



**Eastern Regional Research Center**  
**Dairy Processing and Products Research Unit**  
 Agricultural Research Service  
 U.S. Department of Agriculture  
 600 East Mermaid Lane  
 Wyndmoor, Pennsylvania 19038  
[www.ars.usda.gov/naa/errc](http://www.ars.usda.gov/naa/errc)



The ERRC is one of four government-funded Regional Research Centers in ARS, established by Act of Congress in 1938. The scientific investigations of ERRC have had a favorable impact on the welfare of American farmers, industries, and the consuming public. In times of excess supplies of agricultural commodities, surplus to our need for export and domestic consumption, utilization research has pointed toward new ways to use that surplus. When national priorities were focused on areas such as food safety, nutrition, energy production and conservation and avoidance of pollution, research progress in each of these fields made contributions to the resolution of problem areas. Today, multi-disciplinary teams sharing techniques, insights and advanced scientific instruments and facilities, provide low cost, shelf-stable, nutritious and safe food, fiber, biofuels, and non-food or industrial products to the marketplace.

The Dairy Processing and Products Research Unit (RU), as one of six RUs at ERRC, is one of its kind, focused on postharvest research and development of technologies for U.S. stakeholders, in the Federal system.  
 Peggy M. Tomasula, Research Leader, Tele: 215-233-6703; email: [ptomasula@errc.ars.usda.gov](mailto:ptomasula@errc.ars.usda.gov)

**Mission:** Solving problems to expand markets for milk via the following objectives:

- ▶ Define milk protein structure-function relationships by computer-assisted modeling of ultra-structural and biochemical changes linked to how proteins assemble for building specialty dairy ingredients and foods
- ▶ Develop new environmentally-benign processing methods for dairy-proteins and their modification to new uses
- ▶ Genetically modify food microorganisms to process quality, safe and nutritious dairy products
- ▶ Processing-induce structural changes in milk proteins to enhance functionality of low-fat and ethnic-style cheeses
- ▶ Modify casein and whey protein structures via thermoplastic extrusion for new and novel nutritious foods
- ▶ Devise technologies for preventing or removing intentionally added threat agents as part of food biosecurity

**Centers of Excellence:** Dairy Processing Pilot Plant; Cheese Processing Pilot Plant; Extrusion and Polymer Rheology Unit; Chemistry and Engineering Process Modeling Concepts; Sensory Laboratory (Taste Panel Facility)

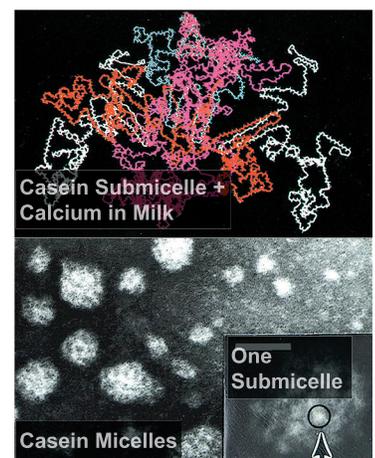
Budget, \$4.1 M; Stakeholder Funding, Grants, etc., \$175K; Employees, 26; Research Scientists, 15; CRIS Work Units, 4; Patents, 9; Licenses 2; Publications, 45/year

**Selected Food and Nutritional Outcomes with Impact:**



**Lactose Reduction**  
 (Lact-Aid, Lactose Reduced Dairy Products)

**Low-fat, Reduced Salt Mozzarella Cheese**  
 (School Lunch Program)



**Modeling Milk Protein Structure-Function Properties for New and Novel Food Uses**



## Dairy Processing and Products Research Unit, ERRC, ARS, USDA Selected Ongoing and Potential Research Opportunities for Stakeholders

*“Dairy products as nutrient-dense foods are important to good health, according to the 2005 USDA Food Pyramid, which recommends that Americans consume at least three servings of low-fat or fat-free milk products a day”*

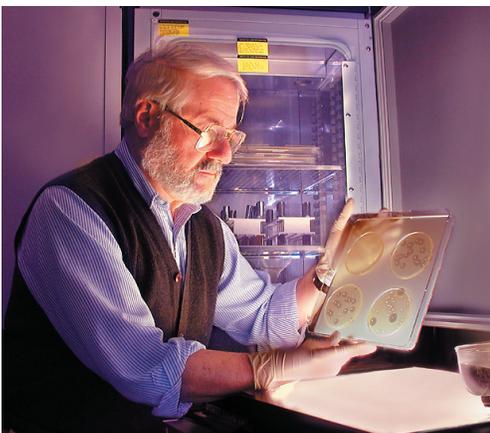
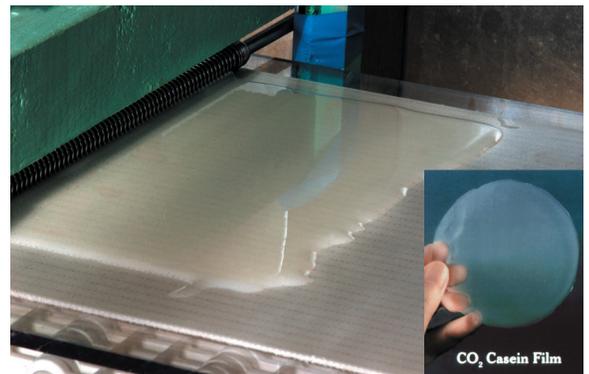
**Modify casein and whey protein structures via extrusion technologies for new, novel nutritious snack foods**



**Processing to induce structural changes of milk proteins to enhance functionality of ethnic-style cheeses; develop a “Standard of Identity” for Hispanic-style cheeses like that for Cheddar cheeses**



**Environmentally-benign high pressure CO<sub>2</sub> processing of casein and whey proteins for new uses, such as food/non-food packaging films**



**Genetically modify food microorganisms to process quality, safe and nutritious dairy products**

**Dr. John P. Cherry, Director**

Tele: (215) 233-6595; e-mail: [jcherry@errc.ars.usda.gov](mailto:jcherry@errc.ars.usda.gov)