Meat Science & Animal Biologics Discovery Quarterly

Meat Science & Animal Biologics Discovery
UNIVERSITY OF WISCONSIN-MADISON

VOLUME 2, ISSUE 1 SPRING 2022

MEAT SCIENCE & BIOLOGICS DISCOVERY
1933 OBSERVATORY DRIVE
MADISON, WI 53706

UPCOMING EVENTS:

- **Meat Snacks Short Course: June 7-9, 2022**
- **Basic HACCP Training for Meat & Poultry Processors: August 17-18, 2022**

INSIDE THIS ISSUE:

Words from the Director: Steven Ricke

Happy 2022 greetings to colleagues, friends, and supporters of the Meat Science and Animal Biologics Discovery (MSABD) program! Welcome to our second newsletter from the new MSABD building! Now that we have moved in and are getting settled into more of a routine (if there is such a thing during a pandemic) the building is starting to come alive with faculty, staff, and students actively engaged on a daily basis. This, in addition to several events that were hosted by the MSABD, as well as workshops conducted by the Extension staff and faculty, has made this a busy place. As Director I enjoy seeing people using the building for a wide range of activities including classroom instruction and hands-on learning in our state-of-the-art processing facilities to hosting social events and conducting cutting-edge research in our laboratories. In addition, we have welcomed several large and small tour groups through our building that have given us a chance to show off our amazing capabilities and talented individuals. Like any program we have experienced changes in our personnel during 2021. Our lab manager Joan Parrish retired in the fall of 2021 (see article on her retirement party in this newsletter). We wish her the very best in her well-deserved retirement, but we will certainly miss her stewardship in getting us moved into the new building, as well as getting us up and running once we moved in. At the same time, we are pleased to welcome new staff members Jesse Brookstein and Dan Mechenich to MSABD. Jesse is serving as an Extension program associate and Dan is serving as our administrative assistant. We very much look forward to their contributions to our MSABD program. In closing, please feel free to stop by and say hello – we enjoy sharing our new digs with everybody!

Current MSABD Personnel:

Faculty:
Dr. Steven Ricke, Professor & Director
Dr. Wei Guo, Assistant Professor Meat Science & Muscle Biology
Dr. Mark Richards, Professor Meat Science
Dr. Vanessa Leone, Assistant Professor Animal Biologics & Metabolism
Dr. Jim Claus, Professor Meat Science
Dr. Jeffery Sindelar, Professor & Extension Meat Specialist

Staff:
Dillon Walker, Plant Operations Manager
Mitch Monson, Retail Operations Manager
Cindy Austin, BSL2 Lab Manager
TBA, Research Lab Manager
Jesse Brookstein, Outreach Specialist
John Licari, Building Manager
Dan Mechenich, Administrative Assistant

Post Doctorates and Visiting Scientists:
Dr. Eric Grunwald
Dr. Sung Ki Lee
Dr. Birol Kilic
Dr. Jing Zhao
Dr. Dana Dittoe
Dr. Samar Tolba

Graduate Students:
Kaysie Allen, MS AN SCI (Dr. Claus)
Sean Baker, PhD Food Science (Dr. Richards)
Aaron Bodie, PhD AN SCI (Dr. Ricke)
Jessica Brown, PhD AN SCI (Dr. Ricke)
Adam Franzen, MS AN SCI (Dr. Claus)
Jeffrey (Shengjia) Gao, PhD AN SCI (Dr. Guo)
Jake Hermanson, IGPNS Trainer (Dr. Leone)
Jordan Nehls, MS AN SCI (Dr. Sindelar)
Elena Olson, PhD AN SCI (Dr. Ricke)
Alyssa Seitz, MS DY SCI (Dr. Sindelar)
Siyuan (Steven) Sheng, PhD AN SCI (Dr. Sindelar)
James Whalin, PhD AN SCI (Dr. Richards)
Yuting Wu, Engineering (Dr. Richards)
Lindsey Wythe, MS AN SCI (Dr. Ricke)
Yanghai Zhang, PhD AN SCI (Dr. Guo)

Leading MSABD Into The Future

New Technology, Food Safety, Biologics, and a Vision

A piece in the **November 2021** edition of **Meatingplace** takes a look at the ways changes in the meat industry very much suit MSABD Director Dr. Steven Ricke's background and skillset. According to Dr. Ricke, the biggest industry advances made in recent years have to do with food safety – specifically microbiology and taking a preventative, as opposed to reactionary, approach. Dr. Ricke speaks of advances in identifying specific strains of pathogens and how those strains are either encouraged or discouraged by the microbiome found in animals' stomachs. Dr. Ricke's experience in bacteriology, and new technology at MSABD, such as a new sequencer (see **Sidebar 1**), allow him to identify specific pathogens and to understand how the diet of animals impact pathogens and the microbiome in their stomachs, as well as the effect of treatments such as acid baths during the processing stage on pathogen levels.

Dr. Ricke is also doing work to understand the whole microbiome present on a carcass. The interactions between microbes are complex. *Salmonella* competes for resources with other non-pathogen microbes and when the former is being outcompeted, it might be triggered to release a toxin or take another action that causes a food safety issue.

The food safety discussion continued in an article Dr. Ricke authored for **Food Safety Magazine's October/ November 2021** edition. Having a fuller snapshot of the microbiome may also reveal "indicator" microbes that respond to treatments in a very similar fashion to pathogens. If a treatment greatly reduces the presence of the indicator microbe, the treatment is probably also likely to reduce pathogens. On a related note, Dr. Ricke is using the sequencer to identify nonpathogen microbes and studying their role in product freshness and shelf life.

Finally, MSABD's live animal to ready-to-eat product capacity allows the program to perform longitudinal studies in food safety. In addition to a diet designed to limit pathogen growth in animals' stomachs (e.g. probiotics, prebiotics, etc.), other preventative measures like vaccines help keep pathogens out of live animal production. When these animal carcasses are processed, it is not always clear if the lack of food safety problems in the ready-to-eat products is a result of the negligible pathogen levels in the animals or effective treatments in the processing plant. MSABD, in its Biosafety Level II (BSL2) lab, is able to deliberately and safely infect live animals with pathogens, and thus test the efficacy of different treatments in BSL2's processing plant knowing pathogens are present.

Dr. Ricke's mindset not only makes him adept to work on food safety solutions, but also to lead the MSABD program to success. He views a lack of previous research in an area not as an obstacle, but as a groundbreaking opportunity – an exciting challenge to apply science in new ways. This is perhaps best seen in MSABD's emphasis on biologics. In the coming years, Dr. Ricke will jump right into answering mind-boggling questions, like one posed by the MSABD Advisory Council asking if "the value of the non-meat portion of the animal [can] exceed the value of the meat?"

Patience is also a virtue held by Dr. Ricke. He understands developments in food safety will come incrementally and that it will take time for MSABD to establish itself and attract the talent it needs to thrive. Part of MSABD's education strategy, as mentioned in the Food Safety article, is to attract crossover students from fields related to meat science. Already MSABD is working on a feed project with students and faculty from UW Madison's Microbial Sciences program.

To view Dr. Ricke's Food Safety article and see teaching, research, and outreach in action at MSABD, follow the link below.

https://www.food-safety.com/articles/7393-training-the-next-generation-of-meat-scientists

Sidebar 1

Purchased in Fall 2021, the Illumina MiSeq short read sequencer allows MSABD to perform 16S rDNA targeted amplicon sequencing.

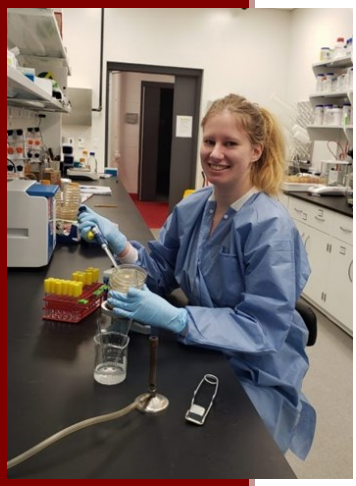
Just as a computer file is made up of binary code (0s and 1s), a length of DNA is made up of bases (A, T, C, and G). A sequencer allows scientists to determine what order the bases in a DNA length are in, thus the genome of that DNA. Since each species has a unique genome, it is possible to tell if that species is present, via its genome and associated DNA, in a sample.

Targeted amplicon sequencing will eventually be expanded to fungal species (16S and ITS).

The sequencer offers students many training opportunities in addition to being a valuable research tool.

Dr. Ricke speaking at Union South in 2019.

Undergraduate Research: Persephone Valentine



Originally an animal science major focused on companion animals at UW River Falls, Persephone had to switch gears after transferring to UW Madison, which did not have an equivalent major. It took just a Communications A general education course to spark her path towards a major in Life Sciences Communication. While pursuing her major, she had the opportunity to write for the University's Food Research Institute and do a summer research project at MSABD.

Under the mentorship of MSABD's Jeff Sindelar, Cindy Austin, and Jordan Nehls, Persephone studied how the fat content of pork patties and thermal processing affect the lab lethality of salmonella on the surface of pork patties. She appreciated being given room to figure things out on her own and the chance to learn by doing. She also helped Dillon Walker with animal harvest and processing in the USDA plant. Persephone believes meat is often taken for granted, and her time at MSABD has given her an appreciation for where meat comes from.

Persephone hopes to use her writing skills to ethically provide science-based information that reaches as many people as possible. If her fundamental knowledge of a broad range of topics and enjoyment of learning (she also graduated Winter 2021 with a second major in Chinese) is any indication, providing such knowledge will help create well-rounded and informed people.

PhD Research: Jessica Brown

Jessica (right) before the Bray Ceremony.

Jessica Brown, Animal Sciences PhD student, is originally from Clearwater, FL, near Tampa. She first got involved in meat science as an undergraduate at the University of Florida when she one day tagged along with a roommate to a meat judging team practice. Six months in, Brown was hooked; she finished out the year as a judge and spent the next two years helping to coach the 2018 and 2019 teams.

Focused on her end goal and not one for barriers, Brown reached out to UW Madison to pursue a PhD after obtaining a Master's degree in Animal Sciences from the University of Florida. Here she found a perfect fit for her unique blend of industry knowledge, meat science background, and interest in food safety. After the first two virtual meetings, which were scheduled for 30 minutes, stretched into two-hour conversations, she felt confident UW Madison was the place for her.

As a student under Dr. Ricke, Brown is encouraged to think outside the box and try new things. She has had the opportunity to collaborate with other labs across campus, serve as a mentor to a pair of undergraduates writing a literature review, and participate in a wide range of research projects.

Brown is a recipient of the Bray-Woodbury Wisconsin Distinguished Graduate Fellowship and accepted a plaque commemorating Dr. Robert Bray at a special ceremony held at MSABD on December 14, 2021. Having learned about Dr. Bray as a great in meat science during her time in quizbowl, Brown is honored to now be a part of the program he founded and hopes to help build its legacy as an alum – staying active in clubs and associations as she begins an exciting career in food safety.

Jessica is also grateful to be the 2022 recipient of the John Cerveny IAFP Travel Award. She received a certificate at the Food Research Institute Spring Meeting May 18 at the Pyle Center and will use the up to $2,000 awarded to travel to the International Association for Food Protection 2022 Annual Meeting in Pittsburgh, PA July 31 - August 3. The IAFP Annual Meeting is considered the world's leading food safety conference.

Dr. Jeff Sindelar Completes Food Safety Study

MSABD's Dr. Jeff Sindelar, along with Kathy Glass - UW Madison Food Research Institute (FRI) and several industry partners, recently completed a food safety study that was published in Meat and Muscle Biology. The study goal was to come up with a simple but effective solution to the more stringent requirements found in the 2017 update of USDA's Appendix A. The team needed to find a way to maintain a humidity level of at least 90% during meat and poultry cooking processes that last less than one hour (such as in an impingement oven) - the idea being that the extra moisture keeps surface pathogens from drying out and makes them more susceptible to lethal temperatures.

The solution, known as hydrated surface lethality (HSL), uses steam injection, which allows existing impingement ovens to be retrofitted at a much lower cost than them being replaced. HSL was validated and will be implemented in industry, helping to ensure food safety. Bob Hanson, who serves as an advisor to the meat industry, praised the project as "timely and cost-effective" and was impressed by the level of collaboration by all involved.

A FRI article about the study was featured in the news section of the CALS website in October 2021.

To view the article, please follow the link below:

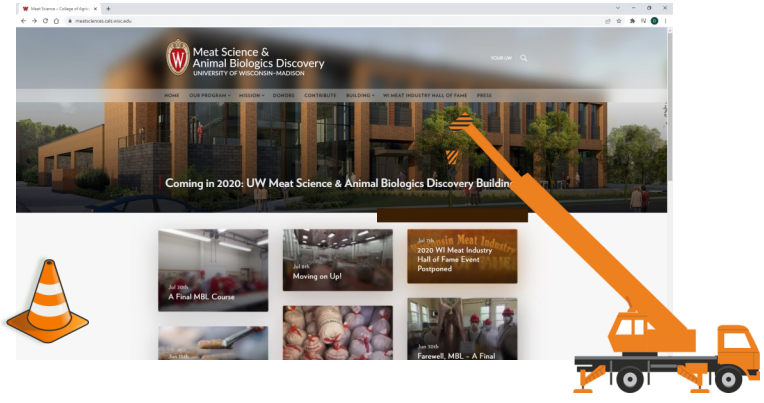
https://news.cals.wisc.edu/2021/10/12/uw-scientists-team-with-meat-industry-to-provide-food-safety-solution/

Updated Website

A team composed of AnDySci Digital Media Intern Taylor Schaefer, MSABD and AnDySci Administrative Assistant Dan Mechenich, and Outreach Specialist Jesse Brookstein, under the direction of Dr. Jeff Sindelar and aided by Al Nemec of CALS IT, is in the process of updating the MSABD website. The current website is stuck in time in 2020 before the building's grand opening. It has exceeded its original scope as it was put together to chronicle the construction of the building. Once updated, the website will be a resource for the MSABD program and all that it does. Changes and additions include:

- links to MSABD student job listings
- a home for information on MSABD's Extension courses and workshops
- a refreshed WI Meat Industry Hall of Fame listing
- the ability to schedule a MSABD tour online
- a live events box similar to that found on the AnDySci website

Stay tuned for the updates to go live!



HOURS

Monday :	12—5 pm
Tuesday :	12—5 pm
Wednesday :	12—5 pm
Thursday :	12—5 pm
Friday :	12 —5 pm
Saturday :	CLOSED
Sunday :	CLOSED

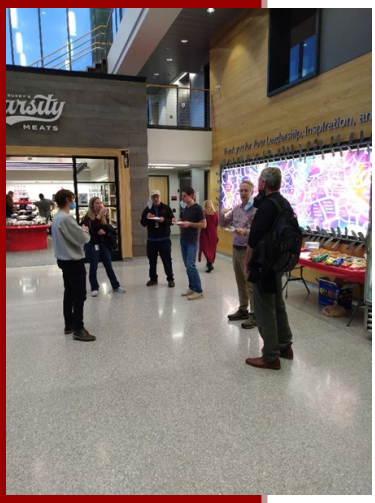
BUCKY'S Varsity MEATS

Mitch Monson - Retail Operations Manager
University of Wisconsin-Madison
1933 Observatory DR
Madison, WI 53706
(608) 262-7801
monson5@wisc.edu

New Administrative Assistant

In October 2021 Dan Mechenich joined the Animal & Dairy Science Department and MSABD program as Administrative Assistant for both. Prior to joining, he was employed for two years at UW Madison as an animal caretaker. Dan enjoys learning about all the work happening in the department and program and is looking forward to giving tours of the USDA processing plant.

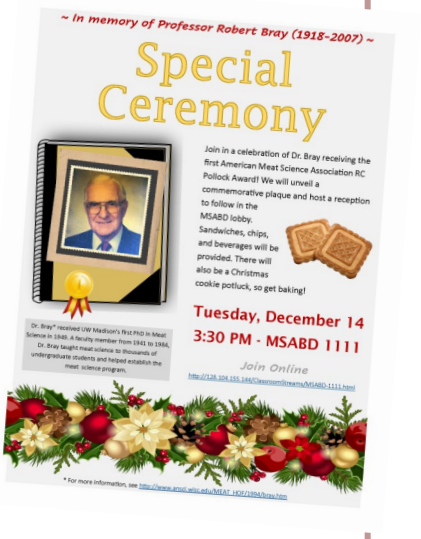
Bray Ceremony



On December 14, members of MSABD and the Animal & Dairy Sciences Department at UW Madison gathered for the presentation of a plaque commemorating Robert Bray, a titan of meat science from UW Madison, receiving the first American Meat Science Association (AMSA) R.C. Pollock award in 1977 for his legacy on the meat industry. Jessica Brown, a PhD student at MSABD, accepted the plaque on behalf of the program as a recipient of a scholarship funded by an endowment Dr. Bray contributed to (Bray-Woodbury Wisconsin Distinguished Graduate Fellowship in Meat Science – established 2006).

Dr. Bray is said to have founded the meat science program at UW Madison and teach meat science to over 2,500 students over his 43-year career. He was actually a contemporary of RC Pollock - the two working together to create the first Reciprocal Meat Conference in 1948. Dr. Bray was AMSA's first president, serving the customary one-year role from 1964 to 1965.

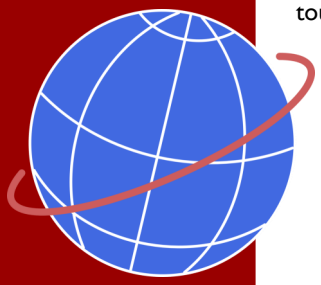
The ceremony was a chance to reflect on where meat science has come and its potential in the future at UW Madison, from humble beginnings in the Stock Pavilion to a new home in the state-of-the-art MSABD building completed in 2020.



Collaborations: The Wisconsin Idea

The MSABD program continues to grow, with faculty and staff collaborating with entities from Wisconsin to East Asia on a variety of projects, including product development, financing, food safety, and livestock nutrition.

Below are lists of just some of the entities that have A.) visited MSABD in-person for discussions, tours, and/or use of the USDA processing plant/BSL II spaces and B.) collaborated with MSABD virtually.



<u>In-Person Collaborations</u>:

- Promega – Madison, WI
- Johnsonville - Sheboygan Falls, WI
- PSSI - Kieler, WI
- SMS Tech – Twin Cities, MN
- Kerry – Beloit, WI
- Compeer Financial – Sun Prairie, WI
- Rheonix – Ithaca, NY
- Sargento – Plymouth, WI
- UW Madison Office of Business Engagement – Madison, WI
- UW Madison American Family Insurance Data Science Institute – Madison, WI
- UW Madison Department of Bacteriology – Madison, WI

<u>Virtual Collaborations</u>:

- Pinduoduo – Shanghai, China
- Medical College of Wisconsin – Milwaukee, WI
- Ajinomoto – Tokyo, Japan
- Santa Fe Farms – Santa Fe, NM
- NC-SARE Farmer/Rancher Grant – Green Lake, WI
- Adisseo – Paris, France
- Ecolab – Twin Cities, MN
- Origination, LLC – Twin Cities, MN

Graduate Research: Jordan Nehls

Jordan grew up in Janesville, WI and graduated from UW Madison with a degree in Food Engineering. That led to a job in Food Safety, Quality, and Regulatory at Cargill in Albert Lea, MN working with further processed and cooked meat. While she didn't anticipate an interest in meat science, her experience at Cargill, the impact her research could have on the meat industry, and her strong interest in thermal processing, food safety, and meat science inspired Jordan to join MSABD in January 2020 to pursue a master's degree in Meat Science and Muscle Biology with Dr. Jeff Sindelar.

From helping start up MSABD's USDA-inspected meat and poultry processing plant and conducting the initial HACCP plan validation to doing research that ensures your food is cooked properly under the correct conditions and is safe to eat, Jordan has already demonstrated her passion for thermal processing, food safety, and meat science. She contributed to a paper recently published in the Journal of Meat and Muscle Biology (https://www.iastatedigitalpress.com/mmb/article/id/12248/). She enjoys being part of a high performing team delivering scientifically proven solutions for the meat and poultry industry.

Jordan appreciates the opportunities to explore her interests and develop her abilities that come with being a graduate student. She currently serves as vice-president of the Badger Meat Sciences Club. She is active in MSABD goings-on and regularly helps with MSABD Extension workshops. Her advisor is Dr. Jeff Sindelar, who she says shares the same interest in thermal processing, food safety, and meat science as well with his dedication to the meat and poultry processing industry. Jordan plans to graduate after the summer session later this year and is entertaining the possibilities of pursuing a PhD degree or joining the meat industry.

Meet the Staff: Jesse Brookstein

Jesse grew up and attended college in Central New York before moving to Colorado to pursue his career in the beer industry. Always having enjoyed exploring different kinds of beer, the beer industry offered him a chance to be around other hardworking down-to-earth folks and use his expertise in graphic design, marketing, and event planning. In 2015, Jesse took his experience and founded his own brewery, Call to Arms Brewing Company, in Denver.

After moving to Wisconsin, Jesse authored "A Perfect Pair: The History of Landjaeger in Green County, Wisconsin" (available for purchase in Bucky's Varsity Meats). While writing the book, he began to notice the many similarities between the beer and meat industries. Just like a brewer tweaks their formula to make the perfect beer, meat scientists study muscle biology to produce the finest cuts.

Research for the book eventually led Jesse to interview MSABD's very own Jeff Sindelar. Jesse was struck by how Dr. Sindelar had the same passion for the meat industry and strong work ethic that Wisconsin's many small business meat shops do – a drive and outlook Jesse could relate to as a former small business owner himself. When he saw that Extension was looking for an outreach specialist to work at MSABD, he jumped at the chance and joined the team in September 2021. He enjoys the chance to support and keep Wisconsin's small business meat shops going.

Jesse has been busy learning the ins and outs of the meat industry but has found camaraderie here and knows the key to any successful workshop comes down to good communication. Long days organizing and hosting workshops seem to fly by doing such rewarding work. And Jesse is hoping to expand the MSABD's sensory analysis program, which is something he feels is both incredibly interesting and very important for anyone hoping to create consistent, high-quality products.

Plans to restart the Wisconsin Meat Industry Hall of Fame in 2022 have been set in motion!

Well-Deserved Retirement: Joan Parrish

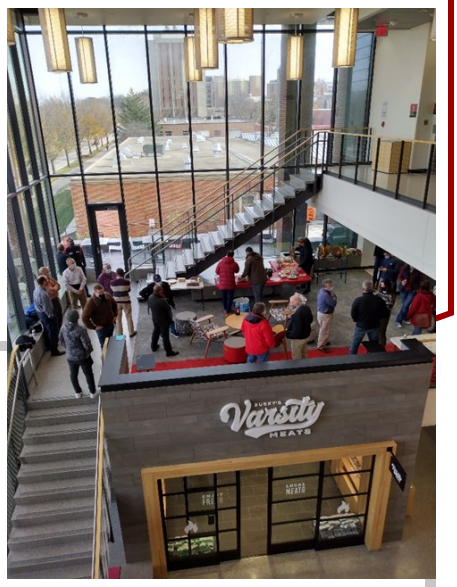
Written by Dr. Dan Schaefer - former MSABD Director

Joan Parrish retired from the Department of Animal and Dairy Sciences after a career in the department that spanned more than 38 years. Joan completed her M.S. degree in Reproductive Physiology at Cornell University and then moved to UW-Madison with her husband, John. Joan's UW-Madison employment began on September 19, 1983, as a Senior Research Specialist in the laboratory of Professor Neal First, whose lab subsequently conceived and perfected in vitro fertilization in cattle with applications for numerous additional species including humans. Joan was part of the team which investigated oocyte activation leading to a patent in that area. Because of her wide ranging interests in Animal Sciences, Joan was active in many labs (First, Parrish, Cook, Reed, Cezar, Radunz). Her work in support of graduate student research set many students on an upward trajectory.

Due to budget circumstances and her grant-writing skills, Joan was recruited by the Department to become its first Grants Facilitator. Her service to faculty members across the Department was quickly welcomed and appreciated by faculty members, the Department Chair, and CALS Research Administration. What had been a turbulent and contentious situation was calmed by Joan's ability to listen, adapt, negotiate, and succeed. Joan's wide-ranging interests empowered her to seek grant opportunities for faculty members. Her passion for communicating science led her to learn graphic design skills, which she used to make many monthly informative posters for viewers in the Animal Sciences Building foyer. Again due to budget circumstances, the Extension specialists recruited Joan to be the webmaster of their sites which she accepted. This service grew to include Departmental webmaster duties. Due to a staff retirement in the Meat Science & Muscle Biology Lab (MBL), Joan provided needed expertise and time to support the programs of those faculty members, plus her existing Grants Facilitator and Webmaster duties.

By 2018, the Meat Science & Animal Biologics Discovery (MSABD) building and program were emerging realities. The needs of this program were no longer for office support but instead for laboratory support. The MBL faculty knew of Joan's lab management background and her capacity for helpfulness and student training so they appealed to the Department for her to join their programs as the Lab Manager, and to be released from her Department-wide responsibilities. The Department agreed and Joan accepted the new role. Although she began as Lab Manager, the impending completion of the MSABD building required the physical clean-out of MBL, either for disposal or transfer to MSABD. Joan orchestrated the research program's exit from MBL and installation in MSABD. With the opening of MSABD, new faculty, staff and students arrived, all needing to learn the culture and protocols of UW-Madison, the College of Agricultural and Life Sciences, and the Department. Her patience, knowledge, experience, and diplomacy enabled faculty, staff and students to get settled into the research lab in MSABD.

Through all of these transitions and the professionally-challenging circumstances in her career, Joan displayed calm confidence, loyalty, and conscientious performance, with the oft-spoken advice, "We will get through this." These qualities endeared her to those whom she served. After a full career of service to this Department, she established many friendships and earned a well-deserved retirement on November 19, 2021. In her retirement, Joan plans to have many adventures with her family and friends - two and four footed. Joan is active in the Badger Kennel Club, Badger Golden Retriever Club, Madison Retriever Club, GRCA, and Pet Partners. Her motto "If you stop learning you might as well die" will be her guide.



In The News

Bucky's Varsity Meats was featured in the trendy **Madison Magazine** in **November 2021**. Mitch Monson, Retail Operations Manager for Bucky's, said the story led to a large increase in the number of "likes" for the shop on Facebook.

4 New Protein Purveyors in the Madison Area

Monson and Bucky's were also featured in **Meatingplace's November 2021** R&D Matters email newsletter. That same month, Meatingplace also ran a lengthy article about MSABD in the former's print magazine. An online copy of the magazine can be viewed on Meatingplace's website with a free subscription.

During home football games **Fall 2021**, Monson catered for **Q106's** tailgate parties and in return the station promoted Bucky's on-air.

In **December 2021**, a suggestion was made to Google to correct the location of the MSABD building on Google Maps. The suggestion was accepted, and analytics showed that MSABD was searched for on Google over 5,000 times since.

Dr. Jeff Sindelar was recently quoted in a **Green Bay Press Gazette December 2021** article about the great sausage produced in Wisconsin. The MSABD program and building, as well as Dr. Sindelar's Master Meat Crafter Extension courses, were listed as contributing factors.

Why is Wisconsin a great state for great sausage?

Pioneers of the Past/Donor Spotlight: Charles Vignieri

Mr. Charles Vignieri
Kenosha Beef Company

Charles Vignieri (1924-2015) was a first generation American born to Italian parents in Chicago, IL in 1924. When his father decided to go into the meat business in 1937, thirteen-year-old "Charlie" helped with butchering, processing, and delivering meat to grocery stores. After being stationed in the Philippines during the Pacific theater of WWII, Charles returned home and married Lorraine Vanderwarn, who he had met at a dance prior to his service. He also resumed working with his father at Frank Vignieri & Son, which would eventually become Kenosha Beef International.

During his career, Charles helped revolutionize the transportation of meat products. He embraced the use of vacuum packaging and boxed beef (shipping cuts versus a whole or partial carcass) when these developments were relatively new. Around the beginning of the 21st century, Kenosha Beef International was the leading supplier of precooked meat for Taco Bell. By 2015, the company, which Charles poured hard work into and led with compassion, had grown to over 700 employees with facilities in Wisconsin, Ohio, and Georgia. Today, Kenosha Beef Company is known for its quality and sanitation. The Charles Vignieri Meat Processing Lab in the MSABD processing plant is named in honor of Charles.

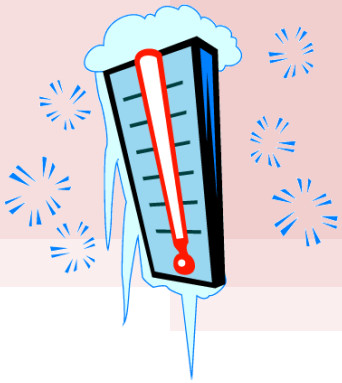
For Your

FYI

Information

The approximately 25,000 square feet USDA inspected processing plant is slightly larger than the 19,400 square foot ice rink installed in the Kohl Center for Badger hockey games.

The Ultra-Chill Freezer for cooling carcasses is capable of reaching a temperature of –40°F, three degrees cooler than Madison's record low set in 1951.



From the Desk of Dr. Jeff Sindelar

Written by Dr. Jeff Sindelar - Professor & Extension Meat Specialist

Since substantial completion (Summer 2020), progress continues to get the MSABD building online. As with any good project, not everything works perfectly from Day 1: things break as part of normal warranty related reasons and some of the more complex systems need extra time and attention to test out, modify designs as necessary, and re-commission. This has certainly been the case as there is a small, yet significant, number of items in the building still being worked on and through. Thankfully, the State of Wisconsin Division of Facilities Development is committed to ensuring the building users have a functional facility that meets our needs. And so . . . the work continues.

The first MSABD Extension programs were held in the building Fall 2021. Several more programs, including the relaunch of the Master Meat Crafter training program, are planned for 2022 that were all put on hold due to the significant time commitment towards MSABD construction and recent COVID related challenges. To support these efforts, Jesse Brookstein joined the MSASBD Extension program as Outreach Specialist. In this role, Jesse will play in integral role in supporting the design, development, and execution of a variety of Extension programs and activities.

EXTENSION

USDA, Food Safety Inspection Service Roundtable Session

A hybrid (virtual and in-person) USDA/Food Safety Inspection Service (FSIS)-industry-academia roundtable meeting was held August 2021 at the MSABD building. Speakers traveled from Washington, D.C.; Des Moines, IA; and locally to engage in conversation about relevant issues, challenges, and opportunities in the meat & poultry industries. Panel speakers included:

Paul Kiecker
Administrator for FSIS

Dr. Hany Sidrak
Deputy Assistant Administrator for USDA, FSIS Office of Field Operations

Rachel Edelstein
Assistant Administrator for the USDA, FSIS Office of Policy and Program Development

Dr. Cathy Pierce
Frontline Supervisor for USDA, FSIS Office of Field Operations

Dawn Sprouls
USDA, FSIS Des Moines District Manager

2021 Wisconsin Association of Meat Processors Pre-Convention Workshop

A Wisconsin Association of Meat Processors (WAMP) pre-convention workshop was held August 2021 at MSABD as part of the WAMP annual convention in Middleton, WI.

43 members attended the workshop "Squeal-to-Meal", which included classroom presentations by:

Dean Pringle
University of Georgia

Jim Murray
National Pork Board

Nelson Gaydos
American Association of Meat Processors

Mitch Monson & Ligia da Cunha Moreira
MSABD

and processing demonstrations by:

Jake Sailer
Sailer's Food Market & Meat Processing

Andy Geiss
Geiss Meat Service

Wayne Lautsbaug
Crescent Meats & Catering

Chris Hermann
Eden Meat Market

with support from MSABD staff (Dillon Walker/Mitch Monson/John Licari) and students

2021 Food Safety Summit

A "Wisconsin Food Safety Summit" took place at the MSABD building on November 4, 2021 and was co-presented by MSABD and USDA, Food Safety and Inspection Service. This all-day seminar addressed current topics in food safety and had 70 attendees. The workshop was supported by MSABD staff (Jesse Brookstein/Dillon Walker/Steve Switzer/Mitch Monson) and students (Jordan Nehls/Steven Sheng/Persephone Valentine), and Bucky's Varsity Meats catered lunch. Featured speakers included:

Meryl Silverman
USDA, FSIS, Office of Policy and Program Development

Dr. Philip Bronstein
Assistant Administrator, USDA, FSIS

Todd Gerwig
Des Moines Deputy District Manager, USDA, FSIS

Jeff Sindelar
MSABD Professor & Extension Meat Specialist

Cindy Austin
MSABD BSL2 Lab Manager

Dana Dittoe
MSABD Research Associate

Jan Murray
Ecolab

Upcoming:

6/7 - 6/9/2022

Meat Snacks Short Course

8/17 - 8/18/2022

Basic HACCP Training for Meat & Poultry Processors

Basic HACCP for Meat & Poultry Plants

A Basic HACCP Training for Meat & Poultry Processors took place November 10-11, 2021 with 32 participants attending. The workshop was co-hosted by the Wisconsin Department of Agriculture, Trade & Consumer Protection and MSABD Extension program and included two full days of presentations and breakout sessions. Attendees learned and had reinforced the principles of HACCP and gained hands-on experience helping to develop and implement HACCP plans & programs, including new USDA, FSIS regulations. In addition, several candidates in the 2022-2023 Master Meat Crafter program were in attendance to gain their HACCP certification – a prerequisite for the MMC program. Bucky's Varsity Meats catered lunch both days. Speakers included:

Nicole Lukens, Alexi Valitchka, Kim Zierler, and Paul Humphrey
WI DATCP

Adam Borger
UW-Food Research Institute

Jeff Sindelar, Cindy Austin, and Jorden Nehls
MSABD
with support from MSABD staff (Jesse Brookstein/Mitch Monson) and students

"I learned so much - I'm in awe of the talent at the university."

Master Meat Crafter Training Program

"Thank you!"

Now in its fifth offering, the Master Meat Crafter Training Program returned to MSABD January 2022. The first of six 2.5 day workshops (schools), which are spread out over two years, was held January 11-13. Participants are equipped with a comprehensive and in-depth knowledge of meat science, food safety, and the principles of meat processing via four program elements:

- doing targeted homework assignments
- developing and carrying out a 1-year mentorship program
- completing an in-plant research project
- presenting a program at their formal graduation ceremony December 2023

Successful completion of these tasks will confer the distinction of "Master Meat Crafter" on the 35 candidates participating, the program's largest class to date.

The highly regarded Master Meat Crafter Training Program is a first-of-its-kind meat industry training program. Previous classes were offered 2010-2012, 2012-2014, 2014-2016, and 2016-2018.

"I enjoyed the group projects. I was able to learn better in the smaller group, while learning valuable information."

Continuing to Deliver: *Salumi 101*

UW Extension and MSABD provided another high-impact workshop to the Wisconsin meat industry last week during the three-day Salumi 101 workshop (February 22-24). Workshop participants crafted safe and high-quality artisan meat products alongside experts from the American Meat Science Association (AMSA), North Carolina State University, California State University – Fresno, Pennsylvania State University, and UW Madison.

AMSA CEO Collette Kaster was in attendance and had high praise for the workshop, finding much to be fond and appreciative of. The level of preparation, teaching, and engagement made Collette proud of the meat science world.

While hosting successful workshops is not out of the ordinary, a new state-of-the-art facility and the enthusiasm and teamwork between fresh faces and veterans alike begin a new chapter in outreach for MSABD and all those who benefit.

Selected MSAs:

- Smithfield Foods, Inc.
- The Paget Group
- Kerry Ingredients
- Johnsonville Sausage LLC
- Hygiena, LLC
- SMS Tech

Total Grants & Contracts: 60

Selected Grants & Contracts:

Dr. Jim Claus	
MPSC, Inc	Post-exsanguination vascular infusion with concurrent vascular rinsing: effects on quality attributes and metabolic changes in beef and pork.
The Good Food Institute	Crossing two kingdoms: bioengineered clean meat in plant-based tissue scaffolds.
Dr. Wei Guo	
NIH R03	Maternal Obesity and Origin of Adult Offspring Cardiovascular Disease
NIH R01	Posttranscriptional regulation of RNA binding proteins in heart failure
USDA Hatch MultiState	Role of RBM20 in skeletal muscle regeneration and growth (WIS04005)
American Heart Assoc.	Cytoplasmic trafficking of titin mRNA binding protein 20 in heart failure progression
Dr. Vanessa Leone	
Gilead Sciences	Gilead Research Scholars Program - Liver Disease
NIH K award	Diurnal oscillations in gut microbes and host immunity in health and obesity
Dr. Mark Richards	
USDA, NIFA	Role of solvent access to myoglobin and hemoglobin: a unifying mechanism of oxidative deterioration in muscle foods
RCN	Resilient Salmon: Trained immunity and nutritional programming for resilient salmon
Dr. Steven Ricke	
Hygiena, LLC	Development and optimization of the Hygiena BAX System for the detection and quantitation of *Campylobacter* in poultry matrices
Food Research Institute	Effect of organic acid components on the inhibition of *Clostridium perfringens* and *Bacillus cereus* during extended cooling of uncured meat products
Hydrite Chemical Co.	Efficacy of peroxyacetic acid on inoculated beef and poultry parts
Adisseo	In *vitro* screening of cereal grain brans for the reduction of the rumen methane production
Harvest Fuels	Evaluating probiotein fermentate feed amendments on the cecal microbiome of poultry
Kerry Ingredients	Shelf-Life and microbiome assessment of plant-based meat protein products during storage
Elanco	Determining the microbiota composition of poultry litter during an extended downtime between flocks

Dr. Leone continued her research in 2021 by studying the negative correlation of antibiotics and helpful microbes in the guts of animals and how restoring those microbes prevents the development of bowel diseases. She co-authored two papers on the research.

Dr. Richards has established himself in the research of hemoglobins. In 2021, he studied the binding of human hemoglobin from sickle cell disease with caffeic acid in collaboration with the University's Biotechnology Center and researchers of the Food and Drug Administration.

Dr. Ricke continues to emphasize on food safety research specifically focused on foodborne pathogen *salmonella* and *campylobacter*. He is also studying the microbial ecology of animal production using microbiome sequencing to follow microbial ecology from farm to fork.

Selected Grants & Contracts (cont'd):

Dr. Jeff Sindelar	
Kikkoman USA	Refined chemical identity and biological function of taste-potentiating chemistry of soy sauce containing comminuted meat products
Kikkoman USA	Implications of common meat processing operations on the fate of adenylate isomers
USDA, NIFA	Organic alternatives to conventional celery powder as a meat curing agent
Michigan State Univ	Improving Validation Methods for Salmonella Lethality on the Surface of Multiple Impingement -Cooked Meat and Poultry Products
USDA, NIFA	Dairy Beef Crossbred Feeding Management: Applied Research and Extension Project

Publications:

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The Allen International Graduate Scholarship and International Meat Science Travel Awards were awarded to:

- Jessica Brown
- Jordan Nehls
- Steven Sheng
- Sean Baker

A Q&A With Blythe Salamone - FRI Scholarship Awardee

How did you get involved with FRI?

I got involved with FRI a couple of months ago when the opportunity was presented to me to apply for the FRI undergraduate research scholarship. The scholarship will help fund my research that is comparing the microbial populations of the rumen to that of the hindgut in beef cattle. I recently found out that I have been awarded the scholarship and I am very excited to begin the program this summer which includes weekly presentations from professors and two field trips throughout to food manufacturers for a better understanding of the industry.

Why to you is your work at FRI meaningful?

My ultimate goal is to become a food animal veterinarian. As a food veterinarian, I will always have to be thinking about how to keep the animals, but also people, safe through the food they consume. The work being done at FRI is meaningful because it is enhancing the safety of our food supply to keep the population safe through a variety of techniques. My specific research is to determine if the bacterias in the rumen are the same as in the hindgut. This could help cattle health in the future, which could produce overall meat quality consumed. At the moment if a cow isn't growing, farmers can collect feces samples and find the bacteria present, but there is no research knowing if this is the same bacteria present in the rumen. There is a chance that the abomasum could be killing off good bacteria and it won't be present in the lower gut digestion. If my research shows this then farmers can take precautions in the future and change feed or give vitamins to help growth and development.

What does it mean to you to receive this award?

I am honored and grateful to win this award. Winning this award means that I will get to expand my knowledge into a realm that I had not thought possible and be able to have those opportunities to explore the industry before attending veterinary school. I am so excited to see what this summer in the program brings. Thank you to the Food Research Institute and a huge thank you to Dr. Ricke, Dana Dittoe, and Jessica Brown for helping and supporting me throughout my project journey.

MSABD Tour Groups (OCT 21 - JUL 22):

- Wisconsin Beef Council
- TemPac & Oregon School District
- Alice in Dairyland
- Tyson representative
- UW Madison journalism major
- Toyota Tsusho Canada
- Babcock Dairy Store (UW Madison)
- Swiss Consulate of Chicago
- AgrAbility National Training Workshop (NTW)
- Ecolab & Adisseo
- Kerry Ingredients
- Promega & Kristen Gibson of the University of Arkansas
- Compeer Financial
- UW Madison Office of Business Engagement
- American Family Insurance
- Sargento
- UW Madison College of Engineering
- UW Madison School of Veterinary Medicine
- UW Madison Office of Legal Affairs
- Wisconsin Master Farmers
- 4-H (various counties)
- American Farm Bureau Federation
- UW Madison Biotechnology Center

In the next edition of Meat Science & Animal Biologics Discovery Quarterly, we will talk with Ashley Tarcin about her FRI scholarship, look into some highlights from the recent FFA meat judging event, and tag along with MSABD members on their visit to Germany, plus so much more!

Meat Science & Animal Biologics Discovery
UNIVERSITY OF WISCONSIN-MADISON