Providing research solutions for the food, feed and biorenewables industries

www.ccur.iastate.edu
The CCUR is a multidisciplinary research, development and technology transfer program in the College of Agriculture and Life Sciences at Iowa State University.

We specialize in food, feed, biofuels and biobased product technologies to expand the demand for agricultural materials. Our faculty members from 14 Iowa State University departments have earned international reputations by pioneering a variety of processes and products.

Through our modern research facilities and highly skilled faculty and staff, we can provide you with innovative research solutions for developing new crop-derived technologies and products in an industry-friendly setting.

RESEARCH SOLUTIONS DESIGNED FOR YOUR NEEDS.
WORLD-CLASS FACILITIES IN A UNIVERSITY SETTING

For over 30 years the Center for Crops Utilization Research has been committed to increasing the utilization of corn, soybeans and other crops and creating new agricultural enterprises by developing advanced technologies and high-value products.

OUR MAIN SERVICES

» Wet milling, grinding, mixing, centrifugation, spray drying, filtration and cold and dry storage
» Dry milling and separation, cooking and extrusion
» Film and sheet extrusion, compression and injection molding, tray drying and food extrusion
» Fermentation and process development and freeze drying
» Analytical services for grain composition and quality, carbohydrate chemistry, protein characterization and vegetable oil characterization
» Consumer evaluation services
» Industry incubator labs and offices
» Technical consulting services
» Educational workshops
The wet processing pilot plant incorporates a variety of wet processing systems for protein extraction, corn wet milling, spray drying, milk and cheese production, soyfoods production and fruit and vegetable processing.

The facility is equipped with wet grinders, kettles, retorts, membrane system, continuous centrifuges, spray dryer, pasteurizer, screens and mixing tanks. Cold and dry storage lockers are available. Utility connections have been designed to allow for rapid rearrangement and modification of processing machinery and related equipment.

5,000 square feet of wet processing space available
The dry processing pilot plant is designed for the experimental processing and scale-up of industrial milling, dry separation and extrusion systems for grain processing and other industrial processes. The area has an integrated dust collection system.

2,600 square feet of dry processing space available
The fermentation facility is designed to help researchers develop new fermentation technologies and products and provide bench- and pilot-scale fermentation and downstream processing equipment. The facility has equipment for scaling up the production of industrially important chemicals, chemical feedstocks, enzymes and genetically modified organisms.

Researchers have access to state-of-the-art equipment and expertise in the areas of microbial fermentation and product recovery. By using the facility’s equipment, clients have found a cost-effective way to test new products and processes.

**Services**

- Controlled growth of microorganisms from bench- to pilot-scale capacities
- Simultaneous, parallel and long-term fermentations
- Continuous and batch fermentations
- Downstream processing including centrifugation, ultrafiltration and freeze-drying
The industry incubator can provide companies with cost-effective ways to test new products and processes without interrupting their own full-scale production systems. Our involvement can take on a number of forms including equipment rental, technical assistance, cooperative research contracts and proprietary agreements.

The industry incubator program helps companies start a business or expand an existing one. They are allotted space for short periods of time to network with faculty and use pilot-plant equipment and other labs.

The 3,000-square-foot technology transfer pilot plant is an industrial products processing and technology transfer facility for manufacturing bio- and petroleum-based plastic pellets, parts, films, and sheets; food and feed products; wood components and products; and composite materials. These manufactured items can be tested for extractables for food safety, mechanical and physical properties and biodegradability.

The pilot plant houses a plastic film and sheet extruder, injection molding machines, hydraulic presses, tray drying, food extrusion equipment, refrigerated and frozen storage, incubators and bioplastics digester. The facility is equipped with a special ventilation system for controlling noxious fumes and odors.
The test kitchen and sensory evaluation labs are specially designed for testing new products and ingredients for functional and sensory properties. The test kitchen has three food preparation areas and a variety of cooking and baking equipment including mixers, fryers, ovens and other food preparation equipment.

Connected to the test kitchen are two areas for sensory evaluation. The 24 individual sensory evaluation booths feature color and light controls and sliding doors for passing samples through to isolated panelists. A large focus group evaluation room accommodates up to 16 people and also features color and light controls.

**RESEARCH LABORATORIES**

A variety of labs are available for bench-scale processing:

» Carbohydrate and carbohydrate structure analysis
» Cereal and legume processing for food and feed ingredients
» Fat, oil and lipid analysis
» Grain composition and quality analysis
» Grain quality analysis for genetic traits and commercial uses
» High-pressure processing
» Plastics characterization
» Protein analysis
WAYS TO COLLABORATE

CCUR offers a variety of opportunities for Iowa State University scientists and industry clients to collaborate on research and development projects and have access to our unique facilities and equipment. We provide cost-effective services to our clients to help them develop and test new products and processes.

OPPORTUNITIES FOR INDUSTRY

**Collaborative Projects** – Work with CCUR faculty and staff through joint solicitations or industry sponsorships.

**Fee for Service** – Conduct research on-site using CCUR facilities and expertise.

**Space and Equipment Leases** – Lease space and equipment to conduct proprietary research.

**Industry Incubator** – Locate your company or organization at CCUR to carry out proprietary research and development.

OPPORTUNITIES FOR SCIENTISTS

Iowa State University scientists are invited to join CCUR. By becoming an affiliate, researchers can receive a number of benefits including use of lab- and pilot-scale equipment, opportunities for research team development and clerical assistance.

CCUR assists affiliates with industry collaborative grant proposals and coordinates administration of contracts and results reporting. Affiliates can receive help connecting with companies to commercialize technologies developed in their research programs.