

June 3, 2024

NOTE: During the summer, the RCA Update will be delivered only on the first Monday of June, July, and August.

NDSU psychology professor receives NSF grant to study facial pareidolia

Benjamin Balas, North Dakota State University professor of psychology, has received a \$608,176 award from the U.S. National Science Foundation (NSF) to study pareidolia in children in the project entitled, "Tuning of the Visual Perception of Meaning to Natural Image Statistics in Childhood."

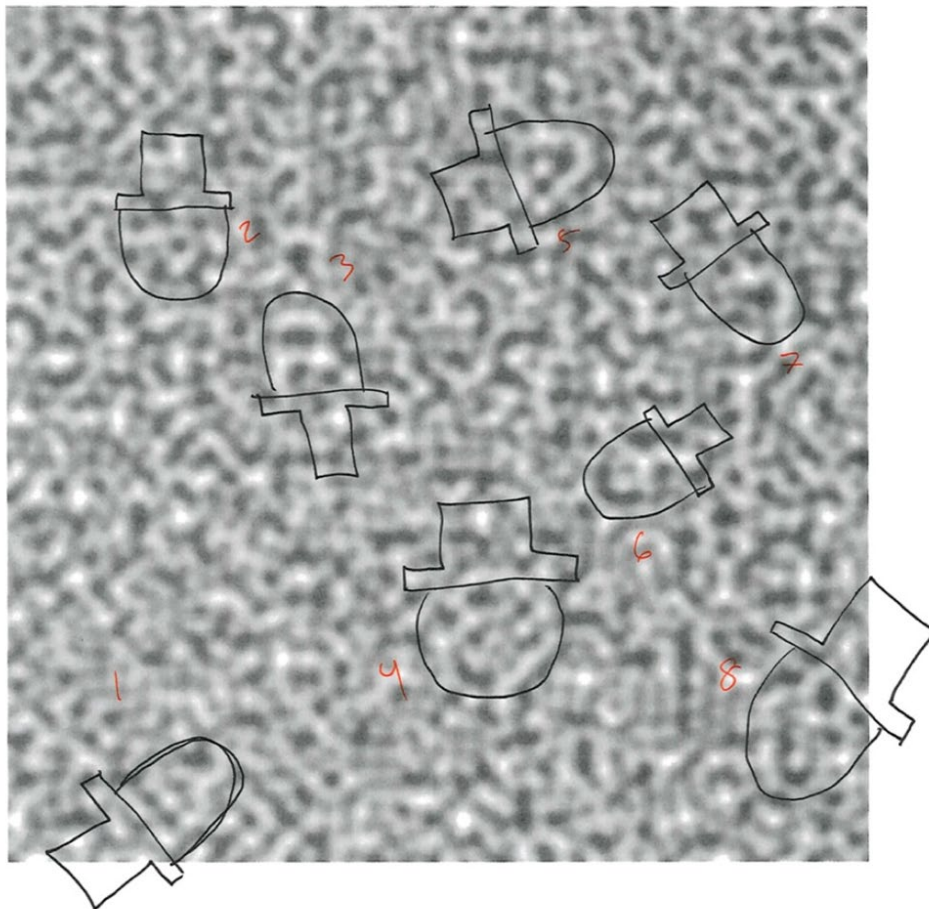
Pareidolia is the tendency of seeing an image, such as a face, on objects where there isn't one. For example, some people may perceive a face in the structures of clouds, or as a pattern on a building's windows, or even on the rocks on the surface of the moon ("the man on the moon").

"Our research is about how and why kids and adults sometimes see patterns (like faces) in textures and scenes. Seeing a face in the clouds depends on what your visual system knows about the way faces look and how it tries to combine information across different parts of a scene," said Balas.



Our vision is finely attuned to the colors and patterns we commonly see in nature. When we look at objects, our brains are most sensitive to patterns that resemble what we see in the real world. But what about when we encounter random patterns, like static on a TV screen? The focus of the three-year study is understanding how our brains make sense of these random patterns, especially when it comes to seeing faces where there are not any.

Circle all the **Hidden Faces** you see in this picture!
Add a top hat so we know which way is up.



An exercise from Balas' study

Balas specifically wants to learn more about how children develop an understanding about the world around them. His project will involve children between 5 and 12 years old and study how they learn to spot faces in noisy scenes. "By studying the conditions that lead people to see faces in noisy patterns, we hope to learn more about the way the visual brain changes in response to experience as kids get older," said Balas.

The project is jointly funded by NSF Developmental Sciences, NSF Perception, Action and Cognition (SBE/BCS), NSF Science of Broadening Participation (SBE), and the Established Program to Stimulate Competitive Research (EPSCoR). Colleen Fitzgerald, NDSU vice president for research and creative activity noted that federal agencies today are interested in projects like this one, especially given NDSU's location in an EPSCoR state. "NSF's support of Dr. Balas's innovative study is an example of the agency's interest in supporting projects that come out of EPSCoR jurisdictions. This is a trend across all NSF directorates that other NDSU researchers could leverage."

Balas was recently involved with another EPSCoR Track 2 collaboration with the University of Nevada Reno and Bates College. The research provided him with important experience that he believes will have an impact on his new project. "During that project I developed experience related to big-data management and in using cutting-edge tools from computer vision to characterize human perception."

Balas's work not only expands our knowledge of cognitive development but also paves the way for innovative approaches to understanding how we interpret and make sense of the world around us.

Award Abstract #[233860](#)

**Members of Air Force Research Laboratory (AFRL) Regional
Network – Midwest visit NDSU**

The NDSU Office of Research and Creative Activity recently hosted representatives from the Air Force Research Laboratory (AFRL) Regional Network – Midwest for a campus visit.



The visit aligns with RCA's efforts to increase innovation and industry partnerships, following a successful visit in October 2023 from the U.S. Army Corps of Engineers (USACE) Engineer Research and Development Center (ERDC) Construction Engineering Research Laboratory (CERL). NDSU leads all North Dakota higher education institutions in DOD funding and research expenditures.

The AFRL Regional Network – Midwest is dedicated to developing next-generation research and technology to support the Air Force mission by providing analysis, development, and testing capabilities that span multiple science and engineering disciplines. From propulsion to communications, materials to sensors, the AFRL's research focus is on advancing mission capability and accelerating technology transitions throughout the life cycle of programs. The Midwest Network works to facilitate partnerships between industry and academia to develop new means to address current and future needs.



Stacy Manni, PhD, director of AFRL Midwest, and Michael Bianco, deputy program manager for the APEX PIA, a program managed under Parallax Advanced Research, discussed how NDSU researchers could integrate with AFRL and navigate the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs.

Representatives from both Elinor Coatings and Packet Digital, two Fargo-based companies with U.S. Department of Defense (DOD) contracts, joined Manni and Bianco in a roundtable discussion with industry partners to increase SBIR and STTR awards in conjunction with AFRL and other DOD partners.

Manni praised the level of research at NDSU and discussed details about the next call for research grants from the agency, saying "It was a pleasure learning about all the impactful research happening at North Dakota State University. The AFRL Regional Network - Midwest values meaningful innovation that advances next-generation research and technology. It's clear that NDSU is already doing its part,

and we look forward to connecting its talented researchers with scientists and engineers across the defense ecosystem."

Cindy Graffeo, NDSU's director of innovation and economic development, was instrumental in organizing the event. She is responsible for aligning campus and regional resources with opportunities to foster and support economic development, startups, entrepreneurship, and innovative efforts and she noted the importance of providing NDSU researchers with connections like Manni and Bianco.

"The AFRL Regional Network – Midwest exists to provide a doorway into research collaborations with the Air Force and it was beneficial to have both groups together throughout the visit," said Graffeo. "RCA will continue to create these types of opportunities that connect NDSU faculty researchers with funding agencies and other groups to leverage our intellectual capital with the needs of the nation."

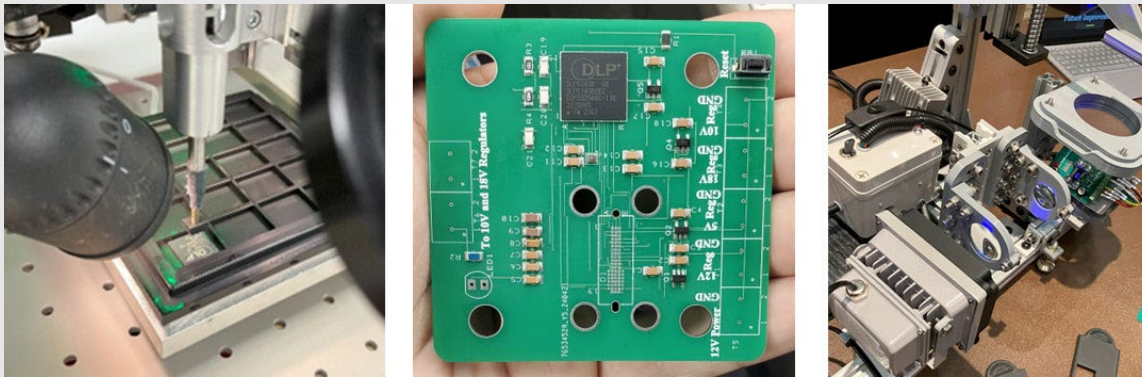
Learn more about the [AFRL Regional Network - Midwest >>](#)

R2 cleanroom labs offer senior design group a venue for producing controller for 3D printer prototype

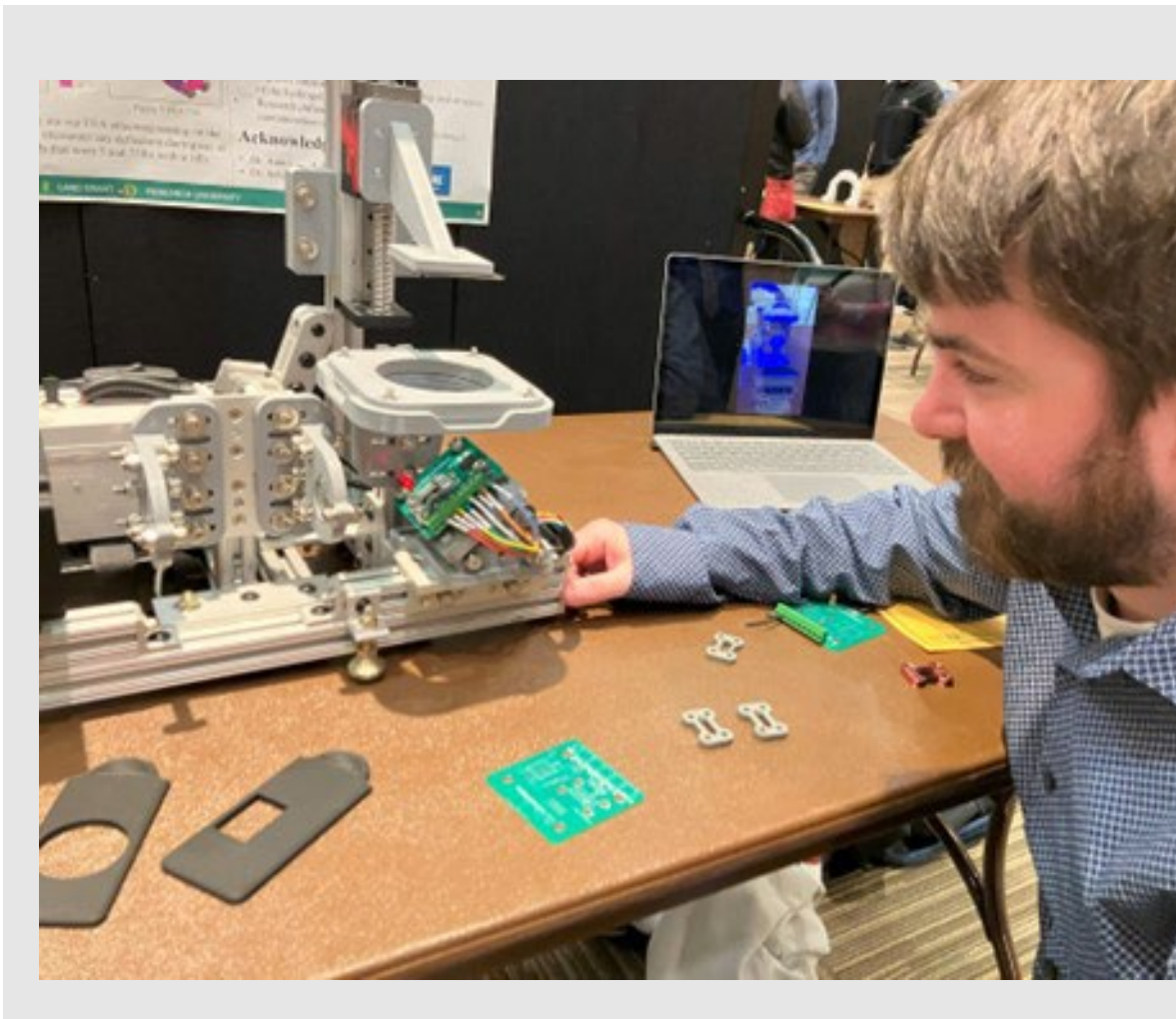
Since its inception in 2003, R2 has had a history of offering its teaching, support, and R&D manufacturing services to groups on campus in addition to internal and external customers.

The facility has been used for Department of Defense (DoD) and Defense Microelectronics Activity (DMEA) projects and Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs along with sponsored research and independent research. The class 100k and 10K cleanrooms provide very high-level specific assembly and fabrication processes not normally found at major universities including photolithography, etching processes, chip scale packaging, and surface mount electronics assembly.

An NDSU senior design group recently utilized these technologies to help create a DLP-based printer which could print micron-sized materials (~500 micrometer) in various shapes and print fidelity. The group used the R2 Class 10k cleanroom electronics assembly tools to create a functioning circuit board with specific components to control a Micromaterials 3D Printer totally designed and fabricated at NDSU.



Terick Frazer, Joseph Wolf, Joseph Rowland, and Nathan Levorson were members of the team and their printer was showcased May 2, 2024 at the NDSU College of Design Senior Design Expo.



Two join RCA

Sean Mahoney and Binu Christopher have recently joined the RCA Research Development team.

Mahoney serves as the research development coordinator, a role in which he works to provide NDSU faculty with resources, training, and assistance in developing successful research programs. He obtained a master's degree in exercise science and nutrition at NDSU and most recently worked as manager of clinical operations and in other roles for AXIS Clinicals. Sean is currently working on his Ph.D. at NDSU, studying how aging and fat levels in muscles impact physical function and strength.

Christopher is a master's student in electrical and computer engineering at NDSU. In addition to working as a teaching and research assistant, she will work as a graduate assistant in the department supporting both Heidi and Sean.



Sean Mahoney



Binu Christopher

Watch BisonSpark Talks 2023 videos

In October 2023, the NDSU Office of Research and Creative Activity held the first-ever BisonSpark Talks. The event's goals included served to spark interest, ideas, and collaborations across our research community.

These 5-minute stories served to highlight some of the amazing research happening in various disciplines at NDSU and in our community. The presentations are all available on demand on the RCA website.

[Watch BisonSpark Talks 2023 videos >>](#)



INTERNAL FUNDING OPPORTUNITIES FROM RCA

Bison Arts and Humanities Fund

The Vice President for Research and Creative Activity has created a program to stimulate new research and creative endeavors in the humanities and the arts: the Bison Arts and Humanities Fund.

The arts and humanities are vital to the human condition, with importance for civic engagement, cross-cultural understanding, and the development of critical and creative thinking skills.

Faculty are encouraged to submit a proposal for up to \$5,000 that can be used for

early-to late-stage humanities or arts projects. Emphasis for funding will be on projects that directly support career progression and projects with strong potential to bring positive national attention to NDSU faculty and/or which can be leveraged for future funding.

[Learn more and apply >>](#)

University Research Collaboration Program (URCP) - ROUND 2

North Dakota State University and the University of North Dakota have issued a joint call for the University Research Collaboration Program which is funded by the Economic Diversification Research Funds (EDRF) appropriated in the 2023 Legislative session. The University Research Collaboration Program has selected a first round of awards of up to \$50,000. The EDRF funds are targeted at stimulating economic activity across the state through innovation of new technology, concepts, and products and promoting job creation and career and wage growth while providing experiential learning opportunities for students. The URCP requires projects to include faculty from UND and NDSU along with faculty or students from a third North Dakota institution. A call next fiscal year is also anticipated for the year two funds.

Deadline: June 5, 2024

[Learn more and apply >>](#)

SBIR/STTR Phase 0 Funding Program

Research and Creative Activity has designed a program to provide financial support for those pursuing federal Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs. Funding for this program will come from Economic Diversification Research Funds (EDRF). Established by the ND Legislature for NDUS institutions, the program's purpose is to:

- Stimulate economic activity across the state through innovation of new technology, concepts, and products;

- Promote job creation and career and wage growth;
- Enhance health care outcomes;
- Address loss of revenue and jobs in communities with economies that depend primarily on the fossil fuel industry; and/or
- Provide experiential learning opportunities for students.

Applications will be accepted on a rolling basis beginning April 23, 2024. Review of submitted proposals began May 15, 2024. The request for applications will be open until funds are fully obligated.

[Learn more and apply >>](#)



The NDSU Foundation Grants Committee is accepting applications for the 2024 Impact Fund Grant Program.

The Impact Fund Grant Program provides funding for projects that make a significant impact on excellence and the educational experience for students at North Dakota State University. This program is supported by annual contributions from alumni and friends of the University.

Applications are accepted from faculty, staff, and recognized student groups. The Impact Fund Grant Program offers grants of \$20,000 to \$75,000.

Find more information on the [NDSU Foundation website](#). Contact Grants Committee Staff Liaison [Janna Swanson](#) with any questions.

The application deadline is **Wednesday, July 24, 2024, by 4:30 p.m.**

[Apply >>](#)

Legacy IBC system to be phased out

In an effort to modernize all IBC protocols and move them to the Novelution system, the Legacy (paper) system is being phased out. Beginning in November, 2023 all Principal Investigators (PIs) at the time of annual update, or anytime a substantive change is requested, have been or will be notified that their protocols will transition to Novelution.

This process will continue through October, 2024. At this time, the transition will be nearly complete as we wait for the review process on the last of the converted protocols. Once the transition is finalized the Legacy system will be retired.



The Foundation for Food & Agriculture Research (FFAR) is seeking panel judges for the Harvest for Health Breakthrough Crop Challenge.

The Harvest for Health Breakthrough Crop Challenge aims to accelerate the development of underutilized crops and to increase the diversity of nutritious foods in the marketplace. While underutilized crops have incredible functional and

nutritional potential, the development of such crops for consumption or use in other products is prohibitively expensive and time-intensive.

To attract more private sector investment in underutilized crop development, Harvest for Health launched the Breakthrough Crop Challenge to develop a predictive model that can screen underutilized crops to determine a crop's usefulness as potential sources of functional and nutritious ingredients that could replace, complement, or aid in reformulating the existing food products or developing new ones.

FFAR will bring together a panel of judges to review the submitted model. This will be a 2-step review process. The panel judges will:

- **Step 1:** Review all submitted RFA submission criteria documentation and recommend up to 10 applicants for the next review process step (Step 2) where applicants will submit their predictive model and all data sets.
- **Step 2.1:** Review the provided predictive model performance report and recommend up to 5 applicants for the experimental validation.
- **Step 2.2:** Review the experimental validation report and make recommendations for the Breakthrough Crop Challenge winner (NB: FFAR and the Advisory Council reserve the right to select the final winner to be awarded).

For questions regarding the Harvest for Health Breakthrough Crop Challenge, please contact [Rebecca Gyawu](#).

[Complete Interest Form >>](#)

Research Development and Grant Writing News

The Research and Creative Activity office holds a subscription to Research Development and Grant Writing News, a monthly newsletter full of helpful tips and information about funding agencies and writing successful grant proposals.



Here are some articles you will find in the May 2024 edition:

- **CHIPS and Science Act in FY2025 Budget Requests –** *The latest information on FY 2025 budget requests for the CHIPS and Science Act.*
- **NIH Common Fund 2025 Budget Request –** *FY 2025 budget requests for the NIH Common Fund.*
- **Understanding Agency-Required Diversity Plans (NIH PEDP and DOE PIER) –** *NIH and DOE's required diversity plans and the guidance they're providing.*
- **EPAs FY 2025 Research Budget Priorities –** *The latest information on FY 2025 budget requests for the EPA.*
- **Tips for Winning an NEH Individual Fellowship –** *NEH's advice for Individual Fellowship applicants.*
- **You Got Funding! Now Think About Supplements –** *Winning an NSF or NIH grant opens the door to more funding in the form of supplements. (reprinted from the April 2021 issue).*

[Access these and more articles](#) (requires NDSU log-in) >>

WE'RE HIRING:

**Director of Animal Resources/Institutional Attending
Veterinarian**

COME WORK WITH US!

The NDSU Office of Research and Creative Activity is hiring

DIRECTOR OF ANIMAL RESOURCES/INSTITUTIONAL ATTENDING VETERINARIAN

Provides oversight and management of the university's animal care and use program and serves as the institutional attending veterinarian.

Learn more: <https://tinyurl.com/NDSUVET>

NDSU RESEARCH AND
CREATIVE ACTIVITY

[Learn more and apply >>](#)

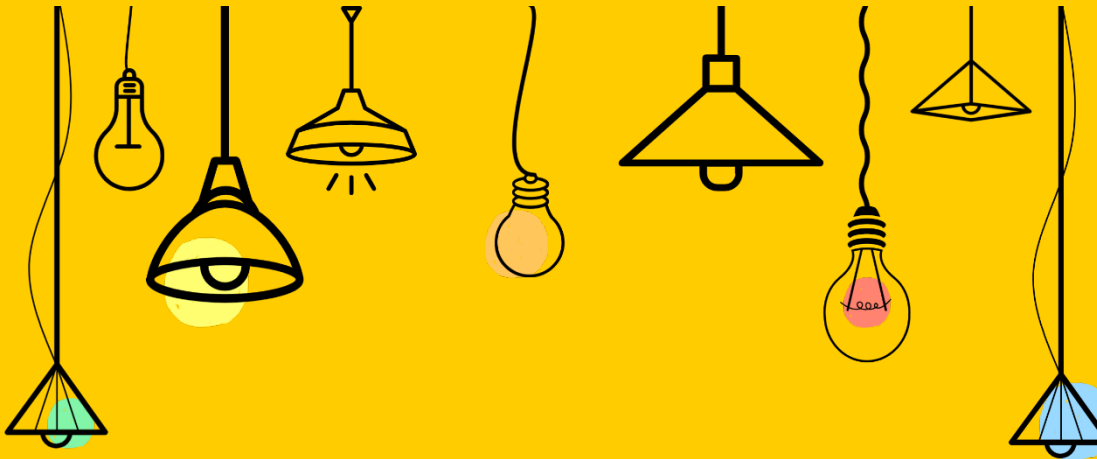


CAREER Proposal Submission Logistics Webinar

June 7, 2024, 2:00 p.m. – 3:30 p.m.

Representatives from NSF's Division of Enterprise Services will hold a technical webinar on system-related information to assist with CAREER proposal submission. This webinar will include a review of the system-related requirements in the CAREER proposal submission timeline guidance.

[Learn more >>](#)



Have a big, bright idea about research at NDSU?

It's important that we continually challenge each other to come up with ambitious, big ideas in our research endeavors at NDSU. So we'd like to hear your ideas, and the bigger they are, the better.

While we can't promise all of them will succeed, we welcome you to share them - from an early concept or thought all the way to developed ideas that may just need some collaboration - send us an email (bigideas@ndsu.edu) and get the process started.

Funding Opportunities



National Institutes
of Health

[NIH Grant Funding](#)



[NSF Grant Funding](#)



[DoD Grant Funding](#)

[ALL RCA INTERNAL FUNDING OPPORTUNITIES >>](#)

Highlighted Funding Opportunities

DCL: Joint NSF and USDA National Institute of Food and Agriculture Funding

Opportunity: Supporting Foundational Research in Robotics (FRR)

The National Science Foundation (NSF), in collaboration with United States Department of Agriculture National Institute of Food and Agriculture (USDA/NIFA), seeks proposals to advance foundational research in agricultural robotics. These proposals should be of mutual interest to the NSF Foundational Research in Robotics (FRR) program and to USDA/NIFA.

[Read full DCL >>](#)

NIH R01: Interventions to Reduce Sleep Health Disparities

Standard deadlines apply, First deadline in October

[Learn more and apply >>](#)

NIH R01: Understanding the Intersection of Social Inequities to Optimize Health and Reduce Health Disparities: The Axes Initiative

Deadline July 5

[Learn more and apply >>](#)

Limited submission programs

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 by **close of business** on the notification deadline date.

Notice of Intent to Compete in Limited Submission Programs:

The following Limited Submission programs are open for “Intent to Compete” notifications. If you are interested in submitting to any of these programs, please send an email to ndsu.researchdev@ndsu.edu by the dates indicated below. If more than two applicants respond we will run an internal pre-proposal phase.

- There are currently no limited submission program opportunities.

Review all available [Limited Submission Programs](#)

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.

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

[Contact Us](#)



The Office of Research and Creative Activity (RCA) sends bi-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.

We collectively acknowledge that we gather at NDSU, a land grant institution, on the traditional lands of the Oceti Sakowin (Dakota, Lakota, Nakoda) and Anishinaabe Peoples in addition to many diverse Indigenous Peoples still connected to these lands. We honor with gratitude Mother Earth and the Indigenous Peoples who have walked with her throughout generations. We will continue to learn how to live in unity with Mother Earth and build strong, mutually beneficial, trusting relationships with Indigenous Peoples of our region.