



PROPOSAL WRITING SERIES

Hosted by the
Division of Research & Economic Development

Proposal Writing Series Overview



April 5, 2023, UND Supports for Proposal Writing. Presenters: *President Andy Armacost*, Provost and Vice-President for Academic Affairs, *Eric Link*, Vice-President for Research & Economic Development, *John Mihelich*, and *Associate Deans for Research*.

April 12, 2023, Proposal Writing is a Team Sport. Role of the Grand Challenges in collaborative research efforts. Presenters: *UND Grand Challenge Champions*

April 19, 2023, Proof of Concept Development. What problem are you solving? What is your hypothesis? What is your capacity? What is the relevance? Presenters: *Successful Proposal Writers at UND*

April 26, 2023, Budget Development and Using Novelution. Budget Templates will be provided and how to submit in Novelution will be reviewed. Presenters: *Staff in the Division of Research & Economic Development Pre-Award Office (Research & Sponsored Program Development)*.

May 3, 2023, Aligning Funding Sources with Interests. Presenter: *John Mihelich*, Vice President for Research & Economic Development. Participants will have the opportunity to visit with proposal writers with expertise in topic areas including NIH/HHS/Justice/Energy/Humanities/Defense/NSF and to engage in a Q and A with Dr. Mihelich.



UND LEADS – Pillar of Discovery

The breath, combined with the depth embodied by UND's Grand Challenges, is what propels ND toward new horizons.

Grand Challenges



- The Grand Challenges are areas of historical strengths where UND is well-positioned to find interdisciplinary solutions to complex problems with substantial social impact.
- UND has tremendous strength across all our disciplines including in the arts, humanities, pedagogy, and our various professional fields, and we know that complex problems demand interdisciplinary solutions.
- We seek new perspectives and expertise for these Grand Challenges so that we can expand the productivity, participation, and impact of our research.
- By supporting both the breadth and depth of our scholarship, UND will lead the way in developing responsible, sustainable solutions to our grandest challenges.
- **UND LEADS** Strategic Goal: Enhance and deepen UND's Grand Challenge areas which foster and sustain cross-disciplinary teams dedicated to identifying solutions to pressing challenges. Be open to the addition of new Grand Challenges to help meet society's changing needs.

UND's Current Six Grand Challenges

- Computational and Data Science
- National Security and Space
- Human Health
- Energy and Environmental Sustainability
- Rural Health and Communities
- Autonomous Systems
 - <https://und.edu/about/strategic-plan/discovery.html>



Data & Computational Research & National Security and Space

Dr. Ryan Adams

Terry and Diane Severson Endowed Professor of National Security

Associate Dean of National Security

College of Engineering and Mines

Data & Computational Research



- Multidisciplinary research that requires computational resources (Super Computer), knowledge of computational techniques, and domain expertise
- Many challenging problems are best solved using computational techniques (such as machine learning, deep learning, discretization of continuous equations, optimization, data visualization, etc)
- Contributes academic programs of Computer Science, Data Science, Cyber Security, Electrical Engineering, Mathematics, Chemistry, Physics, Atmospheric Science, other Engineering Disciplines, etc.

Data & Computational Research Successes

UND proudly participates in research and outreach with rural and tribal communities. There has been active participation in the Grand Challenge through the College of Engineering and Mines, College of Arts and Sciences, and the John D. Odegard School of Aerospace Sciences

- **UND Computational Research Initiative**
 - 4 TT faculty in Data Science
 - 4 TT faculty in Cyber Security
- **National Security Initiative**
 - Space Research
 - Digital Engineering
- **Research Institute for Autonomous Systems**
 - Computational support for FAA and others

Proposal Writing



- Success REQUIRES multidisciplinary teams (computational expertise, domain expertise, etc)
- It is important to be able to communicate/work with researchers in other fields
- One important skill is to write your section of the proposal in the context of the overall goals of the project
- Proposals are often written in response to a call from a specific agency; the needs of each agency differ
- It is important to be adaptable – to be able to write for more than one audience
- Opportunities:
 - NSF CISE: AI, Quantum Computing, Communication, Smart and Connected Communities
 - AFOSR: DURIP, Intelligence Structures for Morphing High Speed Vehicles, Materials Characterization and Quantum Performance: Correlation and Causation, General BAA, etc.
 - NRO: Director's Innovation Initiative, BAA
 - NASA: ROSES, ND EPSCoR



Human Health

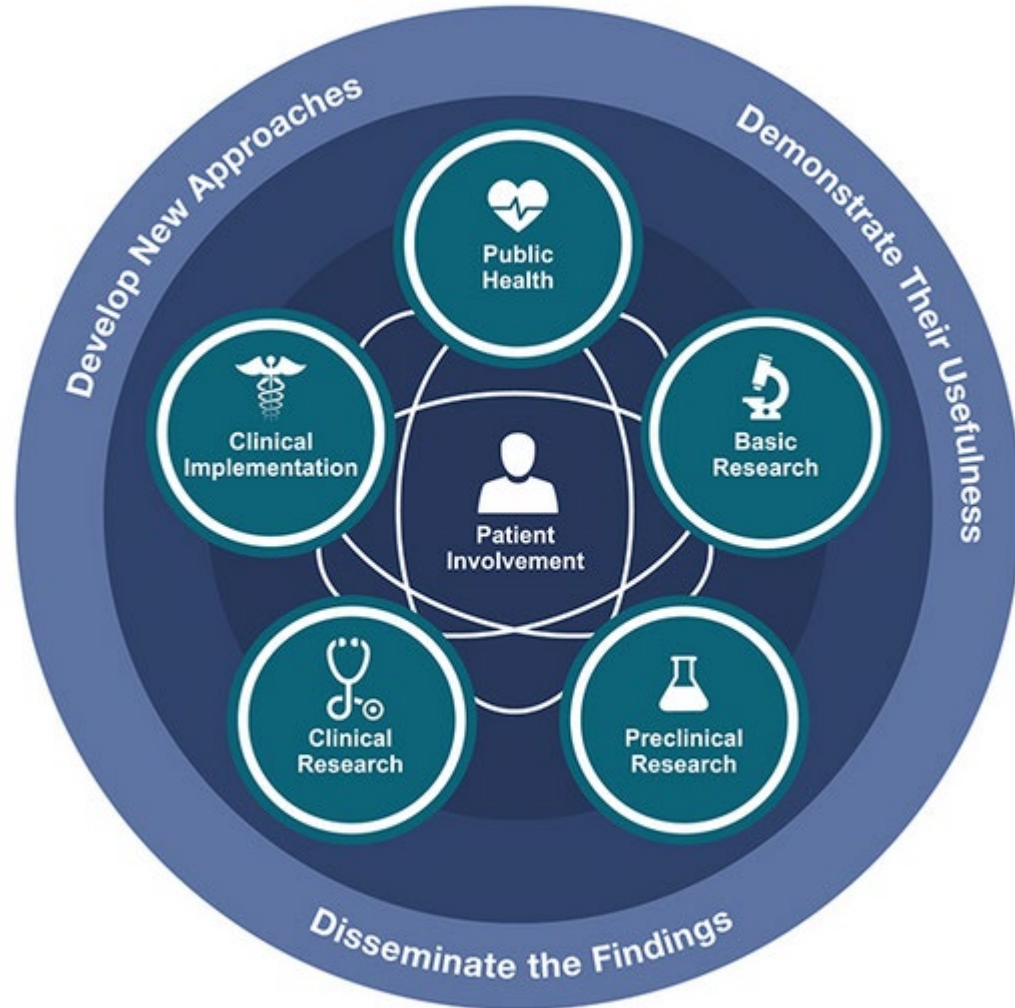
Dr. Colin Combs

Department Chair, Basic Science

Biomedical Services

Chester Fritz Distinguished Professor

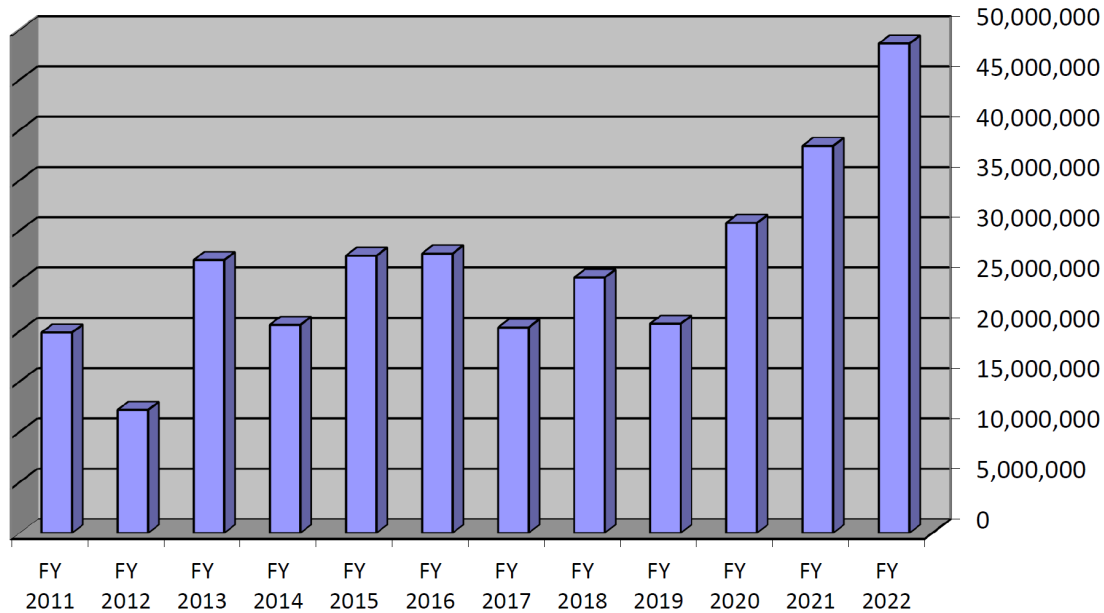
Human Health



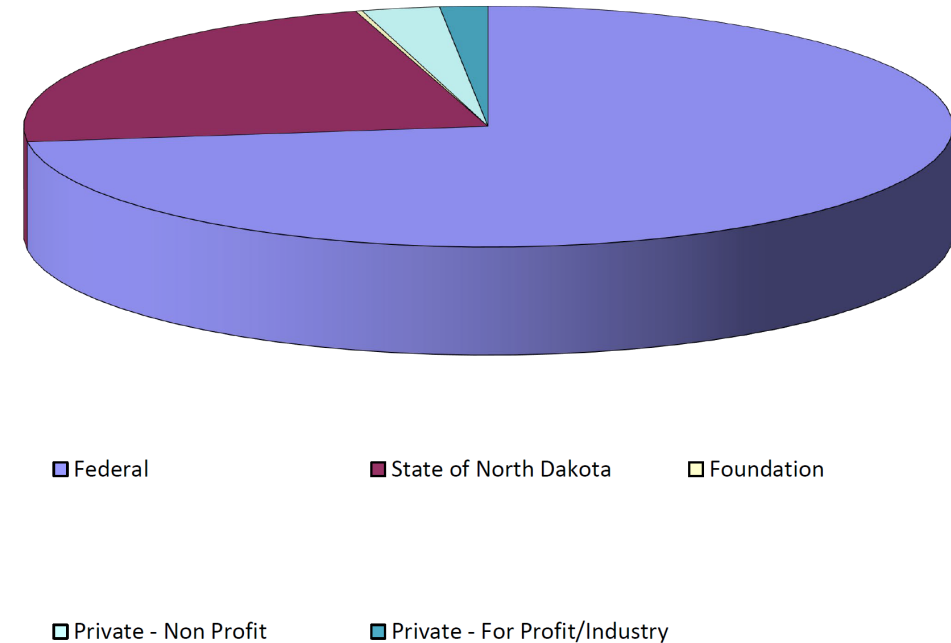
Our goal is to address health challenges through basic, clinical and translational discovery

Successes

Sponsored Project Awards - Trend Analysis



FY 2022 Sponsored Project Awards by Sponsor Type



Basic (Preclinical)

Host-Microbe Interactions (COBRE phase 2)
Epigenetics and Cancer (COBRE phase 2)
Neurosciences (previous COBRE)

Clinical and Translational

Indigenous Health (COBRE phase 1)
Clinical and Translational Science (DaCCoTA CTR)
Clinical Trials (AiCoRN PBRN)

Partnering to Study Human Health

- Human health is much broader than developing/prescribing drugs or running lab tests.
- NIH funds research focused on health/disease, development, career development, environmental contaminants, information dissemination, education, course development, etc.
- Find an opportunity at <https://grants.nih.gov/funding/index.htm>, connect with someone with NIH funding experience, and write a competitive proposal.





Energy & Environmental Sustainability

Dr. Michael Mann

Research Developer, Office of Research and Sponsored Programs

Previously, Associate Dean for Research, College of Engineering and Mines

Energy & Env. Sustainability (EES)

- North Dakota has one of the most extreme and highly variable climates in the world, hosts globally important and rare biomes, and is home to major agriculture, natural resources, and energy industries. The state continues to experience rapid economic and population growth set against the context of climate and other environmental challenges. Through this Grand Challenge, UND promotes the growth of the State's energy economy while sustaining the social and environmental balance.
- EES Grand Challenge area encompasses all disciplines across the UND campus
 - Successful implementation of EES strategies must consider the social, political, behavioral, health, legal, and economic interactions along with the traditional physical, chemical and biological approach to addressing sustainability problems.
 - Methods to ensure stakeholder engagement, communication and education are essential.

Energy & Env. Sustainability Success Stories

- UND researchers are exploring ways to utilize the nation's vast energy resources in a manner that is environmentally sustainable and matches regulatory, political and social expectations, paying particular attention to the inter-relations between energy and food production, water use and ecological integrity.
- <https://blogs.und.edu/und-today/2021/01/und-research-and-north-dakota-energy-and-environmental-sustainability/>
- <https://blogs.und.edu/press-releases/2021/10/oil-drilling-simulator-one-of-the-largest-in-the-world-will-be-dedicated-oct-21-during-und-homecoming/>
- <https://blogs.und.edu/press-releases/2021/12/farmgirl-scientist-travels-world-publishes-book-on-environmental-challenges/>
- <https://blogs.und.edu/press-releases/2022/10/und-geologist-takes-part-in-multinational-climate-change-research/>
- https://search.und.edu/s/redirect?collection=und-search&url=https%3A%2F%2Fundalumni.org%2Fnews-stories%2Fimpact%2Fsusan-ellis-felege.modal.html&auth=i5Wp%2FRNme5SrfFHeQRJeHw&profile=_default&rank=22&query=felege
- <https://blogs.und.edu/und-today/2022/11/carbon-capture-and-storage-from-dream-to-reality/>

Proposal Writing Tips



- Carefully read what the funding agency is looking
- Be willing to stretch out of your comfort zone - apply your skills and knowledge broadly
- Draft a plan / discuss with project office / revise accordingly
- Acknowledge your weaknesses and use as an opportunity for teaming
 - Look both within and outside of UND for potential partners
- Being a Co-PI on proposals is a good way to build your resume, support your research, and learn from a seasoned mentor
- Write with plenty of time to review
- Expect failure – use feedback to improve the next proposal



Rural Health & Communities

Dr. Shawnda Schroeder

Educator Scholar, Assistant Professor

Department of Indigenous Health, UND SMHS

Previously, Associate Director of Research and Evaluation, Center for Rural Health

Rural Health & Communities



- Identify persons at UND with expertise and willingness to collaborate to address unique rural health and social concerns
- Does NOT narrowly focus on traditional physical health; inclusive of any collaborative research or grant making that supports healthy rural communities
- Includes programs, research initiatives, and service and training projects that have significant and positive impacts on individual and community health, which in turn, create a strong, healthy, and vibrant North Dakota

Rural Health & Community Success Stories

UND proudly participates in research and outreach with rural and tribal communities. There has been active participation in the Grand Challenge through the College of Nursing and Professional Disciplines, College of Arts and Sciences, College of Education and Human Development, School of Medicine and Health Sciences, and the School of Law.

- UND Behavioral Health Initiative
- [Mountain Plains Mental Health Technology Transfer Center](#)
- [Drone Medicine Delivery with MHA Nation](#)
- [Indigenous Trauma & Resilience Research Center](#)
- Centers for Disease Control and Prevention: North Dakota School-based Sealant Program
- Behavioral Health Bridge

Proposal Writing

- Many hands make light work
- Cross school, interdisciplinary work makes any proposal stronger
- Develop an outline as specified by the funding agency
- Pull together a strong, interdisciplinary team
- Assign sections of the proposal to various team members
- Set writing deadlines
- Schedule shared writing time on your calendar
- Have one “lead” who can develop a single voice and lead the group

Example

- **Geography:** Write the background and description of service area and unique aspects of serving rural
- **Psychology:** Describe clinical pediatric behavioral health needs in rural areas as well as behavioral health workforce shortages
- **Public health:** Epidemiology and surveillance data, reporting rural pediatric behavioral health trends, suicidality, depression, substance misuse etc.
- **Education:** Write section on how social emotional learning and investment in school-based mental health services (K-8) can improve learning and health in rural communities
- **Collectively:** Propose an implementation study and design methodology for the study



Autonomous Systems

Research Institute for *Autonomous Systems* (RIAS)

Paul Snyder, Associate Professor
Assistant Chair / Director of UAS Operations
Department of Aviation
RIAS Focus Lead for Autonomous Platforms

RIAS Vision



- Be a global leader in uncrewed and autonomous systems research, application, and policy development

RIAS Mission



Create

new autonomous systems

through

multidisciplinary research

and lead development of

world-changing autonomous policies

with the goal of driving a

vibrant, diverse and sustainable economy

consistent with

ethical and legal standards.

Team Building

- Knowing who the team is!
 - Be Curious
 - Begin to connect – What is happening at UND? Who are the people?
- Helping the team win.
 - Be Resilience
 - Proposals will be last minute – will you help and put in the late nights to get it done? Knowing you can likely still 'lose'.
 - Regularly meet to learn/review opportunity;
- Looking for ways to say Yes.
 - Take the initiative
 - When opportunity arrives – start the communication, follow up, pick up the phone.
 - Are you willing to be the PI to move it forward?
- Mentor others
 - Grow the team – utilize your colleague's expertise
- Be Smart
 - Know where the funding agencies want to go / overall objectives
 - Learn from white papers / save your work
 - Develop industry partners



UND Supports for Proposal Writing

UND Associate Deans for Research



Research in College of Arts & Science

Mark Hoffmann, PhD
Associate Dean for Research
College of Arts & Sciences

Broad range of expertise: from Theatre Arts to Physics & Astrophysics

Sciences are strongly connected to Grand Challenges:

- Autonomous Systems (Psychology, Biology, Geography)
- Energy and Environmental Sustainability (Chemistry, Physics, Biology)
- Computational & Data Science (Physics, Math, Communications)
- National Security & Space (Physics & Astrophysics, Math, Psychology, Communications)
- Rural Health & Communities (Psychology, Sociology, Criminal Justice, Forensic Science)
- Human Health (Biology)

It has become appallingly obvious that our technology has exceeded our humanity. - Albert Einstein

A nation that does not support and encourage its theater is - if not dead - dying; just as a theater that does not capture with laughter and tears the social and historical pulse, the drama of its people, the genuine color of the spiritual and natural landscape, has no right to call itself theater; but only a place for amusement. – Federico Garcia Lorca

Resources:

- NMR (high field superconducting)
- Scanning Electron Microscope (SEM)
- Time of Flight Mass Spectrometer
- Gas Chromatography
- Gel Chromatography
- Real Time Polymerase Chain Reaction (PCR)
- Confocal Microscope
- Cryostat
- Nanofactory (ISO-6 clean room; e-beam lithography; cryogenic 6-probe station)
- Martens Observatory (20" telescope)
- Northern Plains Community Clinic (Mental Health; Speech-Language Pathology; Audiology)
- Electroencephalogram (EEG)
- Transcranial Direct Current Stimulation (tDCS)
- *many others*

Funding Opportunities:

- Fine Arts & Humanities Scholarship
- Multi-investigator Seed Grant
- Undergraduate Research / Creative Activity
- VPRED initiatives (equipment, postdoc)
- NSF EPSCoR (core & seed)
- NIH COBRE
- NASA EPSCoR

Proposal/Grant Support:

- ADR Hoffmann (RFP, team building, editing)
- CBO Becky Lucke (large multi-investigator grants)
- Finance & External Award Analyst *TBD* (budgets)
- Hanover Research (proposal development)



NCOPA PROPOSAL WRITING SUPPORT

Chih Ming Tan

Associate Dean for Research

Nistler College of Business and Public Administration

Institute of Policy & Business Analytics (IPBA)

Main platform for advancing NCoBPA's strategic priority of increasing external funding for research.

- Main Activities:
 - Facilitating collaborations & strategic partnerships
 - E.g., “Matching-making” with IPBA Faculty Experts
 - Fund-raising
 - E.g., Alumni funding for strategic or seed projects
 - Strategic Projects & Initiatives
 - External: ND Commerce Dept., City of GF, etc.
 - UND: Center for Innovation, RIAS, EERC, SBDC, etc.
 - IPBA: Pandemic/Vaccine Impact Surveys, Labor Market Surveys, Business “Pulse” Surveys
 - Media Outreach

Executive Director: Dr. Jason Jensen

Research Director: Dr. David Flynn

Contributions (Direct Support)

- Economic/Policy/Business Impact Analysis
 - Regional-, Sectoral-, Firm-, Individual-level
- Methods
 - Econometric Analysis of Data
 - Regression Analyses for different data structures
 - Quantitative Impact/Program Evaluation
 - Input-Output Modeling (IMPLAN)
 - Models sectoral dependencies (regional economy).
 - Surveys
 - Qualitative Approaches
 - Focus groups
 - Case studies

Contributions (Indirect Support)

- For reports/proposals not developed by NCoBPA, we can provide “Referee Reports” (formally or informally) for relevant proposal sections (or whole proposals).
- Critically Review and Evaluate proposals for strengths & weaknesses.
- Offer constructive suggestions, alternative approaches, etc.



Research at CEHD

Rob Stupnisky

Assoc Dean for Research & Faculty Development

College of Education and Human Development



Research Focus Areas



- Student success
- STEM education
- Pre-service teacher training
- Behavioral health
- Diversity, equity, & inclusion
- Sports, athletics, & human performance
- Higher education
- Rural education & economic development
- Education policy & community partnerships
- Sustainable development & outdoor education
- Scholarship of teaching & learning

Research Support



- Grant budget preparation (Kim Keeley)
- Danley Faculty Fellowship & Fischer Professorship
- Research mini-grants
- Summer grant writing
- Research group development funding
- NCFDD Faculty success program
- Research writing groups
- Research Excellence Awards: Early Career, “best scholarly product”, grad student
- Annual professional development funds



Energy & Environmental Research Center (EERC)

EERC Research Topics and Support

UND Proposal Writing Workshop

Chester Fritz Library

April 12, 2023

Scott Ayash

Director of Research Management

CORE RESEARCH PRIORITIES

Coal Utilization & Emissions

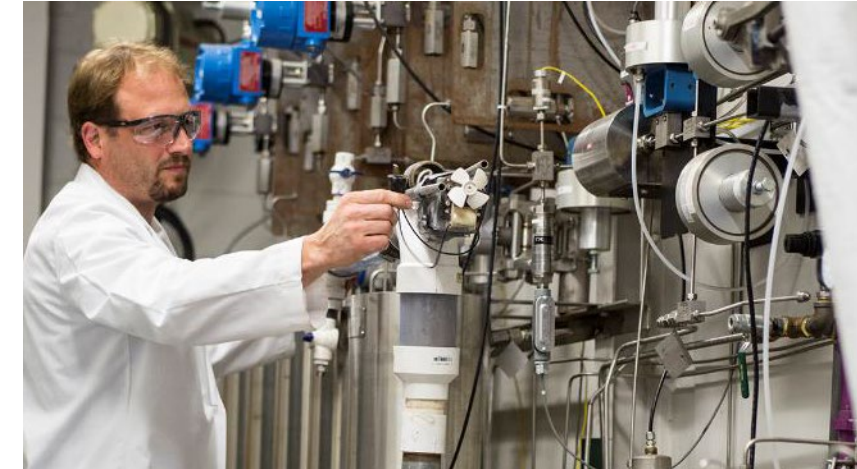
Carbon Management

Oil & Gas

Critical Minerals/Materials

Alternative Fuels & Renewable Energy

Energy-Water





**HIGH-BAY
TECHNOLOGY
DEMONSTRATION**

**FUEL
PROCESSING**

**MOBILE
LABORATORIES**

**WATER USE
MINIMIZATION
TECHNOLOGY**

FUELS OF THE FUTURE

**NATIONAL CENTER
FOR HYDROGEN
TECHNOLOGY**

CHEMICAL STORAGE

LABORATORIES

OFFICES

**IN-HOUSE
FABRICATION SHOP**

**TECHNOLOGY
DEMONSTRATION**

**DISCOVERY HALL
MEETING AREA**

OUR FACILITIES

254,000 SQ. FT. OF FACILITIES

EERC PROPOSAL SUPPORT



Formal Development Process



Budget Preparation and Review



Document Production Services



Research Management Expertise



Scott Ayash
Director of Research Management
sayash@undeerc.org
701.777.5204

**Energy & Environmental
Research Center**
University of North Dakota
15 North 23rd Street, Stop 9018
Grand Forks, ND 58202-9018

www.undeerc.org
701.777.5000 (phone)
701.777.5181 (fax)

A wide-angle photograph of a university campus at sunset. The sun is low on the horizon, casting a warm glow over the scene. In the foreground, there is a large green lawn. In the middle ground, there are several multi-story brick buildings and a parking lot filled with cars. Trees with yellowing leaves are scattered throughout the scene.

THANK YOU

Critical Challenges. Practical Solutions.



CEM Proposal Writing Support

College of Engineering & Mines

Dan Laudal

04/12/2023

Research at CEM - Summary

\$20 Million/yr in Research

- Increase from ~\$10.1 million in FY22
- Supports UND's goal of achieving R1 status
- Would generate over \$4 million in F&A each year and even more in allocations of state appropriations

20:1 Student to Faculty Ratio

- In each department, while growing or maintaining enrollment
- Over 40 more faculty needed
- Supports our student-focused culture
- Allows us to grow our PhD numbers to help UND achieve R1

Research Focus Areas

- Energy & Minerals Innovation Center (EMIC)
- Artificial Intelligence Research Initiative (AIR)
- Center for Cyber Security Research (C2SR)
- Sustainable Infrastructure Research Initiative (SIRI)
- Advanced Materials and Manufacturing Initiative (MMI)
- Transportation Technology Research Institute (TTRI)
- North Dakota Center for Water Research (NDCWR)
- Bioengineering Innovation Center (BIC)
- Sustainable Energy Research Supporting Education (SUNRISE)

CEM Research Resources

Infrastructure

- Advanced Materials Characterization Laboratory
- Environmental Analytical Research Laboratory
- High Bay Laboratories
- High Performance Computing
- Drilling and Completions Laboratory / Research Facility

Internal Opportunities

- Annual CEM Seed Funding Opportunity
- Publication / Travel Support

Proposal / Grant Management Support

- Grant Prep Assistant – Elle West
- Technical Writer / Editor – Anna Crowell
- Purchasing Specialist – Angie Cantera
- Post Award Analysts / Accountants
 - Frederick Gietzen
 - Cindy Bray
- CEM Business Office
 - Anna Leddige, CBO
 - Tonya Parton, Finance Manager
- CEM Research Institute
 - Dan Laudal, Executive Director,
daniel.laudal@und.edu, 701-777-5745

Process Development – in progress

Business Development

- Opportunity Tracking / Forecasting (Pgo/Pwin)
- Story Boarding – Quad Charts & White Papers
- FBO/Grants.gov Search Engines
- Strategic Planning
- Marketing
- Competitive Analysis
- Unsolicited Strategies
- Cost Reduction Initiative Strategies
- Customer Relationship Management
- Contract Vehicle Strategies

Proposal Management

- Win Strategy
- Shredding/Cross Reference Matrix
- Storyboarding
- Tech Volume Writing
- Pink/Red Team Reviews
- Blue Team Review (competitive analysis)
- Q&A Strategies

Project Management

- Schedule creation (Gannt)
- Critical path
- Earned Value / Cost Tracking
- Periodic Reviews / Gates
- IP and Commercialization Strategies



Research at the John D. Odegard School of Aerospace Sciences

David J. Delene, PhD
Aerospace Research Fellow



College Research Focus Areas

- Operations
 - Aircraft, Airport, UAS, Space Environment
 - Newer Focus – Stratosphere, Rockets
- Observations (Atmosphere, Space, Earth)
 - Aircraft, UAS, Satellite, Balloons, Surface, Telescope
- Partnerships
 - Government (NASA, FAA, DOD)
 - Foundation
 - Private Companies
 - Colleges



Research Facilities



- Research projects should focus on the problem to address, background and experience of personnel, and lastly facilities.



College Research Proposal Support

- Proposal Budget Preparation and Support
 - Laurie Baumgartner and Amber Holien
- Computer System Design/Support
 - Neil Nowatzki and John Wold
- College Seed Funding
 - Annual Proposal Calls
- Vetting Proposal Ideas
 - David Delene, Research Fellow
 - Aerospace Research Council
 - FAST (Future Aerospace Strategic Thinking) Presentations





Research at UND Law

Alexandra P.E. Sickler

Archie Unterseher Endowed Professor of Law

UND School of Law



Research Focus Areas

- Energy law & policy
- Artificial intelligence (AI) & privacy
- Technology and intellectual property law
- Indian environmental law
- Indian gaming law
- Farm/small business bankruptcies
- Insurance law
- Professional and ethical responsibilities of lawyers
- Scholarship of teaching and learning

Research Support

- Summer research grants
- Annual professional development funds
- Workshop opportunities
- One-on-one mentoring



Research at SMHS

Colin Combs, PhD

Professor and Chair

Department of Biomedical Sciences

School of Medicine & Health Sciences



Research Focus Areas

- Host-Microbe Interactions
- Epigenetics and Cancer
- Indigenous Health
- Clinical and Translational Science
- Neuroscience
- Rural Health
- Aging

Research Support

- Budget and grant preparation (Susan Holden, Grants Manager, Research Affairs)
- Core Facilities
 - Animal Behavior
 - Genomics
 - Flow Cytometry & Cell Sorting
 - Histology
 - Imaging (includes EM as well as light)
 - Mass Spectrometry
 - Microscopy
 - <https://med.und.edu/research/facilities-cores.html>

Research support: DaCCoTA (NIH CTR Award)

- Grant Writer's Circle
- Biostats and Clinical Trial Design Core (includes on-line training and in person consultation). Large clinical dataset access support
- Community Engagement Core
- Practice-based Research Network (AiCoRN)
- Pilot Grant/Career Development Cores) for clinician-non-clinician team science and mentoring
- <https://med.und.edu/research/daccota/>



Research at CNPD

Dr. Yi-Ping Hsieh

Social Work

College of Nursing and Professional Development



CNPD RESEARCH

COLLABORATION & OPPORTUNITIES

Predicting Financial Well-Being

Tissue Pressures, Oxygenation, and Pain

Indigenous Trauma and Resilience

Native American Nutrition

Health and Wellness Coaching

Perinatal Substance Abuse Disorders

Student Mental Health & Wellbeing

Undergraduate Research Training & Mentoring

Adoption and Foster Parenting

Healthcare Workforce Issues

Behavioral Research with Vulnerable Populations

Geriatric Syndromes Following Surgery

Clinical Simulation Studies

Food Insecurity

For CNPD Investigators' Research Interests, please contact – cordell.fontaine@UND.edu

COLLEGE OF NURSING & PROFESSIONAL DISCIPLINES

SOCIAL WORK | NUTRITION & DIETETICS | NURSING

RESEARCH SUPPORT SERVICES:

- Accounting and Grants Specialist
- Associate Dean for Research
- Statistician
- Clinical Resource & Simulation Center





Q & A

Series Continues: *Proof of Concept*

April 19, 2023, 2:00 to 3:00

- David Flynn
- Crystal Alberts
- Junior Nasah
- Aaron Kennedy
- Susan Felege
- Nuri Oncel

Thank you for your participation. We look forward to seeing you next week.

