

# CALIFORNIA Dairy Dispatch

RESEARCH, EDUCATION AND SERVICE TO SUPPORT THE DAIRY INDUSTRY

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## College of the Sequoias Trains Tomorrow's Dairy Workforce

*California Dairy Products Training Institute provides hands-on experience in community college*

California's dairy industry contributes an estimated \$35 billion to the state's economy in everything from milk sales to value-added products, local jobs and more. With 1.7 million cows and an industry that leads the nation in the production of milk, butter, ice cream, nonfat dry milk, whey protein concentrate and Mozzarella cheese, attracting a skilled workforce is a challenge.

Tulare County, the largest milk producing county in the U.S., is home to a unique industry/academic partnership that is working to fill that need. Housed in the College of the Sequoias, the California Dairy Products Training Institute (CDPTI) is a partnership between industry and academia with a common purpose — training the dairy workers of tomorrow.

Established with the goal of meeting the growing needs of the dairy industry by providing a high standard of professional training and education in dairy processing—

*(See CDPTI on page 2)*



From left, CDPTI's Project Director Russ Poe, and Plant Manager Paul Lyons.

## 2<sup>ND</sup> International Milk Genomics Symposium to be held in Napa Nov. 10–11

International experts in nutrition, genomics, bioinformatics and milk will gather in Napa, California, again this fall to discuss milk-specific genomic research at the second International Symposium on Milk Genomics and Human Health.

The event, to be held November 10-11 at the COPIA Center for Wine, Food & the Arts in Napa, is sponsored by the California Dairy Research Foundation, and will feature four sessions over the two-day period. Discussion topics involve comparative lactation biology; deconstructing milk for health values; milk components and the

*(See Genomics on page 4)*

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guided by the industry itself—the CDPTI provides both theory and applied skills for dairy workers.

The program began four years ago with a grant from the Chancellor's Office of the California Community Colleges to create a dairy training curriculum and build a processing plant on the College of the Sequoias campus. Once the 5,000-square-foot facility was built, however, COS Dean of Academic Services Larry Dutto envisioned a self-sufficient facility funded through a private, for-profit enterprise. He contacted Russ Poe, a fourth-generation California dairyman and Cal Poly dairy science graduate, to set-up a program that would teach students about dairy processing.



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After researching the concept, Poe determined the best use for the facility was for yogurt processing, and Sequoia Valley Products was born. As project director of the CDPTI (an unpaid position) and president of Sequoia Valley Products, Poe balances the needs of students along with a growing business.

“When we developed the partnership, our goals were to serve the industry by training current and future dairy workers while at the same time utilizing the facility in a way that would not cost the COS any money,” said Poe. “This arrangement achieves both goals and really should be a model for future operations of this sort.”

How does it work? The yogurt processing plant is run as a for-profit business, manufacturing private label yogurt products. The building is leased by Sequoia Valley from the college, and leaseholder improvements are made at no cost to the college. Equipment donations are the property of the college, on loan to the company through the lease agreement.

Where this arrangement gets creative is in the teaching side. Part of the lease agreement calls for classes to be taught in the processing facility by providing classrooms, classes and a facility for doing hands-on dairy manufacturing and learning of the technology. The COS collects student tuition and hires teaching staff—often directly from the dairy industry. Classes are conducted at night, so both staff and students can work full-time. Three certificate programs are offered: Concepts in Dairy Processing; Applied Skills in Dairy Processing; and the Maintenance Technician Program.

The program curriculum was developed with strong input from the

local dairy industry. Dutto met with human resources managers from local dairy processors to determine what skills were necessary to make an applicant stand out.

Coursework for the Concepts in Dairy Processing certificate includes 13 classes and two units of work experience focusing on entry-level dairy processing. The curriculum covers everything from the basics of milk processing to HACCP and food safety practices, processing equipment and engineering, even employment preparation skills. The Applied Skills certificate gives students the opportunity for hands-on application of what was learned in the Concepts program and includes classes on milk pasteurization, cheesemaking, laboratory skills and equipment troubleshooting and teardown. The certificate program for Maintenance Technician offers specialized training for the maintenance and repair of dairy processing equipment.

In addition to training, the CDPTI is designed to assist students in obtaining necessary licenses, such as a sampler/weigher license or license for pasteurization, which can set a job applicant apart.

Former student Robert Murrietta, who now works as a production coordinator for Sequoia Valley, is a testament to the program's success. One of the first certificate recipients, Murrietta had a background in retail and food service before entering the program.

“Coming from Hanford, I had a familiarity with the dairy industry but had not worked in dairy processing,” he said. “The program provided a good solid background in dairy processing practices and prepared me well for working in a plant like Sequoia Valley.”

*(Continued on page 3)*



According to Dutto, the program and facility serve an important function for Tulare County and the state's growing dairy industry. "The program provides an important connection between academia and the industry. We want to not only help dairy workers learn about the industry but also become a prescreening process for employers looking to hire dairy processing staff."

The local industry is increasingly tapping this resource. CDPTI students have included representatives

from Leprino Cheese Company, Dairyman's Cooperative Creamery, California Dairies Inc., California Protein International and Land O'Lakes.

Dutto also hopes to get an early start on processing education. In the fall, the CDPTI will begin providing vocational dairy processing training to students at El Diamante High School in Visalia. Through an education grant, modular classrooms for the high school are being set up near the CDPTI processing facility for hands-on experience.

Sequoia Valley is licensed to manufacture regular and organic yogurt products—a growing area of interest for yogurt companies. The facility is gearing up to run production five days a week—giving ample opportunities for hand-on

teaching. The plant has the capacity for producing 50 million cups of yogurt per year.

When not in production, the facility is available as a contract lab for cultured products testing. Equipment includes a pasteurizer, homogenizer, liquefier/mixer, two processing culture tanks, milk receiving facilities with the capability of segregating organic and BST-free milk, and a full laboratory. The facility can fill 18- and 25-pound buckets, as well as 4-, 6-, 8-, 16- and 24-ounce cups.

Information about the California Dairy Products Training Institute at the College of Sequoias is available at [www.cos.edu](http://www.cos.edu) and [www.cdpti.org](http://www.cdpti.org), or by contacting Russ Poe at (559) 799-3917 or Larry Dutto at (559) 730-3808.

*edd*

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## Cal Poly Team Takes Home Award for New Product Development

In late June, a team of five Cal Poly, San Luis Obispo, students learned they had won third place out of 23 university teams competing in the Danisco USA Knowledge Award New Products Contest. Danisco, one of the world's largest producers of food ingredients, primarily based on natural raw materials, employs 10,000 people in 40 countries.

The Cal Poly team, consisting of Jessica Yee, Eleanore Brophy, Lindsay Reiman, Angie Benavides, and Dee Bachiero, submitted a probiotic strawberry cheesecake frozen bar novelty, titled "ProCream." The team developed this indulgent product, flavored with real strawberry puree, vanilla and cheesecake flavoring at the Dairy Products Technology Center under faculty advisors Rafael Jimenez and Phil Tong. The objective of this development project was to create a portable, reduced-fat ice cream bar with the added benefits of protein and probiotics for the health-conscious consumer.

The Danisco Knowledge Award contest is in collaboration with university students throughout the United States studying food science and involves the Danisco departments: Innovation, Global Marketing and Communications. The mission of the new products

contest and the Knowledge Award is to support innovation in academic institutions, develop stronger links between universities and Danisco, as well as encourage innovative approaches to food science challenges.

First place winners in the Knowledge Award receive \$10,000, second place winners receive \$5,000, and third place winners take home \$2,000. For more information about the Danisco Knowledge Award contest, visit <http://knowledgeaward.danisco.com/us> on the Web.



Cal Poly team members, from left, Angie Benavides, Eleanore Brophy, Dee Bachiero, and Lindsay Reiman. (Jessica Yee not pictured).

## Genomics Symposium *from page 1*

prevention of metabolic disease; health properties of oligosaccharides, oligopeptides and oligonucleotides of human milk; milk genomics databases and expression tools; database mining tools; the knowledge management environment; the milk genomics online educational environment; and updates from participants in the International Milk Genomics Consortium.

Invited speakers include Martin Grigov of the Nestlé Research Center in Switzerland, Michael Zemel of the University of Tennessee, Margaret (Peggy) Neville of the University of Colorado Health Services Center, Floyd Schanbacher of Ohio State University, Robert Ward of Utah State University and Carlito Lebrilla, J. Bruce German, Matthew Lange and Juan Medrano of the University of California, Davis.

The inaugural Milk Genomics Symposium attracted researchers from 11 countries to discuss the future of genomic research into milk and its health benefits, and led to the development of an International Milk

*International Symposium:*

## Milk Genomics & Human Health

November 10-11, 2005 – Napa, California

Genomics Consortium. The Consortium's goals include leveraging existing resources for the assembly of genetic instructions for milk molecules, linking the scientific community for a better understanding of the biological values of milk, creating tools for an interactive, web data exchange, coordination of pre-competitive research to develop baseline data, and providing a foundation for the development of exclusive/competitive research.

Information about the International Milk Genomics Consortium can be obtained by sending an e-mail inquiry to [info@cdrf.org](mailto:info@cdrf.org). Special sessions for Consortium members also will be held during the two-day event.

Symposium registration is \$245 through September 6, and \$295

thereafter, and includes program materials and daytime meals as well as a COPIA tour and dinner in Napa. Members of the International Milk Genomics Consortium can register at the 2004 rate of \$225 through September 6, and \$275 thereafter. For registration information, contact symposium coordinator Jennifer Giambroni at [info@cdrf.org](mailto:info@cdrf.org) or (415) 254-4549.

Special symposium room rates of \$129-169 per night have been blocked at the River Terrace Inn in Napa under the group code "MILK." Attendees are responsible for their own reservations, which can be made by calling the River Terrace at (866) NAPA-FUN, by sending an e-mail inquiry to Victor Jigalin at [vjigalin@riverterraceinn.com](mailto:vjigalin@riverterraceinn.com), or online through group reservations at [www.riverterraceinn.com](http://www.riverterraceinn.com).

The COPIA Center for Wine, Food & the Arts is a cultural museum and educational center dedicated to exploring the distinctively American contribution to the character of wine and food in close association with the arts and humanities. Information about COPIA is available at [www.copia.org](http://www.copia.org). *edd*

## Mondavis Break Ground for New Wine & Food Institute at UC Davis

**O**n June 23, more than 450 dignitaries, UC Davis staff and alumni, and news media witnessed Robert and Margrit Mondavi "break ground" for the Robert Mondavi Wine and Food Science Institute (RMI), utilizing an oversized corkscrew designed specially for the occasion.

Robert Mondavi called the event "...a great day for everyone interested in wine and food" and "an honor for our family, which has been involved in wine and food for four



From left, Neal Van Alfen, dean of the UC Davis College of Agricultural and Environmental Sciences, with Robert and Margrit Mondavi. Behind and to Robert's left is his son Tim Mondavi.

generations." Scheduled to open in early 2008, the RMI will house UC Davis' top-ranked departments of Viticulture and Enology and Food Science and Technology.

A 129,600-square-foot academic building will be constructed first, built in three wings wrapped around a courtyard facing westward toward a teaching vineyard. The courtyard will contain demonstration gardens and serve as a venue for special events. *edd*

## On-Farm Training Aims to Boost the Ranks of Dairy Veterinarians

**V**eterinary students, many raised in cities and suburbs, are learning the nuts and bolts of dairy and beef cattle operations on farms and ranches throughout nine California counties, as well as in Colorado and Montana.

The program, coordinated by the UC Davis School of Veterinary Medicine, is designed to point veterinary students in the early stages of their training toward careers in dairy medicine or cattle health, areas for which veterinarians are in short supply.

“We’re excited that this program will not only provide our students with more practical knowledge and hands-on training, but will also encourage more students to consider careers caring for dairy and beef cattle,” said Bradford Smith, director of the UC Davis Veterinary Medical Teaching Hospital. “There is no substitute for this type of on-farm training, and we greatly appreciate the dairy and ranch owners who are mentoring our students, as well as the

industry supporters who are helping to provide scholarships for the program.”

The program, initially funded by CDRF, is active this summer in



Veterinary student Karly Hodge spent five weeks at the Van Exel Dairy in Lodi, learning to palpate cattle to check for pregnancy and to artificially inseminate cows. She also monitored the maternity pen to make sure the newborn calves got colostrum and bottle fed calves frozen-thawed colostrum.

Glenn, Merced, Sacramento, San Joaquin, Santa Barbara, Shasta, Sonoma, Tulare and Yolo counties. Also, one student is training near Greeley, Colo., and one near Wilsall, Mont.

Participating students spend two summer sessions of five weeks each. During the first summer, students unfamiliar with dairies or cattle live and work on a modern dairy farm or cattle ranch, performing all the tasks of milking, feeding, medicating sick cows and calves, and maintaining records. During the second session the following summer, each student pairs up with a veterinarian or large-animal veterinary clinic to care for animals on farms or ranches, meet with clients, learn about nutritional management and how to deal with herd-health and food-safety issues. Nineteen veterinary students are participating in the program this year.

More information about the program is available online at <<http://www.vetmed.ucdavis.edu/evsbep/default.htm>>. *CDR*

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## DMI Unveils New Web Site for Dairy, Food and Beverage Industries

**D**MI introduces *innovatewithdairy.com*, which combines resources from *doitwithdairy.com* and *extraordinarydairy.com* with relevant nutrition information to provide a single-source site for dairy, food and beverage manufacturers.

Looking for a dairy ingredient supplier? How about the latest research and information on dairy products, ingredients, processes and packaging? Or could you use some idea starters for new product concepts? The answers to these questions are all in one spot online at *innovatewithdairy.com*, the new Web site from Dairy Management Inc.<sup>TM</sup> (DMI), the dairy farmer-funded organization that helps build demand for U.S. dairy products and ingredients.

Powered by a robust search engine that searches quickly among the extensive technical and marketing

content pages, the site features sections on dairy research and technologies; ingredients and formulations; nutrition research; and innovation, including:

- Product and processing breakthroughs
- Dairy news and market trends
- Dairy ingredient supplier list
- Formulations library
- Searchable database of product research and application projects
- Ingredient specs and nutrition
- Innovation Station for ideas for successful products and applications

To register, visit [www.innovatewithdairy.com/profile.aspx](http://www.innovatewithdairy.com/profile.aspx).

*CDR*

## Low-fat dairy cuts diabetes risk in men

An estimated 41 million Americans have pre-diabetes, or impaired glucose tolerance, in which blood sugar levels are higher than normal and lead to high risk of developing type 2 diabetes. Dairy food makers looking to drill further into the health benefits of their primary foodstuffs will welcome new findings that suggest two servings of low-fat dairy foods a day could reduce men's risk of developing type 2 diabetes.

Tracking 41,000 men for 12 years, scientists at the Massachusetts General Hospital (MGH), Harvard School of Public Health (HSPH) and Brigham and Women's Hospital (BWH) found that men who ate higher levels of dairy products, especially low-fat dairy foods, had a significantly lower risk of developing type 2 diabetes.

Full findings are published in the May 9, 2005, issue of *Archives of Internal Medicine*, of the JAMA/Archives journals. (Source: Dairyreporter.com, May 10, 2005).

## Americans are hearing the good news on bacteria

The message about the gut health benefit probiotics can deliver is finally getting through to U.S. consumers, according to a new report on the state of the functional foods sub-category.

A new report from Business Communications Company, titled "Probiotics: Ingredients, Supplements, and Foods" estimates that total sales of probiotics were worth \$764 million in 2005, with foods such as yogurts, kefir and cultured drinks accounting for 65.2 percent of the total.



Of the \$51.7 million in ingredient sales in 2004, the *Lactobacillus* genus strain was by far the most popular, representing 58.2 percent of sales. Research published last November by the International Food Information Service highlighted the need for the U.S. probiotics industry to step up a gear and finance further research into probiotics in order to provide scientific proof of their health benefits and bolster consumer confidence. (Source: NutraIngredients.com, May 17, 2005.)

## Gene-transfer technology could increase dairy yield

Researchers at the U.S. Department of Agriculture's Agricultural Research Service (USDA, ARS) have demonstrated the potential of biotechnology for developing cattle with resistance to mastitis. Currently, vaccines, antibiotics and the cow's own immune system cannot effectively fight the bacterium *Staphylococcus aureus*, a major cause of mastitis.

The ARS team, led by Robert J. Wall, an animal physiologist with the ARS Biotechnology and Germplasm

Laboratory in Beltsville, built a transgene-genetic material using recombinant DNA technology that included the genetic code for producing a naturally occurring, antimicrobial protein called lysostaphin. Research shows that the gene for secreting lysostaphin comes from a non-pathogenic species of *Staphylococcus* that uses the protein to repel its cousin, *S. aureus*. The scientists introduced this transgene into Jersey cows. The lysostaphin is secreted into milk, where it kills *S. aureus*, thus protecting cows from being infected.

Overall, the researchers found that in tests, 71 percent of the mammary glands that were exposed to *S. aureus* from nontransgenic animals became infected, compared to only 15 percent for the transgenic animals. Future studies will include developing similar defenses against other pathogens that affect dairy cattle, as well as gauging the milk's ability to effectively produce common dairy products, such as cheese and yogurt. (Source: Foodnavigator.com, May 4, 2005)

*(Continued on next page)*



**Calcium mechanism for weight loss gets clinical support**

Calcium could reduce body weight by binding fat in the intestine and increasing its excretion from the body, say Danish researchers, who have provided the first clinical evidence to support a mechanism for the weight loss effect of dairy products.

A study, published in the March issue of the *International Journal of Obesity* (vol. 29, no. 3, pp. 292-301) reveals that fat excreted in the feces increased 2.5-fold in people on a high-calcium diet, compared with when they lowered their calcium intake.

The researchers set up a trial that tightly controlled the diets and energy expenditure of 10 healthy, moderately overweight volunteers. The randomized crossover study tested three diets with different calcium and protein levels, mainly from low-fat dairy products. Calcium intake had no effect on 24-hour energy excretion or fat oxidation, ruling out one previously suggested mechanism—that the mineral could affect the minerals' role in fat metabolism by influencing fat's oxidation.

However, fecal fat excretion came to 14.2g per day for the high calcium, normal protein diet, compared to 6g for the low calcium diet and 5.9g for the low calcium, high protein diet. No effects were detected on blood cholesterol, free fatty acids, triacylglycerol, insulin, leptin or thyroid hormones. The findings are important because this is the first human intervention study to support calcium's fat-binding mechanism through consumption of dairy products. (Source: [nutraingredients.com](http://nutraingredients.com))

**Brewing Expert Charlie Bamforth to Head Food Science Department**

Charlie Shoemaker stepped down as chair of the UC Davis Department of Food Science and Technology on June 30. After two five-year terms of effective and dedicated service as chair, he will hand over these responsibilities to Professor Charlie Bamforth and focus on the "normal" teaching, research, and outreach activities of a faculty member.



Charles Bamforth

Charles Bamforth, an authority in brewing science and holder of the Anheuser-Busch Endowed Professor-

ship of Malting and Brewing Science, has been a member of the UC Davis faculty since 1999. While at UC Davis, Bamforth has taught courses on malting and brewing science and conducted research on beer quality, including the stability of beer flavor and foam.

His third book, scheduled for publication by Blackwell Science Ltd. in September 2005 is titled "Food, Fermentation and Micro-organisms." The book provides comprehensive coverage of all known food applications of fermentation, including diverse alcoholic beverages, bread, cheese and other dairy products, meats and vegetables.

Before coming to UC Davis, Bamforth was prominent in the brewing industry in England. He worked for the Brewing Research Foundation and for Bass Brewers, as Research Manager and Quality Assurance Manager. He is a Fellow of the Institute of Brewing and Distilling and a Fellow of the Institute of Biology.

*edd*

**PG&E Offering Free Dairy Energy Efficiency Classes**

PG&E will be hosting a series of free Dairy Energy Efficiency classes this fall to California businesses. The course covers energy efficiency measures and processes found on a modern California dairy farm, including milk harvesting, milk cooling (refrigeration), lighting, circulation and ventilation, washing and water heating, water systems, and compressed air systems.

Dates and locations:

- |                           |                        |
|---------------------------|------------------------|
| <b>September 27, 2005</b> | <b>Ferndale, CA</b>    |
| <b>October 20, 2005</b>   | <b>Stockton, CA</b>    |
| <b>November 3, 2005</b>   | <b>Bakersfield, CA</b> |

For additional information, visit the PG&E Web site at [www.pge.com/stocktonclasses](http://www.pge.com/stocktonclasses), or call (800) 244-9912.

This program is funded by California utility customers and administered by Pacific Gas and Electric Company under the auspices of the California Public Utilities Commission.

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## *Calendar of* **EVENTS**

### **September 17-22, 2005**

**IDF World Dairy Summit.** PARTNERING—The Future of the World Dairy Industry. Location: Vancouver, Canada. For information, visit [www.meet-ics.com/idf/](http://www.meet-ics.com/idf/)

### **September 23, 2005**

**Submissions due for 2006 nominations for the William C. Haines Dairy Science Award.** Downloadable nomination forms available at [www.cdrf.org](http://www.cdrf.org) under "Awards & Giving" link at top of page.

### **September 27, 2005**

**PG&E Dairy Energy Efficiency class.** Location: Ferndale, California. For additional information, visit the PG&E Web site at [www.pge.com/stocktonclasses](http://www.pge.com/stocktonclasses), or call (800) 244-9912. (See page 7 article).

### **September 27-30, 2005**

**Sixth Annual Dairy Science and Technology Basics for the Artisan/Farmstead Cheesemaker.** Location: Cal Poly Dairy Products Technology Center, San Luis Obispo. For more information, call Laurie Jacobson at (805) 756-6097 or send an e-mail message to [ljacobso@calpoly.edu](mailto:ljacobso@calpoly.edu).

### **October 18-19, 2005**

**Ninth Annual Dairy Cleaning and Sanitation Short Course.** Location: Cal Poly Dairy Products Technology Center, San Luis Obispo. For more information, call Laurie Jacobson at (805) 756-6097 or send an e-mail message to [ljacobso@calpoly.edu](mailto:ljacobso@calpoly.edu).

### **October 20, 2005**

**PG&E Dairy Energy Efficiency class.** Location: Stockton, California. For additional information, visit the PG&E Web site at [www.pge.com/stocktonclasses](http://www.pge.com/stocktonclasses), or call (800) 244-9912. (See page 7 article).

### **November 3, 2005**

**PG&E Dairy Energy Efficiency class.** Location: Bakersfield, California. For additional information, visit the PG&E Web site at [www.pge.com/stocktonclasses](http://www.pge.com/stocktonclasses), or call (800) 244-9912. (See page 7 article).

### **November 7-10, 2005**

**Sixth Annual Frozen Dairy Desserts Manufacturing Short Course.** This course emphasizes ingredients function and usage, mix formulation, equipment and processes in frozen dessert manufacture. Location: Cal Poly Dairy Products Technology Center, San Luis Obispo. For more information, call Laurie Jacobson at (805) 756-6097 or send an e-mail message to [ljacobso@calpoly.edu](mailto:ljacobso@calpoly.edu).

### **November 10-11, 2005**

**Second International Symposium on the Milk Genome and Human Health.** Location: COPIA—The American Center for Wine, Food and the Arts in Napa, Calif. For more information, call Jennifer Giambroni at (415) 254-4549 or send an e-mail message to [jgiambroni@sbcglobal.net](mailto:jgiambroni@sbcglobal.net).