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News from NDSU School of Food Systems

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The School of Food Systems on the Web

www.ndsu.edu/foodsystems

The GPIFS on the Web

www.ndsu.edu/foodsafety

The Cereal and Food Sciences on the Web

www.ag.ndsu.edu/cereal-science/

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 is a partner in the National Center for Food Protection and Defense

www.ncfpd.umn.edu

The mission of the Department of Cereal and Food Sciences is 1) to provide respected academic programs for undergraduate and graduate students; 2) to pursue relevant research on the conversion of state- and regionally- produced raw agricultural products into processed forms suitable for direct consumption; and 3) to use discipline-specific, pedagogical, and managerial expertise in service to students, colleagues, food industries/ commodity groups, and professional societies that will provide competent professionals, and make North Dakota a reliable supplier of high quality, safe, and nutritious food products.

NORTH DAKOTA STATE UNIVERSITY DOES NOT DISCRIMINATE ON THE BASIS OF RACE, COLOR, NATIONAL ORIGIN, RELIGION, SEX, DISABILITY, AGE, VIETNAM ERA VETERANS STATUS, SEXUAL ORIENTATION, MARITAL STATUS, OR PUBLIC ASSISTANCE STATUS. DIRECT INQUIRIES TO THE CHIEF DIVERSITY OFFICER, 205 OLD MAIN, (701) 231-7708.

Director's Note

As we complete the 2008-2009 academic year, let me take the opportunity to reflect on our success and challenges during the last year. We have had many successes during the past year. We continued to establish the Food Safety program as one of the top programs in the country by 1) forming stronger working relationships with campus programs including the Upper Great Plains Transportation Institute, the Emergency Management Program, and with the new proposed Masters of Public Health Program; 2) increased our international outreach with universities in China, Chile, and Uganda; 3) continued establishing greater collaboration with U.S. higher education institutions including South Dakota and New Mexico State Universities through a USDA Higher Education Challenge Grant and the University of Minnesota through the National Center for Food Protection and Defense; and 4) establishing the framework for the non-thesis Masters degree that can be completed totally online. We also identified opportunities to improve our graduate programs by streamlining the Cereal Science student application review process between the faculty in the School and Plant Sciences and unifying the grading process in the graduate seminar class between Cereal Science and Food Safety students. Furthermore, a faculty committee led by Dr. Frank Manthey was established to continue to review the graduate curriculum for both programs.

Another success for the School is that we were able to begin the process of hiring another faculty member for the School to support our Food Safety and Food Science programs.

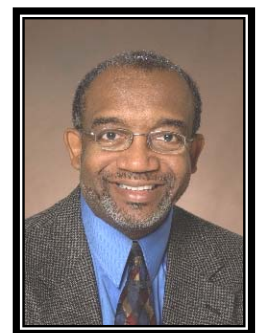
The search committee, chaired by Dr. Charlene Wolf-Hall, is now beginning the interview process and we hope to be able to name the new faculty member in time to for an August 1st start date. Finally, one special accomplishment of note is that Dr. Clifford Hall was awarded promotion from assistant to associate professor with tenure by North Dakota State University and the North Dakota State Board of Higher Education. On behalf of the School of Food Systems, I congratulate Dr. Hall on this tremendous achievement.

In addition to our successes, however, we were faced with some major challenges this year. The "flood of 2009" will long be remembered as one of most trying times for North Dakota State and the Fargo-Moorhead region. We lost two full weeks of classes and one full week of university work during this period. In spite of this natural disaster however, the community and the university came together in a way that only this area of the country can. The amount of damage to the region was minimized by the community sandbagging effort and the excellent leadership by the city administration. The damage to our academic year and the university was minimized by the excellent leadership of President Chapman and the entire university administration as we were able to adjust class schedules and complete needed university services through a total unified effort.

The School of Food Systems also lost our grant writer, Julie Nash, who accepted another position on campus. We congratulate Julie as she begins a new position that will provide her new career opportunities, however,

the School will need to replace her invaluable support for our grant writing efforts.

As we look forward to the upcoming 2009-2010 academic year, our hope is to build on the successes of the past year in the Food Safety and Cereal Science programs and begin focusing our efforts on evaluating our undergraduate Food Science program for improvement increasing our outreach efforts with the food processors in the state. On behalf of the School of Food Systems, I want to thank the faculty, staff, students, and alumni for your continued support during the past year and look forward to working with all of you next year as we seek to continue our mission of education, research, and outreach to add value to this region in the processing and safety of foods in this region, nationally, and internationally.



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Alumni News

NDSU Alumnus Works for Dakota Specialty Milling

Joel Dick is an alumnus who received three different degrees from NDSU. He received his B.S. in Medical Technology in 1967, M.S. in Cereal Technology in 1971, and Ph.D. also in Cereal Technology in 1976. Dick is currently Vice-President/Chief Operations Officer of Dakota Specialty Milling, reporting directly to the President of Dakota Specialty Milling, Bill Matthaiei.

Dick's responsibilities include overseeing the production and engineering operations for milling, blending, packaging, and toasting, and all aspects of safety, sanitation, food safety, and quality assurance. "My degrees and previous experiences have helped me immensely in carrying out the functions of my current job," said Dick. He also said that having the M.S. and Ph.D. degrees opened doors of opportunity in grain and food-related businesses and that his education at NDSU exposed him to many subjects including cereal science (milling, baking, rheology, etc.), biology, biochemistry, industrial engineering, nutrition, and microbiology, all of which have been valuable in helping him manage their business.

As for advice for future students, Dick has a few tips. He said that in addition to the major courses (which should include biochemistry, food safety, microbiology, and nutrition, etc.) that one chooses in the area of food systems, he would encourage students to include courses in industrial engineering or business which address quality assurance, statistics, economics, and accounting. Other useful courses include marketing, personnel management, and business law. The value of having been introduced to an array of subjects becomes more apparent as one has opportunities to move into management positions throughout one's career. Dick also said it is important to remember that while earning a college degree is a very worthy accomplishment, it is merely a 'ticket' to the job interview. Once you have been hired, your long-term value to an employer is that you show up for work each day and utilize your education and skills to support the goals of the organization for which you work. His final tip: try to have fun, and never stop learning.

Dick said that he has been fortunate enough to have worked for both public and private organizations and has also traveled throughout the world. He has also had the opportunity to have worked with and been mentored and supported by many talented and dedicated people throughout his learning/working years. Although Dick feels fortunate for his education/career accomplishments, he says his greatest blessing has been his forty-two-year marriage to Rita, along with his three sons and seven grandchildren.



"My degrees and previous experiences have helped me immensely in carrying out the functions of my current job."
Joel Dick



"A major challenge in North Dakota is the long winters."
Gurleen & Harkanwal Sandhu

Married Couple to Complete Graduate School

Gurleen Sandhu will be graduating in May 2010 with a degree in Cereal Science. Her research project is to study food gums in traditional and nontraditional pasta systems. The importance of her research is to understand how to use the functionality of food gums (hydrocolloids) in pasta dough systems to help improve the physical, textural, and cooking quality of pasta. Basic research will also help Gurleen understand gum functionality (interaction of gums with starch, protein, and/or lipids) in a pasta dough system containing nontraditional ingredients. She plans to work for a food company after she graduates.

Gurleen's husband, Harkanwal Sandhu, is also a graduate student at NDSU. He will be graduating in December 2009 with a Ph.D. in Cereal Science. Harkanwal's research involves studying the effect of ozonation on the physical and chemical properties of hard red spring wheat flour. Ozone is a tri-atomic molecule (O₃) that is a powerful oxidant. This research is very important because the use of ozone in the food industry has been limited mainly to shelf life extension of commodities. Recently, there has been renewed interest in ozone and its application in food processing. His project is aimed at studying the effect of the ozonation of flour on bread and noodle quality. Ozone, having high oxidation reduction potential, may oxidize proteins and starch in flour and help in improving bread and noodle quality. Ozonation of flour may also improve bread loaf volume and reduce or slow down bread staling. After graduating, Harkanwal plans on working in industry for a period of time and eventually plans on going back to India.

Since both Gurleen and Harkanwal Sandhu are from Punjab, India, adjusting to North Dakota has been a task. Not surprisingly, they both said their number one challenge has been the winter. Although they have had challenges, they both agree that North Dakota is a very peaceful place with friendly and helpful people.



Student Highlight

Asharani Prasad to Receive Masters Degree

Asharani Prasad is pursuing a Masters degree in Food Safety at NDSU and will be graduating in August 2009. As a graduate research assistant, Prasad's research involves synthesis of derivatives of rosemary products and testing their antioxidant activities on emulsion type of food systems. Her work requires the use of instruments such as the GC-Mass Spectroscopy (GCMS), ¹H and ¹³C NMR Spectroscopy, IR Spectroscopy, and High Resolution Mass Spectroscopy (HRMS) for analysis. By making the derivatives of rosemary products, Prasad will be able to increase the miscibility of these derivatives in oil and hence will be able to increase their antioxidant activities in emulsion type of food systems.

Prasad is originally from India, so acclimating to North Dakota has had its challenges and definitely took some adjusting. She said graduate study itself is a challenge, but believes it is important for her professional and intellectual growth. The most major of adjustments has been the North Dakota winters. Prasad thinks the North Dakota winters are harsh and cruel and said the weather goes from bad to worse during the winter. She also points out how she isn't the only one to suffer during winter; her car suffers too—either being heavily covered with snow or not starting. Prasad did point out one good thing however, after living through North Dakota winters; it now takes her very little time to adjust to winter conditions.

After graduation, Prasad would like to work as a food scientist in the food industry. As a food scientist, she would like to be involved in both basic and applied research. She has a passion for research and realizes that her academics, research, and industry experience will make her a good research scientist.

Food Science and Food Safety Club News

According to Alexis Freier, club president, "The Food Science and Food Safety Club's main objective is to recruit new members and provide a place for students and faculty to interact." The club hopes that recruiting more members would help expand opportunities for the club. The club is open to anyone and only costs \$5 in dues to join. Gurleen Sandhu designed the club's T-shirts, which are available for purchase for \$7 for club members and \$12 for non-club members. The club has approximately 20 to 25 members. Freier also said the club provides a place for students and faculty to interact, unifies the Food Science and Food Safety programs, and allows the club to promote those programs to incoming and undecided students. The current officers are president, Alexis Freier; vice president, Gurleen Sandhu; secretary, Danielle Lambert; and treasurer, Amanda Merrill. Clifford Hall serves as the club's adviser. The club meets every other Wednesday at 5 p.m. The club plans on having representatives from Cass Clay, Cargill, and Cloverdale at their meetings this semester. Freier encourages anyone who is interested to attend a meeting because it is a great way to

Staff Highlight

Mary Niehaus Chemist at NDSU for Eight Years

Mary Niehaus has been a chemist at NDSU for eight years. Her job activities are varied and include: conducting research projects on crops such as flax, canola and pulses; managing lab equipment usage among staff and students; training and supervising six undergraduate students to conduct research; assisting and training graduate students; preparing for and assisting with Food Science teaching labs; and maintaining equipment such as HPLC and GC.

Niehaus has had many major accomplishments in the past year including: optimizing a ferulic acid extraction from wheat flour, completing an analysis on wheat flours as a service for a major food company, learning the bread making process, completing a research project that included the analysis of the physical and sensory attributes of flax bread, and optimizing an HPLC method to quantify chlorophyll from canola seed. Her current major project involves extracting chlorophyll from canola using the HPLC to quantify chlorophyll content in 300 canola seed samples, with a goal of using the data to calibrate a NIR curve for future ease of determining chlorophyll in canola. Niehaus said that organizing activities, planning projects, encouraging students in their education, and watching students grow throughout the years as they develop skills in the lab are all favorite parts of her job.



"I have a deep passion for research. I want to work as a food scientist in the food industry after graduation."
Asharani Prasad



"I enjoy organizing activities, planning projects, encouraging students in their education and watching students grow throughout the years as they develop skills in the lab."
Mary Niehaus

interact with students who have similar interests and it's also a great opportunity to network with representatives from various food companies.

Congratulations! The Food Science/Food Safety club held a recognition reception on Wednesday, April 29. The reception gave students and faculty in the School of Food Systems an opportunity to socialize, as well as applaud the graduate students and graduating seniors for their achievements. Dr. Hall was recognized for his promotion to associate professor and tenure. The Food Science/Food Safety club presented Hall with a plaque and cake as a thank you for his dedication and assistance as club advisor. NDSU Dining Services catered the event.



Club members decorating Christmas cookies with residents at Bethany homes.

Faulty Highlight



Julie Garden-Robinson Helps With Outreach Efforts in Nutrition and Food Safety

Julie Garden-Robinson completed her B.S., M.S., and Ph.D. degrees at NDSU. In 1993 she was hired to teach in the former Food and Nutrition Department. After teaching full-time for two years, she took a job as an Extension Specialist. Garden-Robinson has a B.S. degree in food and nutrition/dietetics and a minor in music. She is also a licensed registered dietitian. She has an M.S. degree in Food and Nutrition (emphasis in food science), with a minor in Biochemistry, and her Ph.D. is in Cereal Science and Food Technology, with a minor in Biochemistry.

Garden-Robinson's primary job is to create, implement, and evaluate statewide programs in food safety and nutrition for adults and children. She writes a lot of grants and supports much of the outreach efforts in nutrition and food safety with external funding. She also works with Extension agents throughout North Dakota. Garden-Robinson works with a variety of faculty on campus in several disciplines on research and extension projects as well. Aside from all of the previously named responsibilities, she also does a lot of writing including extension brochures, a weekly column, monthly newsletter, and she also recently became a health and nutrition writer for www.connectionsforwomen.com. Garden-Robinson has also been a member of the GPIFS since its inception and teaches one of the classes in the food safety program.

Garden-Robinson says that her favorite part of her job is working with a wide range of people from a variety of disciplines and having the latitude to be creative and try different approaches to nutrition and food safety education. She believes that her music training helps her approach things a little differently. For the past five years, Garden-Robinson has helped develop and coordinate the "Eat Smart. Play Hard." outreach program with Bison Athletics, which features Bison athletes as role models. This year, she coordinated the development of an "Eat Smart. Play Hard." magazine and they also revamped their web site (www.ndsu.edu/eatsmart); while also adding a Facebook page. For the past four years, Garden-Robinson has also worked with an interdisciplinary team on a USDA-funded food safety education project focusing on the immigrant/refugee population in the region. They are identifying and developing multilingual materials and approaches to provide education on safe food handling. They are reaching fruition on some of their projects, so that has been exciting. She was also pleased to receive a national writing award this past year since being a writer was a childhood dream of hers.

"My favorite part of my job is working with a wide range of people from a variety of disciplines – and having the latitude to be creative and try different approaches to nutrition and food safety education."

Julie Garden-Robinson



Dr. Sam K. C. Chang celebrates 25 Years at NDSU

Dr. Sam K. C. Chang has been at NDSU since 1984. He graduated with M.S. and Ph.D. degrees from the University of Nebraska-Lincoln in Food Science and Technology. His B.S. degree is in Food and Nutrition with a double emphasis in human nutrition and food science. Chang also held a postdoctoral fellowship at the University of Arizona-Tucson in muscle biology. Dr. Chang said he enjoys all three parts of the NDSU mission of teaching, research, and service. However, he says the most rewarding part is seeing his students/supervisees achieve success either in courses or in research learning. It makes him feel good when they publish research articles and/or present their research findings in scientific meetings. Chang says it is always nice to know that the knowledge he advanced is being used by the food industry or the consumers. He has travelled to several Asian countries to promote marketing of food soybeans by communicating with the users the quality advantages of soybeans produced in the region. He also enjoys meeting people at the scientific meetings.

Chang was elected by his peers as a Fellow of the Institute of the Food Technologists, recognizing his contributions to food science and technology, particularly on legume foods. He was also invited to speak at the Bush Brothers canning company in Tennessee to present his research findings on bean quality and chemistry. Chang said this was a good year for him and his peers since their lab published about ten papers in three different research journals, mostly in the *J. Food Science and Agricultural and Food Chemistry*. He also co-organized, with Professor Cadwallader of the University of Illinois, an international soy chemistry symposium at the American Chemical Society's annual meeting in Philadelphia. They are also organizing the efforts to publish an ACS book from this symposium. Chang and his peers were fortunate enough to have their work on the antioxidants of beans reported in Readers Digest, and the results were adopted as a part of the USDA antioxidant database. Chang hopes that their work will encourage people to eat more beans for promoting health.

Chang also said he is happy with the addition of some new visiting scholars who can perform work in areas that are not of his expertise. He also said he appreciates the financial support of their commodity groups, particularly the North Dakota Soybean Council and the National Dry Pea and Lentil Association for their kind support of his research and conference outreach. Chang is also appreciative of the support of NDSU leadership which allows him the opportunity to focus on the subjects he is interested in.

"The most rewarding part is seeing my students/supervisees achieve either in courses or in research learning."

Sam Chang

Congratulations also to:

- ☺ Julie Garden-Robinson was the National 1st Place Award Winner and Central Region 1st Place Winner in the written press release category for the National Extension Association of Family and Consumer Sciences
- ☺ Julie Garden-Robinson and Sheri Stastny received the North Dakota Dietetic Association (NDDA) Pyramid Power Award for the development and implementation of "Eating for Your Eyes"
- ☺ Ya Liu received "Bison Brevities outstanding act" award from Blue key honor society and LeRoy and Dorothy Dugan Food Chemistry Fellowship, East Lansing, MI
- ☺ Yu Zhang received Institutes of Food Technologists (IFT) Minnesota Division Graduate Scholarship, IFT Carbohydrate Division Graduate Scholarship (2nd place), 2nd place in the IFT refrigerated and frozen food division graduate student paper competition, & Top five finalists in IFT carbohydrate division graduate student paper
- ☺ Harkanwal Sandhu received a scholarship from Cargill Inc.
- ☺ Gurleen Sandhu received a Roman Meal Milling Co. scholarship and an internship with Cargill Inc.
- ☺ Robert Littlefield was acknowledged as the Chamber of Commerce Distinguished Professor
- ☺ Margaret Khaitsa was granted tenure and promotion
- ☺ Clifford Hall was granted tenure and promotion
- ☺ Five Food Science graduating students:

"I am a double major in Food Science and Animal Science. I will be working for Cargill with my placement in Wahpeton, ND. I grew up in Pipestone, MN, and while at school have been a very active member of the Saddle and Sirloin Club and Judging Club. I liked NDSU because the teachers actually care about you as a student and as a person." - **Jenna Schmidt**

"College was more than I could have ever expected. After graduation, I plan on becoming a beekeeper and have a lifetime supply of honey! It'll be nice to use my education to develop creative and innovative uses for honey." - **Nathan Kroh**

"My favorite memories from being in the Food Science program were going on tours of different facilities and being in the Food Science/Food Safety Club. I'm not sure what the next chapter of my life will be, but I feel prepared for whatever life brings my way thanks in part to my education at NDSU." - **Jessica Ryant**

"Attending NDSU over the past four has been a great experience, and I would like to thank everyone at NDSU and in the Cereal and Food Science Department for everything they have done for me. I have a third internship with Cargill this summer in Eddyville, IA, and then I may either decide to pursue a graduate degree in business (MBA) or find a full time job within the food industry." - **Paul Feldmann**

"After graduation I will be working for Dakota Grower's Pasta Company at their New Hope, MN location." - **Alexis Freier**

Updates From Alumni

Letter from alumni, Charles E. Walker...

I am Chuck Walker, the second PhD out of the department, slipping in between Vernon Youngs and Bert D'Appolonia, completing my defense in the summer 1966. Dr. Ken Gilles was my official advisor and department head at that time. I developed the micro-brewery as part of my Ph.D. research under Mr. Orville Banasik who was in charge of the Barley Quality activities, and later department head, before Bert. Before entering NDSU ('62 - '65), I was at the General Mills JFB laboratories from 1959 - 1962. I spent nine years teaching and as Chair of the Division of Science & Mathematics at Valley City State College from 1965 to 1974, and was coordinator when we built the new Science Center building.

From 74 - 80, I was at the Fairmont Foods Research Labs in Omaha, NE, and then returned to academia, at the University of Nebraska, Food Science & Technology Dept, from 80 - 87. I have been in the Department of Grain Science & Industry at Kansas State University since then, interrupted by frequent trips to Australia, China, and other countries.

In 2002, I went on a 3-year 50% phased-in retirement at age 65, and have been hired back on a part-time basis since 2005. I still spend essentially full-time at work, and am still supervising several graduate students. They are due to finish during 2009.

But I have agreed to remain active for another year to coordinate the Department's Centennial Celebration in the Fall of 2010. This department had its beginnings at about the same time as NDSU's Cereal Technology Department when evaluation on wheat quality began in the Kansas Ag College's chemistry department in 1905. The ancestor of the Grain Science department was officially established in 1910.

We love to hear from our alumni. If you have news you would like to share with our School of Food Systems, please send it to Char Kuss at c.kuss@ndsu.edu.

The School of Food Systems offers a wide variety of academic programs:

- Undergraduate Minor in Food Safety
- Bachelor of Science degree in Food Safety
- Bachelor of Science degree in Food Science
- Graduate Certificate in Food Protection
- Master of Science degree in Cereal Science
- Master of Science degree in Food Safety (both thesis and non-thesis options). Note: The non-thesis option can be obtained completely online
- Ph.D. degree in Cereal Science
- Ph.D. degree in Food Safety

New initiatives in the works include:

- Course sharing with SDSU
- Increasing the number of online elective courses in the Food Safety and Food Science programs
- A Food Safety track in a new M.P.H. program

For more information about the GPIFS including:

- Other institute research activities
- More about our academic programs
- Career opportunities
- Food safety extension and outreach
- Food safety certification
- Our international activities

please visit our Web site at www.ndsu.nodak.edu/foodsafety

International Experience Course

In the advent of globalization, we are faced with new challenges including the spread of animal and human pandemics. One way to confront these threats is to adjust curricula in a way that will promote globalization of research and career opportunities. In line with this, the Department of Veterinary & Microbiological Sciences at North Dakota State University, in conjunction with the Department of Veterinary Public Health & Preventive Medicine, Makerere University, Kampala, Uganda, have developed this course designed to facilitate diversity in student training and exposure.

www.ndsu.edu/dce/degreeeligibleactivity/ugandaShow.html

And

http://vetmicro.ndsu.nodak.edu/Summer_Program_Uganda.htm

Please send us your story ideas and updates for future newsletters. We especially would love to hear updates from our alumni.

Send items and/or enquiries to

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Thanks to Our Donors!

Donors make important contributions to the scholarship program and other activities that enhance the student experience. Below is a summary of donors this past year to the Department of Cereal and Food Sciences. We are grateful for contributions of any size. If you wish to designate your contribution for a particular use, please feel free to do so.

Jeffry and Suzanne Bernhardt

Rachel L. Brudvik

Bert D'Appolonia

Marco and Rosario Nevado

William and Mary Niehaus

Decai and Yan Zhang