

119TH CONGRESS
2D SESSION

S. 4770

To require the Secretary of Energy to establish a centralized resource for access to data to facilitate biological research through enabling advanced computational methods such as artificial intelligence, and for other purposes.

IN THE SENATE OF THE UNITED STATES

JUNE 11, 2026

Mr. YOUNG (for himself, Mr. PADILLA, Mr. KIM, and Mr. ROUNDS) introduced the following bill; which was read twice and referred to the Committee on Energy and Natural Resources

A BILL

To require the Secretary of Energy to establish a centralized resource for access to data to facilitate biological research through enabling advanced computational methods such as artificial intelligence, 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.**

4 This Act may be cited as the “Web of Biological Data
5 Act of 2026”.

6 **SEC. 2. WEB OF BIOLOGICAL DATA.**

7 (a) DEFINITIONS.—In this section:

1 (1) ADVISORY BOARD.—The term “advisory
2 board” means the advisory board established under
3 subsection (h).

4 (2) DIRECTOR.—The term “Director” means
5 the Director of the National Laboratory selected
6 under subsection (b)(1)(A).

7 (3) NATIONAL LABORATORY.—The term “Na-
8 tional Laboratory” has the meaning given the term
9 in section 2 of the Energy Policy Act of 2005 (42
10 U.S.C. 15801).

11 (4) SECRETARY.—The term “Secretary” means
12 the Secretary of Energy.

13 (5) WEB.—The term “Web” means the Web of
14 Biological Data established under subsection
15 (b)(1)(A).

16 (b) ESTABLISHMENT.—

17 (1) IN GENERAL.—Not later than 180 days
18 after the date of enactment of this Act, the Sec-
19 retary shall—

20 (A) through a competitive process, award a
21 grant to a National Laboratory to establish a
22 centralized data resource, to be known as the
23 “Web of Biological Data”, to facilitate biologi-
24 cal research through advanced computational
25 methods such as artificial intelligence; and

1 (B) establish a research and development
2 program to further data science relating to gen-
3 erating, storing, curating, and managing bio-
4 logical data.

5 (2) CONTENTS.—The Web shall—

6 (A) serve as a single point of entry for re-
7 searchers to access different sources of biologi-
8 cal data, especially those funded by the Federal
9 Government, by directly hosting data or pro-
10 viding access to existing databases;

11 (B) have metrics and metadata to indicate
12 data quality, including usability, interoper-
13 ability, and completeness; and

14 (C) include tiered levels of cybersecurity
15 safeguards and access controls to protect dif-
16 ferent types of biological data assets hosted in
17 or connected to the Web.

18 (c) DUTIES OF DIRECTOR.—As part of establishing
19 the Web, the Director may—

20 (1) enter into data sharing agreements, memo-
21 randa of understanding, or other relevant contracts
22 with other Federal departments and agencies to in-
23 tegrate biological datasets into the Web that are not
24 hosted by the Department of Energy;

1 (2) enter into cost-sharing agreements with
2 nongovernmental entities to fund the Web;

3 (3) establish partnerships with other Federal
4 departments and agencies, academia, industry, and
5 international partners and allies to optimize usability
6 and performance of the Web; and

7 (4) carry out any other activities determined
8 necessary by the Secretary to advance United States
9 biological data curation and sharing.

10 (d) IMPLEMENTATION PLAN.—Not later than 1 year
11 after the date of enactment of this Act, the Director, in
12 consultation with the Secretary, shall submit to the Com-
13 mittee on Energy and Natural Resources of the Senate
14 and the Committee on Science, Space, and Technology of
15 the House of Representatives an implementation plan for
16 the Web that describes—

17 (1) how the Director and the Secretary shall
18 implement this section;

19 (2) a plan for working with Federal depart-
20 ments and agencies—

21 (A) to acquire data that was collected
22 through Federal funding; and

23 (B) to digitize biological samples that are
24 currently owned or funded by the Federal Gov-
25 ernment;

1 (3) the type of initial projects that shall be pur-
2 sued under the program established under sub-
3 section (b)(1)(B);

4 (4) a plan for exploring and implementing cost-
5 sharing agreements, including with philanthropy and
6 industry, to assist in cost-sharing for the Web;

7 (5) a cybersecurity plan for the Web; and

8 (6) how the Director will leverage partnerships
9 with other Federal departments and agencies, aca-
10 demia, and industry.

11 (e) PHASE I.—Not later than 2 years after the date
12 of enactment of this Act, the Director shall—

13 (1) test an initial version of the Web, which
14 shall—

15 (A) focus on specific biological data
16 subtypes selected in consultation with the advi-
17 sory board, representatives from other Federal
18 departments and agencies, and external stake-
19 holders from industry and academia;

20 (B) include a single point-of-entry inter-
21 face for biological data that—

22 (i) optimizes user experience and data
23 management;

24 (ii) is built around human-centered
25 design principles;

1 (iii) is built with the capability to ex-
 2 pand to other datasets and biological
 3 datatypes beyond the initial version; and

4 (iv) is built with tiered security ac-
 5 cess;

6 (C) include initial frameworks, developed
 7 in collaboration with the National Institute of
 8 Standards and Technology, for application pro-
 9 gramming interfaces focusing on hosting an ini-
 10 tial list of biological data subtypes; and

11 (D) include appropriate cybersecurity and
 12 access safeguards to protect data accessible by
 13 the Web, including limiting access to adver-
 14 sarial countries and countries that do not par-
 15 ticipate in reciprocal data sharing, as deter-
 16 mined by the Secretary;

17 (2) as part of developing the initial version of
 18 the Web described in paragraph (1)—

19 (A) work with Federal departments and
 20 agencies to acquire data that was collected
 21 through Federal funding;

22 (B) develop cost-sharing agreements, in-
 23 cluding with philanthropic and industry mem-
 24 bers, to fund the Web; and

1 (C) work with biotechnology stakeholders
2 to test and evaluate the initial version and im-
3 plement any needed changes to ensure usability;

4 (3) select initial research projects to fund under
5 the research and development program established
6 under subsection (b)(1)(B); and

7 (4) submit a report to the committees described
8 in subsection (j) on the implementation of this sub-
9 section and plans for carrying out subsection (f).

10 (f) PHASE II.—

11 (1) IN GENERAL.—Not later than 5 years after
12 the date of enactment of this Act, the Director shall
13 expand the Web—

14 (A) to be accessible to United States re-
15 searchers;

16 (B) to accommodate different types of bio-
17 logical data; and

18 (C) to be capable of adapting and expand-
19 ing based on the emergence of new biological
20 data.

21 (2) FEATURES.—The expanded version of the
22 Web described in paragraph (1) shall have the fol-
23 lowing features:

24 (A) A fully realized single point-of-entry
25 interface that—

- 1 (i) is connected to any dataset or
2 database that hosts federally funded data;
3 (ii) hosts biological data not already
4 stored by other Federal databases; and
5 (iii) hosts relevant bioinformatic tools
6 for optimized access and analysis.

7 (B) A full suite of interoperability frame-
8 works associated with different types of biologi-
9 cal data, metadata, and appropriate ontologies.

10 (C) An online interface that optimizes
11 usability, including the ability to rapidly search
12 through metadata across databases.

13 (D) Incorporation of human-centered de-
14 sign principles into user interfaces.

15 (E) A standard quality and format for the
16 hosted biological data that is appropriate for
17 training artificial intelligence models.

18 (F) Restrictions on data sharing with
19 countries described in subsection (e)(1)(D).

20 (G) Appropriate cybersecurity require-
21 ments and tiered safeguards related to the sen-
22 sitivity of data to prevent misuse of data.

23 (3) OTHER ACTIVITIES.—In the 3-year period
24 following the 2-year period described in subsection
25 (e), the Secretary shall continue—

1 (A) to carry out the activities described in
2 subparagraphs (A) and (B) of paragraph (2) of
3 that subsection; and

4 (B) to carry out the research and develop-
5 ment program established under subsection
6 (b)(1)(B).

7 (g) INDEPENDENT ASSESSMENT OF CYBERSECU-
8 RITY.—The Director shall seek to enter into a contract
9 with an external entity to conduct a biannual independent
10 assessment of the cybersecurity safeguards and access
11 controls of the Web.

12 (h) ADVISORY BOARD.—

13 (1) IN GENERAL.—Not later than 180 days
14 after the Secretary selects a National Laboratory
15 under subsection (b)(1)(A), the Secretary shall es-
16 tablish an advisory board to oversee the implementa-
17 tion of the Web and ensure that the Web maximizes
18 the usability of biological datasets across sectors.

19 (2) CHAIR.—The Chair of the advisory board
20 shall be the Director.

21 (3) MEMBERS.—The advisory board shall con-
22 sist of 11 additional members, of whom—

23 (A) 4 shall be representatives of industry;

24 (B) 2 shall be representatives of academia;

1 (C) 2 shall be representatives of National
 2 Laboratories (excluding the National Labora-
 3 tory selected under subsection (b)(1)(A)); and

4 (D) 3 shall be representatives of relevant
 5 Federal departments and agencies, as deter-
 6 mined by the Director, of whom at least 1 shall
 7 be an expert on biosecurity research.

8 (4) FACA EXEMPTION.—Chapter 10 of title 5,
 9 United States Code, shall not apply to the advisory
 10 board.

11 (i) COLLABORATION.—In developing the Web, the Di-
 12 rector shall collaborate with—

13 (1) Federal departments and agencies involved
 14 in biosafety and biosecurity capabilities to assist
 15 with implementation of proper cybersecurity and bio-
 16 security safeguards;

17 (2) the National Artificial Intelligence Research
 18 Resource of the National Science Foundation to en-
 19 sure integration of well-curated biological data with
 20 cutting-edge foundational artificial intelligence tools;

21 (3) the National Institute of Standards and
 22 Technology to ensure that—

23 (A) the data included in the Web is for-
 24 matted in a way that is appropriate for training
 25 artificial intelligence models; and

1 (B) associated application programming
2 interfaces and ontologies are sufficiently adapt-
3 able to changes in biological data;

4 (4) the National Library of Medicine to ensure
5 compatibility and interoperability between the Na-
6 tional Center for Biotechnology information data-
7 bases and the Web;

8 (5) a nongovernmental group that is qualified
9 to implement an online interface that maximizes
10 usability by the public and human-centered design;
11 and

12 (6) any other Federal departments and agencies
13 determined relevant by the Director.

14 (j) REPORT.—Not later than 2 years after the date
15 of enactment of this Act, and annually thereafter, the Di-
16 rector shall submit to the Committee on Energy and Nat-
17 ural Resources of the Senate and the Committee on
18 Science, Space, and Technology of the House of Rep-
19 resentatives a report describing—

20 (1) progress made in developing the Web, in-
21 cluding—

22 (A) the quantity of data stored directly on
23 the Web and accessible through application pro-
24 gramming interfaces;

1 (B) collaborations with other Federal de-
2 partments and agencies; and

3 (C) user engagement;

4 (2)(A) any cybersecurity vulnerabilities identi-
5 fied by an assessment carried out pursuant to sub-
6 section (g); and

7 (B) actions taken to address those
8 vulnerabilities; and

9 (3) plans for maintenance, expansion, and de-
10 velopment of the Web in the subsequent year.

11 (k) AUTHORIZATION OF APPROPRIATIONS.—There
12 are authorized to be appropriated—

13 (1) \$30,000,000 for the period of the first 3
14 years following the date of enactment of this Act to
15 carry out subsection (b)(1)(B);

16 (2) \$310,000,000 for the period of the first 3
17 years following the date of enactment of this Act to
18 carry out subsection (e); and

19 (3) on completion of subsection (e) and the sub-
20 mission of the report described in paragraph (4) of
21 that subsection, \$80,000,000 for each of the subse-
22 quent 2 years to carry out this section.

23 (l) RULE OF CONSTRUCTION.—Nothing in this sec-
24 tion supersedes, modifies, or waives any applicable re-
25 quirement relating to privacy, informed consent, human-

1 subject protections, data use limitations, or protections
2 against unauthorized disclosure, misuse, or re-identifica-
3 tion applicable to biological data hosted in or accessible
4 through the Web.

