NDSU EXPLORE Celebrates Undergraduate Research and Creativity

NDSU EXPLORE, a showcase of undergraduate research and creative activity, was held on April 11, 2019. This year was the fifth for the event, which features NDSU undergraduate oral and poster presentations across a wide array of disciplines.

61 students and 50 mentors representing 56 projects participated in NDSU EXPLORE. Attendees discussed their work in two poster and oral sessions and every NDSU academic college was represented. Awards will be given to the top oral and poster presenters in both the morning and afternoon.
sessions. A total of 24 evaluators provided feedback on the students.

“It was exciting to see the turnout for this year’s EXPLORE,” commented NDSU Vice President for Research and Creative Activity Jane Schuh. “Studies show that students who engage in research early in their academic careers are more successful, innovate more and have better problem solving and communications skills. The students at EXPLORE are truly on their paths to becoming tomorrow’s researchers.”

Scott Meyer, Director of Entrepreneurial Initiatives at NDSU, gave a lunchtime keynote to the students and their mentors. His presentation was entitled “Be weird, be bold, choose yourself” and in it Meyer discussed the nature of innovation and provided examples of individuals finding and celebrating their ideas. He challenged students to embrace what makes each of them unique.

NDSU EXPLORE is an annual event and will be held again in spring 2020. Learn more about NDSU EXPLORE >>
IRB NOTICE: The submission deadline for the May IRB Meeting has been changed. Please submit materials by close of business on Wednesday, April 24th. Materials received after this date will be reviewed at the June meeting.

For questions, contact Kristy Shirley [kristy.shirley@ndsu.edu; 231-8995].

Revised Human Subjects Regulations: Exemption Category 5 – Public Benefit for Service Programs

Find the regulatory criteria [here](#).
Research and demonstration projects that are conducted or supported by a Federal department or agency, or are subject to the approval of a Federal department or agency head and that are designed to study, evaluate, improve or otherwise examine public benefit or services programs.

Key Changes –

- Scope broadened to include research supported by a Federal department or agency (instead of only conducted by such)
- Scope broadened to include research designed to improve, not just evaluate, public benefit or service programs
- Exemption only permitted if the research is listed on a federal website.

When seeking this exemption, must confirm with the federal agency supporting the research that the study is eligible for exemption.

For questions, please contact Kristy Shirley kristy.shirley@ndsu.edu; 231-8995.

EXPORT CONTROL FAQs

Q: When can we lose the Fundamental Research (FRE) exclusion?

A: The Fundamental research exclusion may be void if the university or the principal investigator accepts or agrees to any of the following:

- proprietary research;
• the researcher agrees to a ‘side deal’ allowing the sponsors the ability
to review and approve publications or to control access to the project
or project results;
• foreign national controls or approvals; or
• national security controls.

Please contact the export control administrator
[ndsu.exportcontrols@ndsu.edu / 231-6455] with any questions, or visit the
NDSU export control website.

The Research Integrity Administrators (IACUC, IBC & IRB) will be out
of the office Monday, April 29-Thursday, May 1, 2019 while
attending the Three I’s and Biosecurity professional development
conference. Please plan accordingly.

For questions during this time,
contact Neil Dyer [1-7830, neil.dyer@ndsu.edu]

Significant Financial Interest (SFI) Disclosures for
Grant Submissions

If you are planning to submit a grant proposal April 29-May 2, please ensure
that your Significant Financial Interest (SFI) disclosure is current. This will
avoid delays in the process while the Research Integrity Administrators are
out of the office. SFI disclosures are valid for 12 months. Please contact Julie
Sherwood [231-8908, j.sherwood@ndsu.edu] with any questions.
CONTENTS

FUNDING OPPORTUNITIES

- DOE ARPA-E: AI and Machine Learning in Energy Technology and Design
- DOE: Water Power Technologies Research
- DOE: Wind Energy Research
- Gerber Foundation: Research Awards
- NSF: Computing in Undergraduate Education
- NSF: Fairness in AI in Collaboration with Amazon

EVENTS

- Veterinary & Public Health Implications of Tuberculosis
- IACUC Rodent Training Series
DOE ARPA-E: AI and Machine Learning in Energy and Technology Design

The U.S. Department of Energy (DOE) Advanced Research Projects Agency-Energy (ARPA-E) has announced up to $20 million in funding [DOE-FOA-0002107] to accelerate the incorporation of machine learning and artificial intelligence (AI) into energy technology and product design processes. AI makes it possible for machines to learn from experience, adjust to new inputs and perform like humans. Machine learning is a core part of AI, and it is the study of computer algorithms that improve automatically through experience. Incorporating machine learning into the energy technology and/or product design processes is anticipated to facilitate a rapid transition to lower-carbon-footprint energy sources and systems. The Design Intelligence for Formidable Energy Reduction Engendering Numerous Totally Impactful Advanced Technology Enhancements (DIFFERENTIATE) program
seeks to enhance energy innovation by incorporating artificial intelligence and machine learning into energy technology development. In order to organize the proposed efforts, the program adopts and utilizes a simplified engineering design process framework to identify six general mathematical optimization problems that are common to many engineering design processes. It then conceptualizes several machine learning tools that could help engineers to execute and solve these problems in a manner that dramatically accelerates the pace of energy innovation. The program seeks to develop machine learning tools that:

- Enhance the creativity of the hypothesis generation (i.e., conceptual design) process by helping engineers develop new concepts and by enabling the consideration of a larger and more diverse set of design options during the hypothesis generation phase;
- Enhance the efficiency of the high-fidelity evaluation (i.e., detailed design) process by accelerating the high-fidelity analysis and optimization of the hypothesized solution, and
- Ultimately reduce (ideally eliminate) design iteration by developing the capability to execute “inverse design” processes in which the product design is effectively expressed as an explicit function of the problem statement.

Concept paper deadline: May 20, 2019

DOE: Water Power Technologies Research

Daniel Simmons, Assistant Secretary for the U.S. Department of Energy (DOE) Office of Energy Efficiency and Renewable Energy (EERE), has announced up to $26.1 million in funding to drive innovative industry-led technology solutions to advance the marine and hydrokinetics industry and increase hydropower's ability to serve as a flexible grid resource [DE-FOA-0002080]. The funding will support projects in four areas of interest:

- Hydropower Operational Flexibility,
- Low-Head Hydropower and In-Stream Hydrokinetic Technologies,
- Advancing Wave Energy Device Design, and
- Marine Energy Centers Research Infrastructure Upgrades.

Program goals are to increase affordability of hydropower and marine energy, strengthen U.S. manufacturing competitiveness, and build on Department-wide storage initiatives, which focus on improving the capabilities of technologies to deliver value to the grid. The Water Power Technologies Office (WPTO) enables research, development, and testing of emerging technologies to advance marine energy as well as next generation hydropower and pumped storage systems for a flexible, reliable grid.

*Concept paper deadline: May 13, 2019; Full application deadline: July 9, 2019*

---

**DOE: Wind Energy Research**

The U.S. Department of Energy’s (DOE’s) Wind Energy Technologies Office (WETO) has issued a $28 million multi-topic Funding Opportunity Announcement [DE-FOA-0002071](#) aimed at enabling wind energy nationwide across all sectors: land-based, offshore, and distributed. According to the DOE Press Release, while utility-scale wind energy in the United States has grown to 90 gigawatts, significant opportunities for cost reductions remain, especially in the areas of offshore wind, distributed wind, and tall wind. The funding covers four topics:

1. Wind Innovations for Rural Economic Development (WIRED)
2. U.S. Offshore Wind Test Facilities R&D and Upgrades
3. Project Development for Offshore Wind Demonstrations
4. Tall Towers for U.S. Wind Power

*Concept paper submission deadline: April 29, 2019; Full application submission deadline: June 17, 2019*
Gerber Foundation: Research Awards

The Gerber Foundation is dedicated to enhancing quality of life for infants and young children, with a focus on children under the age of three. Of particular interest to the foundation are projects offering substantial promise of meaningful advances in prevention and treatment of diseases and those with broad and general applicability. Research focus areas identified by the foundation include:

- **Pediatric Health**: Projects that promote health and/or the prevention or treatment of disease. Of particular interest to the foundation are applied research projects focused on reducing the incidence of neonatal and early childhood illnesses, or those aimed at improving the cognitive, social, and emotional aspects of development.
- **Pediatric Nutrition**: Projects that ensure adequate nutrition for infants and young children, including applied research that evaluates the provision of specific nutrients and their related outcomes.
- **Environmental Hazards (nutrient competitors)**: Projects that document the impact of, or ameliorate the effects of, environmental hazards on the growth and development of infants and young children.

The foundation's research program supports:

- new diagnostic tools that may be more rapid, more specific, more sensitive, or less invasive;
- new treatment regimens that are novel, less stressful or painful, more targeted, have fewer side effects, and/or provide optimal dosing;
- preventative measures;
- the assessment of deficiencies or excesses (vitamins, minerals, drugs, etc.); and
- risk assessment tools or measures for environmental hazards, trauma, etc.

Through the program, the foundation supports projects that will result in "new" information, treatments, or tools with the potential to effect a change in practice. The foundation rarely funds projects focused on sharing current information with parents or caregivers.
NSF: Computing in Undergraduate Education (IUSE: CUE)

Increasingly, undergraduate computer science (CS) programs are being called upon to prepare larger and more diverse student populations for careers in both CS and non-CS fields, including careers in scientific and non-scientific disciplines. Many of these students aim to acquire the understanding and competencies needed to learn how to use computation collaboratively across different contexts and challenging problems. However, standard CS course sequences do not always serve these students well. With this solicitation [NSF 19-546], the National Science Foundation (NSF) will support teams of Institutions of Higher Education (IHEs) in re-envisioning the role of computing in interdisciplinary collaboration within their institutions. In addition, NSF will encourage partnering IHEs to use this opportunity to integrate the study of ethics into their curricula, both within core CS courses and across the relevant interdisciplinary application areas. Proposals must comprise a multi-institutional partnership, with a lead IHE and 2-4 additional IHE partners. Proposals that do not meet this requirement will be returned without review. A single IHE may partner on at most two submitted proposals.

Full proposal deadline: May 9, 2019

NSF: Fairness in AI in Collaboration with Amazon (FAI)

The National Science Foundation (NSF) has long supported transformative research in artificial intelligence (AI) and machine learning (ML). The resulting
innovations offer new levels of economic opportunity and growth, safety and security, and health and wellness. At the same time, broad acceptance of large-scale deployments of AI systems relies critically on their trustworthiness which, in turn, depends upon the collective ability to ensure, assess, and ultimately demonstrate the fairness, transparency, explainability, and accountability of such systems. Importantly, the beneficial effects of AI systems should be broadly available across all segments of society. In this solicitation [NSF 19-571], NSF and Amazon are partnering to jointly support computational research focused on fairness in AI, with the goal of contributing to trustworthy AI systems that are readily accepted and deployed to tackle grand challenges facing society. Specific topics of interest include, but are not limited to:

- transparency,
- explainability,
- accountability,
- potential adverse biases and effects,
- mitigation strategies,
- validation of fairness, and
- considerations of inclusivity.

Funded projects will enable broadened acceptance of AI systems, helping the U.S. further capitalize on the potential of AI technologies. Although Amazon provides partial funding for this program, it will not play a role in the selection of proposals for award. Advancing AI is a highly interdisciplinary endeavor drawing on fields such as computer science, information science, engineering, statistics, mathematics, cognitive science, and psychology. As such, NSF and Amazon expect these varied perspectives to be critical for the study of fairness in AI. NSF’s ability to bring together multiple scientific disciplines uniquely positions the agency in this collaboration, while building AI that is fair and unbiased is an important aspect of Amazon’s AI initiatives. This program supports the conduct of fundamental computer science research into theories, techniques, and methodologies that go well beyond today’s capabilities and are motivated by challenges and requirements in real systems.

Letter of intent deadline date: May 10, 2019; Full proposal deadline: June 25, 2019
Veterinary & Public Health Implications of Tuberculosis
Sarah Bailey, DVM, MPH, CPH(p), the North Dakota Assistant State Veterinarian, will be on campus on Wednesday, April 17, 2019, to present a seminar on the veterinary and public health implications of tuberculosis. Mark your calendars and plan to attend:

Wednesday, April 17, 2019
2-4pm
Van Es 101

NDSU IACUC Rodent Training Series
Session 4: Breeding and Genotyping
NDSU's Institutional Animal Care and Use Committee (IACUC) is offering a series of rodent training sessions. The next session's topic will be "Breeding and Genotyping." This session will take place Thursday, April 25, 2019, from 3-4:30pm.

This training is open to faculty, staff, and students. Participants must be able to competently restrain a mouse.

Register for the event today! Space is limited.
The Office of Research and Creative Activity (RCA) sends weekly emails to NDSU faculty and staff to provide current information on various topics including funding opportunities, grant program changes, research resources, deadlines, notices, and training.

You are receiving this notification through the NDSU official employee listserv or sub-list. The official listserv refreshes after each pay period.

North Dakota State University does not discriminate on the basis of age, color, disability, gender expression/identity, genetic information, marital status, national origin, public assistance status, race, religion, sex, sexual orientation, or status as a U.S. veteran. Direct inquiries to: Equal Opportunity Specialist, Old Main 201, 701-231-7708 or Title IX/ADA Coordinator, Old Main 102, 701-231-6409.