ND INBRE PIPELINE CONSTRUCTION

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UND SMHS

ND INBRE Supported By
National Institutes of Health
National Center for Research Resources

MISSION OF THE ND INBRE

- To prime and develop the pipeline of the next generation of health professionals through undergraduate research and training experiences.
  - Basic research
  - Clinical/Translation research
  - Behavioral research
  - Big data research
  - All areas of medical practice
- To provide research infrastructure to support the research enterprise.
  - Multiuser core facilities

HOW INBRE DEVELOPS THE PIPELINE PRIMARY UNDERGRADUATE INSTITUTIONS

- ND INBRE supports full academic year research programs at the four state-supported primary undergraduate institutions (PUIs).
  - Minot State, Dickinson State, Valley City State and Mayville State Universities.
  - Experience crucial for career choice.
- Since 2004, ND INBRE has provided well over 1 million federal dollars in undergraduate student powered research at each of the above institutions.
- From 2009 to 2015 over 309 undergraduates have performed INBRE-supported research at the above PUIs.
  - Measured as over 150 hours of dedicated time.

Measuring Success One Student at a Time

- In 2004–2005 Mr. Joshua Steffan performed undergraduate research at Dickinson State University.
- Dickinson State University, B.S.
- Louisiana State University Health Sciences Center, Ph.D.
- Supporting a Role for the GTPase Rab7 in Prostate Cancer Progression, PLoS One. 2014; 9(2): e87882.
- 2014: Assistant Professor of Biology at Dickinson State University
  - INBRE now supports his undergraduate research at DSU
- Over 60% of students go on to post-bachelor's education.

HOW INBRE DEVELOPS THE PIPELINE UND AND THE SMHS

- ND INBRE supports a 10-week summer undergraduate research program for
  - UND undergraduates.
  - ND Tribal College students.
  - ND community college students.
- ND INBRE and SMHS support approximately $750,000/summer.
  - Includes estimated salary support.
- Highly structured program in gene regulation.
- 2009–2015: 349 students (majority UND).

Measuring Success One Student at a Time

- 2008–2009: Ms. Bethany Davis, UND Undergraduate Research.
  - Turtle Mountain Community College.
  - 2011 -2012 B.S. from UND.
  - 2012 – Present, Graduate Student, UND SMHS.
- Will be the first Native American Ph.D. from the Biomedical Sciences at the SMHS since 2001 and most likely much earlier.
- 2008–2009: Ms. Andrea Slusser, Summer UND Undergraduate
  - 2014: Ph.D. UND SMHS Department of Biomedical Sciences.
  - 2015: Postdoctoral Fellow, UND SMHS Department of Pathology.
- Supervised the 2016 UND Summer Undergraduate Research Program.

HOW INBRE DEVELOPS THE PIPELINE
ND Tribal Colleges

- Before 2014, the majority of TC students attended the summer program at UND SMHS.
- September 2014: Awarded the Native American Research Centers for Health from the Indian Health Services and NIH IDeA Program.
  - 4 Years, approximately $600,000 per year.
- Provides academic year undergraduate research at 4 of the 5 ND Tribal Colleges.
  - $105,000 plus per year/TC.
  - Over 50% earmarked for student employment.
- In 2015: 38 undergraduates participated in research at the TCs.

ND INBRE Annual Undergraduate Research Symposium

- In October of each year at Alerus Center.
- Attended by all ND INBRE participants.
- All are invited to attend.
- Highlight is student poster presentations of research.
- Approximately 800 posters have been presented by ND undergraduates, graduates and postdoctoral fellows since 2009.
- Approximately 100 peer-reviewed scientific publications.
- New Research Avenues.

Core Research Infrastructure

- Available for all of ND.
  - Flow Cytometry ($400,000, $100,000).
  - Behavioral Science ($400,000, $100,000).
  - Bioinformatics and Medical Informatics ($150,000, $150,000).
  - Metal Analysis ($390,000, $130,000).
- Used for cutting-edge research and research training.

FUTURE

- Continue to be “ND First.”
- Leverage ND INBRE success to include K–12.
  - Federal Funding
- Provide laboratory experience necessary for advanced placement in biology and chemistry.
  - Travel support for students to UND SMHS or ND INBRE to the Frontier Counties, Crowd funding.
- Enhance the ND State Science Fair.
  - Currently provide registration, but clearly not enough.
  - Looking for answers to stimulate K–12 STEM.

ND INBRE
THANKS YOU!