NDSU OFFICE OF RESEARCH AND CREATIVE ACTIVITY

RCA UPDATE

January 24, 2022

NDSU geosciences researchers add two new state-of-the art analytical instruments

Ben Laabs, PhD

Bernhardt Saini-Eidukat, PhD

Scott Wood, PhD

Researchers in the NDSU geosciences department have recently added two new high-tech analytical instruments to their brand new laboratory spaces in Sugihara Hall: an inductively coupled plasma optical emission spectrometer (ICP-OES) and an x-ray fluorescence spectrometer (XRF). These instruments will provide a reliable method of determining the composition of various elements found in water, rock, sediment, and soil samples. They will be important tools for researchers in North Dakota, where water and soil quality research has a significant economic impact on sectors like agriculture.

Funded by a $202k National Science Foundation (NSF) grant, the instruments will support faculty and student research activities at NDSU as well as to faculty and students at the five Tribal Colleges in North Dakota through an outreach program. "This new equipment will allow our faculty to expand their research and allow our students to get hands on experience with cutting edge technology," said associate professor of geology and geography and chair of geosciences Stephanie Day.

The ICP-OES determines the composition of the elements using the combination of plasma and a spectrometer. Plasma, often referred to as the fourth state of matter (along with solids, liquids, and gases), is created when a gas is superheated to the point where its electrons are stripped away from the atoms, resulting in an ionized gas. Samples placed into this extremely hot environment are atomized, releasing a unique spectrum fingerprint which can then be measured by the spectrometer. By studying the results, researchers can determine the exact makeup of the sample.

A complementary tool to the ICP-OES, the XRF measures the unique x-ray fluorescence emitted by various elements contained within a sample. Like the ICP-OES, the XRF provides researchers with a list of the various specific elements within the sample through a non-destructive analytical process.

Ben Laabs, associate professor of geology at NDSU, and Bernhardt Saini-Eidukat and Scott Wood, both professors of geology at NDSU, were the three individuals who submitted the proposal.

Read more >>

Meet NDSU's New Faculty Members

Throughout the year, RCA will be highlighting new faculty in the weekly newsletter. Full profiles are available on the RCA website.

Shuvashis Dey, PhD
Electrical and Computer Engineering

What are your primary research and scholarly interests?
My research interest is mainly focused on the development of low-cost and compact RFID-based sensing systems for various Internet of Things (IoT) applications such as smart farming, retail and supply chain, smart buildings and maintenance management etc. While IoT and RFID technologies remain the main theme, the inter-disciplinary and collaborative approach of my research has resulted in a diversified research direction. The core elements that help develop the RFID based sensing system are the broadband antennas, microwave resonators, characterization of smart materials, and finally, integration of these materials in the passive design to enable physical sensing of tagged objects. Through the investigation of these core elements, my research aims to realize a better-connected world. The other significant direction of my research involves the design and development of phased array and metamaterial-based antenna systems for 5G and satellite IoT communications.

Where are you from and where did you pursue your education?
I am originally from Bangladesh although I grew up in many different parts of the world. I received the Bachelor of Technology (B. Tech) degree in Electronics and Communication Engineering from National Institute of Technology-Durgapur, West Bengal, India in 2007, the M.Sc. degree in Wireless Networks from Queen Mary, University of London, England, United Kingdom in 2009 and the Ph.D. degree in Electrical and Computer Systems Engineering from Monash University, Australia in 2018. I worked at the Auto-ID Labs, Massachusetts Institute of Technology as a

visiting researcher in 2016 and pursued a part of my Ph.D. there. Prior to joining NDSU in Fall 2021, I was a postdoctoral researcher at Monash University, Australia.

What excites you about NDSU?
The most exciting factor for me at NDSU is its immensely welcoming and collaborative research environment. I also admire the opportunity to work on developing technology for precision agriculture, right at the heart of one of the significant agricultural hubs of the United States. Being at NDSU provides me with a fantastic opportunity, as well as great resources and facilities to pursue this research interest which is quite close to my heart.

What motivates you?
Learning about a new innovation, its underlying theory and its application motivate me big time. Research allows me to utilize my intellectual abilities to the fullest while it provides me endless freedom and opportunity to learn and explore the area I have chosen. The researcher in me finds limitless chances to identify the fundamental cause of a yet unknown problem and dig down a solution for it. Alongside that, being able to interact with the students in the classroom fills me with immense joy. I also get a satisfying feeling to find the glow in the eyes of the students when they can grasp a new concept!

 Learn more about Shuvashis >>

Pre- and Post-award Disclosures to Funding Agencies

The National Science Foundation (NSF) and the National Institutes of Health (NIH) have both recently published a resource for researchers applying to their funding programs: tables that detail the information that needs to be disclosed to the funding agency, and when and in which document to disclose. It is recommended that you consult the table for the appropriate agency as you are completing your biographical sketch, current and pending support or other support documents.

- [NSF Pre-award and Post-award Disclosures Relating to the Biographical Sketch and Current and Pending Support](#)
- [NIH Pre-award and Post-award Disclosures Relating to the Biographical Sketch and Other Support](#)

FEATURED RESOURCE

January Issue: Research Development & Grant Writing News

The January 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:

- Applying for a Fulbright Award;
- A timeline for working on your NSF CAREER;
- Editing Proposals for Significance; and
- NSF Center Proposals.

Upcoming Events and Deadlines

- **DOE Virtual Workshop: Mentorship at the Labs Across all Career Levels and Types**
  January 25, 2022 / *Learn more >>*
- **NSF and the Social Sciences / Convergence Research**
  January 27-28, 2022 / *Learn more >>*
- **Webinar: Keys to Competitive NSF S-STEM Proposals**
  January 27, 2022 / *Learn more >>*
- **Deadline: Programmatic Requests**
  January 28, 2022 / *Learn more >>*
- **NSF Webinar: Current and Pending Support**
  January 31, 2022 / *Learn more >>*

- **Agriculture Utilization Research Institute: New Uses Forum**
  March 23-24, 2022 / *Learn more >>*
- **Application Deadline: Summer Institute in Computational Social Science**
  March 25, 2022 / *Learn more >>*
- **Student Research Day**
  April 19, 2022 / *Learn more >>*
- **Workshop: University-Industry Partnerships in the Social Sciences**
  April 20-21, 2022 / *Learn more >>*

FUNDING OPPORTUNITIES

- Agriculture Genome to Phenome Initiative: Seed Grants
- EPA: Drivers and Environmental Impacts of Energy Transitions in Underserved Communities
- National Academy of Medicine: Extending the Human Healthspan
- NEH-Mellon: Fellowships for Digital Publication
- NIH: Exploratory / Developmental Bioengineering Research
- NIH: Instrumentation Grants
- NIH: Research Infrastructure Development for Interdisciplinary Aging Studies
- NSF: AI Research Institutes – **LIMITED**
- NSF: Signals in the Soil
- Russell Sage Foundation: Grants in the Social Sciences

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 AI Research Institutes
  Notification Deadline: 02/02/2022
- NIH: Collaborative Program Grant for Multidisciplinary Teams
  Notification Deadline: 02/02/2022
- NEA: Challenge America
  Notification Deadline: 02/10/2022
- Breast Cancer Alliance: Exceptional Project Grants
  Notification Deadline: 02/15/2022

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.

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.

Agriculture Genome to Phenome Initiative: Seed Grants

A major goal of the Agricultural Genome to Phenome Initiative (AG2PI) is to bring together agricultural scientists from multiple disciplines to work together in addressing shared challenges in genome-to-phenome research and related endeavors. To that end,

they provide a seed grant program to foster first steps towards the development of community solutions to research needs and opportunities, as well as gaps in physical infrastructure and the data management pipeline.

This **third round of the AG2PI seed grant program** aims to fund around twelve (12) awards across three levels of support: Emerging (funds up to $50,000), Enabling (up to $75,000), and Establishing (up to $100,000). Applications will be due by 11:59pm CST on Tuesday, March 8. The anticipated start date for funded projects is June 1, 2022 and each project may be 6-12 months in duration. Further details regarding the request for proposals, application and review process can be found at the [AG2PI website](#).

If you have any questions regarding the mini-conference or seed grants, please direct them to Nicole Scott at nmscott@iastate.edu.

Deadline: March 8, 2022

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EPA: Drivers and Environmental Impacts of Energy Transitions in Underserved Communities

The U.S. Environmental Protection Agency (EPA), as part of its Science to Achieve Results (STAR) program, is seeking applications proposing community-engaged research that will address the drivers and environmental impacts of energy transitions in underserved communities [[EPA-G2022-STAR-F1](#)]. For purposes of this competition and the evaluation of applications, "underserved communities" refers to populations sharing a particular characteristic, as well as geographic communities, that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life, including people of color, low income, rural, tribal, indigenous, and other populations that may be disproportionately impacted by environmental harms and risks. This program also has an opportunity for [early career faculty](#).

Deadline: April 28, 2022

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National Academy of Medicine: Catalyst Award - Extending the Human Healthspan

The [Catalyst Awards](#)—part of the broader [Healthy Longevity Global Competition](#)—reward bold, new, potentially transformative ideas to improve the physical, mental, or social well-being and health of people as they age, in a measurable and equitable way.

The NAM is currently seeking bold, new, and innovative ideas that aim to extend the human healthspan (i.e., the number of years lived in good health), especially approaches that challenge existing paradigms or propose new methodologies or concepts. High-risk ideas that could potentially yield high rewards and, in turn, dramatically change the field of healthy longevity are encouraged.

Ideas may focus on any stage of life, as long as they ultimately promote health as people age.

Applications may also originate from any field or combination of fields (e.g., biology, chemistry, medicine, engineering, behavioral and social sciences, technology, data science, and policy). Examples of topic areas include but are not limited to:

- behavioral health (e.g., social connectedness, engagement, and well-being);
- biology of aging and molecular pathways;
- built environment and urban planning;
- disease prevention, including biomarkers and indicators of disease;
- health care delivery (e.g., technologies simplifying access to care, elder care services);
- housing (e.g., smart-enabled homes, intergenerational housing models);
- physical health (e.g., mobility and functionality);
- policy (e.g., economic, health, and science);
- reproductive longevity and equality; and
- technology (e.g., artificial intelligence; robotics; medical, assistive, and information technology).

Deadline: February 28, 2022

NEH-Mellon: Fellowships for Digital Publication

Through [NEH-Mellon Fellowships for Digital Publication](#), the National Endowment for the Humanities (NEH) and The Andrew W. Mellon Foundation jointly support individual scholars pursuing interpretive research projects that require digital expression and digital publication. To be considered under this opportunity, an applicant's plans for digital publication must be integral to the project's research goals. That is, the project must be conceived as digital because the research topics being addressed and methods applied demand presentation beyond traditional print publication. Competitive submissions embody exceptional research, rigorous analysis, and clearly articulate a project's value to humanities scholars, general audiences, or both.

[Webinar](#) for interested applicants: January 31, 2022 – 12pm

Optional draft deadline: February 28, 2022
Application deadline: April 20, 2022

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NIH: Exploratory / Developmental Bioengineering Research Grants

The purpose of this engineering-oriented funding opportunity announcement (FOA) [[PAR-22-090](#)] is to encourage submissions of exploratory / developmental Bioengineering Research Grant (EBRG) applications to demonstrate feasibility and potential utility of new capabilities or improvements in quality, speed, efficacy, operability, costs, and / or accessibility of solutions to problems in basic biomedical, pre-clinical, or clinical research, clinical care delivery, or accessibility.

Standard deadlines apply; upcoming deadlines: February 16, June 16, and October 16

For a companion opportunity that supports clinical trials, see [PAR-22-091](#)

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NIH: Instrumentation Grants

The National Institutes of Health (NIH) published two funding opportunity announcements for instrumentation grants.

High-End Instrumentation [PAR-22-079]
The High-End Instrumentation (HEI) Grant Program encourages applications from groups of NIH-supported investigators to purchase or upgrade a single item of high-end, specialized, commercially available instruments or integrated systems. The minimum award is $600,001. There is no maximum price limit for the instrument; however, the maximum award is $2,000,000. Instruments supported include, but are not limited to, X-ray diffractometers, high throughput robotic screening systems, mass spectrometers, nuclear magnetic resonance spectrometers, DNA and protein sequencers, biosensors, electron and light microscopes, flow cytometers, and biomedical imagers.

Shared Instrumentation Grant [PAR-22-080]
The Shared Instrument Grant (SIG) Program encourages applications from groups of NIH-supported investigators to purchase or upgrade a single item of high-priced, specialized, commercially available instruments or integrated instrumentation system. The minimum award is $50,000. There is no maximum price limit for the instrument; however, the maximum award is $600,000. Instruments supported include, but are not limited to: X-ray diffractometers, mass spectrometers, nuclear magnetic resonance spectrometers, DNA and protein sequencers, biosensors, electron and light microscopes, flow cytometers, and biomedical imagers.

Note: NDSU is not eligible for the Basic Instrumentation Grant program [PAR-22-081]

Deadline: June 1, 2022

NIH: Research Infrastructure Development for Interdisciplinary Aging Studies (R21/R33 – Clinical Trial Optional)

This Funding Opportunity Announcement (FOA) [PAR-20-070] invites applications that propose to develop novel research infrastructure that will advance the science of aging in specific areas requiring interdisciplinary partnerships or collaborations. This FOA will use the NIH Phased Innovation Award (R21/R33) mechanism to provide up to 2 years of R21 support for initial developmental activities and up to 3 years of R33 support for expanded

activities. Through this award, investigators will develop a sustainable research infrastructure to support projects that address key interdisciplinary aging research questions.

Standard deadlines apply. Upcoming deadlines: February 16, June 16, and October 16, 2022

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NSF: Artificial Intelligence Research Institutes – Limited Submission Program

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.

NSF AIRI : Notify RCA **by 02/2/2022, 5:00pm if you are interested in submitting to this program.**

This program [NSF 22-502] is a joint government effort between the National Science Foundation (NSF), U.S. Department of Agriculture (USDA) National Institute of Food and Agriculture (NIFA), U.S. Department of Education (ED) Institute of Education Sciences (IES), U.S. Department of Homeland Security (DHS) Science & Technology Directorate (S&T), National Institute of Standards and Technology (NIST), Department of Defense (DOD) Office of the Under Secretary of Defense for Research and Engineering (OUSD (R&E)), and IBM Corporation (IBM).

This program solicitation expands upon the nationwide network established by the first 18 AI Research Institutes to pursue transformational advances in a range of economic sectors, and science and engineering fields. In this round, the program invites proposals for institutes that have a principal focus in one of the following themes, detailed in the Program Description:
- Theme 1: Intelligent Agents for Next-Generation Cybersecurity

- Theme 2: Neural and Cognitive Foundations of Artificial Intelligence
- Theme 3: AI for Climate-Smart Agriculture and Forestry
- Theme 4: AI for Decision making
- Theme 5: Trustworthy AI
- Theme 6: AI-Augmented Learning to Expand Education Opportunities and Improve Outcomes

LIMITED SUBMISSION: An organization may submit no more than 2 preliminary proposals to this solicitation as lead institution.

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NSF: Signals in the Soil

The National Science Foundation (NSF), in collaboration with the US Department of Agriculture National Institute of Food and Agriculture (USDA NIFA), encourages convergent research that transforms existing capabilities in understanding dynamic soil processes, including soil formation, through advances in sensor systems and modeling. The Signals in the Soil (SitS) program [NSF 22-550] fosters collaboration among the two partner agencies and the researchers they support by combining resources and funding for the most innovative and high-impact projects that address their respective missions. To make transformative advances in our understanding of soils, multiple disciplines must converge to produce environmentally-benign novel sensing systems with multiple modalities that can adapt to different environments and collect and transmit data for a wide range of biological, chemical, and physical parameters. Effective integration of sensor data will be key for achieving a better understanding of signaling interactions among plants, animals, microbes, the soil matrix, and aqueous and gaseous components. New sensor networks have the potential to inform models in novel ways, to radically change how data is obtained from various natural and managed (both urban and rural) ecosystems, and to better inform the communities that directly rely on soils for sustenance and livelihood.

Deadline: April 14, 2022

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Russell Sage Foundation: Grants in the Social Sciences

The [Russell Sage Foundation](#) (RSF) will accept letters of inquiry (LOIs) under all of its core programs and special initiatives: [Behavioral Science and Decision Making in Context](#); [Future of Work](#); [Immigration and Immigrant Integration](#); [Race, Ethnicity and Immigration](#); [Social, Political, and Economic Inequality](#). In addition, RSF will also accept LOIs relevant to any of its core programs that address at least one of the following issues:

1. [Research on the Covid-19 pandemic and the resulting recession in the U.S.](#) Specifically, research that assesses the social, political, economic, and psychological causes and consequences of the pandemic, especially its effects on marginalized individuals and groups and on trust in government and other institutions. Our priorities do not include analyses of health outcomes or health behaviors. RSF seldom supports studies focused on outcomes such as educational processes or curricular issues, but does prioritize analyses of inequities in educational attainment or student performance.

2. **Research focused on systemic racial inequality and/or the recent mass protests in the U.S**. Specifically, research that investigates the prevalence of racial disparities in policing and criminal justice and their social, political, economic, and psychological causes and consequences; the effects of the current social protest movement and mass mobilization against systemic discrimination; the nature of public attitudes and public policies regarding policing, criminal justice, and social welfare; and the effects of those attitudes in the current political environment.

Deadline: May 4, 2022

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DOE Virtual Workshop
Mentorship at the Labs Across all Career Levels and Types
January 25, 2022 | 12-2pm

The next event in the DOE Laboratories of the Future (LOTF) workshop series will be focused on mentorship at the laboratories as a mechanism for creating successful environments and inclusive cultures across all career levels and types. Panel speakers will address:

- How can the labs encourage a culture of intentional, inclusive, & effective mentorship across all career levels and types?

- What are the best practices, tools, and techniques for lab-based mentors?
- What role can mentorship, including peer-mentorship, across all career levels and types play in creating inclusive environments and combating the effects of isolation?
- What are the best ways to evaluate mentoring outcomes?
- What are the innovative mentorship practices, including virtual mentorship, that can be implemented in a lab-based environment?

Panel Speakers
- Dr. Jennifer Stanford, Center for the Advancement of STEM Teaching and Learning Excellence – Importance of Mentorship in Effective and Inclusive STEM Education
- Dr. Ann Quiroz Gates, University of Texas at El Paso – Developing the Next-Generation Researcher through Inclusive Excellence
- Dr. Jeanita Pritchett, National Institute for Standards and Technology – How to Leverage Mentoring and Coaching to Cultivate an Inclusive Workplace
- Dr. Melissa McDaniels, Center for the Improvement of Mentored Experiences in Research – Building Cultures of Inclusive Mentorship at National Laboratories

Register to attend >>

NSF and the Social Sciences / Convergence Research
January 27-28, 2022

The Office of Research and Creative Activity is hosting Mark S. Hurwitz, PhD, professor of political science at Western Michigan University (WMU) and prior program officer at the National Science Foundation (NSF) to lead several opportunities:

- **Workshop: NSF and the Social Sciences – Writing Proposals for the SBE Directorate:** Thursday, January 27 / 9am-12pm
- **One-on-One Consultations:** Thursday, January 27 / 2-5pm; Friday, January 28 / 8-11am
- **Lunch Session: Convergence Research at NSF:** Friday, January 28 / 12-2pm

Learn more and register >>

Participants are requested to wear masks at these events.

Webinar: Keys to Competitive S-STEM Proposals
January 27, 2022 | 11-11:45am

With the goal of enabling low-income, academically talented students to pursue successful careers in STEM, the S-STEM program provides awards for scholarships in addition to supporting institutions' efforts to adapt, implement, and study evidence-based curricular activities related to recruitment, retention, transfer, student success, academic/career pathways, and graduation in STEM.

This webinar will discuss:
- an overview of the S-STEM program and tracks;
- strategies for competitive proposals and mistakes to avoid; and
- major changes from the updated solicitation.

Presenters:
- Bryan DeBusk — Senior Grants Consultant, *Hanover Research*
- Erin Bangsboll — Senior Content Director, *Hanover Research*

Register to attend >>

Programmatic Requests
Deadline: January 28, 2022

Each year congressional delegations have the opportunity to submit programmatic funding requests for federal research programs. Programmatic requests are designed to add additional funding to federal agencies' budgets with the intent that a competitive funding opportunity will be released in connection with the funding increase.

NDSU's process for submitting requests for consideration is on the RCA website. The deadline for FY2023 submissions to RCA is January 28, 2022.

If anyone has questions about the process or would like to discuss a potential idea, please contact ndsu.researchdev@ndsu.edu.

NSF Webinar: Current and Pending Support
January 31, 2022 | 1-2pm

The first webinar of the 2022 NSF Policy Office Webinar Series will cover NSF's Current and Pending Support policy and frequently asked questions. There is no cost to participate.

Learn more and register >>

Agriculture Utilization Research Institute: New Uses Forum
March 23-24, 2022 | Minneapolis, MN

The Agriculture Utilization Research Institute (AURI) and its partners, Compeer Financial and Georgetown University's Rural Opportunity Initiative, invite you to save the date for the 4th New Uses Forum. The event will be held in Minneapolis on March 23rd - 24th, 2022.

The 2-day forum will feature talented speakers with in-depth knowledge and real-world experience in areas related to entrepreneurship, innovation, development and investment in the food and agriculture sector.

The New Uses Forum will be a hybrid event with in-person and virtual options. Please watch for more information as it becomes available.

Application Deadline
Summer Institute in Computational Social Science
March 25, 2022

The Summer Institutes, available at no cost to participants, bring together graduate students, postdoctoral researchers, and beginning faculty interested in computational social science for one to two weeks of intensive study and collaborative research that

challenges disciplinary boundaries. NDSU is a partner institution for the 2022 institutes, and the NDSU Summer Institute in Computational Social Science will take place June 19-30, 2022.

Learn more and apply >>

STUDENT RESEARCH DAY
Save the Date · APRIL 19, 2022

April 19, 2022

NDSU Student Research Day is a new event involving a collaboration between **NDSU EXPLORE**, **Gamma Sigma Delta**, and the **Graduate Student Council**. We are excited to bring together what once was three separate events into one day of celebrating undergraduate and graduate student research and creative projects.

Please plan to join us on April 19, 2022 in the Memorial Union.
Watch for more information on registration and event details in early 2022.

Workshop: University-Industry Partnerships in the Social Sciences

April 20-21, 2022 | College Park, MD

The **University of Maryland, College Park,** in partnership with UIDP and with support from the National Science Foundation, as well as MITRE, Optimal Solutions Group, SAGE Publishing, the Consortium of Social Science Associations, and the Federation of Associations in Behavioral & Brain Sciences, is **hosting this workshop April 20-21, 2022, at The Hotel at the University of Maryland.** Join experts and leaders from academia, industry, and government to consider how academic-corporate partnerships can advance social, behavioral, and organizational science research to positively impact science and society. This event will complement the virtual workshop held on October 14, 2021 (see recording and materials).

Learn more and register >>

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

Contact Us

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.