



**FROZEN FOOD**  
FOUNDATION

# 2023 Annual Report



The Frozen Food Foundation supports research and education intended to **improve and benefit the broader frozen food industry**. Its research initiatives and collaborations are rooted in principles of scientific excellence and transparency and its goals are aligned with the American Frozen Food Institute's (AFFI) strategic initiatives.

Throughout 2023, the Foundation supported research and projects in support of **food safety, sustainability and nutrition**.



# Research Program

The Foundation fosters scientific research, industry education and consumer awareness about the safety, nutritional and sustainability attributes of frozen foods. It commissions scientific studies to enhance our understanding of key processing, distribution and storage of frozen foods.

## Food Safety

The Foundation holds a purposeful and concerted role in advancing food safety research. The body of research generated represents seminal work and an unprecedented effort to support frozen food companies and their supply chain. Work conducted in 2023 further drove industry standards, product safety and the advancement of best practices.

### Finished Product Sampling & Microbiological Testing Plans

The Foundation is pursuing a project with Dr. Donald Schaffner of Rutgers University and invited AFFI member representatives to review and outline microbiological testing plans for frozen foods. The study will result in a report with sampling and testing recommendations that will be shared with the International Commission for Microbiological Specifications for Foods (ICMSF), an organization that provides science-based sampling guidance to industry and governments, particularly to assess and control the microbiological safety of foods.

### Pilot Blanching Studies

Building on existing AFFI research on validation of time and temperature parameters, the Foundation is enhancing blanching guidance in collaboration with the Institute of Food Safety and Health (IFSH)

### Frozen Mangos

The Foundation worked with the National Mango Board to conduct and publish research related to chemical inactivation of foodborne pathogens during mango processing.



## Sustainability

In 2023, the Foundation completed and released key research initiatives to support understanding the sustainability footprint of the frozen food industry.

### Sustainability of the Frozen Mango Supply Chain

In partnership with the National Mango Board and Ohio State University, the Foundation developed a model Life Cycle Analysis (LCA) using data collected across multiple facilities in the frozen mango supply chain.



### Quantifying Frozen Food's Role in Reducing Food Waste

The Foundation released two studies in 2023 related to frozen food's role in reducing food waste. Through an online survey of frozen food consumers' practices and beliefs around food waste, and a literature review and meta-analysis conducted by Cornell University of the existing research, the Foundation identified data measuring the ways frozen food reduces food waste. Both the literature review and consumer studies revealed that frozen food is wasted less frequently than its fresh counterparts.



Cornell University



## Nutrition

- Nutrition and health equity are important topics driving the dialogue about today's food system. The Foundation is invested in research to help further drive understanding of frozen food's role in promoting nutrition access.

The Foundation is currently supporting a study through South Dakota State University to assess the role of frozen foods in providing year-round nutrition for SNAP consumers and to explore the frozen produce shopping habits that are unique to SNAP-eligible consumers.

**Frozen Food  
in SNAP**



# 2023 Activities



## Frozen Berry Segment Protection Plan

In 2023, a hepatitis A outbreak associated with frozen organic strawberries led to recalls and supply chain demands for finished product testing. AFFI and the Frozen Food Foundation launched the Frozen Berry Segment Protection Plan to target efforts to strengthen the supply chain and enhance the safety of frozen berries.

The funding target to support this plan was met with contributions from more than 30 companies. The plan includes three areas of focus:

### 1

#### Prevention and Control

In collaboration with iDecisionSciences (IDS), the Foundation has launched a pilot program to assess a real-time enteric virus risk assessment tool in the supply chain. The use of the tool and its analysis presents a unique opportunity for the industry to dynamically quantify supplier/supply chain risks and generate real-time metrics to complement food safety oversight and management.

### 2

#### Supply Chain Resilience

The Foundation worked with experts in the field to present the inherent challenges in managing non-cultivable foodborne pathogens across diverse stakeholders in our food system and specifically address the issues related to finished product testing.

Additionally, the Foundation's international expert panel is in the final stages of completing its white paper with recommendations on the detection of enteric viruses in berries.

### 3

#### Loss Protection & Related Research

The Foundation is pursuing research to investigate validation of chemical, thermal and non-thermal pathogen inactivation processes.

Foundation leadership and food safety experts authored articles on the futility of product testing to preclude widespread testing requirements in the supply chain..

***Food Safety Magazine: Are 'Standard' Methods to Detect Non-Cultivable Pathogens in Food and the Environment Fit For Purpose?***

***Food Safety News: Is mandatory testing the best approach for managing hepatitis A in berries?***





## 2023 Freezing Research Award



The Freezing Research Award honors an individual, group or organization for its outstanding contribution in frozen food research. The 2023 Frozen Food Foundation Freezing Research Award recipient was Dr. Craig Hedberg with the University of Minnesota.

Dr. Hedberg played a critical role in advancing a science-based understanding of *L. monocytogenes* risk assessment and management for frozen foods. He participated in the international expert panel on *L. monocytogenes*, which published a peer-reviewed white paper, to help inform alternate approaches to the risk management of *L. monocytogenes* in low-risk foods, including frozen foods.

Separately, In 2022, Dr. Hedberg and his team published “Public health consequences of low levels of *L. monocytogenes* in foods,” giving credence to a potential transition to regulatory action limit for this pathogen in low-risk foods.



## Promoting Research Findings



Over the years, the Foundation has committed significant research efforts in support of the inherent low risk of frozen foods relative to *L. monocytogenes*. The Foundation makes the portfolio of scientific

contributions on this topic publicly available. In addition, the team continues to share the key findings of these studies at various international food safety meetings and presentations. The presentation at the 2023 Annual Meeting of the International Association for Food Protection received broad interest and was further covered in an article in the trade journal Food Safety News, elevating the foundation’s scientific

## Extramural Funding

Funding is a critical component of the Frozen Food Foundation’s success. New in 2023, the Foundation sought extramural funding to complement industry contributions and further support the strategic goals and research needs of the frozen food industry.

**Enteric Viruses** In partnership with the University of Delaware and Emory University, the Foundation submitted a USDA grant proposal to augment enteric virus detection with determination of public health impact. The research will also result in guidance for produce sampling for enteric viruses and highlight the importance of implementing risk mitigation practices throughout the supply chain.

### *L. monocytogenes*

The Foundation submitted a proposal to USDA to research the growth potential and treatment options for *L. monocytogenes* in frozen specialty crops.





# Partnerships



The Frozen Food Foundation continues to foster strong relationships with and engage key stakeholders in the nutrition, food safety and education arenas. The Foundation is involved with outreach efforts and provides financial support to the following organizations:



## Partnership for Food Safety Education

Supports the development and promotion of effective education programs to reduce foodborne illness risk for consumers.



## Portion Balance Coalition

A multisector working group, facilitated by Georgetown University's Business for Impact to identify, create, and implement innovative solutions to promote balanced, healthy lifestyles through the adoption of portion balance in the food ecosystem.



## Frozen Food Industry Memorial Scholarship Foundation

In collaboration with the National Frozen and Refrigerated Foods Association, the Frozen Food Memorial Scholarship Foundation grants support to students pursuing careers in the food industry.



# Operations



## Board of Directors and Staff

**Debbie Radie  
(Chair)**

Boardman  
Foods Inc.

**Jennifer  
Weekes**

Lamb Weston

**Mark  
FeDuke**

ArdoVLM Foods

**William  
Smittcamp**

Wawona  
Frozen Food

**Sanjay  
Gummalla**

Executive Director

## 2023 Contributions Overview

2023 Contributions	\$208,000
2023 Frozen Berry Segment Protection Plan Contributions	\$422,000
2023 Total Contributions/Revenue	\$630,000

## Make a Donation

Individuals or organizations interested in making a donation to the Frozen Food Foundation can visit [www.affi.org/FFFoundation](http://www.affi.org/FFFoundation) or contact Dr. Sanjay Gummalla at [sgummalla@affi.com](mailto:sgummalla@affi.com)



# Frozen Berry Segment Protection Plan Supporters



"Processing for the Next Generation"





# All 2023 Contributors

The Frozen Food Foundation would like to thank the following organizations and individuals for their support in 2023.

## \$100,000+

Lamb Weston

## \$50,000-\$99,999

Washington Red Raspberry Commission

## \$20,000-\$49,999

Cameron

Jasper Wyman & Son

Scenic Fruit

Titan Frozen Foods

Nature's Touch

OPC/Willamette

Wawona

## \$10,000-\$19,999

Cal Splendor

Columbia Fruit

Comfrut

Enfield

Firestone Pacific

Patagonia

Snowcrest Foods Ltd.

Sunmark

Valle Frio Spa

## \$1,000 - \$9,999

AGRÍCOLA Y GANADERA CHAVIN DE HUANTAR SA

Ajinomoto Foods North America

BC Frozen

Alison Bodor

Brecon

Cavendish Farms Corporation

Conagra Brands Inc.

Del Mar

Donna Garren

Green Garden Produce

Sanjay Gummalla

Isik Organic

Kraft Heinz Company

Lamb Weston

Lamex

Tom Madden

Mars / KindSnacks

National Frozen Foods Corp.

Naturipe

Nortera

One Frozen

The Pictsweet Company

## \$200-\$999

Anacapa Foods, LLC

ASC Co., LTD

B & G Foods, Inc.

Bellisio Foods, Inc.

Boardman Foods, Inc.

California Custom Fruits & Flavors, Inc.

Cebro Frozen Foods

Champion Foods

Congeladora Horticola S.A de CV. / CH FOODS INC

Congeladora Nino / USA Trading & Services L.L.P.

Daily Harvest

Del Carmen Foods Inc.

Emblem Cranberry

Food Service Systems, LLC

Global Natural Foods, Inc.

Home Run Inn Frozen Foods

Inn Foods, Inc.

The J.M. Smucker Co.

J.R. Simplot Company

Jain Farm Fresh Foods, Inc.

Lakeside Foods, Inc.

MarBran, USA

Muzzi Family Farms, LLC

Nichirei USA, LLC

Noon International LLC

Oppenheimer Companies, Inc.

Palermo Villa, Inc.

Paradise Ingredients/Mercantum

PJ Impex, Inc.

Reddy-Raw, Inc.

RLS Logistics

Scelta Mushrooms BV

Seabrook Bros. & Sons Inc.

Adrienne Seiling

Sierra Pacific Warehouse Group

Smith Frozen Foods, Inc.

Southeastern Meats

Sovos Brands

SUPHERB FARMS

Sure Fresh Produce, Inc.

Trinity Distribution, Inc.

Van Drunen Farms

Viru S.A.

Tom Wiersma

## Up to \$199

Advanced Logistics

American Halal Co., Inc. dba Saffron Road Foods

American Packaging

Didiar Amiel

Arlusa

Mike Barrett

Carolina Batiz

Bellingham Cold Storage

Kelly Berrie

Blount Fine Foods

Tim Brian

C. H. Belt & Associates, Inc.

Cherry Central, Inc.

Circle Foods

Robert Colletti

Compania Frutera La Paz S.A.

Jorge Corrales

Deibel Laboratories of Florida

Eckert Frozen Foods

Eurocaribe Packing Co.

Export Packers Co., Ltd.

F&S Produce Company

FGM Frozen Foods, LLC

Sean Finn

Flagship Food Group

FlexXray

Freedom Packaging

G&C Foods

Federico Garcia-Moreno

Garlock Printing & Converting Corp.

Cody Granneman

Alvaro Guerrero-Ferber

Glacier Sales, Inc.

Global Food Exchange LLC

Global Organics, Ltd

The Greenbrier Companies

Hall Street Storage LLC

Hanline Frozen Foods

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R. Neil Happee

Happy D Corporation

Harris Hollow Foods, LC

Holli-Pac, Inc.

Justin Houde

Innovative Cold Storage Enterprises, Inc.

Interamerican Quality Foods, Inc.

Interstate Cold Storage

Jewel Apple LLC

J.G. Boswell Co.

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Thomas Kearney

Kostas Konstantinidis

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Lars Mikkelsen

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Chris Murphy

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NewCold USA Services LLC

Northwest Naturals

Once Upon a Farm PBC

PAC/GRO & Associates, LLC

Pacific Valley Foods, Inc.

Partner's Produce, Inc.

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Matthew Rhodes

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RLS Merchants

Savor Imports

Smeltzer Orchard Co.

SOMEREX

Strong Roots

SVZ USA Washington, Inc.

Thrive Foods

Toteco Packaging Company LLC

Turn 4 Foods

U.S. Cold Storage, Inc.

UniPro Foodservice Inc.

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VISAFruit LLC

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