I

112TH CONGRESS
2D SESSION

H. R. 4483

To authorize the Director of the National Science Foundation to provide grants to institutions of higher education for implementing or expanding reforms in undergraduate science, technology, engineering, and mathematics (STEM) education in order to increase the number of students from underrepresented minority groups receiving degrees in these fields, and to recruit, retain, and advance STEM faculty members from underrepresented minority groups at institutions of higher education.

IN THE HOUSE OF REPRESENTATIVES

APRIL 24, 2012

Ms. EDDIE BERNICE JOHNSON of Texas (for herself, Ms. WILSON of Florida, Mr. CLEAVER, Mr. JACKSON of Illinois, Mr. REYES, Mr. RUSH, Mr. CONYERS, Mr. LUJÁN, Mr. HINOJOSA, and Ms. FUDGE) introduced the following bill; which was referred to the Committee on Science, Space, and Technology

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A BILL

To authorize the Director of the National Science Foundation to provide grants to institutions of higher education for implementing or expanding reforms in undergraduate science, technology, engineering, and mathematics (STEM) education in order to increase the number of students from underrepresented minority groups receiving degrees in these fields, and to recruit, retain, and advance STEM faculty members from underrepresented minority groups at institutions of higher education.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the ''Broadening Participation in STEM Education Act''.

SEC. 2. FINDINGS.

The Congress finds the following:

(1) One of the National Science Foundation's core missions is ''to achieve excellence in U.S. science, technology, engineering and mathematics (STEM) education''.

(2) STEM education at the undergraduate level is vital to developing a workforce that will allow the United States to remain the leader in the 21st century global economy.

(3) In 2007, underrepresented minority groups comprised 33.2 percent of the college-age population of the United States, but only 17.7 percent of undergraduate students earning bachelor's degrees in STEM fields.

(4) The Higher Education Research Institute at the University of California, Los Angeles, found that, while freshmen from underrepresented minority groups express an interest in pursuing a STEM undergraduate degree at the same rate as all other

freshmen, only 22.1 percent of Latino students, 18.4 percent of African-American students, and 18.8 percent of Native American students studying in STEM fields complete their degree within 5 years, compared to an approximate 33 percent and 42 percent 5-year completion rate for White and Asian students, respectively.

(5) Statistics are particularly alarming in specific STEM fields. For example, even though underrepresented minorities make up approximately 33 percent of the college-age population, according to an analysis of National Science Foundation data performed by the National Action Council for Minorities in Engineering, students from underrepresented minority groups earned only 13 percent of all engineering degrees in 2009.

(6) Underrepresented minority groups currently make up about 29 percent of the United States population. However, only about 8 percent of tenure-track science and engineering faculty members at universities and 4-year colleges and less than 1 percent of tenure-track science and engineering faculty members at the top 100 research universities in the United States are from underrepresented minority groups.

(7) Students from underrepresented minority groups at institutions of higher education who see few others ''like themselves'' among faculty and student populations often do not experience the social integration that is necessary for success in all disciplines, including STEM.

(8) The ability to connect students and faculty members from underrepresented minority groups has been demonstrated to be successful in increasing the achievement level of students from underrepresented minority groups studying in STEM fields.

(9) The United States faces a demographic challenge with regard to STEM education: by 2050, 52 percent of the college-age population of the United States will be from underrepresented minority groups.

(10) If the percentage of students from underrepresented minority groups earning bachelor's degrees in STEM fields does not significantly increase, the United States will face an acute shortfall in the overall number of students who earn degrees in STEM fields.

(11) With this impending shortfall, and with the number of citizens of other countries earning degrees in STEM fields increasing, the comparative

advantage of the United States STEM workforce will diminish, and the United States will almost certainly lose its competitive edge in the 21st century global economy.

SEC. 3. FOUNDATION SUPPORT FOR BROADENING PARTICIPATION IN UNDERGRADUATE STEM EDUCATION.

(a) GRANTS.—The Director shall award grants to institutions of higher education (or consortia thereof) to implement or expand research-based reforms in undergraduate STEM education for the purpose of recruiting and retaining students from minority groups who are underrepresented in STEM fields.

(b) MERIT REVIEW; COMPETITION.—Grants shall be awarded under this section on a merit-reviewed, competitive basis.

(c) USE OF FUNDS.—Activities supported by grants under this section may include—

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

(2) implementation or expansion of bridge, cohort, tutoring, or mentoring programs designed to enhance the recruitment and retention of students

from underrepresented minority groups in STEM fields;

(3) implementation or expansion of outreach programs linking institutions of higher education and K–12 school systems in order to heighten awareness among pre-college students from underrepresented minority groups of opportunities in college-level STEM fields and STEM careers;

(4) implementation or expansion of faculty development programs focused on improving retention of undergraduate STEM students from underrepresented minority groups;

(5) implementation or expansion of mechanisms designed to recognize and reward faculty members who demonstrate a commitment to increasing the participation of students from underrepresented minority groups in STEM fields;

(6) expansion of successful reforms aimed at increasing the number of STEM students from underrepresented minority groups beyond a single course or group of courses to achieve reform within an entire academic unit, or expansion of successful reform efforts beyond a single academic unit to other STEM academic units within an institution of higher education;

(7) expansion of opportunities for students from underrepresented minority groups to conduct STEM research in industry, at Federal labs, and at international research institutions or research sites;

(8) provision of stipends for students from underrepresented minority groups participating in research;

(9) support for graduate students and postdoctoral fellows from underrepresented minority groups to participate in instructional or assessment activities at primarily undergraduate institutions, including primarily undergraduate minority-serving institutions and two-year institutions of higher education; and

(10) other activities consistent with subsection (a), as determined by the Director.

(d) SELECTION PROCESS.—

(1) APPLICATION.—An institution of higher education (or consortia thereof) seeking a grant under this section shall submit an application to the Director at such time, in such manner, and containing such information and assurances as the Director may require. The application shall include, at a minimum—

(A) a description of the proposed reform effort;

(B) a description of the research findings that will serve as the basis for the proposed reform effort or, in the case of applications that propose an expansion of a previously implemented reform, a description of the previously implemented reform effort, including data about the recruitment, retention, and academic achievement of students from underrepresented minority groups;

(C) evidence of an institutional commitment to, and support for, the proposed reform effort, including a long-term commitment to implement successful strategies from the current reform beyond the academic unit or units included in the grant proposal;

(D) a description of existing or planned institutional policies and practices regarding faculty hiring, promotion, tenure, and teaching assignment that reward faculty contributions to improving the education of students from underrepresented minority groups in STEM; and

(E) how the success and effectiveness of the proposed reform effort will be evaluated and assessed in order to contribute to the national knowledge base about models for catalyzing institutional change.

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

(A) the likelihood of success of the proposed reform effort at the institution submitting the application, including the extent to which the faculty, staff, and administrators of the institution are committed to making the proposed institutional reform a priority of the participating academic unit or units;

(B) the degree to which the proposed reform effort will contribute to change in institutional culture and policy such that greater value is placed on faculty engagement in the retention of students from underrepresented minority groups;

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

(D) the degree to which evaluation and assessment plans are included in the design of the proposed reform effort.

(3) PRIORITY.—For applications that include an expansion of existing reforms beyond a single academic unit, the Director shall give priority to applications for which a senior institutional administrator, such as a dean or other administrator of equal or higher rank, serves as the principal investigator.

(4) GRANT DISTRIBUTION.—The Director shall ensure, to the extent practicable, that grants awarded under this section are made to a variety of types of institutions of higher education, including two-year and minority-serving institutions of higher education.

(e) EDUCATION RESEARCH.—

(1) IN GENERAL.—All grants made under this section shall include an education research component that will support the design and implementation of a system for data collection and evaluation of proposed reform efforts in order to build the knowledge base on promising models for increasing recruitment and retention of students from underrepresented minority groups in STEM education at

the undergraduate level across a diverse set of institutions.

(2) DISSEMINATION.—The Director shall coordinate with relevant Federal agencies in disseminating the results of the research under this subsection to ensure that best practices in broadening participation in STEM education at the undergraduate level are made readily available to all institutions of higher education, other Federal agencies that support STEM programs, non-Federal funders of STEM education, and the general public.

SEC. 4. FOUNDATION SUPPORT FOR INCREASING DIVERSITY AMONG STEM FACULTY AT INSTITUTIONS OF HIGHER EDUCATION.

(a) GRANTS.—The Director shall award grants to institutions of higher education (or consortia thereof) for the development of innovative reform efforts designed to increase the recruitment, retention, and advancement of individuals from underrepresented minority groups in academic STEM careers.

(b) MERIT REVIEW; COMPETITION.—Grants shall be awarded under this section on a merit-reviewed, competitive basis.

(c) USE OF FUNDS.—Activities supported by grants under this section may include—

(1) institutional assessment activities, such as data analyses and policy review, in order to identify and address specific issues in the recruitment, retention, and advancement of faculty members from underrepresented minority groups;

(2) implementation of institution-wide improvements in workload distribution, such that faculty members from underrepresented minority groups are not disadvantaged in the amount of time available to focus on research, publishing papers, and engaging in other activities required to achieve tenure status and run a productive research program;

(3) development and implementation of training courses for administrators and search committee members to ensure that candidates from underrepresented minority groups are not subject to implicit biases in the search and hiring process;

(4) development and hosting of intra- or inter-institutional workshops to propagate best practices in recruiting, retaining, and advancing faculty members from underrepresented minority groups;

(5) professional development opportunities for faculty members from underrepresented minority groups;

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

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

(8) other activities consistent with subsection (a), as determined by the Director.

(d) SELECTION PROCESS.—

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

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

(B) any available evidence of specific difficulties in the recruitment, retention, and advancement of faculty members from underrepresented minority groups in STEM academic

careers within the institution of higher education submitting an application, and how the proposed reform effort would address such issues;

(C) how the institution of higher education submitting an application plans to sustain the proposed reform effort beyond the duration of the grant; and

(D) how the success and effectiveness of the proposed reform effort will be evaluated and assessed in order to contribute to the national knowledge base about models for catalyzing institutional change.

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

(A) the likelihood of success in undertaking the proposed reform effort at the institution of higher education submitting the application, including the extent to which the administrators of the institution are committed to making the proposed reform effort a priority;

(B) the degree to which the proposed reform effort will contribute to change in institutional culture and policy such that greater value

is placed on the recruitment, retention, and advancement of faculty members from underrepresented minority groups;

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

(D) the degree to which evaluation and assessment plans are included in the design of the proposed reform effort.

(3) GRANT DISTRIBUTION.—The Director shall ensure, to the extent practicable, that grants awarded under this section are made to a variety of types of institutions of higher education.

SEC. 5. DEFINITIONS.

In this Act:

(1) DIRECTOR.—The term ''Director'' means the Director of the National Science Foundation.

(2) FOUNDATION.—The term ''Foundation'' means the National Science Foundation established under section 2 of the National Science Foundation Act of 1950 (42 U.S.C. 1861).

(3) INSTITUTION OF HIGHER EDUCATION.—The term ''institution of higher education'' has the

meaning given that term in section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001(a)).

(4) STEM.—The term ''STEM'' means the academic and professional disciplines of science, technology, engineering, and mathematics.

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