

117TH CONGRESS  
1ST SESSION

# S. 1418

To provide for a coordinated Federal research initiative to ensure continued  
United States leadership in engineering biology.

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## IN THE SENATE OF THE UNITED STATES

APRIL 28, 2021

Mr. MARKEY (for himself, Mrs. GILLIBRAND, Mr. RUBIO, and Mrs. CAPITO)  
introduced the following bill; which was read twice and referred to the  
Committee on Commerce, Science, and Transportation

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## A BILL

To provide for a coordinated Federal research initiative to  
ensure continued United States leadership in engineering  
biology.

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.**

4 This Act may be cited as the “Bioeconomy Research  
5 and Development Act of 2021”.

6 **SEC. 2. FINDINGS.**

7 The Congress makes the following findings:

8 (1) Cellular and molecular processes may be  
9 used, mimicked, or redesigned to develop new prod-

1       ucts, processes, and systems that improve societal  
2       well-being, strengthen national security, and con-  
3       tribute to the economy.

4           (2) Engineering biology relies on a workforce  
5       with a diverse and unique set of skills combining the  
6       biological, physical, chemical, and information  
7       sciences and engineering.

8           (3) Long-term research and development is nec-  
9       essary to create breakthroughs in engineering biol-  
10      ogy. Such research and development requires govern-  
11      ment investment as many of the benefits are too dis-  
12      tant or uncertain for industry to support alone.

13          (4) Research is necessary to inform evidence-  
14      based governance of engineering biology and to sup-  
15      port the growth of the engineering biology industry.

16          (5) The Federal Government has an obligation  
17      to ensure that ethical, legal, environmental, safety,  
18      security, and societal implications of its science and  
19      technology research and investment follows policies  
20      of responsible innovation and fosters public trans-  
21      parency.

22          (6) The Federal Government can play an im-  
23      portant role by facilitating the development of tools  
24      and technologies to further advance engineering biol-  
25      ogy, including user facilities, by facilitating public-

1 private partnerships, by supporting risk research,  
2 and by facilitating the commercial application in the  
3 United States of research funded by the Federal  
4 Government.

5 (7) The United States led the development of  
6 the science and engineering techniques that created  
7 the field of engineering biology, but due to increas-  
8 ing international competition, the United States is  
9 at risk of losing its competitive advantage if it does  
10 not strategically invest the necessary resources.

11 (8) A National Engineering Biology Initiative  
12 can serve to establish new research directions and  
13 technology goals, improve interagency coordination  
14 and planning processes, drive technology transfer to  
15 the private sector, and help ensure optimal returns  
16 on the Federal investment.

17 **SEC. 3. DEFINITIONS.**

18 In this Act:

19 (1) **BIOMANUFACTURING.**—The term “bio-  
20 manufacturing” means the utilization of biological  
21 systems to develop new and advance existing prod-  
22 ucts, tools, and processes at commercial scale.

23 (2) **ENGINEERING BIOLOGY.**—The term “engi-  
24 neering biology” means the application of engineer-  
25 ing design principles and practices to biological sys-

1       tems, including molecular and cellular systems, to  
 2       advance fundamental understanding of complex nat-  
 3       ural systems and to enable novel or optimize func-  
 4       tions and capabilities.

5           (3) INITIATIVE.—The term “Initiative” means  
 6       the National Engineering Biology Research and De-  
 7       velopment Initiative established under section 4.

8           (4) OMICS.—The term “omics” refers to the  
 9       collective technologies used to explore the roles, rela-  
 10      tionships, and actions of the various types of mol-  
 11      ecules that make up the cells of an organism.

12   **SEC. 4. NATIONAL ENGINEERING BIOLOGY RESEARCH AND**  
 13                   **DEVELOPMENT INITIATIVE.**

14       (a) IN GENERAL.—The President, acting through the  
 15      Office of Science and Technology Policy, shall implement  
 16      a National Engineering Biology Research and Develop-  
 17      ment Initiative to advance societal well-being, national se-  
 18      curity, sustainability, and economic productivity and com-  
 19      petitiveness through—

20           (1) advancing areas of research at the intersec-  
 21      tion of the biological, physical, chemical, data, and  
 22      computational sciences and engineering to accelerate  
 23      scientific understanding and technological innovation  
 24      in engineering biology;

1           (2) advancing areas of biomanufacturing re-  
2           search to optimize, standardize, scale, and deliver  
3           new products and solutions;

4           (3) supporting social and behavioral sciences  
5           and economics research that advances the field of  
6           engineering biology and contributes to the develop-  
7           ment and public understanding of new products,  
8           processes, and technologies;

9           (4) improving the understanding of engineering  
10          biology of the scientific and lay public and sup-  
11          porting greater evidence-based public discourse  
12          about its benefits and risks;

13          (5) supporting research relating to the risks  
14          and benefits of engineering biology, including under  
15          subsection (d);

16          (6) supporting the development of novel tools  
17          and technologies to accelerate scientific under-  
18          standing and technological innovation in engineering  
19          biology;

20          (7) expanding the number of researchers, edu-  
21          cators, and students and a retooled workforce with  
22          engineering biology training, including from tradi-  
23          tionally underrepresented and underserved popu-  
24          lations;

1           (8) accelerating the translation and commer-  
2           cialization of engineering biology research and devel-  
3           opment by the private sector; and

4           (9) improving the interagency planning and co-  
5           ordination of Federal Government activities related  
6           to engineering biology.

7           (b) INITIATIVE ACTIVITIES.—The activities of the  
8 Initiative shall include—

9           (1) sustained support for engineering biology  
10          research and development through—

11           (A) grants to fund the work of individual  
12           investigators and teams of investigators, includ-  
13           ing interdisciplinary teams;

14           (B) projects funded under joint solicita-  
15           tions by a collaboration of no fewer than two  
16           agencies participating in the Initiative; and

17           (C) interdisciplinary research centers that  
18           are organized to investigate basic research  
19           questions, carry out technology development  
20           and demonstration activities, and increase un-  
21           derstanding of how to scale up engineering biol-  
22           ogy processes, including biomanufacturing;

23           (2) sustained support for databases and related  
24          tools, including—

1           (A) support for curated genomics,  
2           epigenomics, and other relevant omics data-  
3           bases, including plant and microbial databases,  
4           that are available to researchers to carry out  
5           engineering biology research in a manner that  
6           does not compromise national security or the  
7           privacy or security of information within such  
8           databases;

9           (B) development of standards for such  
10          databases, including for curation, interoper-  
11          ability, and protection of privacy and security;

12          (C) support for the development of com-  
13          putational tools, including artificial intelligence  
14          tools, that can accelerate research and innova-  
15          tion using such databases; and

16          (D) an inventory and assessment of all  
17          Federal government omics databases to identify  
18          opportunities to improve the utility of such  
19          databases, as appropriate and in a manner that  
20          does not compromise national security or the  
21          privacy and security of information within such  
22          databases, and inform investment in such data-  
23          bases as critical infrastructure for the engineer-  
24          ing biology research enterprise;

(3) sustained support for the development, optimization, and validation of novel tools and technologies to enable the dynamic study of molecular processes in situ, including through—

(A) research conducted at Federal laboratories;

(B) grants to fund the work of investigators at institutions of higher education and other nonprofit research institutions;

(C) incentivized development of retooled industrial sites across the country that foster a pivot to modernized engineering biology initiatives; and

(D) awards under the Small Business Innovation Research Program and the Small Business Technology Transfer Program, as described in section 9 of the Small Business Act (15 U.S.C. 638);

(4) support for education and training of undergraduate and graduate students in engineering biology, biomanufacturing, bioprocess engineering, and computational science applied to engineering biology and in the related ethical, legal, environmental, safety, security, and other societal domains;



1           (5) activities to develop robust mechanisms for  
 2       documenting and quantifying the outputs and eco-  
 3       nomic benefits of engineering biology; and

4           (6) activities to accelerate the translation and  
 5       commercialization of new products, processes, and  
 6       technologies by—

7                (A) identifying precompetitive research op-  
 8       portunities;

9                (B) facilitating public-private partnerships  
 10      in engineering biology research and develop-  
 11      ment;

12               (C) connecting researchers, graduate stu-  
 13      dents, and postdoctoral fellows with entrepre-  
 14      neurship education and training opportunities;  
 15      and

16               (D) supporting proof of concept activities  
 17      and the formation of startup companies includ-  
 18      ing through programs such as the Small Busi-  
 19      ness Innovation Research Program and the  
 20      Small Business Technology Transfer Program.

21      (c) EXPANDING PARTICIPATION.—The Initiative  
 22      shall include, to the maximum extent practicable, outreach  
 23      to primarily undergraduate and minority-serving institu-  
 24      tions about Initiative opportunities, and shall encourage  
 25      the development of research collaborations between re-

1 search-intensive universities and primarily undergraduate  
2 and minority-serving institutions.

3 (d) ETHICAL, LEGAL, ENVIRONMENTAL, SAFETY,  
4 SECURITY, AND SOCIETAL ISSUES.—Initiative activities  
5 shall take into account ethical, legal, environmental, safe-  
6 ty, security, and other appropriate societal issues by—

7 (1) supporting research, including in the social  
8 sciences, and other activities addressing ethical,  
9 legal, environmental, and other appropriate societal  
10 issues related to engineering biology, including inte-  
11 grating research on such topics with the research  
12 and development in engineering biology, and encour-  
13 aging the dissemination of the results of such re-  
14 search, including through interdisciplinary engineer-  
15 ing biology research centers described in subsection  
16 (b)(1);

17 (2) supporting research and other activities re-  
18 lated to the safety and security implications of engi-  
19 neering biology, including outreach to increase  
20 awareness among Federal researchers and Federally-  
21 funded researchers at institutions of higher edu-  
22 cation about potential safety and security implica-  
23 tions of engineering biology research, as appropriate;

24 (3) ensuring that input from Federal and non-  
25 Federal experts on the ethical, legal, environmental,

1 safety, security, and other appropriate societal issues  
2 related to engineering biology is integrated into the  
3 Initiative;

4 (4) ensuring, through the agencies and depart-  
5 ments that participate in the Initiative, that public  
6 input and outreach are integrated into the Initiative  
7 by the convening of regular and ongoing public dis-  
8 cussions through mechanisms such as workshops,  
9 consensus conferences, and educational events, as  
10 appropriate; and

11 (5) complying with all applicable provisions of  
12 Federal law.

13 **SEC. 5. INITIATIVE COORDINATION.**

14 (a) INTERAGENCY COMMITTEE.—The President, act-  
15 ing through the Office of Science and Technology Policy,  
16 shall designate an interagency committee to coordinate ac-  
17 tivities of the Initiative as appropriate, which shall be co-  
18 chaired by the Office of Science and Technology Policy,  
19 and include representatives from the National Science  
20 Foundation, the Department of Energy, the Department  
21 of Defense, the National Aeronautics and Space Adminis-  
22 tration, the National Institute of Standards and Tech-  
23 nology, the Environmental Protection Agency, the Depart-  
24 ment of Agriculture, the Department of Health and  
25 Human Services, the Bureau of Economic Analysis, and

1 any other agency that the President considers appropriate  
2 (in this section referred to as the “Interagency Com-  
3 mittee”). The Director of the Office of Science and Tech-  
4 nology Policy shall select an additional co-chairperson  
5 from among the members of the Interagency Committee.  
6 The Interagency Committee shall oversee the planning,  
7 management, and coordination of the Initiative. The  
8 Interagency Committee shall—

9           (1) provide for interagency coordination of Fed-  
10       eral engineering biology research, development, and  
11       other activities undertaken pursuant to the Initia-  
12       tive;

13           (2) establish and periodically update goals and  
14       priorities for the Initiative;

15           (3) develop, not later than 12 months after the  
16       date of the enactment of this Act, and update every  
17       3 years thereafter, a strategic plan submitted to the  
18       Committee on Science, Space, and Technology and  
19       the Committee on Energy and Commerce of the  
20       House of Representatives and the Committee on  
21       Commerce, Science, and Transportation and the  
22       Committee on Health, Education, Labor, and Pen-  
23       sions of the Senate that—

24                   (A) guides the activities of the Initiative  
25       for purposes of meeting the goals and priorities

1 established under (and updated pursuant to)  
2 paragraph (2); and

3 (B) describes—

4 (i) the Initiative’s support for long-  
5 term funding for interdisciplinary engineer-  
6 ing biology research and development;

7 (ii) the Initiative’s support for edu-  
8 cation and public outreach activities;

9 (iii) the Initiative’s support for re-  
10 search and other activities on ethical, legal,  
11 environmental, safety, security, and other  
12 appropriate societal issues related to engi-  
13 neering biology including—

14 (I) an applied biorisk manage-  
15 ment research plan;

16 (II) recommendations for inte-  
17 grating security into biological data  
18 access and international reciprocity  
19 agreements;

20 (III) recommendations for manu-  
21 facturing restructuring to support en-  
22 gineering biology research, develop-  
23 ment, and scaling-up initiatives; and

24 (IV) an evaluation of existing  
25 biosecurity governance policies, guid-

1                   ance, and directives for the purposes  
2                   of creating an adaptable, evidence-  
3                   based framework to respond to emerg-  
4                   ing biosecurity challenges created by  
5                   advances in engineering biology;

6                   (iv) how the Initiative will contribute  
7                   to moving results out of the laboratory and  
8                   into application for the benefit of society  
9                   and United States competitiveness; and

10                  (v) how the Initiative will measure  
11                  and track the contributions of engineering  
12                  biology to United States economic growth  
13                  and other societal indicators;

14                  (4) develop a national genomic sequencing  
15                  strategy to ensure engineering biology research fully  
16                  leverages plant, animal, and microbe biodiversity, as  
17                  appropriate and in a manner that does not com-  
18                  promise national security or the privacy or security  
19                  of human genetic information, to enhance long-term  
20                  innovation and competitiveness in engineering biol-  
21                  ogy in the United States;

22                  (5) develop a plan to utilize Federal programs,  
23                  such as the Small Business Innovation Research  
24                  Program and the Small Business Technology Trans-  
25                  fer Program as described in section 9 of the Small

1 Business Act (15 U.S.C. 638), in support of the ac-  
2 tivities described in section 4(b)(3); and

3 (6) in carrying out this section, take into con-  
4 sideration the recommendations of the advisory com-  
5 mittee established under section 6, the results of the  
6 workshop convened under section 7, existing reports  
7 on related topics, and the views of academic, State,  
8 industry, and other appropriate groups.

9 (b) TRIENNIAL REPORT.—Beginning with fiscal year  
10 2022 and ending in fiscal year 2028, not later than 90  
11 days after submission of the President’s annual budget re-  
12 quest and every third fiscal year thereafter, the Inter-  
13 agency Committee shall prepare and submit to the Com-  
14 mittee on Science, Space, and Technology of the House  
15 of Representatives and the Committee on Commerce,  
16 Science, and Transportation of the Senate a report that  
17 includes—

18 (1) a summarized agency budget in support of  
19 the Initiative for the fiscal year to which such budg-  
20 et request applies, for the following 2 fiscal years,  
21 for the then current fiscal year, including a breakout  
22 of spending for each agency participating in the Pro-  
23 gram, and for the development and acquisition of  
24 any research facilities and instrumentation; and

1           (2) an assessment of how Federal agencies are  
2     implementing the plan described in subsection  
3     (a)(3), including—

4           (A) a description of the amount and num-  
5     ber of awards made under the Small Business  
6     Innovation Research Program and the Small  
7     Business Technology Transfer Program (as de-  
8     scribed in section 9 of the Small Business Act  
9     (15 U.S.C. 638)) in support of the Initiative;

10          (B) a description of the amount and num-  
11     ber of projects funded under joint solicitations  
12     by a collaboration of no fewer than 2 agencies  
13     participating in the Initiative; and

14          (C) a description of the effect of the newly  
15     funded projects by the Initiative.

16     (c) INITIATIVE OFFICE.—

17           (1) IN GENERAL.—The President shall establish  
18     an Initiative Coordination Office, with a Director  
19     and full-time staff, which shall—

20           (A) provide technical and administrative  
21     support to the interagency committee and the  
22     advisory committee established under section 6;

23           (B) serve as the point of contact on Fed-  
24     eral engineering biology activities for govern-  
25     ment organizations, academia, industry, profes-



1 sional societies, State governments, interested  
2 citizen groups, and others to exchange technical  
3 and programmatic information;

4 (C) oversee interagency coordination of the  
5 Initiative, including by encouraging and sup-  
6 porting joint agency solicitation and selection of  
7 applications for funding of activities under the  
8 Initiative, as appropriate;

9 (D) conduct public outreach, including dis-  
10 semination of findings and recommendations of  
11 the advisory committee established under sec-  
12 tion 6, as appropriate;

13 (E) serve as the coordinator of ethical,  
14 legal, environmental, safety, security, and other  
15 appropriate societal input; and

16 (F) promote access to, and early applica-  
17 tion of, the technologies, innovations, and ex-  
18 pertise derived from Initiative activities to agen-  
19 cy missions and systems across the Federal  
20 Government, and to United States industry, in-  
21 cluding startup companies.

22 (2) FUNDING.—The Director of the Office of  
23 Science and Technology Policy, in coordination with  
24 each participating Federal department and agency,  
25 as appropriate, shall develop and annually update an

1 estimate of the funds necessary to carry out the ac-  
2 tivities of the Initiative Coordination Office and sub-  
3 mit such estimate with an agreed summary of con-  
4 tributions from each agency to Congress as part of  
5 the President's annual budget request to Congress.

6 (3) TERMINATION.—The Initiative Coordination  
7 Office established under this subsection shall termi-  
8 nate on the date that is 10 years after the date of  
9 the enactment of this Act.

10 (d) RULE OF CONSTRUCTION.—Nothing in this sec-  
11 tion shall be construed to alter the policies, processes, or  
12 practices of individual Federal agencies in effect on the  
13 day before the date of the enactment of this Act relating  
14 to the conduct of biomedical research and advanced devel-  
15 opment, including the solicitation and review of extra-  
16 mural research proposals.

17 **SEC. 6. ADVISORY COMMITTEE.**

18 (a) IN GENERAL.—The agency co-chair of the inter-  
19 agency committee established in section 5 shall, in con-  
20 sultation with the Office of Science and Technology Policy,  
21 designate or establish an advisory committee on engineer-  
22 ing biology research and development (in this section re-  
23 ferred to as the “advisory committee”) to be composed of  
24 not fewer than 12 members, including representatives of  
25 research and academic institutions, industry, and non-

1 governmental entities, who are qualified to provide advice  
2 on the Initiative.

3 (b) ASSESSMENT.—The advisory committee shall as-  
4 sess—

5 (1) the current state of United States competi-  
6 tiveness in engineering biology, including the scope  
7 and scale of United States investments in engineer-  
8 ing biology research and development in the inter-  
9 national context;

10 (2) current market barriers to commercializa-  
11 tion of engineering biology products, processes, and  
12 tools in the United States;

13 (3) progress made in implementing the Initia-  
14 tive;

15 (4) the need to revise the Initiative;

16 (5) the balance of activities and funding across  
17 the Initiative;

18 (6) whether the strategic plan developed or up-  
19 dated by the interagency committee established  
20 under section 5 is helping to maintain United States  
21 leadership in engineering biology;

22 (7) the management, coordination, implementa-  
23 tion, and activities of the Initiative; and

1           (8) whether ethical, legal, environmental, safety,  
2       security, and other appropriate societal issues are  
3       adequately addressed by the Initiative.

4       (c) REPORTS.—Beginning not later than 2 years  
5       after the date of enactment of this Act, and not less fre-  
6       quently than once every 3 years thereafter, the advisory  
7       committee shall submit to the President, the Committee  
8       on Science, Space, and Technology of the House of Rep-  
9       resentatives, and the Committee on Commerce, Science,  
10      and Transportation of the Senate, a report on—

11           (1) the findings of the advisory committee’s as-  
12      sessment under subsection (b); and

13           (2) the advisory committee’s recommendations  
14      for ways to improve the Initiative.

15       (d) APPLICATION OF FEDERAL ADVISORY COM-  
16      MITTEE ACT.—Section 14 of the Federal Advisory Com-  
17      mittee Act (5 U.S.C. App.) shall not apply to the Advisory  
18      Committee.

19       (e) TERMINATION.—The advisory committee estab-  
20      lished under subsection (a) shall terminate on the date  
21      that is 10 years after the date of the enactment of this  
22      Act.

1 **SEC. 7. EXTERNAL REVIEW OF ETHICAL, LEGAL, ENVIRON-**  
2 **MENTAL, SAFETY, SECURITY, AND SOCIETAL**  
3 **ISSUES.**

4 (a) IN GENERAL.—Not later than 6 months after the  
5 date of enactment of this Act, the Director of the National  
6 Science Foundation shall seek to enter into an agreement  
7 with the National Academies of Sciences, Engineering,  
8 and Medicine to conduct a review, and make recommenda-  
9 tions with respect to, the ethical, legal, environmental,  
10 safety, security, and other appropriate societal issues re-  
11 lated to engineering biology research and development.  
12 The review shall include—

13 (1) an assessment of the current research on  
14 such issues;

15 (2) a description of the research gaps relating  
16 to such issues;

17 (3) recommendations on how the Initiative can  
18 address the research needs identified pursuant to  
19 paragraph (2); and

20 (4) recommendations on how researchers en-  
21 gaged in engineering biology can best incorporate  
22 considerations of ethical, legal, environmental, safe-  
23 ty, security, and other societal issues into the devel-  
24 opment of research proposals and the conduct of re-  
25 search.

1 (b) REPORT TO CONGRESS.—The agreement entered  
2 into under subsection (a) shall require the National Acad-  
3 emies of Sciences, Engineering, and Medicine to, not later  
4 than 2 years after the date of the enactment of this Act—

5 (1) submit to the Committee on Science, Space,  
6 and Technology of the House of Representatives and  
7 the Committee on Commerce, Science, and Trans-  
8 portation of the Senate a report containing the find-  
9 ings and recommendations of the review conducted  
10 under subsection (a); and

11 (2) make a copy of such report available on a  
12 publicly accessible website.

13 **SEC. 8. AGENCY ACTIVITIES.**

14 (a) NATIONAL SCIENCE FOUNDATION.—As part of  
15 the Initiative, the National Science Foundation shall—

16 (1) support basic research in engineering biol-  
17 ogy through individual grants, collaborative grants,  
18 and through interdisciplinary research centers;

19 (2) support research on the environmental,  
20 legal, ethical, and social implications of engineering  
21 biology;

22 (3) provide support for research instrumenta-  
23 tion for engineering biology disciplines, including  
24 support for research, development, optimization and

1 validation of novel technologies to enable the dy-  
2 namic study of molecular processes in situ;

3 (4) support curriculum development and re-  
4 search experiences for secondary, undergraduate,  
5 and graduate students in engineering biology and  
6 biomanufacturing; and

7 (5) award grants, on a competitive basis, to en-  
8 able institutions to support graduate students and  
9 postdoctoral fellows who perform some of their engi-  
10 neering biology research in an industry setting.

11 (b) DEPARTMENT OF COMMERCE.—As part of the  
12 Initiative, the Director of the National Institute of Stand-  
13 ards and Technology shall—

14 (1) establish a bioscience research program to  
15 advance the development of standard reference ma-  
16 terials and measurements and to create new data  
17 tools, techniques, and processes necessary to advance  
18 engineering biology and biomanufacturing;

19 (2) provide access to user facilities with ad-  
20 vanced or unique equipment, services, materials, and  
21 other resources to industry, institutions of higher  
22 education, nonprofit organizations, and government  
23 agencies to perform research and testing; and

24 (3) provide technical expertise to inform the po-  
25 tential development of guidelines or safeguards for

1 new products, processes, and systems of engineering  
2 biology.

3 (c) DEPARTMENT OF ENERGY.—As part of the Ini-  
4 tiative, the Secretary of Energy shall—

5 (1) conduct and support research, development,  
6 demonstration, and commercial application activities  
7 in engineering biology, including in the areas of syn-  
8 thetic biology, advanced biofuel development,  
9 biobased materials, and environmental remediation;

10 (2) support the development, optimization and  
11 validation of novel, scalable tools and technologies to  
12 enable the dynamic study of molecular processes in  
13 situ; and

14 (3) provide access to user facilities with ad-  
15 vanced or unique equipment, services, materials, and  
16 other resources, including secure access to high-per-  
17 formance computing, as appropriate, to industry, in-  
18 stitutions of higher education, nonprofit organiza-  
19 tions, and government agencies to perform research  
20 and testing.

21 (d) DEPARTMENT OF DEFENSE.—As part of the Ini-  
22 tiative, the Secretary of Defense shall—

23 (1) conduct and support research and develop-  
24 ment in engineering biology and associated data and  
25 information sciences;



1           (2) support curriculum development and re-  
2       search experiences in engineering biology and associ-  
3       ated data and information sciences across the mili-  
4       tary education system, to include service academies,  
5       professional military education, and military grad-  
6       uate education; and

7           (3) assess risks of potential national security  
8       and economic security threats relating to engineering  
9       biology.

10       (e) NATIONAL AERONAUTICS AND SPACE ADMINIS-  
11   TRATION.—As part of the Initiative, the National Aero-  
12   nautics and Space Administration shall—

13           (1) conduct and support basic and applied re-  
14       search in engineering biology, including in synthetic  
15       biology, and related to Earth and space sciences,  
16       aeronautics, space technology, and space exploration  
17       and experimentation, consistent with the priorities  
18       established in the National Academies’ decadal sur-  
19       veys; and

20           (2) award grants, on a competitive basis, that  
21       enable institutions to support graduate students and  
22       postdoctoral fellows who perform some of their engi-  
23       neering biology research in an industry setting.

24       (f) DEPARTMENT OF AGRICULTURE.—As part of the  
25   Initiative, the Secretary of Agriculture shall—

1           (1) support research and development in engi-  
2           neering biology, including in synthetic biology and  
3           biomaterials;

4           (2) award grants through the National Institute  
5           of Food and Agriculture; and

6           (3) support development conducted by the Agri-  
7           cultural Research Service.

8           (g) ENVIRONMENTAL PROTECTION AGENCY.—As  
9           part of the Initiative, the Environmental Protection Agen-  
10          cy shall support research on how products, processes, and  
11          systems of engineering biology will affect or can protect  
12          the environment.

13          (h) DEPARTMENT OF HEALTH AND HUMAN SERV-  
14          ICES.—As part of the Initiative, the Secretary of Health  
15          and Human Services, as appropriate and consistent with  
16          activities of the Department of Health and Human Serv-  
17          ices in effect on the day before the date of the enactment  
18          of this Act, shall—

19               (1) support research and development to ad-  
20               vance the understanding and application of engineer-  
21               ing biology for human health;

22               (2) support relevant interdisciplinary research  
23               and coordination; and

24               (3) support activities necessary to facilitate  
25               oversight of relevant emerging biotechnologies.

1 **SEC. 9. RULE OF CONSTRUCTION.**

2       Nothing in this Act shall be construed to require pub-  
3 lic disclosure of information that is exempt from manda-  
4 tory disclosure under section 552 of title 5, United States  
5 Code.

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