

The Endless Frontier Act

Since the end of World War II, the United States has been the unequivocal global leader in scientific and technological ingenuity and innovation, and as a result the American people have benefited through good-paying jobs, economic prosperity, and a higher quality of life. Today, however, this leadership position is being eroded. For decades, the U.S. has underinvested in the very ingredients that made the country a global leader: research, manufacturing, and workforce development. At the same time, our foreign competitors, some of whom are stealing American intellectual property, are aggressively investing to dominate the key technology fields of today and of the future.

Without a significant increase in investment in research and development, education and training, resilient supply chains, and the broader U.S. innovation ecosystem, it is only a matter of time before America's global competitors catch up and overtake the U.S. in terms of technological primacy. This would threaten our national security and economic competitiveness. Whichever country wins the competition in key technologies and supporting capabilities will be the superpower of the future. Bold and decisive action is required to turn the tables. The U.S. must make a new commitment to federal investment in research, supply chains, and the skills of all Americans to ensure our country wins the strategic competition with China and other nations to lead the world in technology and innovation.

To do this, we propose the Endless Frontier Act:

- Create a new Directorate for Technology and Innovation at the National Science Foundation focused on basic research, commercialization, and innovation related to key technology areas with geostrategic implications for the United States.
- Authorize \$100 billion over five years for the new Directorate at the National Science Foundation.
- Provide the new Directorate with highly flexible personnel, program management, and awarding authorities. The new Directorate would also be given DARPA-like authorities, with the option to utilize program managers for selecting awardees.

The authorized activities of the Directorate include:

- Increasing research spending at universities, including through cross-sector consortia, to advance U.S. progress in key technology areas, including the creation of university technology centers. Particular focus is paid to increasing federal research investment throughout more of the country and at historically Black colleges and universities, Tribal colleges or universities, other minority-serving institutions, community colleges, and institutions that participate in the NSF EPSCoR program.
- Funding new undergraduate scholarships, community college advanced technological education programs, graduate fellowships and traineeships, and post-doctoral support in the key technology areas to develop a diverse STEM workforce.
- Providing critical new funding for equipment used in test-bed and fabrication facilities.

- Directing the creation of new programs to facilitate and accelerate the transfer of technologies from the lab to the marketplace.
- Coordinating with state and local economic development stakeholders to build regional innovation ecosystems in communities across the country.
- Collaborating with U.S. allies, partners, and international organizations on research in key technology areas to enhance national security.

In addition to carrying out its own activities, the Directorate could partner with the rest of NSF and other federal research entities, including the Department of Energy, NIST, and National Labs, to advance its objectives in the key technology areas.

In order to ensure no time is wasted, the bill establishes the following initial technology focus areas for the new NSF Directorate to fund research in:

1. artificial intelligence, machine learning, and other software advances
2. high performance computing, semiconductors, and advanced computer hardware
3. quantum computing and information systems
4. robotics, automation, and advanced manufacturing
5. natural or anthropogenic disaster prevention or mitigation
6. advanced communications technology
7. biotechnology, medical technology, genomics, and synthetic biology
8. cybersecurity, data storage, and data management technologies
9. advanced energy, batteries, and industrial efficiency
10. advanced materials science, engineering, and exploration relevant to the other focus areas

The bill also authorizes \$10 billion over five years for the Department of Commerce to invest in regions throughout the country to lead in technology and innovation. This includes a program to support comprehensive regional technology strategies to attract public and private investment.

- The Department of Commerce will also designate at least 10 regional technology hubs, awarding flexible funds for comprehensive investment initiatives that position communities to be global centers for the research, development, workforce training, entrepreneurship, and manufacturing.

Additionally, the bill establishes a new Supply Chain Resiliency and Crisis Response Program at the Department of Commerce with the national security mission to monitor supply chain vulnerabilities and provide investments to diversify supply chains in critical products to the nation's security. A mandate is also included to develop a strategy on national competitiveness and ingenuity in science, research, and manufacturing to support the national security strategy. This national competitiveness strategy will help guide priorities for federal research spending, the Supply Chain Resiliency and Crisis Response Program, and other key federal investments and initiatives.