Former INBRE scholar, Andie Gilkey, reaches for the stars

“I was fortunate to take a year-long course that explores health careers during my senior year of high school. It was from this course that I decided to pursue a degree in biomedical engineering. At the time, I wanted to learn to design devices to improve the quality of life.”

Richard Holland

Future Scientist award winners from left to right: Christine Nguyen, Creighton, third place-oral; Anne James, Creighton, first place-oral; Mike Stewart, UNL, second place-oral and Caty Sargus, UNL, third place-poster. Not pictured: Anya Burkart, Creighton, first place-poster and Reed Stubbsendieck, UNL, second place-poster.

While at the University of Nebraska-Lincoln I became an INBRE Scholar and began doing research in a biomaterials and non-viral gene delivery lab. My project was to design a vehicle for non-viral gene delivery. I found that I learned more about biomaterials and tissue engineering doing research in the lab than I could have ever learned in the classroom alone. Taking part in research such as gene therapy, which can benefit people worldwide, is absolutely essential for me, so that I can play a role in improving the lives of individuals suffering from disease. I have found through my INBRE experience that conducting meaningful research and teaching others about the research is very appealing to me, which is why I decided to pursue graduate studies.

I currently attend the Massachusetts Institute of Technology where I am pursuing graduate studies in aeronautics and astronautics. I work in the man vehicle laboratory and study the interaction between humans and their environment, specifically as it relates to outer space. Patients that have difficulty walking due to movement impairments can directly benefit from biomechanics studies on methods to improve the ability of astronaut crew members to walk in space. This opportunity will allow me to combine my knowledge of biological systems and engineering with my passion for the space program and manned spaceflight.

My desire to help others with medical disorders has not changed since high school. There are many medical disorders people suffer from worldwide, ranging from diseases caused by genetic mutations in the area of gene delivery to movement disorders in the area of biomechanics. Researchers are vital to finding cures to these diseases. Pursuing a Ph.D. can most effectively help me help others both in the research conducted in graduate school and the experience gained in preparation for work in the industry.

Former INBRE scholar Travis Kirchner holds boxes containing vials of frozen cells used for studying the transport of proteins in various diseases. Kirchner worked in the lab of Steve Caplan, Ph.D., associate professor of biochemistry and molecular biology at the University of Nebraska Medical Center. The cells are kept in cold storage at -133 °F.

INBRE Scholar Travis Kirchner holds boxes containing vials of frozen cells used for studying the transport of proteins in various diseases. Kirchner worked in the lab of Steve Caplan, Ph.D., associate professor of biochemistry and molecular biology at the University of Nebraska Medical Center. The cells are kept in cold storage at -133 °F.

INROADS

in this issue

Non-traditional college student mixes dream with scientific research Travis Claybrooks, pictured above, plans to apply his newfound research skills with his dream of opening a whole life wellness center.

Future scientists receive awards at annual INBRE meeting Six students receive monetary awards and recognition from the Nebraska Coalition for Lifesaving Cures.

The INBRE program is funded by the National Center for Research Resources. NCCR is part of the National Institutes of Health, U.S. Department of Health and Human Services.
INBRE scholars plan to incorporate research into whole life wellness center

It would seem that a wellness center and scientific research are at different ends of the spectrum. But not if you’re Travis Claybrooks, who sees a clear link between his dream of opening a whole life wellness center and the research he does as a fellow in the INBRE program.

Claybrooks, a non-traditional student at the University of Nebraska at Kearney, plans to incorporate alternative therapies in his wellness center, like those used by osteopathic physicians. But he wants to know how well those therapies work, and that is where knowing how to do research comes in handy.

“For example, hydrotherapy helps the body do certain things, but there is very little science behind why. I want to document the success or failure of alternative therapies,” said the 38-year-old pre-medicine major. “And Claybrooks gets to spend the next two summers researching at the lab of Julie Shaffer, Ph.D., associate director of the Undergraduate Bioinformatics Program at UNO.

“She’s an excellent mentor,” Claybrooks said. “She’d say, ‘here’s how you do it, now go learn!’ and you know you’re going to mess up, you’re going to fail, but figuring out your mistakes leads to answers.’

Recognizing a problem, figuring out the best approach to answering those key questions and coming up with a solution is a skill that is not just beneficial to science, he said, but to life in general.

And Claybrooks gets to spend the next two years as an INBRE scholar honing that skill. The awards are made on the basis of merit to students who have outstanding potential and intend to pursue careers in mathematics, the natural sciences, or engineering. Based on my discussions with the program director, their participation in INBRE was instrumental in showing their potential and demonstrating their commitment to pursuing careers in research.

Kudus as well, to Julie Shaffer (UNK) on her election as president-elect to the Missouri Valley branch of the American Society of Microbiology and to Dhuindy Bastola (UNO) for his appointment as an associate editor for International Journal of Life Sciences.

Congratulations are in order to all recipients for a job well done. Keep it up!”

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INBRE INNOVATIONS

A newsletter of Nebraska’s Institutional Development Awards (IDeA) Networks of Biomedical Research Excellence (INBREs). The Nebraska INBRE is funded through a grant from the National Center for Research Resources, a part of the National Institutes of Health. The INBRE program is designed to enrich premedical and prehealth students through research opportunities.

From the director

A while back we started a feature that highlighted Honors and Awards that have been received by our students and faculty. A quick glance at this month’s feature shows how successful our program participants have been in this area.

Their accomplishments speak volumes about the quality of the NE-INBRE. Anya Burkart is the fourth INBRE Scholar to receive a Goldwater Scholarship. These Scholarships were authorized by Congress in 1986 to honor Sen. Barry M. Goldwater to pay tribute to his leadership, courage, and vision and to establish in his name an endowed recognition program to foster and encourage excellence in science and mathematics. For more information about this scholarship go to the website: http://www.act.org/goldwater/yb llvm.html

University of Nebraska at Kearney

Kimberly Carlson, Ph.D.
UNK Undergraduate Research Fellow Mentor of Becky Fusby, 2009-2010
UNK Undergraduate Research Fellow Mentor of Jasko Bauer, 2009-2010
UNK Thompson Scholar Mentor of Samantha Mitchell, 2009-2010
Nominated for Pratt Heins Award for Research, 2010
UNK Mentor Board Faculty Recognition Award, Fall 2009
2009 Research Innovation Award from UNMC and UNeMed Corporation
Julie Shaffer, Ph.D.
Missouri Valley Branch of the American Society of Microbiology, president-elect 2009-2010
Dixan Simran, Ph. D.
UNK Undergraduate Research Fellow Mentor of Travis Kirchner, 2009-2010
Becky Fusby, INBRE Scholar Excellent Poster Award - Sigma Xi Annual Research Conference, Houston, Texas, November 2009
Student Talent Development Award, $300, November 2009
Student Talent Development Award, $300, November 2009
2nd Place Poster Award - UNK Evolution Symposium, Kearney, Neb., September 2, 2009
UNK Undergraduate Research Fellow, January 2009-May 2010

Doane College

Kyle Rosnowski, INBRE Scholar
Richard Holland Future Scientist Award for undergraduate students, August 2009. (Presented at the Annual INBRE Meeting)
Dr. David Smith Memorial Research Award, May, 2009
Robert Muckel Bata Beta Beta Award for Excellence in Biological Sciences, October 2009
Garrett Poulson, INBRE Scholar
MO dissertations, 2009. Presented by Doane College to top chemistry student.

University of Nebraska at Omaha

Dhuindy Bastola, Ph.D. Associate editor for International Journal of Life Sciences

Chananjay Nawandar, INBRE Scholar
Top prize for student presenter at the Conference on Biotechnology and Human Development, Vallore, India
Schultz Memorial Collegiate Scholarship, Nebraska Academy of Sciences

Mork Pauley, Ph.D.
Associate director of the Undergraduate Bioinformatics Program at UNO
Keynote speaker at the Biotechnology and Bioinformatics Symposium, Kearney, Neb., September 2, 2009
UNK Undergraduate Research Fellow, January 2009-May 2010

Creighton University

Julie Soukup, Ph.D.
Nominee, Creighton University Research Award
Nominee, Carnegie Foundation U.S. Professors of the Year Award
Grant reviewer, National Institutes of Health Challenge grants

Natalie German, INBRE Scholar
American Chemical Society Undergraduate Award in Analytical Chemistry
American Institute of Chemists Award
Creighton University Dept of Chemistry Distinguished Academic Achievement Award
Kathy Wosniack, INBRE Scholar
Creighton University Clara Boothula Luce Scholarship for Women in Science

Anya Burkart, INBRE Scholar
IADAD Rising Research Internship to study in Germany
Creighton University Clare Boothula Luce Scholarship for Women in Science

C. Bertrand and Marian Othmer Schultz Collegiate Scholarship (NAS) Barry M. Goldwater Scholarship
Schultz Memorial Collegiate Scholarship
Wayne State College

Doug Christensen, Ph.D., Professor of Biology Nebraska State Bank Teaching Excellence Award

HONORS AND AWARDS

Congratulations are in order to all recipients for a job well done. Keep it up!”

Science educators and students enriched through summer research experiences

Eustice-Farnam High School science teacher Dan Widick would like his students to talk to university professors about science. He never imagined that one day a few of them would actually get to work in a research lab.

Thanks to a $600,000 educational supplement through the National Center for Research Resources, his students were able to spend the summer working in the research labs of Kim Carlson, Ph.D., and Julie Shaffer, Ph.D., at the University of Nebraska at Kearney.

The educational supplement, “Recovery Act Funds for Administrative Supplements Providing Summer Research Experiences for Students and Science Educators,” is designed to recruit students and science teachers to spend two summers doing research in INBRE-supported laboratories on undergraduate campuses.

High school senior Ashley Ferrell joined Widick to learn the latest lab techniques about the cleaning habits of diaposita vira (fruit flies).

“Almost everything we did in our project with the flies was a new experience for me,” Ferrell said.

At the end of the summer she and Widick presented their findings in a poster session at the annual INBRE conference in Grand Island, Neb.

“That was one of the best parts of the program, getting to listen and talk to other groups about their research,” Ferrell said.

Ferrill and Widick’s research focused on the flies’ eating habits and how bacteria and disease.

The two exposed the flies to E. coli and hypothesized that through their cleaning habits the flies would digest the bacteria and then deposit it in their droppings. What they discovered was that the flies did not ingest the bacteria but instead somehow cleaned it off and left it in the surrounding environment.

“The experience gave me a refresher course on microbiology, showed me new ways of doing research in the lab and gave me a bigger picture of something new,” Widick said.

“The faculty at UNK is very willing to help and the students get so much out of it. I wish more students could participate in a program like this,” he said.