



INROADS

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

INBRE welcomes its youngest scholar to the program

Crystal Vander Zanden has accomplished more than most youth her age.

The 15-year-old has graduated high school, completed two years of college and is spending her summer participating in the INBRE program.

"I love to problem solve and figure out how things work. When I was younger I was interested in how the human body worked," said Vander Zanden, a junior at Doane College in Crete, Neb.

Vander Zanden, who has been reading since age 3, often spent hours reading a medical encyclopedia when she got bored.

"It fascinated me to read about all the things that are going on inside of our bodies," she said.

Vander Zanden was referred to the program by INBRE faculty associate and Doane College professor, Andrea Holmes, Ph.D.

She is assigned to the lab of Jack Morris, Ph.D., an expert in plant virology at the University of Nebraska-Lincoln.

There she will conduct research to confirm earlier findings that show how a plant's immune system is triggered.

"I hope this experience will help me become more comfortable in a lab environment and make connections with other researchers," Vander Zanden said.



INBRE participant Crystal Vander Zanden studies under Jack Morris, Ph.D., a plant virology expert at UNL.

UNMC welcomes 26 new INBRE Scholars

This year brings an eclectic group of INBRE scholars to UNMC, Creighton University Medical Center and the University of Nebraska-Lincoln to learn about biomedical research.

The mix of students includes one of the youngest ever to enter the program, an expectant mother and a psychology major who would like to be a dentist.

Established in 2001 in Nebraska, the Institutional Development Award Program (IDeA) Networks of Biomedical Research Excellence (INBRE) program, which is overseen by James Turpen, Ph.D., professor of genetics, cell biology and anatomy at UNMC, is funded by a \$17.2 million National Institutes of Health grant.

The 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 and upon the recommendation of their professor.

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 the summers.

Students conduct research on their home campuses during the school year, but during the summer, they have the option of staying on their home campus or going to UNMC, the University of Nebraska-Lincoln or Creighton University to conduct research.

The students' last day in the lab is July 31. On Aug. 3-6 they will give oral and poster presentations of their work at the annual INBRE meeting in Grand Island.

NIH grant to benefit students across Nebraska

The National Institutes of Health recently awarded its largest grant in Nebraska history to a program aimed at producing more scientists in the state.

A significant portion of the grant goes to provide scholarships to the best and brightest students from Chadron to Omaha. Because of this grant, these students will have the opportunity to pursue careers in biomedical research.

The \$17.2 million NIH grant supports the INBRE program at UNMC and is funded through the Institutional Development Award Program (IDeA) Networks of Biomedical Research Excellence (INBRE) and comes from the National Center for Research Resources (NCRR), which is a division of the NIH.

"The goal of the INBRE program is to create a statewide biomedical research infrastructure that provides research opportunities for undergraduate students and serves as a pipeline for those students to continue into graduate research," said Dr. Turpen, principal investigator on the grant and a professor of genetics, cell biology and anatomy at UNMC.

"The INBRE program has been the impetus on this campus for research change. We have had tremendous growth in undergraduate research," said Kim Carlson, Ph.D., associate professor of biology at the University of Nebraska at Kearney.

"The monetary support from the program has allowed us to purchase equipment, create new lab space and buy supplies. Without INBRE we would not have been able to do any of these things," Dr. Carlson said.

"The INBRE program has given me a chance to experience research at the undergraduate level. It has given me opportunities I feel like I would otherwise not have had," said Becky Fusby, a junior

majoring in chemistry at UNK. The students come from nine undergraduate institutions and two community colleges – the University of Nebraska-Lincoln, the University of Nebraska at Omaha, the University of Nebraska at Kearney, Creighton University, Nebraska Wesleyan University, Doane College, Chadron State College, Wayne State College, College of St. Mary, Western Nebraska Community College and Little Priest Tribal College.

"The Nebraska INBRE has created opportunities for students throughout the state to develop interests and skills in biomedical research and health professions," said NCRR Director Barbara Alving, M.D. "The success of this network is evidenced by the fact that 75 percent of its graduates pursue careers in the fields of science."

"The confidence the NIH has in the success of the INBRE program in Nebraska is evident," said Harold M. Maurer, M.D., UNMC chancellor.

"Dr. Turpen's leadership has taken this program to new heights and given the faculty and students a platform on which to build their biomedical research careers," Dr. Maurer said.

"This speaks volumes about our researchers, their talents and the collaborative relationships they have built with the undergraduate institutions in the state," he said.

So far 148 undergraduate students have participated in the program. Of those, 30 percent have gone to graduate school, 30 percent have entered professional school and 15 percent are in the scientific workforce in some capacity.

This is the second time the grant has been renewed since the program was established in 2001. The first renewal was in 2004 for \$16.9 million.

While the students who participate in the INBRE program are provided stipends, funding also helps support several state-of-the-art core facilities, such as the DNA microarray facility at UNMC used by researchers and students around the state, and supports the research of 24

undergraduate faculty.

Sen. Ben Nelson has been a longtime advocate of IDeA and led the effort to increase funding for the program, which supports INBRE. His efforts led to an increase of \$5 million to the IDeA program in fiscal year 2009.

"Dr. Turpen is a national leader in the area of science workforce development, and his having merited the largest NIH grant in Nebraska history is a testament to the value of this outstanding senior scientist. It's an honor for his department, his college and his university to claim Jim as a colleague," said Thomas Rosenquist, Ph.D., vice chancellor for research.

"The success of the INBRE program, and the guidance of Dr. Turpen and UNMC in bringing this program to Nebraska is proving to be an important ingredient in our efforts to strengthen and develop the biotechnology industry in the state," said Richard Baier, director of the Nebraska Department of Economic Development.



The Nebraska INBRE is funded through a grant from the National Center for Research Resources, a division of the National Institutes of Health.

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Participating undergraduate institutions: the University of Nebraska-Lincoln, the University of Nebraska at Omaha, the University of Nebraska at Kearney, Creighton University, College of St. Mary, Nebraska Wesleyan University, Chadron State College, Doane College, Wayne State College, Little Priest Tribal College and Western Nebraska Community College.

www.unmc.edu/inbre

INBRE scholar pursues a higher calling

Alzheimer's crept into Natalie German's life like a thief in the night and robbed her. Not of her memories, but of someone she loved.

Natalie's grandfather, Clarence Nelson, suffered with the disease for five years. It was tough on German and her family to watch him slowly slip away, mentally and physically. "We would visit him every Sunday at the nursing home, but it wasn't the grandpa I remembered," German said.

Watching her grandfather suffer with Alzheimer's gave German the resolve to pursue a career in scientific research. Ideally, the recent college graduate said, she would like to study the mechanisms that precipitate the onset of Alzheimer's and the progression of the disease.

German, who graduated in May from Creighton University, will do just that in the biological and biomedical sciences program at Harvard Medical School. She is one of only 57 students accepted into the program.

INBRE she said gave her the confidence and skills she needed to apply to the program. Mike Wolfe, Ph.D., professor



Natalie German works in the lab of her mentor, Creighton University professor Julie Soukup, Ph.D.

of neurology and an affiliate member of the department of biological chemistry and molecular pharmacology at Harvard agreed.

"The INBRE program not only gave her real world experience, it prepared her for one of the top biological and biomedical sciences Ph.D. programs in the world," Dr. Wolfe said.

"INBRE was the key to helping me get into more biological-related research," German said. "Before that I was doing organic chemistry-related research."

Her experience in the program also gave German the confidence to apply to schools like Harvard, Johns Hopkins and Yale. German worked in the lab of Julie

Soukup, Ph.D., a biochemistry professor at Creighton, doing research in ribonucleic acid (RNA) biology.

Dr. Wolfe said that although German's research in Nebraska was in a different area the two made an instant connection because a new line of investigation in his lab involves the study of the role of RNA in Alzheimer's and other related dementias.

"Natalie struck me as a very enthusiastic, knowledgeable and poised student, who I have every confidence will do very well in our biological and biomedical sciences Ph.D. program at Harvard Medical School," he said.

German's grandfather would be proud.

2009 Honors and Awards

UNMC

Marko Jovic, Ph.D. - (one of the first INBRE scholars who started in 2002), Thomas Jefferson Ingenuity Award for 2009.

University of Nebraska at Kearney

Austin Nuxoll - inducted in UNK's Sigma Xi: the Scientific Research Society/honorary; received an "outstanding" on his poster presentation at the Sigma Xi national meeting.

Becky Fusby - inducted in UNK's Sigma Xi: the Scientific Research Society/honorary (the youngest person ever inducted into the chapter); selected as a UNK Undergraduate Research Fellow for spring 09.

Nebraska Wesleyan University

Richie Nelson - awarded "best oral presentation by a Tri Beta member" at the West Coast Biomedical Science Undergraduate Research Conference at Point Loma Nazarene University.

Creighton University

Meg Marquardt - Physics department outstanding research in physics award.

Natalie German - College of Arts & Sciences senior award (the highest award given by the college); Honors Program Dean's Award, induction into Phi Lambda Upsilon, National Chemistry Honor Society; Creighton University Clare Boothe Luce Scholarship for Women in Science; winner national Barry M. Goldwater Scholarship; American Chemical Society Undergraduate Award in Analytical Chemistry; president Creighton College of Arts and Sciences Student Senate; student representative, Creighton University President's Strategic Planning Task Force; student representative, Creighton University College of Arts & Sciences Dean's advisory group on undergraduate research; American Institute of Chemists Award; department of chemistry distinguished academic achievement award; graduate fellowship to Harvard University.

Timothy Smith - physics department award for outstanding scholarship and research

in physics; induction into Sigma Pi Sigma, National Physics Honor Society.

McKenzie Jarecki - nominee, Barry M. Goldwater Scholarship.

Kelley Wanzeck - Creighton University Research Day, best undergraduate poster - basic sciences category; Creighton University Presidential Mentoring Scholarship; Creighton University Clare Boothe Luce Scholarship for Women in Science; Creighton University nominee, USA TODAY All-USA College Academic Award; nominee, Barry M. Goldwater Scholarship.

Juliane Soukup, Ph.D. - INBRE faculty associate - Creighton University College of Arts & Sciences award for professional excellence in scholarship; nominee, Creighton University Research Award; chosen as a representative from Creighton to be nominated for Carnegie Foundation U.S. Professors of the Year award; grant reviewer, National Institutes of Health SBCA study section.

New grant proves program's success, invites new challenges

I am very pleased that the Nebraska INBRE grant has been renewed for another five years.

The renewal reflects the hard work that has taken place on all of our campuses and the numerous contributions made by the faculty, staff and students over the past five years.

The success of this project is a result of the team effort and the research community we have built over the years and I sincerely want to thank everyone who has been involved.

As we move forward, I believe we will continue to grow and be successful and take advantage of new opportunities as they become available.



James Turpen, Ph.D.

We now have graduated our first Ph.D. student who started with the first cohort of INBRE scholars and several more scholars are nearing completion of their degrees.

We have added new faculty on several of our campuses which broadens the research opportunities available for their undergraduate students.

We have added a new campus, the College of Saint Mary, to our network resulting in the expansion of our INBRE scholars program.

The IDeA Program has awarded a new COBRE, the Nebraska Center for Nanomedicine, and we already have placed two INBRE scholars with scientists in this program.

We are hopeful that we will be able to work with the Nebraska recipient of the NCCR supported Clinical and Translational Science Awardee once funding becomes available.

This initiative will provide opportunities for interested faculty and students to become involved in translational research.

Our scientists also have applied for stimulus funding made available through the American Recovery and Reinvestment Act.

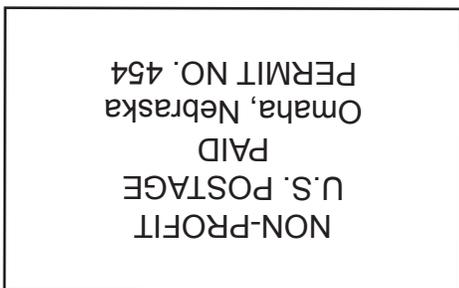
We have received an award to extend our pipeline to the high school level by providing research opportunities to high school teachers and students and we have three additional funding requests pending -- two in work force development and one pilot project.

These initiatives have involved faculty at both our undergraduate and research campuses.

The competitive renewal represents recognition of our successes over the past five years and provides us with new and challenging opportunities.

We must build on our past successes and continue with our forward momentum as we help develop the research capacity for the colleges and universities here in Nebraska.

Congratulations to all of you who have made this program such a success.



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