Table of Contents

Cornell University Department of Food Science and Cornell Institute for Food Systems (CIFS) 04
CIFS Vision, Mission, and Goal 05
Message from the Department of Food Science Chair 06
CIFS Faculty Fellows 07
Message from the Industry Liaison Officer 08
CIFS-IPP Executive Board 10
CIFS-IPP At a Glance, Current Members 13
How CIFS-IPP Works 14
Partnership Highlights 14
Faculty Highlights 16
Student Highlights 18
Research Highlights 20
Contact Information 23
Cornell University Department of Food Science

As one of the premier food science programs in the nation, the Cornell University Department of Food Science applies the principles of science and engineering to ensure the nutritional value, safety, and quality of foods in the United States and around the globe. The Cornell food science program integrates the disciplines of chemistry, biology, nutrition, physiology, biotechnology, and engineering to ensure that all people have access to healthy, affordable food.

Cornell Institute for Food Systems

The Cornell Institute for Food Systems Industry Partnership Program (CIFS-IPP) is a vibrant, public-private partnership that expands and enhances engagement of Cornell University faculty and staff with industry scientists, engineers, and business leaders throughout the food system. With expertise in business and industry, CIFS-IPP finds solutions to today’s food system challenges while shaping tomorrow’s discoveries. The Cornell Institute for Food Systems informs and advances industry practice with cutting-edge science that propels food industry partners to the forefront of research, development, and technology.
OUR VISION
To create and apply knowledge for the purpose of ensuring a safe, appealing, and nutritious food supply for all, today and in the future.

OUR MISSION
To provide a forum for CIFS members to meet, share ideas, and develop collaborative teaching, research, and extension initiatives.

OUR GOAL
The long-term goal of CIFS is to foster solution-oriented scientific discoveries and advance technologies and strategies that will lead to a safer, more nutritious, and more accessible global food supply.
Message from the Chair

Cornell University’s mission is deeply rooted in the three key principles of the land grant mission: teaching, research, and extension. The Department of Food Science is fortunate to see all three in action every single day. The Department is currently home to a talented group of 121 undergraduate Food Science majors and 86 graduate students pursuing Master of Professional Studies, M.S. and Ph.D degrees. Whether they are winning product development competition awards, conducting research and extension projects, or supporting local businesses through the capstone class, the next generation of food industry leaders never fails to inspire us with their outstanding work.

Cornell University is a world-renowned research organization, and we have the state-of-the-art facilities to conduct cutting edge research in food science. With the renovations of Stocking Hall recently completed, the home of the Department of Food Science has become a gathering place for industry leaders to explore the possibilities new processing capabilities offer, test product concepts, and participate in training classes. Renovations to the New York State Agricultural Experiment Station in Geneva are currently underway, opening the door for exciting new research and technological capabilities for our students and industry partners. Our High Pressure Processing Validation Center has been busy since February, and by summer of 2018, the fruit and vegetable processing pilot plant will reopen with new thermal and non-thermal processing equipment.

Extension is part of the fabric of the Department of Food Science, and the Cornell Institute for Food Systems (CIFS) is a perfect example of how we connect the research and expertise of our faculty and students with industry partners. The Department has a long-standing history of recognizing and serving industry needs and has had an Institute for connecting with industry partners in place since the 1970s. The CIFS Industry Partnership Program, founded in 2014, is ready for the next phase of collaboration with industry. Thank you very much for your interest in Cornell University’s Department of Food Science and the Industry Partnership Program.

With my best regards,

Olga Padilla-Zakour, PhD
Professor and Chair, Department of Food Science
CIFS Faculty Fellows

Over 90 Faculty Fellows from 16 units/departments across 5 colleges share a passion for and an interest in food and food systems.

- Animal Science
- David R. Atkinson Center for a Sustainable Future
- Biological and Environmental Engineering
- Chemical and Biomolecular Engineering
- Civil and Environmental Engineering
- Crop and Soil Science
- Charles H. Dyson School of Applied Economics & Management
- Environmental Toxicology
- Food Science
- Horticulture
- Nutritional Sciences
- Plant Breeding and Genetics
- Plant Pathology and Plant Microbe Biology
- Population Medicine
- The School of Hotel Administration
- USDA Holley Center
Message from Industry
Liaison Officer

Just over three years ago, the Department of Food Science quietly yet confidently initiated an innovative public-private partnership with members of the food industry. The Department of Food Science, under the leadership of Dr. Dennis Miller and Dr. Olga Padilla-Zakour hired me to create the Cornell Institute for Food Systems Industry Partnership Program. While the department has a long history of collaborating with industry, this program was destined to be different by design with a focus on pairing academic research with industry priorities. I am proud to announce that over the last three years, the Cornell Institute for Food Systems Industry Partnership Program has attracted over 20 members to its guiding principle of “Synergistic Thinking. Innovative Food Solutions.” Our membership represents the entire food system, with members from the dairy, wine, and produce sectors, suppliers of cultures, food safety instrumentation and food equipment, and manufacturing and retail food sectors.

Each year we strive to deliver value to our CIFS-IPP member companies, and each year we explore new ideas for revolutionary partnership. Over the past few years, one member company placed a new faculty member onsite in Copenhagen to learn more about dairy fermentation. Another explored the idea to co-locate on campus. Other companies maximize the program’s expertise in connecting them with top students. Still others embark on collaborative research projects to fill the pipeline for future success with innovative discoveries. No matter how you want to work with the Cornell Institute for Food Systems through the Industry Partnership Program, we are determined to ensure a high return of value for investment in the program.

Our member companies are strategic thinkers who strive for a competitive advantage and a leadership position in the marketplace, with an eye toward issues of social responsibility and sustainability, which affect us all. Our dynamic interactions with industry help to retain Cornell University's position as the leading agricultural college and assist our industry partners in becoming leaders in their sectors. Thank you for joining us in our mission to ensure a safe, appealing, and nutritious food supply for all, today and in the future.

Best,
Julie Stafford, PhD
Industry Liaison Officer
CIFS-IPP Executive Board

The CIFS-IPP Executive Board serves a stewardship role by guiding the program to ensure that it best meets industry needs. All Gold-level Members have company representation on the CIFS-IPP Board.

ERIN TOLEFREE
Executive Vice President
Baldwin Richardson Foods

JASON JACOBS
Vice President, Technical Services
Beech-Nut Nutrition Company

NICK DOKOOZLIAN
Vice President of Viticulture, Chemistry, and Enology
E&J Gallo

MIKE J. SUEVER
Senior Vice President of Research and Development, Engineering and Procurement
HP Hood LLC

HASMUKH PATEL
Technical Director, Ingredient Solutions Platform
R&D Fellow Dairy Foods Research and Development
Land O'Lakes, Inc.
AMY Achter
Senior Director, Partner Development
The Nature’s Bounty Co.

Casey Koehnlein
General Manager
Marshall Ingredients

Christophe Galopin
Director, Taste Discovery for Sugar Reduction
PepsiCo

Brooke Schwartz
Vice President of Strategy and Marketing,
Rheonix, Inc.

William Strassburg
Vice President of Strategic Planning
Wegmans Food Markets
CIFS-IPP at a Glance - Current Members

Gold-Level Members

Silver-Level Members
How CIFS-IPP Works

At the start of the partnership, the CIFS-IPP team immerses itself in the business strategy of member companies. This includes everything from discussions with senior management to site visits to facilitated discussions on Cornell University’s campus with key faculty members. All member companies work hand-in-hand with the CIFS-IPP team to create an annual Action Plan which details the projects they will work on with Cornell. When membership is eligible for renewal, member companies receive an Impact Statement illustrating project results and the value associated with each project. The goal of the CIFS-IPP team is to ensure members have received maximum value for their investment in the program.

Partnership Highlights

- Five CIFS-IPP members convened prior to the Northeast Dairy Foods Research Center Annual Meeting to discuss shared challenges within the category.
- CIFS-IPP hosted a Clean Label Forum to address a trend many CIFS-IPP members were facing: consumer interest in where their food comes from, how it is grown or raised, what it is made of, who made it, and how it is made or packaged.
- CIFS-IPP hosted a Field Day Forum to educate industry partners about the broad range of fruits and vegetables being studied at Cornell, to share a range of ways of collaborating with faculty and students, and to inform members of important regulatory changes and resources at Cornell.
- CIFS-IPP Gold-level Member Wegmans provided substantial support for the Hiperbaric 55L validation unit for the new High Pressure Processing Validation Center at the New York State Agricultural Experiment Station in Geneva.
- JBT Corporation donated Fresh’n Squeeze® Produce Plus Juicer equipment to the Food Processing Development Laboratory on the Ithaca campus.
- CIFS-IPP members provided industry letters of support from 6 corporations for 3 USDA grant applications to support Cornell University’s position as a world-class research institution.
- In collaboration with New York State Agricultural Experiment Station, CIFS-IPP provided support for four Planning Grants to assist teams of faculty submitting applications to the 2017 National Science Foundation/United States Department of Agriculture/National Institute of Food and Agriculture call for Innovation at the Nexus of Food, Energy, and Water Systems grant.
Faculty Highlights – New in 2015 - 2017

**Alireza Abbaspourrad**, Assistant Professor, Food Chemistry, Department of Food Science

**Academic focus**: Encapsulation of Food Ingredients, Modification of Protein, and Evaluation of Ingredients Bioavailability using Gut-on-a-Chip model

**Previous positions**: Post-doc, Harvard University (2009-2015); Post-doc, University of Campinas (2008-2009)


**In his own time**: Reading and hiking

**Position funded by**: Yongkeun Joh and Advanced Food Systems, Inc.

---

**Sam Alcaine**, Assistant Professor, Department of Food Science

**Academic focus**: Dairy fermentations

**Previous positions**: Principal food safety microbiologist, Unilever (2009-2012); process and product innovation manager, Miller Brewing Co. (2005-2009)

**Academic background**: B.S., cell, molecular biology and genetics, University of Maryland, College Park, 2001; M.S., food science, Cornell University, 2005; Ph.D., food science, University of Massachusetts, Amherst, 2015

**In his own time**: Spending time with my kids, reading and brewing

**Position funded by**: New York Dairy Promotion Board

---

**Patrick Gibney**, Assistant Professor of Wine Microbiology, Department of Food Science

**Academic focus**: Understanding how yeast, a microbe relevant for wine production, uses metabolic pathways to integrate decisions relating growth control and stress response activation

**Previous positions**: Associate Scientist, Calico Life Sciences (2014-2017); Postdoctoral Research Scholar, Princeton University (2009-2014)

**Academic background**: B.S. chemistry, B.S. Biology, 2003, University of Northern Iowa; Ph.D. Biomedical Sciences (emphasis in Microbiology and Molecular Genetics), 2009, University of Texas Graduate School of Biomedical Sciences at Houston

**In his own time**: Reading and hiking

**Position funded by**: E&J Gallo
Julie Goddard, Associate Professor, Department of Food Science  
**Academic focus:** Biomaterials and biointerfaces in food and agriculture  
**Previous positions:** Associate professor (2015-2016); assistant professor (2009-2015), University of Massachusetts, Amherst; research engineer, Kraft Foods (1999-2003)  
**Academic background:** B.S. chemical engineering, 1999, Ph.D., food science, 2008, Postdoc Mechanical engineering, 2007-09, Cornell University  
**In her own time:** Hiking and creek stomping with the family

Motoko Mukai, Assistant Professor, Department of Food Science  
**Academic focus:** Chemical food safety and toxicology  
**Previous positions:** Senior Research Associate (2011-2013), College of Veterinary Medicine, Cornell University; Veterinary Toxicology Resident (2008-2010), Postdoc (2007-2010), University of California-Davis  
**Academic background:** DVM, Azabu University (Japan, 2001); PhD, University of Illinois at Urbana-Champaign (2006)  
**In her own time:** Hiking with the dog, traveling and eating local food, nature

Sam Nugen, Associate Professor, Department of Food Science  
**Academic focus:** Rapid detection of food and waterborne pathogens to improve food safety and animal health  
**Previous positions:** Assistant/associate professor, University of Massachusetts, Amherst (2009-2016); postdoctoral associate, Department of Biological and Environmental Engineering, Cornell University; research engineer at Kraft Foods (1999-2003)  
**Academic background:** B.S., animal science, University of Vermont, 1997; M.S., food engineering, 1999; Ph.D., food science, 2008, Cornell University  
**In his own time:** Spending time with family
BEECH-NUT STUDENT INTERNSHIP
“Having worked with Beech-Nut is a blessing. I am really impressed by what the company stands for -- pursuing clean label and making real (and delicious) foods for babies! For ten weeks, I was lucky to get to know how the different facets of the company work as a whole from R&D to marketing.”
– Katrina Carino, M.P.S. Food Science ‘17

THE FOOD SYSTEMS FELLOWS PROGRAM
The Food Systems Fellows program launched in June 2017. Food Systems Fellows, undergraduate students with a major or minor in the College of Agriculture and Life Sciences who are interested in all aspects of the food system from farm to fork, participate in an integrated internship program that covers multiple facets of the food system, including experiences in production, processing, and management. The goal of the program is to enhance real-world understanding of how food is produced and transformed into products as well as learning techniques to promote informed managerial decision making. The program has received strong support from Wegmans along with participation by Cabot, Chobani, and Kreher’s Farm Fresh Eggs.

BALDWIN RICHARDSON INNOVATION CENTER TOUR
Fifteen Cornell Food Science students and Summer Scholars had the exciting opportunity to tour the brand new Baldwin Richardson Innovation Center in Oakbrook Terrace, Illinois. The tour, led by Sharon Webster Tolin, Senior Director of Marketing & Innovation, was fun, informative and a great opportunity for the students to experience a day in life of a Baldwin Richardson Foods employee.
STUDENT LED NATURAL CUTS WINS AWARDS
Vipul Prakash Saran CALS M.P.S. ’17 took first prize in the Cornell Hospitality Business Plan Competition for the concept Natural Cuts and, along with his partner Michael Annunziata, also took first prize in the Cornell Venture Challenge and the Advanced Technology Track of the New York State Business Plan Competition. Natural Cuts uses an innovative process to extend the shelf life of fresh cut vegetables and fruits without the use of chemicals, preservatives, and other additives. Their first product is a shelf stable pre-cut potato which is never frozen and has lower calories compared to frozen French fries when fried.

JACK’D JERKY TAKES FIRST PLACE
The IFTSA & MARS Product Development team placed first in their competition at the 2017 Institute for Food Technologists annual conference in Las Vegas, Nevada in June with their product “Jack’d Jerky”. Team leaders - Jessica Kwong, Brandon Yep and team members Halle Bershad, Will Borchert, Micah Martin, Molly Mandel, Isabel Alster, Alexa Capano, Anna Xu and Kaitlin Steinleitner.
THE DEPARTMENT OF FOOD SCIENCE BEGINS COLLABORATION WITH IBM

A leader in genomics research, the Department of Food Science recently began a research collaboration with IBM to use milk as a model for studying the genetics of food. Martin Wiedmann, the Gellert Family Professor in Food Safety and Cornell Institute for Food Systems faculty fellow is leading this research along with Laura Carroll, Ph.D. candidate in Food Science.

KALE RESEARCH PROJECT

Farmers and companies came together to support a kale research project as kale represents a microcosm of the future of farming and retail given its nutritious, versatile, and locally grown profile. This research project linked plant breeding and the Sensory Evaluation Center to create consumer insights about kale. Farms and companies provided funding support for plant breeding graduate student research on organic kale sensory perceptions and gained media attention from Cornell Chronicle and NPR.

ENCAPSULATION TECHNOLOGY

Consumers are increasingly interested in wholesome food with clean label ingredients, and Cornell is responding with extensive research activity in this area. Multiple CIFS-IPP companies are working on projects with Cornell researchers to explore the use of encapsulation technology to extend the usage of natural colors.
<table>
<thead>
<tr>
<th></th>
<th>December 2014:</th>
<th>December 2015:</th>
<th>December 2016:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of CIFS-IPP members in</td>
<td>8</td>
<td>9</td>
<td>20</td>
</tr>
</tbody>
</table>

Letters of support from industry partners for six faculty proposals to federal agencies and foundations:

18

Number of Attendees at the 2015 Global Summit:

115
Acknowledgments

CIFS-IPP would like to acknowledge the contributions of the undergraduate and graduate students who have participated in strategic analyses for CIFS-IPP members, as well as daily operations of the program. We firmly believe that this experience has also contributed to their understanding and appreciation of the synergistic relations that are possible between industry and academia.

- Elfi Anggreani
- Elizabeth Buerman
- Susana Teresa Jimenez
- Rachel Joseph
- Stephanie Kleiner
- Ghadeer Makki
- Jiyu Zhu