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Director's Update

By Clare M. Hasler



It is hard to believe that 2009 is already upon us. The new year brings many reasons to celebrate, and for me that includes the fact that the administrative offices for the Robert Mondavi Institute for Wine and Food Science now reside in a beautiful new state-of-the-art building. Truly a long-term dream realized. I have been fortunate to host numerous tours of the complex for groups ranging from two to 100 and continue to be amazed at the positive visitor reaction to our new academic home. It is indeed such a pleasure to showcase this wonderful new space.

And more is yet to come. In a few months, construction will begin on the Teaching and Research Winery and the August A. Busch III Brewing and Food Science Laboratory. [See the full story below](#). Completion of "phase II" of the complex is slated for fall 2010. Those of you who frequently drive past the complex on Old Davis Road have likely noticed that the grapevine trellises are now in place. Very soon approximately 13 acres of vineyards will be planted which will provide a wonderful greeting to UC Davis. How exciting it will be to have a little slice of the California wine country right in our very own backyard.

We have already begun to take full advantage of the wonderful new space within the RMI, beginning with the first in a series of consumer tasting experiences on December 6. Held in the Silverado Vineyards Sensory Theatre, a sold-out crowd attended "[Olive Oil: Renaissance, Renewal, Revelation](#)," enjoying the opportunity to taste several excellent California olive oils as well as learn about the health benefits of this "functional food"

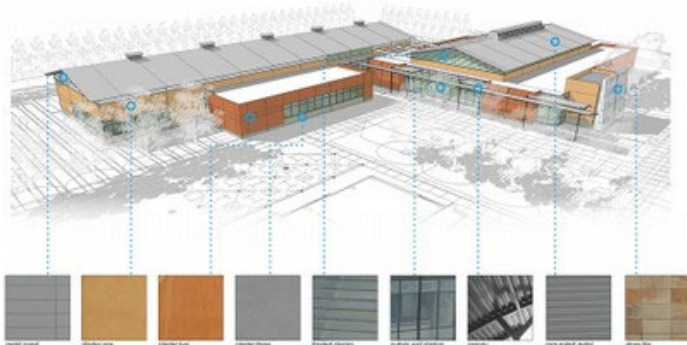
We are planning a second Saturday tasting event on May 16, "[Beer and Cheese: Mastering the Marriage](#)" featuring two of our food science faculty, Charlie Bamforth and Moshe Rosenberg. Space is still available but is going fast.

I wish all of you a healthy, prosperous, and peaceful 2009!

Clare

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New Winery, Brewery and Food Science Laboratory will show 'Green' Leadership



Construction of the new Research and Teaching Winery and the August A. Busch III Brewing and Food Science Laboratory at the University of California, Davis, will commence in June after design plans were approved by the UC Regents last week. The new facilities are part of the UC Davis Robert Mondavi Institute for Wine and Food Science, and will be used for scientific research, student training and industry collaboration.

"It is a dream come true to have UC Davis' preeminent wine, food and brewing programs housed together in a brand new state-

of-the-art complex," said Clare M. Hasler, executive director of the institute. "The new winery, brewery and food processing facility will further advance our teaching, research and outreach programs."

The three academic buildings of the institute, which house the departments of Viticulture and Enology and of Food Science and Technology opened in fall 2008. The 34,000-square-foot building housing the winery and the laboratory will be completed in 2010.

The August A. Busch III Brewing and Food Science Laboratory will house a food processing pilot plant, a dairy processing facility, and a pilot brewery to be used by the Department of Food Science and Technology. The facility will be named in recognition of August A. Busch III's long-time contributions to the art of brewing. The Anheuser-Busch Foundation gave \$5 million toward the project.

Charles Bamforth, the Anheuser-Busch Endowed Professor of Malting and Brewing Sciences at UC Davis, said, "This wonderful new resource confirms that brewing education at UC Davis is second to none. There is no finer facility anywhere for the training of future brewery employees and the ongoing education of existing brewers."

The winery, which is yet to be named, will include a large experimental fermentation area, controlled temperature rooms for large-scale testing, barrel and bottle cellars, a testing lab, a classroom and a special bottle cellar for donated wines. The winery will be used for research, teaching and industry short courses. The landscape outside the winery will feature a 12.5-acre teaching and research vineyard, and educational gardens.

"This new facility will be a platform for experimentation in wine processing, with the ability to measure energy and water usage as well as waste output," said Andrew Waterhouse, professor and chair of the Department of Viticulture and Enology. "Our students will be able to learn about winemaking using the most advanced facility, and learn approaches to improve sustainable and precision wine production."

Both the winery and the laboratory will be constructed to achieve LEED (Leadership in Energy and Environmental Design) certification through the U.S. Green Building Council. The aim is to achieve LEED Platinum certification, the highest rating awarded, which would make this the first facility of its type in the world.

Sustainability and environment-friendly features that are incorporated into the building design include onsite solar power generation, rainwater capture and water conservation, energy efficiency, carbon dioxide containment and removal for sequestration, use of local and recycled construction materials, and reduction of building site waste.

The winery is intended to be the first wine-production facility in the world that is:

- fully solar-powered at peak load;
- equipped to capture and sequester all carbon dioxide from its fermentations; and
- operated on captured rainwater for its cleaning needs, recycling solutions at least five times.

UC Davis is committed to green-building construction as part of a 2004 University of California policy to make all new buildings "eco-friendly." The winery and laboratory also will serve as a model for what the wine, brewing and food industries can achieve in environmental and energy efficiency. The innovative environmental design reflects UC Davis' effort to provide leadership in sustainable winemaking, brewing and food processing.

"The global wine community is acutely aware of climate change and the critical importance of efficient water use in sustainable winemaking practices," said Roger Boulton, professor of viticulture and enology at UC Davis, who works with Kendall-Jackson and other wineries on sustainability issues. "The Live Winery aspect of this project will provide real-time data of all system technologies on a Web page for wineries. Implementing and sharing these sustainability systems with wineries everywhere exemplifies what UC Davis does beyond its education and research activities."

"Water conservation, energy efficiency and waste reduction are issues that food and beverage processors confront constantly in their quest to be competitive operations," said James Seiber, chair of the Department of Food Science and Technology. "The new facility will showcase environmental and sustainable technologies that others can evaluate and put into practice in their own operations."

The new winery and laboratory are being constructed entirely with private funds. Major gifts have been received from the late Robert Mondavi, the Anheuser-Busch Foundation, the California processing tomato industry with leadership from The Morning Star Packing Company, Jerry Lohr, Silverado Vineyards, and Ronald and Diane Miller. A second group of winery partners, led by Kendall-Jackson, J. Lohr Vineyards & Wine and the Wine Group, provided the extra funding to attain LEED Platinum certification. More than 150 individuals, alumni, corporate friends and foundations have contributed more than \$16.5 million for the new building. Additional funding is being sought to equip the facility and to develop the sustainable energy, water and carbon systems.

With this new winery and laboratory, the Robert Mondavi Institute for Wine and Food Science will be able to provide extraordinary outreach and partnership opportunities with the food and beverage industries in California and beyond. The completed academic buildings are already facilitating UC Davis' ability to deliver unique educational curricula and to conduct world-renowned research and public education on critical food- and beverage-related topics.

The team of architects, engineers and builders for the new building includes BNB Norcal of San Mateo, Flad Architects of San Francisco, F.M. Booth Mechanical, Red Top Electric, KPW Structural Engineers, Creegan + D'Angelo Civil Engineers, and HLA Landscape Architects.

About UC Davis

For 100 years, UC Davis has engaged in teaching, research and public service that matter to California and transform the world. Located close to the state capital, UC Davis has 31,000 students, an annual research budget that exceeds \$500 million, a comprehensive health system and 13 specialized research centers. The university offers interdisciplinary graduate study and more than 100 undergraduate majors in four colleges -- Agricultural and Environmental Sciences, Biological Sciences, Engineering, and Letters and Science – and advanced degrees from five professional schools: Education, Law, Management, Medicine, and Veterinary Medicine. The UC Davis School of Medicine and UC Davis Medical Center are located on the Sacramento campus near downtown.

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Olive Oil: Renaissance, Renewal, Revelation

By Nicole Sturzenberger



To kick off the 2008 holiday season, the UC Davis Olive Center offered the first in a series of olive oil tasting courses. Led by local olive oil expert, Alexandra Devarenne, Robert Mondavi Institute executive director, Clare Hasler, and Olive Center executive director, Dan Flynn, the course was targeted at both consumers and individuals from the olive oil industry.

The three-hour class was held in the new Silverado Vineyards Sensory Theatre which provided the 70 participants with great sightlines and sound quality in a handsome and comfortable environment. Alexandra Devarenne provided an introduction to olive oil tasting the way experts do it. Proper tasting technique and some olive oil vocabulary helped attendees better appreciate the five California extra virgin olive oils tasted in the class. One supermarket olive oil, labeled as extra virgin, was revealed as clearly defective in the tasting. This underlined the importance of the new California legislation on olive oil standards discussed by Dan Flynn in his presentation.

The olive oil tasting included various olive varieties that are popular in California. Information about the history and horticultural characteristics of each one provided interesting background to the sensory experience of the tasting. A plate of food at the end of the tasting allowed for experimentation with combinations of different olive oils and foods. Since the oils ranged in style from ripe, fruity and soft to green, fruity and peppery, this exercise really brought the tasting experience into the kitchen.

Dan Flynn discussed the recent legislation to adopt international olive oil standards in California, a law that prohibits the labeling of defective olive oil as “extra virgin.” Dan also surveyed the history of olives and olive oil in California, giving an overview of the industry and the role of the University of California, past, present, and future.

In addition to tasting olive oil, participants also learned about its health benefits from Dr. Clare Hasler. “Olive Oil as a Functional Food” was the title of her presentation which covered the contribution of olive oil to a healthy diet. She provided a summary of some of the current research into the nutritional aspects and health benefits of olive oil.

The course was followed by a beer and wine reception, giving participants the chance to mingle and ask further questions of presenters.

Marking the Olive Center’s commitment to upholding the UC Davis mission of outreach and education, 2009 will offer more classes open to the public, which can be viewed on the Olive Center website, www.olivecenter.ucdavis.edu.

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“Super-Premium” Olive Oil Presentation

By Dan Flynn and Alexandra Kicenik Devarenne



Professor Claudio Peri, president of TREE

On January 15, the Robert Mondavi Institute and the UC Davis Olive Center hosted a presentation by TREE, an Italian organization that certifies and promotes excellence in extra virgin olive oil. The presentation was attended by a capacity audience of 50 California olive oil producers, educators, and researchers.

Dan Flynn, executive director of the Olive Center, described TREE as the only organization in the world that is attempting to define excellence in olive oil. Flynn noted that consumers and food authorities commonly accept “extra virgin” as premium quality, yet the international standards actually set the bar at a minimal level of “no defects and some fruitiness” that allow for a great deal of mediocrity. He introduced the president of TREE, Professor Claudio Peri, to discuss how TREE is attempting to define the upper quality levels of extra virgin.

Peri is a UC Davis alumnus (1968-1969) who later established the first university food science program in Italy. TREE was established in Rome four years ago to distinguish the best Italian olive oils from the average quality oils. Peri described TREE, which means “three E” in Italian: (1) Ethics (in the production process), (2) Excellence (in olive oil quality), and (3) Economy (the association’s activities to promote consumer demand for fine olive oil). He described the criteria by which olive oils are evaluated at TREE and urged producers to strive to achieve their own style of olive oil that they would work to achieve consistently from year to year.

The session concluded with the tasting of six new Italian olive oils that meet TREE standards. Peri noted that TREE looks to California producers as innovators, and invited them to submit oils to the association without a fee for a one-year trial period. Professor Peri explained that he is working this year to expand TREE to Spain, Greece, and California. He also said that the Culinary Institute of America (CIA) at Greystone is working with TREE to install a special system that will provide samples of TREE olive oils to guests at the CIA’s new visitor center, now under construction.

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Food Science and Technology Department Welcomes New Chair

By Karen Nofziger



James Seiber, chair of the

Department of Food

Science and Technology

Dr. James N. Seiber began his term as chair of the Department of Food Science and Technology during the first week of January. Prior to joining UC Davis, Seiber was director of the Western Regional Research Center (WRRC) in Albany, Calif. He retired from there after 10 years with the Agricultural Research Service (ARS).

A native of Missouri, Seiber obtained his degrees in chemistry: an A.B. from Bellarmine College, an M.S. from Arizona State University, and a Ph.D. from Utah State University. He worked in the pesticide discovery and development areas at Dow Chemical Company in Midland, Michigan, and Pittsburg, Calif. He left Dow to join the Department of Environmental Toxicology at the University of California, Davis, where he served as department chair and taught and conducted research in the areas of chemical contaminant analysis, transport, and environmental fate. He also served as Associate Dean for Research in the College of Agricultural and Environmental Sciences until 1992.

Dr. Seiber was appointed the first director of the University Center for Environmental Sciences at the University of Nevada, Reno, from 1992 to 1998. He coordinated research and teaching programs over five interdisciplinary environmental sciences programs at UNR, the Desert Research Center, and University of Nevada, Las Vegas. Seiber mentored 30 Ph.D. students and authored or co-authored 225 journal publications and book chapters while in academia. He also edited or co-edited ten books in the areas of contaminate transport and fate, and natural toxicant chemistry.

He was selected as director of the ARS Western Regional Research Center in Albany, Calif., in 1998. WRRC, one of USDA's four regional research centers, conducts research in food healthfulness and safety, biofuels and biobased products, environmental quality enhancement including control of invasive weeds using biologically-based methods, and basic plant biology, including genomics, proteomics, and related techniques of plant molecular biology. During his tenure as director, WRRC realized significant increases in numbers of journal manuscript publications, CRADA partnerships, and funded grants and agreements. WRRC's budget doubled, and the number of permanent scientists increased, particularly in the areas of food safety and biofuels. A listserv-based research update was initiated, now reaching more than one thousand individuals and organizations, and an annual research partnership meeting was established with stakeholders and customers of WRRC and ARS research. He was instrumental in the development of international agreements with the European Union, Mexico, Ireland, China, and other nations.

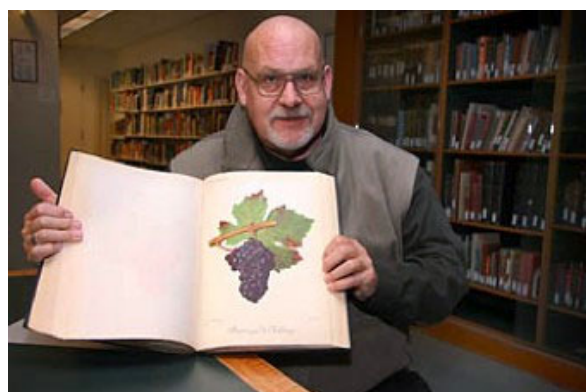
Seiber served as acting director of both the Western Human Nutrition Center in Davis, Calif., and the Southern Regional Research Center in New Orleans, La. In addition to his considerable leadership and administrative duties, he has served since 1998 as editor-in-chief of the *Journal of Agriculture and Food Chemistry*, an American Chemical Society publication.

Dr. Seiber is excited about his return to academic life at UC Davis. He and his wife, Rita, plan to be active in university and community service, improve their orchard in Winters, and spend more time with their grandchildren.

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Grapevine's Archivist – UC Davis Collection Chronicles Wine Science, Culture

By Jeff Hudson, Davis Enterprise staff writer



Axel Borg has a one-of-a-kind job. The wine and food science bibliographer at UC Davis, he works with approximately 29,000 volumes in the university's Viticulture and Enology Collection at Shields Library.

"I usually say I've got the best job at the university, as far as I'm concerned," Borg said. "Getting to work with books, getting to work with food and wine? What a great combination.

"It doesn't revolve around me," he hastened to add. "But I'm in the middle of all of it. I meet really interesting people, who are working on interesting problems, and help them discover new things.

"Now, with the Robert Mondavi Institute for Food and Wine Science really getting going, there are even more dimensions that are being brought in," Borg said.

He is working with a particularly notable collection, one of the finest of its kind. According to the Research Libraries Group (which evaluates and ranks specialized collections of various kinds) UC Davis' holdings in viticulture and enology rank as a "five." Borg put that number into context: "A zero means you have nothing. A 'one' means you have the things you'd find in a public library. A 'two' means you've got material for undergraduate work, and a 'three' means the graduate level. A 'four' means you can support all academic teaching and research done at any level (in that field). And a 'five' means something beyond that." The collection at UC Davis is the only one in the United States that's been ranked at that top level.

Several thousand volumes in the collection were donated by the late Maynard Amerine, in whose honor the collection is named. Amerine, who grew up near Modesto and did his undergraduate work at UC Davis, was hired to teach in the university's newly formed Department of Viticulture and Enology in 1935, when the California wine industry was just recovering from the restrictions of Prohibition. Amerine became a full professor in 1952, and later the department chair. He retired in the 1974, but stayed in touch with UC Davis, which is how Borg got to know Amerine, after Borg was hired in 1988.

"Maynard lived in St. Helena (Napa County) at that point, but he would come to UC Davis about once a month," Borg recalled. "Generally, he would come over for a day, and the work that he gave me would occupy me for two or three days. It was an apprenticeship, in many ways. One time, he asked me a question about a series of publications done in California in the 1880s. . . I had worked with them, and I guess that impressed him, because he invited me to co-author a bibliography (on grapes, wines and other alcoholic beverages) that was published in 1996," shortly before Amerine's passing in 1998.

As a result of Amerine's influence, Borg became intimately acquainted with the Viticulture and Enology Collection (including the 3,000-some items that Amerine donated in 1972). "I went through and looked at each book," Borg said. "It took me the better part of a year and a half. But physically handling each of the volumes, getting that kind of understanding, was invaluable. That, and the apprenticeship under Maynard, helped me understand the world of grape and wine literature.

"Maynard also provided insight into the personalities of wine, and California wine ... like the Gallos and the Mondavis, and why they were important. He knew these people, and had worked with them. It's a matter of not just understanding the literature, but also the people in the field. Librarians tend to forget that literature comes from people, and it's for people."

As a wine and food bibliographer, working with a notable collection, Borg gets inquiries of many different kinds from all over the world. "For example, you probably know that the system for measuring sugar in grapes is called the Brix system. Well, there was a person who contacted me, and said he'd been wine tasting in Napa, where he had asked what degree Brix the grapes had been harvested at. And he was corrected by someone who told him that it was pronounced 'brie' (like the cheese) rather than 'brix' (like bricks). And he wanted to know if he'd been mispronouncing it.

"I said 'No.' The Brix system was designed by a German, and the French use a system called the Baume scale to measure sugar. So that was a popular type of question."

Other questions come from halfway 'round the world. "I got an e-mail question from people who were looking to make pineapple wine in Mauritius" — an island republic in the Indian Ocean. "I was able to find several technical articles on making wine from pineapples, and got copies to them."

Other questions come from academic researchers with a historical bent. "There was a person from Washington state, whose field is the history of science. He was researching 17th century French chemistry. He came for a week to use books in Special Collections. One day, about halfway through his visit, he became so excited he was vibrating. He'd made this wonderful discovery, putting two volumes side-by-side ... what had been thought to be two different works were actually the same, one was translated, actually it was plagiarism. I still remember his excitement, it was contagious. It's a wonderful thing to be a part of."

Borg gets many questions pertaining to California wine and he's always seeking to expand the collections holdings in that still-developing field. "As a bibliographer, I'm responsible for developing the collection, books, journals, maps, DVDs, computer software that relates to grape growing ... everything from very high-level scholarly material to kids' books to brochures."

And all the while, the 55-year-old Borg is using his ever-growing knowledge of literature in his chosen field to assist the researchers who come to the Amerine collection on the third floor of Shields Library. It's a never-ending process.

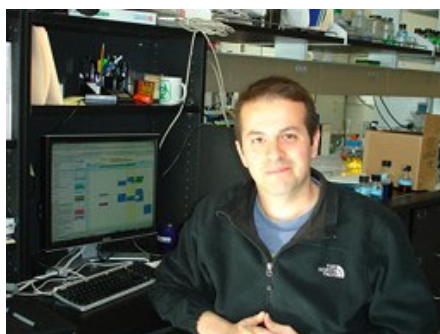
"My daughter gave me a little plaque, quoting something Michelangelo said: 'I'm still learning.' And I'm still learning, myself, and I'm very much in awe of all these things. That's the really nice part of it."

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Got Milk? *Bifidobacterium infantis* Does

By David Sela



RMI researchers have linked microbial consumption of milk sugars to the genome of a bacterium commonly inhabiting the breast-fed infant gut. *Bifidobacterium infantis* is recognized as beneficial since it occupies preferred intestinal niches that pathogenic bacteria would otherwise colonize. In addition, there is mounting evidence for its attenuation of gastrointestinal disorders such as traveler's diarrhea and irritable bowel syndrome, as well as inflammatory

disorders. *B. infantis* is currently used in several probiotic preparations.

Our previous work has shown that *B. infantis* subsists on the oligosaccharides abundant in human milk which are not digested by the infant. Accordingly, its genome possesses several unique features that enable *B. infantis* to recognize, import, and use these sugars as food. To date, these milk utilization features were not identified in other bacteria incapable of consuming milk. This is powerful molecular evidence that early mammalian nourishment (mother-milk-infant) has coevolved with a beneficial microorganism. Currently we are studying how to best employ bovine oligosaccharides (among other human milk oligosaccharide substitutes) in various food-based applications.

Building on the UC Davis tradition of collaborative scholarship, the genome sequencing project involved RMI researchers working with scientists from the U.S. Departments of Energy and Agriculture and was funded primarily by the California Dairy Research Foundation.

The *B. infantis* genome project represents one part of a larger campus wide effort to study milk's bioactive properties. The Milk Bioactives Consortium (MBC) originally combined the expertise of food science/nutrition (Bruce German, RMI), microbiologists (David Mills, RMI) and chemistry (Carlito Lebrilla, chemistry) to examine milk as a true food for health. Today MBC-affiliated faculty members are located in chemistry, microbiology, nutrition, veterinary medicine, and the School of Medicine as well as the RMI.

Our recently published paper can be found in print: Sela, D.A., et al., PNAS 2008 Dec 2;105(48):18964-9 and online at <http://www.pnas.org/content/105/48/18964>.

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Upcoming Events

- Tasting Histories – Food and Drink Cultures Through the Ages, February 27–March 1: <http://foodandbody.ucdavis.edu/tastinghistories/>
- Wine Executive Program, March 8-12: <http://www.wineexecutiveprogram.com/>
- Cheese Loves Beer: Mastering the Marriage, May 16: <http://rmi.ucdavis.edu/docs/cheese-loves-beer-mastering-the-marriages>
- Beyond Extra Virgin Conference, June 21–23: <http://olivecenter.ucdavis.edu/beyond-extra-virgin-2009>
- GiESCO Conference, July 12–16: <http://www.cevs.ucdavis.edu/Cofred/Public/Aca/ConfHome.cfm?confid=398>

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