

CALIFORNIA Dairy Dispatch

RESEARCH, EDUCATION AND SERVICE TO SUPPORT THE DAIRY INDUSTRY

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Dairy Research Foundation Appoints Denise Mullinax as Assistant Director of California Dairy Quality Assurance Program

Former Hilmar Cheese Company dairy environmental and quality coordinator Denise Mullinax will join CDRF on March 1 as assistant director of the California Dairy Quality Assurance Program (CDQAP). At Hilmar, Mullinax worked on environmental issues, biosecurity, milk quality and risk management.

A California native, Mullinax grew up on the Central Coast and received her bachelor's degree in animal science and her master's degree in agriculture management, both from UC Davis. She spent two years as a UC Cooperative Extension advisor before joining Hilmar Cheese Company in 1998 as producer education coordinator. Her most recent position at Hilmar was dairy environmental and quality coordinator.

"Denise has been instrumental to the success of the CDQAP since its inception—educating Hilmar dairymen about program modules, giving important insight in the development of tools and workshops, and adminis-

(see **Mullinax** on page 2)



CDQAP Director Michael Payne with new Assistant Director Denise Mullinax

Experts Discuss the Genetics of Milk and its Influence on Human Health

International scientists with expertise in nutrition, genomics, bioinformatics and lactation gathered in Napa in November to present their research as part of the 2nd International Symposium on Milk Genomics & Human Health.

The two-day event, held Nov. 10-11, was specifically designed to advance the collective knowledge of how milk components promote health and to provide collaboration in efforts to isolate the functional mechanisms behind milk's physiological benefits.

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CDRF's MaryAnne Drake wins award for sensory research.

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tering Hilmar's incentive program for producers who completed the environmental stewardship certification," said CDQAP program director, Michael Payne. "Her deep industry ties and intimate knowledge of the program will be a tremendous asset as we grow."

Mullinax is pleased that her new position will give her the opportunity to support all California producers. "I have greatly enjoyed working with Hilmar producers to manage the is-

ssues that affect their business—like the environment, farm security, food safety and animal welfare," she said. "Our industry is being faced with many important regulatory, public perception and food protection issues. The CDQAP can provide good solid solutions and support to assist producers in meeting these new challenges."



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As assistant director, she will work with CDQAP director Michael Payne to develop and deliver curriculum, conduct needs assessments and create and leverage partnerships to extend producer funding to administer CDQAP modules in Environmental Stewardship, John's Disease Control, Farm Security and Animal Welfare.

"The CDQAP represents a strong education arm for the CDRF, addressing the issues important to consumer confidence in the state's dairy products," said Joseph O'Donnell, executive director of the CDRF. "Denise is uniquely qualified to work with producers in achieving the goals of the program. We're lucky to have her on board."

Impressed by CDQAP's nine-year track record, Mullinax said, "The CDQAP has built a strong foundation and reputation among producers and the regulatory community as an effective program for producer education and regulatory compliance assistance. I'm looking forward to working with Mike to expand all program modules so dairymen can utilize the program's tools to proactively and effectively manage external issues so they can get back to their core business of dairying."



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About the CDQAP

Established in 1997, the California Dairy Quality Assurance Program (CDQAP) is a partnership of regulatory agencies, academia and the dairy industry working cooperatively to promote the health of the consumer, the environment and dairy livestock. The voluntary program provides education, resources and funding for dairy producers in the following areas: Environmental Stewardship, John's Disease Control, Food Safety and Emergency Preparedness, and Animal Welfare.

CDQAP partners include the University of California, U.S. EPA, California-EPA, California Department of Food and Agriculture, State Water Resources Control Board, Western United Dairymen, California Milk Advisory Board, California Farm Bureau Federation, U.S. Fish & Wildlife Service and many others. For more information, contact CDQAP toll-free at 1-866-66CDQAP, or visit www.cdqa.org.

Consumer Perceptions of Environmental Stewardship is Critical for the Future of California's Dairy Industry

By Joseph O'Donnell

These days we are seeing a growing level of appreciation for the role dairy products play in overall nutrition. That good news, however, is being trumped by the constraints some groups would like to place on milk production due to unscientifically supported concerns over the environment.

Consumer perception of the nutritional value of dairy products, especially for parents, is at the heart of the fact that most U.S. households contain dairy products of some kind. Beyond that, dairy producer investment in nutritional research has given us many positive stories to tell about dairy, ranging from osteoporosis prevention to weight management to new data on the role of milk in easing symptoms of PMS. Meanwhile, members of the hydrogenated oil industry are seeing their work catch up to them in the form of trans fats—the fats used to replace natural milkfat—which are actually much more deleterious to health than any natural fat.

While it's proven that the dairy industry's cohesive check-off funded efforts to convey the clear nutritional advantages of dairy over many foods has been effective, we can't rest on our laurels. We still need to make products that meet the needs and lifestyles of consumers. That is working too. The dairy foods research centers across the country are working hand-in-hand with dairy processors to deliver the technology necessary to put new products on the shelf.

And yet milk production is growing at a fairly slow pace in the United

States. Falling overseas production coupled with increasing demand from countries with improving economies and a desire to eat better is creating a salesman's worst nightmare: a demand that outstrips supply.

At the same time, despite growing demand, there are many popular misperceptions about the dairy industry among consumers.



What is constraining U.S. milk production today and threatens to give our industry a black eye? Two words: environmental stewardship.

If you take a look at history and the dairies lost in the Midwest you might wonder—how much was due to environmental pressure? In the West, the largest constraints on getting the permits necessary to build or expand a dairy revolve around environmental stewardship.

It starts with the consumer. Unfortunately, it is fairly easy for advocacy groups to sell consumers on the notion that dairies pollute the air and water of their communities. Whatever their motivation, these nonprofit, high-payroll groups pressure the legislature, regulators and the courts to

limit dairy growth. While just about any reasonably intelligent person can tell you the major source of air pollution in California's Central Valley is the car and truck traffic, the hammer is landing squarely on the shoulders of the dairy industry. Why? Because we don't have the data to defend ourselves. Everyone in the industry—from processors to producers, even delivery truck drivers—is under the microscope. The sheer size of the industry itself attracts this attention.

I live in the Central Valley and I'm as interested in protecting our environment here and elsewhere as anyone—including dairy producers. I also am a scientist and need data in order to act or direct action. This is where our greatest production challenge lies—in our ability to provide the correct, responsible data to be able to counter any consumer misconceptions in a thoughtful way and to offer solutions to real problems.

Environmental stewardship has little to do with increasing milk production efficiency but everything to do with supplying a finished product with value to consumers. Dairy products are necessary to maintain the nutritional status of our population here and abroad. Research activity is underway and will grow quickly in this area. Be a participant—your consumers are counting on you.

This article by Joseph O'Donnell, executive director of the California Dairy Research Foundation, first appeared in the July 2005 issue of Cheese Market News.

ODD

(Genome *from page 1)*

According to symposium co-organizer Bruce German, UC Davis professor of food science and technology, the greatest challenge of nutrition in the 21st Century is to promote health and prevent disease. He contends that milk, a food designed to deliver nutrition, can be used as a model for how diet can guide health.

Milk Genomics & Human Health

German discussed the value of collaboration between his milk genomics research and the International Milk Genomics Consortium (IMGC), an academic/industry partnership with interest in bringing the science to practice and building pre- and post-competitive public scientific knowledge.

Focusing on the comparative genomics of milk, symposium speakers examined variations in milk compositions, the disparate functions of milk as they apply to different mammals and human infants, and the benefits provided by milk for energy balance in animals and humans.

Olav Oftedal of the Department of Conservation Biology at the Smithsonian National Zoological Park in Washington, DC, discussed the ability of mammals to evolve diverse lactation strategies leading to variations in types and quantities of milk, depending upon infant and maternal circumstances. He offered by example the hooded seal, which in response to the need to rapidly acquire stored energy on an ice flow birth site, can transfer 7kg of stored energy from mother to pup in a single day of feeding. Oftedal was joined in presenting by Michael Power of the American College of Obstetricians and Gynecologists and the Department of Conservation Biology at the Smithsonian Institute in Washington, D.C., Peggy Neville of the University of Colorado Health Services Center, and Floyd Schanbacher of the Ohio Agricultural Research and Development Center.

Michael Zemel of the University of Tennessee discussed the mechanisms by which milk directs optimal metabolism and demonstrated that dairy products help improve the rate of weight loss and increase fat loss while retaining muscle mass in humans attempting to lose weight in a calorie-restricted diet.

Afternoon sessions on the first day focused on the health properties of the oligosaccharides, oligopeptides and oligonucleotides in milk. Bob Ward of Utah State University presented a multidisciplinary investigation conducted during his graduate studies at UC Davis into the functions of milk oligosaccharides as a new set of targets in the discovery of milk's bioactives. Martin Grigorov, head of bioinformatics at the Nestlé Research Center in Lausanne, Switzerland, reviewed the main molecular constituents of milk and the consideration of milk proteins and their potential application as precursors of biologically active peptides that potentially work as modulators of various regulatory processes. Carlito Lebrilla, UC Davis professor of chemistry, explained the importance of oligosaccharides—the third most abundant component of human milk, important for their potential probiotics and immunogenic compounds. In addition to the variations of oligosaccharides between mammals, he introduced new tools for oligosaccharide analysis, including the development of a new microchip for NanoLC profiling created in partnership with Agilent Technologies.

Day two focused on research highlights from attendees throughout the world and on resources being created and utilized.

(Continued on next page)



*Technician Randy Wisser conducts genome mapping.
Photo courtesy of USDA ARS*

(Genome from page 4)

Juan Medrano, professor of animal genetics at UC Davis, discussed the tools used in genomics, specifically comparative genomics for functional annotation and identification of genes. Matthew Lange, technology manager for the IMGC, led a session on the Consortium's Web Portal, which was recently introduced in a beta format (<http://lactoknow.ucdavis.edu>). The Portal was created to assist researchers in translating biological information into health knowledge by providing a visual and electronic framework for displaying relationships between publicly available databases and ontologies as well as annotating and sharing concepts related to their scientific pursuit. German closed the symposium by presenting the outline of a scheduled online course program in the area of milk genomics, nutrition and food science.

"In its second year, the symposium is proving to be an important collaborative environment for the advancement of our knowledge of how milk delivers health," said Joseph O'Donnell, executive director of the California Dairy Research Foundation (CDRF), the event sponsor. "This is the first step in the future development of customized dairy products and manufacturing processes to maximize consumer health."

The symposium attracted participants from 11 countries including the United States, Argentina, Canada, France, Australia, New Zealand, The Netherlands, Ireland, Belgium, Switzerland and Denmark. A third International Symposium on Milk Genomics & Human Health is scheduled for September 2006 in Brussels, Belgium, and will be coordinated by the International Dairy Federation (IDF) and the CDRF. For more information, contact coordinator Jennifer Giambroni at (415) 254-4549 or info@cdrf.org.

NEWS AND NOTES

US law opens schools to milk processors

A new law allowing American schools to sell milk anywhere at any time instead of just at the canteen may help milk processors to fight back against soft drink dominance. The "anytime, anywhere" rule is intended to prevent restrictions on the sale and marketing of 100 percent fluid milk in schools, and specifically ban these sorts of restrictions in exclusive deals schools have with soft drink companies.

The law, which forms part of the U.S. Department of Agriculture's (USDA) 2004 Child Nutrition Act, began on December 21, although comments and proposals for amendments will be allowed until May 22, 2006. As it stands, all schools must make the necessary changes to their supply contracts with soft drinks firms by the beginning of the 2006-2007 school year.

"This is a major victory for milk processors," said Victor Zaborsky, senior marketing manager at the International Dairy Foods Association (IDFA). "There have been lots of schools around the country that have not allowed milk vending machines in the school because of those soft drink contracts. We are certainly not against competition in schools, all we want is an ability to be there."

Nearly half of all U.S. schools had an exclusive con-



Courtesy Dairy Management Inc.

(News and Notes *from page 5)*

tract with a beverage company in the 2003-04 school year, according to a report published by the Government Accountability Office last August. Opinions differ on just how much these deals hamper milk marketing. “Based on discussions with state agencies, we understand that very few if any current vending contracts actually limit the sale or marketing of fluid milk,” said a representative of the USDA.

The question is—will students really reject coca-cola for the white stuff? After all, American children currently drink three times more soda than milk. And the U.S. National Dairy Council says the country’s milk market has been shrinking for decades.

The IDFA has been working to increase school milk consumption through the Milk Processor Education Program. It sponsored research across 300 schools in St. Louis which showed that milk consumption rose more than 12 percent where new flavors, packaging and posters were offered. A quarter of the schools saw consumption jump 34 percent.

This article by Chris Mercer appeared in the December 8 issue of DairyReporter.com

Low-fat dairy tied to lower blood pressure

Middle-aged adults who favor skim milk and other low-fat dairy foods may have lower blood pressure than others their age, a new study suggests.

Researchers in Spain found that among nearly 5,900 adults they followed over two years, those with the highest intake of low-fat dairy products were about half as likely to develop high blood pressure as those who consumed the fewest dairy products.

The apparent protective effect remained when the researchers accounted for other factors in high blood pressure risk, including overall diet, exercise, body weight and smoking.

Fattier dairy foods like whole milk and ice cream, however, were not a blood pressure boon, according to findings published in the *American Journal of Clinical Nutrition* (November 2005).

Though some past research has linked low-fat dairy consumption to lower blood pressure, this is the first to find the relationship among middle-aged adults. Previous studies have focused on children and young adults,



Courtesy U.S. Dairy Export

Alvaro Alonso, the lead author of the new study, told Reuters Health.

It’s not completely clear why dairy foods might help control blood pressure, but it does not appear to be due to calcium alone. In the current study, only calcium from low-fat dairy products was related to lower blood pressure risk, and past research has failed to find a clear association between higher calcium intake and lower blood pressure, said Alonso, who is currently with Harvard School of Public Health in Boston.

The study included 5,880 adults who ranged in age from 20 to 90 and were free from high blood pressure and cardiovascular disease at the start of the study. Participants completed questionnaires on their diets and other health and lifestyle factors, and the researchers followed up with them two years later to see how many had developed high blood pressure.

Overall, 180 people developed the condition during the study period. Those who had reported the highest intake of low-fat dairy—mostly in the form of skim and reduced-fat milk—were 54 percent less likely to develop high blood pressure than those with the lowest intakes of dairy.

Milk, the study authors note, provides caseins and whey proteins that may act in a manner similar to blood-pressure-lowering drugs called angiotensin converting enzyme (ACE) inhibitors. These proteins may help explain the study results, they speculate.

As for why only low-fat dairy had positive effects, it’s “plausible,” according to the researchers, that the saturated fat in richer dairy foods neutralizes any blood pressure benefits.

This article by Amy Norton appeared in Reuters Health, New York, December 9, 2005.

Probiotics set for explosive growth in China

Probiotics are now being added to more and more products in China, and appear to be heading for rapid growth in demand. In early 2005, key probiotics supplier Chr Hansen, the Danish cultures maker, formed a strategic alliance with China's leading liquid milk producer Mengniu Dairy to promote the healthy bacteria in a market where dairy foods are already booming.

As part of the agreement, Chr. Hansen will help train Mengniu's R&D and production staff, distributors and sales force, and advise on marketing strategy and positioning for probiotics on the Chinese market.

"Twelve months ago there was almost no interest in probiotics," explained Mark Johnston, the firm's dairy manager for the region. "But now between 10 and 20 percent of yogurts produced industrially contain probiotics." However he added that most companies are simply adding the probiotics without communicating their benefits to consumers.

Dairy consumption in China is growing at an average rate of more than 20 percent. Of the estimated 600,000 to 700,000 tons of yogurt being produced industrially each year, much is sold in drinkable form rather than the

more typical set yogurts consumed in Europe. "The market is heavily influenced by Japan and Taiwan," said Johnston.

Taiwanese firm Wei Chun has raised standards at the premium end of the market with its presence in China and probiotic yogurts will continue to grow the premium offering. "There are probably about 200 million Chinese with disposable income buying processed foods," said Johnston.

Rapid growth in the dairy sector has already attracted a number of western firms, and probiotics could be another area of opportunity. The National Bureau of Statistics of China forecasts a 10-fold increase in Chinese dairy consumption between now and 2015.

This article by Dominique Patton was excerpted from the December 15 issue of FoodNavigator.com.

DD



CDRF Research Investigator MaryAnne Drake Wins Prestigious Award

MaryAnne Drake, associate professor of microbiology and sensory analysis at North Carolina State University, and CDRF research investigator, received the 2005 Samuel Cate Prescott Award for outstanding ability in food science research. Recipients of



MaryAnne Drake

this award must be under 36 years of age or have received his or her highest degree within the previous 10 years.

Since receiving her Ph.D. degree in food science in 1996, Drake has conducted research primarily in sensory and instrumental analysis of dairy flavors. She was the first researcher to develop defined sen-

sory languages for dairy foods and apply the languages for precise communication using multiple panels at different locations. She disseminated the developed languages through multiple academic and industrial presentations and workshops and peer-reviewed publications, and subsequently applied the language for use as a powerful analytical research tool for fundamental and applied understanding of flavor and to gain insights on consumer perception of various flavors.

Drake received funding from CDRF to use the developed cheese flavor lexicon to study regional differences in Cheddar cheese flavor development and flavor and texture differences between milled and stirred-curd Cheddar cheeses. CDRF also provided funds to establish flavor variability and stability of skim milk powder by using the dried dairy ingredient flavor lexicon. These results will provide crucial information for processing and marketing in the dairy industry around the world.

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Calendar of **EVENTS**

March 21–24

Eighteenth Annual Cheese Short Course I.

Location: Cal Poly Dairy Products Technology Center, Cal Poly, San Luis Obispo. For more information, call Laurie Jacobson at (805) 756-6097, or visit www.calpoly.edu/~dptc.

April 18–19

Twelfth Annual Milk Processing Technology Short Course.

Location: Cal Poly Dairy Products Technology Center, Cal Poly, San Luis Obispo. For more information, call Laurie Jacobson at (805) 756-6097, or visit www.calpoly.edu/~dptc.

June 24–28

Institute of Food Technologists Annual Meeting,

Orlando, FL. For more information visit www.am-fe.ift.org/cms/.

June 26–27

California Creamery Operators Annual Meeting,

Lake Tahoe, NV. For more info, call (530) 662-1228

July 9–13

ADSA-ASAS Joint Annual Meeting, Minneapolis, MN. For more information visit <http://adsa.asas.org/meetings/2006/>.

August 7–9

International Conference on the Future of Agriculture: Science, Stewardship, and Sustainability,

Hyatt Regency in downtown Sacramento. The conference is sponsored by the U.S. EPA ORD Hazardous Substance Technical Liaisons

Program, the National Institute of Environmental Health Sciences, the Midwest Hazardous Substance Research Center—Kansas State University, and California EPA. For more information, contact Ellen Stauffer at ellen@ksu.edu, or call (785) 532-2562, 8 a.m.–5 p.m. (CST).

August 13–16

International Association for Food Protection,

Calgary, Canada. For more information, visit www.foodprotection.org/meetingsEducation/2006ammain.asp.

September 19–21

Third Annual International Milk Genomics Symposium,

Brussels, Belgium. Sponsored by CDRF, the symposium will discuss ongoing and future collaborative milk genomics research and provide database mining tools and highlights from International Milk Genomics Consortium participants. For more information, call Jennifer Giambroni at (415) 254-4549 or e-mail jgiambroni@sbcglobal.net

September 26–29

8th Dairy Science and Technology Basics for the Farmstead/Artisan Cheesemaker.

Basics of quality cheese manufacture with emphasis on artisan/farmstead cheese manufacture. Location: Cal Poly Dairy Products Technology Center, San Luis Obispo, CA. For information, call Laurie Jacobson at (805) 756-6097, or visit www.calpoly.edu/~dptc.