**Department of Defense**

**Basic Research**

****

**Mission**

The Basic Research Office is the Department-wide strategic thread in ensuring future capability, and makes investments in areas where the Services may not be able to. The Basic Research Office works with academia, industry, and government partners to foster collaborations, shape priorities, and forge pathways in scientific investment areas that aim to establish new and strengthened alliances with international allies, insertion of new innovations into programs of record, and long-term scientific and technological superiority.

**Basic Research Office Goals**

1. **Drive the Direction of DoD Basic Research Investments**Identify emerging research areas of strategic importance to the DoD; maintain support for high-risk, paradigm shifting basic research that may lead to enhanced warfighter capabilities, and strategic and tactical advantage.
2. **Coordinate and Conduct Oversight of DoD Basic Research Programs**Coordinate activities of Components, Universities, and Industry to ensure a coherent research effort in addressing Defense enterprise needs; improve efficiency and streamline operations to achieve a better return on research investments.
3. **Improve Science & Engineering (S&E) Workforce and Public Outreach**Contribute to the growth, diversity, and maintenance of the S&E talent pool by identifying and supporting top U.S. science and engineering researchers through basic research programs; enhance programs under the purview of the Basic Research Office that develop a more scientifically capable workforce; raise public awareness of groundbreaking DoD basic research and improve scientific literacy of general public to ensure future DoD workforce needs.
4. **Enhance University-Industry Collaboration**Develop programs to increase collaboration between the university and industry sectors in areas of relevance to DoD; identify and bring defense-related technologies resulting from basic research to market faster by supporting commercialization and technology transfer initiatives.
5. **Engage with Academic Research Community and International Partners**Encourage academic community to conduct research of DoD interest; given the changing landscape of R&D, engage with international partners to ensure U.S. scientific superiority, strengthen and leverage the capabilities of our allies, and support other international DoD mission goals.

**Research Programs**

[**Vannevar Bush Faculty Fellowship Program**](https://basicresearch.defense.gov/Programs/Vannevar-Bush-Faculty-Fellowship/)

The Vannevar Bush Faculty Fellowship (VBFF) is the Department of Defense’s most prestigious single-investigator award and supports basic research with the potential for transformative impact. Approximately 10 Fellows are selected each year.

As a 5-year fellowship with up to $3 million in funding, the VBFF supports new, out-of-the box ideas where researcher creativity intersects with the unknown. Vannevar Bush Fellows represent a cadre of experts that provide invaluable direction to the DoD in its scientific efforts and also train the next generation of scientists and engineers. The VBFF is administered by the Office of Naval Research. Fellows develop and sustain a career-long association with the DoD.

Current DoD research areas for this program include:

* Engineering Biology
* Quantum Information Science
* Cognitive Neuroscience
* Novel Engineered Materials
* Applied Math and Computational Science
* Other research fields with high potential

The FY2020 solicitation was published in June 2019, with white papers due August 16, 2019. Invited applicants submit full proposals in January 2020.

[**Minerva Research Initiative – University Research Grants**](https://minerva.defense.gov/)

The Minerva Research Initiative, administered jointly by the Office of Basic Research and the Office of Policy at the U.S. Department of Defense, supports social science research aimed at improving our basic understanding of security, broadly defined. Supported projects are university-based and unclassified, with the intention that all work be shared widely to support the thriving of stable and safe communities. The goal is to improve DoD’s basic understanding of the social, cultural, behavioral, and political forces that shape regions of the world of strategic importance to the U.S.

Research teams range from single investigators to large multi-university consortia, and all awarded projects are expected to be funded for at least three years (and in some cases--pending availability of funding--eligible for an extension up to five years).

Research topics of interest change each calendar year. The following topics are for the 2019 funding opportunity announcement:

Topic 1: Peer/Near-peer Statecraft, Influence, and Regional Balance of Power  
Topic 2: Power, Deterrence, and Escalation Management   
Topic 3: Alliances and Burden Sharing  
Topic 4: Economic Interdependence and Security  
Topic 5: Economic Viability, Resilience, and Sustainability of Logistics Infrastructure  
Topic 6: Multi-Domain Behavioral Complexity and Computational Social Modeling   
Topic 7: Autonomy, Artificial Intelligence, Machine Ethics, and Social Interactions  
Topic 8: Models and Methods for Understanding Covert Online Influence  
Topic 9: Automated Cyber Vulnerability Analysis

The FY2019 solicitation deadlines have passed. Expected award announcement in January 2020.

[**Multidisciplinary University Research Initiative (MURI)**](https://www.onr.navy.mil/Science-Technology/Directorates/office-research-discovery-invention/Sponsored-Research/University-Research-Initiatives/MURI.aspx)

Multidisciplinary University Initiative (MURI) efforts involve teams of researchers investigating high priority topics and opportunities that intersect more than one traditional technical discipline. For many military problems this multidisciplinary approach serves to stimulate innovations, accelerate research progress and expedite transition of results into naval applications

MURI awards are made in research topics specified by the participating defense agencies each year that the program is in force. Specified topics change each year. Awards are typically for a period of three years (funded incrementally or as options) with two additional years possible as options to bring the total award to five-years, and at a funding level ranging from half a million to about a million dollars per year, with the size of the award dependent upon the topic, technical goals, and availability of appropriations.

The FY2020 solicitation was published March 2019 and full proposals were due September 2019.

[**Future Directions Workshops**](https://basicresearch.defense.gov/Programs/Future-Directions-Workshops/)

The Future Directions Workshop series seeks to examine emerging research and engineering areas that are most likely to transform future technology capabilities. Rather than a standard conference format, these workshops are designed primarily around small-group breakout sessions and whole-group discussions for scientists and engineers from academia, national laboratories, and industry to express their perspectives and outlooks over areas of rapid progress in fundamental research and shed insight on three overarching questions:

* How might the research impact science and technology capabilities of the future?
* What is the possible trajectory of scientific achievement over the next 10–15 years?
* What are the most fundamental challenges to progress?

Past workshop topics include Social Science, Management Sciences, Synthetic Biology for Energy and Power, Network Sciences, Quantum Information Sciences, etc.

Ideas for Future Directions Workshops can be submitted online [here.](https://basicresearch.defense.gov/Contact/)

**Research Pilots**

[**Defense Established Program to Stimulate Competitive Research (DEPSCoR)**](https://basicresearch.defense.gov/Pilots/DEPSCoR-Defense-Established-Program-to-Stimulate-Competitive-Research/)

The aim of DEPSCoR is to improve the research capabilities at institutions of higher education in eligible states to perform competitive basic research in science and engineering that is relevant to the DoD mission and that reflects national security priorities. Oregon is one of the eligible states, who must currently receive less than 60% of the 1/50th of DoD science & engineering research obligations in US.

The DEPSCoR competition intends to encourage collaborations on basic research projects of interest to the Department. The program is structured to form a 2-person team between 1) an investigator with prior funding from the DoD (within the past seven years), and 2) a researcher who has not previously received funding from the DoD. Both faculty must be tenured or tenure-track in DEPSCoR-eligible jurisdictions.

The DEPSCoR program is congressionally mandated and has directed over $8.5 million toward program grants this fiscal year, with more to potentially follow in coming years. Also funding $3.45 million in outreach and support. As of the FY19 solicitation, the program anticipates approximately $3.6M in total funding to fund up to 6 awards ($600,000 each; $200K per year for 3 years).

The FY19 call noted the following categories for white paper submissions:

* + Chemistry
  + Biology and Engineering Biology
  + Physics, Electronics, and Sensors
  + Engineering
  + Materials
  + Earth and Space Sciences
  + Mathematical, Computer, and Information Sciences
  + Social and Behavioral Sciences and Human Systems
  + Other

**[Defense University Research Instrumentation Program (DURIP)](https://www.onr.navy.mil/Science-Technology/Directorates/office-research-discovery-invention/Sponsored-Research/University-Research-Initiatives/DURIP.aspx)**

The Defense University Research Instrumentation Program (DURIP) supports university research infrastructure essential to high-quality Navy relevant research. The research instrumentation that is necessary to carry out cutting-edge research.

DURIP funds will be used for the acquisition of major equipment to augment current or develop new research capabilities in support of DoD-relevant research. Proposals may request $50,000 to $1,500,000. Proposals for purely instructional equipment are not eligible. General-purpose computing facilities are not appropriate for DURIP funding, but requests for computers for DoD-relevant research programs are appropriate.

Funds provided under DURIP may not be used for the construction or modification of buildings, building support systems (e.g., heating/ventilation/air conditioning, plumbing and electrical), or fixed equipment (e.g., clean rooms and fume hoods). Proposed budgets can include costs (e.g., machine shop expenses) for constructing, assembling and/or installing equipment, but the budget may not request funding for salaries of faculty, postdoctoral associates or students. Costs for continued operation and maintenance are not eligible for consideration. This competition is open to U.S. institutions of higher education with degree granting programs in science, math or engineering.

**I-CORPS @ DoD**

I-Corps @ DoD is a partnership with the National Science Foundation to provide DoD-funded researchers with training from experienced entrepreneurs in how to commercialize their innovations. BRO is also looking to establish bridges that will allow teams who have completed the training to more seamlessly mature innovations into products that may enter DoD programs of record.

[**Defense Enterprise Science Initiative (DESI)**](https://basicresearch.defense.gov/Programs/Defense-Enterprise-Science-Initiative/)

DESI is a pilot program that supports university-industry research collaboration focused on accelerating the impact of basic research on defense capabilities. The goals of DESI are twofold. First, it seeks to foster sustainable university-industry partnerships to identify and apply new discoveries and knowledge on existing capabilities and address technological gaps. DESI also aims to charter a new pathway to accelerate the transfer of basic research to innovative technologies and complement the Department’s other basic research programs. DESI is sponsored by the Basic Research Office in the Office of the Under Secretary of Defense for Research and Engineering. The [Air Force Office of Scientific Research](http://www.wpafb.af.mil/afrl/afosr/) administers the program in collaboration with the [Army Research Office](https://www.arl.army.mil/www/default.cfm?page=29).

[**Laboratory University Collaboration Initiative (LUCI)**](https://basicresearch.defense.gov/Pilots/Laboratory-University-Collaboration-Initiative/)

LUCI is a pilot program that supports collaboration between DoD lab scientists and DoD-funded academics. An important objective of this pilot phase of LUCI is to engage leading university scientists and their students, introduce them to the DoD research environment, and facilitate collaborative work that addresses long-term DoD basic research needs. The scientific topic areas that LUCI supports are in applied mathematics, cognitive neuroscience, engineering biology, novel engineered materials, quantum information science, manufacturing science, and other areas of interest. The LUCI program adds value to the defense enterprise by funding high risk basic research projects and providing adequate time to DoD researchers to cultivate their ideas for long term research.