

NEWSLETTER

DEPARTMENT OF FOOD SCIENCE AND TECHNOLOGY



Baumert and Taylor participate in largest-ever allergen study

The Department of Food Science and Technology is assisting with the largest-ever study of food allergies.

The Integrated Approaches to Food Allergen and Allergy Risk Management study is sponsored by the European Commission and spearheaded by the University of Manchester in Manchester, England. UNL is among 38 research partners and the only partner in the United States. Food Science and Technology scientists Joseph Baumert and Stephen Taylor will lend their well-regarded food allergen expertise to this study, which will have global impact.

“We want to provide allergic consumers with the maximum number of food choices possible while ensuring their safety.”

– Joseph Baumert

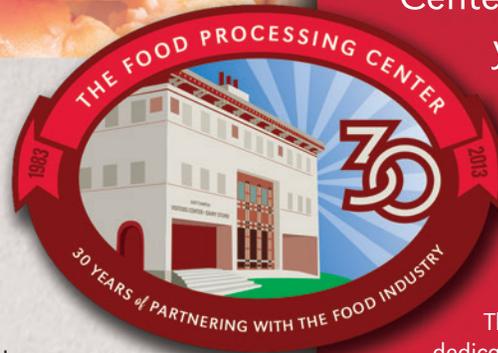
The hope is that regulatory agencies and the food industry will adopt harmonized food allergen thresholds (action levels) around the world. Those thresholds will benefit allergic consumers because food will have clear and transparent packaged food labeling that will inform them of allergenic risk regardless of what country they may visit, Baumert said. “We want to provide allergic consumers with the maximum number of food choices possible while ensuring their safety.”

Many stakeholders are partners in the project. They include the food industry, allergic patient organizations, risk assessors and risk managers, clinicians and academic researchers.

“These partners will work together to develop new risk models and tools that will help the food industry with risk management decisions,” Baumert said. The study also will develop tools designed to enforce these regulations and produce evidence-based knowledge for new health

The Food Processing Center celebrates 30 years of service

For 30 years, The Food Processing Center has provided services that help ensure the food consumers eat is safe and nutritious.



The Center was officially dedicated on July 19, 1983.

Its mission is to advance the value-added food manufacturing industry by partnering on technical and business development from idea through ongoing market support. Initially composed of Food Science faculty with partial appointments, The FPC now has a full-time staff of 15 and provides technical and business support for food companies and institutions worldwide. About half of its clients are from outside Nebraska.

It's rewarding to see how many people have been served, said Rolando A. Flores, director of The Food Processing Center and head of the Department of Food Science and Technology. “Having been a service organization all these years, the important thing is how The FPC has evolved to what it is and also what it will become in the next 10-20 years.”

On June 9, The FPC had a public open house at the Food Industry Complex on the UNL East Campus. Highlights included tours of The FPC facility, interactive displays and free ice cream.

The open house was an opportunity for people to come and see our services, including the Pilot Plants, Flores said. “About half of our clients are from outside Nebraska. We hope to increase activities like this and The FPC's electronic newsletter.”



Greetings from the Department of Food Science and Technology and The Food Processing Center!

Welcome to the spring 2013 issue of our alumni newsletter. We hope you will enjoy reading about the activities, achievements and awards of our faculty, staff and students.

The Food Processing Center's 30th anniversary is on July 19. We had an open house on June 9 to celebrate. [You can read more about this on page 1.](#) 

As part of an effort across IANR to maintain excellence and innovation in agriculture and life sciences, our department will be adding three new faculty members in the coming months. Searches are currently under way for specialists in food allergy risk assessment, food lipid chemistry and functionality, and food safety risk assessment.

This semester, 11 undergraduates received their degrees, and two master's students and three doctoral candidates completed their studies. On April 10, we honored our students for their achievements at our annual awards banquet. [You can find a list of awards our students received this spring on pages 6, 7 and 8.](#) 

Our department will be hosting 20 student interns from the National Institute of Food Technology Entrepreneurship and Management in Sonapat, India. This spring, faculty members Andréia Bianchini and Jayne Stratton also hosted Joselyn Santamaria from Zamorano University in Honduras and Rodrigo Mendoza from Universidad del Valle in Guatemala. Student interns Ashley Andersen and Kristi Block are working in the dairy store.

Our faculty members have engaged in a variety of research and other activities in the last few months. [Read about them on page 5.](#) 

Wanda Bowder, manager of our department's administrative unit, has received the IANR Outstanding Employee Award for the first quarter 2013. She received this award for "going above and beyond job responsibilities." More information can be found here: <http://ianrpeoplenews.unl.edu/bowder-receives-oea>.  Congratulations, Wanda!

Best wishes,

Rolando A. Flores
Head, Department of Food Science and Technology
Director, The Food Processing Center

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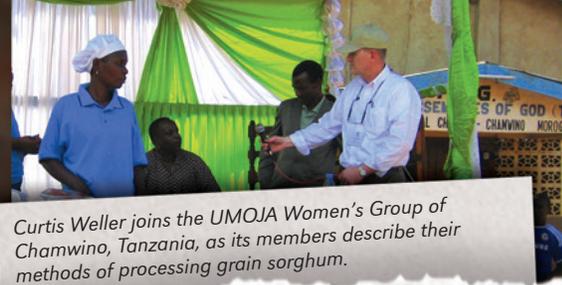
Department Head, Department of
Food Science and Technology, and
Director of The Food Processing Center
Rolando A. Flores

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Why is there SORGHUM in my bread?



Curtis Weller joins the UMOJA Women's Group of Chamwino, Tanzania, as its members describe their methods of processing grain sorghum.



Has sorghum appeared in the ingredient list of your favorite whole-grain bread?

What do you think of when you see the word sorghum? Like many others, you probably think of molasses. Molasses is made from sorghum, but the sorghum used in making the whole-grain bread you like probably is not the same type of sorghum used in making molasses, said Curtis Weller, professor in the Department of Food Science and Technology.

"Grain sorghum is becoming more common as an ingredient in human and pet food and beverages, and has agronomic advantages and health benefits that are just now being recognized," he said.

Grain sorghum is the fifth-leading cereal in worldwide consumption, trailing rice, wheat, maize and barley.

It is the dietary staple of more than 500 million people in more than 30 countries of the semiarid tropics, making it one of the most familiar foods in the world. Sorghum has been described as being in more

alcoholic beverages around the world than any other plant.

Among cereal staples, sorghum is unique because of its hardiness as a crop. Sorghum grows in both temperate and arid climates, is drought-tolerant and resistant to water-logging, and grows in various soil conditions. It is photosynthetically efficient because it is a plant that uses the C4 carbon fixation pathway, is rapidly maturing and may provide more than one harvest per year. Five recognized types or basic races of sorghum are bicolor, guinea, caudatum, kafir and durra. The predominant type grown in the United States originates from kafir.

Recent research at the University of Nebraska-Lincoln by Weller and other collaborators has focused on recovery methods of lipid fractions from grain sorghum kernels and processing by-products. The researchers also

are working to increase the understanding of the effects of the lipid compounds on

cholesterol metabolism and of tannins on starch digestibility. Some work has focused on better understanding the influence of dietary sorghum components on the number and type of gut microorganisms.

Currently, food grade sorghums are being promoted in the United States. If traditional foods and beverages from other parts of the world grow in popularity or certain health benefits are identified, more varieties and colors of sorghum may be sought or reach the marketplace, Weller said. Foods that may be introduced might be similar to

"GRAIN SORGHUM IS BECOMING MORE COMMON AS AN INGREDIENT IN HUMAN AND PET FOOD AND BEVERAGES, AND HAS AGRONOMIC ADVANTAGES AND HEALTH BENEFITS THAT ARE JUST NOW BEING RECOGNIZED."

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The FPC Helps Yasso Frozen Yogurt Reach Success



A lineup of Yasso flavors

Yasso® Frozen Yogurt is a rapidly rising star in the trendy field of Greek yogurt, and The Food Processing Center helped makers of the first-ever frozen Greek Yogurt bar transform their idea into a healthy food product available nationwide. Yasso is manufactured by Apollo Food Group in Boston, Maine, a company founded by longtime friends Amanda Klane and Drew Harrington.

“With the great success of refrigerated Greek yogurt, we wanted to create something similar but in the frozen foods aisle. There was a lack of truly healthy and nutritious novelties so that is the segment we went after,” Klane said. “We wanted to make a portion-controlled product that was high in protein, low in calories, and had little to no fat.”

Klane and Harrington began working with The FPC in March 2010, soon after the company was founded. Klane has a sales background and Harrington has a marketing background, but neither are food scientists so they contacted Laurie Keeler, The FPC senior technical manager.

“Being a startup, we were bootstrapped at the beginning and could not afford some of the larger food science laboratories. We needed a group that would be willing to work with a startup,” Klane said.

Initial work with The Food Processing Center resulted in development of the three original Yasso flavors, strawberry, blueberry and raspberry. The FPC also

provided assistance in nutritional labeling, development of fruit smoothie blends, and custom processing trials.

The FPC often helps companies like Apollo test the functionality of new ingredients, perform flavor trials and address production issues when the company changes or adds new processors, Keeler said. Julie Reiling, The FPC product developer, assists in nutritional

“We are sending them samples of their new flavor ideas almost every week.”

— Laurie Keeler, Senior Technical Manager
at The Food Processing Center

information and ingredient statements. “We are sending them samples of their new flavor ideas almost every week,” Keeler said.

Undergraduate student assistants in The FPC also receive valuable industry experience by working on Yasso projects. “I’ve helped make most of the different flavors and it’s always fun to taste them all,” said freshman Kaitlin Reimer. “By working on these products I’ve learned that there is a lot of trial and error and the product may not turn out exactly how you expected. That doesn’t mean that you can’t roll with the punches and make something even better.”

Klane and Harrington continue to do a lot of work with The FPC. “The results have been great. We currently sell Yasso products nationwide in over 15,000 retail stores. We now have six flavors of Yasso bars and three smoothie flavors,” Klane said. “It has been great to work with The FPC for the past three years to help grow our products and brand.”

RESEARCH

SORGHUM

(continued from page 3) 

traditional foods and beverages from other parts of the world, such as unfermented breads, sorghum-based tortillas, fermented breads, stiff porridges, thin porridges, sorghum-based couscous, boiled whole or pearled kernels, and East Asian snack foods.

“As the future unfolds and global food security is challenged by population growth, limited water resources and climate change, I expect to see more grain sorghum make its way into our diets,” Weller said.

He looks forward to being part of research efforts at the University of Nebraska–Lincoln that will contribute to improved

understanding of grain sorghum’s health benefits and the role it can play in ensuring food security for future generations.

“The appearance of sorghum in the ingredient list on the label of your whole-grain bread is one sign of what may be happening to address health and climate change concerns,” Weller said.

FST Outreach IN INDIA

In India, about 20 percent of grains and 40 to 50 percent of fruits and vegetables spoil after harvest.

One of the ways the government of India is trying to decrease food waste is to build a food processing infrastructure. "Food processing is at a nascent stage in India," said Jeyamkondan Subbiah, a UNL Department of Food Science and Technology faculty member. "The government of India recognized this fact and is currently trying to build a food processing infrastructure and increase the skilled human power in India."

Subbiah's recent primary interaction with Indian institutions has been with the Indian Institute of Crop Processing Technology (IICPT). IICPT, located in Thanjavur in southern India, offers bachelor's, master's and doctoral degrees in food science. The UNL Department of Food Science and Technology has hosted three scientists, one Ph.D. student and two master's degree students from IICPT.

India is one of the countries the University of Nebraska has identified as a key partner for its global engagement activities.

UNL Chancellor Harvey Perlman

signed a memorandum of agreement with IICPT in February 2009, which has led to cooperation such as the 3rd International Conference on Food Technology at IICPT. The conference was attended by UNL Food Science department head Rolando A. Flores, faculty members John Rupnow and Subbiah, and adjunct professor Gordon Smith.

"IICPT is a premier institute. We are building the partnership at an early stage, and we can make a lasting impact," Subbiah said. "Being a global university, UNL has to develop ties with India, which is the second most populous country in the world."

Currently, IICPT is building research labs. "We will develop one-on-one relationships with IICPT faculty on developing research infrastructure, so that we can collaborate on research projects to produce joint publications," Subbiah said. UNL also plans to offer online courses to IICPT graduate students on specialized topics.

Selected Grants

Pioneer Hi-Bred

Richard Goodman

"In Vitro IgE Testing of a Biotech Soybean Event LEPI 2800"

\$225,755 (18 months)

UNL - John C. and Nettie V. David Memorial Trust Fund

Amanda Ramer-Tait, Robert Hutkins

"Impact of Galacto-Oligosaccharide Supplementation on Susceptibility to Enteric Bacterial Pathogens"

\$10,000 (1 year)

Visiting Faculty and Scholars

In the spring semester, Joselyn Santamaria from Zamorano University in Honduras and Rodrigo Mendoza from Universidad del Valle in Guatemala were hosted by faculty members Andréia Bianchini and Jayne Stratton.

Cécile Guillard, an exchange student from the University of Bordeaux in Bordeaux, France, was hosted by Robert Hutkins this spring.

Conferences and Workshops

Food Entrepreneur Program Seminar

August 16, 2013 – Lincoln, NE

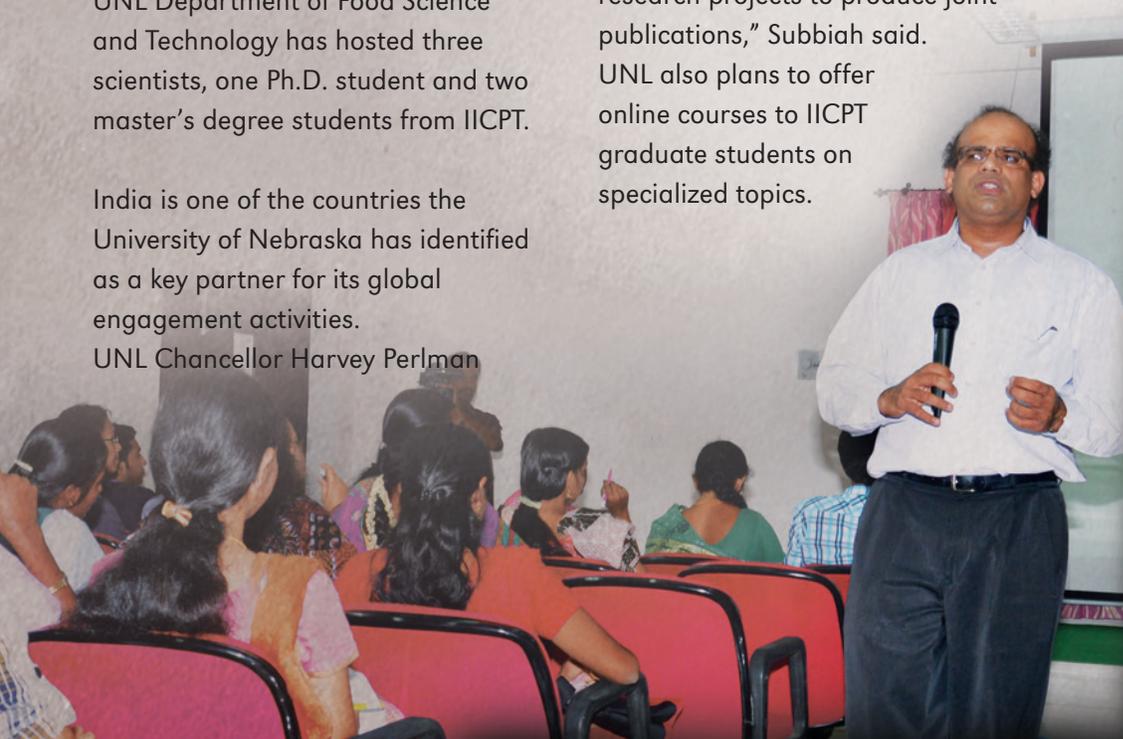
October 26, 2013 – Lincoln, NE

Better Process Control School

October 1-3, 2013 – Lincoln, NE

Extrusion Workshop

October 15-17, 2013 – Lincoln, NE



Jeyamkondan Subbiah gives a presentation at the 3rd International Conference on Food Technology in Thanjavur, India.

Featured Alumni

Lisa Culpepper

Sometimes, mothers — and professors — really do know best.

During Lisa Kapels Culpepper's first visit to the University of Nebraska–Lincoln, she visited the dietetics program with the goal of becoming a registered dietitian. Her mother suggested that since they were on East Campus, they should also stop by the food science department. There she talked with professor John Rupnow.

"I remember Dr. Rupnow saying that people are always going to eat and the need for food scientists is never going to stop," Culpepper said. "After talking with him, I realized that a degree in food science would be the best way to feed the world."

Culpepper, who grew up on a dairy farm near Creston, said the food science program seemed to be the perfect fit, a blend of chemistry, biology and food.

"Becoming a food scientist just clicked with me. It was using your kitchen as a laboratory, and I could become involved in providing safe, healthy food for the world," she said.



Lisa Culpepper

Culpepper received her bachelor's degree in 1989 and her master's degree in 1992 from UNL. While working on her bachelor's degree, Culpepper began working with Professor Steve Taylor. She also assisted Julie Nordlee on various food allergy and intolerances projects.

"I remember the scrombroid fish project that I helped with. It has taken me awhile to be able to eat fish without casting a critical eye to it," Culpepper said, smiling.

Her master's degree research involved working on peanut allergies by trying to identify the proteins that were responsible for the immune response. Taylor was her adviser.

Culpepper is now quality lead for Elanco Animal Health, which makes enzymes for animal feed. Her responsibilities include the food safety/HACCP plans, the quality management system as well as management of the laboratory.

Throughout my career, I have been involved in investigating and implementing solutions to various food safety issues that arise in the food processing industry," Culpepper said. "The changing landscape of federal regulations and consumer food safety concerns has created many opportunities to implement changes at the facilities where I have worked."

Her UNL food science studies have provided a broad base with a strong understanding of food. "It allowed me to work in canned pet foods, transition to corn processing, and then on to enzymes. The classes and experiences I

received during my time at UNL gave me a strong foundation to succeed in the food industry, Culpepper said. "The classwork and lab experiences provided me the knowledge, while the people provided me with a network of contacts to reach out to."

Student Awards

Adeline Ames Fund Scholarship
Jenny Pickering

Allegra Wilkens Scholarship
Erica Marshall

Ambassador Scholarship
Lydia Molnar

Boettcher Scholarship
Cassandra Rucker

Ceres Club Endowment
Samantha Bryant

Chancellor's Fellowship
Danny Unruh
Kaye Ivens

Chancellor's Scholarship
Emilie O'Connor

Cooper-Sharpless Fellowship
Danny Unruh

David Distinguished Scholarship
Kaelyse Clapper
Julia Harvey
Erica Marshall
Jacqueline O'Doherty

Dean's List
Soon Kiat Lau
Miranda Schurr

Directors Club Fund
Spencer Brown
Nicole Stott

Edward Lang True Fund
Connor Bloedorn

Ernest Weyenth Scholarship
Kaelyse Clapper

European Academy of Allergy and Clinical Immunology Travel Grant
Mei Lu

Eva J. Bute Memorial Scholarship
Jenny Pickering

Flemming Schofield Scholarship
Emily Segieda
Kaelyse Clapper

G&M Plucknett Scholarship
Erica Pribil

George Beadle Scholarship
Kyler Held
Erica Marshall
Kathryn Merckel
Lauren Wilson
Ariel Wong

Global Ambassador Scholarship
Franklin Sumargo
Soon Kiat Lau

Global Delegate Scholarship
Xin Liu

Global Gateways Scholarship
Kathryn Merckel

Hanson Teaching Assistant Scholarship
Brooke Grossenbacher

Hermene Ferris Scholarship
Abigail Burrows

Holling Memorial Scholarship
Justin Bakke
Abigail Burrows
Amy Garrison
Julia Harvey
Soon Kiat Lau
Kathryn Merckel
Emilie O'Connor
Jenny Pickering

Honors Textbook Scholarship
Connor Bloedorn
Julia Harvey
Emilie O'Connor
Jacqueline O'Doherty
Erica Pribil
Ariel Wong

Horatio Alger Scholarship
Carly Adams

IANR Ambassador Scholarship
Brooke Grossenbacher

International Affairs Scholarship
Kathryn Merckel

James Canfield Scholarship
Amy Garrison
Quinn LeFrois
Kaitlin Reimer
Matthew Taylor

K.B. Weber Military
Mariah Brandt

Kellogg's Scholarship
Brooke Grossenbacher

(continued from page 6) 

Ken Morrison Scholarship
Ariel Wong

Kind World Distinguished Scholar Award
Carly Adams

L.K. Crowe Kiwanis Award Fund
Justin Bakke

Lampert Family Scholarship
Erica Pribil
Miranda Schurr

Larrick Memorial Travel Fund
Junyi Yang
Yiewei Liu
Mei Lu

Larrick Student Support Fund
Lauren Wilson

Leo Kellett Scholarship
Elizabeth Gill

Lowenstein Student Scholarship
Julianne Kopf

Luther Drake Scholarship
Kaitlin Reimer

Martha McKelvie Scholarship
Brooke
Grossenbacher

Mather Scholarship
Jenny Pickering
Julia Harvey

Maxcy Food Science & Technology Scholarship
Lauren Wilson

Midwest Student Exchange Scholarship
Brooke
Grossenbacher

Milton E. Mohr Research Scholarship
Brooke
Grossenbacher
Soon Kiat Lau
Kathryn Merckel

Mussehl Scholarship
Xin Liu

Nebraska Legacy Scholarship
Lydia Molnar

National FFA Foundation ConAgra Scholarship
Stephanie Teten

NCAA Student Athlete Opportunity Fund
Jacqueline
O'Doherty

Nestlé Purina Petcare Scholarship
Alyssa Craig
Diem Doan
Amy Garrison
Lydia Molnar

Oak B. Smith Scholarship
Spencer Brown
Kaelyse Clapper
Amy Garrison
Annabelle Greger
Julia Harvey
Katherine Hilgren
Alex Hlavaty
Hannah Kesterson
Erica Marshall
Kathryn Merckel
Erica Pribil
Jenny Pickering
Kaitlin Reimer
Kim Hock Tan
Stephanie Teten
Ariel Wong

P.H. & Irene A. Hines Fund
Erica Pribil

Regents Scholarship
Justin Bakke
Connor Bloedorn
Hannah Kesterson
Erica Pribil

Robert Gumaer Fund
Emily Segieda

Ronald Murdock-Lexington Scholarship
Leslie Santana

Sam and Martha McKelvie Scholarship
Julianne Kopf

Science Without Borders Scholarship
Bruna Waechter

Susan Hefle Scholarship
Justin Bakke

University Of Nebraska Cornish Fund
Justin Bakke
Soon Kiat Lau
Emilie O'Connor
Miranda Schurr

Doctoral student combining food science and microbiology



Mauricio Redondo Solano

Mauricio Redondo Solano doesn't hesitate when asked to name his best memory of UNL.

"The moment Dr. (Harshavardhan) Thippareddi told me to apply for the

master's program to be his student. I will always remember that day," Redondo said. "Being accepted as a graduate student was a very important personal accomplishment because, as many of the other graduate students in food science, I worked very hard to be part of the UNL program."

Originally from Cartago, Costa Rica, Redondo earned a bachelor's degree from the University of Costa Rica in 2008. Currently, he is a doctoral candidate in the UNL Department of Food Science and Technology. Redondo, who wants to work in the food microbiology field, has a background in clinical microbiology from Costa Rica.

"In my opinion, coupling a deeper education in food science with previous knowledge in microbiology is the key to fully understand the impact of microorganisms in food," he said.

He came to UNL because one of his professors in Costa Rica told him that several universities in the United States were developing strong academic and research

programs in food science and technology and one of them was UNL.

"When I saw that UNL had one of the top food science programs in the country among other universities with good food science programs, I realized that UNL had the extra advantage of being located in a state where food production is a major activity," Redondo said.

"I must say that one of the nicest surprises for me at the beginning was to be in touch with people from so many countries and cultural backgrounds," he said. "They were very nice and helpful when I was trying to get used to the new experience."

Redondo began his studies at UNL in January 2009, as a research scholar. He received his master's degree from UNL in 2011 and began his doctorate in the fall of that year. Thippareddi has been his adviser for both his master's and doctorate.

His current research focuses on evaluation of the risk associated with anaerobic microorganisms in meat and poultry products.

"I REALIZED THAT UNL HAD THE EXTRA ADVANTAGE OF BEING LOCATED IN A STATE WHERE FOOD PRODUCTION IS A MAJOR ACTIVITY."

"We have found some new features in the behavior of Clostridium perfringens in meat samples and how these meat systems can affect spore germination and outgrowth," he said. "Using this knowledge as a basis, we are now focusing our work in Clostridium difficile, a strict anaerobic microorganism

that has been identified as a potential foodborne pathogen."

After completing his doctorate, Redondo plans to become a professor in microbiology at the University of Costa Rica.

Food Science Freshman Receives FFA First Place

Hannah Kesterson, a freshman in the Department of Food Science and Technology, was awarded first place in the FFA Food Science and Technology Career Development Event (CDE) at the 2013 National FFA Convention & Expo in Indianapolis.

The CDE is designed to test a student's basic knowledge of food science and ability to apply this knowledge to practical situations.

At the state FFA Career Development Event in March of 2012, Kesterson's team from Alliance placed first, which allowed the team to compete at the national conference.

Kesterson graduated from Alliance (Nebraska) High School. She is studying food science because she is interested in improving and developing food products and processing methods.

"With food being both a basic necessity of life for all people and a source of enjoyment for many, I believe this area of study is very important and I am excited to become part of the food industry," she said. "I have so many reasons to be glad I came here. I have been exposed to the excellent professors and advisers, have seen the numerous opportunities offered to students, and have felt the welcoming environment that CASNR offers."

At the national convention, Kesterson received both a gold emblem and first place for an individual. "I feel very honored to be the national champion, but I know that what will last long after awards are forgotten are the memories that we made over the hours of studying, competing in contests and traveling to Indianapolis together."

After graduation, Kesterson wants to return to a rural area in the Midwest.

"I am interested in the meat science industry and hope that by gaining experience and taking a variety of classes, I can find an area that I would like to focus my career in."



Hannah Kesterson

(continued from page 1)

Allergen study

advice on nutrition for pregnant women, babies and people with allergies. The UNL team will be contributing to the data gap analysis that will be conducted early in the project.

"We currently know that threshold data does not exist for several of the important tree nuts so the UNL team will be helping with the design and organization of a clinical threshold study for walnut," Baumert said.

The UNL team also will be working with international experts on development of risk assessment tools that can be used by food industry risk assessors and managers to make more informed food allergen management decisions. This work will include an evaluation of consumption patterns of food allergic individuals, which is a key input variable needed in the risk assessment process.

UNL was selected to participate in this study because Department of Food Science and Technology researchers have been among the international leaders in food allergen thresholds and risk assessment. Collaborative work has resulted in the curation of the world's largest database of clinical thresholds for a number of priority food allergens.

Student Awards

(continued from page 7)

**UNL Women's Club
Scholarship**
Samantha Bryant

**V.W. Henningsen Award
for Food Science and
Technology Outstanding
Thesis**
Jihan Cepeda

Von Gillern Scholarship
Kathryn Merckel

Women's Golf Scholarship
Jacqueline O'Doherty

**Women's Softball
Scholarship**
Jacqueline O'Doherty

**IFT
2012 Graduate Student
Research Competition
First Prize, Toxicology
and Safety Evaluation
Division Poster**
Kaye Ivens

**Burdock Group Travel
Award**
Kaye Ivens

IFT Feeding Tomorrow
Stephanie Teten

UCARE (and sponsors)
Justin Bakke
(Vicki Schlegel)
"Determination of optimal
extraction methods of dry
edible bean phytochemicals"

Spencer Brown
(Joseph Baumert)
"The Effect of Food
Processing on Detection of
Allergenic Milk Residue"

Samantha Carter (Jayne
Stratton)
"Antimicrobial
Resistance of Foodborne
Microorganisms"

Emilie O'Connor
(Steve Taylor)
"Evaluation of Commercial
ELISA Methods for
Detection of Gluten
Residues in Food Products"

Megan Pinches
(Randy Wehling)
"High-Fiber Fruit Dessert"

Kristin Smith (Andréa
Bianchini-Huebner)
"Production of Mozzarella
Cheese Added with
Probiotic Cultures"