit comparable
2 record data for the 5 years preceding the
3 date of submission.

4 (iii) AVOIDING DUPLICATION OF EF-
5 FORTS.—The working group shall work
6 collaboratively with other relevant Federal
7 agencies to gather the information required
8 under clauses (i) and (ii) through existing
9 data collection and reporting efforts to the
10 extent possible.

11 (D) REPORTING.—Not later than 2 years
12 after the date of enactment of this Act and
13 every 2 years thereafter, the working group, in
14 collaboration with the relevant Federal statis-
15 tical agencies, shall provide to the National
16 Science Board all statistical summary data col-
17 lected under this paragraph. Not later than 6
18 months after receiving the summary data, the
19 National Science Board shall publish a report
20 that includes statistical summary data, find-
21 ings, and policy recommendations in a report as
22 required under section 4(j)(2) of the National
23 Science Foundation Act of 1950 (42 U.S.C.
24 1863(j)(2)). All statistical summary data shall
25 be disaggregated and cross-tabulated by race,

1 ethnicity, disability, gender, age, and number of
2 years since receiving doctoral degree, provided
3 that such data does not reveal personally identi-
4 fiable information about an individual.

5 (2) COORDINATION AND IMPLEMENTATION OF
6 TRAINING ACROSS FEDERAL SCIENCE AGENCIES TO
7 CREATE A MORE DIVERSE AND INCLUSIVE STEM
8 WORKFORCE.—

9 (A) IN GENERAL.—Not later than 6
10 months after the date of enactment of this Act,
11 the working group, with the approval of the Di-
12 rector, shall recommend a uniform policy for a
13 minimum frequency of trainings and a set of
14 model training curricula for Federal science
15 agencies to use to educate Federal STEM em-
16 ployees and program managers, senior man-
17 agers at Federal laboratories, and other feder-
18 ally funded intramural and extramural re-
19 searchers about methods for addressing the sys-
20 temic factors that can limit the recruitment, re-
21 tention, and success of underrepresented groups
22 at all stages of the STEM pipeline. The train-
23 ing policies and curricula shall address the fol-
24 lowing:

(i) Training at least biannually on reducing implicit bias in hiring, promotion, evaluation, the grant review process, and the workplace in general.

(ii) Methods to reduce the experience of stereotype threat.

(iii) Prevention of sexual harassment in the workplace.

(iv) Other evidence-based training on systemic factors that the working group determines can impede the inclusion of underrepresented groups in STEM and in the workplace.

(B) INTERAGENCY COORDINATION.—The working group shall ensure that training policies and curricula are coordinated across Federal science agencies and jointly supported as appropriate.

(C) EXISTING GUIDANCE.—In developing the policy and training curricula under subparagraph (A), the working group shall utilize guidance and best practices already developed or collected by the Office of Science and Technology Policy, the National Aeronautics and Space Administration, the National Science

1 Foundation, the Office of Personnel Manage-
2 ment, the Office of Management and Budget,
3 the Department of Energy, the Department of
4 Education, or from any other appropriate
5 source.

6 (D) DISSEMINATION OF GUIDANCE.—The
7 working group shall broadly disseminate the
8 training policies and curricula under subpara-
9 graph (A) to institutions of higher education
10 that receive Federal research funding, scientific
11 disciplinary societies and associations, nonprofit
12 research institutions, industry (including small
13 businesses), and federally funded research and
14 development centers, nongovernmental organi-
15 zations, and others with a stake in increasing
16 the inclusion of underrepresented groups in
17 STEM. The dissemination process shall include
18 the creation of a public website.

19 (E) ESTABLISHMENT OF TRAINING POLI-
20 CIES AND CURRICULA.—

21 (i) IN GENERAL.—Not later than 1
22 year after the date of enactment of this
23 Act, each Federal science agency shall—

1 (I) adopt training policies and
2 curricula based on the model policies
3 under subparagraph (A);

4 (II) adapt such model training
5 policies and curricula to their agency,
6 as appropriate; and

7 (III) report to the Director of the
8 Office of Science and Technology Pol-
9 icy on the training policies and cur-
10 ricula and implementation plan of the
11 agency.

12 (ii) ENSURING QUALITY.—The Direc-
13 tor of the Office of Science and Technology
14 Policy shall—

15 (I) ensure the quality of the
16 training policies and curricula de-
17 scribed under clause (i) for each Fed-
18 eral science agency to meet the min-
19 imum frequency and requirements
20 under subparagraph (A);

21 (II) require updates, if necessary;
22 and

23 (III) approve such training poli-
24 cies and curricula not later than 15

1 months after the date of enactment of
2 this Act.

3 (F) INTERAGENCY COORDINATION.—The
4 working group shall ensure that training poli-
5 cies and curricula are jointly supported across
6 Federal science agencies, as appropriate.

7 (3) COORDINATION AND IMPLEMENTATION OF
8 POLICIES AND PRACTICES ACROSS FEDERAL
9 SCIENCE AGENCIES TO CREATE A MORE DIVERSE
10 AND INCLUSIVE STEM WORKFORCE.—

11 (A) GUIDANCE TO ALL FEDERAL SCIENCE
12 AGENCIES.—The working group shall gather,
13 develop, and disseminate evidence-based prac-
14 tices and recommend model policies for achiev-
15 ing greater inclusion of underrepresented
16 groups in STEM to all Federal science agencies
17 and provide guidance on reviewing and updat-
18 ing policies and practices that can impede the
19 inclusion of underrepresented groups in STEM
20 within each agency. The model policies and
21 practices shall address the following:

22 (i) Work-life accommodation, includ-
23 ing flexibility for caregivers on the timing
24 of research grants.

1 (ii) Procedures for handling claims of
2 sexual harassment.

3 (iii) Reducing implicit bias in hiring,
4 promotion, evaluation, the grant review
5 process, and the workplace in general.

6 (iv) Other policies and practices to ad-
7 dress systemic factors that the working
8 group determines can impede the inclusion
9 of underrepresented groups in STEM and
10 the workplace.

11 (B) ESTABLISHMENT OF POLICIES AND
12 PRACTICES.—

13 (i) IN GENERAL.—Not later than 1
14 year after the date of enactment of this
15 Act, each Federal science agency shall—

16 (I) work with the Office of Per-
17 sonnel Management to adopt the
18 model policies and practices under
19 subparagraph (A);

20 (II) adapt such model policies
21 and practices to their agency, as ap-
22 propriate; and

23 (III) report to the Director of the
24 Office of Science and Technology Pol-

1 icy on the policy and practice imple-
2 mentation plan of the agency.

3 (ii) ENSURING QUALITY.—The Direc-
4 tor of the Office of Science and Technology
5 Policy shall—

6 (I) ensure the quality of the poli-
7 cies and practices described under
8 clause (i) for each Federal science
9 agency meet the minimum require-
10 ments under subparagraph (A);

11 (II) require updates, if necessary;
12 and

13 (III) approve such policies and
14 practices not later than 15 months
15 after the date of enactment of this
16 Act.

17 (C) REPORT TO CONGRESS.—Not later
18 than 2 years after the date of enactment of this
19 Act and every 2 years thereafter, the working
20 group shall report to Congress on what steps all
21 Federal science agencies have taken to imple-
22 ment policies and practices to address systemic
23 factors that impede inclusion of underrep-
24 resented groups in agency workplaces, and how
25 effective those policies and practices have been

1 in increasing participation of underrepresented
 2 groups in the agencies.

3 **SEC. 5. STRENGTHENING THE NATIONAL SCIENCE FOUN-**
 4 **DATION ADVANCE PROGRAM.**

5 (a) STRENGTHENING THE NATIONAL SCIENCE
 6 FOUNDATION ADVANCE PROGRAM.—

7 (1) IN GENERAL.—The Director shall strength-
 8 en the goals and activities of the ADVANCE pro-
 9 gram as in effect on the date of enactment of this
 10 Act to focus on increasing the recruitment, reten-
 11 tion, and success of all women in STEM, including
 12 minorities and persons with disabilities.

13 (2) RECOGNITION FOR EXCELLENCE IN STEM
 14 INCLUSION.—The Director shall support the explo-
 15 ration, development, evaluation, and implementation
 16 of a system to recognize institutions of higher edu-
 17 cation that have demonstrated success in promoting
 18 inclusion for underrepresented groups in STEM.

19 (b) ESTABLISHMENT OF ADVANCE CENTER OF EX-
 20 CELLENCE FOR INCLUSION IN STEM.—

21 (1) IN GENERAL.—The Director shall build on
 22 the success of the ADVANCE program by awarding
 23 a grant for the establishment of at least one Center
 24 of Excellence for Inclusion in STEM (referred to in
 25 this section as a “Center”)—

1 (A) to collect, maintain, and disseminate
2 information on increasing the inclusion of all
3 underrepresented groups in STEM, including
4 women, minorities, and persons with disabili-
5 ties; and

6 (B) to scale-up the success of ADVANCE
7 funded initiatives and other federally funded
8 initiatives to support women, minorities, and
9 persons with disabilities in STEM careers by
10 providing technical assistance, collecting, main-
11 taining, and disseminating best practices, and
12 providing related training at federally funded
13 institutions of higher education.

14 (2) ESTABLISHMENT.—

15 (A) IN GENERAL.—The Director shall es-
16 tablish a Center through a competitive grant
17 award consistent with standard National
18 Science Foundation practice.

19 (B) CRITERIA.—Grants and subgrants
20 awarded under this subsection shall be awarded
21 on a merit-reviewed, competitive basis. The Di-
22 rector shall establish criteria for the award of
23 a grant or subgrant under this subsection that
24 includes requiring a grant or subgrant recipient
25 to transfer all Center program information to

1 any awardee that receives a subsequent grant
2 or subgrant under this subsection.

3 (C) PUBLIC DOMAIN.—All program infor-
4 mation developed, collected, or maintained by a
5 Center, with the exception of personally identifi-
6 able information, is and shall remain part of
7 the public domain.

8 (D) DURATION.—At least one Center es-
9 tablished under this subsection shall be oper-
10 ational at all times during the 15 years fol-
11 lowing the initial Center program award.

12 (3) GENERAL OPERATION.—A Center estab-
13 lished under this subsection shall carry out the fol-
14 lowing activities:

15 (A) Collect, maintain, and broadly dissemi-
16 nate information from ADVANCE funded ini-
17 tiatives and from broader STEM communities
18 on systemic factors affecting the participation
19 of underrepresented groups in STEM, and best
20 practices for addressing those factors.

21 (B) Collaborate with Federal science agen-
22 cies and professional associations to share best
23 practices on work-life accommodation policies
24 and practices.

1 (C) Collaborate with institutions of higher
2 education in order to clarify and catalyze the
3 adoption of a coherent and consistent set of
4 work-life accommodation policies and practices
5 that support the needs of faculty, students,
6 post-doctoral fellows, staff, and trainees.

7 (D) Provide educational opportunities, in-
8 cluding workshops and trainings for STEM fac-
9 ulty to improve their mentoring, instructing,
10 and advising of students from underrepresented
11 groups.

12 (E) Provide training at least biannually on
13 the impact of implicit bias on hiring, promotion,
14 evaluation, grant review processes, and the
15 workplace in general.

16 (F) Develop evidence-based workshops and
17 training on improving inclusion of underrep-
18 resented groups in STEM. Such workshops and
19 training may be carried out by awarding sub-
20 grants to institutions of higher education (or
21 consortia of such institutions), nonprofit organi-
22 zations, professional societies, or other entities
23 that the Center determines eligible for partici-
24 pation. An eligible entity that carries out a
25 workshop under this subparagraph shall collect

1 data on the rates of attendance by invitees in
 2 workshops, including information on the home
 3 institution, rank, and department of attendees,
 4 conduct attitudinal surveys on workshop
 5 attendees before and after the workshops, and
 6 collect follow-up data on any relevant institu-
 7 tional policy or practice changes reported by
 8 attendees not later than 1 year after attendance
 9 in such a workshop.

10 (G) Other efforts that the Center deter-
 11 mines are necessary to further the inclusion of
 12 underrepresented groups in STEM.

13 (c) NATIONAL CONFERENCE AND REPORT TO CON-
 14 GRESS.—

15 (1) IN GENERAL.—Not later than 4 years after
 16 the date of enactment of this Act, a Center shall
 17 hold a national conference on the effectiveness of the
 18 activities supported under this section.

19 (2) INVITEES.—Conference invitees shall in-
 20 clude community colleges, business and industry,
 21 secondary school systems, 4-year institutions of
 22 higher education, nonprofit organizations, Federal
 23 science agencies and education agencies, Federal
 24 laboratories, and Congress.

1 (3) FOCUS.—The conference shall focus on ad-
 2 vancing collaborative capacity within, across, and be-
 3 yond ADVANCE awardees.

4 (4) CONFERENCE PARTICIPANTS.—Conference
 5 participants shall share recent research and program
 6 progress, evaluate opportunities for inter-project col-
 7 laboration, exchange and disseminate ideas within
 8 the community, and provide program management
 9 the opportunity to assess the overall balance of the
 10 portfolio and evaluate future research and program
 11 priorities.

12 (5) CONFERENCE REPORT.—A conference re-
 13 port, including program progress, shall be available
 14 to the public and provided to Congress not later
 15 than 6 months after the end of the conference.

16 (d) AUTHORIZATION OF APPROPRIATIONS.—There
 17 are authorized to be appropriated—

18 (1) \$20,000,000 in each of fiscal years 2017
 19 through 2021 for the ADVANCE program at the
 20 National Science Foundation, including activities de-
 21 scribed in subsection (a); and

22 (2) \$6,000,000 in each of fiscal years 2017
 23 through 2021 to carry out subsections (b) and (c).

1 **SEC. 6. DATA COLLECTION TO DETERMINE SUCCESS IN**
2 **BROADENING STEM FACULTY.**

3 (a) COLLECTION OF DATA.—Not later than 2 years
4 after the date of enactment of this Act, and every 2 years
5 thereafter, the Director shall carry out a survey to collect
6 institution-level data on the demographics of STEM fac-
7 ulty, by broad fields of STEM at different types of institu-
8 tions of higher education, and shall consider, by gender,
9 race, ethnicity, disability, citizenship status, age, and
10 years since completion of doctoral degree—

- 11 (1) the number and percentage of faculty;
12 (2) the number and percentage of faculty at
13 each rank;
14 (3) faculty years in rank; and
15 (4) the number and percentage of faculty hired
16 in the 2 years preceding the date of the survey, by
17 rank.

18 (b) PUBLICATION OF RESULTS.—Not later than 6
19 months after the completion of the data collection de-
20 scribed in subsection (a), the Director shall provide all rel-
21 evant data and information to the National Science Board.
22 Not later than 6 months after receiving such data and
23 information, the National Science Board shall publish a
24 report that includes statistical summary data, findings,
25 and policy recommendations resulting from the feasibility
26 study described in subsection (c), in a report as required

1 by section 4(j)(2) of the National Science Foundation Act
 2 of 1950 (42 U.S.C. 1863(j)(2)). All statistical summary
 3 data shall be disaggregated and cross-tabulated by race,
 4 ethnicity, gender, age, disability, and number of years
 5 since receiving doctoral degree, provided that such data
 6 does not reveal personally identifiable information about
 7 an individual.

8 (c) SURVEY STUDY.—Not later than 2 years after the
 9 date of enactment of this Act, the Director shall evaluate
 10 the feasibility of a survey or other data collection instru-
 11 ment to collect institution-level data on—

12 (1) the demographics of faculty, including post-
 13 doctoral positions, by broad fields of STEM at dif-
 14 ferent types of institutions of higher education, and
 15 shall consider, by gender, race, ethnicity, disability,
 16 citizenship status, age, and years since completion of
 17 doctoral degree—

18 (A) the number and percentage of faculty
 19 who are reviewed for promotion, including ten-
 20 ure, and the percentage of that number who are
 21 promoted, included being awarded tenure;

22 (B) the number and percentage of faculty
 23 to leave tenure-track positions;

24 (C) the number and percentage of faculty
 25 in leadership positions;

1 (D) the size and composition of the various
 2 components included in the start-up package
 3 for new faculty hires;

4 (E) the number and percentage of faculty
 5 who are in nontenure-track positions, including
 6 teaching and research; and

7 (F) the number and percentage of post-
 8 doctoral fellows or trainees who are not em-
 9 ployed in a STEM position at an academic in-
 10 stitution 5 years after their fellowship or
 11 traineeship began; and

12 (2) the demographics of STEM pre-doctoral
 13 students, by broad fields of STEM at different types
 14 of institutions of higher education, and shall con-
 15 sider, by gender, race, ethnicity, disability, citizen-
 16 ship status, age, and socioeconomic status—

17 (A) the number and percentage of pre-doc-
 18 toral students who leave their program before
 19 becoming Ph.D. candidates;

20 (B) the number and percentage of Ph.D.
 21 candidates who leave their program before re-
 22 ceiving their Ph.D.; and

23 (C) the number of years to attrition in pre-
 24 doctoral program.

1 (d) PUBLICATION OF RESULTS.—The National
 2 Science Board shall develop a companion piece to the
 3 Science and Engineering Indicators biennial report on in-
 4 dicators of the state of science and engineering in the
 5 United States, as required under section 4(j)(1) of the Na-
 6 tional Science Foundation Act of 1950 (42 U.S.C.
 7 1863(j)(1)), regarding the results of the feasibility study
 8 described in subsection (c), and make related policy rec-
 9 ommendations. All statistical summary data shall be
 10 disaggregated and cross-tabulated by race, ethnicity, dis-
 11 ability, gender, and age, provided that such data does not
 12 reveal personally identifiable information about an indi-
 13 vidual.

14 (e) AUTHORIZATION OF APPROPRIATIONS.—There
 15 are authorized to be appropriated \$3,000,000 in each of
 16 fiscal years 2017 through 2019 to carry out this section.

17 **SEC. 7. NATIONAL SCIENCE FOUNDATION SUPPORT FOR**
 18 **BROADENING PARTICIPATION IN STEM.**

19 (a) GRANTS.—The Director shall award competitive
 20 grants to institutions of higher education (or consortia of
 21 such institutions) to implement or expand evidence-based
 22 reforms for the purpose of recruiting, retaining, and ad-
 23 vancing students, fellows, trainees, and faculty from
 24 underrepresented groups in STEM, and do so, to the ex-

1 tent practicable, within existing National Science Founda-
 2 tion programs.

3 (b) MERIT REVIEW; COMPETITION.—Grants shall be
 4 awarded under this section on a merit-reviewed, competi-
 5 tive basis.

6 (c) SELECTION PROCESS.—

7 (1) APPLICATION.—An institution of higher
 8 education (or a consortium of such institutions)
 9 seeking a grant under this section shall submit an
 10 application to the Director at such time, in such
 11 manner, and containing such information and assur-
 12 ances as such Director may require. The application
 13 shall include, at a minimum—

14 (A) a description of the proposed reform
 15 effort;

16 (B) a description of the research findings
 17 that will serve as the basis for the proposed re-
 18 form effort or, in the case of applications that
 19 propose an expansion of a previously imple-
 20 mented reform, a description of the previously
 21 implemented reform effort, including data about
 22 the recruitment, retention, and academic
 23 achievement of students from underrepresented
 24 groups;

1 (C) evidence of an institutional commit-
 2 ment to, and support for, the proposed reform
 3 effort, including a long-term commitment to im-
 4 plement successful strategies from the current
 5 reform beyond the academic unit or units in-
 6 cluded in the grant proposal;

7 (D) a description of existing or planned in-
 8 stitutional policies and practices regarding fac-
 9 ulty hiring, promotion, tenure, and teaching as-
 10 signments that reward faculty contributions to
 11 increasing representation from underrep-
 12 resented groups in STEM; and

13 (E) how the success and effectiveness of
 14 the proposed reform effort will be evaluated and
 15 assessed in order to contribute to the national
 16 knowledge base about models for catalyzing in-
 17 stitutional change.

18 (2) REVIEW OF APPLICATIONS.—In selecting
 19 grant recipients under this section, the Director
 20 shall consider, at a minimum—

21 (A) the likelihood of success of the pro-
 22 posed reform effort at the institution submit-
 23 ting the application, including the extent to
 24 which the faculty, staff, and administrators of
 25 the institution are committed to making the

1 proposed institutional reform a priority of the
2 participating academic unit or units;

3 (B) the degree to which the proposed re-
4 form effort will contribute to change in institu-
5 tional culture and policy such that greater value
6 is placed on faculty engagement in the retention
7 of students from underrepresented groups;

8 (C) the likelihood that the institution will
9 sustain or expand the proposed reform effort
10 beyond the period of the grant; and

11 (D) the degree to which evaluation and as-
12 sessment plans are included in the design of the
13 proposed reform effort.

14 (3) PRIORITY.—With respect to applications for
15 a grant under this section that include an expansion
16 of existing reforms beyond a single academic unit,
17 the Director shall give priority in awarding grants to
18 applications for which a senior institutional adminis-
19 trator, such as a dean or other administrator of
20 equal or higher rank, serves as the principal investi-
21 gator. The Director shall give priority in awarding
22 grants under this section to applications that target
23 at the broad fields of STEM in which the national
24 rate of representation of underrepresented groups
25 among tenured or tenure-track faculty or non-faculty

1 researchers at doctorate-granting institutions of
 2 higher education is at least 25-percent less than the
 3 graduate degree completion rate for underrep-
 4 resented groups in that broad field of STEM, ac-
 5 cording to the most recent data available from the
 6 National Center for Science and Engineering Statis-
 7 tics.

8 (4) GRANT DISTRIBUTION.—The Director shall
 9 ensure, to the extent practicable, that grants award-
 10 ed under this section are made to a variety of types
 11 of institutions of higher education, including 2-year
 12 institutions of higher education and minority-serving
 13 institutions of higher education.

14 (d) USE OF FUNDS.—An institution of higher edu-
 15 cation (or a consortium of such institutions) that receives
 16 a grant under this section shall use the grant funds for
 17 activities that may include—

18 (1) implementation or expansion of innovative,
 19 research-based approaches to broaden participation
 20 of underrepresented groups in STEM fields;

21 (2) implementation or expansion of bridge, co-
 22 hort, tutoring, or mentoring programs designed to
 23 enhance the recruitment and retention of students
 24 from underrepresented groups in STEM fields;

1 (3) expansion of successful reforms aimed at in-
2 creasing the number of STEM students from under-
3 represented groups beyond a single course or group
4 of courses to achieve reform within an entire aca-
5 demic unit, or expansion of successful reform efforts
6 beyond a single academic unit to other STEM aca-
7 demic units within an institution of higher edu-
8 cation;

9 (4) expansion of opportunities for students from
10 underrepresented groups to conduct STEM research
11 in industry, at Federal laboratories, and at inter-
12 national research institutions or research sites;

13 (5) provision of stipends for students from
14 underrepresented groups participating in research;

15 (6) development of research collaborations be-
16 tween research-intensive institutions of higher edu-
17 cation and minority-serving institutions;

18 (7) programs to help prepare undergraduate
19 students from minority-serving institutions to enter
20 graduate programs at predominately White institu-
21 tions of higher education;

22 (8) activities to identify and engage exceptional
23 undergraduate and graduate students from under-
24 represented groups at various stages of their studies
25 and to encourage them to enter academic careers;

1 (9) professional development, mentoring, and
2 research training opportunities for graduate stu-
3 dents and early career faculty from underrep-
4 resented groups;

5 (10) implementation or expansion of faculty de-
6 velopment programs focused on improving retention
7 of undergraduate and graduate STEM students
8 from underrepresented groups;

9 (11) implementation or expansion of mecha-
10 nisms designed to recognize and reward faculty
11 members who demonstrate a commitment to increas-
12 ing the participation of students from underrep-
13 resented groups in STEM fields;

14 (12) institution-wide improvements in workload
15 distribution, such that faculty staff, postdoctoral fel-
16 lows, trainees, and students from underrepresented
17 groups are not disadvantaged in conducting re-
18 search, publishing papers, and engaging in other ac-
19 tivities required to achieve tenure status or advance
20 their career;

21 (13) development and implementation of train-
22 ing courses for administrators and search committee
23 members to ensure that candidates from underrep-
24 resented groups are not subject to implicit biases in

1 hiring, promotion, or evaluation processes or proce-
 2 dures;

3 (14) institutional assessment activities, includ-
 4 ing data collection and policy review to assess fac-
 5 tors that may be impeding or facilitating the recruit-
 6 ment, retention, and success of underrepresented
 7 groups at all levels of the university; and

8 (15) other activities consistent with the purpose
 9 described in subsection (a), as determined by the Di-
 10 rector.

11 (e) EDUCATION RESEARCH.—

12 (1) IN GENERAL.—All grants awarded under
 13 this section shall include an education research com-
 14 ponent that will support the design and implementa-
 15 tion of a system for data collection and evaluation
 16 of proposed reform efforts in order to build the
 17 knowledge base on promising models for increasing
 18 recruitment and retention of students from under-
 19 represented groups in STEM education at the un-
 20 dergraduate and graduate level across a diverse set
 21 of institutions.

22 (2) DISSEMINATION.—The Director shall co-
 23 ordinate with relevant Federal agencies in dissemi-
 24 nating the results of the research under this sub-
 25 section to ensure that best practices for increasing

1 the inclusion of underrepresented groups in STEM
 2 in institutions of higher education are made readily
 3 available to all types of institutions of higher edu-
 4 cation, other Federal agencies, relevant committees,
 5 subcommittees, and working groups of the National
 6 Science and Technology Council, non-Federal
 7 funders of STEM education, and the general public.

8 (f) AUTHORIZATION OF APPROPRIATIONS.—There
 9 are authorized to be appropriated \$15,000,000 in each of
 10 fiscal years 2017 through 2021 to carry out this section.

11 **SEC. 8. AUTHORIZATION OF PRESIDENTIAL AWARDS FOR**
 12 **EXCELLENCE IN SCIENCE, MATHEMATICS,**
 13 **AND ENGINEERING MENTORING.**

14 (a) ESTABLISHMENT.—The Director shall administer
 15 the Presidential Awards for Excellence in Science, Mathe-
 16 matics, and Engineering Mentoring program (referred to
 17 in this section as the “PAESMEM” program) on behalf
 18 of the White House Office of Science and Technology Pol-
 19 icy to recognize, on an annual basis, outstanding men-
 20 toring in STEM fields in primary, secondary, and higher
 21 education.

22 (b) THREE TYPES OF AWARDS.—The following 3
 23 types of PAESMEM program awards shall be provided:

24 (1) Nominees for the Florence R. Sabin Distin-
 25 guished PAESMEM program award shall be United

1 States citizens or lawful permanent residents in in-
2 dustry, academia, primary and secondary education,
3 military, nonprofit organizations, foundations, and
4 government. Distinguished PAESMEM program
5 winners shall have not less than 5 years of sus-
6 tained, exceptional mentoring with demonstrated im-
7 pact on underrepresented groups.

8 (2) Nominees for the Roland B. Scott Early
9 Career Mentor PAESMEM program award shall be
10 United States citizens or lawful permanent residents
11 in industry, academia, primary and secondary edu-
12 cation, military, nonprofit organizations, founda-
13 tions, and government. Consideration for Early Ca-
14 reer Mentor PAESMEM program awards shall be
15 given to early career mentors who are scientists,
16 technicians, post-baccalaureate, post-masters, post-
17 doctoral, new STEM faculty, and new STEM K–12
18 teachers (both pre- and in-service), in public and pri-
19 vate sectors. Early Career Mentor PAESMEM pro-
20 gram winners shall have not less than 2 years of
21 sustained, exceptional mentoring with demonstrated
22 impact on underrepresented groups.

23 (3) Nominees for the Carl Sagan Organiza-
24 tional PAESMEM program award shall be a United
25 States educational institution or agency, corporation,

1 foundation, military or government agency, or non-
2 profit organization. An Organizational PAESMEM
3 program nominee may be a mentoring program or
4 activity within an organization.

5 (c) REVIEW OF APPLICATIONS.—The Director shall
6 solicit applications across all types of entities until at least
7 100 applications are received for each of the 3 types of
8 PAESMEM program awards described under subsection
9 (b).

10 (d) DISTRIBUTION OF AWARDS.—

11 (1) FREQUENCY.—PAESMEM program win-
12 ners shall be announced and honored annually, not
13 later than 1 year after the application deadline.

14 (2) NUMBER.—A minimum of 20 PAESMEM
15 program winners shall be honored annually in each
16 of the categories described under paragraphs (1)
17 through (3) of subsection (b).

18 (3) MONETARY AWARD.—Except as provided in
19 paragraph (5), each PAESMEM program winner
20 shall receive a monetary award of \$10,000 and a
21 Presidential citation.

22 (4) CONSIDERATION.—The Director, in award-
23 ing—

24 (A) PAESMEM program winners in each
25 of the categories described under paragraphs

1 (1) and (2) of subsection (b), shall make a fair
2 distribution of awards to individuals who are
3 from underrepresented groups; and

4 (B) PAESMEM program winners in the
5 category described under subsection (b)(3),
6 shall make awards to all types of entities de-
7 scribed under subsection (b)(3).

8 (5) SUPPLEMENTAL AWARD FOR EARLY CA-
9 REER FACULTY.—Annually, not less than 5 of the
10 Roland B. Scott Early Career Mentor PAESMEM
11 program winners shall be reserved for early career
12 faculty at institutions of higher education who have
13 shown promise for making a significant contribution
14 to their field of expertise. Such faculty members
15 shall receive an additional \$50,000 award that can
16 be used towards advancing their program of re-
17 search.

18 (e) EXEMPTION FROM MERIT REVIEW.—Nomina-
19 tions for PAESMEM program awards shall be exempt
20 from merit review criteria.

21 (f) LIST OF WINNERS TO CONGRESS.—The Director
22 shall provide Congress with an annual list of PAESMEM
23 program winners, including the name, institution, and a
24 brief synopsis of the impact of the mentoring efforts.

1 (g) AUTHORIZATION OF APPROPRIATIONS.—There
 2 are authorized to be appropriated \$1,000,000 for each of
 3 fiscal years 2017 through 2021 to carry out this section.

4 **SEC. 9. REDUCING GOVERNMENT WASTE AND ADMINISTRA-**
 5 **TIVE BURDEN AT THE NATIONAL SCIENCE**
 6 **FOUNDATION.**

7 The following reports produced by the National
 8 Science Foundation shall be eliminated:

9 (1) The Mathematics and Science Education
 10 Partnerships report on coordination under section
 11 9(c)(4) of the National Science Foundation Author-
 12 ization Act of 2002 (42 U.S.C. 1862n(c)(4)).

13 (2) The report under section 1008(c) of the
 14 America COMPETES Act (42 U.S.C. 6603(c)).

15 (3) The funding for successful science, tech-
 16 nology, engineering, and mathematics education pro-
 17 grams report under section 7012(c) of the America
 18 COMPETES Act (42 U.S.C. 6603(c)).

19 (4) The encouraging participation report under
 20 section 7031(b) of the America COMPETES Act
 21 (42 U.S.C. 1862o–11).

22 (5) The evaluations report under section
 23 19(a)(3) of the National Science Foundation Au-
 24 thorization Act of 2002 (42 U.S.C. 1862n–8(a)(3)).

1 (6) The major research equipment and facilities
2 construction plan report under section 14(a)(2) of
3 the National Science Foundation Authorization Act
4 of 2002 (42 U.S.C. 1862n-4(a)(2)).

○