

116TH CONGRESS  
1ST SESSION

# H. R. 2528

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## AN ACT

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”.

6        (b) TABLE OF CONTENTS.—The table of contents for  
 7        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.

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

9            (1) Many reports over the past decade have  
 10        found that it is critical to our Nation’s economic  
 11        leadership and global competitiveness that the  
 12        United States educates and trains more scientists  
 13        and engineers.

14          (2) Research shows that women and minorities  
 15        who are interested in STEM careers are dispropor-  
 16        tionately lost at nearly every educational transition  
 17        and at every career milestone.

18          (3) The National Center for Science and Engi-  
 19        neering Statistics at the National Science Founda-

1       tion collects, compiles, analyzes, and publishes data  
2       on the demographics of STEM degrees and STEM  
3       jobs in the United States.

4           (4) Women now earn nearly 37 percent of all  
5       STEM bachelor's degrees, but major variations per-  
6       sist among fields. In 2017, women earned only 20  
7       percent of all bachelor's degrees awarded in engi-  
8       neering and 19 percent of bachelor's degrees award-  
9       ed in computer sciences. Based on Bureau of Labor  
10      Statistics data, jobs in computing occupations are  
11      expected to account for nearly 60 percent of the pro-  
12      jected annual growth of newly created STEM job  
13      openings from 2016 to 2026.

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

1 fields complete their degree within 5 years, com-  
2 pared to approximately 33 percent of White students  
3 and 42 percent of Asian students who complete their  
4 degree within 5 years.

5 (6) In some STEM fields, including the com-  
6 puter sciences, women persist at about the same rate  
7 through doctorate degrees. In other STEM fields,  
8 women persist through doctorate degrees at a lower  
9 rate. In mathematics, women earn just 26 percent of  
10 doctorate degrees compared with 42 percent of un-  
11 dergraduate degrees. Overall, women earned 38 per-  
12 cent of STEM doctorate degrees in 2016. The rate  
13 of minority students earning STEM doctorate de-  
14 grees in physics is 9 percent, compared with 15 per-  
15 cent for bachelor's degree. Students from underrep-  
16 resented minority groups accounted for only 11.5  
17 percent of STEM doctorate degrees awarded in  
18 2016.

19 (7) The representation of women in STEM  
20 drops significantly from the doctorate degree level to  
21 the faculty level. Overall, women hold only 26 per-  
22 cent of all tenured and tenure-track positions and 27  
23 percent of full professor positions in STEM fields in  
24 our Nation's universities and 4-year colleges. Black  
25 and Hispanic faculty together hold about 6.8 percent

1 of all tenured and tenure-track positions and 7.5  
2 percent of full professor positions. Many of the num-  
3 bers in the American Indian or Alaskan Native and  
4 Native Hawaiian or Other Pacific Islander cat-  
5 egories for different faculty ranks were too small for  
6 the National Science Foundation to report publicly  
7 without potentially compromising confidential infor-  
8 mation about the individuals being surveyed.

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

1           (9) By 2050, underrepresented minorities will  
2       comprise 52 percent of the college-age population of  
3       the United States. If the percentage of female stu-  
4       dents and students from underrepresented minority  
5       groups earning bachelor's degrees in STEM fields  
6       does not significantly increase, the United States  
7       will face an acute shortfall in the overall number of  
8       students who earn degrees in STEM fields just as  
9       United States companies are increasingly seeking  
10      students with those skills. With this impending  
11      shortfall, the United States will almost certainly lose  
12      its competitive edge in the 21st century global econ-  
13      omy.

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

1       percent indicated it was because they were unable to  
2       balance work and life demands.

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

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

19          (13) A substantial body of evidence establishes  
20      that most people hold implicit biases. Decades of  
21      cognitive psychology research reveal that most peo-  
22      ple carry prejudices of which they are unaware but  
23      that nonetheless play a large role in evaluations of  
24      people and their work. Unintentional biases and out-  
25      moded institutional structures are hindering the ac-

cess and advancement of women, minorities, and other groups historically underrepresented in STEM.

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

(15) In 2012, the Office of Diversity and Equal Opportunity of the National Aeronautics and Space Administration (in this Act referred to as “NASA”) completed a report that—

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

(B) provides guidance that is usable by all institutions of higher education receiving significant Federal research funding on how to conduct meaningful self-evaluations of campus culture and policies.

(16) The Federal Government provides 55 percent of research funding at institutions of higher education and, through its grant-making policies, has had significant influence on institution of higher education policies, including policies related to institutional culture and structure.



1 **SEC. 2. PURPOSES.**

2 The purposes of this Act are as follows:

3 (1) To ensure that Federal science agencies and  
4 institutions of higher education receiving Federal re-  
5 search and development funding are fully engaging  
6 the entire talent pool of the United States.

7 (2) To promote research on, and increase un-  
8 derstanding of, the participation and trajectories of  
9 women, minorities, and other groups historically  
10 underrepresented in STEM studies and careers, in-  
11 cluding persons with disabilities, older learners, vet-  
12 erans, and rural, poor, and tribal populations, at in-  
13 stitutions of higher education and Federal science  
14 agencies, including Federal laboratories.

15 (3) To raise awareness within Federal science  
16 agencies, including Federal laboratories, and institu-  
17 tions of higher education about cultural and institu-  
18 tional barriers limiting the recruitment, retention,  
19 promotion, and other indicators of participation and  
20 achievement of women, minorities, and other groups  
21 historically underrepresented in academic and Gov-  
22 ernment STEM research careers at all levels.

23 (4) To identify, disseminate, and implement  
24 best practices at Federal science agencies, including  
25 Federal laboratories, and at institutions of higher  
26 education to remove or reduce cultural and institu-

1 tional barriers limiting the recruitment, retention,  
2 and success of women, minorities, and other groups  
3 historically underrepresented in academic and Gov-  
4 ernment STEM research careers.

5 (5) To provide grants to institutions of higher  
6 education to recruit, retain, and advance STEM fac-  
7 ulty members from underrepresented minority  
8 groups and to implement or expand reforms in un-  
9 dergraduate STEM education in order to increase  
10 the number of students from underrepresented mi-  
11 nority groups receiving degrees in these fields.

12 **SEC. 3. FEDERAL SCIENCE AGENCY POLICIES FOR CARE-**  
13 **GIVERS.**

14 (a) OSTP GUIDANCE.—Not later than 6 months  
15 after the date of enactment of this Act, the Director, in  
16 consultation with relevant agencies, shall provide guidance  
17 to each Federal science agency to establish policies that—

18 (1) apply to all—

19 (A) research awards granted by such agen-  
20 cy; and

21 (B) principal investigators of such research  
22 who have caregiving responsibilities, including  
23 care for a newborn or newly adopted child and  
24 care for an immediate family member who is  
25 sick or disabled; and

1 (2) provide—

2 (A) flexibility in timing for the initiation of  
3 approved research awards granted by such  
4 agency;

5 (B) no-cost extensions of such research  
6 awards;

7 (C) grant supplements, as appropriate, to  
8 research awards for research technicians or  
9 equivalent positions to sustain research activi-  
10 ties conducted under such awards; and

11 (D) any other appropriate accommodations  
12 at the discretion of the director of each such  
13 agency.

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

18 (c) ESTABLISHMENT OF POLICIES.—Consistent with  
19 the guidance under subsection (a), Federal science agen-  
20 cies shall—

21 (1) maintain or develop and implement policies  
22 for individuals described in paragraph (1)(B) of  
23 such subsection; and

24 (2) broadly disseminate such policies to current  
25 and potential grantees.

1 (d) DATA ON USAGE.—Federal science agencies  
2 shall—

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

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

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

10 (a) COLLECTION OF DATA.—

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

20 (2) UNIFORMITY AND STANDARDIZATION.—The  
21 Director, in consultation with the Director of the  
22 National Science Foundation, shall establish a policy  
23 to ensure uniformity and standardization of the data  
24 collection required under paragraph (1).

25 (3) RECORD-LEVEL DATA.—

1           (A) REQUIREMENT.—Beginning not later  
2           than 2 years after the date of the enactment of  
3           this Act, and on an annual basis thereafter,  
4           each Federal science agency shall submit to the  
5           Director of the National Science Foundation  
6           record-level data collected under paragraph (1)  
7           in the form required by such Director.

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

14       (b) REPORTING OF DATA.—The Director of the Na-  
15       tional Science Foundation shall publish statistical sum-  
16       mary data, as practicable, collected under this section,  
17       disaggregated and cross-tabulated by race, ethnicity, gen-  
18       der, and years since completion of doctoral degree, includ-  
19       ing in conjunction with the National Science Foundation’s  
20       report required by section 37 of the Science and Tech-  
21       nology Equal Opportunities Act (42 U.S.C. 1885d; Public  
22       Law 96–516).

1 **SEC. 5. POLICIES FOR REVIEW OF FEDERAL RESEARCH**  
2 **GRANTS.**

3 (a) IN GENERAL.—Each Federal science agency shall  
4 implement the policy recommendations with respect to re-  
5 ducing the impact of implicit bias at Federal science agen-  
6 cies and grantee institutions as developed by the Office  
7 of Science and Technology Policy in the 2016 report enti-  
8 tled “Reducing the Impact of Bias in the STEM Work-  
9 force” and any subsequent updates.

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

18 (c) ESTABLISHMENT OF POLICIES.—Drawing upon  
19 lessons learned from the pilot activity under subsection  
20 (b), each Federal science agency shall maintain or develop  
21 and implement evidence-based policies and practices to  
22 minimize the effects of implicit bias in the review of extra-  
23 mural and intramural Federal research grants.

24 (d) ASSESSMENT OF POLICIES.—Federal science  
25 agencies shall regularly assess, and amend as necessary,  
26 the policies and practices implemented pursuant to sub-

1 section (c) to ensure effective measures are in place to  
2 minimize the effects of implicit bias in the review of extra-  
3 mural and intramural Federal research grants.

4 **SEC. 6. COLLECTION OF DATA ON DEMOGRAPHICS OF FAC-**  
5 **ULTY.**

6 (a) COLLECTION OF DATA.—

7 (1) IN GENERAL.—Not later than 3 years after  
8 the date of enactment of this Act, and at least every  
9 5 years thereafter, the Director of the National  
10 Science Foundation shall carry out a survey to col-  
11 lect data from grantees on the demographics of  
12 STEM faculty, by broad fields of STEM, at dif-  
13 ferent types of institutions of higher education.

14 (2) CONSIDERATIONS.—To the extent prac-  
15 ticable, the Director of the National Science Foun-  
16 dation shall consider, by gender, race, ethnicity, citi-  
17 zenship status, and years since completion of doc-  
18 toral degree—

19 (A) the number and percentage of faculty;

20 (B) the number and percentage of faculty  
21 at each rank;

22 (C) the number and percentage of faculty  
23 who are in nontenure-track positions, including  
24 teaching and research;

1 (D) the number and percentage of faculty  
2 who are reviewed for promotion, including ten-  
3 ure, and the percentage of that number who are  
4 promoted, including being awarded tenure;

5 (E) faculty years in rank;

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

8 (G) the number and percentage of faculty  
9 hired, by rank; and

10 (H) the number and percentage of faculty  
11 in leadership positions.

12 (b) EXISTING SURVEYS.—The Director of the Na-  
13 tional Science Foundation, may, in modifying or expand-  
14 ing existing Federal surveys of higher education (as nec-  
15 essary)—

16 (1) take into account the considerations under  
17 subsection (a)(2) by collaborating with statistical  
18 centers at other Federal agencies; or

19 (2) award a grant or contract to an institution  
20 of higher education or other nonprofit organization  
21 to take such considerations into account.

22 (c) REPORTING DATA.—The Director of the National  
23 Science Foundation shall publish statistical summary data  
24 collected under this section, including as part of the Na-  
25 tional Science Foundation's report required by section 37



1 of the Science and Technology Equal Opportunities Act  
2 (42 U.S.C. 1885d; Public Law 96–516).

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

8 **SEC. 7. CULTURAL AND INSTITUTIONAL BARRIERS TO EX-**  
9 **PANDING THE ACADEMIC AND FEDERAL**  
10 **STEM WORKFORCE.**

11 (a) BEST PRACTICES AT INSTITUTIONS OF HIGHER  
12 EDUCATION AND FEDERAL LABORATORIES.—

13 (1) DEVELOPMENT OF GUIDANCE.—Not later  
14 than 12 months after the date of enactment of this  
15 Act, the Director, in consultation with the inter-  
16 agency working group on inclusion in STEM, shall  
17 develop written guidance for institutions of higher  
18 education and Federal laboratories on the best prac-  
19 tices for—

20 (A) conducting periodic climate surveys of  
21 STEM departments and divisions, with a par-  
22 ticular focus on identifying any cultural or in-  
23 stitutional barriers to the recruitment, reten-  
24 tion, or advancement of women, racial and eth-  
25 nic minorities, and other groups historically

1 underrepresented in STEM studies and careers;  
2 and

3 (B) providing educational opportunities, in-  
4 cluding workshops as described in subsection  
5 (b), for STEM faculty, research personnel, and  
6 administrators to learn about current research  
7 on implicit bias in recruitment, evaluation, and  
8 promotion of undergraduate and graduate stu-  
9 dents and research personnel.

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

14 (3) DISSEMINATION OF GUIDANCE.—Federal  
15 science agencies shall broadly disseminate the guid-  
16 ance developed under paragraph (1) to institutions  
17 of higher education that receive Federal research  
18 funding and Federal laboratories.

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

21 (A) the Director of the National Science  
22 Foundation shall develop a policy that—

23 (i) applies to, at a minimum, doctoral  
24 degree granting institutions that receive  
25 Federal research funding; and

1 (ii) requires each such institution, not  
2 later than 3 years after the date of enact-  
3 ment of this Act, to report to the Director  
4 of the National Science Foundation on ac-  
5 tivities and policies developed and imple-  
6 mented based on the guidance developed  
7 under paragraph (1); and

8 (B) each Federal science agency with a  
9 Federal laboratory shall maintain or develop  
10 and implement practices and policies for the  
11 purposes described in paragraph (1) for such  
12 laboratory.

13 (b) WORKSHOPS TO ADDRESS CULTURAL BARRIERS  
14 TO EXPANDING THE ACADEMIC AND FEDERAL STEM  
15 WORKFORCE.—

16 (1) IN GENERAL.—Not later than 6 months  
17 after the date of enactment of this Act, the Director,  
18 in consultation with the interagency working group  
19 on inclusion in STEM, shall recommend a uniform  
20 policy for Federal science agencies to carry out a  
21 program of workshops that educate STEM depart-  
22 ment chairs at institutions of higher education, sen-  
23 ior managers at Federal laboratories, and other fed-  
24 erally funded researchers about methods that mini-  
25 mize the effects of implicit bias in the career ad-

1 vancement, including hiring, tenure, promotion, and  
2 selection for any honor based in part on the recipi-  
3 ent's research record, of academic and Federal  
4 STEM researchers.

5 (2) INTERAGENCY COORDINATION.—The Direc-  
6 tor shall, to the extent practicable, ensure that work-  
7 shops supported under this subsection are coordi-  
8 nated across Federal science agencies and jointly  
9 supported as appropriate.

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

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

1           (5) ORGANIZATIONS ELIGIBLE TO CARRY OUT  
2       WORKSHOPS.—A Federal science agency may carry  
3       out the program of workshops under this subsection  
4       by making grants to organizations made eligible by  
5       the Federal science agency and any of the following  
6       organizations:

7           (A) Nonprofit scientific and professional  
8       societies and organizations that represent one  
9       or more STEM disciplines.

10          (B) Nonprofit organizations that have the  
11       primary mission of advancing the participation  
12       of women, minorities, or other groups histori-  
13       cally underrepresented in STEM.

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

16          (A) Invitees to workshops shall include at  
17       least—

18               (i) the chairs of departments in the  
19       relevant STEM discipline or disciplines  
20       from doctoral degree granting institutions  
21       that receive Federal research funding; and

22               (ii) in the case of Federal laboratories,  
23       individuals with personnel management re-  
24       sponsibilities comparable to those of an in-

1           stitution of higher education department  
2           chair.

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

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

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

1           (7) DATA ON WORKSHOPS.—Any proposal for  
2           funding by an organization seeking to carry out a  
3           workshop under this subsection shall include a de-  
4           scription of how such organization will—

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

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

12                  (C) collect follow-up data on any relevant  
13                  institutional policy or practice changes reported  
14                  by attendees not later than 1 year after attend-  
15                  ance in such a workshop.

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

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

1           (1) a summary and analysis of the types and  
2           frequency of activities and policies developed and  
3           carried out under subsection (a) based on the re-  
4           ports submitted under paragraph (4) of such sub-  
5           section; and

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

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

15      **SEC. 8. RESEARCH AND DISSEMINATION AT THE NATIONAL**  
16                                      **SCIENCE FOUNDATION.**

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

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



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

3           (3) research grants to study the impact of poli-  
4       cies and practices that are implemented under this  
5       Act or that are otherwise consistent with the pur-  
6       poses of this Act;

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

12          (5) collaboration with institutions of higher  
13      education in order to clarify and catalyze the adop-  
14      tion of a coherent and consistent set of work-life ac-  
15      commodation policies and practices.

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

20      **SEC. 9. RESEARCH AND RELATED ACTIVITIES TO EXPAND**  
21                                      **STEM OPPORTUNITIES.**

22      (a) NATIONAL SCIENCE FOUNDATION SUPPORT FOR  
23      INCREASING DIVERSITY AMONG STEM FACULTY AT IN-  
24      STITUTIONS OF HIGHER EDUCATION.—Section 305 of the

1 American Innovation and Competitiveness Act (42 U.S.C.  
2 1862s-5) is amended—

3 (1) by redesignating subsections (e) and (f) as  
4 subsections (g) and (h), respectively; and

5 (2) by inserting after subsection (d) the fol-  
6 lowing:

7 “(e) SUPPORT FOR INCREASING DIVERSITY AMONG  
8 STEM FACULTY AT INSTITUTIONS OF HIGHER EDU-  
9 CATION.—

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

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

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

22 “(A) institutional assessment activities,  
23 such as data analyses and policy review, in  
24 order to identify and address specific issues in  
25 the recruitment, retention, and advancement of

1 faculty members from underrepresented minor-  
2 ity groups;

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

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

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

22 “(E) professional development opportuni-  
23 ties for faculty members from underrepresented  
24 minority groups;

“(F) activities aimed at making undergraduate STEM students from underrepresented minority groups aware of opportunities for academic careers in STEM fields;

“(G) activities to identify and engage exceptional graduate students and postdoctoral researchers from underrepresented minority groups at various stages of their studies and to encourage them to enter academic careers; and

“(H) other activities consistent with paragraph (1), as determined by the Director of the Foundation.

“(4) SELECTION PROCESS.—

“(A) APPLICATION.—An institution of higher education (or a consortium of such institutions) seeking funding under this subsection shall submit an application to the Director of the Foundation at such time, in such manner, and containing such information and assurances as such Director may require. The application shall include, at a minimum, a description of—

“(i) the reform effort that is being proposed for implementation by the institution of higher education;

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

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

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

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

23 “(i) the likelihood of success in under-  
24 taking the proposed reform effort at the  
25 institution of higher education submitting

1 the application, including the extent to  
2 which the administrators of the institution  
3 are committed to making the proposed re-  
4 form effort a priority;

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

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

16 “(iv) the degree to which evaluation  
17 and assessment plans are included in the  
18 design of the proposed reform effort.

19 “(C) GRANT DISTRIBUTION.—The Director  
20 of the Foundation shall ensure, to the extent  
21 practicable, that grants awarded under this sec-  
22 tion are made to a variety of types of institu-  
23 tions of higher education.

24 “(5) AUTHORIZATION OF APPROPRIATIONS.—

25 There are authorized to be appropriated to carry out

1       this subsection \$8,000,000 for each of fiscal years  
2       2020 through 2024.”.

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

9       “(f) SUPPORT FOR BROADENING PARTICIPATION IN  
10      UNDERGRADUATE STEM EDUCATION.—

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

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

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

23           “(A) implementation or expansion of inno-  
24      vative, research-based approaches to broaden

1 participation of underrepresented minority  
2 groups in STEM fields;

3 “(B) implementation or expansion of  
4 bridge, cohort, tutoring, or mentoring pro-  
5 grams, including those involving community col-  
6 leges and technical schools, designed to enhance  
7 the recruitment and retention of students from  
8 underrepresented minority groups in STEM  
9 fields;

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

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

21 “(E) implementation or expansion of  
22 mechanisms designed to recognize and reward  
23 faculty members who demonstrate a commit-  
24 ment to increasing the participation of students



1 from underrepresented minority groups in  
2 STEM fields;

3 “(F) expansion of successful reforms  
4 aimed at increasing the number of STEM stu-  
5 dents from underrepresented minority groups  
6 beyond a single course or group of courses to  
7 achieve reform within an entire academic unit,  
8 or expansion of successful reform efforts beyond  
9 a single academic unit or field to other STEM  
10 academic units or fields within an institution of  
11 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           nosity groups to participate in instructional or  
2           assessment activities at primarily under-  
3           graduate institutions, including primarily un-  
4           dergraduate minority-serving institutions and 2-  
5           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 2-year  
4 and minority-serving institutions of higher edu-  
5 cation.

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 of the Na-  
23       tional Science Foundation shall, as practicable—

24                       (A) use a common set of benchmarks and  
25       assessment tools to identify best practices and



1 materials developed or demonstrated by the re-  
2 search conducted pursuant to grants programs  
3 under section 525 of the America COMPETES  
4 Reauthorization Act of 2010 (42 U.S.C.  
5 1862p–13);

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

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

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

16 (3) REPORT.—Not later than 180 days after  
17 the date on which the evaluation under paragraph  
18 (1) is completed, the Director of the National  
19 Science Foundation shall submit to Congress and  
20 make available to the public, a report on the results  
21 of the evaluation, including any recommendations for  
22 legislative action that could optimize the effective-  
23 ness of the grant program authorized under section  
24 525 of the America COMPETES Reauthorization  
25 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.

Passed the House of Representatives September 26,  
2019.

Attest:

*Clerk.*



116<sup>TH</sup> CONGRESS  
1<sup>ST</sup> SESSION

**H. R. 2528**

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## **AN ACT**

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.