

WESTERN DAIRY CENTER

Utah State University (Logan)

www.usu.edu/westcent



OVERVIEW

The Western Dairy Center's primary location is Utah State University in Logan, with additional resources available at other universities in the Intermountain West. The faculty has extensive expertise in dairy processing/production, microbiology, chemistry and sensory analysis. An integral part of the center is a newly established Dairy Technology Innovation Laboratory group of researchers dedicated to providing innovative solutions to challenges and opportunities facing today's dairy processing industry.

RESEARCH FOCUS

- Cheese flavor and functionality
- Fermented products, including cheese and yogurt
- Ultra-high-temperature and extended-shelf-life fluid milk beverages
- Milk protein chemistry, including coagulation, denaturation and separation
- Milk fractionation and use of membrane separation in dairy foods
- Anaerobic digestion of dairy processing waste
- Whey protein extrusion
- Application of genetics, genomics and metabolomics to lactic acid bacteria
- Whey and milk utilization

FACILITIES AND EQUIPMENT

The Gary Haight Richardson Dairy Products Laboratory located at Utah State University is a complete dairy processing facility. It operates daily to produce the dairy products used on campus. It is also used extensively by the researchers at the Western Dairy Center, as well as by researchers from industry for research and product development. Facilities are available on a daily basis for research, product development, formulation, manufacture and scaleup of dairy products. The efficient operation and flexible scheduling assure a short turnaround time for the customers' products.

TO ARRANGE USE OF THE PILOT PLANT FACILITY, CONTACT:

RANDALL BAGLEY

Manager, Gary Haight Richardson Dairy Products Laboratory
435-797-2108
randall.bagley@usu.edu

TO ARRANGE RESEARCH TRIALS, CONTACT:

CARL BROTHERSEN, M.S.

Associate Director, Dairy Technology Innovation Laboratory
435-797-3466
carl.brothersen@usu.edu

- EQUIPMENT:**
- Two Scherping horizontal cheese vats (1,500 lbs.)
 - Three open cheese vats (500 lbs.)
 - Homogenizer and pasteurizer
 - Tetra Pak Sterilab ultra-high-temperature processor (steam injection and indirect heating)
 - High-pressure/-temperature extruder
 - Process cheese cooker
 - Ice cream freezer, continuous and batch
 - Ultrafiltration, microfiltration, nanofiltration and reverse osmosis separation

COURSES, SYMPOSIA AND EVENTS

- Annual Cheesemaking Short Course for Industrial Cheesemakers (Utah State University)
- Annual Cheesemaking Short Course for Artisan Cheesemakers (Utah State University)

RESEARCHERS AND STAFF

DAVID BRITT, PH.D.

Assistant Professor, Biological Engineering
Utah State University

dbritt@cc.usu.edu

Surface chemistry, interfacial water structure (hydration layers) and associated surface potential of membranes and biomaterials as related to protein absorption and biofilm formation; lactose-hydrogels for enhanced water retention in soil and crop yield.

JEFF BROADBENT, PH.D.

Professor, Dairy Microbiology
Utah State University

jeff.broadbent@usu.edu

Genomics of lactic acid bacteria, non-starter lactic acid bacteria in cheese; improvements in low-fat cheeses; functionality in high-moisture cheeses; effect of oxidation-reduction potential on growth of lactic acid bacteria; use of adjunct cultures.

CARL BROTHERSEN, M.S.

Associate Director, Western Dairy Center
Associate Director, Dairy Technology Innovation Laboratory
Utah State University

carl.brothersen@usu.edu

Chemical diffusion of molecules in cheese matrix; oxidation-reduction potential in Cheddar cheese; value-added cheese.

DAREN CORNFORTH, PH.D.

Winder Professor, Meat Technology
Utah State University

daren.cornforth@usu.edu

Dried milk mineral as an antioxidant in processed meats; lipid oxidation in precooked meats by dairy calcium and phosphoproteins; dried whey mineral as an antioxidant.

CONLY HANSEN, PH.D.

Professor, Food Engineering
Utah State University

conly.hansen@usu.edu

Anaerobic digestion as a waste management tool for decreasing effluent load from farms and food processing facilities and generation of energy.

SILVANA MARTINI, PH.D.

Assistant Professor, Lipids, Sensory Evaluation
Utah State University

silvana.martini@usu.edu

Technologies for designing healthy, high-quality, fat-containing foods for today's consumer; fat crystallization and phase transition theory; encapsulation; relationships between physicochemical properties of fats and emulsions and sensory characteristics.

DONALD J. MCMAHON, PH.D.

Director, Western Dairy Center
Director, Dairy Technology Innovation Laboratory
Professor, Dairy Food Processing
Utah State University

donald.mcmahon@usu.edu

Structure and function of casein proteins, milk coagulation, cheese manufacture, low-fat cheese texture and flavor, Mozzarella cheese functional properties; membrane fractionation and processing of milk and whey; ultra-high-temperature processing of milk.

WILLIAM R. MCMANUS, M.S.

Research Technician
Utah State University

bill.mcmanus@usu.edu

Microstructure of foods, electron microscopy, confocal laser microscopy, low-fat cheese.

RESEARCHERS AND STAFF

BRIAN NUMMER, PH.D.

Assistant Professor, Extension Food Safety Specialist
Utah State University

briann@usu.edu

Food safety manager education, retail-foodservice food safety, small food entrepreneur food safety, home food storage, HACCP short course.

MARIE WALSH, PH.D.

Associate Professor, Dairy Chemistry
Utah State University

marie.walsh@usu.edu

Whey proteins (formulation, extrusion and production) in snack foods and meat extenders; immobilized enzyme reactors.

CRAIG J. OBERG, PH.D.

Regents Professor, Microbiology
Weber State University

coberg@weber.edu

Cheese starter cultures, microbiology of lactic acid bacteria, probiotic cultures.

ROBERT WARD, PH.D.

Assistant Professor, Bioactive Food Components
Utah State University

robert.ward@usu.edu

Lipid analysis and metabolism, plus novel bioactivities associated with the milkfat globular membrane.

BRIAN PETTEE, B.S.

Dairy Technology Innovation Laboratory Research Technician
Utah State University

brian.pettee@usu.edu

Value-added cheese and dairy products.

BART WEIMER, PH.D.

Professor, Director of Center for Integrated Biosystems
Utah State University

bart.weimer@usu.edu

Genomic and proteomic study of lactic acid bacteria and their application in dairy foods.

KIMBERLY RASMUSSEN

Dairy Technology Innovation Laboratory Staff Assistant
Utah State University

kimberley.rasmussen@usu.edu

J. ANTONIO TORRES, PH.D.

Associate Professor, Food Process Engineering
Oregon State University

j_antonio.torres@oregonstate.edu

Novel and conventional applications of high-pressure processing with emphasis on bacterial spore inactivation mechanisms, in-line/real-time optical polarization measurements in food systems.