



Since 1946, a tradition of food safety leadership through research, training, and outreach

The Food Research Institute (FRI) was founded in 1946 at the University of Chicago and moved to the University of Wisconsin in 1966.

FRI aims to be an internationally recognized leader in research on microbial foodborne pathogens and toxins and a center that conducts independent research, catalyzes multidisciplinary and collaborative research, and promotes education and outreach to enhance the safety of the food supply. To fulfill this mission FRI will engage in the following food safety activities:

- Provide leadership in identifying and resolving food safety issues to meet community, government, and industry needs
- Conduct fundamental and applied research
- Provide accurate and practical information and expertise
- Deliver quality education and training

FRI activities focus on the microbiology of foodborne disease and on bioactive compounds in foods that affect human health. The major efforts continue to be on foodborne disease microbiology, yet expansion into these other areas has enabled us to respond to a broader aspect of foodborne diseases. The goal is to enhance the understanding of the science underlying food safety for the scientific community, government, industry, and the public to make informed decisions.

FRI is an interdepartmental entity at the University of Wisconsin-Madison, with the core Executive Committee and the Affiliated Faculty having tenure homes in the departments of Bacteriology, Animal Sciences, Food Science, Medical Microbiology & Immunology, Plant Pathology, and the School of Veterinary Medicine. In addition, faculty and staff collaborate on food protection projects with the Wisconsin Center for Dairy Research, and the departments of Genetics, Molecular and Environmental Toxicology, Nutrition, Civil and Environmental Engineering, Biosystems Engineering, the Center for Human Performance and Risk Analysis, and Veterinary Diagnostics.

FRI's funding is derived from four sources:

1. The University, which provides our building and laboratories; pays faculty salaries; and contributes to certain projects.
2. Competitively awarded government grants and contracts.
3. Industry funds for work on specific non-proprietary projects.
4. Unrestricted gifts from companies, suppliers, and trade associations.

Category 4 is extremely important because it provides the resources to quickly respond to developing problems without having to wait for formal project support. For example, FRI projects on *Listeria* and *E. coli* O157:H7 were underway and some basic questions answered almost a year before agency support became available. The unrestricted gifts support the FRI infrastructure and provide funding for faculty to maintain their research programs relevant to FRI sponsor needs.

Industrial companies that support FRI provide an annual contribution based upon the annual volume of their food sales. The rate is \$34.00 per million dollars in sales up to a billion dollars of food sales, or a maximum of \$34,000. The minimum annual gift is \$2,500.



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Sponsorship Benefits

1. Portal to the vast resources at the University of Wisconsin-Madison campus for food safety information, including experts in microbiology, food science, animal and meat sciences, veterinary medicine, plant pathology, engineering, dairy research, and many others.
2. Consultation with FRI faculty at no charge. Consultation requiring extensive work or travel results in a consulting fee.
3. Access to collaborative research at sponsor rate with the FRI Applied Food Safety Laboratory, which can work with *Clostridium botulinum*, *Clostridium perfringens*, *Listeria monocytogenes*, *Bacillus cereus*, *Staphylococcus aureus*, *Salmonella*, *E. coli* O157:H7, and other foodborne microorganisms in a variety of refrigerated and shelf-stable foods. The laboratory is a recognized process authority for pasteurized process cheese products. Sponsored research with other faculty members is welcomed and encouraged.
4. Several literature Food Safety Reviews per year reviewing emerging food safety concerns, as well as customized literature reviews on specific food protection issues. There is an additional fee for extensive reviews and white paper development.
5. Rapid access to significant findings generated from FRI research through seminars and webinars, updates in newsletters, at annual and special meetings, and personal communication with FRI and affiliated faculty.
6. Multiple opportunities to participate in conferences, seminars, and webinars, including:
 - Biweekly FRESH seminars during fall and spring semesters
 - FRI Annual Meeting, featuring our own project reports plus presentations on related subjects by speakers from other institutions and government agencies
 - Focus on Food Safety symposia on select issues facing the food industry
 - Better Process Cheese School for safe production of low-acid canned food process cheese
 - Food Safety and Meat Microbiology School provides an overview of microbiology, sanitation, thermal processing, new ingredients/technologies, and demonstrations and laboratory exercises pertinent to fresh and processed meats
 - Other training webinars and customized training sessions can be developed by coordination with UW-Madison faculty
 - Reduced-rate registration for all conferences; no charge for participation at training webinars and FRESH seminars
7. Monthly e-newsletter FRI eNews provides updates on research and events at FRI and UW-Madison. Special FRI eAlerts provide the latest developments on exceptional issues, upcoming events and pertinent publications affecting the food industry.
8. Third-party contact with regulatory agencies regarding issues and problems.
9. Access to well-trained graduates as potential employees.
10. A location for your employees to learn and work on problems with a pathogen.
11. Access to the Sponsors Only portion of the FRI website, which includes the most current Food Safety Reviews and recorded presentations from FRESH seminars and select conferences. Contact outreach specialist Lindsey Jahn (lindsey.jahn@wisc.edu) to request access codes.



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Supporting Organizations of the Food Research Institute

Alp Senn AG	Jungbunzlauer
American Pasteurization Company	Kellogg's
ARYZTA	Kemin Food Ingredients
Bel Brands USA	Kerry Ingredients
Berner Foods, Inc.	Kikkoman Foods Foundation
Campbell Soup Company	Kraft Heinz Company
Chr. Hansen	(Oscar Mayer)
ConAgra Foods	Land O' Frost
Corbion Purac	Leprino Foods
Covance	Marshfield Food Safety
Dairyfood USA	Niacet Corporation
Dairyvative	Old Fashioned Foods, Inc.
Deibel Laboratories	Ornua
Emmi Roth USA	PepsiCo
Fonterra	Promega Corporation
Fromm Family Foods	Salm Partners
Gamay	Sargento Foods
General Mills	Schreiber Foods
Gilman Cheese Corp.	Sensient Technologies
Great Lakes Cheese	Sysco Quality Assurance
Hormel Foods (Jennie-O and Century Foods International)	Thermo Pac
ICL Performance Products (BK Giulini)	Wegmans
Jeneil Biotech	Wenda America, Inc.
Johnsonville Foods	Whitehall Specialties
Jones Dairy	Winona Foods

FRI Contacts

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Lindsey Jahn, Associate Outreach Specialist
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Food Research Institute

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FRI Executive Committee and Affiliate Faculty

Executive Committee	
Jeri Barak Associate Professor Dept. Plant Pathology, UW-Madison (608) 890-2581; barak@plantpath.wisc.edu	Laura J. Knoll Professor Dept. Medical Microbiology & Immunology, UW-Madison (608) 262-3161; ljknoll@wisc.edu
Mark E. Cook Professor, Dept. Animal Sciences, UW-Madison (608) 262-7747; mcook@wisc.edu	Andrew Milkowski Adjunct Professor, Dept. Animal Sciences, UW-Madison (608) 263-6826; milkowski@wisc.edu
Charles Czuprynski Director, FRI; Chair, Dept. Pathobiological Sciences (608) 263-6826; czuprync@svm.vetmed.wisc.edu	Michael W. Pariza Professor Emeritus, Dept. Food Science, UW-Madison (608) 263-6955; mwpariza@wisc.edu
Kathleen Glass Associate Director and Distinguished Scientist Food Research Institute (608) 263-6935; kglass@wisc.edu	Jeff Sindelar Associate Professor, Dept. Animal Sciences, UW-Madison (608) 262-0555; jsindelar@wisc.edu
Eric A. Johnson Professor, Dept. Bacteriology, UW-Madison (608) 263-7944; eajohnso@wisc.edu	Amy C. Wong Professor Emeritus, Dept. Bacteriology, UW-Madison (608) 263-7777; acwong@wisc.edu
Charles W. Kaspar Professor, Dept. Bacteriology, UW-Madison (608) 263-6936; cwkaspar@wisc.edu	Jae-Hyuk Yu Professor, Department of Bacteriology, UW-Madison (608) 262-4696; jyu1@wisc.edu
Nancy P. Keller Professor, Dept. Medical Microbiol. & Toxicology; Dept. Bacteriology, UW-Madison (608) 262-9795; npkeller@wisc.edu	
Affiliate Faculty	
Robert K. Bush Professor Emeritus Dept. Medicine, Allergy & Immunology, UW-Madison rkb@medicine.wisc.edu	Barb Ingham Professor, Dept. Food Science, UW-Madison bingham@wisc.edu
Dorte Dopfer Associate Professor, Dept. Medical Sciences School of Veterinary Medicine, UW-Madison dopferd@vetmed.wisc.edu	Rachel Klos Epidemiologist, Wisconsin Division of Public Health (608) 267-7422; Rachel.klos@wi.gov
Steven Ingham Administrator, Division of Food Safety Wisconsin Dept. of Ag, Trade, and Consumer Protection (608) 224-4701; Steve.Ingham@wisconsin.gov	Federico E. Rey Assistant Professor, Dept. of Bacteriology, UW-Madison (608) 890-2046; ferey@wisc.edu
Jan Peter van Pijkeren Assistant Professor, Dept. Food Science, UW-Madison (608) 890-2640; vanpijkeren@wisc.edu	Stacey Schultz-Cherry Associate Member Dept. Infectious Disease, St. Jude Children's Research Hospital Stacey.Schultz-Cherry@stjude.org



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FRI Research

FRI Research and Expertise

Microbiology

Clostridium botulinum and medical uses of its toxin
Bacillus cereus
Listeria and listeriosis
Salmonella
Shiga-toxin producing *E. coli*, including O157:H7
Staphylococcus aureus
Fungi and Mycotoxins
Fungal/Bacterial genomics
Cryptosporidia, *Toxoplasma*
Novel detection systems
Stress response
Viruses (Astrovirus, Norovirus)
Challenge studies

Intervention strategies

Pre-harvest interventions
Traditional/Natural antimicrobials
Dairy/Meat/Produce safety
Biofilm intervention
Host-Microbe interaction

Other expertise

CLA
Bioactive compounds
Host response to food components/pathogens
Food defense
Process-generated food toxicants
Microbiome in health and disease
Alternatives to antibiotics in food animals
Statistical analysis of complex data sets
Safety issues related to fruit
Probiotics

Select FRI Funded and Sponsored Research

- Antimicrobial activity of fungal metabolites (*Keller*)
- Construction of nontoxicogenic *Clostridium botulinum* strains for food challenge studies (*Johnson*)
- Desiccation tolerance in *Salmonella* serovars (*Kaspar*)
- How does *Listeria monocytogenes* cause fetal infection and abortion? (*Czuprynski*)
- Enhancing the safety of reduced-sodium cheese (*Glass*)
- Formation, survival, and virulence of stress-induced filamentous *L. monocytogenes* and *Salmonella* (*Czuprynski, Kaspar*)
- Genomic and proteomic analyses of *Clostridium botulinum* endospore resistance (*Johnson*)
- Human and plant pathogen synergy in the tomato phyllosphere (*Salmonella*) (*Barak*)
- Modeling persistence of non-O157 Shiga toxin-producing *E. coli* during beef cattle production and slaughter (*Kaspar, Döpfer*)
- Enhancing the safety of foods with clean-label antimicrobial food ingredients (*Glass*)
- Survival of *Salmonella* in dry environments (*Kaspar*)
- Use of novel regulators to achieve fungal spore inactivation and mycotoxin control (*Yu*)
- Developing thermal processing tools to improve the safety of RTE meat and poultry products (*Glass, Sindelar*)
- Thermal inactivation of *Listeria monocytogenes* in process cheese products (*Glass*)
- Developing a predictive model for the botulinum safety of shelf-stable process cheese products (*Glass*)
- Antimicrobial activity of volatile compounds (*Czuprynski*)
- Novel strategies to prevent bacterial adhesion and biofilm formation (*Czuprynski*)
- Using next generation sequencing of the CRISPER system to create a *Toxoplasma* vaccine (*Knoll*)
- Development of next-generation probiotics to eradicate foodborne pathogens (*van Pijkeren*)



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FRI Undergraduate and Graduate Student Opportunities

Since 2011, FRI has coordinated the FRI Undergraduate Research Program in Food Safety for UW-Madison students seeking a B.S. degree. Each summer, FRI supports talented undergraduate students as FRI Research Scholars, who work on food safety projects in the laboratories of FRI faculty and staff, attend tutorials, and visit food processing plants.

FRI faculty and senior staff have trained hundreds of undergraduate and graduate students, post-docs, visiting scientists, and research specialists. Our alumni hold positions in industry, government, and academia across the country and abroad, where they continue to promote food safety.

PAST FRI STUDENTS AND SCIENTISTS (PARTIAL LISTING)

Name	Last known employer	Position and Degree at FRI
Meareg Amare	Cellular Dynamics International	M.S.
Susan (Anderson) Hough	Masterson Company	Undergrad Lab Asst.
Rhona Applebaum	The Coca-Cola Company (retired)	Ph.D.
Emma Baar	Northwestern University	FRI Summer Scholar
Nicole Baker	DuPont	FRI Summer Scholar
Cheryl Barrett-Kaiser	Rockline Industries	Undergraduate
Adam Bartling	PepsiCo	FRI Summer Scholar
David Baumler	University of Minnesota	Ph.D.
Doug Beecher	FBI Laboratory, Hazardous Materials Unit	Scientist
Erica Behling-Kelly	Cornell University	Ph.D.
Jeffrey Bose	University of Kansas	M.S.
Robert Brackett	Institute for Food Safety & Health (IFSH)	Ph.D.
Ken Brandenburg	San Antonio Military Medical Center	Ph.D.
Byron Brehm-Stecher	Iowa State University	Ph.D.
Carmen Buchrieser	Pasteur Institute, France	Visiting scientist
Donald Burr	FDA CFSAN	Ph.D.
Nurliza Buyong	Kraft Heinz Company	Ph.D.
Jeffrey Byrd	St. Mary's College, Maryland	Visiting scientist
Michelle Ciezek	Jones Dairy Farm	Undergraduate, Research Intern
Maribeth Cousin	Purdue University, Food Microbiology	Ph.D.
Alan Degnan	Wis State Lab of Hygiene (retired)	Research Specialist
Virginia Deibel	Covance	Independent Study
Ratih Dewanti	Bogor Agricultural University, Indonesia	Ph.D.
Sean Dineen	Beckman Coulter Genomics	Ph.D.
Michael Doyle	Univ. Georgia, Center Food Safety (retired)	Ph.D.
Staci (Eickert) Richardson	Schreiber Foods Inc.	Undergraduate
Patrick Eimerman	llumina	Undergrad Lab Asst.



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Name	Last known employer	Position and Degree at FRI
Katina Fisher	Kraft Heinz	Undergrad Lab Asst.
Jacob Folz	UC-Davis	FRI Summer Scholar
Joseph Frank	University Georgia, Food Science (retired)	Ph.D.
Mike Goodnough	Metabiologics	Ph.D.
Alyssa Hangartner	Kraft Heinz Company	FRI Summer Scholar
Tim Harried	Socius Ingredients	Undergrad Lab Asst., Research Spec.
Susan Hefle	Deceased (Univ. Nebraska)	Ph.D.
Shawn Heidel	Covance	Ph.D.
Jeff Hsueh	Yuan-Ze University, Taiwan	Ph.D.
Tzu-Pi Huang	National Chung Hsing University	Ph.D.
Jennifer Johnson	Badger State Food Safety Consulting	Ph.D.
Alan Junkins	Norton Healthcare	Ph.D.
Kristine (Kaufman) Clemons	Silliker Laboratories	Undergrad Lab Asst., Research Spec.
Katherine Kennedy	Michigan State University	FRI Summer Scholar
Amanda King	Kemin Food Technologies	Ph.D.
Jeffrey Kornacki	Kornacki Microbiology Solutions, Inc.	Ph.D.
Ronald Labbe	Univ. Massachusetts, Food Science	Ph.D.
Anna Lammerding	Public Health Branch , Health Canada, retired	Ph.D.
Sean Leighton	Cargill	B.S.
Greg Leyer	UAS Laboratories	Ph.D.
Michael Liewen	PepsiCo	Ph.D.
Wei-Jen Lin	California State Polytechnic University	Ph.D.
Melanie Maas	Oscar Mayer, retired	Ph.D.
Nicole Maks	NCFST	M.S.
Carl Malizio	Metabiologics	Undergrad Lab Asst., Research Spec.
Kristin (Marshall) Schill	FDA	Ph.D.
Jodi McDermott	University of Wisconsin-Platteville	Research Specialist
Joseph Meyer	Kraft Heinz Company	Master's Program
Lloyd Moberg	Church And Dwight Co.	Ph.D.
Lori Neal	University of Michigan-Ann Arbor	Ph.D.
Min Ni	Regeneron Pharmaceuticals	Ph.D.
Alhaji N'jai	Procter & Gamble	Ph.D.
Julie Nordlee	University of Nebraska, Dept Food Science	Research Specialist
Lindsey O'Brien	Foremost Farms	Research Specialist
Katie Osterbauer	University of Washington	FRI Summer Scholar, Assoc. Research Spec.
HeeSoo Park	Duke University, Molecular Genetics	Ph.D.
Yeonhwa Park	Univ. Massachusetts, Food Science	Ph.D.

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Name	Last known employer	Position and Degree at FRI
Amy Parr	UC-Davis	FRI Summer Scholar
James Pestka	Michigan State University, Food Sci. and Human Nutrition	Ph.D.
Dawn (Waidanz) Picket	Smithfield (John Morrell Food Group)	Undergrad Lab Asst.
Keith Poulsen	School of Vet Med, UW-Madison	Ph.D.
Dawn Preston Gadicke	Grande Cheese	Undergrad Lab Asst.
Angel (Duerr Smith) Rayller	Lifecore	Undergrad Lab Asst., Research Spec.
Anjan Reddy	Bel Brands	Ph.D.
Karien J. Rodriguez	Kimberly-Clark	Ph.D.
Julian Rood	Monash University, Australia; Microbiology	Ph.D.
Amy Ronner	Silgan Containers Manufacturing Corp.	Research Specialist
Elliot Ryser	Michigan State University, Food Science	Ph.D.
Jordan Sabez	ConAgra	FRI Summer Scholar
William Schroeder	Cargill	Ph.D.
Lucas Schuette	LeanCor	Research Specialist
Jenny Scott	FDA	M.S.
Merike Seaman	Gehl Foods	Undergrad Lab Asst.
Joe Shebuski	Cargill (retired)	Ph.D.
Jack Shere	USDA, APHIS, VS	Ph.D.
Amanda Skarlupka	University of Georgia	FRI Summer Scholar, Assoc. Research Spec.
Jill Snowdon	USDA/APHIS/VS/NCIE	Scientist
William Sperber	Cargill (retired)	Ph.D.
Ann Sticha	PepsiCo	Student Hourly
Yi-Cheng Su	Seafood Res. Education Center, Oregon State	Ph.D.
Susan Sumner	Virginia Tech, Dept. Food Science	Ph.D.
Matthew J. Sylte	USDA-ARS	Ph.D.
Dawn (Granberg) Tessmer	City of Norwich, Connecticut	Undergrad Lab Asst., Research Spec.
Joanne Tsarouha	Thermo Fisher Scientific	M.S.
Megan Wagner	Ohio State University	Student Hourly, FRI Summer Scholar
Regina Whitemarsh	Catalent Pharma Solutions	B.S., Ph.D.
Pam Wilger	Cargill	Undergrad Lab Asst., M.S.
Emily Wilson	AmeriCorps	B.S.
Ahmed Yousef	The Ohio State University, Dept. Food Science	Ph.D.
Sara Zerbel	UW Hospital and Clinic	M.S.

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FRI Outreach: Meetings, Training, and Seminars

FRI, in collaboration with other UW-Madison departments and other organizations, provides outreach to the scientific community through meetings, short courses, conferences, and symposia. The goal of these events is to bring individuals interested in food safety topics together, allowing for public debate and the development of relationships among scientists. Some of our past events are listed below.

Dates	Event	Comments
2005–present	FRESH seminar series	Bi-weekly seminar series each semester
2009–present	Better Process Cheese School: Processing Controls for Shelf-Stable Pasteurized Process Cheese Product Manufacture	Presented annually; Co-sponsored with the Dept. of Food Science, UW-Madison
2016–present	Preventive Controls for Human Food Training	This course developed by the FSPCA is the “standardized curriculum” recognized by FDA; successfully completing this course is one way to meet the requirements for a “preventive controls qualified individual.”
Biennial since 2010	Food Safety and Meat Microbiology School	Co-sponsored with the Master Meat Crafter Program, Dept. of Animal Sciences, Dept. of Meat Science, and the Muscle Biology Lab, UW-Madison
2017	The Microbiomes: From Field to Food to Human Gut	<i>FRI Focus on Food Safety Series</i> , co-sponsored with the Institute for Food Safety and Health (IFSH)
2017	FRI 2017 Spring Meeting	FRI current research; <i>Special Topics</i> : Clean-label ingredients, <i>Salmonella</i> , decision tools for product developers, fermented foods, botulism in traditional ethnic foods
2016	FRI 2016 Spring Meeting and 50/70 Anniversary Celebration	FRI current research; <i>Special Topics</i> : FRI history, food microbiomes, microbial evolution, new detection methods, interactive packaging, produce safety, validation and preventive controls for low-moisture foods, <i>Listeria</i> outbreaks in ice cream, regulatory updates
2015	Food Allergens: Best Practices for Assessing, Managing and Communicating the Risks	<i>FRI Focus on Food Safety Series</i> , co-sponsored with the Institute for Food Safety and Health (IFSH)
2015	FRI 2015 Spring Meeting	FRI current research; <i>Special Topics</i> : Antibiotic alternatives, clean-label antimicrobials, FSMA, foodborne outbreaks and public health, noroviruses, gut microbiome
2014	Rapid Methods in Food Safety Microbiology Symposium	<i>FRI Focus on Food Safety Series</i> , co-sponsored with the Institute for Food Safety and Health (IFSH)
2014	FRI 2014 Spring Meeting	FRI current research; <i>Special Topics</i> : Rapid detection of pathogens, microbial food safety, food allergy research, issues in human health and food safety, and diet and cancer
2013	Role of Water in Food Safety & Health Symposium	<i>FRI Focus on Food Safety Series</i> , co-sponsored with the Institute for Food Safety and Health (IFSH)

Social Media

Facebook (<https://www.facebook.com/FoodResearchInstitute>)

Twitter (<https://twitter.com/FoodResearchUW>)

LinkedIn (<https://www.linkedin.com/company/university-of-wisconsin-madison--food-research-institute/>)

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