COLLABORATIVELY GROWING THE LANDSCAPE OF PLANT-BASED PROTEINS

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https://ppic.cfans.umn.edu
Mission
The Plant Protein Innovation Center (PPIC) mission is to bring together interdisciplinary researchers and industry partners to deliver to the supply chain new nutritious and functional plant protein ingredients and products, working all the way from breeding and genetics to processing, formulation, and marketing.

Approach
The PPIC will address industry-identified plant-protein challenges and opportunities to develop a wealth of interdisciplinary research.
The PPIC will not only bring economic gain to the industry, but will also address the consumer desire for nutritious and healthy food, have a positive impact on the environment by seeking and utilizing sustainable crops, provide additional sources of protein for the growing population, and provide revenue to farmers.
How? The PPIC Model

Research will be mainly **Pre-Competitive** and **Non-Proprietary**

Will focus on fundamental science that addresses industry needs and consumers demands

**Total funds acquired: over $2,500,000**
The PPIC Model: 
Coming Together to Grow Research
Research Areas

- Agronomy
- Breeding & Genetics
- Analytical Chemistry
- Agricultural Economics
- Biochemistry
- Informatics
- Bioengineering
- Chemical Engineering
- Food Science & Technology
- Nutrition
- Biomaterial Science
- Business Management
- Statistics
Research Areas

- Food Science & Technology
- Breeding & Genetics
- Agronomy
- Analytical Chemistry
- Bioengineering
- Biomaterial Science
- Chemical Engineering
- Biochemistry
- Business Management
- Statistics
- Nutrition
- Informatics
- Agricultural Economics
- Protein Chemistry
- Proteomics
- Metabolomics
- Non-Thermal Processing
- Breeding & Genetics
- Protein Functionalization
- Human Nutrition
- Animal Nutrition
- Polymer Characterization
- Flavor Chemistry
- Athlete Nutrition

Experts in Various Fields

- Protein Bioactivity
- Dietetics
- Product Development
- Protein Extraction & Concentration
- Encapsulation
- Toxicology
- Protein Functionalization
- Human Nutrition
- Athlete Nutrition
Areas to be Addressed

- Understand how novel proteins can replace or be combined with traditional protein ingredients in various food products to deliver optimal nutrition, functionality, and flavor

- Determine viable (cost effective) extraction (wet and dry) and processing technologies for producing functional protein ingredient from novel sources

- Unveil unique characteristics and applications for each protein source

- Investigate crop diversity and breed for protein quality traits

- Secure abundant and sustainable supply
Identified Research Priorities

Production
*Primary research focus areas related to breeding, sustainability of the supply, and crop diversity*

Processing & Formulation
*Primary research focus areas related to extraction methods, unique processing, co-products, food systems, high value end use*

Application
*Primary research focus areas related to flavor, functionality, and nutrition*

https://ppic.cfans.umn.edu/research/research-priorities
Research Advances

PPIC Funded Research
- Two successful RFPs resulting in five one-year projects, submitted by PPIC researchers, funded for up to $50,000 each
- Link to research summaries

PPIC Grant Proposals (Over one million dollars)
- Proposal funded through Good Food Institute (GFI) (2020)
  - Title: *Characterizing and texturizing proteins from pulses to form fibers with textures that mimic chicken*
  - Three interdisciplinary PPIC researchers
  - Funds granted: $250,000
- Proposal funded through Foundation for Food & Agricultural Research (FFAR) (2020)
  - Plant Protein Enhancement Project
  - Title: *Legumes of the future: Developing methodologies and germplasm to enhance the functionality and nutritional quality of pea protein*
  - Five interdisciplinary researchers
  - Funds requested: $800,000
Who?

Industry Members

Partners

Associate Members
Who?

Supporters & Collaborators
Who?

• Researchers
  – 24 interdisciplinary researchers across the University of Minnesota and from external institutions!
  
  https://ppic.cfans.umn.edu/expertise/researchers

• Students and post-docs!
Become a Member of the PPIC!

With investment and collaborative effort between industry and researchers, we can innovate!

**Associate**
- Companies that have less than $5 million annual revenue* and for organizations wishing to join the center
- A yearly membership fee of $6,000/year for 3 years

**Partner**
- A yearly membership of $20,000 for 3 years for companies that have $5-100 million annual revenue;
- A yearly membership of $40,000 for 3 years for companies with more than $100 million in annual revenue

- 20% discount for multi-year commitment (more than three years, e.g. year 4 and 5 will be 20% discounted)

*A company that makes more than $5 million annual revenue may join at an associate level for a one-year trial period, non-renewable. If they wish to remain a member of the PPIC they must join at the partner level the following year and will have to sign a new agreement.*

[https://ppic.cfans.umn.edu/model-involvement](https://ppic.cfans.umn.edu/model-involvement)
Benefits to Members

Associate Level

- Contribution to research ideas
- Access to non-proprietary research findings
- Involvement in research projects
- Access to workshops and short courses (free for two reps from each company), free registration to research spotlight and to planning meetings (up to two reps from each company)
- Opportunity to host booths for their respective company at spring planning meetings and fall research spotlight meetings
- Interactions with scientists from various disciplines, and general networking
- Welcome package (worth $8,000) at no additional cost

Partner Level

- Having an R&D scientist on the technical committee. Having R&D scientist on the technical committee will allow for having an impact on the direction of pre-competitive research, and choice of workshops and training programs
- All the benefits listed above for associate level.

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Benefits to Members

Other benefits and outcomes

- Scientific exchange
- Interdisciplinary interactions and connections
- Trained professionals for future hires
- Access to resources (internal and external) and other centers within the University of Minnesota at a reasonable cost (through projects run by students and post-docs)
- Additional resources to speed up project timelines and reach goals faster
- Training programs for current employees and potential future hires
- Participation in joined projects

https://ppic.cfans.umn.edu/model-involvement
PPIC Outreach

- Conferences
- Workshops
- Training programs

Short courses (e.g. protein chemistry, extraction technology, formulations, flavor chemistry)

*Outreach will allow for the exchange of knowledge between the public and private sphere*
Thank You to Our: Technical Committee

Chelsey Hinnenkamp
Protein Research Scientist,
Archer Daniels Midland Company

Diane Kussy
Technical Sales Director,
Bluegrass Ingredients

Nathan Knutson
Nutrition Center of Expertise & PPO Leader for the Americas, Cargill

Rohan Dodal
Manager R&D, Global Technical, Innovation & Supply Chain,
The Coca Cola Company

Clint Johnson
Director, R&D
Conagra Brands

Yui Maneephan Keeratiurai
Technical Leader,
Plant Based Center of Excellence,
Danone North America

Sara Rosene
Associate Principal Scientist,
Nutrition & Technology Solutions, Protein Program,
General Mills

Steven Hess
Senior Director, Snacks Research & Development,
The Hershey Company

Wajira Ratnayake
Manager, Research Ingredient Incorporated

Adam Janczuk
Global Director, Re-Imagine Protein®
International Flavors & Fragrances

Gabriela Perez-Hernandez
Senior Manager,
R&D External Partnerships
Kellogg Company

Julie Anne Grover
Principal Scientist, Technology Discovery & Development
Kraft Heinz

Jennifer Kimmel
Senior Protein Chemist
Roquette America, Inc.

Lehan Patrick
Director, R&D
Saputo Dairy Foods USA

Lolly Occhino
Scientist of Food & Nutrition,
Agricultural Utilization Research Institute

Gary Reineccius
Professor Emeritus,
Food Science & Nutrition Dept,
University of Minnesota

University of Minnesota
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Thank You to Our: Executive Board

Laurice Pouvreau
Senior Scientist & Project Leader, Plant Protein Technology, Wageningen University & Research (The Netherlands)

Denis Chéreau
CEO, IMPROVE (France)

Greg Cuomo
Associate Dean for Research & Graduate Programs, CFANS, University of Minnesota

Sergiy Smetana
Head of Food Data Group, German Institute of Food Technologies (DIL e.V.) (Germany)

Julie Simonson
Food & Beverage R&D Executive Professional, Schwan’s Company

Jason Robinson
R&D Leader, Agricultural Utilization Research Institute

Christina Connelly
Trade Commissioner, Consulate General of Canada
The PPIC will not only bring economic gain to the industry, but will also address the consumer desire for nutritious and healthy food, have a positive impact on the environment by seeking and utilizing sustainable crops, provide additional sources of protein for the growing population, and provide revenue to farmers.
Partner with us today to change the landscape of plant-based protein tomorrow!

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