Winter 2015

The Jackrabbit Dairy Review

Vikram Mistry
South Dakota State University, Vikram.Mistry@sdstate.edu

Follow this and additional works at: http://openprairie.sdstate.edu/dairy_review
Part of the Dairy Science Commons

Recommended Citation
http://openprairie.sdstate.edu/dairy_review/2

This Newsletter is brought to you for free and open access by the Dairy Science at Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. It has been accepted for inclusion in The Jackrabbit Dairy Review by an authorized administrator of Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. For more information, please contact michael.biundo@sdstate.edu.
The Jackrabbit Dairy Review

DAIRY SCIENCE DEPARTMENT

Faculty
Sanjeev Anand  Associate Professor
Jill Anderson  Assistant Professor
Howard Bonnemann  Lecturer
Kristen Carlisle  Assistant Director, First Year Advising
David Casper  Assistant Professor
Alvaro Garcia  Agriculture and Natural Resources Program Director/Professor
Lloyd Metzger  Professor, Alfred Chair in Dairy Education
Vikram Mistry  Professor and Department Head
Hasmukh Patel  Assistant Professor
Maristela Rovai  Assistant Professor/Extension Dairy Specialist

Adjunct Faculty
Ashraf Hassan
Thom Hupertz
K. Rajinder Nauth

Emeritus Faculty
Robert Baer  currently in the Black Hills area
David Henning  currently in Wisconsin
John Parsons  currently in Arkansas
David Schingoethe  currently in Brookings

Staff
Steve Beckman  Filtration Technologist
Ananya Biswas  Research Associate
Tracey Erickson  Extension Field Specialist
John Haberkorn  Manager, Davis Dairy Plant
Akimoto Ichinomiya  Assistant Manager, Davis Dairy Plant
Anil Kommineni  Assistant Manager, Institute for Dairy Ingredient Processing
Pete Linke  Ag Foreman/Fresh and Sick Cows/ Calf Care/Interim Dairy Farm Manager
Sonia Patel  Application Technologist
Jayne Raabe  Senior Secretary
Melissa Schmitt  Assistant Manager, Dairy Research and Training Facility
Suja Senan  Post Doc Research Associate
Ty Wilczinski  Ag Foreman/Feeding, Maintenance

MESSAGE FROM THE DEPARTMENT HEAD

2014 was a vibrant year for the dairy science department presenting exciting opportunities as well as challenges. Early in the year we awarded a record $108,000 in scholarships to dairy science students. This generosity of donors and continuing strong demand of graduates helped us recruit students resulting in a record high enrollment of 105 majors and 95 students. We will continue our efforts and market our programs for further increases to meet industry demands of graduates. An Institutional Program Review led by a team of well-respected peers from off campus clearly identified the strengths of the department in terms of faculty, staff and programs and also provided recommendations for further strengthening the program. Dr. Sanjeev Anand was promoted to professor of dairy science. Several of our faculty members extended their impacts overseas. Dr. Hasmukh Patel in East Africa, Dr. Ashraf Hassan in Lebanon, Dr. David Casper in China, and Dr. Lloyd Metzger in Brazil. This outreach was the result of these faculty members recognized excellence in their respective programs. We also witnessed the departure of four faculty members to other positions. Dr. Alvaro Garcia, our long-time dairy Extension specialist, accepted a position as program director on campus and will serve the entire SDSU Extension system. Dr. Kenneth Kalscheur, professor in dairy production accepted a research position with USDA-ARS in Madison, Wisconsin; Dr. Ashraf Hassan, associate professor in dairy manufacturing, has become a research scientist at Daisy Brands in Texas; and Stephen Crego, dairy farm manager, accepted a position as senior research specialist with ABS Global, Inc., in DeForest, Wis. These individuals collectively represented approximately 41 years of excellent service to the department. We thank them for their service and wish them well in their new endeavors. We are in various stages of the recruitment process for filling the programmatic vacancies that their departure has created. In the meantime our current faculty members have graciously taken on the additional task of filling in for the duties of the departed faculty members to enable seamless continuation of programs. In fiscal year 2014 dairy science faculty members had secured over $1.25 million in external grants through 26 projects to cover research projects and support graduate students and researchers. Our Dairy Products Judging Team received a seventh straight national championship, and the cattle judging and dairy challenge teams also were very competitive at national events. In another major development, the university made the decision in 2014 to move the food science and human nutrition program from the College of Education and Human Sciences to the dairy science department in the College of Agriculture and Biological Sciences effective July 2015. Beginning with the new academic year we will offer three majors in the department, dairy production, dairy manufacturing, and food science. Three additional faculty members will join the department, and we will also begin the recruiting process for students to join the new major. The new program complements the existing dairy programs very well and will present additional opportunities for us to serve the bigger food industry and for faculty members in the two areas to develop collaborative research programs. Help us spread the word about exciting careers in dairy science, its outstanding scholarship program, and the opportunity to engage with world-class faculty and facilities. We are well poised to continue to serve the dairy and food industry through our teaching, research and service programs.

Vikram Mistry

CLASS OF 2018

Dairy Science Department
Alfred Dairy Science Hall
South Dakota State University
Brookings, SD 57007-0647

Phone: 605-688-4116
Fax: 605-688-6276
Email: vikram.mistry@sdstate.edu
www.sdstate.edu/fs
NEW FACULTY AND VISITORS

2014 GRADUATES

Ph.D.
Sanjeewa Ranathunga, Sri Lanka, Production
M.S.
Kimberly Buchner, White, Manufacturing
Fernando Diaz-Royon, Spain, Production
Dana Gadeken, Alexandria, Va., Production
Akimoto Ichinomiya, Japan, Manufacturing
Nadeesha Jayasinghe, Sri Lanka, Production
Sowmya Marka, India, Manufacturing
Brittney Strayer, Wadena, Minn., Production

B.S. Manufacturing
Lee Alexander, Twin Brooks, Minn.
Kevin Berg, Baltic
Daniel Gacke, Beresford
Taylor Jones, Huron
Joshua Oakley, Dakota Dunes
Timothy Pennings, Arlington

B.S. General Agriculture
Christopher Schulze, Holland, Minn.

B.S. Production
Bethany Chapman, Winfred
Jordan Evans, Pipestone, Minn.
Jennifer Gunnnink, Lake Benton, Minn.
Matthew Holdvogt, Eden Valley, Minn.
Chelsey Johnson, Heron Lake, Minn.
Larissa Neugebauer, Dimock
Chelsey Shumski, Fairmont, Minn.

STUDENT ACCOMPLISHMENTS

Twelve graduate students working towards their Ph.D. or M.S. degrees in dairy production or dairy manufacturing presented their research work at the annual meetings of the American Dairy Science Association in Kansas City or Institute of Food Technologists in Chicago.

Sarah Post and Chelsea Schossow, sophomore dairy science students, were finalists in the Princess Kay of the Milky Way program of Minnesota, a very competitive program that selects the Minnesota Dairy Ambassador from among the finalists.

Chelsey Johnson and Maggie Stiles received National Dairy Shrine scholarships. Chelsey completed her B.S. degrees in dairy production and agriculture education, communication, and leadership with an education specialization in 2014 and is currently employed as a digital communications coordinator at Accelerated Genetics in Baraboo, Wis. Maggie is a junior dairy production and speech communications student and is active in dairy cattle judging team and Sigma Alpha professional ag sorority. During summer 2014 she completed a dairy nutrition internship with Cargill in California.

Thirteen of our students received National Dairy Promotion and Research Board scholarships. Recipients included: Samantha Berg, Pipestone, Minn.; Benjamin Choudek, Owatonna, Minn.; Morgan Goche, Burt, Iowa; Chelsey Johnson, Heron Lake, Minn.; Kimberly Maassen, Rock Rapids, Iowa; Sarah Post, Chandler, Minn.; Megan Schafer, Paynesville, Minn.; Audrey Souza, Milbank; Maggie Stiles, Lakeville, Minn.; Brent Van Middendorp, Sioux Falls; Meg Viland, Pipestone, Minn.; Kaylee Wegner, Faribault, Minn.; and Bobbi Jo Wild, Lansing, Iowa. On behalf of dairy farmers, the National Dairy Promotion and Research Board each year awards nationwide up to 19 $1,500 scholarships.

NEW FACULTY AND STAFF

Steven Beckman joined the department as filtration technologist in January 2014. Steve holds an M.S. in food science from Cornell University and a B.S. in food science and technology from the University of Nebraska, Lincoln. As filtration technologist he will conduct research in the ingredient application area and interface with external clients on research projects at the plant. Steve is also pursuing a Ph.D. degree in dairy manufacturing.

Dr. Maristela Rovai joined the department as assistant professor and Extension dairy specialist in November 2014. She holds a degree in veterinary science, from the Veterinary Medicine School in São Paulo, Brazil; a Ph.D. in animal science from the Autonomous University of Barcelona, and postdoctoral positions at the University of Wisconsin-Madison, E. de la Garza American Institute for Goat Research-Langston University, Technical University of Munich in Germany and Autonomous University of Barcelona. Dr. Rovai’s main interests have focused in milk quality improvement, lactation and mammary gland physiology, udder health and ruminant management. She has conducted research and development work on animal electronic identification in ruminants and research on aspects of lactation physiology and health issues as well as milking technology in dairy cows. Recently Dr. Rovai has gained experience working closely with farm personnel, veterinarians and field-related companies. The dairy industry in the region has been in an exciting growth and development phase for the past 15 years, and her experience and passion for the industry will be of great value to our students, Extension and the industry as a whole.

Suja Senan joined the department as postdoctoral research associate in November 2014. Dr. Senan holds a Ph.D. in dairy microbiology from And Agricultural University in Anand, India, M.Sc. in dairy microbiology from the National Dairy Research Institute, Karnal, India; and B.Tech, dairy technology from Gujarat Agricultural University, India. In her role she will work on functional bio-active dairy ingredients in collaboration with the pharmaceutical sciences department.

Randy Gross, former president of Holstein Association, USA, and retired assistant branch manager of Northwest Farm Credit Services of Washington State, served as visiting instructor in dairy production classes. Randy’s wealth of experience was most valuable to our students.

Jim Linn (professor emeritus of animal science, University of Minnesota), David Barban (Cornell University), Brian Paulson (Davisco Foods), Olga Ruevekamp (Hilltop Dairy) conducted a comprehensive institutional program review of the dairy science department. During their two-day visit they visited with several groups, toured facilities and developed recommendations for the department.

Walt Wosje, alumnus and retired CEO of Michigan Milk Producers served as guest lecturer in several of our classes and conducted individualized practice interviews for our students. Walt was also the recipient of a distinguished alumnus award of the SDSU Alumni Association in 2011.

VISITORS

Randy Gross

Suja Senan

VISITORS

Alfred Nef (left) of Valley Queen Cheese Factory, Milbank, presents Swiss cowbells to Dr. J. O. Young, Dairy Science Department head.

From the past, Alfred Nef (left) of Valley Queen Cheese Factory, Milbank, presents Swiss cowbells to Dr. J. O. Young, Dairy Science Department head.
JUDGING ACTIVITIES

DAIRY CATTLE EVALUATION

The SDSU Dairy Judging Team, coached by Jon Pretz, competed in several contests throughout 2014. For the North American International Livestock Exposition Dairy Judging Contest held in Louisville, Kentucky, the team placed 13th overall and 14th in reasons, second in Brown Swiss and seventh in Guernseys. David Trcka was the third high individual overall, ninth high individual in Ayrshires, 11th high individual in Brown Swiss, and third high individual in Holsteins. Jacob Johnson was 11th high individual in Reasons and Audrey Souza was seventh high individual in Jerseys and 14th in Brown Swiss. Bernice Vander Wal was 12th high individual in Guernseys and 14th in Jerseys. The team also competed at the annual National Collegiate Judging Contest at the World Dairy Expo in Madison, Wis., and placed 18th overall and 11th in reasons with 21 teams participating in the contest. With a 3-way tie for first place for red and white, the SDSU team placed third overall. Mikayla Piller placed second and Maggie Stiles eighth. The team placed fourth for Brown Swiss, Mikayla Piller placing 11th high individual. In September the team participated in the 21st annual Accelerated Genetics Intercollegiate Dairy Cattle Judging Contest in Viroqua, Wis. A total of 21 teams competed in the contest. At this contest the team placed 12th high team overall and 11th high team in reasons. Mikayla Piller was first high individual in the Guernsey and 16th high individual overall. At the Southwestern Exposition and Livestock Contest in Fort Worth, Texas, the team placed second overall among 13 collegiate teams. The team placed second in Jerseys, fourth in Holsteins and fourth in oral reasons. Mikayla placed first in Jerseys and placed fourth as high scoring individual.

DAIRY CHALLENGE

Our Dairy Challenge Team earned a second place award at the 13th Annual North American Intercollegiate Dairy Challenge® that was held in Ft. Wayne, Indiana. In total, 264 students from 37 colleges across the U.S. and Canada attended this educational event co-hosted by Purdue University, Michigan State University and The Ohio State University. The team, composed of David Berning, Matt Holdvogt, Chelsey Johnson and Holly Schmitt, ranked second from a field of eight teams, which evaluated the same operating dairy in the tri-state area. The team was coached by Kenneth Kalscheur, David Casper and Melissa Schmitt. In addition, a number of industry professionals assisted with practices to help prepare the team. For the contest, participants visited six dairy farms in Indiana, Michigan and Ohio, as part of their training to help farmers evaluate and adapt management to optimize success and animal care. Also, industry professionals presented cutting-edge research, new programs and career opportunities to students. Academy participants from SDSU included Jennifer Casperson, Sam Fuchs, Emily Martin, Riley Pitman and Sara Sontag.

DAIRY PRODUCTS

Our Dairy Products Judging Team placed first in all products at the 2014 Collegiate Dairy Products Evaluation Contest that was held at Northern Illinois University in Hoffman Estates, Illinois. This was the seventh consecutive year that SDSU won the national championship. SDSU has a long history at the contest and has won the national championship 22 times in the 93-year history of the contest. The team placed first in butter and ice cream, second in cheddar cheese, third in yogurt and cottage cheese, and fourth in milk. A total of 44 undergraduate and graduate contestants from 12 universities in the U.S. and Canada participated in the contest. SDSU team members were Rachel Achen, Rachel Johnson, Natasha Laska and Somil Gupta. The team is coached by Lloyd Metzger, SDSU professor of dairy science and Alfred Chair in Dairy Education, and Lee Alexander, SDSU graduate student. Achen placed fifth overall, first in butter and third in ice cream and cheddar cheese. As the top judge in butter, Achen received the Bert Aldrich Award. Laska placed fourth overall, second in butter and fourth in yogurt. Johnson was third overall, second in ice cream and milk, and fourth in butter. In the graduate student contest, Gupta placed sixth overall and was third in milk and butter. For placing first overall, the SDSU team won the Shirley Seas Memorial Scholarship given in memory of Shirley Seas, who coached the SDSU team for 21 years. Metzger also received the Aurelia and George Weigold Coach of the Year Award. The contest was hosted by Tate and Lyle and was sponsored by the U.S. Department of Agriculture and more than 25 dairy associations, companies and suppliers.

DAIRY CLUB

2014 Officers: Benjamin Choudek, president; Sara Sontag, vice president; Meg Viland, secretary; Bernice Vander Wal, treasurer; Megan Schafer and Maggie Stiles, historians; Sarah Post and Nicole Jax, activities coordinators; and Chelsey Johnson, Dairy Digest editor. Advisers were Drs. Jill Anderson, David Casper, Lloyd Metzger and graduate students Jon Pretz and Billy Weich. Club members attended ADSA-SAD regional conference in Columbus, Ohio, at The Ohio State University in February. In June, club members hosted youth at the 11th annual Jackrabbit Dairy Camp. Other club activities throughout the past year included the South Dakota State Fair, Ag-Bio Ice Cream Social, National Ag Day, Relay for Life, Hobo Day festivities, and cheese boxes.
PROFESSIONAL ACTIVITIES OF FACULTY AND STAFF

Faculty and students together present numerous papers including refereed publications in scientific journals, abstracts, presentations, book chapters, Extension publications, theses or dissertations and Extension presentations. All publications are listed on our website at www.sdstate.edu/ds.

**Dr. Sanjeev Anand**, a faculty member in dairy science since 2006 who teaches and conducts research in the areas of dairy microbiology and food safety, has won promotion to professor of dairy science. He teaches dairy microbiology, advanced dairy microbiology and food microbiology and routinely mentors undergraduate researchers as well as grad students working towards M.S. and Ph.D. degrees. Dr. Anand has mentored 14 undergraduate researchers, four Ph.D. and 14 M.S. students. He has established his research in four broad areas: biofilm development and control, control of shelf-life of dairy products, improving product quality, dairy products with enhanced health benefits, and general food safety education. This research has been supported by 26 grants totaling $1.8 million and is regularly disseminated through several means including refereed publication, presentations at national meetings, etc. Dr. Anand was instrumental in creating virtual food safety labs. This project was funded by USDA-CSREES and included participants from three SDSU departments, and three universities, including SDSU. He is an invited member of an expert group of the Food and Agriculture Organization of the U.N. and a member of the national Food Safety Committee of the American Dairy Science Association. He is the SDSU resource person in food safety and listed in the Food Safety Contacts Directory of USDA, NIFA, 2007-present. He serves as the department representative to the Functional Genomics Core Facility (2007–present) and the dairy science representative for the Van D. and Barbara B. Fishback Honors College (2013–present).

**Dr. Jill Anderson** joined the dairy science department as assistant professor in September 2012 and teaches several classes and has established a research program in heifer nutrition. She served on the College of Agriculture and Biological Sciences curriculum taskforce.

**Howard Bonnemann** has been on the dairy science faculty since 1997. He teaches Introduction to Dairy Science at the freshman level, Dairy Foods, parts of Dairy Product Processing I and II, Dairy Plant Management, Field Experience, and Undergraduate Research. Bonnemann also serves as academic adviser to approximately 20 students per semester. He is the assessment coordinator for the department and the College of ABS representative on the University Assessment Committee. Bonnemann is also the department curriculum coordinator and has conducted many FFA dairy products judging clinics across the state. He serves as the executive secretary for the South Dakota Dairy Association. In recognition of his service to the department he was presented the first David Schingoethe Citizenship Award in Dairy Science and the Walt McCarty Advising Award of the College of Agriculture and Biological Sciences to recognize his outstanding advising record.

**Dr. David Casper** began his research and teaching position as assistant professor of dairy science in 2011 and serves in various capacities on boards of the American Dairy Science Association and the American Society of Animal Science. He served as co-coach of the Intercollegiate Dairy Challenge Team. Among several other classes, he co-taught an Ag-Bio class in the spring for a study abroad trip to New Zealand. During summer 2014 Dr. Casper travelled to China on an industry trip surveying the dairy industry.

**Dr. Alvaro Garcia** has been a faculty member in dairy science since 2001 as Extension dairy specialist. In spring 2014 he was selected to serve in Extension administration for the college as agriculture and natural resources program director. While he continues to hold tenure in the dairy science department, in his new position he serves the entire College of Agriculture and Biological Sciences. Dr. Garcia was recognized with the SDSU Award for Excellence in Outreach and Engagement. The global reach of his work includes North America, South America, Europe and Middle East. He has been a leader in conducting training for thousands of Spanish-speaking dairy employees. Dr. Garcia has also been a leading organizer for the I-29 Dairy Conference and has played a major role in helping increase the profitability of local producers. He has authored 11 refereed publications, 81 Extension publications in English and 55 in Spanish, two book chapters and made 28 invited international presentations.

**John Haberkorn** served as the manager of the Davis Dairy Plant. In addition to managing the plant he provided tours of the plant to numerous groups, initiated several new programs, including student edition cheeses, GMP program, development and production of a large range of flavored cheeses, and a positive release program. All initiatives involve student participation.

**Dr. Ashraf Hassan** who joined SDSU in 2003 accepted a position with Dairy Brand in Texas and is now adjunct in the department. His position is currently vacant.

**Dr. Kenneth Kalscheur** joined SDSU in 2001 and was offered a position with USDA-ARS in Madison, Wis. His position is currently vacant.

**Peter Linke** who is an ag foreperson at the dairy research and training facility graciously accepted the position of interim farm manager when the former manager Stephen Crego departed for another position in industry. Recruiting for the farm manager position is in progress.

**Dr. Lloyd Metzger** served as director of the Midwest Dairy Foods Research Center and the executive secretary of the North Central Cheese Industries Association, member of the ADSA Dairy Foods Milk Protein and Enzyme Committee, president of the ADSA Dairy Foods division and member of the editorial board of the Journal of Dairy Science. Dr. Metzger has served as coach of the Dairy Products Judging Team and led the SDSU team to a record seventh national championship. Dr. Metzger travelled to Brazil where he discussed process cheese manufacturing with the local industry.

**Dr. Vikram Mistry** served as the U.S. editor of the French Journal of Dairy Science and Technology, and associate director of the Midwest Dairy Foods Research Association. He also served on the boards of the American Dairy Association of South Dakota, South Dakota Dairy Producers, American Dairy Science Association Foundation, and advisor to the North Central Cheese Association and the South Dakota Dairy Producers.

**Dr. Hasmukh Patel** joined the dairy science department in 2012 and has established a research program on understanding the basic mechanisms of protein interactions and provides new knowledge, which enables the design of novel, value-added ingredients with tailored functional and nutritional properties. In spring 2014 he was invited by the Clinton Health Access Initiative to travel to Uganda and Kenya as a dairy expert to assist the local industry with dairy processing and nutrition matters.

**Tracey Erickson** continues as Extension dairy field specialist at the Watertown Regional Center. In December 2014 she completed her Master of Science in administrative studies with an emphasis in human resources. Erickson is the co-chair of the I-29 Dairy Conference and the lead department person for iGrow activities. In addition to her Extension work, she also served as the secretary of the South Dakota Dairy Fieldmen’s Association. Erickson is the vice chair for the university Professional Staff Advisory Council, representing over 500 professional staff (non-faculty exempt) employees at SDSU. She also serves on the Central Plains Dairy Association Advisory board of directors overseeing the Central Plains Dairy Association Expo and yearly dairy events and co-coordinates the youth 4-H Dairy Cattle Evaluation and serves as an adviser to the 4-H Dairy Cattle program in South Dakota.

YEARS OF SERVICE

**Jill Anderson, David Casper and Lloyd Metzger** were each recognized for 10 years of service to SDSU. Dr. Anderson, currently an assistant professor, began her employment as a graduate research assistant, after which she served as a research associate and then as a faculty member. Dr. Casper joined the department as graduate research assistant and research assistant during the early 1980s and then returned as assistant professor in 2011. Dr. Metzger joined the department as associate professor and Alfred Chair in Dairy Education and is currently professor and director of the Midwest Dairy Foods Research Center. He was previously employed as a graduate research assistant during 1992-1994.
ONGOING FUNDS FOR SUPPORTING RESEARCH

Completed projects are listed on our website: www.sdstate.edu/ds.

Anand, S. K. To improve the microbial quality of milk powders by controlling thermally resistant spore forming and spores. 8.01.12 to 7.31.15. Dairy Research Institute. $287,613.
Anand, S. K. Does feeding lactic acid bacteria as a “direct fed microbe” to lactating dairy cows influence microbial quality of raw milk. 5.01.14 to 4.30.15. Midwest Dairy Foods Research Center. $8,990.
Anderson, J. K. Griffith Undergraduate Research Award. 6.11.14 to 4.30.15. SDSU $2,000.
Anderson, J. K. Feeding microbiologically-enhanced soyprotein in dairy calf starter with traditional or accelerated milk replacer. 5.01.14 to 6.30.15. South Dakota Soybean Promotion and Research Council. $37,853.
Anderson, J. K., Singsho, D. J. Maximize the use of Canola meal in dairy feed diets: amino acid nutrition and metabolism. 7.01.10 to 7.01.14. Canola Council of Canada. $229,000.
Casper, D. P. Commercial dairy farm evaluation of milk replacers with different protein concentrations and sources. 3.15.13 to 9.30.14. Milk Specialties Global. $8,000.
Casper, D. P. High quality forage blends. 8.04.14 to 5.31.16. Ceres Trust. $10,000.
Casper, D. P. Effects of rumen-protect methionine and histidine sources fed to lactating dairy cows. 11.04.13 to 10.31.15. Kemin Industries. $67,981.
Casper, D. P. To-determine if corn varieties that are high in energy density and digestible starch can improve the growth rates in young calves fed calf starter. 10.26.12 to 2.01.14. Master’s Choice. $21,892.
Cortus, E., Pohl, S., Garcia, A. D. Managing variable costs on dairy farms through energy use assessment and conservation. 7.01.10 to 7.01.14. North Central Risk Management Center. $23,066.
Hassan, A. Role of Baccillus SUPP. In spoilage of yogurt and sour cream. 1.01.14 to 12.31.16. Dairy Brand. $154,200.
Metzger, L. E. Application scientist at the IDIP. 7.01.13 to 6.30.15. Dairy Research Institute. $118,493.
Metzger, L. E. Concentration, storage stability and functionality of highly concentrated micellar casein. 10.01.11 to 6.30.14. Dairy Management Inc. $91,822.
Metzger, L. E. Scale-up of modified milk protein concentrate to replace rennet casein. 07.01.13 to 12.31.15. Dairy Research Institute. $47,971.

DAIRY FACILITIES

Davis Dairy Plant
Davis Dairy Plant tours attract a wide range of visitors, including schools, alumni, prospective students, professionals and many others, including those that are curious about the manufacture of dairy products. A virtual tour of the plant is available at www.sdstate.edu/ds/plant/video. Through the very comprehensive programs developed by plant manager, John Haber­

korn, students receive excellent hands-on training for product manufacture, quality assurance, product development and general plant management. In summer 2014 dairy science students began manufacturing their own cheese flavors under the Student Edition Cheese program. A cheese flavor is developed by a dairy science student and produced at the Davis Dairy Plant under standard manufacturing protocols. It undergoes a series of quality tests to make sure it meets industry and SDSU standards and is then cut, wrapped and labeled with the type of cheese and the name of the originating student. The first Student Edition Cheese was maple bacon created by Rachel Johnson. In 2014, we extended invitations to all our Jackrabbit Dairy Council members and donors for the dairy plant project to come to campus to conduct interviews for summer internships and permanent positions. Fifteen donor companies visited the department and conducted over 200 interviews and follow-up on-site interviews. Job offers for permanent positions and summer internships are being finalized.

Dairy Research and Training Facility
Our Dairy Research and Training Facility has approximately 350 certified and registered milking cows and a total of 300 animals including approximately 50 Brown Swiss. The rolling herd average attained a record of just over 25,000 pounds per year. The herd is primarily used for research projects in the cattle nutrition area and also for teaching. In addition, K-12 students also benefit from it through the Dairy Camp and cattle judging contests that are hosted at the farm. Benjamin Choudek and Jennifer Casperson serve as student managers. Peter Linke and Melissa Schmitt, interim manager and assistant manager, respectively, managed the farm. Ty Wilczinski serves the DRFA as ag foreman and has the duty of feeding and maintenance. We are now embarking on a project for renovating and remodeling the facility to help us meet the teaching and research goals of the future. For planning of the new facility, we will invite input from dairy producers and other industry groups over the next year.

One of the many Student Edition Cheese flavors.

Students working in the Davis Dairy Plant.
SCHOLARSHIPS

Our students were once again the beneficiaries of the generosity of many alumni, friends and industry. At the spring 2014 banquet, 220 attendees witnessed the award of 68 scholarships and awards valued at about $108,000.

Agropur Inc. Dairy Manufacturing, $1,250
Agropur Inc. Dairy Production, $1,250
Alfred Hermann Rishoi, (2/$550) $1,100
Associated Milk Producers Inc., $1,000
Bel Brands USA, $3,000
 Clyde Helper Memorial, $1,000
 Dairy Club, (3/$250) $750
 Dairy Connections, $1,000
 Dairy Farmers of America, $400
 Dairy Science, (4/$250) $1,000
 David H. Henry Memorial in ABS, $200
 David J. Schingoethe, $1,000
 Davisco Foods Int'l, and Jay Headley Memorial, $1,500
 Dean Foods - Land O Lakes, $1,250
 Derdall, $500
 Emery Bartle Memorial, $5,000
 George Marx, $1,000
 Gilbert T. & Olga Gilbertson Memorial, $400
 H. C. Olsen, $450
 Harbarth, (7/$800) $5,600
 Heifers for State, (2/$500) $1,000
 Idaho Milk Processors Association, (2/$2,000) $4,000
 J. J. Yee, $500
 James Marvel Memorial, $400
 James Marvel Memorial, $400
 Jessica Goens, $1,000
 John Anderson Memorial, (2/$2,000) $4,000
 John C. Gross, $1,000
 Joseph Van Treeck, $1,300
 Kemps LLC, $1,500
 Kirk Mears Memorial, $1,000
 Land O' Lakes-Region 65, $400
 Leprino Foods, $4,000
 Midwest Dairy Association, (2/$3,500 each) $7,000
 North Central Cheese Industries Association, (2/$1,000, 2/$2,000) $6,000
 Ore Family, $500

DAIRY SCIENCE STUDENTS

SCHOLARSHIPS

Our students were once again the beneficiaries of the generosity of many alumni, friends and industry. At the spring 2014 banquet, 220 attendees witnessed the award of 68 scholarships and awards valued at about $108,000.

Agropur Inc. Dairy Manufacturing, $1,250
Agropur Inc. Dairy Production, $1,250
Alfred Hermann Rishoi, (2/$550) $1,100
Associated Milk Producers Inc., $1,000
Bel Brands USA, $3,000
 Clyde Helper Memorial, $1,000
 Dairy Club, (3/$250) $750
 Dairy Connections, $1,000
 Dairy Farmers of America, $400
 Dairy Science, (4/$250) $1,000
 David H. Henry Memorial in ABS, $200
 David J. Schingoethe, $1,000
 Davisco Foods Int'l, and Jay Headley Memorial, $1,500
 Dean Foods - Land O Lakes, $1,250
 Derdall, $500
 Emery Bartle Memorial, $5,000
 George Marx, $1,000
 Gilbert T. & Olga Gilbertson Memorial, $400
 H. C. Olsen, $450
 Harbarth, (7/$800) $5,600
 Heifers for State, (2/$500) $1,000
 Idaho Milk Processors Association, (2/$2,000) $4,000
 J. J. Yee, $500
 James Marvel Memorial, $400
 James Marvel Memorial, $400
 Jessica Goens, $1,000
 John Anderson Memorial, (2/$2,000) $4,000
 John C. Gross, $1,000
 Joseph Van Treeck, $1,300
 Kemps LLC, $1,500
 Kirk Mears Memorial, $1,000
 Land O' Lakes-Region 65, $400
 Leprino Foods, $4,000
 Midwest Dairy Association, (2/$3,500 each) $7,000
 North Central Cheese Industries Association, (2/$1,000, 2/$2,000) $6,000
 Ore Family, $500

DAIRY SCIENCE STUDENTS

GRADUATE STUDENTS

Dairy Production
Indiwey Acharya, Nepal
Samah Basha, Nepal
Kelly Froehlich, Grasston, Minn.
Kayla Hulshquist, Muscatine, Iowa
Oksana Kuester, Silver Spring, Md.
Rhea Lawrence, Aurora, Ill.
Peter Linke, Mitchell
Angelina Manthe, Janesville, Minn.
Andrew Mendes, Bristol, Vt.
Phil Pozdnek, Minn.
Karla Rodrigues-Hernandez, Mexico
Juan Sanchez-Duarte, Mexico
Nirosh Seneviratne, Sri Lanka
William Weich, Rogers, Minn.
Dairy Manufacturing
Lee Alexander, Twin Brookstar
Tagreedee Almaliki, Saudi Arabia
Dhikii Bawa, India
Steven Beckman, Lincoln, Neb.
Ashok K. Bhattacharjisa, India
Ananya Biswas, India
Hiral Vora, India

UNDERGRADUATE STUDENTS

Manufacturing
Rachel Achen, Warner
Samatha Berg, Pipestone, Minn.
Joshua Blase, Twin Lakes, Wis.
Jared Bowens, Hartley
Leana Bucholtz, New London, Ill.
Lauren Chimside, Lees Summit, Mo.
Kaelyn Dammell, Mitchell
Peter DeVries, Olympia, Wash.
Kristin Ehr, Oakdale, Minn.
Morgan Goche, Burt, Iowa
Rob Goetz, South Falls
Anna Hemmenway, Huron
Nicole Jax, Waltham, Minn.
Marchelle Jazdzewski, Gilman, Wis.
Jacob Jewett, Glencoe, Minn.
Courtney Johnson, Huron
Gramm Johnson, Fulton
Krista Johnson, Russell, Minn.
Rachel Johnson, Russell, Minn.
Andrew Kaskie, Hudson
Molly Kennedy, Beresford
Kevin Kral, Hanska, Minn.
Weina Liu, China
Rachel Larson, Beresford
Natasha Laska, Canton
Kimberly Maassen, Rock Valley, Iowa
Kyla Mauk, Howard Lake, Minn.
Kristin Mohr, New Ulm, Minn.
Geena Mott, Minneapolis, Minn.
Hayden Palmer, Beresford
Shayna Popkes, Rock Rapids, Iowa
Cassie Scapsausky, Sauk Rapids, Minn.

Production
Brennen Albrecht, Stuttgart, Minn.
Kimberly Azevedo, Merced, Calif.
Bennet Baker, Kasota, Minn.
Olivia Bartel, New London, Wis.
Jacob Bierstedt, Pipestone, Minn.
Riley Boddow, Baltic
Hersain Cancino, Saint Peter, Minn.
Benjamin Choudrey, Owatonna, Minn.
Kylie Fischer, New Ulm, Minn.
Katelyn Groetsch, Albany, Minn.
Brandon Hawkins, New Ulm, Minn.
Joseph Hoffman, New Ulm, Minn.
Aidinn Hofmeyer, Paulina, Iowa
Jacob Johnson, Heron Lake, Minn.
Brianna Lee, West Union, Iowa
Brandon Lindquist, Kerrogeven, Minn.
Emily Martin, Rochester, Minn.
Lauren McMartin, Gerber, Calif.
Andrew Wolter, Perry, Iowa

Manufacturing and Manufacturing
John Beusman, Springfield, Minn.
Sam Fuchs, Eureka
Koel Hoy, West Salem, Wis.
Katelyn Johnson, Sleepy Eye, Minn.
Mohammad Khawaja, Pakistan
Kerby Kroghostad, Eota, Minn.
Holly Schmitt, Thorp, Wis.
Teresa Sandberg, Taylors Falls, Minn.

INDUSTRY SCHOLARSHIPS

Valley Queen Cheese Factory, $1,000
SD State Dairy Association, (4/$1,000) $4,000
SD Dairy Fieldmen’s Association, (7/$1,000) $7,000
SD State Dairy Association, (2/$500) $1,000
Valley Queen Cheese Factory, $1,000
William & Marge Kallemeyn & Sons, $1,150

GRADUATE STUDENT SCHOLARSHIPS

Dairy Recognition and Education Foundation, (2/$4275) $8,550
Delbert and Robert Brezeale Memorial Award, $750

AWARDS

Alfred Tobkin Memorial, (4/$200) $800
Arnold Heppen Dairy Challenge, (4/$200) $800
Dairy Judging Manufacturing, $150
Dairy Judging Production, $150

Forbes Leadership, $285
Graber-Ford, $150
Howard Voelker Memorial, (4/$200) $800
Students Employee Excellence, (2/$250) $500

INCOMING STUDENT SCHOLARSHIPS

Dairy Science Faculty, $600
Heifers for State, (2/$500) $1,000
Howard Voelker Freshman Dairy Production, $1,000
Midwest Dairy Association, (3/$1,000) $3,000
SD Dairy Fieldmen’s Association, (7/$8,000) $7,000
SD State Dairy Association, (2/$500) $1,000
Valley Queen Cheese Factory, $1,000
William & Marge Kallemeyn & Sons, $1,150

GRADUATE STUDENT SCHOLARSHIPS

Dairy Recognition and Education Foundation, (2/$4275) $8,550
Delbert and Robert Brezeale Memorial Award, $750

New students in 2014-2015

Samantha Schaefer, Lake Benton, Minn.
Erik Ode, Brandon
Gregory Reeter, Volga
Sarah Post, Chandler, Minn.
Abigail Weyers, Plano, Texas
Angela Wick, Jordan, Minn.
David Wick, Jordan, Minn.
Bobbi Jo Wild, Lansing, Iowa
Andrew Wolter, Perry, Iowa

Production and Manufacturing
John Beusman, Springfield, Minn.
Sam Fuchs, Eureka
Cole Hoy, West Salem, Wis.
Katelyn Johnson, Sleepy Eye, Minn.
Mohammad Khawaja, Pakistan
Kerby Kroghostad, Eota, Minn.
Holly Schmitt, Thorp, Wis.
Teresa Sandberg, Taylors Falls, Minn.

Manufacturing and Production
John Beusman, Springfield, Minn.
Sam Fuchs, Eureka
Cole Hoy, West Salem, Wis.
Katelyn Johnson, Sleepy Eye, Minn.
Mohammad Khawaja, Pakistan
Kerby Kroghostad, Eota, Minn.
Holly Schmitt, Thorp, Wis.
Teresa Sandberg, Taylors Falls, Minn.

New students in 2014-2015
OUTREACH

Area Dairy Expos
Alumni, students, staff, and faculty of the dairy science department participated in Central Plains Dairy Expo in Madison, Wis. Faculty and students also participated in the Washington Pavilion Ag Day events in Sioux Falls, demonstrating various dairy activities to participants.

North Central Cheese Industries Association
Dr. Lloyd Metzger serves as executive secretary and Dr. Vikram Mistry as adviser to the NCCIA. The annual meeting was held in Sioux Falls in October and attracted over 130 cheese makers and suppliers from the upper Midwest.

Jackrabbit Dairy Drive
Roger Scheibe, industry relations director of the Midwest Dairy Association and SDSU dairy science alum, collaborated with SDSU athletics for the first Jackrabbit Dairy Drive at a women’s basketball game on campus. The purpose of the event was to honor dairy producers, promote the dairy industry and raise funds for the dairy research and training facility renovations. In fall another dairy drive was organized by industry during a football game between SDSU and Cal Poly.

Faculty Travel
Faculty members travelled overseas on professional assignments to assist the dairy industry; Dr. Hasmukh Patel, assistant professor, visited Uganda and Kenya in East Africa as an appointee of the Clinton Health Access Initiative (CHAI). He served as a dairy expert and consultant to research the dairy sector in these countries as it relates to CHAI’s nutrition work in East Africa. Founded by former President Bill Clinton in 2002, CHAI utilizes business strategy and solutions to improve market dynamics for medicines and diagnostics and develop more effective local management of health care in the developing world. Dr. Ashraf Hassan, former associate professor completed a successful two-week volunteer abroad assignment in Lebanon. His visit was made possible by the Farmer-to-Farmer (F2F) Middle East and North Africa (MENA) program, which is being led by Land O’ Lakes International Development and funded by the U.S. Agency for International Development (USAID). While on assignment in Lebanon, Dr. Hassan helped a small dairy company gain a competitive advantage by improving sanitation and expanding their products to include cheddar, feta, soft mozzarella, pizza, braid and gouda cheeses.

SDSU-NIZO Joint Symposium
The SDSU Dairy Science Department collaborated with NIZO Food Research of the Netherlands to organize a joint international symposia on “Spray Drying, Dairy Ingredient Functionality and Applications” at the dairy science department. The department and NIZO now have an active collaboration and this course is one of the outcomes. Dr. Thom Huppertz of NIZO is an adjunct professor at SDSU and works closely with the department on research projects in the dairy ingredient area. Deb Anderson VP at NIZO is a dairy science alumnus. The symposia was attended by 39 participants (52 including speakers) from six countries (USA, Canada, Australia, Germany, Denmark and The Netherlands). Participants spanned across 25 different dairy companies, research organizations and U.S. Dairy Export Council. The symposia included topics ranging from basics of evaporation and drying to computer simulations over a two-day period.

K-12 STUDENTS

Dairy Camp
The Dairy Club hosted the 11th annual Dairy Camp in June for youth ages 8-18. Activities included a visit to a local commercial dairy, training on care of heifers, judging, visit to the SDSU dairy plant, making ice cream, clipping and showing cattle, and entertainment. Participants learned what they learned at a showmanship contest on the final day of the camp. Parents were invited to attend the show.

High School Visits
Recruiting students for our programs is a year-round activity and a priority. Dairy science Ag-Bio Ambassadors visited several high schools throughout the year in South Dakota, Iowa and Minnesota. In addition, the department visited schools and career fairs in Minnesota and South Dakota.

EXTENSION

The Ninth Annual I-29 Dairy Conference
The Ninth Annual I-29 Dairy Conference was held in Sioux Falls in January 2014, with a focus on preparation and development of a sustainable dairy community via the I-29 Dairy Conference “Moo-University.” The keynote speaker was Amanda Radke, a livestock advocate and freelance writer and blogger. Ninety participants attended.

First Annual Dairy Fest
The inaugural Annual Dairy Fest was held June 6-7, 2014, at the Swiftest Center in Brookings hosted by the Dairy Festival steering committee made up of dairy industry representatives and dairy producers. The steering committee’s mission is “to help educate consumers about the dairy industry and the future of dairy youth education.” Proceeds from the event will be used for two scholarships of $500 each to educate youth about the dairy industry and will be awarded in spring 2015 by the dairy science department. The festival began with a “Got Milk” Gala on June 6 featuring various dairy products in food entries and was attended by 150 people. On Saturday, June 7, the committee hosted the Dairy Youth Carnival, coordinated by Roger Scheibe, MDA, and Tracey Erickson, SDSU Extension dairy field specialist. Many volunteers worked with the SDSU Dairy Club, SDSU dairy science faculty, dairy producers and dairy industry people to coordinate the event’s hands-on activities including teaching youth and their parents about dairying, where the milk goes, how it is turned into dairy products, and the nutritional value of dairy products.

Educating Young Consumers
In May 2014, Extension provided informative sessions about agriculture to 68 inner-city first-grade students from Sioux Falls and 14 adult chaperones. The focus of the 20-minute sessions was to learn about agriculture hands-on. Tracey Erickson coordinated the dairy portion of the activities using live cows to demonstrate how the cows take in feed and then break the feedstuffs into nutrients to make milk. In addition, Dr. Lloyd Metzger taught the kids how milk was turned into cheese and what nutrients cheese contains.

Human resource management training modules developed by Tracey Erickson, SDSU Extension dairy field specialist, and Dr. Alvaro Garcia, ANR program leader/professor dairy nutrition, are used to expand the human resource skill set and ensure the continued success of dairy producers, employees and support industries. These modules and other dairy research information is available through iGrow at iGrow.org under the “Livestock > Dairy” tab.
RESEARCH HIGHLIGHTS

Faculty research activities are supported by the Agricultural Experiment Station and external grants. The broad areas of research are as follows:

Metabolic Relationships in Supply of Nutrients for Lactating Cows (NC-1009) Dr. David Casper Quantify supply, availability and interaction of nutrients and bioactive compounds utilized for efficient milk production while reducing environmental impact. Identify and quantify molecular, cellular and organismal signals that regulate partitioning and efficient conversion of nutrients to milk. This knowledge of feed properties and metabolic and molecular quantitative relationships to challenge and refine nutrient requirement models leading to more precise feeding systems for dairy cattle.

Management Systems to Improve the Economic and Environmental Sustainability of Dairy Enterprises (Rex. NC-1119) Dr. Jill Anderson Optimize calf and heifer performance through increased understanding of feeding strategies, management systems, well-being, productivity and environmental impact for productivity and profitability. Improve dairy cow management decisions through nutrient utilization, well-being and profitability. Analyze whole farm system components and integrate information into decision-support tools to improve efficiency, enhance profitability and environmental sustainability.

Evaluation of Different Dietary Energy Sources on Growth Performance and Metabolism of Replacement Dairy Heifers Dr. Jill Anderson Overall: Determine how different dietary energy sources impact calf and heifer growth, nutrient digestion, metabolism and reproductive development. Determine if energy and protein from distillers grains can replace energy and protein from forage sources in growing dairy heifer rations in precision feeding scenarios. Determine how particle size of the ration forage with slowly degradable concentrate sources influences total tract digestion of feedstuffs in precision-fed rations for dairy heifers. Determine how much supplemental fat can be fed in replacement of starch from corn in moderate forage (>50 percent) heifer diets. Long term goal: Determine if manipulation of the energy sources in diets of dairy heifers can decrease age at puberty and breeding, and therefore shorten the time it takes to initiate lactation without negatively impacting milk production of primiparous cows.

Manufacture of Dairy Based Ingredients Dr. Lloyd Metzger Manufacture of modified milk protein concentrates and their utilization as ingredients and will include several related research projects. The objectives are: 1) determine the impact of carbon dioxide injection on membrane performance, mineral content, and functionality of milk protein concentrate; and 2) evaluate the effectiveness of transglutaminase to modify the functionality of native casein concentrate and milk protein concentrate when they are used as ingredients in process cheese products and to evaluate the commercial feasibility of a novel process for producing a unique dairy-based ingredient that is targeted for process cheese product applications.

Structure-Function Relationship of Milk Proteins and Design of Dairy Ingredients with Tailored Functionality, Improved Nutrition and Health Benefits Drs. Hasmukh Patel, Lloyd Metzger and Bonny Specker The objectives are 1) to improve our knowledge of structure-function relationship of milk proteins 2) to provide link between food structure and bioavailability/ nutrient delivery 3) to improve understanding and provide insights for designing new dairy ingredients with improved nutrition and functionality.

Improving Feed Efficiency Through High Forage Rations as a Feeding Strategy to Increase the Profitability and Sustainability of Dairy Production Dr. David Casper Identify and evaluate methods to improve the feed efficiency of dairy cows through traditional forage quality and new forage hybrids that may come available for use in dairy cattle diets. Most evaluations will be as feeds for lactating cows, although some evaluations (e.g. specific nutrient profiles) may be with growing heifers or dry cows. Specific objectives include three steps. First, evaluating the nutritional composition and feeding value of highly digestible forages and new forage hybrids for maximum inclusion rate for feeding high forage diets to lactating dairy cows. Techniques will include ruminal fermentation with continuous culture fermenter system, measurement of gas production from ruminal fermentation and rational feeding methods of lactating dairy cows. Second, to evaluate the maximum forage inclusion rates for mid- to late-lactation dairy cows. Highly digestible forages could result in very high forage diets that will reduce the feed costs of these cows. Third, to evaluate the nutrient composition, dry matter digestibility, fiber digestibility, starch digestibility to accurately predict the feeding value of forages and new forage hybrids for dairy cattle.

Safety and Quality Improvement of Milk and Cheese Dr. Sanjeev Anand The objectives are 1) to study the role of thermoduric bacteria in influencing shelf life of milk products such as cheese; 2) to reduce the cross contamination in dairy processing environments by controlling bacterial biofilms.