

## **Dairy Dispatch – Summer 2001**

### **Dairy students capture top awards at IFT**

For the second year in a row, UC Davis Food Science and Technology students won big at the IFT (Institute of Food Technology) Annual Meeting and IFT Food Expo. This year's meeting took place June 23-27 in New Orleans. The IFT Meeting included almost 100 technical oral, technical poster, symposium, hot topic and forum sessions. The Food Expo included more than 800 exhibitors from throughout the world, representing every facet of the food industry. New Products and Technologies sessions showcased the industry's newest developments, culminating with a "best" new product or technology award based on the presentations.

The dairy portion of the program included technical poster sessions, and symposia titled "Sensory Evaluation of Dairy Flavors," "Dairy Foods: More Than Just Good Nutrition," and "Dairy Ingredients: Past, Present and Future."

In the Dairy Foods Division graduate student oral presentation competition, Lauren Franssen—who is working on her Ph.D. in Food Science at UC Davis—won first place for her presentation on "Potassium Sorbate Diffusion in Whey Protein Isolate and Lipid Emulsion Films." Kirsten Danganan, also a Ph.D. student in Food Science, placed second for "Whey-Protein-Isolate Coatings as Replacements for Shellac in the Confectionery Industry."

And, for the second year in a row, UC Davis students won 1st and 2nd place in the Food Packaging Division graduate student poster competition on whey protein-related topics. Soo-Yeun Lee, who just completed her Ph.D. in Food Science at UC Davis, took first place for her poster titled "Modeling Shelf-Life of Whey-Protein-Coated Peanuts Analyzed by Static-Headspace Gas Chromatography." Second place winner Rungsinee "Pearl" Sothornvit, a Ph.D. candidate in food engineering, presented "Oxygen Permeability and Mechanical Properties of Plasticized Beta-Lactoglobulin Films."

"I believe that the quantity and quality of this research points to the excellent students being attracted to dairy foods research by the funding from the dairy industry," said Dr. John Krochta, who is holder of the Peter J. Shields Chair in Dairy Food Science, is a faculty member of the Departments of Food Science & Technology and Biological & Agricultural Engineering, and is the students' advisor. "Presenting these papers at IFT helps disseminate important information to the larger food industry community. And, the awards received give extra attention to the nature of this research on whey protein utilization."

CDRF Executive Director Dr. Joseph O'Donnell states, "In my experience, the dairy industry's return-on-investment in this value-added whey protein research is unprecedented in terms of productivity and broad recognition from the food industry."

The first place prize total was \$500 and second place \$300, for both the Food Packaging and Dairy Foods competitions.

## How to control Johne's disease in your dairy herd

The California dairy industry is taking action against a disease that until now infected only dairy herds in the eastern part of the United States. A recent survey by the National Animal Health Monitoring Service disturbingly found that herds infected with Johne's disease, which initially causes low milk production and leads to livestock deaths, are just as prevalent in California as elsewhere in the United States.

Johne's is a slowly degenerative disease that does not yield visible symptoms—diarrhea and weight loss—until its terminal phase, just before death. Visible signs do not appear for three to five years following the initial infection. During this time, the Johne's bacteria invade the cells lining the small intestine. An infected animal may have a good appetite but can't absorb the nutrients in the feed it is consuming. The severity of the nutritional absorption deficiency worsens over several years.

John H. Kirk, an extension veterinarian with the University of California, Davis, stationed in Tulare says, "The best way to prevent Johne's disease is by understanding how it is spread and how it affects cows. Control requires total commitment of energy and time. Johne's is a bacterial disease that is spread from infected cows to other cows and young calves through manure. Additional spread can take place through the colostrum or milk. The National Johne's Working Group suggests numerous preventive measures, which we augment with our own herd management suggestions."

**CLOSE YOUR HERD** to animals of unknown Johne's infection status.

- Buy replacements only from test-negative herds or herds with low prevalence.
- Isolate all newly arrived animals before mixing them with your herd. Delay mixing until you have tested for high-risk diseases such as Johne's.
- Consider testing animals before bringing them into your herd.

**REDUCE THE EXPOSURE** of newborn calves to manure that may contain the bacteria.

- Calve in a clean, dry maternity area. To determine if the bedding is dry enough, kneel down in it. If your knee comes up wet and covered with manure, the maternity pen needs some work. Frequent cleaning and replacement of bedding is essential.
- Remove the newborn calf from the dam before it has a chance to nurse or even attempt to nurse. Don't let the calf ingest milk from a manure-covered teat or from other parts of the dam. Ingesting manure greatly increases the risk of Johne's transfer.
- Avoid keeping older cows with diarrhea and weight loss in common maternity pens, because they present high risk for shedding the Johne's bacteria. Manure from cows with Johne's is infused with infective bacteria.
- Use separate maternity and hospital pens to shield newborn calves from exposure.

**PROVIDE CLEAN FEED** for young stock and mature animals.

- Feed from adult cows, especially refused feed, should not be given to young stock. The risk of infection is greatest in the youngest animals, so young calves are vulnerable to smaller doses of Johne's bacteria than yearlings are.
- Use separate equipment to handle feed and manure. The same tractor used to scrap a cow alley should not be used to push up feed because manure is the source of infection.
- Minimize the number of vehicles crossing cow alleys and feed alleys to avoid transferring manure-borne Johne's bacteria.

- Keep adult cows and young stock in separate pastures, with separate sources of feed and water for young and mature animals.
- Restrict run-off from pens or corrals, particularly run-offs from adult animals that may enter locations where young stock is housed.

RESTRICT MANURE of mature stock from contacting the young stock.

- Raise young stock in separate areas from older animals to prevent exposure of young animals to the potential of Johne's bacteria in the old-stock manure.
- Prevent manure run-off from mature animals from reaching the young stock. Because manure and water both run downhill, put the young stock uphill from the older animals.

FEED LOW-RISK COLOSTRUM.

- Use only colostrum from healthy cows that were negative on a recent Johne's test.
- Give the calf colostrum only from its dam. Pooling increases the chances of infecting many calves from a single infected dam.
- Save colostrum from low-risk cows by freezing or refrigerating.
- Consider using colostrum supplements, particularly if your herd is highly infected.

FEED LOW-RISK MILK.

- Feed a milk replacer instead of milk of unknown status.
- Pasteurize milk or use milk only from cows with recent negative Johne's test results.
- Thoroughly clean the udder and teats before collecting milk for calf feeding.

IDENTIFY AND QUICKLY SEGREGATE animals that have been diagnosed with Johne's disease.

- At the very least, separate test-positive cows from the maternity areas and young stock.
- Do not feed colostrum from test-positive cows to any calves.

DEVELOP A PLAN with your veterinarian for testing adult cows on a regular basis.

- Test a portion of the herd to determine the herd status. Testing as few as 30 adult cows can give an accurate prediction of the level of herd infection.
- Ask your veterinarian for help in monitoring cows newly added to your herd in order to help minimize risk of Johne's, salmonella, Strep ag, Staph aureus, BVD, mycoplasmas and hair heel warts.

By working with your veterinarian, you can develop a plan that will greatly reduce the risk of Johne's Disease in your herd.

To learn more about Johne's Disease in California, visit [www.vmtc.ucdavis.edu/dfs/dfs.html](http://www.vmtc.ucdavis.edu/dfs/dfs.html) and select the link "current topics."

### **38th Marschall Cheese Seminar Sept. 12-13**

Business and fun are on the agenda at the 38th Annual Marschall Cheese Seminar titled "Tools of the Trade," to be held Sept. 12 and 13 at the Visalia Convention Center. Pre-seminar events on Tuesday, Sept. 11., include the MCS Open Scramble Golf Outing at Brighton Crest Golf Course and a day-long whey processing short course in Visalia.

The seminar brings cheese processors and suppliers together to share information and technology to stimulate growth in the domestic cheese market. In addition to seminars and workshops designed for educational development, the event also includes a trade show and wine and cheese reception showcasing award-winning cheeses from throughout the country.

The golf outing will be held at Brighton Crest, a Johnny Miller signature golf course built around Millerton Lake in California's Sierra foothills, one hour northeast of the Visalia Radisson Hotel conference site. Brighton Crest is rated as one of the top courses in the state. virtual tour of the course is available on the Internet at [www.brightoncrest.com](http://www.brightoncrest.com).

A single \$95 fee for golf participants includes transportation between Visalia and the golf course, greens fee, golf cart, box lunch and tri-tip steak dinner. Trade show exhibitors will receive one free golf pass for each 10-by-10 foot booth space reserved.

A whey processing short course, designed to provide basic understanding of whey, whey processing and products derived from whey, is also a pre-seminar option on Sept. 11 for participants of this year's Marschall Cheese Seminar. At 8:30 a.m. Cal Poly San Luis Obispo professors Phillip Tong, Rafael Jimenez-Flores and Carolyn Podgurski will begin presenting a day-long course that includes five sessions titled:

- Origin and Composition of Whey and Whey Products
- Properties of Whey and Whey Products
- Changes Occurring Due to Processing of Whey and Whey Products
- Food Applications of Whey and Whey Products, and
- Developments in Whey Processing Technology.

Dairy industry personnel with talented taste buds will have a chance to compete for the title of "Champion Cheese Judge" at the Marschall Cheese Seminar. The second annual Cheese Grading Contest will allow cheesemakers and other dairy personnel to match their grading skills against those of the experts. Each contestant will have the opportunity to score several samples of Cheddar cheese for flavor, body/texture and color. All scores will be compared with the pre-scored opinions of a trained panel of industry graders. The judges for this year's cheese grading contest are: James Chandler of Hilmar Cheese Co.; Terry Lensmire of Land O' Lakes; Bob Aschebrock of AA Cheese & Butter Grading Service; and Charles White, a professor at Mississippi State University.

Awards will be given to the top three cheese graders in the competition during a luncheon on Sept. 13. Michael Shotts of Farmdale Creamery in San Bernardino, Calif., took home the title in last year's inaugural contest. Participation is free for all Marschall attendees and exhibitors.

Visalia is located in California's dairy-rich Central Valley, 30 miles south of Fresno and 175 north of Los Angeles. The Marschall Cheese Seminar is co-sponsored by the California Dairy Research Foundation and Rhodia's dairy business, headquartered in Madison, Wis. Rhodia is a leading supplier of cultures, media, coagulants, lipases, hydrocolloids, bio-protectants, annatto colors and cheese flavor acceleration systems.

For more information on this year's Marschall Cheese Seminar, please contact Rhodia's Jo Ann Sterenberg at (574) 264-2557, or visit [www.marschallcheeseseminar.org](http://www.marschallcheeseseminar.org) or [www.rhodiadairy.com](http://www.rhodiadairy.com) for updates.

### **UC Davis program gives vet students commercial dairy experience**

Veterinary students are gaining first-hand experience in commercial dairy food safety through a new summer internship program funded by CDRF, the Pharmacia and Upjohn Co., and the UC Davis School of Veterinary Medicine.

The Veterinary Student Food Safety Training Program (VSFSTP) is helping to bridge the gap between classroom lectures and real-life food safety lessons. The program places first- and second-year veterinary students on California dairies for five to eight weeks during two subsequent summers. Students learn that dairies are food production units and, as such, attention to food safety issues are paramount. During their first summer of participation, students are paired with a dairy owner, herdsman or a designated assistant to gain hands-on experience in the various aspects of dairy operation. During the subsequent summer, continuing students are matched with a dairy veterinarian or group practice.

The program, conducted under the supervision of principal investigator Dr. Bradford P. Smith, is intended to stimulate increased interest among veterinary students in the dairy industry, and to give students practical experience in dairy herd health practices and dairy food safety issues.

During the program's first summer of operation last year, eight veterinary students gained knowledge in the management of the health of herds while participating in calf birthing and rearing, milking, feeding, bunk management, reproduction, medical treatments, record keeping, residue avoidance, and other aspects of dairy management.

VSFSTP awards work experience scholarships of \$2,000 to participating students, whose annual education costs total about \$10,400 for tuition and fees, books and living expenses. Veterinary students in the graduating class of 2000 typically amassed \$41,000 in college debts apiece.

"The VSFSTP scholarship fund enables students to consider a career in supporting the marketing of the highest quality and safest dairy products possible demanded by today's consumers," observed CDRF Executive Director Joseph O'Donnell, who says the program is functioning as it was designed.

Bradford Smith, a professor of medicine and epidemiology in the UC Davis School of Veterinary Medicine, added, "The project is intended to improve preparation of veterinary students for dairy practice and to make veterinarians more aware of consumer food safety. Other issues covered include prevention of toxins from entering the food chain, AMDUCA [Animal Medicinal Drug Use Clarification Act] compliance, drug withdrawal times, and ways in which to minimize use of antimicrobials. Response from dairy owners, herdsman and students have led us to conclude that this program is a great success."

The participating students unanimously agree. The first-year interns included Frank Martin of Fort Jones, who worked as a herdsman's assistant in the summer of 2000 at Rancho Teresita in Tulare.

"I worked long days usually starting at around 5:30 a.m. and finishing my day around 5 or 6 in the evening. I learned a lot and had a great time," Martin later wrote of his experiences. "I bred cows, helped doctor sick and downer cows, delivered calves, performed roll and tack surgeries, and even drove the loader tractor to make a load of feed. I scraped manure, cleaned mangers, preg-checked cows, gave pills, administered IVs and intra-uterine infusions. I went down there thinking I knew an awful lot about cows, and I came back knowing that I need to learn a lot more. I highly recommend this internship to any incoming freshmen. I would do it again in a heartbeat."

Student Sabino Herrera, who expects to graduate with a DVM degree next year, likewise wrote glowingly of the program.

"As a VSFSTP participant, I was granted the opportunity to fully submerge myself in a typical large California dairy operation. Having been raised in the inner city of Los Angeles, I was naïve to many aspects pertaining to the actual management of dairies. The VSFSTP and the staff at Ahlem Farms [in Hilmar] allowed me to partake in everyday dairy procedures, giving me insight to how a typical dairy operates," Herrera explained. "I honed my palpating and artificial inseminating skills under the guidance of trained personnel and veterinarians. I was allowed to vaccinate, brand and medicate animals as necessary, and took full advantage of learning and assisting veterinarians during dystocias.

"Having spent time on a California dairy has strengthened my conviction that dairy medicine is for me. I would like to thank all who made this experience possible, especially Pharmacia Upjohn, the California Dairy Research Foundation, William Ahlem, Brad Smith, and the entire staff at Ahlem Farms," wrote Herrera.

The students learned not only animal care procedures, but food safety practices as well. Sarah Lien of La Habra served her first summer internship at the Souza Dairy near Fresno.

"Every day, I helped with milking. I spent some time in the main milking barn, but it was milking the hospital and fresh cows that I helped with daily," she said. "Along with learning the basic operation of milking, these cows provided the opportunity of learning to treat mastitis, to dry cows, and see many of the possible problems that can occur on a dairy. This also provided a good opportunity for me to learn about the handling and testing of milk after the actual milking of the cows. The time I spent at the dairy and the experience I gained was invaluable. I truly believe this experience provides a great opportunity for anyone considering food animal medicine."

Smith said he believes VSFSTP will contribute to an increase in the number of graduating veterinarians with expertise and interest in consumer food safety issues on dairies, and will increase the supply of highly qualified veterinarians available to serve the dairy industry in California. He hopes through additional funding to expand the program.

"This summer 15 veterinary students are participating, a sign that bodes well for the future," Smith concludes.

### **CDRF develops two new Web sites for dairy producers and processors**

The California Dairy Research Foundation (CDRF) has recently launched two new Web sites for obtaining information about activities and new developments in two emerging areas of importance to milk producers, processors and consumers--environmental quality assurance and dairy probiotics.

### **California Dairy Quality Assurance**

Dairy producers can learn more about the California Dairy Quality Assurance (CDQA) Program, including instructions on how and where to sign up for the program, annual activity reports and a list of key contacts and committee members, by visiting [www.cdqa.org](http://www.cdqa.org). The CDQA Program was formed in 1997 and is the result of work by the dairy industry and the University of California to create a voluntary venue for helping dairy producers understand and comply with the various environmental laws enforced by local, state and federal agencies. The program focuses on the components of public health, animal health and welfare, and environmental stewardship. The CDQA Program recently received support from the U.S. Environmental

Protection Agency, which donated nearly \$500,000 and called the program a "model" for the nation. Since its inception, the Environmental Stewardship component of the program has certified 10 dairies and provided voluntary training to about 1,400 dairy farmers and their employees.

### **Dairy Probiotics Information on the Web**

Are live bacteria good for you? Learn more about "probiotics," live cultures consumed for health benefits by visiting [www.usprobiotics.org](http://www.usprobiotics.org), a Web site maintained by CDRF. This site identifies activities, research and new developments in probiotics, a discipline that can be a difficult to explain and understand because it entails evolving science and complex terms. CDRF set up this site with the intention of making it easy for anyone visiting-whether savvy in scientific terminology or not. By using a pop-up dictionary window, visitors will never need to leave the site to go searching for the meanings of complicated terms. Additionally, the various buttons on the site allow visitors to go straight to what they seek, without having to do any extensive research for any particular section. A button for consumers, for instance, outlines some important information about different probiotic bacteria, doses and probiotic products. Another button leads visitors to a section that describes probiotics from top to bottom, including how they work in the body, what the health effects may be, and why it's important to understand the human gastrointestinal system. The site's content is produced by Mary Ellen Sanders, Ph.D., who currently operates Dairy and Food Culture Technologies, an independent consulting business. The company specializes in probiotic cultures, dairy starter cultures and biotechnology. Dr. Sanders also is an adjunct research professor at the Dairy Products Technology Center at California Polytechnic State University, San Luis Obispo. For more information about CDRF and the dairy research it sponsors, visit [www.cdrf.org](http://www.cdrf.org).

### **Bruhn elected IFST Fellow**

John Bruhn was elected Fellow of the Institute of Food Science and Technology (IFST) of the United Kingdom in June. He joins his wife, Christine M. Bruhn, who received a similar recognition last year. John and Christine are the second couple holding a Fellow title in the IFST. Mary K. Schmidl, a UC Davis Food Science and Technology undergraduate alumna, and current president of the Institute of Food Technology, and her husband, Ted Labusa, were the first "couple Fellows."

The IFST recognized John Bruhn's accomplishments in dairy foods education within California, nationally and internationally. He will be recognized in London during the IFST meeting in September. Christine will also attend the meeting as invited speaker for the Baldwin Lecture, a second time for her to be so honored.

### **NMPF Scholarship awarded to UC Davis Ph.D. candidate Franssen**

UC Davis Ph.D. candidate Lauren R. Franssen received a scholarship from the National Milk Producers Federation (NMPF) National Dairy Leadership Scholarship Program. Her research proposal titled "Antimicrobial Properties and Diffusion Modeling of Preservative-Containing Whey Protein Coatings on Cheddar Cheese" described research objectives, preliminary and potential findings, and benefits of exploring edible coatings as carriers of preservatives for cheddar cheese. She also described how her research would benefit dairy cooperatives and producers. Franssen, whose academic advisor is Dr. John M. Krochta, holder of the Peter J. Shields Chair in Dairy Food Science, says, "the scholarship money will be used toward laboratory expenses that will benefit the entire Krochta laboratory."

Organized in 1916, NMPF is the oldest farm commodity organization in the United States and continues to represent the interests of dairy cooperatives that are owned and operated by dairy farm families.

The NMPF offers several scholarships each year to qualified students who are actively pursuing dairy-related fields of research that are of immediate interest to the dairy industry and NMPF member cooperatives.

### **Tong is honored speaker**

Phillip S. Tong, professor, Dairy Products Technology Center, Cal Poly, presented *Protein In Nonfat Dry Milk-Composition Study, Implications and Ramifications of Standardization*, at the April 26 meeting of the Board of Directors, United States Dairy Export Council in Chicago, IL. On April 30 he presented *Cal Poly Dairy Products Technology Center-Teaching, Outreach and Research*, at the Hershey Foods Technical Center, Hershey, PA. And on May 1 he discussed *Factors Contributing To Differences In Milk Powder Properties*, at the 55th Annual Production Conference of the PMCA International Association of Confectioners in Hershey, PA.

### **Leaders of California marketing programs visit Cal Poly DPTC**

Approximately 25 program managers representing groups including the California Strawberry Commission, Dairy Council of California, Salmon Council, and the California Raisin Board, along with staff members of the California Department of Food and Agriculture led by Kelly Krug, director of the Marketing Division, met at Cal Poly DPTC on April 27. Activities of the program managers include research, commodity promotion, maintenance of quality standards and education. Marketing program activities totaled approximately \$130 million in 1998-99. Associate Dean of Agriculture Mark Shelton welcomed the group to Cal Poly on behalf of the University and the College of Agriculture. Drs. Phillip Tong, Edward Jaster and Rafael Jimenez-Flores described for the group some of the current activities being conducted at the Dairy Products Technology Center and the Dairy Cattle Instructional Center.