

Biological and Environmental Research

Biological Systems Sciences Division Principal Investigator Meeting

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Office of Science

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U.S. DEPARTMENT
of **ENERGY**

Office of
Science

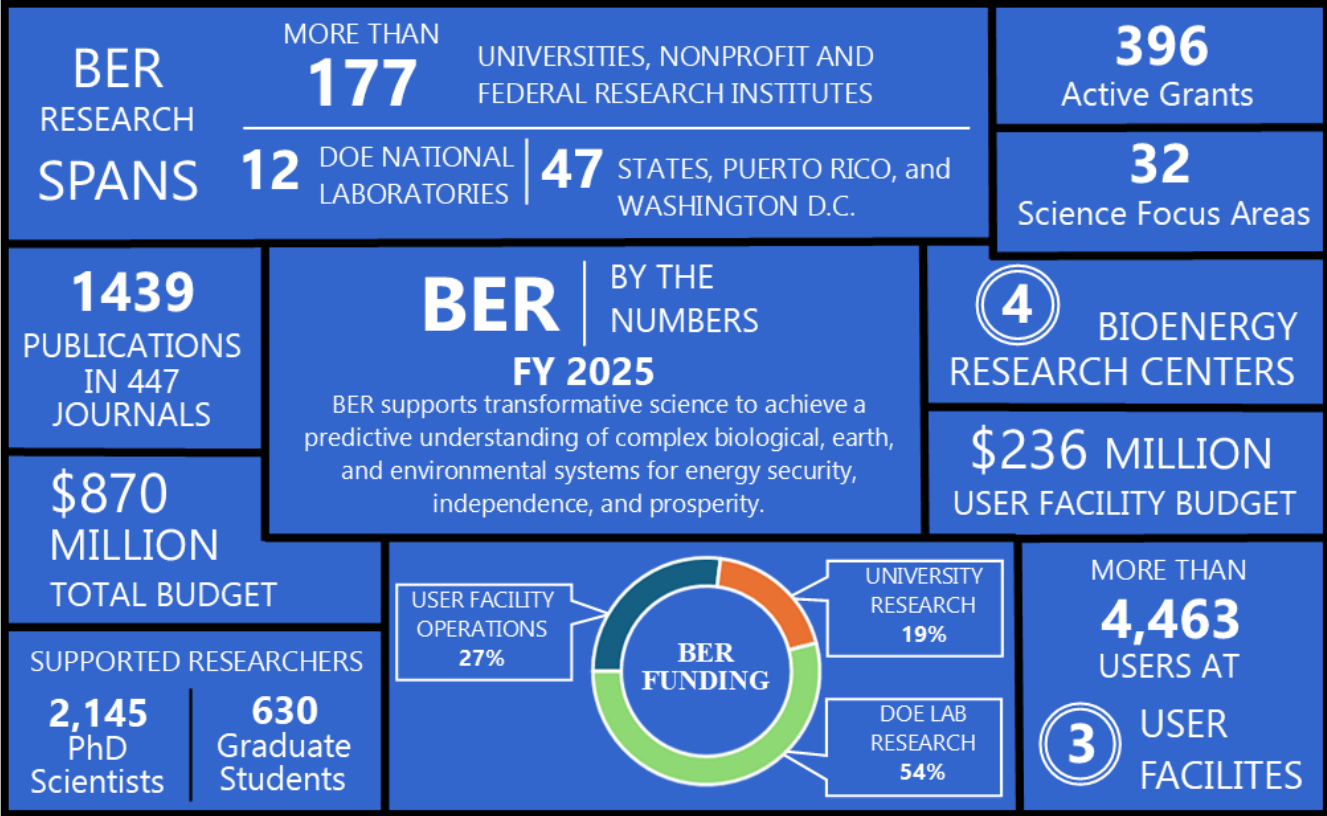
[Energy.gov/science](https://energy.gov/science)

Office of Science (SC) is meeting Administration priorities

Leading AI that underpins science	Advancing unique QIS capabilities	Realizing the potential of fusion energy	Addressing Critical Materials & Minerals
<ul style="list-style-type: none">– Genesis Mission will revolutionize science innovation– Coordinates efforts across DOE and its national laboratories, universities, industry, and philanthropy– Drives AI hardware innovation partnerships, including AI algorithms, hardware co-design, testbeds	<ul style="list-style-type: none">– 5 National QIS Research Centers, providing powerful tools for QIS research– 2 Quantum Computing Testbeds	<ul style="list-style-type: none">– Close S&T gaps in fusion and plasma science– Supports strategic partnerships in early applied science and innovation	<ul style="list-style-type: none">– Identifies more abundant CMM substitutes– Designs new separation methods to isolate individual CMMs



Biological and Environmental Research (BER) at a glance



	FY 2024	FY 2025	FY 2026
Biological and Environmental Research	900,000	870,000	854,000
Office of Science	8,240,000	8,240,000	8,400,000

* All in thousands of dollars



SC and BER has unique capabilities to address critical minerals and materials (CMM) supply vulnerabilities

- Enhance recovery and reuse of critical elements with new chemical and bio-inspired processes and materials
 - Develop selective chemical processes to isolate and concentrate CMM from mining streams or waste sources
 - Design microorganisms and plants with enhanced abilities to extract, separate, and concentrate CMM
- Develop lower cost, abundant substitutes
- BER-BES Biological Molecular Mechanisms for Critical Minerals and Materials Workshop, December 15-17, 2025
 - Priority Research Directions (PRD's) under development





Dr. Dario Gil
Undersecretary for Science



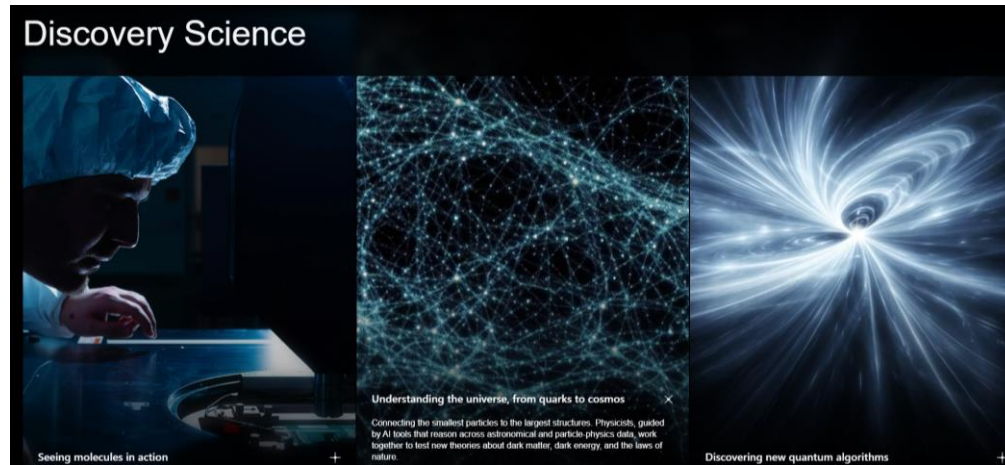
Executive Order, November 24, 2025



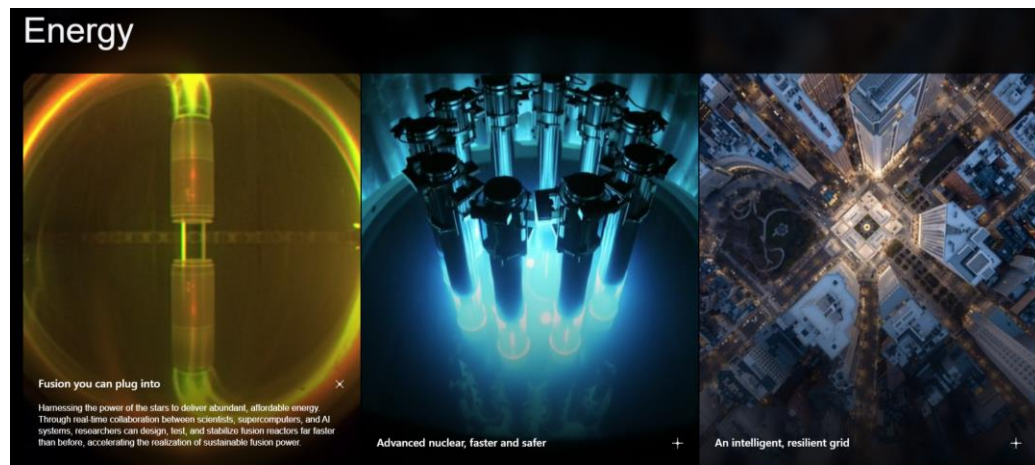
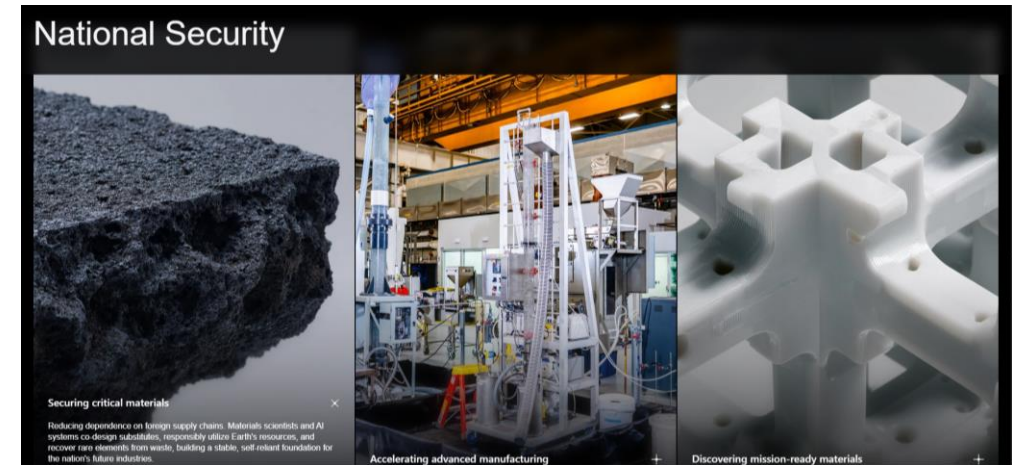
A National Mission to Accelerate Science
Through Artificial Intelligence

Double the productivity and impact of American
research and innovation within a decade

Genesis Mission: 3 DOE Grand Challenges

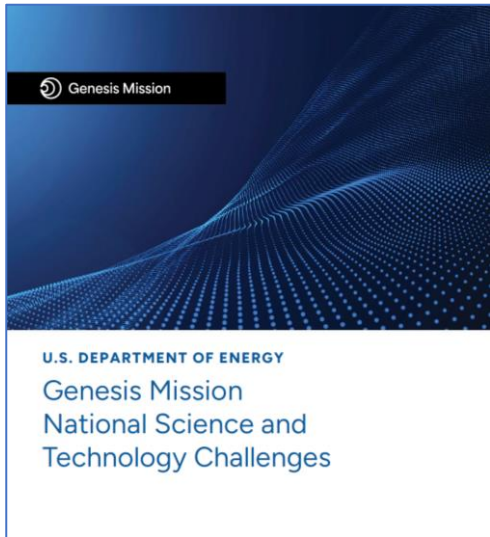


Energy Dominance • Accelerate Science • National Security



Genesis Mission: 3 Components

Computational Platform: Quantum computing (by 2028), software, agentic system, data curation, automated laboratories



26 DOE Science and Technology Challenges

- Scaling the Biotechnology Revolution
- Securing America's Critical Minerals Supply
- Realizing Quantum Systems for Discovery
- Predicting U.S. Water for Energy
- Unleashing Subsurface Strategic Energy Assets
- Scaling the Grid to Power the American Economy
- Achieving AI-Driven Autonomous Laboratories

February 12, 2026

Methods and Tools: transform science



Genesis partnerships

Private Sector:

- 24 initial organization (December 19, 2025)
- Genesis Mission Consortium (February 9, 2026)
- Biotechnology Industry Day (November 2, 2025)

Academia

- University/Philanthropy Summit
(February 18, 2026)

Federal agencies

- Develop Science and Technology Challenges

International

DOE Request for Information (RFI) Due March 4: [Department of Energy Seeks Input on Advancing AI for Science and Engineering Workforce Development and Genesis Mission Challenges | Department of Energy](#)



Genesis Mission Investments

FY 2025

ASCR: American Science Cloud (AmSC)

- Platform infrastructure for hosting AI models and data

ASCR: AI Models Consortium (ModCon)

- Self-improving AI models

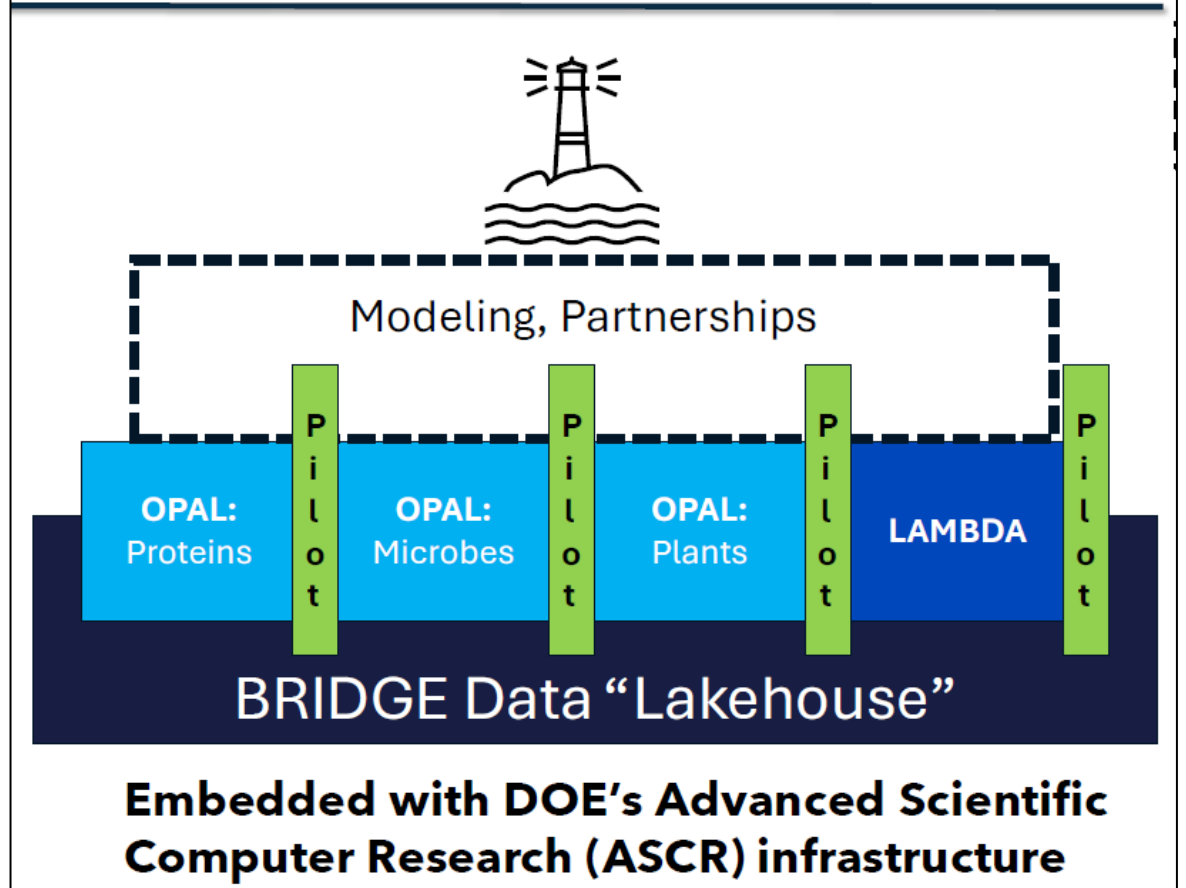
BER: AI Laboratory awards and projects

- BRIDGE: Integrated data system
- OPAL: Orchestrated Platform for Autonomous Laboratories to Accelerate AI-Driven BioDesign
- LAMBDA: A Lakehouse-enabled AI-ready Multi-modal Bioimaging Data Architecture
- 6 AI-biotech pilot projects

FY 2026, anticipate:

- Partner Opportunities
- Pivot existing projects

Building DOE's Biotech AI "Lighthouse"



Aim high!

- Discover fundamental driving mechanisms for biology, e.g. predictive phenomics
- Biodesign on demand
- What else?? quantum computing for biology, next generation facilities
- New way of doing business: Success depends on collaboration and integration across research modalities, institutions, sectors, agencies

