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# News from the



GREAT PLAINS INSTITUTE OF  
**FOOD SAFETY**

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**GPIFS Mission:**  
*The Great Plains Institute of Food Safety engages in multidisciplinary action research and education to provide solutions to food safety, protection and security challenges.*

**The GPIFS on the Web:**  
[www.ndsu.nodak.edu/foodsafety](http://www.ndsu.nodak.edu/foodsafety)

The GPIFS is a partner in the National Center for Food Protection  
[www.ncfpd.umn.edu](http://www.ncfpd.umn.edu)

Thanks go to Sarha Gustin, an outstanding Ag. Communications major, for reporting for this newsletter.

## Happy New Year

If you don't know me, I am an associate professor of food microbiology at NDSU. I have been on the faculty at NDSU since 1997. I tentatively stepped into the role of interim director of the Great Plains Institute of Food Safety (GPIFS) in October 2006. One of my first assignments was to describe who we are as an institute and what we do; not an easy task, and one on which I still am working. As I have contemplated this, one word keeps coming to mind – *change*. Many changes have occurred in the GPIFS since its start in 2000, and for this issue of our newsletter, I will highlight some of these.

**A brief history of the institute.**  
The GPIFS was the brainchild of former NDSU Vice President of Agriculture Patricia Jensen and Dr. Lisa Nolan, formerly from the NDSU Department of Veterinary and Microbiological Sciences. Through their remarkable leadership, an interdisciplinary institute involving more than 20 faculty from four NDSU colleges was developed – quite a feat in academia.

One of the first achievements for the institute was the development of an academic minor in Food Safety, funded through a Higher Education Challenge Grant from the USDA. The Food Safety academic programs quickly grew to include B.S., M.S. and Ph.D. degrees, as well as a Graduate Certificate in Food Protection. The core curriculum for these academic programs was taught as an intensive set of summer courses from 2000 to 2005. In 2006, we piloted our first offerings of this curriculum as online courses designed for distance education, and had students participating in the course from as far away as Brazil. In 2007, the courses are 100 percent online and incorporated into

## Director's Note

the regular academic year semesters. The Food Protection Graduate Certificate can be obtained by taking just 9 credits of online courses. We are not done yet, and any feedback you have on these academic programs would be greatly appreciated. The NDSU Food Safety academic programs are described at [www.ndsu.nodak.edu/foodsafety/academic.htm](http://www.ndsu.nodak.edu/foodsafety/academic.htm).

Food Safety research at NDSU was being performed before the organization of this institute, but with facilitation from the GPIFS, it has flourished through interdisciplinary collaborations within NDSU, as well as with other institutions, government agencies and industry. The same could be said for food safety service and outreach. Most of the research through the institute focuses on food safety risk analysis, which encompasses risk assessment, risk communication and risk management. Future newsletters will highlight some of these activities.

Many people have come and gone within the institute, all leaving their mark. Some key players who have left since 2000 include Dr. Jurgen Schwarz, who moved on to become director of the Food Science and Technology Center at the University of Maryland-Eastern Shore in 2002; Dr. Lisa Nolan, who became the chair for the Department of Veterinary Microbiology and Preventive Medicine at Iowa State University in 2003; VP Jensen, who retired in 2004 and resides in Florida with her husband former Food Safety instructor Bill Coleman; Dr. Monisha Chakraborty, who moved to the Department of Nutrition and Food Science at San Jose State University in 2005; Dr. Marty Marchello, who retired in

2005 and resides in Bismarck; and in 2007, Dr. William Nganje, who has moved to Arizona State University. Dr. Doug Freeman served as the institute director from 2004 to 2006 and stepped down this year to focus on an American Council on Education Fellowship. I'm surely forgetting some names to mention, and I hope to be forgiven for that. The one constant in the institute is the coming and going of people. Although some have left NDSU, they still remain a part of the institute through collaborations – you can leave NDSU, but NDSU never leaves you. We also have several new people who are tremendous assets to the institute; I will highlight their achievements in our next newsletter.

**As Bob Dylan said, "the times, they are a changing."** There will be many changes to come as we extend our teaching, research and outreach efforts into the world – hopefully leading to a safer global food supply. I will highlight where we are going in the next newsletter. We are renovating our institute's Web site at [www.ndsu.nodak.edu/foodsafety/](http://www.ndsu.nodak.edu/foodsafety/). If you have any questions or suggestions regarding the GPIFS, I would love to hear them.



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## Graduate Student Highlights



"I learned new lab techniques and was able to develop my critical thinking skills and technical skills"  
Lilian Nangoh



"Being in a multi-disciplinary program like Food Safety, I was able to get a broad graduate education"  
Isaac Triebold



"I use the Food Safety courses I am taking now and have taken in the past every day"  
Jayd Kittelson

### Congratulations to:

- © Anuradha Boddeda (Food Safety Ph.D. student) on the birth of her son, Aneesh
- © Huimin Zhang (Food Safety Ph.D. student) on her second teaching internship at the Tribal College in Bismarck, as well as for winning the best graduate student poster at the UW-River Falls annual rapid methods workshop

### Groundbreaking research

One Food Safety student's research led to more than a research paper and master's degree. The research was the first to isolate *Enterobacter sakazakii* from cattle and bison fecal samples, suggesting the potential source of the bacterium.

Originally from Cameroon, West Africa, and graduating from the University of Buea, she found herself traveling to North Dakota State University in January 2005.

"I was offered an excellent scholarship opportunity. NDSU is a good institution for research opportunities," stated Nangoh.

Nangoh's research project focused on the microbiology aspects of food safety. The primary objective of Nangoh's research was to investigate the natural habitat and pathogenesis of this bacterium, usually referred to by Nangoh as E. sak. Dr. Penny Gibbs was her adviser.

E. sak is known to cause sepsis, meningitis and necrotizing enterocolitis in infants. The majority of the reported cases have been traced to powdered infant formula.

Nangoh's research focused primarily on detecting E. sak from cattle and bison manure. After performing several screening tests, Nangoh was able to isolate E. sak. from cattle and bison fecal samples.

Nangoh used an animal model, in which she injected several chicken embryos with the bacterium. Results showed the majority of bacteria to be extremely lethal in chicken embryos.

Nangoh enjoyed her experience and the excellent research opportunity at NDSU.

"I learned new lab techniques and was able to develop my critical thinking skills and technical skills," stated Nangoh.

Nangoh's research has opened the door to future research opportunities. Another graduate student is planning to further the research and investigate the pathogenesis of the bacterium. The student will be working on isolating E. sak from powdered infant formula.

"We were the first people to report these findings. We feel it will be a great contribution to the understanding of E. sak.'s ecology and pathogenesis."

### Food safety degree leads to unique career

Graduating with a food safety degree doesn't necessarily involve working with food every day. One food safety major is working with health issues, but not the nutrition or safety type.

Isaac Triebold, M.S., is employed with Clay County Public Health. Triebold, a communication health organizer, is an information provider working with secondhand smoke policies.

Triebold received his undergraduate degrees in economics and biology at Concordia College in Moorhead, Minn.. Triebold started in the NDSU Food Safety Program in 2003 under the advisement of Dr. Margaret Khaita and graduated in May 2006 with a master's degree in Food Safety, specializing in epidemiology and the prevention and control of disease and health promotion issues.

Triebold's thesis research involved evaluating syndromic surveillance in North Dakota. Triebold analyzed historical outbreaks of gastro-intestinal diseases using nontraditional forms of surveillance. It is the goal of these systems to detect some outbreaks sooner than standard methods. This study showed some nontraditional forms of surveillance are economically beneficial.

Triebold chose this career path based on personal interests.

"I always knew I wanted to work in public health. My focus was on epidemiology because I wanted to be able to prevent diseases. Being in a multidisciplinary program like Food Safety, I was able to get a broad graduate education. My background in statistics gave me the analytical ability to understand the disease trends, the microbiology background I received helped me understand the diseases I work with, and the economics helped me analyze the work I do and help determine where we can get the most out of our money in public health," stated Triebold.

Triebold credits much of his success to his experiences and opportunities at NDSU.

Triebold received the opportunity to present at many conferences, including the American Public Health Association Conference in Boston, hosting more than 13,000 individuals.

"It was an honor my research was selected for oral presentation at such an exclusive conference. I got to meet many influential people in public health and do some networking," stated Triebold.

### Cargill hires Kittelson

Jayd Kittelson of Moorhead was hired by Cargill for a chemist position.

Wahpeton Cargill hired Kittelson in the spring of 2005 for a chemist position and he is working as a microbiologist.

Kittelson is a 2005 NDSU graduate. During Kittelson's years at NDSU, he obtained degrees in microbiology and biotechnology. Also, Kittelson held an intern position under Dr. Charlene Wolf-Hall.

Cargill is providing funding for Kittelson to continue his education. He is taking online Food Safety courses to obtain a master's degree in Food Safety.

Kittelson's research for his thesis is a comparative study on various vendors' immunoassay aflatoxin kits using high performance liquid chromatography (HPLC) methods. The project reviews sensitivity, repeatability, cost efficiency and accuracy among the various quick-kit methods. The study will be completed in the spring.

Kittelson credits his internship with Dr. Wolf-Hall as a main reason for starting with Cargill.

"Working for Dr. Wolf-Hall was really beneficial. I was able to see how a research lab functions and do some of my own individual research," stated Kittelson.

Each day Kittelson applies his NDSU education to dealings in everyday life.

"I use the Food Safety courses I am taking now and have taken in the past every day. Learning about bioterrorism and Hazard Analysis and Critical Control Points (HAACP) regulations both at work and in my classes give me a better understanding about the issue," stated Kittelson.

Recently, Kittelson was asked to perform more research for Cargill.



# Meat Safety Faculty

## Marchello will be missed

An extraordinary instructor retired from North Dakota State University last spring.

Dr. Martin Marchello retired in May 2006. Marchello was extremely involved with the Great Plains Institute of Food Safety and the Food Science Program. Marchello taught 11 courses at NDSU in the various area of animal science, food science and food safety.

Marchello is known for his research efforts.

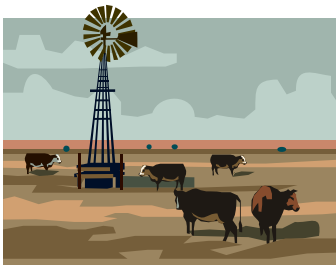
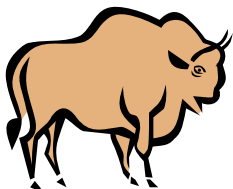
Close to his retirement, Marchello conducted research focused specifically on the aspects of meat and meat products, which are key issues in trying to create a safe food supply.

Also, Marchello is specifically known for his research efforts involving the study of nutrient composition of grass- and grain-fed bison. Marchello's research became the foundation of the original USDA research bison nutrient composition database and received worldwide recognition.

During Marchello's time at NDSU, he received several teaching awards and in 1996 was awarded the NDSU College of Agriculture Senior Career Research Award.

During his career, Marchello participated in several Hazard Analysis Critical Control Point training sessions.

Marchello's efforts and commitment toward his research and students will be missed on the NDSU campus.



## Brother-Sister Meat Scientists at NDSU

Some may say an interest in meat must run in the family. Whether following in an older sibling's footsteps or maybe a possible mere coincidence, this brother and sister found themselves both working on the same campus, in the same building and in the same department with offices right next to one another.

Robert Maddock and Kasey Maddock Carlin are employed as meat scientists with NDSU.

Although both individuals have a strong interest in the meat industry, beef specifically, they differ when it comes down to the specifics. Robert is more involved in meat quality, consumer acceptability and Hazard Analysis and Critical Control Points (HACCP), whereas Kasey is more involved with the muscle biology and chemistry portions.

Robert Maddock obtained his bachelor's and master's degrees in Animal Science at NDSU. Later, he continued his education, obtaining a Ph.D. at Texas A&M.

After graduation, Robert worked at South Dakota State University for six years as an assistant/associate professor.

Now at NDSU, Robert's research involves analyzing the effects of adding antimicrobials to processed meats, specifically hot dogs. Analysis is being performed on three different antimicrobials and the effect these antimicrobials have on texture and flavor.

Other research projects under way involve studying the quality of cow and bull meat in packing plants. Specific points of consideration are the health, body condition and fat depth of the animal, as well as the different breed types and possible sources of contamination.

Another study being performed is the

analysis of whether the addition of field peas to the diets of finishing cattle improves tenderness.

Kasey graduated in 1999 from NDSU with a bachelor's degree in Biotechnology and Animal Science. A master's degree in Animal Science was obtained at the University of Missouri and she later completed her Ph.D. in Meat Science at Iowa State University in 2005.

After graduation, Kasey found herself back at NDSU in a post-doc position teaching classes and conducting research with the Beef Systems Center of Excellence.

Kasey's classes include the slaughter portion of SAFE 450 and 650, and meat technology ARSC 340.

Specific areas of research involve the effects of maternal nutrition on offspring meat quality with sheep. Other research involves meat quality and understanding development, juiciness and tenderness, specifically in beef cattle.

When asked why they decided to come back to NDSU, the responses were the same. Both individuals feel the Beef Center of Excellence has a lot of research opportunities to offer.

"We'll have access to a lot of beef to do research on," stated Kasey.

"We'll have an opportunity to do a great deal of important research and teaching. It's an opportunity that doesn't exist anywhere else," stated Robert.

It is obvious both take their jobs seriously and are very involved with their work. When asked what it was like to work with family, the answers were similar. Both individuals don't seem to mind having their big brother or little sister just down the hall.

"It's fun and easier to work with family. Also it is easier to be upfront and honest," stated Robert.



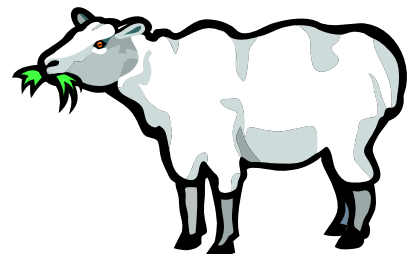
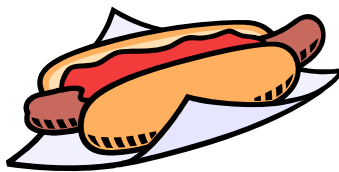
Dr. Martin Marchello retired in May 2006



Dr. Kasey Maddock Carlin became an NDSU faculty member in August 2006



Dr. Robert Maddock became an NDSU faculty member in October 2006



# HACCP



“Food safety continues to be a top priority in the United States.”  
Julie Garden-Robinson

Dr. Garden-Robinson also coordinates ServSafe and TAPS training

## Food Safety Outreach

### Certification training course on NDSU campus

The Great Plains Institute of Food Safety and the North Dakota Department of Agriculture, along with the North Dakota State University Extension Service, co-sponsored a meat microbiology and Hazard Critical Control Points (HACCP) certification training course during the 2006 fall semester.

The course, held Oct. 3-5, met the U.S. Department of Agriculture's HACCP training requirements. It was a hands-on course designed for HACCP individuals in charge of maintaining sanitation and operating procedures.

HACCP is a preventive approach to controlling food safety hazards,

such as *Salmonella* and *E. coli* 0157. HACCP was developed by NASA to guarantee its astronauts' food was safe.

Lilian Nangoh had little knowledge of the HACCP program before attending the seminar and found the seminar to be extremely informative and useful.

“I thought it was a great course. It really enhanced my knowledge about the HACCP program. It will help me in my career, especially if I get a job in industry,” stated Nangoh.

The USDA also began to use HACCP in 1998 because of the emergence of new deadly pathogens that have been known to cause serious

illnesses in humans.

“Food safety continues to be a top priority in the United States,” according to Julie Garden-Robinson, NDSU Extension food and nutrition specialist.

Montana State University and the Montana Department of Livestock presented the seminar. Training was provided in environmental sampling, using scientific literature for HACCP verification, basic microbial testing and creating a HACCP plan.

For further information about upcoming seminar dates and registration, contact Julie Garden-Robinson at (701) 231-8592 or [Julie.Garden-robinson@ndsu.edu](mailto:Julie.Garden-robinson@ndsu.edu). Also see [www.ag.ndsu.nodak.edu/food.htm](http://www.ag.ndsu.nodak.edu/food.htm).

## Food Science and Food Safety Club



“It gives students leadership opportunities.”  
Clifford Hall

The Food Safety Club is active and ready to have a great spring semester! The officers and advisers have been meeting regularly to ensure another positive semester.

Jessica Ryant, a junior majoring in Food Science and Dietetics, has been leading the club for the past two years as president.

The club is involved with numerous activities during the year. Members volunteer time at the Great Plains Food Bank helping repackaging food for different food pantries in the area. The Career Center has held seminars to help students in the major finalize and/or establish a resume.

The club welcomes all guest speakers, such as NDSU graduate Jon Altriger, who spoke about her internship and current employment with Hormel.

The club's current adviser, Dr. Clifford Hall, has been involved with the organization since 2002. Hall feels it is a great way for students to get involved and better their career choices.

“It gives students leadership opportunities. The club gets students together; whether freshman or senior, they all work together,” stated Hall.

Ryant feels the club has much to offer all its members.

“It is a great way to gain networking

opportunities. It really links you with people for future internships and job opportunities,” stated Ryant.

The club also is affiliated with the Institute of Food Technologists. Active involvement in the club can strengthen applications for IFT scholarships.

Anyone interested in joining is invited to contact Dr. Hall or Jessica Ryant.

### 2006-2007 Officer Team

President: Jessica Ryant  
Vice President: Rachel Brudvik  
Secretary: Laura Houglum  
Treasurer: Jacob Nordquist  
Adviser: Dr. Clifford Hall

## **National Needs Fellowships Available – We're Looking for Some Good Students**

The NDSU Great Plains Institute of Food Safety, in collaboration with the USDA, will provide fellowships to qualified individuals to earn a Master of Science (M.S.) degree in Food Safety. The goal of the program is to address the need for food safety experts in the northern Plains region, and to advance economic development in rural communities by preparing individuals for supervisory roles in the food industry, regulatory agencies or health care. This goal addresses both regional and national needs in the field of food safety. The National Needs Fellowships are an honor to receive and come with a **\$36,000 stipend** (\$18,000/year for two years) with tuition waiver.

To be considered for a fellowship, individuals must be United States citizens and admitted to graduate studies at NDSU to pursue an M.S. degree in Food Safety. Due to the interdisciplinary nature of Food Safety, people with a baccalaureate degree in any one of a variety of areas of study may find themselves prepared to pursue graduate studies in Food Safety. The deadline for application for summer/fall 2006 admission is March 15, 2007.

Information on the Food Safety M.S. program is available at [www.ndsu.edu/gradschool/bulletin/d\\_foodsf.html](http://www.ndsu.edu/gradschool/bulletin/d_foodsf.html). There are additional items to highlight in the graduate program application materials to be considered for a fellowship. Interested people may contact Dr. Charlene Wolf-Hall by phone at (701) 231-6387 or e-mail at [charlene.hall@ndsu.edu](mailto:charlene.hall@ndsu.edu) for more information about the fellowships and the Food Safety graduate programs. NDSU is an equal opportunity institution.

*If you have suggestions for newsletter features or notes, please contact Charlene Wolf-Hall ([charlene.hall@ndsu.edu](mailto:charlene.hall@ndsu.edu))*