

(c) Electrochemistry modeling and simulation**(1) In general**

The Secretary shall carry out under the Initiative a program to support research to model and simulate organic electrolytes, including the static and dynamic electrochemical behavior and phenomena of organic electrolytes at the molecular and atomic level in monovalent and multivalent systems.

(2) Activities

As part of the program described in paragraph (1)—

(A) the Director of the Office of Basic Energy Sciences, in coordination with the Associate Director of Advanced Scientific Computing Research, shall support the development of high performance computational tools through a joint development process to maximize the effectiveness of current and projected high performance computing systems; and

(B) the Assistant Secretary for Energy Efficiency and Renewable Energy shall support translational research, development, and validation of physical concepts developed under the program.

(3) Standard of review

The Secretary shall review activities carried out under the program described in paragraph (1) to determine the achievement of technical milestones.

(4) Prohibition

No funds allocated to the program described in paragraph (1) may be obligated or expended for commercial application of energy technology.

(d) Mesoscale electrochemistry**(1) In general**

The Secretary shall carry out under the Initiative a program to support research needed to reveal electrochemistry in confined mesoscale spaces, including scientific discoveries relevant to—

(A) bio-electrochemistry and electrochemical energy conversion and storage in confined spaces; and

(B) the dynamics of the phenomena described in subparagraph (A).

(2) Activities

As part of the program described in paragraph (1)—

(A) the Director of the Office of Basic Energy Sciences and the Associate Director of Biological and Environmental Research shall investigate phenomena of mesoscale electrochemical confinement for the purpose of replicating and controlling new electrochemical behavior; and

(B) the Assistant Secretary for Energy Efficiency and Renewable Energy shall support translational research, development, and validation of physical concepts developed under the program.

(3) Standard of review

The Secretary shall review activities carried out under the program described in paragraph

(1) to determine the achievement of technical milestones.

(4) Prohibition

No funds allocated to the program described in paragraph (1) may be obligated or expended for commercial application of energy technology.

(Pub. L. 109–58, title IX, §975, Aug. 8, 2005, 119 Stat. 903; Pub. L. 115–246, title III, §303(e)(1), Sept. 28, 2018, 132 Stat. 3143.)

AMENDMENTS

2018—Pub. L. 115–246 amended section generally. Prior to amendment, text read as follows: “The Secretary shall conduct a program of fundamental research on solid state lighting in support of the Next Generation Lighting Initiative carried out under section 16192 of this title.”

§ 16316. Advanced scientific computing research and development program**(1) In general**

The Secretary shall conduct an advanced scientific computing research and development program that includes activities related to applied mathematics and activities authorized by the American Super Computing Leadership Act of 2017 (15 U.S.C. 5541 et seq.).

(2) Goal

The Secretary shall carry out the program with the goal of supporting departmental missions, and providing the high-performance computational, networking, advanced visualization technologies, and workforce resources, that are required for world leadership in science.

(Pub. L. 109–58, title IX, §976(a), Aug. 8, 2005, 119 Stat. 903; Pub. L. 115–246, title III, §304(a)(1)(B), Sept. 28, 2018, 132 Stat. 3145.)

REFERENCES IN TEXT

The American Super Computing Leadership Act of 2017, referred to in par. (1), is Pub. L. 108–423, Nov. 30, 2004, 118 Stat. 2400, which is classified principally to subchapter III (§5541 et seq.) of chapter 81 of Title 15, Commerce and Trade. For complete classification of this Act to the Code, see Short Title note set out under section 5501 of Title 15 and Tables.

AMENDMENTS

2018—Par. (1). Pub. L. 115–246 substituted “American Super Computing Leadership Act of 2017” for “Department of Energy High-End Computing Revitalization Act of 2004”.

§ 16317. Systems biology program**(a) Program****(1) Establishment**

The Secretary shall establish a research, development, and demonstration program in microbial and plant systems biology, protein science, computational biology, and environmental science to support the energy, national security, and environmental missions of the Department.

(2) Grants

The program shall support individual researchers and multidisciplinary teams of researchers through competitive, merit-reviewed grants.

(3) Consultation

In carrying out the program, the Secretary shall consult with other Federal agencies that conduct genetic and protein research.

(b) Goals

The program shall have the goal of developing technologies and methods based on the biological functions of genomes, microbes, and plants that—

- (1) can facilitate the production of fuels, including hydrogen in sustainable production systems that reduce greenhouse gas emissions;
- (2) convert carbon dioxide to organic carbon;
- (3) detoxify soils and water, including at facilities of the Department, contaminated with heavy metals and radiological materials;
- (4) develop cellulosic and other feedstocks that are less resource and land intensive and that promote sustainable use of resources, including soil, water, energy, forests, and land, and ensure protection of air, water, and soil quality; and
- (5) address other Department missions as identified by the Secretary.

(c) Plan**(1) Development of plan**

Not later than 1 year after August 8, 2005, the Secretary shall prepare and transmit to Congress a research plan describing how the program authorized pursuant to this section will be undertaken to accomplish the program goals established in subsection (b).

(2) Review of plan

The Secretary shall contract with the National Academy of Sciences to review the research plan developed under this subsection. The Secretary shall transmit the review to Congress not later than 18 months after transmittal of the research plan under paragraph (1), along with the Secretary's response to the recommendations contained in the review.

(d) User facilities and ancillary equipment

Within the funds authorized to be appropriated pursuant to this part, amounts shall be available for projects to develop, plan, construct, acquire, or operate special equipment, instrumentation, or facilities, including user facilities at National Laboratories, for researchers conducting research, development, demonstration, and commercial application in systems biology and proteomics and associated biological disciplines.

(e) Prohibition on biomedical and human cell and human subject research**(1) No biomedical research**

In carrying out the program under this section, the Secretary shall not conduct biomedical research.

(2) Limitations

Nothing in this section shall authorize the Secretary to conduct any research or demonstrations—

- (A) on human cells or human subjects; or
- (B) designed to have direct application with respect to human cells or human subjects.

(f) Bioenergy research centers**(1) Establishment of centers**

In carrying out the program under subsection (a), the Secretary shall establish at least 7 bioenergy research centers, which may be of varying size.

(2) Geographic distribution

The Secretary shall establish at least 1 bioenergy research center in each Petroleum Administration for Defense District or Subdistrict of a Petroleum Administration for Defense District.

(3) Goals

The goals of the centers established under this subsection shall be to accelerate basic transformational research and development of biofuels, including biological processes.

(4) Selection and duration**(A) In general**

A center under this subsection shall be selected on a competitive basis for a period of 5 years.

(B) Reapplication

After the end of the period described in subparagraph (A), a grantee may reapply for selection on a competitive basis.

(5) Inclusion

A center that is in existence on December 19, 2007—

(A) shall be counted towards the requirement for establishment of at least 7 bioenergy research centers; and

(B) may continue to receive support for a period of 5 years beginning on the date of establishment of the center.

(Pub. L. 109-58, title IX, §977, Aug. 8, 2005, 119 Stat. 903; Pub. L. 110-140, title II, §§232(a), 233, Dec. 19, 2007, 121 Stat. 1537.)

REFERENCES IN TEXT

This part, referred to in subsec. (d), was in the original "this subtitle", meaning subtitle G (§§971-984A) of title IX of Pub. L. 109-58, Aug. 8, 2005, 119 Stat. 898, which enacted this part and amended section 5523 of Title 15, Commerce and Trade. For complete classification of subtitle G to the Code, see Tables.

AMENDMENTS

2007—Subsec. (a)(1). Pub. L. 110-140, §232(a)(1), substituted "computational biology, and environmental science" for "and computational biology".

Subsec. (b)(1). Pub. L. 110-140, §232(a)(2)(A), inserted "in sustainable production systems that reduce greenhouse gas emissions" after "hydrogen".

Subsec. (b)(4), (5). Pub. L. 110-140, §232(a)(2)(B)-(D), added par. (4) and redesignated former par. (4) as (5).

Subsec. (f). Pub. L. 110-140, §233, added subsec. (f).

EFFECTIVE DATE OF 2007 AMENDMENT

Amendment by Pub. L. 110-140 effective on the date that is 1 day after Dec. 19, 2007, see section 1601 of Pub. L. 110-140, set out as an Effective Date note under section 1824 of Title 2, The Congress.

§ 16318. Fission and fusion energy materials research program**(a) In general**

Along with the budget request of the President submitted to Congress for fiscal year 2007, the