Researching the big ideas: Cybersecurity

Showcasing how NDSU researchers are tackling important issues.

NDSU computer expert works to strengthen cybersecurity for U.S.

NDSU assistant professor of computer science Jeremy Straub has received approximately $1.75 million to date in awards from several federal agencies for his work on creating stronger protections for various sensitive systems.Straub's list of accomplishments in his six years at NDSU includes serving as director of the NDSU Institute for Cyber Security Education and as a Research and Challey Institute faculty fellow. He is the lead inventor on two U.S. patents and has published over 80 journal articles and hundreds of conference papers. Straub was included in a 2020 list of top-cited scientists worldwide compiled by Stanford University.

Straub's work in cybersecurity relates to how to autonomously detect and protect computer systems from online attacks. He says protecting these systems is an important

topic to look into now because much of the issue comes from design work done years ago. "It's not so much that these weren't good decisions back then, but that the environment is changing so rapidly that they aren't adequately prepared for today's threats."

Straub hopes that his research will have broad impact and that the techniques and technologies developed in his research should be able to be applied to numerous other systems. He believes that protecting the water, power grid, financial and other IT systems of our country today is a critical and urgent need given that the threat has become geopolitical.

"We rely on these systems for everything from electricity to heat to clean water and they are subject to attack by anyone anywhere in the world," he said. "The reasons for an attack could begin with traditional issues like border conflicts in the physical world. Subsequent coordinated cyberattacks on multiple areas of our power grid or defense systems would rapidly bring wartime conditions right to our doorsteps in this country."

Straub wrote about these scenarios for Scholars Strategy Network in March 2022. In his article, he noted that U.S. Federal agencies should be hearing the wakeup calls provided by current cyberattacks as a sort of Pearl Harbor rallying effort for the nation. "The warning signs for any number of future…attacks might already be present," he said in the article.

Mark R. Hagerott, Ph.D. North Dakota University System Chancellor says that Straub's work and the support of federal agencies are important for both the state and the entire country. "Jeremy is helping guard our state and our citizenry by his work in cyber security. The State of North Dakota, the American people, our digital machines, and our networks all will be safer as a result of his work."

Because he believes these kinds of research opportunities are a great opportunity for NDSU students and a good way to recruit more to NDSU, Straub's research always involves students. As an added benefit, he says he often finds kindred spirits in the young researchers and enjoys training tomorrow's cyberexperts, future researchers, and instructors.

"They're interested and curious about learning skills that are directly attached to needs of the world. My work offers them a unique opportunity to work on something with national importance at an R1 research institution."

NDSU vice president of research and creative activity Colleen Fitzgerald said, "NDSU continues to increase the amount of our federally funded cybersecurity research, highlighting the important role North Dakota State University plays in helping the nation be prepared in the face of global threats. Dr. Straub's work is a great example of the unique value the university brings to the state and beyond."

RCA Update delivery frequency change

The RCA Update newsletter provides up-to-date information on grant programs, events, trainings, news about researchers, and other announcements for NDSU researchers, scholars, students, and staff.

Beginning next month, the newsletter's delivery frequency will change from weekly to every other Monday. The next edition of the RCA Update will come out on September 12.

You're invited to a lab tour

Interested in learning more about research at NDSU and finding people with whom you can collaborate? VPR Fitzgerald will be visiting selected NDSU labs and you are invited to submit your name to join a tour with her. Date and time are still to be determined, but please indicate if you have interest in attending.

- ePower Hubs lab - Omid Beik, NDSU assistant professor (electrical and computer engineering)

- Duggan lab - Kat Duggan, NDSU assistant professor (psychology)

Lab tour spots are limited.

Sign up >>

Novelution IBC Module Live

All new Institutional Biosafety Committee (IBC) protocols will need to be submitted in the Novelution IBC module as of September 1, 2022.

As the module is available now, you are highly encouraged to begin using it for your protocol submissions. See the Novelution webpage or contact Amanda Wilkinson (701-231-8908) for more information.

NIH Data Management and Sharing Policy

The New NIH Data Management and Sharing (DMS) Policy will be effective for applications submitted for receipt dates on or after January 25, 2023. To aid researchers in establishing robust DMS Plans, NIH released an optional DMS Plan format page that walks investigators through the Elements of a DMS Plan. A preview version of this format page is available now as a reference. A final, fillable version of this format page along with detailed instructions for preparing DMS Plans will be incorporated into the FORMS-H NIH Application Instructions, available in October.

Learn more:
- NOT-OD-22-189: Implementation Details for the NIH Data Management and Sharing Policy
- NIH Open Mike: Implementation Updates for the New NIH Data Management and Sharing Policy

National Endowment for the Humanities
Proposal Writing Workshop
Wednesday, October 12, 2022; 12-1:30pm

Dr. Victoria Sams, NEH Division of Education Programs, and Dr. Geoff Burrows, NEH

Division of Research Programs, will lead this virtual workshop on writing proposals to the National Endowment for the Humanities (NEH). As a follow-up to NDSU's February 2022 session on funding opportunities in NEH/NEA, this event will provide more in-depth information on what makes for a competitive NEH proposal. Examples of funded programs will be provided as well as tips for success with NEH funding.

Learn more and register >>

Azure Accelerator Program for Research

The Internet2 CLASS program is collaborating on an Azure Accelerator Program for Research, which runs for ten weeks starting October 5. Five applications from Internet2 member orgs will be accepted into the program, and will be awarded the following:

- Up to $5,000 in Azure Credits will be awarded through CloudBank, an NSF-funded initiative.
- A cohort-based learning experience for 10 weeks.
- Synchronous training culminating in industry-recognized certifications (e.g. AZ-900, DP-900, AI-900, etc.)
- Access to an Azure-certified Cloud Solutions Architect twice weekly for the duration of the program.
- Cloud architecture consultation and prototype for the selected research project.
- Sustainable project design and data management plan.
- **The application deadline is September 10, 2022.**

Learn more >>

August Issue: Research Development & Grant Writing News

The August issue of *Research Development and Grant Writing News* is now available

to view. Use your NDSU login information to access this resource. Various topics are covered, including:

- Fitting Your Research Topic to a Funder's Mission
- NSF GRANTED: Broadening Participation in STEM
- Reading the Funding Tea Leaves: How to Anticipate New Funding Opportunities
- NSF Partnership to Advance Conservation Science
- So You've Submitted Your CAREER Proposal: What Now? (August 15, 2021 reprint)
- Proposal Pet Peeves (May 15, 2021 reprint)
- The Role of the Project Evaluator on the Writing Team

Read August Issue >>

RCA Funding Opportunities

Research Development Travel and Conference Support Awards help defray expenses for faculty presenting at national conferences (virtual or on-site) or for supporting travel to visit archives or special collections. As this pool of funding is limited, please consider allowing individuals who do not have other sources of travel funding to apply for this opportunity.

Research Support Services Awards help defray the costs of support services required for research, creative, or scholarly activity. For example, funds may be used in one of the NDSU Core Facilities, another recharge / service center, or for transcription services.

Research Development Funding Agency Visit Travel Awards help defray expenses for faculty traveling to meeting with Program Officers / Program Directors at funding agencies. This program requires a 1:1 match from the applicant's department and / or college.

More information and application instructions are posted on the RCA website.

Additional RCA Opportunities

- Apply or nominate a colleague for the RCA leadership professional development program. Up to 12 mid-career faculty members will be selected for an 8-session research leadership course led by AtKisson Training Group (ATG). Deadline is 8/26/22.
- Planning a proposal to USDA-AFRI? Learn more about the USDA-AFRI Preproposal Review Pilot Program.
- Recently served on a USDA Review Panel? Volunteer to be part of the USDA Expert Bank at NDSU.
- Share what you're doing in your research space by hosting a lab tour for your NDSU colleagues and Vice President Fitzgerald.

Upcoming Events

- **DARPA Forward Regional Events on National Security Innovation**
  August-December, 2022 / *Learn more >>*
- **Webinar: Diving Deeper into the New NIH Data Management and Sharing Policy**
  September 22, 2022; 12:30-2:30pm / *Learn more >>*
- **NIH Grant Writing Webinar Series for Institutions Building Research and Research Training Capacity**
  September 26, and November 1; 1-2:15pm / *Learn more >>*
- **Webinar: Introduction to NSF's Directorate for Technology, Innovation, and Partnerships**
  September 27, 2022; 1-2pm. *Register >>*

FUNDING OPPORTUNITIES

- ND EPSCoR: STEM Research, Education, and Outreach
- American Philosophical Society: Franklin Research Grants
- DARPA: Ice Control for Cold Environments
- DOE: National Energy Technology Lab Research, Development, and Demonstration
- National Endowment for Financial Education: Research Funding
- NEH: Public Scholars

- [NIH NOSI: Office of Disease Prevention – Screening](#)
- [NIH NOSI: Hunger, Food and Nutrition Insecurity](#)
- [North Central Sustainable Agriculture Research and Education](#)
- [NSF: Humans, Disasters, and the Built Environment](#)
- [NSF: Science of Learning and Augmented Intelligence](#)
- [Spencer: Large Research Grants on Education](#)
- [Valent Biosciences Opportunities](#)

Upcoming Limited Submission Program Deadlines

[Limited submission grant programs](#) are those that indicate a limit on the number of proposals that may be submitted by an institution for a particular deadline. A selection process becomes necessary if more applicants express interest in applying than NDSU is allowed to submit to the grant program. Email notifications of interest to [ndsu.researchdev@ndsu.edu](#).

If you identify a limited submission opportunity that is not on the list below, please notify [ndsu.researchdev@ndsu.edu](#).

- [NSF: Major Research Instrumentation](#)
- Notification Deadline: 09/01/2022
- [NIH: Collaborative Program Grant for Multidisciplinary Teams](#)
  Notification Deadline: 09/15/2022
- [NSF: Scholarships in STEM (S-STEM) Program](#)
  Notification Deadline: 09/15/2022

There are a number of limited submission grant programs with upcoming agency deadlines for which we did not receive any notifications of interest. A full list of those programs is available on the [Limited Submissions page](#). For these programs, marked "First to Notify," approval to move forward with a full proposal submission to the funder will be given on a first come, first served basis. Email notifications of interest to [ndsu.researchdev@ndsu.edu](#).

- [NIH: Director's Early Independence Award](#)
  Deadline: 09/02/2022
- [HRSA: Strengthen Evidence for Maternal and Child Health Programs](#)
  Notification Deadline: 09/08/2022

- [NIH: Bridges to the Baccalaureate](#)
  Deadline: 09/26/2022
- [NIH: Bridges to the Doctorate](#)
  Deadline: 09/27/2022
- [NEH: Infrastructure and Capacity Building Challenge Grants](#)
  Deadline: 09/27/2022
- [Johnson & Johnson: Women in STEM2D](#)
  Deadline: 09/30/2022
- [LOC: Connecting Communities Digital Initiative](#)
  Deadline: 09/30/2022
- [NSF: INCLUDES](#)
  Deadline: 10/25/2022
- [NSF: Louis Stokes Alliances for Minority Participation - STEM Pathways Implementation-Only](#)
  Deadline: 11/18/2022

Looking for more funding opportunities?

RCA subscribes to SPIN by InfoEd Global, a database of more than 40,000 funding opportunities. Through this subscription, SPIN is free for current NDSU faculty, staff, and students.

For more information and to access this database, visit the SPIN page on the RCA website. If you have questions, please contact ndsu.researchdev@ndsu.edu.

ND EPSCoR: STEM Research, Education, and Outreach

The ND EPSCoR State Office's mission is to support efforts of participating institutions of higher education across the state that result in increased STEM research capacity and competitiveness; a stronger STEM pathway that produces our next generation workforce, educators, and researchers; and an informed citizenry that values the STEM ecosystem and economy.

Thus, the ND EPSCoR State Office is accepting proposals to fund STEM activities at EPSCoR participating institutions: research universities (RUs; NDSU and UND), master's college / university (MCU; Minot State University), primarily undergraduate institutions (PUIs; Dickinson, Mayville, and Valley City State Universities), and the tribal colleges/universities (TCUs; Cankdeska Cikana Community College, Nueta Hidatsa Sahnish College, Sitting Bull College, Turtle Mountain Community College, and United Tribes Technical College). For details, see the Request for Proposals.

Deadline: Noon, September 30, 2022

American Philosophical Society: Franklin Research Grants

The Franklin program is particularly designed to help meet the costs of travel to libraries and archives for research purposes; the purchase of microfilm, photocopies, or equivalent research materials; the costs associated with fieldwork; or laboratory research expenses.

Franklin grants are made for noncommercial research. They are not intended to meet the expenses of attending conferences or the costs of publication. The Society does not pay overhead or indirect costs to any institution, and grant funds are not to be used to pay income tax on the award. Grants will not be made to replace salary during a leave of absence or earnings from summer teaching; pay living expenses while working at home; cover the costs of consultants or research assistants; or purchase permanent equipment such as computers, cameras, tape recorders, or laboratory apparatus.

Upcoming deadlines: October 3 and December 1, 2022

DARPA: Ice Control for Cold Environments

The Ice Control for cold Environments (ICE) program [HR001122S0047] seeks to develop solutions for extreme cold weather DoD operational challenges by discovering and optimizing biologically sourced or inspired molecules to enable tuned inhibition or nucleation of ice crystallization, propagation, and adhesion. The best performing molecules identified during the discovery phase will subsequently be formulated to develop novel materials with enhanced operational performance, tailored to mitigate extreme cold weather challenges for specific DoD applications, and tested based on stakeholder needs and priorities.

DOE: National Energy Technology Lab Research, Development, and Demonstration

The Department of Energy (DOE) National Energy Technology Laboratory (NETL), on behalf of the Office of Cybersecurity, Energy Security, and Emergency Response (CESER) Risk Management Tools and Technologies (RMT) program, is seeking applications under this Funding Opportunity Announcement [DE-FOA-0002500] to advance cybersecurity tools and technologies specifically designed to reduce cyber risks to energy delivery infrastructure. This effort will lead to next generation tools and technologies not available today that will become widely adopted throughout the energy sector to reduce a cyber incident disruption to energy delivery.

National Endowment for Financial Education: Research Funding

The National Endowment for Financial Education (NEFE) provides funding for rigorous, innovative and actionable research that seeks to improve the public's financial well-being and has the potential to make a profound contribution to the field of financial education.

Both original research questions and replication studies that align with NEFE funding priorities are welcome. Research projects must use rigorous empirical and / or theoretical analysis. Original data is welcome but not required.

Topic areas of interest:
- **Measurement**: Studies that re-evaluate current financial literacy metrics and how financial literacy, behavior, perception, knowledge and skill can be measured more effectively.
- **Systemic Inequality**: Studies that investigate knowledge, skill and wealth disparities, especially among populations that are statistically more likely to experience systemic barriers to improving their financial well-being.

- **Data and Methodological Limitations**: Studies that examine bias—specifically as it pertains to personal finance— to help our field identify knowledge gaps and to strengthen research data and design by including traditionally less heard voices.
- **Youth Focus**: Studies that examine inconsistencies in exposure to financial education among youth in the U.S. as well as variations in financial socialization and education within family units.

Letter of Inquiry deadline: September 15, 2022

^^

NEH: Public Scholars

The Public Scholars program offers grants to individual authors for research, writing, travel, and other activities leading to the creation and publication of well-researched nonfiction books in the humanities written for the broad public. Writers with or without an academic affiliation may apply, and no advanced degree is required. The program encourages non-academic writers to deepen their engagement with the humanities by strengthening the research underlying their books, and it encourages academic writers in the humanities to communicate the significance of their research to the broadest possible range of readers. NEH especially encourages applications from independent writers, researchers, scholars, and journalists.

Deadline: November 30, 2022

^^

NIH NOSI: Office of Disease Prevention – Screening

The National Institutes of Health (NIH) Office of Disease Prevention (ODP), along with participating institutes and centers, has released two Notices of Special Interest (NOSIs) related to preventative and evidence-based screening services.

NOT-OD-22-178 encourages applications proposing to test multilevel strategies and interventions to improve the uptake of evidence-based screening services across the lifespan and in populations including, but not limited to, those experiencing health disparities and those that are underserved. Studies addressing efficacy, effectiveness, dissemination and implementation research, as well as studies seeking to understand and address barriers to screening are encouraged.

NOT-OD-22-179 solicits applications proposing to strengthen the evidence base for

preventive screening services where the evidence is lacking, of poor quality, conflicting, or the balance of benefits and harms cannot be determined. This NOSI encourages the development and use of innovative and rigorous methods and approaches to close high priority evidence gaps to elevate screening services to a level suitable for a definitive grade or recommendation.

For both NOSIs, the specific research interests of participating NIH Institutes and Centers are detailed within the notice.

Both NOSIs are open through May 8, 2025

<div align="right">

[^^](#)

</div>

NIH NOSI: Stimulating Research to Understand and Address Hunger, Food and Nutrition Insecurity

The purpose of this Notice of Special Interest (NOSI) [[NOT-OD-22-135](#)] is to encourage research on the efficacy of interventions that address nutrition security and the mechanisms of food insecurity on a variety of health outcomes. It also calls for the development of new measures for nutrition security and assessment of food insecurity that are broadly applicable. It was developed by the [Office of Nutrition Research](#) (ONR) Implementation Working Group on [Nutrition and Health Disparities](#) in collaboration with NIH Institutes and Centers (ICs) and Offices in support of the goals and objectives of the [Strategic Plan for NIH Nutrition Research](#).

This NOSI is open through November 29, 2024

<div align="right">

[^^](#)

</div>

North Central Sustainable Agriculture Research and Education (SARE)

The North Central Region SARE (NCR-SARE) [Research and Education](#) (R&E) Grant Program is a competitive grant program for researchers and educators involved in projects that explore and promote environmentally sound, profitable, and socially responsible food and / or fiber systems.

Research and Education projects include a strong outreach component and significant

farmer / rancher or other end-user involvement from the inception of the idea through the implementation of the project. Generally:

- Collaborative teams build research and Education grants.
- Producers are key participants in grant activities.
- Coordinators are encouraged to explore social, environmental, AND economic aspects of whole systems.
- All projects include a strong outreach component.
- Many projects are interdisciplinary and / or multi-institutional, involving a broad range of agricultural interests.
- Research and Education grant awards range from $10,000 to $250,000.
- Projects may last up to 36 months or may choose to propose a long-term project.

Preproposal deadline: October 13, 2022 at 4pm.

A Research & Education preproposal application Zoom will take place on September 8, 2022, at 10 am. *Register to attend >>*

^^

NSF: Humans, Disasters, and the Built Environment

The Humans, Disasters and the Built Environment (HDBE) program [PD 19-1638] supports fundamental, multidisciplinary research on the interactions between humans and the built environment within and among communities exposed to natural, technological and other types of hazards and disasters. The program's context is provided by ongoing and emerging changes in three interwoven elements of a community: its population, its built environment (critical infrastructures, physical and virtual spaces, and buildings and related structures) and the hazards and disasters to which it is exposed. The HDBE program seeks research that integrates these elements and that can contribute to theories that hold over a broad range of scales and conditions. Examples include but are not limited to unified frameworks and theoretical models that encompass non-hazard to extreme hazard and disaster conditions, theoretical and empirical studies that consider how interactions between a community's population and its built environment may suppress or amplify hazard exposure or its effects, and studies that seek to inform scholarship through the development of shared data and related resources. In these and other areas funded through the HDBE program, research that challenges conventional wisdom on the interactions among humans, the built environment and hazards and disasters is particularly encouraged. Given the richness of the phenomena under study, the HDBE

program seeks research that advances theories, methods and data within and across diverse disciplines, whether in engineering, the social sciences, computing or other relevant fields. Ultimately, research funded through this program is expected to inform how communities can cultivate and engage a broad range of physical, social and other resources to ensure improved quality of life for their inhabitants.

Proposals accepted anytime.

NSF: Science of Learning and Augmented Intelligence

Science of Learning and Augmented Intelligence [PD 19-127Y] supports potentially transformative research that develops basic theoretical insights and fundamental knowledge about principles, processes and mechanisms of learning, and about augmented intelligence - how human cognitive function can be augmented through interactions with others, contextual variations, and technological advances.

The program supports research addressing learning in individuals and in groups, across a wide range of domains at one or more levels of analysis including: molecular / cellular mechanisms; brain systems; cognitive, affective, and behavioral processes; and social/cultural influences.

The program also supports research on augmented intelligence that clearly articulates principled ways in which human approaches to learning and related processes, such as in design, complex decision-making and problem-solving, can be improved through interactions with others, and / or the use of artificial intelligence in technology. These could include ways of using knowledge about human functioning to improve the design of collaborative technologies that have capabilities to learn to adapt to humans.

For both aspects of the program, there is special interest in collaborative and collective models of learning and / or intelligence that are supported by the unprecedented speed and scale of technological connectivity. This includes emphasis on how people and technology working together in new ways and at scale can achieve more than either can attain alone. The program also seeks explanations for how the emergent intelligence of groups, organizations, and networks intersects with processes of learning, behavior and cognition in individuals.

Deadline: January 18, 2023

Spencer Foundation: Large Research Grants on Education

The [Large Research Grants on Education Program](#) supports education research projects that will contribute to the improvement of education, broadly conceived, with budgets ranging from $125,000 to $500,000 for projects ranging from one to five years. This program is "field-initiated" in that proposal submissions are not in response to a specific request for a particular research topic, discipline, design, method, or location. The goal for this program is to support rigorous, intellectually ambitious and technically sound research that is relevant to the most pressing questions and compelling opportunities in education.

Intent to apply deadline: January 12, 2023; noon

Valent Biosciences Opportunities

Valent has several open funding opportunities related to agriculture:
- [Reducing post-harvest waste of fruit and vegetables](#)
- [Tailoring the interactions between pesticide and surfaces to minimize contamination and enhance performance](#)

Deadline: September 30, 2022

On August 30, 11:30 am, Halo and Valent are hosting a webinar to discuss these opportunities. *[Learn more and register >>](#)*

Have questions, ideas, or suggestions for the RCA Update?

Contact Us