I am excited about this extraordinary collaboration of leading Minnesota entities and look to sustainable agricultural solutions.

Innovation is essential to Minnesota. It’s a major contributor to the state’s economy as well as its reputation as being a place where the brightest minds launch revolutionary ideas that benefit the world. Innovation comes from all different corners of the state, Fortune 500 companies, private entrepreneurs, commodity groups, producers, universities or organizations like AURI.

These entities all play unique roles in developing and commercializing innovation in Minnesota, but may not overlap in their efforts for various reasons. Considering all they accomplish individually, the potential to heighten our impact through creation of a shared space for innovation is vast. That very consideration lead AURI to partner with MBOLD to develop the Bold Open Reverse Pitch platform in collaboration with nearly 20 other entities from throughout Minnesota.

The Bold Open brings together producer groups, small to medium sized agribusinesses and some of the world’s largest and most influential food and agricultural companies to present “reverse pitches” to an audience of producers, researchers, entrepreneurs, innovators and subject-matter experts. The businesses talk about distinctive industry challenges they face and invite a global audience of innovators to propose partnership solutions.

Due to the concentration of agricultural and food businesses here and the range of challenges and opportunities facing Minnesota’s ag and food industries, the growing entrepreneurial ecosystem, and the high caliber research underway at the state’s research institutions, it was compelling to collaborators to come together in one place and under one platform to broadcast these challenges to the widest audience possible. In this way, new relationships could be formed, attracting new solutions and opportunities for innovative proposals to these challenges.

The goal of the Bold Open is to help companies and entrepreneurs accelerate the commercialization of innovative solutions in a wide range of fields. In doing so, Bold Open enhances Minnesota’s long history and global reputation as an innovation center in food and agriculture. Through this unique collaboration, I hope Bold Open collaborators will uncover novel approaches and solutions to a variety of opportunities, from ingredient and product development to sustainable agricultural solutions.

I am excited about this extraordinary collaboration of leading Minnesota entities and look forward to launching the Bold Open event this summer. For more information, please visit auri.org or boldopenmn.com.

Please tell our readers a little about your background.

I grew up in Shakopee, Minnesota and my parents were the first generation off the farm which led to frequent visits with relatives still operating farms. I was fortunate to join Hormel Foods after graduating from the University of Minnesota -Carlson School of Business. I found the down-to-earth culture and people at Hormel were a great match for me. I’ve had multiple career experiences, starting out with 5 years in sales & sales training, moving to 15 years of more in depth experience in consumer products marketing and new product development, followed by about 10 years in new business development & acquisitions, and finally 5 years in Government Affairs.

What motivated you to join the AURI board of directors?

I have a high interest in innovation related to food products and adding value to agricultural commodities through convenience & improved attributes which differentiate them in the marketplaces. I worked extensively in marketing and new product development for Hormel Foods earlier in my career and enjoyed the challenge. I hope to provide evaluation and insights that are helpful to AURI and the entrepreneurs and innovators they assist.

Which food-related issues are most important to you?

Honesty and transparency in food marketing is important to me. Utilizing science based guidance and regulations to keep consumers appropriately informed is just common sense which we should take to heart.

How did you first hear about AURI?

A few years ago, Hormel Foods contacted about collaborating with AURI on new initiatives by Executive Director Shannon Schlecht.

How can Minnesota best support its food innovation industry?

Make Minnesota an attractive home base for new business with friendly tax systems, laws & regulations, and continue to provide resources, such as AURI, to provide the assistance and stimulation to encourage entrepreneurialism. Also, it’s important to continue supporting the great universities and colleges that provide world class programs in areas of study that are critical to the food industry.

What are your goals as a new board member?

My primary goal is to make AURI as effective and efficient as possible in helping entrepreneurs bring new products/ business to the market that meet a need and are successfully sustained.

What do you think is the biggest challenge faced by the food and agricultural ecosystems today?

Growing enough food to feed everyone while protecting the environment. We need to achieve a balance that encourages increasing agricultural productivity and protection of our natural resources.

What do you want to achieve as a new board member?

Successfully collaborate with the rest of the AURI board and other entities to maintain and improve Minnesota’s leadership in the food and agriculture space.
Consumer pressure for wholesale changes to the U.S. food system has never been higher than it is today. From clean labels to protein alternatives and sustainable packaging, consumers are contemplating and examining their food purchases in new ways. Vocal advocates are raising more questions about the food they consume, demanding more transparency and a desire for healthier food options.

**We're edging toward a time when people provide a blood sample, and technology offers an eating plan customized for you and your personal metabolism needs.**

In collaboration with the Dutch Embassy in Washington D.C. and the Dutch Consulate General in Chicago, the Agricultural Utilization Research Institute (AURI) has developed a series of emerging trends, gaps and opportunities that may lead to impactful innovation for the food industry. As part of the AURI探索, the report summarizes discussions across three focus groups in the key Midwest cities of Chicago, Minneapolis-St. Paul, and St. Louis between October 9, 2019 and November 23, 2019. Individual participants represented different sectors of the food and ag industry, government and academia.

The Dutch Consulate Focus Group Narrative report explored six key industry trends: foods, from the future, processing and manufacturing, packaging, food distribution and food waste through in-depth focus group discussions. These trends were originally outlined in the Food Tech in Michigan Report published in 2018. A total of 14 experts and three Dutch Consulate members provided insight that highlighted consumer values and preferences, current gaps and emerging opportunities in relation to these six trends. Such insights include how “younger generations seek differentiation and health claims in their food choices along with traceability, security and sustainability and have a deeper emotional connection with food and purchase decisions.”

A future, potential outcome in personalized nutrition is the concept of a completely customizable and controlable diet. A future food ecosystem: personalized nutrition and alternative proteins. Industry experts see consumers wanting personalized nutrition options as a means to lose weight while also reducing time spent in the kitchen. As families face a variety of diets practiced by individuals in their own household, such as gluten-free or vegan, making a family meal is becoming a bigger challenge. One solution on the rise is the creation of meal kits or options that allow an entire meal to be built from a single base item. For example, using frozen as the base of the meal and engaging the rest of the family in selecting different ingredients for the dish that meet individual dietary requirements.

### Consumer Trends in Consumer Driven Personalized Nutrition and Alternative Proteins

Consumer trends drive product development in the food industry by providing a series of valuable opportunities. Interestingly, while the values consumers express define industry trends, purchase decisions are not always driven by these sources alone. For example, focus group experts noted that financial resources often determine how close their actual purchase history matches their values. Consumers are also learning that the food ecosystem incorporates a series of checks and balances that is manifested by their preference for supply chain transparency for the environment impact and impact on personal health outcomes.

Perceived consumer values have manifested into two leading trends in the industry: personalized nutrition and alternative proteins. Industry experts see consumers wanting personalized nutrition options as a means to lose weight while also reducing time spent in the kitchen. As families face a variety of diets practiced by individuals in their own household, such as gluten-free or vegan, making a family meal is becoming a bigger challenge. One solution on the rise is the creation of meal kits or options that allow an entire meal to be built from a single base item. For example, using frozen as the base of the meal and engaging the rest of the family in selecting different ingredients for the dish that meet individual dietary requirements.

One member of the focus group noted, “We’re edging toward a time when people provide a blood sample, and technology offers an eating plan customized for you and your personal metabolism needs.”

At the same time, consumers are demanding less processed and clean label foods, which are coming to the trend in products. While consumers prefer less processing, perceptions of food manufacturing and technology determine consumers’ acceptance of new food products. For example, consumers interpret cellular agriculture products, such as lab grown培育, as more sustainable and ethically processed while on the other hand despite plant-based proteins rise in popularity consumers express concern about the level of processing needed to make meat analogues products.

### Consumer’s demand more sustainable packaging, an increase in production of specialty food and beverage products and educating consumers about product labels

Consumer have requested the integration of sensors or QR codes into packaging to show how a food item is produced. According to focus group participants, consumers have requested the integration of sensors or QR codes into packaging to show how a food item is produced. According to focus group participants, consumers have requested the integration of sensors or QR codes into packaging to show how a food item is produced. According to focus group participants, consumers have requested the integration of sensors or QR codes into packaging to show how a food item is produced. According to focus group participants, consumers have requested the integration of sensors or QR codes into packaging to show how a food item is produced. According to focus group participants, consumers have requested the integration of sensors or QR codes into packaging to show how a food item is produced. According to focus group participants, consumers have requested the integration of sensors or QR codes into packaging to show how a food item is produced. According to focus group participants, consumers have requested the integration of sensors or QR codes into packaging to show how a food item is produced. According to focus group participants, consumers have requested the integration of sensors or QR codes into packaging to show how a food item is produced. According to focus group participants, consumers have requested the integration of sensors or QR codes into packaging to show how a food item is produced. According to focus group participants, consumers have requested the integration of sensors or QR codes into packaging to show how a food item is produced. According to focus group participants, consumers have requested the integration of sensors or QR codes into packaging to show how a food item is produced. According to focus group participants, consumers have requested the integration of sensors or QR codes into packaging to show how a food item is produced. According to focus group participants, consumers have requested the integration of sensors or QR codes into packaging to show how a food item is produced. According to focus group participants, consumers have requested the integration of sensors or QR codes into packaging to show how a food item is produced. According to focus group participants, consumers have requested the integration of sensors or QR codes into packaging to show how a food item is produced. According to focus group participants, consumers have requested the integration of sensors or QR codes into packaging to show how a food item is produced. According to focus group participants, consumers have requested the integration of sensors or QR codes into packaging to show how a food item is produced. According to focus group participants, consumers have requested the integration of sensors or QR codes into packaging to show how a food item is produced. According to focus group participants, consumers have requested the integration of sensors or QR codes into packaging to show how a food item is produced.

**As younger generations build wealth and have more access to information than ever before in human history, they make purchase decisions based on social and economic values.**

Currently, there is a huge spotlight on food safety. Producers are struggling to navigate food safety standards and language. Consumers often misunderstand or are skeptical about terms such as “clean,” “organic,” “natural” and other labels. They rely on unverified, online resources for definitions and information. Meanwhile, industry professionals express concern about misunderstandings of scientific standards and food research. Focus group participants expressed a need for more universal definitions and consumer education.

### Opportunities for Innovation in the Food Industry

Ultimately, the trends and gaps in the food industry offer producers a wealth of opportunities to meet changing consumer demands. From joining the push in alternative proteins to filling the gap in sustainable packaging, the focus group experts noted that increased possibilities exist between technology, food, food waste and product packaging. While consumer demand focuses on better health and increased sustainability, the current system is not well equipped to rapidly shift to changing consumer demands.

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Food products lose their desired quality experience for many reasons. Accurate determination of a shelf life date requires understanding of the product's logistics. A product's "mode of failure" is key to understanding how to accurately determine a shelf life. The mode of failure equates to what attribute in a product will fail first and will therefore negatively affect the consumer's experience. When the product reaches the mode of failure it can taste stale, rancid or soggy. Crackers, granola bars, and barbecue sauce have different shelf lives and different modes of failure. By correctly diagnosing a product's mode of failure through testing, food manufacturers may be able to devise a plan to address the problem and lengthen the shelf life. In the second section, the guide explains the shelf life testing process and what variables can negatively and positively affect the results of a test. A key point for food processors to consider is that shelf life testing must be brought into the design and manufacturing of food products. Products must be created and stored using Good Manufacturing Practices. "The ingredients in the product, the design and packaging can affect a product's shelf life. So too can the amount of moisture, humidity and oxygen content that interacts with a product while it is packaged and sitting on a shelf," said Robinson. "One of the messages for food processors is to spend time understanding how all those factors work together." Lolly Occhino, a scientist and nutritionist at AURI, said another important message of the guide is that producers should consider shelf life throughout the life cycle of product development. Changes made to the product, packaging, labels and distribution can affect the shelf life without changing the ingredients of the product. "For food producers, it is so important to build strategies into the product from day one rather than try to solve issues later on when the product is already in the supply chain. This is particularly true when your product is shipped to a mass retailer," Occhino said. "It is important to consider the length of shelf life and how it matches up with a company's brand and identity." Ultimately, setting a shelf life is a business decision that is determined by the product marketing department. "We have seen a lot of confusion around shelf life. It is a common stumbling block for many of the early stage discussions we have with people. Many clients come to AURI with a 'Here is my product, now what is its shelf life perspective.'" Robinson said. "And that is not how shelf life works. The goal of this guide is to address many of the common questions and misconceptions. And then armed with that knowledge, an entrepreneur could talk with staff at AURI, a vendor or a service provider and have a much more productive conversation." The guide is divided into four sections. The first provides a detailed definition of shelf life. The second focuses on the factors that determine a producer's shelf life. The third section is an introduction to testing for shelf life. The guide concludes with a look at some of the business considerations involved in a product's shelf life. In the food industry, shelf life is defined as the time period a food manufacturer expects a product to retain its desired quality experience for the food business and consumers filling a shopping cart at the grocery store. The date is not an estimate or afterthought—it is rather the result of the scientifically determined food product shelf life with significant implications for the bottom line of food businesses. To provide food businesses with a baseline understanding of what shelf life is, and the underlying science and supply chain ramifications, the Agricultural Utilization Research Institute published a shelf life primer. The project was part of AURI's Ag Innovation Partnership (AIP) program and was conducted with the assistance and expertise of Clutch, a Minneapolis-based acceleration firm. A shelf life guide was selected as a project to pursue through the AIP program for a variety of reasons, said Jason Robinson, AURI's Project Development Director for Food. "We see a lot of confusion around shelf life. It is a common stumbling block for many of the early stage discussions we have with people. Many clients come to AURI with a 'Here is my product, now what is its shelf life?' perspective.'" Robinson said. "And that is not how shelf life works. The goal of this guide is to address many of the common questions and misconceptions. And then armed with that knowledge, an entrepreneur could talk with staff at AURI, a vendor or a service provider and have a much more productive conversation. "The shelf life guide is a free online resource and is included in AURI's Food Entrepreneur Toolbook, along with the clean-label food guide. Sections of the guide include: 

1. Explaining what a shelf life is 
2. Testing for shelf life 
3. Business considerations involved in a product's shelf life 
4. Understanding of the shelf life of the product In the second section, the guide explains the shelf life testing process and what variables can negatively and positively affect the results of a test. A key point for food processors to consider is that shelf life testing must be brought into the design and manufacturing of food products. Products must be created and stored using Good Manufacturing Practices. We see a lot of confusion around shelf life. It is a common stumbling block for many of the early stage discussions we have with people. Many clients come to AURI with a 'Here is my product, now what is its shelf life?' perspective.' Robinson said. "And that is not how shelf life works. The goal of this guide is to address many of the common questions and misconceptions. And then armed with that knowledge, an entrepreneur could talk with staff at AURI, a vendor or a service provider and have a much more productive conversation. "The shelf life guide is a free online resource and is included in AURI's Food Entrepreneur Toolbook, along with the clean-label food guide. 

The hope is that someday we are at a point where consumers, producers and retailers are all using the same shelf life terminologies. He said, "Approximately 80 percent of the shelf life discussions in the food industry are taking place in a manufacturing center. If we could educate consumers, producers and retailers on this topic, so they know what shelf life is and 'sell by date', that would go a long way to reducing our food waste."

Ag Innovation Partnership Program AURI's AIP program is a competitive process. Each year AURI puts out a call for submissions and businesses, researchers, entrepreneurs and producers are encouraged to submit a proposal. A panel of AURI staff members review and select projects based on the submissions that most align with AURI's mission of supporting innovation and creating long-term economic impact. Projects are also selected based on how they meet a need in the agriculture sector. The selected projects receive AURI's resources, funding and support to help businesses turn their ideas into reality and catalyze innovation in the state's agriculture industry. AURI provides expertise in a range of areas, including high-value co-products and food. The information generated from each project is made publicly available to help producers, entrepreneurs, businesses and agriculture processors. Past AIP collaborations have produced research studies, guides and tools to help businesses utilize Minnesota's agriculture products. The shelf life guide is a free online resource and is included in AURI's Food Entrepreneur Toolbook, along with the clean-label food guide.
ANNUAL REPORT RECAP

As in the past, AURI’s project work made a significant impact on clients and Minnesota’s overall agricultural health. During a five-year period ending with the close of FY19 (June 30, 2019), AURI worked on 183 different projects across the organization’s four focus areas (food, coproducts, biobased products and renewable energy), with 84 new projects opened during the year. AURI staff also provided many additional hours of non-project consultation and support to Minnesota businesses.

Food projects continue to comprise the largest segment of our overall services, with this area representing 61 percent of new projects and 58 percent of total projects serviced.

Food Highlights:

- AURI worked extensively in the food industry with clients in greater Minnesota that were ready to expand and take the next step in their businesses.
- One example is the Food Team’s work with Two Harbors, Minn. based Ruth’s Vegetarian Gourmet. The company turned to AURI for assistance to meet the United States Department of Agriculture (USDA) accreditation requirements for inclusion in public school meal plans. Earning USDA accreditation for school meal plans is technical and expensive. In recent years, AURI has specifically added capabilities and expertise in this area to help guide clients through the process.

Coproducts Highlights:

- The AURI Coproducts Team was proud to determine its potential uses as a food ingredient.
- Scientists on the Coproducts Team lab research to press and filter oilseed cover crops. AURI did significant pilot work to determine its potential uses as a food ingredient.

Biobased Products Highlights:

- New Starch Solutions partnered with AURI’s Biobased Team on the development of a new packaging material made from corn starch. The Plymouth, Minn. based company is a manufacturer and distributor of sustainable packaging products made from starch that are used in a variety of different markets and applications. Their products customer satisfaction scores have improved more than 70 percent.
- AURI also worked to achieve its organizational vision. For example, staff and leadership, engaged together in ecosystem growth throughout the state, by playing an active role in a variety of high-profile events. Most notable among them were Food | Ag | Innovation Week, FEAST, and MN Cup.

Overall, FY19 was a successful period for the organization, thanks to the dedication of the staff and board of directors, as well as the support of AURI’s many partners. What follows is a recap of the report for a high-level understanding of the organization’s achievements.

With regard to project activity, AURI’s dedicated staff worked on 183 different projects across the organization’s four focus areas (food, coproducts, biobased products and renewable energy), with 84 new projects opened during the year. AURI staff also provided many additional hours of non-project consultation and support to Minnesota businesses.

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- Scientists on the Coproducts Team lab research to press and filter oilseed cover crops. AURI did significant pilot work to determine its potential uses as a food ingredient.
The Agricultural Utilization Research Institute (AURI) assisted Attis with the development of the new polymer called ONXV as a pelleting aid. The goal was to improve pelleting efficiency by generating greater volume, while using less horsepower during the pelleting process. This low-cost additive improves BTU values, greatly improves water resistance and provides for several additional processing advantages. It also provides increased potential for applications involving plastics, composites, carbon fiber coatings and binders. Due to the unique characteristics of the ONXV polymer, Attis, NRRI and AURI evaluated the polymer as a potential solution to improve pelleting efficiency for wood pellets and other ag-based materials that are hard to densify.

One of the key services AURI provided via the AURI Coproduct Pilot Lab was the ability to conduct densification trials using a 40-horsepower pellet mill. The goal of these trials was to identify optimal processing that various materials require, the appropriate pellet die size to utilize, the appropriate steam conditioning needed, final pellet quality, as well as pellet durability and density. The ONXV polymer was evaluated to identify the potential improvement in pelleting efficiency.

The ONXV polymer is produced as a coproduct from a novel third generation biofuel. The ONXV polymer is a unique thermoplastic that is produced through a process called partial oxidation. It is produced as a coproduct from a new technology involving plastics, composites, carbon fiber coatings and binders. The goal of these trials was to identify the optimum preprocessing that various materials undergo in order to improve pelleting efficiency by generating greater volume, while using less horsepower during the pelleting process.

Atius Innovations is in the process of engineering, with the intent to build, multiple plants in the United States and abroad. Attis has met with various groups in Minnesota looking to build a facility to provide both cellulose-based fuel and bio-based products. Atius has also partnered with BioTech, the largest wood pellet production and sales company in the United States for integrating the Attis binder into production. AURI research with this Attis polymer has indicated that these new high performance energy pellets provide both improved characteristics and greater energy concentrations. Pelletizing is the process of compressing or molding a material into the shape of a pellet or sphere. Pelletizing improves the density and effective performance of a livestock feed or wood pellet fuel. There is significant interest in hearing biomass pellets for energy that contain wood pellets that are produced using engineered biomass feedstock. Pelletizing of this type is one of the most important pre-treatment steps in the bioenergy industry.

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As you may know, AURI was created by the Minnesota Legislature in the late 1980s during the farm crisis, and in hopes of mitigating its effects on farmers throughout the state. To mark this milestone, AURI celebrated its 30th anniversary earlier this year, on January 16, with a special event for current and past supporters.

The evening event, which followed AURI’s Annual board meeting, started with a welcome by AURI Board Chair Ron Obermoller. This was followed by remarks from Governor Tim Walz, during which he congratulated AURI on its longevity and underscored the importance of organizations, like this, to Minnesota’s economy and its reputation as an innovation hotbed.

This was followed by comments from Minnesota Department of Agriculture Commissioner Thom Petersen, who discussed AURI’s importance to ag producers and his experiences with AURI over the years.

After Commissioner Petersen, AURI Board Member Jeanne Poppe presented Executive Director Shannon Schlecht with a House Resolution congratulating AURI on its 30th anniversary. This was definitely a surprise honor for most of those in attendance and made for another reason to celebrate the occasion.

This presentation was followed by Senator Rich Draheim’s discussion of AURI’s impact on his district and what he described as AURI’s unique position to support Minnesota farmers.

Next, Senator Roger Moe provided a historical context and summary of AURI’s formation at the legislature in the 1980s and the goals and objectives for the organization at that time.

The evening’s festivities closed out with comments from past board members and a current client sharing their experiences of working with AURI over the years and the impact the organization has made on both personal and professional levels.

To mark the occasion, AURI also created a number of displays for the event from throughout its history. These included memories from long-time staff members, who shared their experiences and reflections on the organization and how it evolved over three decades. Another display included samples from many of AURI’s clients throughout its past. The samples ranged from soil amendment products to foods and beverages, which have been available to consumers at different points throughout AURI’s 30 year lifespan.