University of Illinois System

U.S. Department of Defense (DOD)

FOR FY2022, THE U OF I SYSTEM REQUESTS **$TBD BILLION** FOR 6.1 BASIC RESEARCH

DOD S&T, Basic Research (6.1)
FY2022 PBR = TBD
FY2021 = $2.671B
FY2020 = $2.603B
FY2019 = $2.529B
FY2018 = $2.343B
FY2017 = $2.276B
FY2016 = $2.309B
FY2015 = $2.278B

DARPA
FY2022 PBR = TBD
FY2021 = $3.501B
FY2020 = $3.458B
FY2019 = $3.432B
FY2018 = $3.072B
FY2017 = $2.889B
FY2016 = $2.89B

Appropriations Bill: Defense

Agency: U.S. Department of Defense

DOD R&D EXPENDITURES, FY2020

URBANA-CHAMPAIGN: $52.2 MILLION | UIC: $10.4 MILLION
*Source: FY2020 NSF HERD Survey

The U of I System is the state's leading recipient of DOD research funds. The University is prepared to support DOD's research, development, test and evaluation (RDT&E) portfolio at the highest levels, thanks to the construction of a **Sensitive Compartmented Information Facility (SCIF)**, an enclosed area within UIUC's Research Park to process classified information.

It is imperative that DOD—even in a constrained funding environment—invests in the foundational science and technologies to confront looming challenges. U of I System research supports current Department-wide research and technology priorities under the 2018 National Defense Strategy, including hypersonics, artificial intelligence, autonomy, next-generation wireless (5G), cybersecurity, and quantum, and explores long-term research questions to anticipate the military's future needs. The U of I System encourages Congress to support sustained and robust funding for the 6.1, 6.2, and 6.3 science and technology accounts across services.

U.S. Army Research Laboratory

The U of I System has been strengthening its partnership with the **Army Research Laboratory (ARL)**. Both UIC and UIUC are significantly involved in ARL's Open Campus Initiative, specifically ARL Central.

ARL launched a **Center for UAS Propulsion** (CUP) to convene a community of academic, industry, and government partners around technologies for small engine power for next-generation UAS. UIUC is the academic lead for CUP, in close partnership with UIC. Both universities are engaged in multi-disciplinary research to develop next generation multi-fuel engine architecture, novel batteries, advanced materials research, aerospace propulsion, supercomputing aided simulations, advanced control architecture and algorithms, and power optimization.

Both UIUC and UIC were selected to receive awards from ARL through its **Internet of Battlefield Things (IoBT)** program. UIUC was selected to lead a $25M initiative to develop the scientific foundations of next-generation IoBTs, designed to enable predictive battlefield analytics and services. The IoBTs will connect soldiers with smart technology in armor, radios, weapons and more to give troops a better understanding of battlefield situations and help assess risks.

ARL awarded a grant to UIC in 2016 to develop a set of tools to validate experimental data that simulates diesel engine operating conditions of in-field ignition delays and excessive harmful pre-mixed burning. The **Army Research Office (ARO)** sponsors diverse projects at UIUC in catalysis, surface science, and engineering the optical properties of materials.

DOD-Supported Projects at Urbana-Champaign

The **Defense Advanced Research Projects Agency (DARPA)** has funded several cutting-edge UIUC projects. For instance:

- Through its KAIROS program, DARPA has provided $12.3M to support a UIUC-led project, named **RESIN—Reasoning about Event Schemas for Induction of kNowledge**, which seeks to create a framework for the next generation of event understanding systems, with an ambitious goal: being able to provide a comprehensive understanding of evolving situations, events, and trends.
- DARPA is providing $10M for two projects for research on **human performance optimization within U.S. war fighters** at the Beckman Institute for Advanced Science and Technology.

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- **Advanced wireless technology** to support warfighter communications is a major focus. Researchers are developing new low-power and **ultra-compact radio technology** to enable communications through soil, rock and water. Another project will empower individuals to exercise better control over the quality of information they are exposed to on social media. At a national level, the work will help fight adversarial propaganda and help maintain **integrity of critical information** from malicious manipulation. Methods are in development to safeguard the electrical power grid from attacks on its GPS synchronization system.
- UIUC received an $18.7M grant from DARPA to develop a testbed that will enable validation of new technology for faster response and recovery following an attack on the electric grid. The project, called **Cyber-Physical Experimentation Environment for RADICS**, will leverage expertise, tools and data provided by industry collaborators.

UIUC receives significant funding from the **Air Force Office of Scientific Research (AFOSR)**.

In DOD's selection of projects for its FY2021 DOD **Multidisciplinary University Research Initiative (MURI)**, UIUC was a participant in four of the 25 projects that received awards. In 2017, UIUC's **Materials Research Laboratory (MRL)** was part of a consortium that was funded under the MURI program for research centered on additive 3D self-assembly of responsive materials.

DOD's **Defense University Research Instrumentation Program (DURIP)** supports the purchase of major, state-of-the-art equipment that augments current research institutions' capabilities or develops new capabilities to perform cutting-edge defense research and associated graduate student research training in disciplines of importance to DOD. UIUC received six DURIP awards in 2020.

DOD-Supported Projects at UIC

A multidisciplinary research team from UIC was awarded a $3M, three-year DOD award to establish an **undergraduate research mentoring program in STEM areas with a focus on engaging undergraduate student veterans and minority students**.

UIC is currently leading a $3M project funded by DARPA to design, develop, and evaluate a system that will **identify security vulnerabilities in web software**.

With a four-year, $5.25M grant from DOD, UIC researchers are leading a multi-site clinical trial to test the efficacy of a **stem cell-based treatment for eye injuries.**

UIC's Cancer Center has a three-year, $1.17M DOD grant to develop a **new therapy to treat triple-negative breast cancer**.

A three-year grant totaling nearly $1M from the DOD is funding UIC research on the gene SELENOF and its role in the **development of prostate cancer among black men**.

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