

CALIFORNIA Dairy Dispatch

RESEARCH, EDUCATION AND SERVICE TO SUPPORT THE DAIRY INDUSTRY

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Milk's nutritional influence includes weight management

By Joseph O'Donnell

Take a look around you. How many people are overweight and have diabetes or cardiovascular disease? Our genetics haven't changed—has our diet?

The survival of any civilization requires nutritional resources adequate to supporting proper growth and development as well as fending off disease. Given that humans require a great variety of nutrients, meeting the nutritional needs of a society is a heady task. The United States seems to have that under control.

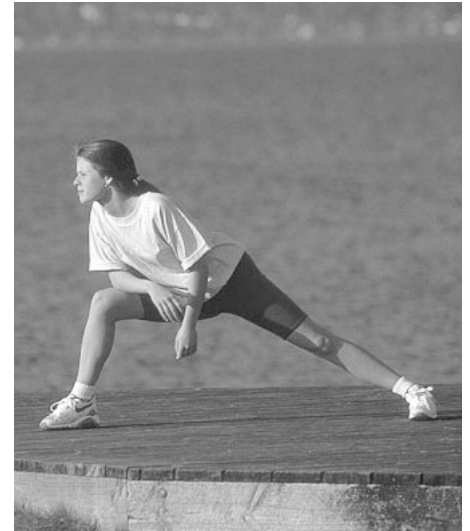
Over the years, we have become so good at food production and distribution that we take nutrition for granted. This is a fairly recent phenomenon. Less than a century ago, nutrition deficiency diseases such as rickets, goiter, scurvy, pellagra and others were not rare, especially in underprivileged areas of the country. This malnutrition opened the door to infectious disease.

Food became tastier

With proper nutrition, sanitation, vaccines and antibiotics, common bacterial infections are not what they

once were. America's prosperity growth in the mid-century brought with it rapid advances in food production, food formulation and distribution. Not only could the country produce much more food than it needed, its scientists could tear food apart and put it back together in a new form to meet the new needs of American kitchens and dinner plates. Food became tastier, easier to digest and abundant.

Where did that take us? The same technology that allowed us to keep
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Cal Poly program enables powder-producing group to land international contract

When a California dairy products collective sought to develop milk powder specially formulated for a customer in Mexico, it obtained the assistance it needed from the Dairy Ingredients Applications Program at Cal Poly, San Luis Obispo. The cooperative, DairyAmerica Inc., consequently secured a sizable contract to provide the resulting vitamin- and mineral-fortified milk powder to the customer.

DairyAmerica, a marketing association of seven producer-owned dairy cooperatives, approached Cal Poly researchers for assistance in developing milk powder samples according to the specifications of its customer. DairyAmerica's appeal for assistance constituted an ideal utilization of the Dairy Products Technology Center program and its staff,

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REDUCE ASTHMA SYMPTOMS
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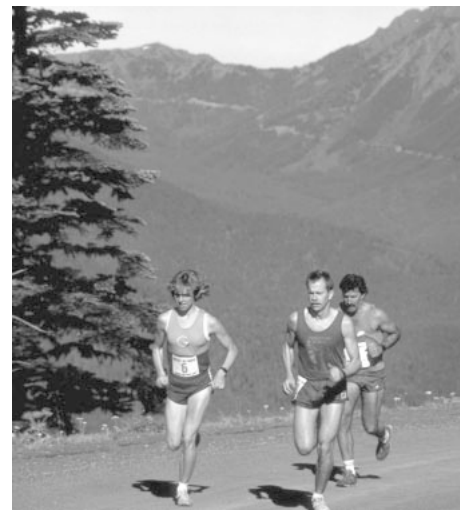
our bellies full also required less physical work to do so. As a result, we're fat and out-of-shape and looking again for nutrition to improve our health. Whether we are trying desperately to find food or selecting from an abundance of food sources, the concept of malnutrition is at the root of the disease and untimely deaths associated with both sides of the equation.

Malnutrition changes with times

The difference between the malnutrition of a century ago and what we suffer from today lies in the kind of diseases manifested. In the last century we saw the classic nutrient

deficiency diseases mentioned above. Today we see more heart disease, stroke, diabetes, obesity and colon cancer—all often associated with the state of our body weight and physical fitness.

Left to its own devices, nature understands the importance of nutritional balance. When we don't get enough variety of foods in our diet, we develop deficiency diseases. This points to the question: are diseases like diabetes the result of a nutritional deficiency much like scurvy? Scurvy is associated with the lack of vitamin C. Perhaps diabetes is



genetics. After all, milk was designed to deliver nutrition and health to mammals—maybe part of that package includes weight management. As the work to understand the components of milk that deliver specific nutritional benefits unfolds, I suspect we will see that the answer is not some magic bullet but that milk brings balance to an otherwise imbalanced diet.

Even if this is the case, we can't expect Americans to start drinking lots more milk. We need to be proactive in using the same technical resources that gave us all this tasty food to put milk into new products that appeal to consumers so they can benefit from its nutritional balancing powers.

Wanting to compete with soda

More than 20 years ago, researchers were looking at carbonating milk in order to compete with the multi-billion dollar soda industry. The timing, technology and marketing, however, weren't in place to make it work. Today we see the same industry reeling from attacks by consumer groups charging them with contributing to the obesity and

(See **Milk** on page 3 at right)

“We need to be proactive in using the same technical resources that gave us all this tasty food to put milk into new products that appeal to consumers...”

the result of an imbalance of calories and other nutrients. We have to ask why, as our genetics haven't changed, is diabetes becoming such an epidemic? If it is associated with malnutrition of some kind, we need to find the way out.

Weight management and milk

Milk has recently been shown to have a significant influence over weight management. While the concept is cutting edge, it's easy to surmise that this is one of the ways nature helps balance nutrition and



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Names in the News

Dairyman named undersecretary of California Dept. of Food and Ag

In January, Central Valley dairyman Charles “Chuck” D. Ahlem was appointed undersecretary of the California Department of Food and Agriculture (CDFA) by Gov. Arnold Schwarzenegger.

“Chuck’s experience in the ranching and agricultural industry has prepared him well to serve in this very important role,” said Gov. Schwarzenegger. “I look forward to working with him to strengthen California through this important sector of our economy.”

Ahlem is a rancher from the Central Valley where he has owned and operated the Charles Ahlem Ranch since 1974. In addition, he is a founding partner and part owner of the Hilmar Cheese Co. From 1996 to 2000 Ahlem served as a board member of the Central Valley Regional Water Quality Control Board, and is currently a member of the California Dairy Quality Assurance Program, a partnership among producers, government agencies and

academic researchers to address the issues affecting agriculture.

Since 1994, Ahlem has served as a member of the California State Board of Food and Agriculture. He is also a member of the Western United Dairymen, the California Dairy Council, the USDA Agricultural Trade Policy Committee in addition to being a member and past president of the Merced County Farm Bureau.



Chuck Ahlem

Ahlem also has a background and interest in agricultural education. He is a member of the Cal Poly, San Luis Obispo Dean’s Agricultural Advisory Committee, and he serves as a member of the University of California President’s Advisory Committee of Agriculture and Natural Resources. Ahlem is also a former board member of California Education in the Classroom.

“I am honored that Governor Schwarzenegger has asked me to use my background in agricultural education and expertise in ranching and livestock to serve in his administration,” said Ahlem. “I look forward to working together to bring greater vitality to California’s economy through agriculture.”

Whey proteins expert receives IFT’s 2003 research & development award



Allen Foegeding

E. Allen Foegeding, professor of food science at North Carolina State University, and research scientist with the Southeast Dairy Foods Research Center, received the Institute of Food Technologists’ 2003 award for research and development. The award recognizes an IFT member who has made a recent significant research and development contribution to the

(See **Names** on page 4)

Milk *continued from page 2*

diabetes epidemic affecting our country. These powerful soft drink companies are now directing their attention toward including milk in new formulations. Whether it



is carbonated or not, we are seeing more and more beverages with milk as an ingredient. It may be the first sign we’re getting back on track to what’s important—the nutritional content of what we eat and drink.

While technology is constantly changing—some things remain evergreen. Just like in centuries past, milk is still the place to go if you want to advance the nutritional status of your population.

This article first appeared in the November 2003 issue of Western DairyBusiness.

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understanding of food science, food technology, or nutrition. Foegeding's research program is recognized worldwide for linking chemical and rheological factors to control the functionality of whey proteins. He is widely sought out by major food companies and whey manufacturers for his expertise in this area and is considered the leading whey protein researcher in the United States.

Nutritionist to direct Robert Mondavi Institute for Wine and Food Science

Clare Hasler, a nutritionist and founding director of the Functional Foods for Health Program at the University of Illinois, Chicago and Urbana-Champaign campuses, has been named the founding executive director of the Robert Mondavi Institute for Wine and Food Science at the University of California, Davis.

Hasler is a leading authority on functional foods—foods that provide specific health benefits, such as lowering the risk of heart disease or cancer, in addition to meeting basic nutritional needs.

As executive director of the Robert Mondavi Institute, Hasler will lead programming and vision-development efforts for the institute, as well as guide fund-raising activities. She also will serve as the university's primary liaison to the wine and food industries.



Clare Hasler

Hasler holds a dual doctoral degree in environmental toxicology and human nutrition from Michigan State University and a master's degree in nutrition from the Pennsylvania State University. She also earned a master's degree in business administration from the University of Illinois at Urbana-Champaign.

The Robert Mondavi Institute will break ground in 2004 and is slated for completion in 2006. The complex will include a 127,000 square-foot academic building with classrooms, laboratories and offices; a 20,000 square-foot food science laboratory; and a 40,000 square-foot teaching and research winery. It will be located near UC Davis' south entry, just west of the Robert and Margrit Mondavi Center for the Performing Arts.

The institute will house the campus departments of Viticulture and Enology, and Food Science and Technology. It will also bring together students and faculty in related areas who have an interest in the wine and food sciences and will provide cutting-edge facilities for teaching and research in these areas. The institute also will offer educational programs for the visiting public.

Krochta lands grant for applying whey protein as food protection system

Professor John Krochta, UC Davis's Peter J. Shields Chair in Dairy Food Science, and director of the Packaging and Biopolymer Film Lab, was recently awarded the UC Discovery Grant in the amount of \$120,000 for a two-year project that focuses on applying whey protein film and coating as a food protection system for food safety. The grant, which was matched by equal funding from the California Dairy Research Foundation, will bring Krochta's research to commercialization. Information about his research on edible film and coating technology is available on the CDRF-sponsored Web site, www.ediblefilms.org.



John Krochta

The UC Discovery Grant is awarded by the Industry-University Cooperative Research Program in five areas of science and engineering. The grant forms a three-way partnership between the University of California, industry sponsors and the State of California. For more information, visit www.ucdiscoverygrant.org.

David Reid named 2003 Fellow of the Institute of Food Technology

David S. Reid, a professor in the UC Davis Department of Food Science and Technology, was honored by the Institute of Food Technology for his outstanding and innovative research and educational contributions to the field of food science and technology and the food industry. Reid's interests and expertise include frozen food technology as well as identifying, designing and conducting fundamental research focused on solving

(See **Names** on page 5 at right)

Live longer, experience less asthma symptoms

People who eat dairy may live longer

Researchers in Japan had previously reported that centenarians in Tokyo prefer dairy products, so they hypothesized that dietary preferences may be associated with longevity. They had identified 104



centenarians in 1992–1999 to investigate the relationship between dietary patterns and further survival and how survival was also influenced by the ability to perform activities of daily living, cognitive function, nutritional status and presence of disease.

Using cluster analysis, the researchers identified four dietary patterns: a pattern preferring vegetables, dairy products, beverages or cereals. In 2001, 28 centenarians were still alive. Of the four dietary patterns, those preferring dairy foods (primarily milk and yogurt) had the highest survival rate. The authors note

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problems of practical significance. To achieve this, he works with the food industry to identify underlying common themes in a range of



David Reid

process problems in order to design appropriate background research. For example, Reid and his colleagues are developing new freezing processes, and new methods to estimate shelf life of frozen foods. He also has developed strong links with trade associations to ensure that basic/background research is

focused on truly critical areas in solving food industry problems.

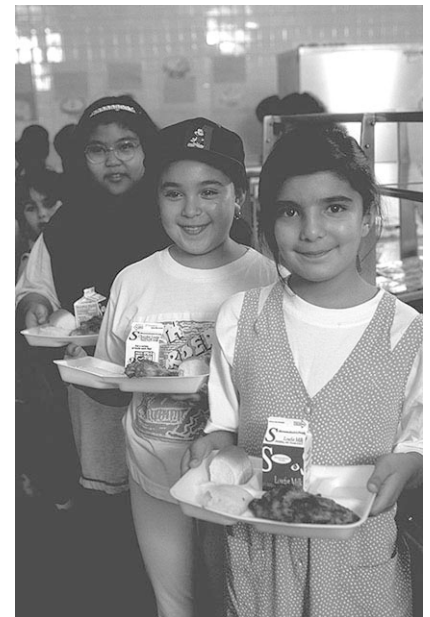
that milk and yogurt are rich in calcium and vitamin B2 (riboflavin); calcium regulates blood pressure and helps prevent osteoporosis, while riboflavin helps protect tissues from oxidative damage.

Shimizu K, et al. *Journal of Nutrition Science Vitaminol.*, 2003; 49: 133-138.

Kids experience asthma symptoms less often when they drink milk

A study of 2,978 preschoolers in the Netherlands found that frequent consumption of products containing milk fat is associated with reduced risk of asthma symptoms. This prospective study investigated the relationship of food consumption at 2 years of age to the presence of asthma symptoms reported at age 3, using a food frequency questionnaire.

Daily consumption of whole milk (including full-fat yogurt and chocolate milk) and butter were significantly associated with low rates of asthma and wheeze. Daily (vs. rarely) consuming whole milk products was associated with a 41 percent reduction in asthma symptoms; and daily (vs. rarely) consuming butter was associated with a 72 percent reduction in symptoms. Authors say these findings are consistent with those from other studies.



Agricultural Research Service, USDA

Wija AH, et al. Association of consumption of products containing milk fat with reduced asthma risk in preschool children: the PIMA birth cohort study. *Thorax*. 2003; 58: 567-572.

These articles appeared in the October 2003 issue of AgribusinessDairyman.

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Dairy beef course is offered by UC Davis on the Internet

The University of California, Davis, is offering a new course for dairy producers to teach them how to market cattle with the highest level of food safety and quality.

The course, "Dairy Beef: Maximizing Quality and Profits," will help with marketing efforts now that meat packers who are implementing Hazard Analysis and Critical Control Point plans, are paying additional attention to the quality of cattle entering their facilities.

The course is designed to strengthen the food-safety link between the farm and the processing plant and improve profits. Dairy cows represent a major source of beef, and cows marketed to beef-processing operations can represent up to 15 percent of a dairy's income.

Modules teach farmers to recognize common health issues leading to condemnation of animals at processing time. Course materials also provide guidelines for early treatment, avoidance of antibiotic residues and understanding what inspectors look for when examining animals intended for the beef market.

The course was developed through a joint effort by university and government specialists from Arizona, California, Colorado, Idaho, New Mexico, Oregon and Washington.

Details are available on the Internet at <http://dairybeef.ucdavis.edu>, or by calling Dale Moore, UC Davis School of Veterinary Medicine, (559) 688-1731 Ext. 217.

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Cal Poly *from page 1*

observed Phillip S. Tong, a professor at Cal Poly, San Luis Obispo, who is closely involved in operation of the center.

"The Dairy Ingredients Applications Program was created specifically to assist manufacturers quickly with creating new products or processes to build their business," observed Tong.

Based on the samples, the customer signed a contract for annual purchases totaling 80 million pounds of nonfat dry milk, or approximately 800 million pounds of skim milk equivalent.

"Cal Poly was very helpful in providing the methodology for mixing vitamins and minerals into the product," said Ronald Thompson, Ph.D., vice president of regulatory and quality assurance for California Dairies

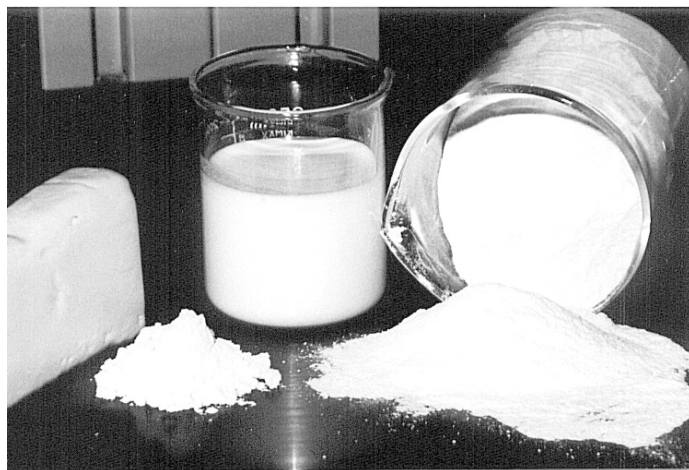
Inc., a member of the DairyAmerica cooperative. "Having a California-based facility that was able to provide the technology, equipment and staffing to rapidly scale up a project of this type was a definite advantage in landing this contract."

Cal Poly's Dairy Ingredients Applications Program was created in 2000 as a means of providing technical support—in facilities and expertise—to manufacturers, users and marketers of dairy-based powders and concentrates. In a show of support, the program was awarded \$150,000 from DairyAmerica for the purchase of equipment during its launch.

"The success of this project clearly demonstrates the payoff in creating partnerships between research and the industry," said Joseph O'Donnell, executive director of the California Dairy Research Foundation. "It's important that more manufacturers understand that this program exists and is available to assist them with their product development needs."

The Dairy Ingredients Applications Program received initial funding from Dairy Management Inc. and the California Dairy Research Foundation. The program is part of the Dairy Products Technology Center at Cal Poly in San Luis Obispo. For more information about the facilities, equipment and capabilities, visit www.calpoly.edu/~dptc.

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USDA: dairy computer use leads others in agriculture

Dairy operations are more likely to have and use computers than their counterparts in other U.S. farming enterprises, based on a recent survey by the USDA's Agricultural Statistics Service. The survey, conducted last June, compared farm computer information by state, farm type and economic class. Dairy operators scored higher than other enterprises in percent of operations with computer access, percent of operations owning or leasing computers, percent of operations using computers for farm business, and percent of operations with Internet access. (See table below).

Across all farming operations, the USDA survey found only slight increases in computer access, ownership and business use compared to a similar survey

in 2001, suggesting that adaptation of computer technology had begun to level off. The notable exceptions were in dairy operations, with operations having gross incomes and government payments between \$1,000 and \$249,999 making bigger strides than operations having gross incomes and government payments at \$250,000 and above.

The Agricultural Statistics Service conducted computer information surveys in 1997, 1999, 2001 and 2003 as part of its annual June agricultural survey. The 2003 computer usage estimates are based on responses from more than 26,400 agricultural operations and represent all sizes and types of farms.

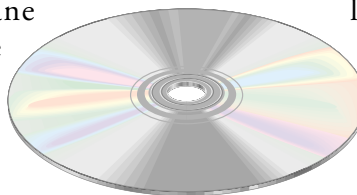
Computers in Dairy Operations	National Farm Average	Dairy Operations	Dairies-income \$250,000 or above		Dairies-income below \$250,000	
	2003	2003	2003	2001	2003	2001
% Have Computer Access	55	72	90	84	66	35
% Own/Lease Computers	54	67	90	79	61	27
% Use Computers for Farm Business	30	42	77	69	32	19
% Have Internet Access	48	63	76	65	59	6

"On-Farm Livestock Euthanasia" CD-ROM now available

Director James S. Cullor, D.V.M., Ph.D., and his colleagues at the UC Davis Veterinary Medicine Teaching and Research Center in Tulare have produced a guide for on-farm humane treatment of livestock that may require euthanasia. The guide, which is offered in CD-ROM format, was developed with assistance from veterinarians, academic researchers and industry representatives.

The CD may be purchased for \$20, plus shipping, by calling the Dairy Food Safety Laboratory at

(559) 688-1731 and asking for Staci Slaght (extension 375) or Rhonda Roche (extension 200). On-line viewing of the CD's contents, as well as a Spanish language version of the information will be available by mid-spring.



The Veterinary Medicine Teaching and Research Center provides teaching, research and service opportunities in food animal production medicine. For more information, visit www.vmtc.ucdavis.edu.

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Calendar of **EVENTS**

March 1-2, 2004

6th Dairy Ingredients Symposium. This two-day symposium covers the latest trends in the marketing, science, manufacturing technology and application of dairy ingredients, including whey-derived and milk-derived concentrates and powders. Location: The Cliffs at Shell Beach, Shell Beach, CA. For more information, call Laurie Jacobson at (805) 756-6097, e-mail ljacobso@calpoly.edu.

March 23-26, 2004

Cal Poly/UC Davis 16th Annual Cheese Short Course I. Participants will obtain the basic scientific information and practical skills needed to manufacture cheese. (includes 1 day of hands-on cheese making). Location: Cal Poly Dairy Products Technology Center, San Luis Obispo, CA. Call Laurie Jacobson at (805) 756-6097, e-mail jacobso@calpoly.edu.

April 13-14, 2004

Cal Poly/UC Davis 10th Annual Milk Processing Technology Short Course. Course emphasizes principles and technology for the processing of milk for fluid and manufactured dairy foods. Location: Cal Poly Dairy Products Technology Center, San Luis Obispo, CA. Call Laurie Jacobson at (805) 756-6097, or send an e-mail message to ljacobso@calpoly.edu.

May 9-12, 2004

Fourth International Symposium on Recombined Milk and Milk Products. Location: Cancun, Mexico, Moon Palace Resort. For more details, call USDEC at (703) 528-3049.

July 12-16, 2004

Institute of Food Technologists Annual Meeting and Food Expo. Location: Las Vegas, NV. For more information, call IFT at (312) 782-8424, fax (312) 782-0045, send an e-mail message to info@ift.org, or visit www.ift.org.

Sept. 28-Oct. 1, 2004

6th Dairy Science and Technology Basics for the Farmstead Cheesemaker. This four-day course covers the basics of quality cheese manufacture with an emphasis on artisan/farmstead cheese manufacture. The course includes one day of hands-on cheese making activities, cheese sensory evaluation, and other considerations in starting a small-scale cheese making business. Location: Cal Poly Dairy Products Technology Center, San Luis Obispo, CA. For more information, call Laurie Jacobson at (805) 756-6097, or send an e-mail message to ljacobso@calpoly.edu.

Oct. 19-20, 2004

9th Annual Dairy Cleaning and Sanitation Short Course. This course was designed to provide the basics of plant and equipment cleaning and sanitation, personal hygiene, and introduction to HACCP. Location: Cal Poly Dairy Products Technology Center, San Luis Obispo, CA. For more information, call Laurie Jacobson at (805) 756-6097, or send an e-mail message to ljacobso@calpoly.edu.