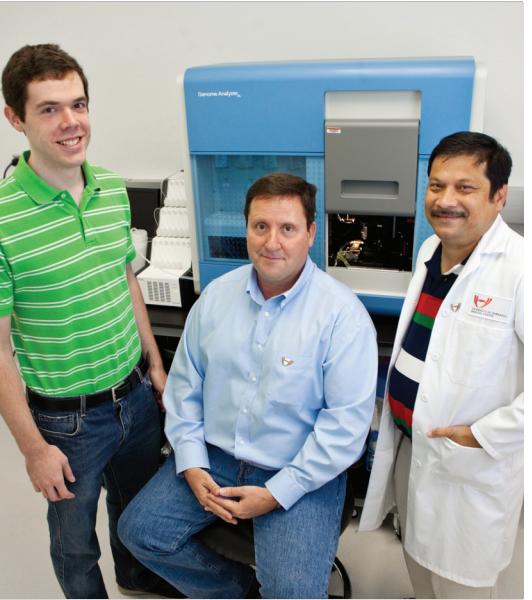


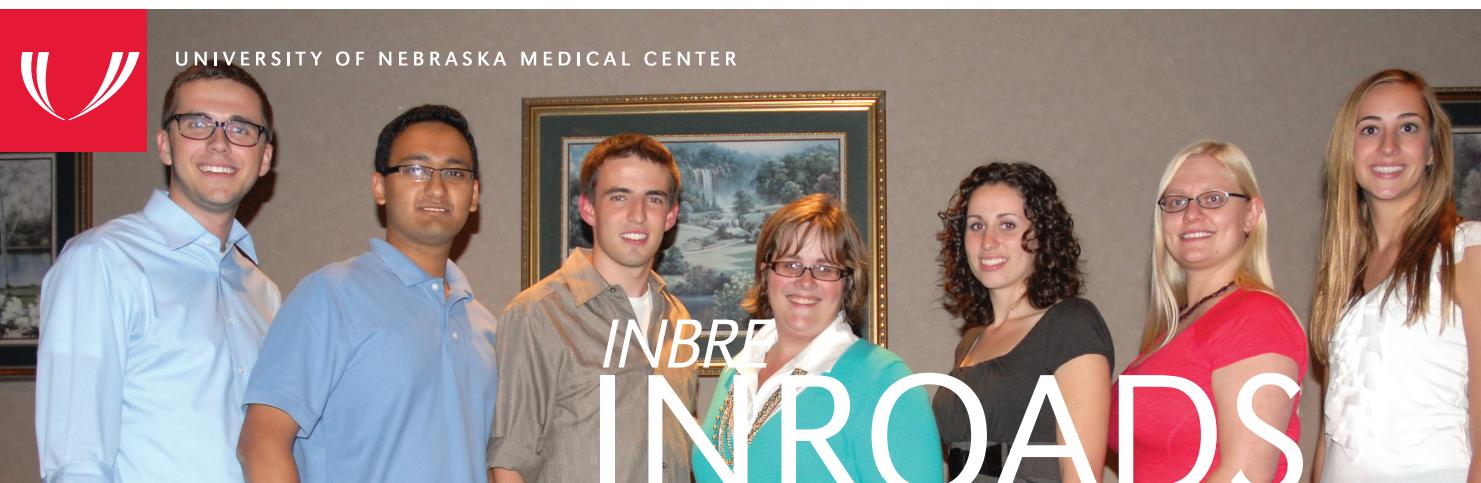
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**"Next generation DNA sequencing (NGS) is a relatively new technology that facilitates the sequencing of very large amounts of DNA quickly and inexpensively. This allows for research that would never have been possible previously, such as the sequencing of whole genomes from a variety of organisms."**— James Eudy, Ph.D., core director.



Former INBRE Scholars,  
Jessica Hutter-Saunders and  
Aspen Workman, Ph.D., gave  
oral presentations on their  
graduate research at the  
annual conference.

# INBRE INROADS



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The INBRE program is funded by the National Center for Research Resources. NCRR is part of the National Institutes of Health, U.S. Department of Health and Human Services.

## INBRE celebrates 10 years of success

For 10 years the Nebraska INBRE program has given undergraduate students the opportunity to shine in the world of biomedical research.

The 46 students who attended the annual conference in August were no exception.

Their research explored everything from how the cleaning behavior of flies can effect bacterial disease transmission to the role of dendritic cells in colitis.

"The caliber of the undergraduate research presented at the Nebraska INBRE conference each year is impressive," said Michael Rea, Ph.D., a biology professor with the University of Houston and member of the INBRE External Advisory Committee.

"The students are polished, well-versed in their area of research and enthusiastic," Dr. Rea said.

That enthusiasm is evident year after year in each new scholar.

After spending ten weeks in a research lab at UNMC, Jerome Prusa, a junior at the University of Nebraska at Omaha, was excited to share what he learned about nano-medicine with his peers.

"I've only read about drug delivery, but this is the first time I was able to work in the field and really see how nano-medicine can impact health care," said Prusa, who worked in the lab of Alexander Kabanov, Ph.D.

"It was a great experience," Prusa said. "I love that I was able to spend the entire summer just concentrating on the research."

That's the goal of the program, said Jim Turpen, Ph.D., principal investigator of the \$17.2 million National Institutes of Health supported INBRE grant that funds the program.

"Providing these kinds of opportunities for these students, watching their enthusiasm for biomedical research grow is exactly what this program is designed to do," Dr. Turpen said.

"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, he said.

The students 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.

At the end of each summer the students participate in the annual conference where they hone their skills in presenting their work orally and on a poster.

"This summer was really a rewarding experience, and the conference is a fun way to share what you've done with your peers and mentors," said Ben White, a senior at the University of Nebraska at Kearney.

## From the director



Once again it is time to welcome our new cohort of INBRE Scholars and congratulate them on their successful completion of the Research Foundations Workshop. Special kudos go to winners of the Richard Holland Future Scientist Award. I would like to thank the Nebraska Coalition for Life Saving Cures for sponsoring this award to honor Mr. Holland. We are very grateful for our association with this coalition and commend them for the great work they are doing to advance science in Nebraska.

As you can see from our stories, we continue to advance our scientific goals on several fronts. It is noteworthy that one of our undergraduate campuses successfully competed at the national level for an award from the National Science Foundation. The installation of a 400 megahertz nuclear magnetic resonance (NMR) spectrometer on one of our campuses is a major accomplishment and opens numerous possibilities to develop the research capacity of our State. Imagine undergraduate

students at a small college in rural Nebraska now have access to sophisticated, cutting-edge instrumentation. The instrument is notable but what is most notable is that a national review panel recognized that the expertise to operate this instrument existed within the faculty at Doane. I share in their confidence that this award will lead to successful outcomes.

Speaking of cutting edge technology, the Next Generation Sequencing Core Facility at UNMC is another indication of how INBRE has been a participant in the development of research infrastructure in Nebraska. Dr. Jim Eudy and the core facilities he oversees have been a part of INBRE from the beginning. Our undergraduate faculty and students have made use of the microarray facility and we now have access to the next generation sequencing facility. This partnership continues to grow and the leveraging of resources from a variety of sources will continue to serve our State well for many years to come.

## NSF grant establishes core facility at Doane

### What can one machine do?

Just ask Erin Wilson, Ph.D., a researcher at Doane College, who recently unwrapped the biggest Christmas present her department has seen in a long time – a 400 megahertz nuclear magnetic resonance (NMR) spectrometer.

Aside from making her research easier, the NMR has the potential to expand or create new scientific collaborations and enrich the research experience of undergraduate students at Doane.

"And it allows us to create a core facility on campus," Dr. Wilson said.

Not bad for a super magnet.

The NMR was purchased with a \$374,000 grant Dr. Wilson received from the National Science Foundation, and in-kind support from Doane.

It has a six foot magnet inside and creates such an incredible amount of magnetic force that it must be housed in its own climate controlled room at plus or minus 1 degree Celsius with anti-static flooring.

The new machine will get plenty of use from people on campus, Dr. Wilson said, and its use will be offered to those researchers at other institutions who participate in the INBRE program.

The interdisciplinary nature of the grant and the INBRE network that Doane is a part of are two reasons cited for the grant award by reviewers, she said.

And there is no doubt that the support of faculty and administrators at Doane also played a critical role in acquiring the new instrumentation.

"Undergraduate research is key to the development of our science students," said John Burney, Ph.D., vice-president for academic affairs at Doane.

So there was no hesitation in supporting the acquisition of the NMR by renovating the room the machine is housed in and buying the supplies needed for it, he said.

"Our students are going to be able to do a much higher level of research than they ever could have done," Dr. Wilson said.

## Six receive Richard Holland Future Scientist award

Six undergraduate students from four Nebraska colleges and universities recently received the 2011 Richard Holland Future Scientist Award from the Nebraska Coalition for Lifesaving Cures.

The students received cash prizes totaling \$2,700 Aug. 10 at the annual INBRE (Institutional Development Award (IDeA) Networks of Biomedical Research Excellence Program) conference 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.

The award winners are listed below.

### Oral

1st place – Zachariah Holmes, Creighton University

2nd place – Michele Stretch, University of Nebraska at Kearney

3rd place – Sasankh BC, University of Nebraska at Omaha

### Poster

1st place – Troy Hubbard, Creighton University

2nd place – Brooke Sullivan, University of Nebraska at Omaha

3rd place – Kelsey Augustin, Wayne State College

## INBRE program opens door to scholar's passion

A doctor.

If you're interested in science, then that's what you're destined to be.

At least that's what Emily Harrison thought.

Then she entered the INBRE program and changed her mind.

"INBRE exposed me to so many different aspects of science, I was really surprised," Harrison said.

No longer did she think that just listing a program like INBRE would simply look good on a medical school application, instead it's become something more.

Harrison's pursuit of knowledge, combined with a passion for research led her through two years as an INBRE Scholar and on to graduate school at the University of Nebraska Medical Center.

An Omaha, Neb., native, she feels fortunate to be able to pursue her passion right in her own backyard. INBRE, Harrison said, gave her the advantage she needed.

At UNMC Harrison is working in the lab of neurodegenerative researcher R. Lee Mosley, Ph.D., an associate professor in pharmacology and experimental neuroscience.

Her interest in neurodegenerative research, in particular Alzheimer's, stems from watching her great grandmother suffer with the disease.

In addition, is her willingness to provide useful insight, as well as her ability to suggest creative changes, within many of the new protocols being developed in the lab, something that is rarely observed in a graduate student that hasn't already received valuable experience in the overall approach to biomedical research, Kuenstling said.

"It seems to me that the INBRE program has provided students like Emily with a unique yet fitting preparation for graduate school, one that gives them a slight edge over others especially during the first few demanding years of graduate school," he said.



Emily Harrison credits the INBRE program for exposing her to the wide variety of science involved in biomedical research.

### INBRE INROADS

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