

117TH CONGRESS  
1ST SESSION

# H. R. 4521

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

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## IN THE HOUSE OF REPRESENTATIVES

JULY 19, 2021

Ms. JOHNSON of Texas (for herself and Mr. LUCAS) introduced the following bill; which was referred to the Committee on Science, Space, and Technology, and in addition to the Committees on Agriculture, and Energy and Commerce, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

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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:

1           (1) Cellular and molecular processes may be  
2 used, mimicked, or redesigned to develop new prod-  
3 ucts, processes, and systems that improve societal  
4 well-being, strengthen national security, and con-  
5 tribute to the economy.

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

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

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

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

24          (6) The Federal Government can play an im-  
25 portant role by facilitating the development of tools

1 and technologies to further advance engineering biol-  
2 ogy, including user facilities, by facilitating public-  
3 private partnerships, by supporting risk research,  
4 and by facilitating the commercial application in the  
5 United States of research funded by the Federal  
6 Government.

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

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

19 **SEC. 3. DEFINITIONS.**

20 In this Act:

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

1           (2) ENGINEERING BIOLOGY.—The term “engi-  
2           neering biology” means the application of engineer-  
3           ing design principles and practices to biological sys-  
4           tems, including molecular and cellular systems, to  
5           advance fundamental understanding of complex nat-  
6           ural systems and to enable novel or optimize func-  
7           tions and capabilities.

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

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

15 **SEC. 4. NATIONAL ENGINEERING BIOLOGY RESEARCH AND**  
16 **DEVELOPMENT INITIATIVE.**

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

23                 (1) advancing areas of research at the intersec-  
24                 tion of the biological, physical, chemical, data, and  
25                 computational and information sciences and engi-

1       neering to accelerate scientific understanding and  
2       technological innovation in engineering biology;

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

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

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

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

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

22              (7) expanding the number of researchers, edu-  
23      cators, and students and a retooled workforce with  
24      engineering biology training, including from tradi-

1 tionally underrepresented and underserved popu-  
2 lations;

3 (8) accelerating the translation and commer-  
4 cialization of engineering biology and biomanufac-  
5 turing research and development by the private sec-  
6 tor; and

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

10 (b) INITIATIVE ACTIVITIES.—The activities of the  
11 Initiative shall include—

12 (1) sustained support for engineering biology  
13 research and development through—

14 (A) grants to fund the work of individual  
15 investigators and teams of investigators, includ-  
16 ing interdisciplinary teams;

17 (B) projects funded under joint sollicita-  
18 tions by a collaboration of no fewer than two  
19 agencies participating in the Initiative; and

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

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

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

12           (B) development of standards for such  
13 databases, including for curation, interoper-  
14 ability, and protection of privacy and security;

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

19           (D) an inventory and assessment of all  
20 Federal government omics databases to identify  
21 opportunities to improve the utility of such  
22 databases, as appropriate and in a manner that  
23 does not compromise national security or the  
24 privacy and security of information within such  
25 databases, and inform investment in such data-

1 bases as critical infrastructure for the engineer-  
2 ing biology research enterprise;

3 (3) sustained support for the development, opti-  
4 mization, and validation of novel tools and tech-  
5 nologies to enable the dynamic study of molecular  
6 processes in situ, including through—

7 (A) research conducted at Federal labora-  
8 tories;

9 (B) grants to fund the work of investiga-  
10 tors at institutions of higher education and  
11 other nonprofit research institutions;

12 (C) incentivized development of retooled in-  
13 dustrial sites across the country that foster a  
14 pivot to modernized engineering biology initia-  
15 tives; and

16 (D) awards under the Small Business In-  
17 novation Research Program and the Small  
18 Business Technology Transfer Program, as de-  
19 scribed in section 9 of the Small Business Act  
20 (15 U.S.C. 638);

21 (4) support for education and training of un-  
22 dergraduate and graduate students in engineering  
23 biology, biomanufacturing, bioprocess engineering,  
24 and computational science applied to engineering bi-



1 ology and in the related ethical, legal, environmental,  
2 safety, security, and other societal domains;

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

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

9 (A) identifying precompetitive research op-  
10 portunities;

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

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

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

23 (c) EXPANDING PARTICIPATION.—The Initiative  
24 shall include, to the maximum extent practicable, outreach  
25 to primarily undergraduate and minority-serving institu-

1 tions about Initiative opportunities, and shall encourage  
2 the development of research collaborations between re-  
3 search-intensive universities and primarily undergraduate  
4 and minority-serving institutions.

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

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

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

1           (3) ensuring that input from Federal and non-  
2           Federal experts on the ethical, legal, environmental,  
3           safety, security, and other appropriate societal issues  
4           related to engineering biology is integrated into the  
5           Initiative;

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

13          (5) complying with all applicable provisions of  
14          Federal law.

15 **SEC. 5. INITIATIVE COORDINATION.**

16          (a) INTERAGENCY COMMITTEE.—The President, act-  
17          ing through the Office of Science and Technology Policy,  
18          shall designate an interagency committee to coordinate ac-  
19          tivities of the Initiative as appropriate, which shall be co-  
20          chaired by the Office of Science and Technology Policy,  
21          and include representatives from the National Science  
22          Foundation, the Department of Energy, the National Aer-  
23          onautics and Space Administration, the National Institute  
24          of Standards and Technology, the Environmental Protec-  
25          tion Agency, the National Oceanic and Atmospheric Ad-

1 ministration, the Department of Agriculture, the Depart-  
2 ment of Health and Human Services, the Bureau of Eco-  
3 nomic Analysis, and any other agency that the President  
4 considers appropriate (in this section referred to as the  
5 “Interagency Committee”). The Director of the Office of  
6 Science and Technology Policy shall select an additional  
7 co-chairperson from among the members of the Inter-  
8 agency Committee. The Interagency Committee shall over-  
9 see the planning, management, and coordination of the  
10 Initiative. The Interagency Committee shall—

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

15           (2) establish and periodically update goals and  
16           priorities for the Initiative;

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

1 (A) guides the activities of the Initiative  
2 for purposes of meeting the goals and priorities  
3 established under (and updated pursuant to)  
4 paragraph (2); and

5 (B) describes—

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

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

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

16 (I) an applied biorisk manage-  
17 ment research plan;

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

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

- 1 (IV) an evaluation of existing  
2 biosecurity governance policies, guid-  
3 ance, and directives for the purposes  
4 of creating an adaptable, evidence-  
5 based framework to respond to emerg-  
6 ing biosecurity challenges created by  
7 advances in engineering biology;
- 8 (iv) how the Initiative will contribute  
9 to moving results out of the laboratory and  
10 into application for the benefit of society  
11 and United States competitiveness; and
- 12 (v) how the Initiative will measure  
13 and track the contributions of engineering  
14 biology to United States economic growth  
15 and other societal indicators;
- 16 (4) develop a national genomic sequencing  
17 strategy to ensure engineering biology research fully  
18 leverages plant, animal, and microbe biodiversity, as  
19 appropriate and in a manner that does not com-  
20 promise national security or the privacy or security  
21 of human genetic information, to enhance long-term  
22 innovation and competitiveness in engineering biol-  
23 ogy in the United States;
- 24 (5) develop a plan to utilize Federal programs,  
25 such as the Small Business Innovation Research

1 Program and the Small Business Technology Trans-  
2 fer Program as described in section 9 of the Small  
3 Business Act (15 U.S.C. 638), in support of the ac-  
4 tivities described in section 4(b)(3); and

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

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

20 (1) a summarized agency budget in support of  
21 the Initiative for the fiscal year to which such budg-  
22 et request applies, for the following 2 fiscal years,  
23 for the then current fiscal year, including a breakout  
24 of spending for each agency participating in the Pro-

1 gram, and for the development and acquisition of  
2 any research facilities and instrumentation; and

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

6 (A) a description of the amount and num-  
7 ber of awards made under the Small Business  
8 Innovation Research Program and the Small  
9 Business Technology Transfer Program (as de-  
10 scribed in section 9 of the Small Business Act  
11 (15 U.S.C. 638)) in support of the Initiative;

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

16 (C) a description of the effect of the newly  
17 funded projects by the Initiative.

18 (c) INITIATIVE OFFICE.—

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

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



1           (B) serve as the point of contact on Fed-  
2           eral engineering biology activities for govern-  
3           ment organizations, academia, industry, profes-  
4           sional societies, State governments, interested  
5           citizen groups, and others to exchange technical  
6           and programmatic information;

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

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

16          (E) serve as the coordinator of ethical,  
17          legal, environmental, safety, security, and other  
18          appropriate societal input; and

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

1           (2) FUNDING.—The Director of the Office of  
2           Science and Technology Policy, in coordination with  
3           each participating Federal department and agency,  
4           as appropriate, shall develop and annually update an  
5           estimate of the funds necessary to carry out the ac-  
6           tivities of the Initiative Coordination Office and sub-  
7           mit such estimate with an agreed summary of con-  
8           tributions from each agency to Congress as part of  
9           the President’s annual budget request to Congress.

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

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

21 **SEC. 6. ADVISORY COMMITTEE.**

22           (a) IN GENERAL.—The agency co-chair of the inter-  
23           agency committee established in section 5 shall, in con-  
24           sultation with the Office of Science and Technology Policy,  
25           designate or establish an advisory committee on engineer-

1 ing biology research and development (in this section re-  
2 ferred to as the “advisory committee”) to be composed of  
3 not fewer than 12 members, including representatives of  
4 research and academic institutions, industry, and non-  
5 governmental entities, who are qualified to provide advice  
6 on the Initiative.

7 (b) ASSESSMENT.—The advisory committee shall as-  
8 sess—

9 (1) the current state of United States competi-  
10 tiveness in engineering biology, including the scope  
11 and scale of United States investments in engineer-  
12 ing biology research and development in the inter-  
13 national context;

14 (2) current market barriers to commercializa-  
15 tion of engineering biology products, processes, and  
16 tools in the United States;

17 (3) progress made in implementing the Initia-  
18 tive;

19 (4) the need to revise the Initiative;

20 (5) the balance of activities and funding across  
21 the Initiative;

22 (6) whether the strategic plan developed or up-  
23 dated by the interagency committee established  
24 under section 5 is helping to maintain United States  
25 leadership in engineering biology;

1           (7) the management, coordination, implementa-  
2           tion, and activities of the Initiative; and

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

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

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

15           (2) the advisory committee’s recommendations  
16           for ways to improve the Initiative.

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

21          (e) TERMINATION.—The advisory committee estab-  
22          lished under subsection (a) shall terminate on the date  
23          that is 10 years after the date of the enactment of this  
24          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 research in engineering biology  
17 through individual grants, collaborative grants, and  
18 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, equipment, and cyberinfrastructure for engi-  
24 neering biology disciplines, including support for re-  
25 search, development, optimization and validation of

1 novel technologies to enable the dynamic study of  
2 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, including through support for  
7 graduate fellowships and traineeships in engineering  
8 biology; and

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

13 (b) DEPARTMENT OF COMMERCE.—

14 (1) NATIONAL INSTITUTE OF STANDARDS AND  
15 TECHNOLOGY.—As part of the Initiative, the Direc-  
16 tor of the National Institute of Standards and Tech-  
17 nology shall—

18 (A) establish a bioscience research pro-  
19 gram to advance the development of standard  
20 reference materials and measurements and to  
21 create new data tools, techniques, and processes  
22 necessary to advance engineering biology and  
23 biomanufacturing;

24 (B) provide access to user facilities with  
25 advanced or unique equipment, services, mate-

1           rials, and other resources to industry, institu-  
2           tions of higher education, nonprofit organiza-  
3           tions, and government agencies to perform re-  
4           search and testing; and

5           (C) provide technical expertise to inform  
6           the potential development of guidelines or safe-  
7           guards for new products, processes, and sys-  
8           tems of engineering biology.

9           (2) NATIONAL OCEANIC AND ATMOSPHERIC AD-  
10          MINISTRATION.—As part of the initiative, the Ad-  
11          ministrators of the National Oceanic and Atmos-  
12          pheric Administration shall—

13           (A) conduct and support research in omics  
14           and associated bioinformatic sciences and de-  
15           velop tools and products to improve ecosystem  
16           stewardship, monitoring, management, assess-  
17           ments and forecasts, consistent with the mis-  
18           sion of the agency; and

19           (B) collaborate with other agencies to un-  
20           derstand potential environmental threats and  
21           safeguards related to engineering biology.

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

24           (1) conduct and support research, development,  
25           demonstration, and commercial application activities



1 in engineering biology, including in the areas of syn-  
2 thetic biology, advanced biofuel and bioproduct de-  
3 velopment, biobased materials, and environmental  
4 remediation;

5 (2) support the development, optimization and  
6 validation of novel, scalable tools and technologies to  
7 enable the dynamic study of molecular processes in  
8 situ;

9 (3) provide access to user facilities with ad-  
10 vanced or unique equipment, services, materials, and  
11 other resources, including secure access to high-per-  
12 formance computing, as appropriate, to industry, in-  
13 stitutions of higher education, nonprofit organiza-  
14 tions, and government agencies to perform research  
15 and testing; and

16 (4) strengthen collaboration between the Office  
17 of Science and the Energy Efficiency and Renewable  
18 Energy Office to help transfer fundamental research  
19 results to industry and accelerate commercial appli-  
20 cations.

21 (d) NATIONAL AERONAUTICS AND SPACE ADMINIS-  
22 TRATION.—As part of the Initiative, the National Aero-  
23 nautics and Space Administration shall—

24 (1) conduct and support research in engineering  
25 biology, including in synthetic biology, and related to

1 Earth and space sciences, aeronautics, space tech-  
2 nology, and space exploration and experimentation,  
3 consistent with the priorities established in the Na-  
4 tional Academies' decadal surveys; and

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

9 (e) DEPARTMENT OF AGRICULTURE.—As part of the  
10 Initiative, the Secretary of Agriculture shall—

11 (1) support research and development in engi-  
12 neering biology, including in synthetic biology and  
13 biomaterials;

14 (2) award grants through the National Institute  
15 of Food and Agriculture and the Agriculture Ad-  
16 vanced Research and Development Authority; and

17 (3) support development conducted by the Agri-  
18 cultural Research Service.

19 (f) ENVIRONMENTAL PROTECTION AGENCY.—As  
20 part of the Initiative, the Environmental Protection Agen-  
21 cy shall support research on how products, processes, and  
22 systems of engineering biology will affect or can protect  
23 the environment.

24 (g) DEPARTMENT OF HEALTH AND HUMAN SERV-  
25 ICES.—As part of the Initiative, the Secretary of Health

1 and Human Services, as appropriate and consistent with  
2 activities of the Department of Health and Human Serv-  
3 ices in effect on the day before the date of the enactment  
4 of this Act, shall—

5 (1) support research and development to ad-  
6 vance the understanding and application of engineer-  
7 ing biology for human health;

8 (2) support relevant interdisciplinary research  
9 and coordination; and

10 (3) support activities necessary to facilitate  
11 oversight of relevant emerging biotechnologies.

12 **SEC. 9. RULE OF CONSTRUCTION.**

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

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