University of Nebraska Medical Center

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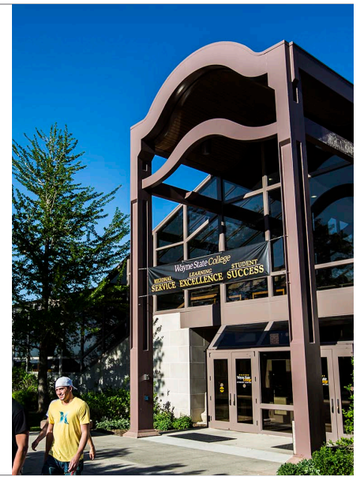
Wayne State College has been the educational and cultural anchor of northeast Nebraska for more than 100 years. Wayne State offers more than 90 undergraduate degrees and four graduate programs and is one of the 12 participating institutions in the Nebraska INBRE program.



in this issue

The INBRE program is funded by the National Institute of General Medical Sciences. NIGMS is part of the National Institutes of Health, U.S. Department of Health and Human Services.

UNMC announces Richard Holland Future Scientist Award winners

Six undergraduate students from four Nebraska colleges and universities recently received the 2012 Richard Holland Future Scientist Award from the Nebraska Coalition for Lifesaving Cures.

The students received cash prizes totaling $2,700 at the annual INBRE (Institutional Development Award (IDeA) Networks of Biomedical Research Excellence Program) conference on Aug. 8 in Grand Island.

The awards are named in honor of Richard Holland, an Omaha philanthropist and longtime supporter of research.

The students were judged in two categories representing oral and poster presentations of the research work they conducted this summer as part of the INBRE program.

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New INBRE faculty associate flourishes at UNK

How do ticks that carry Lyme disease not end up getting Lyme disease?

It's an interesting question and one that Travis Bourret, Ph.D., a professor of biology at the University of Nebraska at Kearney and new faculty associate in the INBRE program, wants to understand.

In order to feed, ticks produce large amounts of nitric oxide, which humans also produce to dilate blood vessels.

The human body also uses nitric oxide to fight bacterial infections. Yet, for some reason when the tick is flooded with nitric oxide during feeding, the bacteria that cause Lyme disease survive this assault.

Dr. Bourret studied this phenomenon during his post-doc training at Rocky Mountain Labs in western Montana. When his training neared the end the Cedar Rapids, Neb., native wondered about coming back to his home state to do research and teach.

Then he heard about a job at UNK that combined research, teaching and public health. He was struck with what he encountered when he interviewed for the position.

"I was impressed to see how well-equipped Bruner Hall of Science was and realized that if I took the position I would be able to do the type of research and teaching that I wanted to do," Dr. Bourret said.

The opportunity to join the INBRE program helped seal the deal.

"It was a big draw for me," Dr. Bourret said. "I got the startup funds I needed to equip my lab and be ready to accept students."

And that's exactly what Dr. Bourret has done since joining UNK on June 1. Today he supervises an INBRE scholar in his lab, teaches public health courses on global public health and molecular biology and continues his research on those innovative ticks that carry Lyme disease.

INBRE INROADS

A newsletter of Nebraska's Institutional Development Awards (IDeA) Networks of Biomedical Research Excellence (INBRE)

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INROADS participating institutions 2012

Creighton University College of Arts and Science; College of Saint Mary's, Doane College; Little Priest Tribal College; Nebraska Wesleyan University; the University of Nebraska at Kearney; the University of Nebraska at Omaha; the University of Nebraska-Lincoln; Wayne State College; Chadron State College; Western Nebraska Community College.

unmc.edu/inbre

From the director

This issue of INROADS highlights one of the critical components of the INBRE Project here in Nebraska, that of faculty development.

We all recognize the important contribution that our INBRE Scholars make to the success of our program, but not as much attention is paid to the faculty on our campuses who make undergraduate research so successful.

Travis Bourret, a new faculty member recently recruited to UNK, comments about the positive impact INBRE had on his decision to accept the position there. We welcome him into the program and look forward to the expertise he brings.

Over the course of our project, INBRE has been a contributor in terms of start-up funding and support for a research environment on several of our campuses. As Kim Carlson points out, we can be a component for growth and change for higher education in Nebraska.

The progress we are making along these lines is especially important at Little Priest Tribal College and I am pleased to welcome Janyce Woodward as a new faculty member at LPTC.

We have a great opportunity to develop a research project that has meaning and relevance to the community that is served by LPTC, a project that involves students in the scientific process in such a way as to develop important skills in critical thinking and applying the scientific method to solve important problems.

Of course I would be remiss if I did not congratulate our Richard Holland Future Scientist Award winners and express our sincere thank you to the Nebraska Coalition for Life Saving Cures for supporting these awards. Their support represents a tangible effort to recognize promising students as they embark on their careers within the scientific community and it is very much appreciated by all of us associated with INBRE.

Scientist award cont...

The INBRE program is overseen by James Turpen, Ph.D., professor of genetics, cell biology and anatomy at the University of Nebraska Medical Center. Dr. Turpen is the principal investigator of the $17.2 million National Institutes of Health grant that funds the program.

Established in 2001, the INBRE Scholars program was created to expose students to serious biomedical research and build a statewide biomedical research infrastructure between undergraduate and graduate institutions.

The students, referred to as INBRE scholars, enter the program after completing their sophomore year of college upon recommendation of their college professors.

Each undergraduate school nominates approximately three students a year for the program. Once in the program, the students are given two-year scholarships worth $11,000. The scholarship provides students with $2,500 during each of their next two undergraduate years and $3,000 during each of the two summers they are in the program.

The award winners are listed below.

Oral

1st place – Lana Zholudeva – Creighton University

2nd place – Sean West – University of Nebraska at Omaha

3rd place – Kate Weskamp – Nebraska Wesleyan University

Poster

1st place – Kristine Ward – Creighton University

2nd place – Andrew Cannon – Nebraska Wesleyan University

3rd place – Rachel Coburn – University of Nebraska-Lincoln

Hoping to improve tribal corn crops

Blue, purple, red and white corn was once harvested in bushels by the Winnebago Indians.

Not today.

For some reason the corn no longer grows well. It's a puzzle Janyce Woodard would like to figure out.

Woodard teaches environmental science at Little Priest Tribal College on the Winnebago Indian Reservation in northeastern Nebraska and is a new faculty associate with the INBRE program.

"My hope is to come up with some reasons why the native corn crop isn't doing well and make recommendations to the community on how to have a better crop," Woodard said.

To do so, Woodard and two students are developing a research project around the issue. Once they have identified the problems they want to work on they will begin looking for collaborators.

Woodard, who holds a bachelor's degree in microbiology, is no stranger to environmental science or horticulture, having taught as an instructor at Western Iowa Tech Community College in Sioux City, Iowa, for the previous 11 years.

But her love of nature extends far into her youth. As a child growing up in Elrama, Pa., Woodard spent countless hours exploring the woods near her home on daily walks with her grandmother.

"I loved being outside in nature and still enjoy gardening and bird watching," she said.

Woodard sees her involvement with the INBRE program as a way to expand her research program, as well as provide her students the opportunity to learn how to work on a project and present their findings to peers.

"It adds another component to the education they receive and goes beyond the lab and lecture," she said.

Her job, she said also provides her a unique opportunity to learn more about the native community and potentially help solve an important problem.

"The corn is such an important part of the daily life here, spiritually as well as nutritionally. I want to be able to contribute to finding answers to bringing the richness of it back in full measure," Woodard said. "And I have a great group of students and supportive community in doing so."

Dr. Janyce Woodard

INBRE scientist's career blossoms

Sharing space.

That's the one thing Kim Carlson, Ph.D., remembers most from her time as a biology major at the University of Nebraska at Kearney.

Geography and biology classes were taught in the same room and if a student needed to do an experiment they had to haul the equipment out of the storage closet.

"Math, biology, geography, all those courses shared classroom space," Dr. Carlson said.

My, how times have changed.

Since joining the faculty in 2003 and becoming a full professor and assistant chair of the department of biology this year, Dr. Carlson has seen the expansion of the science department, the biomedical research program and the building housing Bruner Hall of Science.

"It's an exciting time to be at UNK," she said.

In 2007 the Bruner Hall of Science was remodeled and space opened up. Today, physics, chemistry and biology rule the building's classrooms and laboratories.

It's been an amazing transformation, she said.

Dr. Carlson applauds the university for embracing undergraduate research and the INBRE program for providing funding support.

"We have all these resources, new equipment, gel imagers, a fluorescent microscopy suite and a tissue culture room," she says enthusiastically.

Amid all the growth Dr. Carlson's own career has blossomed, from having just a few students working on a small research project to more than nine working in her own lab.

"My research has evolved over the years and been nurtured and supported by both the university and INBRE program."

Dr. Carlson has been a faculty associate with INBRE since 2003 and her role within the program has grown as well. She is a member of the steering committee and INBRE coordinator for the UNK campus. She discovered that she liked the administrative work and credits this experience for helping her obtain the assistant chairwoman position in the department of biology.

INBRE, Dr. Carlson said, has allowed her to grow her own research program, share that with undergraduate and high school students and collaborate with scientists on related research projects in other countries.

"It's been wonderful for me to be able to expand in all these directions at my alma mater."