Laboratory University Collaboration Initiative Fellowship

FY21 Webinar
1:00 – 2:00 PM EDT

Basic Research Office (BRO)
OUSD(R&E) or Office of the Under Secretary of Defense (Research & Engineering)

Webinar | Feb 4, 2021

Agenda & Webinar Etiquette

1:00 – 1:05: Remarks from Director of Basic Research, Dr. Bindu Nair

1:05 – 1:40: Program Overview, Dr. Ololade Fatunmbi

1:40 – 1:45: Advice from a Previous LUCI Fellow, Dr. Mike Osofsky

1:45 – 2:00: Q&A led by LUCI Program Director, Dr. Jean Luc Cambier

2:00- 2:10 *Bonus* Introduction to the Application Website led by nVision

- This Webinar is recorded and will be uploaded to the DoD site at a later date.
- Mute your microphones during the webinar
- Please post questions in the chat and they will be answered during the Q&A secession
- For technical difficulties during the meeting, contact:
  - 703-610-2040 or cshelp@noblis.org

LUCI Background

What is LUCI and what is its Purpose?

- The LUCI Program is an instrument to ensure that the DoD has:
  - An active, long-term, and aggressive basic research portfolio in areas of strategic importance to the national security
  - The ability to rapidly transition new ideas and scientific concepts towards their application in future challenges facing the Department and its mission.

How Does LUCI Achieve its Purpose?

- Supports collaboration between DoD lab scientists and DoD-funded academics.

Why Basic Research?

- Vannevar Bush foresaw the importance of Basic Research " [Basic research is] the pacemaker of technological progress". "New products and new processes do not appear full-grown…They are founded on new principles and new conceptions, which in turn are painstakingly developed by research in the purest realms of science."

The LUCI program is in spirit of Dr. Vannevar Bush's vision.

LUCI Program Objectives

Foster New Ideas

- Bring the best ideas and fundamental scientific knowledge from academia into the DoD laboratories.

Stimulate Innovation

- Stimulate innovation and creativity inside these laboratories and enhance the value of 6.1 research in the Lab ecosystem. A better appreciation of fundamental discoveries and their possibilities allows higher levels of exploration.

Improve S&T Workforce Skills and Knowledge

- The program allows for long-term (3 years) and deep interaction with faculty, students, optimizing the opportunities for training, and insertion into new fields.

Build Leadership in DoD

- Create a community of Lab researchers who are leaders in their fields and can be leveraged by OSD and other organizations within the DoD.

Enhance Laboratory-Academia Links

- Enhance Laboratory-Academia links and mutual understanding of opportunities, problems, environments, and constraints.

Program Team

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Scientific Advisor
Institute for Defense Analyses

Program Details

Sponsorship

- Currently sponsored by Dr. Bindu Nair, Director for Basic Research Office, OUSD(R&E).

Management

- The Basic Research Office manages the grant. The Program Director is Dr. Jean Luc Cambier

Number Selection

- Approximately 10 Fellows selected each competition

Important Dates for 2021 Competition

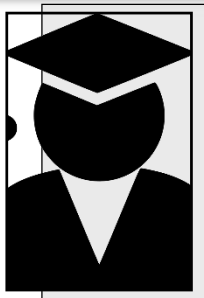
Schedule of Events		
Event	Date	Time
nVision site open for white papers and supporting documents submission	02 November 2020	
Final date/time for submission of white papers and supporting documents	**19 March 2021**	11:59 PM Eastern Daylight Time
Notification of white paper selections for interviews	17 May 2021*	
Interview period	07 - 25 June 2021*	
Notification of selections for award	12 July 2021*	
Start date of project	01 October 2021*	

* Approximate dates

LUCI Eligibility and Details

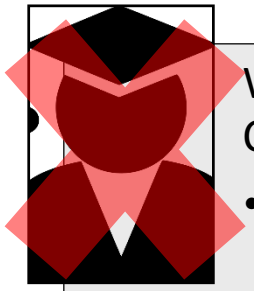
Who Can Apply?

- DoD government laboratory researchers
- Up to 1 Pi and 1 CoPi and up to 2 Labs (could be different)
- Collaboration between different Services is encouraged but not required
- Previous unsuccessful applicants and previous awardees not on an active grant



Who can be an Academic Collaborator?

- Must be current or previous Vannevar Bush Faculty Fellows (VBFF)
- Current or previous PIs and CoPIs from the Multidisciplinary University Research Initiatives (MURI) Program.



Who can NOT be an Academic Collaborator?

- Other University researchers, funded by other DoD programs, are not eligible.

How much money can be requested?

- $200,000/year for 3 years

What the funds could be used be for?

- Awarded funds may be used for a portion of the PI's salary
- Salaries of current in-house contractors, or new post-doctoral researchers or other contractors
- Travel to collaborators' institutions, minor equipment and supplies
- Funds may also be used for part-time support of post-doctoral researchers and students at the collaborating University, but it is expected that most of the funds will be used within the DoD laboratory, and that the Government PI will commit sufficient time to the project.

LUCI: Type of Research

Research Must:

- Be basic research

- Address scientific areas of potential interest to the DoD
  - Although others will be given proper attention

- Have a profound potential impact

- Not be narrow and applicable only to a niche problem, but *potentially* open a new field

- Have **technical merit**
  - The innovation will be the key driver in developing the technical merit component of the proposal.
  - While all the components of the LUCI proposal are evaluated and scored, the technical merit is the area on which the PI must spend the most time.

Current DoD Research Areas of Interest

Applied Math and Computational Science	Network Science, Artificial Intelligence	Cognitive Neuroscience
Fundamentals of Bio-Engineering	Quantum Information Science	Electronics, Photonics and Quantum Materials
Engineered Materials and Structures	Other research fields with high potential	….and (almost) everything in-between…

VBFF FOA: https://www.grants.gov/web/grants/view-opportunity.html?oppId=328010

PI must select which of these areas the white paper is addressing.

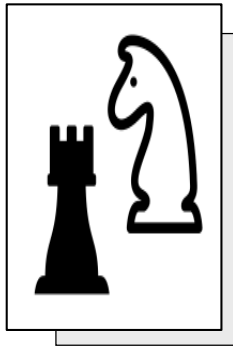
LUCI Collaboration

Open Minds

- The collaboration should open minds and should not just be two researchers continuing existing research paths

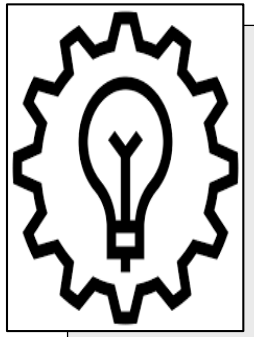
Involve Intellectual Exchange

- Results from a serious, even deep intellectual exchange between the DoD lab scientist and the academic collaborator



Are Strategic

- Collaborators must achieve a common strategy to solve a problem



May Accelerate Transition

- May also be considered an opportunity to accelerate “transition“, but should focus mostly on the transfer of knowledge and skills

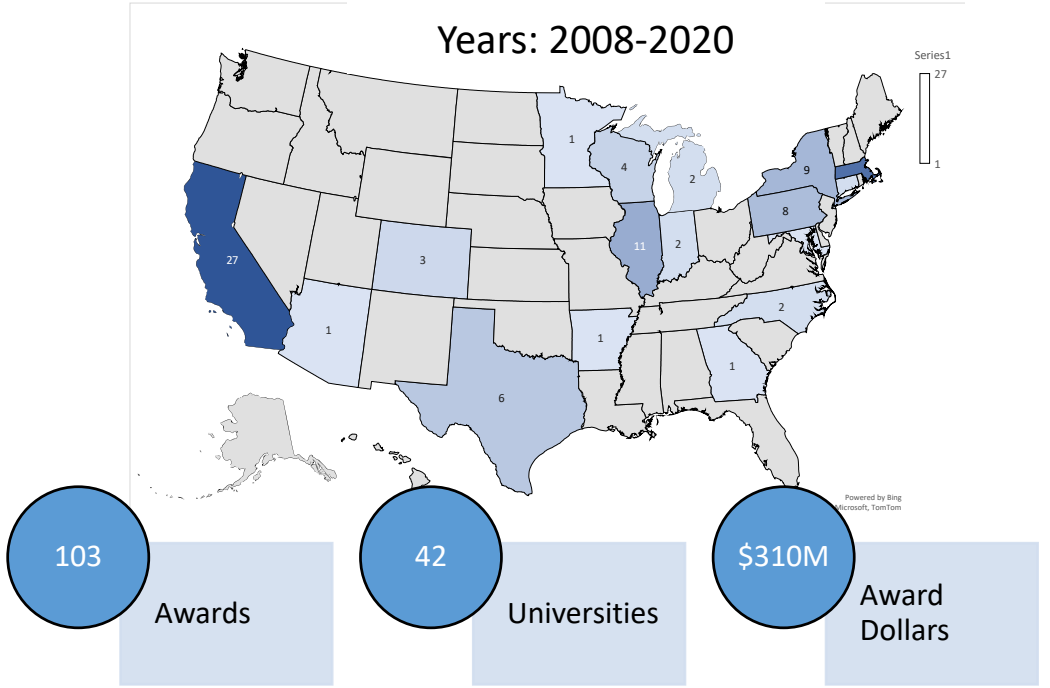
The academic collaborator can be paid with LUCI funds. We leave it to the judgement of the PI to devise a plan that is rational, well-balanced, and justified.

Vannevar Bush Faculty Fellowship Overview

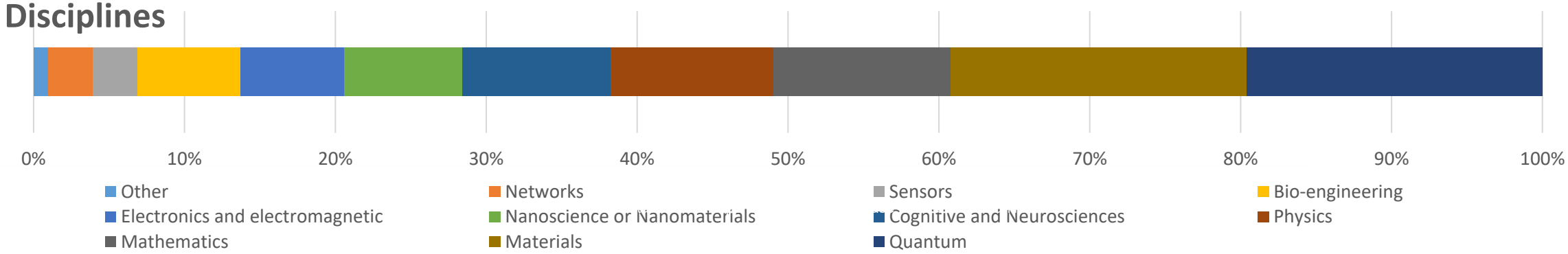
Defense Department's largest single-investigator program:
5-year fellowship with up to $3M for research with potentially extraordinary outcomes

Program Goals:

- VBFF supports transformative, high-risk, basic research
- Attract distinguished, productive, and creative candidates and sustain career-long association between Fellows and DoD
- Establish a group of experts that can study and advise DoD on emerging scientific and technical challenges



Disciplines



Who are the VBFF Fellows?

2008

2020

List VBFF Project and PIs

Weblink:
https://basicresearch.defense.gov/Programs/Vannevar-Bush-Faculty-Fellowship/

Basic Research Office Website

Navigate to the programs → Vannevar Bush

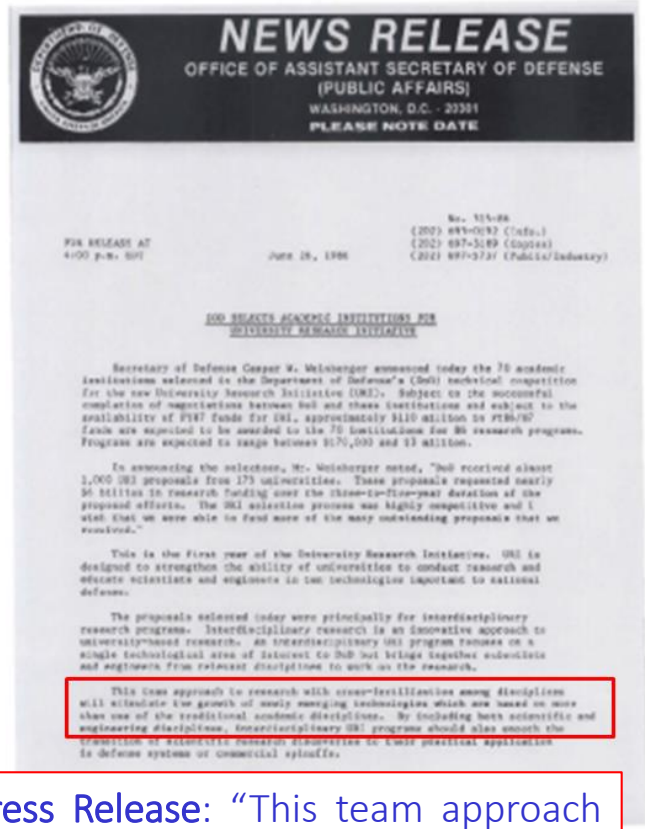
Multidisciplinary University Research Initiative

Tri-service program that supports basic research teams intersecting with more than one traditional science and engineering discipline

Program Goals:

- Educate scientists and engineers in the interdisciplinary areas important to national defense
- Promote rapid technology transition directly to Service applications
- Complement other DoD programs that support university research through the single-investigator awards.
- MURI awards are 3-5 years, with teams funded up to $1.5M/year.

Networking Opportunities – OSD MURI Program Review, the week of July 4th



NEWS RELEASE

OFFICE OF ASSISTANT SECRETARY OF DEFENSE
(PUBLIC AFFAIRS)
WASHINGTON, D.C. 20301
PLEASE NOTE DATE

DOD SELECTS ACADEMIC INSTITUTIONS FOR UNIVERSITY RESEARCH INITIATIVE

Secretary of Defense Caspar W. Weinberger announced today the 76 academic institutions selected in the Department of Defense's (DoD) technical competition for the new University Research Initiative (URI). Subject to the successful completion of negotiations between DoD and these institutions and subject to the availability of FY87 funds for URI, approximately $110 million in FY86/87 funds are expected to be awarded to the 76 institutions for 86 research programs. Programs are expected to range between $175,000 and $3 million.

In announcing the selections, Mr. Weinberger noted, "DoD received almost 1,000 URI proposals from 175 universities. These proposals requested nearly $6 billion in research funding over the three-to-five-year duration of the proposed efforts. The URI selection process was highly competitive and I am glad that we were able to fund more of the many outstanding proposals that we received."

This is the first year of the University Research Initiative. URI is designed to strengthen the ability of universities to conduct research and educate scientists and engineers in the technologies important to national defense.

The proposals selected today were principally for interdisciplinary research programs. Interdisciplinary research is an innovative approach to university-based research. An interdisciplinary URI program focuses on a single technological area of interest to DoD but brings together scientists and engineers from relevant disciplines to work on the research.

This team approach to research with cross-facilitation among disciplines will stimulate the growth of newly emerging technologies which are based on more than one of the traditional academic disciplines. By including both scientific and engineering disciplines, interdisciplinary URI programs should also smooth the transition of scientific research discoveries to their practical application in defense systems or commercial spinoffs.

1986 Press Release: "This team approach in research with cross-facilitation among disciplines will stimulate the growth of newly emerging technologies….

LUCI Competition Process Overview

White Paper

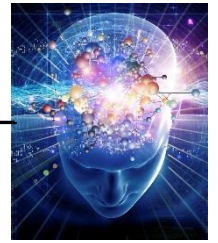
Invitation

Panel

Presentation

Selection Committee

Director



Selection

Recommendation

White Paper Guidelines

- **Technical Merit**
  - Idea
  - Rationale
  - Approach
  - Capability
- **Nature of Collaboration**
- **Impact to DoD**
- **Management Plan and Budget**

This document provides the definitive guidelines for the program:
https://dod-basicresearch.nvision.noblis.org/resources/LUCI%20Proposal%20Guidelines.pdf

Previous unsuccessful applicant should address feedback from previous proposal

Strong vs Weak White Paper

Strength	Weakness
Technical Merit: Transformative research, paradigm-shifting, high risk, and/or is addressing a research gap(s) that this missing for a very long time	**Technical Merit:** Evolutionary, incremental research, or research which could have been performed as part of the regular activities of the PI.
Proposal: Addresses fundamental research and is disruptive	**Proposal:** Geared mostly towards application(s)
Impact: Impact is revolutionary	**Impact:** Impact is incremental
Methodology: • Uses the most advanced methods, resulting in improved skills • Addresses the challenges that could arise during the research and mentions contingency plans• Outlines a logical, well-structured approach • Key steps are well described	**Methodology:** • The methodology described is conventional and/or incremental • All the tasks are critically dependent on the success of earlier ones • Confusing approach, missing key steps • No clear measures of success along the way
Clarity: Well written, free of grammatical errors	**Clarity:** Formatting errors, unexplained technical jargon, and incorrect/unexplained figures.
Budget: • Budget is briefly, but well justified • All costs expected from the narrative are included. • Leveraged funds (if applicable) are clearly listed and a letter of intent of support is included • Justification for the funding of Academic collaborator(s) and Lab partners	**Budget:** • Budget is not commensurate with the scope of the project • Needed travel is not included, or is excessive • Vague or missing reference of leveraged funds (if applicable)
Collaboration: Collaborators will bring interesting ideas and results to the research, but it is clear that the PI takes ownership and leadership of the proposal	**Collaboration:** The PI is very dependent on the collaborator in order for the research to be successful.
DoD Impact: DoD relevance is clear as well as the need and interest. The PI describes a how the academic collaborations will benefit DoD capabilities and workforce	**DoD Impact:** Even if the research is successful, the output has a questionable or undefined utility for the DoD, even in the long term.
Qualifications: PI is productive and considered a leader in her/his field	**Qualifications:** PI has never published or made any impact in the field of research he/she is proposing

LUCI Interview Overview

Preparation

- Address the feedback in the interview process
- 30 mins total: plan a 15 min brief plus 15 mins for questions

Attendees

- PI and the Selection Committee will be at the interview
- University collaborator can be present but not required

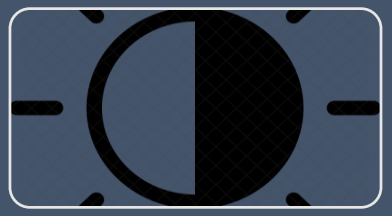
Best Practices

- Be concise and accurate
- Demonstrate passion for basic research
- PI alone should be able to effectively communicate or demonstrate proposed research ideas during their presentation
- Convey a good sense of direction and a broad perspective

Perks of Becoming a LUCI Fellow

Career Booster

- Past fellows expressed LUCI has propelled their career



Exposure

- Fellows have the opportunity to present their work at DoD-sponsored conferences.

Career Opportunities

- Fellows may serve on panels and participate in DoD program reviews.

Collaboration Opportunities

- Fellows may collaborate with DoD researchers on joint projects.

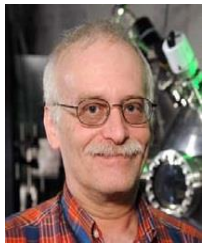
Highlights

- **GOLDSCHMIDT, ELIZABETH (LUCI 2018):** *Army scientist creates a pristine quantum light source that has the potential to lead to more secure communications and enhanced sensing capabilities for Soldiers:* https://www.eurekalert.org/pub_releases/2018-11/uarl-ass110118.php

- **KAPLAN, LANCE (LUCI 2017)**: *AI Research Helps Soldiers Navigate Complex Situations*: https://apgnews.com/inside-the-innovation/r-d/ai-research-helps-soldiers-navigate-complex-situations/

- **BRIDGES, NATHANIEL *(LUCI 2018)***:*Air Force Leans on Neurotechnology and Gives Pilots Earbuds for Super Learning:* https://news.clearancejobs.com/2020/10/21/air-force-leans-on-neurotechnology-and-gives-pilots-earbuds-for-super-learning/

- **OSOFSKY, MIKE *(LUCI 2016)***:*Observation of plasmon-phonons in a metamaterial superconductor using inelastic neutron scattering* https://tsapps.nist.gov/publication/get_pdf.cfm?pub_id=926184



Program Announcement & Information

The FY21 LUCI Funding Opportunity Announcement (call for white papers) can be found:

- https://dod-basicresearch.nvision.noblis.org/

Announcement:

- https://dod-basicresearch.nvision.noblis.org/resources/LUCI%20Announcement.pdf

LUCI Proposal Guidelines:

- https://dod-basicresearch.nvision.noblis.org/resources/LUCI%20Proposal%20Guidelines.pdf