The Center

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The Center is a bulletin compiled by WRRC to alert potential partners of technology transfer opportunities.

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Foodborne Contaminants Research Unit Offers Many Opportunities for Technology Transfer Partnerships

The Foodborne Contaminants Research Unit (FCR) of the Western Regional Research Center (WRRC) has three distinct research projects in food safety. One project is developing advanced technologies for reduction of foodborne microorganisms and reuse of water in food processing. An approach being examined is the use of chlorine dioxide technology to disinfect human pathogens and microbes. Initial efforts to control *Salmonella* in poultry chiller water were highly successful. The unit is now focusing on application of gaseous chlorine dioxide to control pathogens and spoilage bacteria on high value nuts and produce. Another potential application of this technology is in soil fumigation.

Sampling the water used to flush waste from cows housed in open stalls

An alternative approach to chlorine dioxide that the unit is exploring is using electroflotation technology for removal of unwanted chemicals, solids, and pathogens in water. Initial studies have focused on poultry chiller water but more recent applications include agricultural discharge such as dairy manure lagoon water.

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WRRC Patent Activity

September 2002 - February 2003

■ U.S. Patent Applications Allowed:

September 28, 2002, Serial No. 09/649,747
"Nucleic Acid Sequences Encoding Cell Wall-Degrading Enzymes and Use to Engineer Resistance to Fusarium and Other Pathogens"
USDA Inventors: P. Okubara A. Blechl

October 22, 2002, Serial No. 09/840,745
"Novel Bisexual Attractants, Aggregants and Arrestants for Adults and Larvae of Codling Moth and Other Species of Lepidoptera"
USDA Inventor: D. Light

November 21, 2002, Serial No. 09/810,873
"Monoclonal Antibodies Against Campylobacter jejuni and Campylobacter coli Outer Membrane Antigens"
USDA Inventors: R. Mandrell A. Bates D. Brandon

December 24, 2002, Serial No. 09/826,518
"Acoustical Apparatus and Method for Sorting Objects"
USDA Inventor: T. Pearson

■ U.S. Patent Issued:

September 10, 2002
Patent No. 6,448,391
"Ubiquitin-Lytic Peptide Fusion Gene Constructs, Protein Products Deriving Therefrom, and Method of Making and Using Same"
USDA Inventors: J. Garbarino W. Belknap

■ Licenses Granted:

October 25, 2002
"Bisexual Attractants, Aggregants and Arrestants for Adults and Larvae of Colding Moths and Other Species of Lepidoptera"
Licensee: Trecé Inc.
USDA Inventor: D. Light

February 12, 2003
"Glutenin Genes and their Uses," and "Altering Dough Viscoelasticity with Modified Glutenins,"
Licensee: Istituto Agrobiologico per la qualita delle colture mediterranee
USDA Inventors: A. Blechl O. Anderson

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How Do Businesses Get Access to These Technologies?

WRRC is seeking private companies interested in licensing technologies which have been patented or for which a patent application has been filed. We are also looking for companies interested in becoming our partners in Cooperative Research and Development Agreements (CRADAs). CRADA partners have the first right to negotiate an exclusive license for each invention which is made as part of the CRADA. We encourage small and minority-owned business to take part in our technology transfer program.

A second area of research in the FCR unit is control of pathogens in manure. This project is developing detection methods for human pathogens in the environment. The approaches being used include improved immunochemical methods, mass spectrometry, and PCR for *Salmonella*, *E. coli*, and *Campylobacter*. The goal is to use these methods in environmental studies to understand the movement of pathogens from manure onto crops via irrigation or aerosol transport and their reintroduction to livestock. These studies will assist in understanding the risk factors related to contamination of human food. In addition, *Mycobacterium avium paratuberculosis* is also being studied with the aim of furthering environmental knowledge of this pathogen. This project is also studying the effects of aeration and other treatments of dairy manure lagoon water on human pathogen growth.

A third area of research in FCR is exploring new technologies for rapid detection and identification of contaminants in food and feed including pathogenic bacteria, prions, and drug residues in meat and poultry. A number of new monoclonal antibodies to various foodborne pathogenic bacteria have been developed and ultra sensitive detection schemes are being developed including time-resolved fluorescence. In addition, liquid matrix technologies are being studied for multi-bacterial tests. Research is actively underway to improve detection methods for prions, the causative agents of transmissible spongiform encephalopathies (TSE). This project is also examining novel ways to monitor animal feed to detect meat, bone meal and other banned substances.

The FCR unit is seeking industry partners for these activities.
To schedule a visit to FCR or for more information contact:
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WRRC Recognized as National Historic Chemical Landmark

On December 11, 2002, WRRC was designated a National Historic Chemical Landmark by the American Chemical Society (ACS). This prestigious designation recognizes WRRC's pioneering research on frozen foods including the "freezing protocols, analytical techniques, and food handling and storage studies which led to the superior flavor, texture, and apperance of today's frozen foods." The award was presented by ACS, during a ceremony at the Center that was attended by over 100 dignitaries and guests.