

116TH CONGRESS
1ST SESSION

H. R. 2528

To direct the Director of the Office of Science and Technology Policy to carry out programs and activities to ensure that Federal science agencies and institutions of higher education receiving Federal research and development funding are fully engaging their entire talent pool, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

MAY 7, 2019

Ms. JOHNSON of Texas (for herself and Mr. LUCAS) introduced the following bill; which was referred to the Committee on Science, Space, and Technology

A BILL

To direct the Director of the Office of Science and Technology Policy to carry out programs and activities to ensure that Federal science agencies and institutions of higher education receiving Federal research and development funding are fully engaging their entire 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; TABLE OF CONTENTS; FINDINGS.**

4 (a) SHORT TITLE.—This Act may be cited as the
5 “STEM Opportunities Act of 2019”.

1 (b) TABLE OF CONTENTS.—The table of contents for
2 this Act is as follows:

- Sec. 1. Short title; table of contents; findings.
- Sec. 2. Purposes.
- Sec. 3. Federal science agency policies for caregivers.
- Sec. 4. Collection and reporting of data on Federal research grants.
- Sec. 5. Policies for review of Federal research grants.
- Sec. 6. Collection of data on demographics of faculty.
- Sec. 7. Cultural and institutional barriers to expanding the academic and Federal STEM workforce.
- Sec. 8. Research and dissemination at the National Science Foundation.
- Sec. 9. Research and related activities to expand STEM opportunities.
- Sec. 10. Tribal Colleges and Universities Program.
- Sec. 11. Report to Congress.
- Sec. 12. Merit review.
- Sec. 13. Definitions.

3 (c) FINDINGS.—The Congress finds the following:

4 (1) Many reports over the past decade have
5 found that it is critical to our Nation’s economic
6 leadership and global competitiveness that the
7 United States educates and trains more scientists
8 and engineers.

9 (2) Research shows that women and minorities
10 who are interested in STEM careers are dispro-
11 tionately lost at nearly every educational transition.

12 (3) The National Center for Science and Engi-
13 neering Statistics at the National Science Founda-
14 tion collects, compiles, and publishes data on the de-
15 mographics of STEM degrees and STEM jobs in the
16 United States.

17 (4) Women now earn nearly 37 percent of all
18 STEM bachelor’s degrees, but major variations per-
19 sist among fields. In 2017, women earned only 20

1 percent of all bachelor's degrees awarded in engi-
2 neering and 19 percent of bachelor's degrees award-
3 ed in computer sciences. Based on Bureau of Labor
4 Statistics data, jobs in computing occupations are
5 expected to account for nearly 60 percent of the pro-
6 jected annual growth of newly created STEM job
7 openings from 2016 to 2026.

8 (5) In 2017, underrepresented minority groups
9 comprised 39 percent of the college-age population
10 of the United States, but only 18 percent of stu-
11 dents who earned bachelor's degrees in STEM fields.
12 The Higher Education Research Institute at the
13 University of California, Los Angeles, found that,
14 while freshmen from underrepresented minority
15 groups express an interest in pursuing a STEM un-
16 dergraduate degree at the same rate as all other
17 freshmen, only 22.1 percent of Latino students, 18.4
18 percent of African-American students, and 18.8 per-
19 cent of Native American students studying in STEM
20 fields complete their degree within 5 years, com-
21 pared to approximately 33 percent of White students
22 and 42 percent of Asian students who complete their
23 degree within 5 years.

24 (6) In some STEM fields, including the com-
25 puter sciences, women persist at about the same rate

1 through doctorate degrees. In other STEM fields,
2 women persist through doctorate degrees at a lower
3 rate. In mathematics, women earn just 26 percent of
4 doctorate degrees compared with 42 percent of un-
5 dergraduate degrees. Overall, women earned 38 per-
6 cent of STEM doctorate degrees in 2016. The rate
7 of minority students earning STEM doctorate de-
8 grees in physics is 9 percent, compared with 15 per-
9 cent for bachelor's degree. Students from underrep-
10 resented minority groups accounted for only 11.5
11 percent of STEM doctorate degrees awarded in
12 2016.

13 (7) The representation of women in STEM
14 drops significantly from the doctorate degree level to
15 the faculty level. Overall, women hold only 26 per-
16 cent of all tenured and tenure-track positions and 27
17 percent of full professor positions in STEM fields in
18 our Nation's universities and 4-year colleges. Black
19 and Hispanic faculty together hold about 6.8 percent
20 of all tenured and tenure-track positions and 7.5
21 percent of full professor positions. Many of the num-
22 bers in the American Indian or Alaskan Native and
23 Native Hawaiian or Other Pacific Islander cat-
24 egories for different faculty ranks were too small for
25 the National Science Foundation to report publicly

1 without potentially compromising confidential infor-
2 mation about the individuals being surveyed.

3 (8) The representation of women is especially
4 low at our Nation's top research universities. Even
5 in the biological sciences, in which women now earn
6 more than 50 percent of the doctorates and passed
7 the 25 percent level 37 years ago, women make up
8 only 25 percent of the full professors at the approxi-
9 mately 100 most research-intensive universities in
10 the United States. In the physical sciences and
11 mathematics, women make up only 11 percent of full
12 professors, in computer sciences only 10 percent,
13 and across engineering fields only 7 percent. The
14 data suggest that approximately 6 percent of all ten-
15 ure-track STEM faculty members at the most re-
16 search-intensive universities are from underrep-
17 resented minority groups, but in some fields the
18 numbers are too small to report publicly.

19 (9) By 2050, underrepresented minorities will
20 comprise 52 percent of the college-age population of
21 the United States. If the percentage of female stu-
22 dents and students from underrepresented minority
23 groups earning bachelor's degrees in STEM fields
24 does not significantly increase, the United States
25 will face an acute shortfall in the overall number of

1 students who earn degrees in STEM fields just as
2 United States companies are increasingly seeking
3 students with those skills. With this impending
4 shortfall, the United States will almost certainly lose
5 its competitive edge in the 21st century global econ-
6 omy.

7 (10) According to a 2014 Association for
8 Women in Science survey of over 4,000 scientists
9 across the globe, 70 percent of whom were men,
10 STEM researchers face significant challenges in
11 work-life integration. Researchers in the United
12 States were among the most likely to experience a
13 conflict between work and their personal life at least
14 weekly. One-third of researchers surveyed said that
15 ensuring good work-life integration has negatively
16 impacted their careers, and, of researchers intending
17 to leave their current job within the next year, 9
18 percent indicated it was because they were unable to
19 balance work and life demands.

20 (11) Female students and students from under-
21 represented minority groups at institutions of higher
22 education who see few others “like themselves”
23 among faculty and student populations often do not
24 experience the social integration that is necessary for
25 success in all disciplines, including STEM.

1 (12) One in five children in the United States
2 attend school in a rural community. The data shows
3 that rural students are at a disadvantage with re-
4 spect to STEM readiness. Among STEM-interested
5 students, 17 percent of students in rural high
6 schools and 18 percent of students in town-located
7 high schools meet the ACT STEM Benchmark, com-
8 pared with 33 percent of students in suburban high
9 schools and 27 percent of students in urban high
10 schools.

11 (13) A substantial body of evidence establishes
12 that most people hold implicit biases. Decades of
13 cognitive psychology research reveal that most peo-
14 ple carry prejudices of which they are unaware but
15 that nonetheless play a large role in evaluations of
16 people and their work. Unintentional biases and out-
17 moded institutional structures are hindering the ac-
18 cess and advancement of women, minorities, and
19 other groups historically underrepresented in STEM.

20 (14) Workshops held to educate faculty about
21 unintentional biases have demonstrated success in
22 raising awareness of such biases.

23 (15) In 2012, the Office of Diversity and Equal
24 Opportunity of the National Aeronautics and Space

1 Administration (in this Act referred to as “NASA”)
2 completed a report that—

3 (A) is specifically designed to help NASA
4 grant recipients identify why the dearth of
5 women in STEM fields continues and to ensure
6 that it is not due to discrimination; and

7 (B) provides guidance that is usable by all
8 institutions of higher education receiving sig-
9 nificant Federal research funding on how to
10 conduct meaningful self-evaluations of campus
11 culture and policies.

12 (16) The Federal Government provides 55 per-
13 cent of research funding at institutions of higher
14 education and, through its grant-making policies,
15 has had significant influence on institution of higher
16 education policies, including policies related to insti-
17 tutional culture and structure.

18 **SEC. 2. PURPOSES.**

19 The purposes of this Act are as follows:

20 (1) To ensure that Federal science agencies and
21 institutions of higher education receiving Federal re-
22 search and development funding are fully engaging
23 their entire talent pool.

24 (2) To promote research on, and increase un-
25 derstanding of, the participation and trajectories of

1 women, minorities, and other groups historically
2 underrepresented in STEM studies and careers, in-
3 cluding persons with disabilities and rural, poor, and
4 tribal populations, at institutions of higher education
5 and Federal science agencies, including Federal lab-
6 oratories.

7 (3) To raise awareness within Federal science
8 agencies, including Federal laboratories, and institu-
9 tions of higher education about cultural and institu-
10 tional barriers limiting the recruitment, retention,
11 promotion, and other indicators of participation and
12 achievement of women, minorities, and other groups
13 historically underrepresented in academic and Gov-
14 ernment STEM research careers at all levels.

15 (4) To identify, disseminate, and implement
16 best practices at Federal science agencies, including
17 Federal laboratories, and at institutions of higher
18 education to remove or reduce cultural and institu-
19 tional barriers limiting the recruitment, retention,
20 and success of women, minorities, and other groups
21 historically underrepresented in academic and Gov-
22 ernment STEM research careers.

23 (5) To provide grants to institutions of higher
24 education to recruit, retain, and advance STEM fac-
25 ulty members from underrepresented minority

1 groups and to implement or expand reforms in un-
2 dergraduate STEM education in order to increase
3 the number of students from underrepresented mi-
4 nority groups receiving degrees in these fields.

5 **SEC. 3. FEDERAL SCIENCE AGENCY POLICIES FOR CARE-**
6 **GIVERS.**

7 (a) OSTP GUIDANCE.—Not later than 6 months
8 after the date of enactment of this Act, the Director shall
9 provide guidance to each Federal science agency to estab-
10 lish policies that—

11 (1) apply to all—

12 (A) intramural and extramural research
13 awards granted by such agency; and

14 (B) primary investigators of such research
15 who have caregiving responsibilities, including
16 care for a newborn or newly adopted child and
17 care for an immediate family member who is
18 sick or disabled; and

19 (2) provide—

20 (A) flexibility in timing for the initiation of
21 approved research awards granted by such
22 agency;

23 (B) no-cost extensions of such research
24 awards;

1 (C) grant supplements, as appropriate, to
2 research awards for research technicians or
3 equivalent positions to sustain research activi-
4 ties conducted under such awards; and

5 (D) any other appropriate accommodations
6 at the discretion of the director of each such
7 agency.

8 (b) UNIFORMITY OF GUIDANCE.—In providing guid-
9 ance under subsection (a), the Director shall encourage
10 uniformity and consistency in the policies established pur-
11 suant to such guidance across all Federal science agencies.

12 (c) ESTABLISHMENT OF POLICIES.—Consistent with
13 the guidance under subsection (a), Federal science agen-
14 cies shall—

15 (1) maintain or develop and implement policies
16 for individuals described in paragraph (1)(B) of
17 such subsection; and

18 (2) broadly disseminate such policies to current
19 and potential grantees.

20 (d) DATA ON USAGE.—Federal science agencies
21 shall—

22 (1) collect data on the usage of the policies
23 under subsection (c), by gender, at both institutions
24 of higher education and Federal laboratories; and

1 (2) report such data on an annual basis to the
2 Director in such form as required by the Director.

3 **SEC. 4. COLLECTION AND REPORTING OF DATA ON FED-**
4 **ERAL RESEARCH GRANTS.**

5 (a) COLLECTION OF DATA.—

6 (1) IN GENERAL.—Each Federal science agency
7 shall collect, as practicable, with respect to all appli-
8 cations for merit-reviewed research and development
9 grants to institutions of higher education and Fed-
10 eral laboratories supported by that agency, the
11 standardized record-level annual information on de-
12 mographics, primary field, award type, institution
13 type, review rating, budget request, funding out-
14 come, and awarded budget.

15 (2) UNIFORMITY AND STANDARDIZATION.—The
16 Director shall establish a policy to ensure uniformity
17 and standardization of the data collection required
18 under paragraph (1).

19 (3) RECORD-LEVEL DATA.—

20 (A) REQUIREMENT.—Beginning not later
21 than 2 years after the date of the enactment of
22 this Act, and on an annual basis thereafter,
23 each Federal science agency shall submit to the
24 Director of the National Science Foundation

1 record-level data collected under paragraph (1)
2 in the form required by such Director.

3 (B) PREVIOUS DATA.—As part of the first
4 submission under subparagraph (A), each Fed-
5 eral science agency, to the extent practicable,
6 shall also submit comparable record-level data
7 for the 5 years preceding the date of such sub-
8 mission.

9 (b) REPORTING OF DATA.—The Director of the Na-
10 tional Science Foundation shall publish statistical sum-
11 mary data collected under this section, disaggregated and
12 cross-tabulated by race, ethnicity, gender, age, and years
13 since completion of doctoral degree, including in conjunc-
14 tion with the National Science Foundation’s report re-
15 quired by section 37 of the Science and Technology Equal
16 Opportunities Act (42 U.S.C. 1885d; Public Law 96–
17 516).

18 **SEC. 5. POLICIES FOR REVIEW OF FEDERAL RESEARCH**
19 **GRANTS.**

20 (a) IN GENERAL.—Each Federal science agency shall
21 implement the policy recommendations with respect to re-
22 ducing the impact of implicit bias at Federal science agen-
23 cies and grantee institutions as developed by the Office
24 of Science and Technology Policy in the 2016 report enti-

1 tled “Reducing the Impact of Bias in the STEM Work-
2 force” and any subsequent updates.

3 (b) PILOT ACTIVITY.—In consultation with the Na-
4 tional Science Foundation and consistent with policy rec-
5 ommendations referenced in subsection (a), each Federal
6 science agency shall implement a 2-year pilot orientation
7 activity for program officers and members of standing re-
8 view committees to educate reviewers on, and minimize the
9 effects of, implicit bias in the review of extramural and
10 intramural Federal research grants.

11 (c) ESTABLISHMENT OF POLICIES.—Drawing upon
12 lessons learned from the pilot activity under subsection
13 (b), each Federal science agency shall maintain or develop
14 and implement policies and practices to minimize the ef-
15 fects of implicit bias in the review of extramural and intra-
16 mural Federal research grants.

17 (d) ASSESSMENT OF POLICIES.—Federal science
18 agencies shall regularly assess, and amend as necessary,
19 the policies and practices implemented pursuant to sub-
20 section (c) to ensure effective measures are in place to
21 minimize the effects of implicit bias in the review of extra-
22 mural and intramural Federal research grants.

23 **SEC. 6. COLLECTION OF DATA ON DEMOGRAPHICS OF FAC-**
24 **ULTY.**

25 (a) COLLECTION OF DATA.—

1 (1) IN GENERAL.—Not later than 3 years after
2 the date of enactment of this Act, and at least every
3 5 years thereafter, the Director of the National
4 Science Foundation shall carry out a survey to col-
5 lect institution-level data on the demographics of
6 STEM faculty, by broad fields of STEM, at dif-
7 ferent types of institutions of higher education.

8 (2) CONSIDERATIONS.—To the extent prac-
9 ticable, the Director of the National Science Foun-
10 dation shall consider, by gender, race, ethnicity, citi-
11 zenship status, age, and years since completion of
12 doctoral degree—

13 (A) the number and percentage of faculty;

14 (B) the number and percentage of faculty
15 at each rank;

16 (C) the number and percentage of faculty
17 who are in nontenure-track positions, including
18 teaching and research;

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

23 (E) faculty years in rank;

24 (F) the number and percentage of faculty
25 to leave tenure-track positions;

1 (G) the number and percentage of faculty
2 hired, by rank; and

3 (H) the number and percentage of faculty
4 in leadership positions.

5 (b) EXISTING SURVEYS.—The Director of the Na-
6 tional Science Foundation, may, in modifying or expand-
7 ing existing Federal surveys of higher education (as nec-
8 essary)—

9 (1) take into account the considerations under
10 subsection (a)(2) by collaborating with statistical
11 centers at other Federal agencies; or

12 (2) award a grant or contract to an institution
13 of higher education or other nonprofit organization
14 to take such considerations into account.

15 (c) REPORTING DATA.—The Director of the National
16 Science Foundation shall publish statistical summary data
17 collected under this section, including as part of the Na-
18 tional Science Foundation’s report required by section 37
19 of the Science and Technology Equal Opportunities Act
20 (42 U.S.C. 1885d; Public Law 96–516).

21 (d) AUTHORIZATION OF APPROPRIATIONS.—There
22 are authorized to be appropriated to the Director of the
23 National Science Foundation \$3,000,000 in each of fiscal
24 years 2020 through 2022 to develop and carry out the
25 initial survey required under subsection (a).

1 **SEC. 7. CULTURAL AND INSTITUTIONAL BARRIERS TO EX-**
2 **PANDING THE ACADEMIC AND FEDERAL**
3 **STEM WORKFORCE.**

4 (a) BEST PRACTICES AT INSTITUTIONS OF HIGHER
5 EDUCATION AND FEDERAL LABORATORIES.—

6 (1) DEVELOPMENT OF GUIDANCE.—Not later
7 than 12 months after the date of enactment of this
8 Act, the Director shall develop written guidance for
9 institutions of higher education and Federal labora-
10 tories on the best practices for—

11 (A) conducting periodic climate surveys of
12 STEM departments and divisions, with a par-
13 ticular focus on identifying any cultural or in-
14 stitutional barriers to the recruitment, reten-
15 tion, or advancement of women, racial and eth-
16 nic minorities, and other groups historically
17 underrepresented in STEM studies and careers;
18 and

19 (B) providing educational opportunities, in-
20 cluding workshops as described in subsection
21 (b), for STEM faculty, research personnel, and
22 administrators to learn about current research
23 on implicit bias in recruitment, evaluation, and
24 promotion of undergraduate and graduate stu-
25 dents and research personnel.

1 (2) EXISTING GUIDANCE.—In developing the
2 guidance under paragraph (1), the Director shall
3 utilize guidance already developed by Federal science
4 agencies.

5 (3) DISSEMINATION OF GUIDANCE.—Federal
6 science agencies shall broadly disseminate the guid-
7 ance developed under paragraph (1) to institutions
8 of higher education that receive Federal research
9 funding and Federal laboratories.

10 (4) ESTABLISHMENT OF POLICIES.—Consistent
11 with the guidance developed under paragraph (1)—

12 (A) the Director of the National Science
13 Foundation shall develop a policy that—

14 (i) applies to, at a minimum, each in-
15 stitution classified under the Indiana Uni-
16 versity Center for Postsecondary Research
17 Carnegie Classification as a doctorate-
18 granting university with a very high level
19 of research activity; and

20 (ii) requires each such institution, not
21 later than 3 years after the date of enact-
22 ment of this Act, to report to the Director
23 of the National Science Foundation on ac-
24 tivities and policies developed and imple-

1 mented based on the guidance developed
2 under paragraph (1); and

3 (B) each Federal science agency with a
4 Federal laboratory shall maintain or develop
5 and implement practices and policies for the
6 purposes described in paragraph (1) for such
7 laboratory.

8 (b) WORKSHOPS TO ADDRESS CULTURAL BARRIERS
9 TO EXPANDING THE ACADEMIC AND FEDERAL STEM
10 WORKFORCE.—

11 (1) IN GENERAL.—Not later than 6 months
12 after the date of enactment of this Act, the Director,
13 in consultation with the interagency working group
14 on inclusion in STEM, shall recommend a uniform
15 policy for Federal science agencies to carry out a
16 program of workshops that educate STEM depart-
17 ment chairs at institutions of higher education, sen-
18 ior managers at Federal laboratories, and other fed-
19 erally funded researchers about methods that mini-
20 mize the effects of implicit bias in the career ad-
21 vancement, including hiring, tenure, promotion, and
22 selection for any honor based in part on the recipi-
23 ent's research record, of academic and Federal
24 STEM researchers.

1 (2) INTERAGENCY COORDINATION.—The Direc-
2 tor shall ensure that workshops supported under this
3 subsection are coordinated across Federal science
4 agencies and jointly supported as appropriate.

5 (3) MINIMIZING COSTS.—To the extent prac-
6 ticable, workshops shall be held in conjunction with
7 national or regional STEM disciplinary meetings to
8 minimize costs associated with participant travel.

9 (4) PRIORITY FIELDS FOR ACADEMIC PARTICI-
10 PANTS.—In considering the participation of STEM
11 department chairs and other academic researchers,
12 the Director shall prioritize workshops for the broad
13 fields of STEM in which the national rate of rep-
14 resentation of women among tenured or tenure-track
15 faculty or nonfaculty researchers at doctorate-grant-
16 ing institutions of higher education is less than 25
17 percent, according to the most recent data available
18 from the National Center for Science and Engineer-
19 ing Statistics.

20 (5) ORGANIZATIONS ELIGIBLE TO CARRY OUT
21 WORKSHOPS.—A Federal science agency may carry
22 out the program of workshops under this subsection
23 by making grants to organizations made eligible by
24 the Federal science agency and any of the following
25 organizations:

1 (A) Nonprofit scientific and professional
2 societies and organizations that represent one
3 or more STEM disciplines.

4 (B) Nonprofit organizations that have the
5 primary mission of advancing the participation
6 of women, minorities, or other groups histori-
7 cally underrepresented in STEM.

8 (6) CHARACTERISTICS OF WORKSHOPS.—The
9 workshops shall have the following characteristics:

10 (A) Invitees to workshops shall include at
11 least—

12 (i) the chairs of departments in the
13 relevant STEM discipline or disciplines
14 from at least the top 50 institutions of
15 higher education, as determined by the
16 amount of Federal research and develop-
17 ment funds obligated to each institution of
18 higher education in the prior year based on
19 data available from the National Science
20 Foundation; and

21 (ii) in the case of Federal laboratories,
22 individuals with personnel management re-
23 sponsibilities comparable to those of an in-
24 stitution of higher education department
25 chair.

1 (B) Activities at the workshops shall in-
2 clude research presentations and interactive dis-
3 cussions or other activities that increase the
4 awareness of the existence of implicit bias in re-
5 cruitment, hiring, tenure review, promotion, and
6 other forms of formal recognition of individual
7 achievement for faculty and other federally
8 funded STEM researchers and shall provide
9 strategies to overcome such bias.

10 (C) Research presentations and other
11 workshop programs, as appropriate, shall in-
12 clude a discussion of the unique challenges
13 faced by different underrepresented groups, in-
14 cluding minority women, minority men, persons
15 from rural and underserved areas, persons with
16 disabilities, and first generation graduates in
17 research.

18 (D) Workshop programs shall include in-
19 formation on best practices for mentoring un-
20 dergraduate and graduate women, minorities,
21 and other students from groups historically
22 underrepresented in STEM.

23 (7) DATA ON WORKSHOPS.—Any proposal for
24 funding by an organization seeking to carry out a

1 workshop under this subsection shall include a de-
2 scription of how such organization will—

3 (A) collect data on the rates of attendance
4 by invitees in workshops, including information
5 on the home institution and department of
6 attendees, and the rank of faculty attendees;

7 (B) conduct attitudinal surveys on work-
8 shop attendees before and after the workshops;
9 and

10 (C) collect follow-up data on any relevant
11 institutional policy or practice changes reported
12 by attendees not later than one year after at-
13 tendance in such a workshop.

14 (8) REPORT TO NSF.—Organizations receiving
15 funding to carry out workshops under this sub-
16 section shall report the data required in paragraph
17 (7) to the Director of the National Science Founda-
18 tion in such form as required by such Director.

19 (c) REPORT TO CONGRESS.—Not later than 4 years
20 after the date of enactment of this Act, the Director of
21 the National Science Foundation shall submit a report to
22 Congress that includes—

23 (1) a summary and analysis of the types and
24 frequency of activities and policies developed and
25 carried out under subsection (a) based on the re-

1 ports submitted under paragraph (4) of such sub-
2 section; and

3 (2) a description and evaluation of the status
4 and effectiveness of the program of workshops re-
5 quired under subsection (c), including a summary of
6 any data reported under paragraph (8) of such sub-
7 section.

8 (d) AUTHORIZATION OF APPROPRIATIONS.—There
9 are authorized to be appropriated to the Director of the
10 National Science Foundation \$1,000,000 in each of fiscal
11 years 2020 through 2024 to carry out this section.

12 **SEC. 8. RESEARCH AND DISSEMINATION AT THE NATIONAL**
13 **SCIENCE FOUNDATION.**

14 (a) IN GENERAL.—The Director of the National
15 Science Foundation shall award research grants and carry
16 out dissemination activities consistent with the purposes
17 of this Act, including—

18 (1) research grants to analyze the record-level
19 data collected under section 4 and section 6, con-
20 sistent with policies to ensure the privacy of individ-
21 uals identifiable by such data;

22 (2) research grants to study best practices for
23 work-life accommodation;

24 (3) research grants to study the impact of poli-
25 cies and practices that are implemented under this

1 Act or that are otherwise consistent with the pur-
2 poses of this Act;

3 (4) collaboration with other Federal science
4 agencies and professional associations to exchange
5 best practices, harmonize work-life accommodation
6 policies and practices, and overcome common bar-
7 riers to work-life accommodation;

8 (5) collaboration with institutions of higher
9 education in order to clarify and catalyze the adop-
10 tion of a coherent and consistent set of work-life ac-
11 commodation policies and practices; and

12 (6) research grants to study the use of stand-
13 ardized graduate student admission exams and its
14 impact on the recruitment, retention, and success of
15 women, underrepresented minorities, persons from
16 rural areas, persons with disabilities, and first gen-
17 eration graduates in graduate STEM degree pro-
18 grams.

19 (b) AUTHORIZATION OF APPROPRIATIONS.—There
20 are authorized to be appropriated to the Director of the
21 National Science Foundation \$5,000,000 in each of fiscal
22 years 2020 through 2024 to carry out this section.

1 **SEC. 9. RESEARCH AND RELATED ACTIVITIES TO EXPAND**
2 **STEM OPPORTUNITIES.**

3 (a) NATIONAL SCIENCE FOUNDATION SUPPORT FOR
4 INCREASING DIVERSITY AMONG STEM FACULTY AT IN-
5 STITUTIONS OF HIGHER EDUCATION.—Section 305 of the
6 American Innovation and Competitiveness Act (42 U.S.C.
7 1862s–5) is amended—

8 (1) by redesignating subsections (e) and (f) as
9 subsections (g) and (h), respectively; and

10 (2) by inserting after subsection (d) the fol-
11 lowing:

12 “(e) SUPPORT FOR INCREASING DIVERSITY AMONG
13 STEM FACULTY AT INSTITUTIONS OF HIGHER EDU-
14 CATION.—

15 “(1) IN GENERAL.—The Director of the Foun-
16 dation shall award grants to institutions of higher
17 education (or consortia thereof) for the development
18 and assessment of innovative reform efforts designed
19 to increase the recruitment, retention, and advance-
20 ment of individuals from underrepresented minority
21 groups in academic STEM careers.

22 “(2) MERIT REVIEW; COMPETITION.—Grants
23 shall be awarded under this subsection on a merit-
24 reviewed, competitive basis.

25 “(3) USE OF FUNDS.—Activities supported by
26 grants under this subsection may include—

1 “(A) institutional assessment activities,
2 such as data analyses and policy review, in
3 order to identify and address specific issues in
4 the recruitment, retention, and advancement of
5 faculty members from underrepresented minor-
6 ity groups;

7 “(B) implementation of institution-wide
8 improvements in workload distribution, such
9 that faculty members from underrepresented
10 minority groups are not disadvantaged in the
11 amount of time available to focus on research,
12 publishing papers, and engaging in other activi-
13 ties required to achieve tenure status and run
14 a productive research program;

15 “(C) development and implementation of
16 training courses for administrators and search
17 committee members to ensure that candidates
18 from underrepresented minority groups are not
19 subject to implicit biases in the search and hir-
20 ing process;

21 “(D) development and hosting of intra- or
22 inter-institutional workshops to propagate best
23 practices in recruiting, retaining, and advancing
24 faculty members from underrepresented minor-
25 ity groups;

1 “(E) professional development opportuni-
2 ties for faculty members from underrepresented
3 minority groups;

4 “(F) activities aimed at making under-
5 graduate STEM students from underrep-
6 resented minority groups aware of opportunities
7 for academic careers in STEM fields;

8 “(G) activities to identify and engage ex-
9 ceptional graduate students from underrep-
10 resented minority groups at various stages of
11 their studies and to encourage them to enter
12 academic careers; and

13 “(H) other activities consistent with para-
14 graph (1), as determined by the Director of the
15 Foundation.

16 “(4) SELECTION PROCESS.—

17 “(A) APPLICATION.—An institution of
18 higher education (or a consortium of such insti-
19 tutions) seeking funding under this subsection
20 shall submit an application to the Director of
21 the Foundation at such time, in such manner,
22 and containing such information and assur-
23 ances as such Director may require. The appli-
24 cation shall include, at a minimum, a descrip-
25 tion of—

1 “(i) the reform effort that is being
2 proposed for implementation by the insti-
3 tution of higher education;

4 “(ii) any available evidence of specific
5 difficulties in the recruitment, retention,
6 and advancement of faculty members from
7 underrepresented minority groups in
8 STEM academic careers within the institu-
9 tion of higher education submitting an ap-
10 plication, and how the proposed reform ef-
11 fort would address such issues;

12 “(iii) how the institution of higher
13 education submitting an application plans
14 to sustain the proposed reform effort be-
15 yond the duration of the grant; and

16 “(iv) how the success and effective-
17 ness of the proposed reform effort will be
18 evaluated and assessed in order to con-
19 tribute to the national knowledge base
20 about models for catalyzing institutional
21 change.

22 “(B) REVIEW OF APPLICATIONS.—In se-
23 lecting grant recipients under this subsection,
24 the Director of the Foundation shall consider,
25 at a minimum—

1 “(i) the likelihood of success in under-
2 taking the proposed reform effort at the
3 institution of higher education submitting
4 the application, including the extent to
5 which the administrators of the institution
6 are committed to making the proposed re-
7 form effort a priority;

8 “(ii) the degree to which the proposed
9 reform effort will contribute to change in
10 institutional culture and policy such that
11 greater value is placed on the recruitment,
12 retention, and advancement of faculty
13 members from underrepresented minority
14 groups;

15 “(iii) the likelihood that the institu-
16 tion of higher education will sustain or ex-
17 pand the proposed reform effort beyond
18 the period of the grant; and

19 “(iv) the degree to which evaluation
20 and assessment plans are included in the
21 design of the proposed reform effort.

22 “(C) GRANT DISTRIBUTION.—The Director
23 of the Foundation shall ensure, to the extent
24 practicable, that grants awarded under this sec-

1 tion are made to a variety of types of institu-
2 tions of higher education.

3 “(5) AUTHORIZATION OF APPROPRIATIONS.—

4 There are authorized to be appropriated to carry out
5 this subsection \$8,000,000 for each of fiscal years
6 2020 through 2024.”.

7 (b) NATIONAL SCIENCE FOUNDATION SUPPORT FOR
8 BROADENING PARTICIPATION IN UNDERGRADUATE
9 STEM EDUCATION.—Section 305 of the American Inno-
10 vation and Competitiveness Act (42 U.S.C. 1862s–5), as
11 amended by subsection (b), is further amended by insert-
12 ing after subsection (e) the following:

13 “(f) SUPPORT FOR BROADENING PARTICIPATION IN
14 UNDERGRADUATE STEM EDUCATION.—

15 “(1) IN GENERAL.—The Director of the Foun-
16 dation shall award grants to institutions of higher
17 education (or a consortium of such institutions) to
18 implement or expand research-based reforms in un-
19 dergraduate STEM education for the purpose of re-
20 cruiting and retaining students from minority
21 groups who are underrepresented in STEM fields.

22 “(2) MERIT REVIEW; COMPETITION.—Grants
23 shall be awarded under this subsection on a merit-
24 reviewed, competitive basis.

1 “(3) USE OF FUNDS.—Activities supported by
2 grants under this subsection may include—

3 “(A) implementation or expansion of inno-
4 vative, research-based approaches to broaden
5 participation of underrepresented minority
6 groups in STEM fields;

7 “(B) implementation or expansion of
8 bridge, cohort, tutoring, or mentoring programs
9 designed to enhance the recruitment and reten-
10 tion of students from underrepresented minor-
11 ity groups in STEM fields;

12 “(C) implementation or expansion of out-
13 reach programs linking institutions of higher
14 education and K–12 school systems in order to
15 heighten awareness among pre-college students
16 from underrepresented minority groups of op-
17 portunities in college-level STEM fields and
18 STEM careers;

19 “(D) implementation or expansion of fac-
20 ulty development programs focused on improv-
21 ing retention of undergraduate STEM students
22 from underrepresented minority groups;

23 “(E) implementation or expansion of
24 mechanisms designed to recognize and reward
25 faculty members who demonstrate a commit-

1 ment to increasing the participation of students
2 from underrepresented minority groups in
3 STEM fields;

4 “(F) expansion of successful reforms
5 aimed at increasing the number of STEM stu-
6 dents from underrepresented minority groups
7 beyond a single course or group of courses to
8 achieve reform within an entire academic unit,
9 or expansion of successful reform efforts beyond
10 a single academic unit to other STEM academic
11 units within an institution of higher education;

12 “(G) expansion of opportunities for stu-
13 dents from underrepresented minority groups to
14 conduct STEM research in industry, at Federal
15 labs, and at international research institutions
16 or research sites;

17 “(H) provision of stipends for students
18 from underrepresented minority groups partici-
19 pating in research;

20 “(I) development of research collaborations
21 between research-intensive universities and pri-
22 marily undergraduate minority-serving institu-
23 tions;

24 “(J) support for graduate students and
25 postdoctoral fellows from underrepresented mi-

1 nority groups to participate in instructional or
2 assessment activities at primarily under-
3 graduate institutions, including primarily un-
4 dergraduate minority-serving institutions and
5 two-year institutions of higher education; and

6 “(K) other activities consistent with para-
7 graph (1), as determined by the Director of the
8 Foundation.

9 “(4) SELECTION PROCESS.—

10 “(A) APPLICATION.—An institution of
11 higher education (or a consortia thereof) seek-
12 ing a grant under this subsection shall submit
13 an application to the Director of the Founda-
14 tion at such time, in such manner, and con-
15 taining such information and assurances as
16 such Director may require. The application
17 shall include, at a minimum—

18 “(i) a description of the proposed re-
19 form effort;

20 “(ii) a description of the research
21 findings that will serve as the basis for the
22 proposed reform effort or, in the case of
23 applications that propose an expansion of a
24 previously implemented reform, a descrip-
25 tion of the previously implemented reform

1 effort, including data about the recruit-
2 ment, retention, and academic achievement
3 of students from underrepresented minor-
4 ity groups;

5 “(iii) evidence of an institutional com-
6 mitment to, and support for, the proposed
7 reform effort, including a long-term com-
8 mitment to implement successful strategies
9 from the current reform beyond the aca-
10 demic unit or units included in the grant
11 proposal;

12 “(iv) a description of existing or
13 planned institutional policies and practices
14 regarding faculty hiring, promotion, ten-
15 ure, and teaching assignment that reward
16 faculty contributions to improving the edu-
17 cation of students from underrepresented
18 minority groups in STEM; and

19 “(v) how the success and effectiveness
20 of the proposed reform effort will be evalu-
21 ated and assessed in order to contribute to
22 the national knowledge base about models
23 for catalyzing institutional change.

24 “(B) REVIEW OF APPLICATIONS.—In se-
25 lecting grant recipients under this subsection,

1 the Director of the Foundation shall consider,
2 at a minimum—

3 “(i) the likelihood of success of the
4 proposed reform effort at the institution
5 submitting the application, including the
6 extent to which the faculty, staff, and ad-
7 ministrators of the institution are com-
8 mitted to making the proposed institu-
9 tional reform a priority of the participating
10 academic unit or units;

11 “(ii) the degree to which the proposed
12 reform effort will contribute to change in
13 institutional culture and policy such that
14 greater value is placed on faculty engage-
15 ment in the retention of students from
16 underrepresented minority groups;

17 “(iii) the likelihood that the institu-
18 tion will sustain or expand the proposed
19 reform effort beyond the period of the
20 grant; and

21 “(iv) the degree to which evaluation
22 and assessment plans are included in the
23 design of the proposed reform effort.

24 “(C) GRANT DISTRIBUTION.—The Director
25 of the Foundation shall ensure, to the extent

1 practicable, that grants awarded under this
2 subsection are made to a variety of types of in-
3 stitutions of higher education, including two-
4 year and minority-serving institutions of higher
5 education.

6 “(5) EDUCATION RESEARCH.—

7 “(A) IN GENERAL.—All grants made under
8 this subsection shall include an education re-
9 search component that will support the design
10 and implementation of a system for data collec-
11 tion and evaluation of proposed reform efforts
12 in order to build the knowledge base on prom-
13 ising models for increasing recruitment and re-
14 tention of students from underrepresented mi-
15 nority groups in STEM education at the under-
16 graduate level across a diverse set of institu-
17 tions.

18 “(B) DISSEMINATION.—The Director of
19 the Foundation shall coordinate with relevant
20 Federal agencies in disseminating the results of
21 the research under this paragraph to ensure
22 that best practices in broadening participation
23 in STEM education at the undergraduate level
24 are made readily available to all institutions of
25 higher education, other Federal agencies that

1 support STEM programs, non-Federal funders
2 of STEM education, and the general public.

3 “(6) AUTHORIZATION OF APPROPRIATIONS.—

4 There are authorized to be appropriated to carry out
5 this subsection \$15,000,000 for each of fiscal years
6 2020 through 2024.”.

7 **SEC. 10. TRIBAL COLLEGES AND UNIVERSITIES PROGRAM.**

8 (a) GRANTS TO BROADEN TRIBAL COLLEGE AND
9 UNIVERSITY STUDENT PARTICIPATION IN COMPUTER
10 SCIENCE.—Section 525 of the America COMPETES Re-
11 authorization Act of 2010 (42 U.S.C. 1862p–13) is
12 amended by inserting after subsection (c) the following:

13 “(d) GRANTS TO BROADEN TRIBAL COLLEGE AND
14 UNIVERSITY STUDENT PARTICIPATION IN COMPUTER
15 SCIENCE.—

16 “(1) IN GENERAL.—The Director, as part of
17 the program authorized under this section, shall
18 award grants on a competitive, merit-reviewed basis
19 to eligible entities to increase the participation of
20 tribal populations in computer science and computa-
21 tional thinking education programs to enable stu-
22 dents to develop skills and competencies in coding,
23 problem-solving, critical thinking, creativity and col-
24 laboration.

1 “(2) PURPOSE.—Grants awarded under this
2 subsection shall support—

3 “(A) research and development needed to
4 bring computer science and computational
5 thinking courses and degrees to tribal colleges
6 and universities;

7 “(B) research and development of instruc-
8 tional materials needed to integrate computer
9 science and computational thinking into pro-
10 grams that are culturally relevant to students
11 attending tribal colleges and universities;

12 “(C) research, development and evaluation
13 of distance education for computer science and
14 computational thinking courses and degree pro-
15 grams for students attending tribal colleges and
16 universities; and

17 “(D) other activities consistent with the
18 activities described in paragraphs (1) through
19 (4) of subsection (b), as determined by the Di-
20 rector.

21 “(3) PARTNERSHIPS.—A tribal college or uni-
22 versity seeking a grant under this subsection, or a
23 consortia thereof, may partner with an institution of
24 higher education or nonprofit organization with dem-

1 onstrated expertise in academic program develop-
2 ment.

3 “(4) COORDINATION.—In carrying out this sub-
4 section, the Director shall consult and cooperate
5 with the programs and policies of other relevant
6 Federal agencies to avoid duplication with and en-
7 hance the effectiveness of the program under this
8 subsection.

9 “(5) AUTHORIZATION OF APPROPRIATIONS.—
10 There are authorized to be appropriated to the Di-
11 rector of the Foundation \$2,000,000 in each of fis-
12 cal years 2020 through 2024 to carry out this sub-
13 section.”.

14 (b) EVALUATION.—

15 (1) IN GENERAL.—Not later than 2 years after
16 the date of enactment of this Act, the Director of
17 the National Science Foundation shall evaluate the
18 grant program authorized under section 525 of the
19 America COMPETES Reauthorization Act of 2010
20 (42 U.S.C. 1862p–13), as amended.

21 (2) REQUIREMENTS.—In conducting the evalua-
22 tion under paragraph (1), the Director shall—

23 (A) use a common set of benchmarks and
24 assessment tools to identify best practices and
25 materials developed or demonstrated by the re-

1 search conducted pursuant to grants programs
2 under section 525 of the America COMPETES
3 Reauthorization Act of 2010 (42 U.S.C.
4 1862p–13);

5 (B) include an assessment of the effective-
6 ness of such grant programs in expanding ac-
7 cess to high quality STEM education, research,
8 and outreach at tribal colleges and universities,
9 as applicable;

10 (C) assess the number of students who
11 participated in such grant programs; and

12 (D) assess the percentage of students par-
13 ticipating in such grant programs who success-
14 fully complete their education programs.

15 (3) REPORT.—Not later than 180 days after
16 the date on which the evaluation under paragraph
17 (1) is completed, the Director of the National
18 Science Foundation shall submit to Congress and
19 make available to the public, a report on the results
20 of the evaluation, including any recommendations for
21 legislative action that could optimize the effective-
22 ness of the grant program authorized under section
23 525 of the America COMPETES Reauthorization
24 Act of 2010, as amended by subsection (a).

1 **SEC. 11. REPORT TO CONGRESS.**

2 Not later than 4 years after the date of enactment
3 of this Act, the Director shall submit a report to Congress
4 that includes—

5 (1) a description and evaluation of the status
6 and usage of policies implemented pursuant to sec-
7 tion 3 at all Federal science agencies, including any
8 recommendations for revising or expanding such
9 policies;

10 (2) with respect to efforts to minimize the ef-
11 fects of implicit bias in the review of extramural and
12 intramural Federal research grants under section
13 5—

14 (A) what steps all Federal science agencies
15 have taken to implement policies and practices
16 to minimize such effects;

17 (B) a description of any significant up-
18 dates to the policies for review of Federal re-
19 search grants required under such section; and

20 (C) any evidence of the impact of such
21 policies on the review or awarding of Federal
22 research grants; and

23 (3) a description and evaluation of the status of
24 institution of higher education and Federal labora-
25 tory policies and practices required under section

1 7(a), including any recommendations for revising or
2 expanding such policies.

3 **SEC. 12. MERIT REVIEW.**

4 Nothing in this Act shall be construed as altering any
5 intellectual or broader impacts criteria at Federal science
6 agencies for evaluating grant applications.

7 **SEC. 13. DEFINITIONS.**

8 In this Act:

9 (1) **DIRECTOR.**—The term “Director” means
10 the Director of the Office of Science and Technology
11 Policy.

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

16 (3) **FEDERAL SCIENCE AGENCY.**—The term
17 “Federal science agency” means any Federal agency
18 with at least \$100,000,000 in research and develop-
19 ment expenditures in fiscal year 2018.

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

24 (5) **INTERAGENCY WORKING GROUP ON INCLU-**
25 **SION IN STEM.**—The term “interagency working

1 group on inclusion in STEM” means the interagency
2 working group established by section 308 of the
3 American Innovation and Competitiveness Act (42
4 U.S.C. 6626).

5 (6) STEM.—The term “STEM” means science,
6 technology, engineering, and mathematics, including
7 computer science.

○