

MEAT SCIENCE &
MUSCLE BIOLOGY
LABORATORY
1805 LINDEN DRIVE
MADISON WI 53706

UPCOMING EVENTS:

- **Meat Curing**
School: January
15-16, 2013
- **Wisconsin Meat
Processing**
School: March
19-20, 2013

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Words from the Director: Jim Claus

Welcome to our first quarterly newsletter. We have many exciting things to report on which we hope you will find interesting and of value. During the past decade, significant changes have taken place in terms of MBL faculty and staff. Chronologically, the new hires include myself (research/teaching; meat quality, 1999), Dr. Mark Richards (research/teaching; lipid/pigment oxidation, poultry, 2001), Dr. Jeff Sindelar (state meat extension specialist, 2007), Robby Weyker (meat lab manager, 2011), and

Seth Schulz (new outreach specialist position, 2012). Our core remains strong with Dr. Marion Greaser, Ron Russell, and Laura Trumble. A special thanks to Seth for being instrumental in launching this first newsletter. To gain more visibility to the meat science program, Bucky's Butchery was developed as our retail outlet which you'll learn more about later. For the most part, structurally MBL has remained the same except for some drastically needed refrigeration repairs in 2009, including 'air conditioning' to the fabrication and meat

processing room. The classroom has also been upgraded with an advanced AV system. Many of you likely have heard the most exciting news and that is the positive movement on building a new meat science and muscle biology lab. You'll find more details on this effort in this newsletter. We value your affiliation with MBL and are very much interested in reconnecting with all of our MBL friends. Please do stay in touch.

Current Meat Lab Personnel:

Faculty:

Dr. James Claus, Professor of Meat Science
Dr. Marion Greaser, Professor of Muscle Biology
Dr. Mark Richards, Professor of Muscle Biology
Dr. Jeffrey Sindelar, Extension Meat Specialist
Dr. Andrew Milkowski, Adjunct Professor
Dr. Larry Borchert, Adjunct Professor
Dr. Elton Aberle, Emeritus
Dr. Robert Kauffman, Emeritus

Post Doctorates and Visiting Scientists:

Dr. Eric Grunwald
Dr. Wei Guo
Dr. Birol Kilic
Dr. Sung Ki Lee
Dr. Jing Zhao

Staff:

Ronald Russell, Senior Lecturer
Seth Schulz, Associate Outreach Specialist
Robert Weyker, Meat Laboratory Manager
Laura Trumble, Receptionist

Graduate Students:

Chen Du-M.S. Candidate, Claus
Amanda King- Ph.D. Candidate, Sindelar
Dale Perez-Ph.D. Candidate, Richards
Jonathan Pleitner-Ph.D. Candidate, Greaser
Chris Sawyer-M.S. Candidate, Claus
William Shazer III-M.S. Candidate, Sindelar
Nantawat Tatiyaborworntam-
Ph.D. Candidate, Richards

Graduate Research: Jonathan Pleitner



Jonathan is a Ph.D. candidate under the direction of Dr. Marion Greaser who will be completing his graduate program this Fall. Jonathan began his postgraduate work at UW-Madison in fall of 2007, after obtaining a Bachelor's degree from the Department of Animal Sciences at Purdue University. While at Purdue, he participated in the Muscle Biology laboratory of Dr. Dave Gerrard, focusing on myosin fiber type and muscle growth. At the University of Wisconsin-Madison, Jonathan has been fortunate to work on a

wide variety of research endeavors, including several processed meat projects pertaining to ingredient technology. The main thrust of his Master's degree work was investigating the regulation and localization of multiple proteins within the muscle structure. Jonathan's doctoral research topics are concerned chiefly with human health and disease. Utilizing a model system which allows for an understanding of dilated cardiomyopathy, a lethal cardiac disease, his work has investigated the effects of thyroid hormone levels on alleviating the symptoms of this illness. Jonathan has also been involved with a

hypercholesterolemic pig model study, which can lead to artery blockage and ischemic heart disease. Through a deep understanding of muscle's impact on cardiovascular function, he will be able to improve the treatment options for human patients afflicted with high cholesterol levels. Ultimately, he hopes to obtain a position within the meat industry that allows him to wed his biomedical knowledge with his applied meat science experiences to increase the healthfulness of the American diet.

Meet the Faculty: Jeff Sindelar



Jeff Sindelar is Associate Professor and Extension Meat Specialist in the department of Animal Sciences at the University of Wisconsin-Madison. He received a Bachelor of Science in Animal Science with a meats emphasis from the University of Nebraska-Lincoln in 1999, a Master of Science in Animal Science/Meat Science at Michigan State University in 2002, and

a Doctor of Philosophy in Meat Science at Iowa State University in 2006. In 2007 Jeff joined the Department of Animal Sciences and was promoted as Associate Professor with tenure in Fall of 2012. In this capacity, he provides assistance to meat processors in the areas of product development, problem solving and regulatory compliance. He also coordinates Meat

Science workshops and training programs, and provides involvement and support to youth Meat Science related activities. Jeff also conducts research on quality and sensory characteristics of processed meats, non-meat ingredient functionality in meat products, and intervention strategies to control pathogenic bacteria in meat products.

Plans for New Building

Plans for a New Meat Science and Muscle Biology Laboratory

The current building, as we fondly refer to as MBL, has served us faithfully to build an unmatched legacy in teaching, research, and extension. As you may know, the first portion of the building was built in 1930 and then was expanded two other times with the most recent being completed in 1970. The need to replace MBL with a modern facility was recognized in the late 1990's. In 2001 there was support from then Governor Tommy Thompson to build a new facility, but with his departure to Washington D.C. to serve the Bush Administration and the down turn in the economy, the project was put on hold. In 2009, the Animal Sciences Department formed a Meat Science Advisory Committee charged with the task of evaluating our Meat Science program. This committee's charge was primarily to assess our program and provide advice on how to proceed with developing a plan to build a new facility. However, the committee became so enthused about the effort to build a new facility, they took the initiative to take a lead role in this effort. The initial UW Meat Science Advisory committee was chaired by Chris Salm (Salm Partners) and committee currently consists of ten other members (Kevin Ladwig, Johnson-

ville Sausage; Steve Van Lannen, American Foods Group; Petri Papinaho, Jennie-O Turkey Store; Bill Paulos, Oscar Mayer/Kraft Foods; Jim Peterson, Alkar RapidPak; Tom Hoffmann, Mepaco-Appache Stainless; Steve Campano, Hawkins Inc.; Bob Hanson, Hanson Tech; Gary Underwood, Red Arrow Products Co; and Fritz Usinger, Usinger's Famous Sausage). The current committee is chaired by Kevin Ladwig while Dan Schaefer, Animal Sciences Department Chair serves as the committee's UW representative. The advisory committee has been working closely and extensively with our department, college, and the UW Foundation. The advisory committee helped create an impressive brochure about the UW meat lab initiative which is titled "A Cut Above". The advisory committee was able to secure financial support from Red Arrow which led to the development of a professionally produced promotional video. Both of these items are available on the web (<http://meatandmore.wisc.edu/>) and are a must see. This web site also has a compilation of other information about the building project. The proposed site for the new facility is located on part of the footprint of the current Poultry Research Lab, residing between Observatory and Linden Drive. The new facility will have several modern, well-equipped pilot

laboratories (harvest, fabrication, further processing), a cutting edge demonstration classroom, along with basic research laboratories. A key feature of the new facility will be a biosafety level II microbiology "pathogen" laboratory fully equipped with a wide range of meat processing equipment to study a whole host of food safety challenges from carcass, further processing, and post packaging. Many of you have asked why you had not yet been approached to participate in this exciting effort. The approach to this project has been to make sure the project had significant traction before seeking broader involvement. The first phase of this effort was to reach out to major companies associated with Wisconsin to begin efforts to achieve critical fundraising goals. Our task is to raise \$20 million (roughly half of the total projected cost of \$43 million). To date \$7.5 million of the \$20 million non-state match has been raised. The project has full UW system support and is now in the State of Wisconsin legislative channels with an anticipated positive decision in March of 2013 with subsequent inclusion in the Wisconsin biennial budget. If we achieve our non-state match and if passed by the state and included in the state budget, such a decision to begin construction is to occur in the 2015-2017 biennium with project completion in 2017.

A current Photograph of the University of Wisconsin-Madison, Meat Science and Muscle Biology Laboratory



Master Meat Crafter Training Program



As a result of an idea and collaborative efforts from the University of Wisconsin Meat Science Extension and Wisconsin Department of Agriculture, Trade and Consumer Protection, a unique and one-of-a-kind program called the Master Meat Crafter Program was developed and launched with the first class beginning in spring 2010. The two year program, directed by Jeff Sindelar, requires successfully completing four program elements for graduation and subsequent accreditation as “Master Meat Crafter”. Part 1 includes attending 6 short courses or “Schools” on meat processing topics including “Basic Meat Processing”, “Fresh Meats”, “Food Safety and Meat Microbiology”, “Cooked & Emulsified Sausages”, and “Fermented & Dry

Cured Meat Products” held at the University of Wisconsin-Madison or River Falls campuses. Part 2 requires completion of several homework exercises on various meat science and food safety topics. Part 3 involves developing and successfully completing an in-plant mentorship training program designed to mentor a fellow employee using newly gained knowledge. Part 4 entails developing and conducting an in-plant research project carried out in the participant’s establishment to address a meat science question. The goals of the program are to 1) provide participants with comprehensive knowledge about meat science/meat processing principles, 2) provide development opportunities for the future meat industry leaders, and 3) help ensure the Wisconsin

meat industry remains strong and viable for years to come. As a result of completing this intensive program, graduating participants are awarded status as a Master Meat Crafter. The inaugural class began their 2-year program in the spring of 2010 and 18 successfully completed the course and were awarded accreditation as a “Master Meat Crafter” in January 2012 signifying their skill set and understanding of meat science/meat processing principles warranting their status as a true master of their craft. The second class of 23 candidates began their program January 2012 and will graduate January 2014.

Bucky's Butchery
is open on Friday's
from 11AM-3PM



Bucky's Butchery: Welcome

Bucky's Butchery is a student -employed meat processing facility making up the west end of the MBL building. 14 undergraduate workers currently work with the Meat Lab manager to accomplish everything from animal harvest to processed meat production. Students are able to gain extensive experience in many facets of the meat industry including slaughter, meat cutting and sausage manufacture, while developing and gaining valuable skills regarding food safety, proper sanitation, and sales. Some of

the favorite products we produce are our bacon, specialty smoked sausages, and Bucky's Mini Hams (product of a special breed of pig developed right here at UW). We also carry the classics like pork chops, ribeye steaks, roasts, and can even stock your freezer with beef/pork sides or whole lambs cut to order. Bucky's Butchery's all beef summer sausage is featured in gift boxes found at the Babcock Dairy Store. We produce a wide variety of products while keeping in mind our

primary function; serving the goals of the department's teaching, research and extension activities. The Meat Lab is utilized by many researchers in the Department of Animal Sciences, and serves as a pilot plant for several companies in the meat industry. Our facility is utilized to investigate topics such as cutting-edge processing techniques, use of functional ingredients, product development and improvement, and animal and human nutrition.

2012 Reciprocal Meat Conference

The warmth of summer brings excitement for Meat Science conferences; a chance to re-unite with UW alumni, friends in the Meat Science community and even some friendly competitions in various activities with other universities. On June 15, faculty, staff and students headed northward for the flat prairie of Fargo, ND for the 2012 Reciprocal Meat Conference (RMC) hosted by North Dakota State University. On Saturday, five students participated in the Iron Chef meat product development competition. Students were divided into groups with individuals from other schools, and were given a facility with meat processing equipment and an array of ingredients, including a mystery raw material, and advice from professional research and development scientists, to create a new meat product. Meat products developed were then introduced to and voted on by RMC attendees at the welcome reception Sunday night. On Monday, Ph. D. candidates Jonathan Pleit-

ner (Greaser) and Amanda King (Sindelar) presented research posters for discussion. Dale Perez (Richards) entered a poster in a Ph. D. poster competition and placed third with his poster titled "The Ability of Dietary Vitamin E (Natural vs. Synthetic) to Deposit in Tissues and Inhibit Lipid Oxidation in Muscle from Turkeys, Chickens and Ducks". Claire Ohman (B.S., Dairy Science and currently pursuing and M.S. in the University of Missouri) presented two posters in the undergraduate division. On Monday night 2 UW teams presented their 'Ethnic themed' Taste of RMC product development projects which were developed at each team's representative University. UW team members Amanda King, Jonathan Pleitner, Dale Perez and Chen Du (M.S., Meat Science) developed a 'Badger Game Day Breakfast' with red peppers; based off 'old world' German sausage, Weisswurst, served on a pretzel bun with brown mustard. Team members Bill Shazer (M.S., Meat Science), Kenneth

Brandenberg (Ph.D., Comparative Biomedical Sciences), Adam Bartling (B.S., Food Science), and Kyriaki Chatzikyrikidou (Ph.D, Food Science) developed a 'Mediterranean (Lamb) Sausage' served on pita chips with lettuce, tomato, and tzatziki sauce. Tuesday night wrapped up the conference with the awards banquet. Dr. Andrew Milkowski, UW Adjunct Professor, received the Signal Service Award; given to members in recognition of their devoted service and lasting contributions to the meat industry. UW Alumni Lauren Sammel (Ph.D. Meat Science, 2004) of Kraft Foods/Oscar Mayer received the AMSA Achievement Award, recognizing her scientific skill in muscle foods research and technology. Martha Cassens of Sara Lee Corporation, daughter of UW Professor Robert Cassens, received the Meat Processing Award, recognizing her outstanding ability as a researcher and specialist in meat processing. Congratulations to all who participated in the 2012 RMC conference!

Class in Session: Meat Science 515

Taught this fall semester, Animal Science 515, Commercial Meat Processing is instructed by Dr. Jim Claus and Dr. Andrew Milkowski. This comprehensive meat processing course continues to prepare the next generation for rewarding leadership careers in the meat industry. 515 emphasizes the fundamental principles of chemistry, biochemistry, physics, microbiology, and food science. In this course, students are strengthening their knowledge on concepts of

chemical and physical properties of meat and non-meat ingredients, formulations of various processed meats, government regulations, understanding of basic meat processing principles and thermal processing. In class laboratories, students are involved in hands on manufacture of a variety of processed meats such as hot dogs, bacon, ham, fermented sausages, liver sausage, bratwursts, marinated meats, and breaded and battered nuggets, to name a few.





UW

Meat Science

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Fall Featured Special: Bucky's Butchery Mini Hams are one of a kind! Bred, raised and processed by UW students! Come get your half or whole Mini Ham today! Only \$3.75/lb.

Bucky's Butchery Specials:

Mini Hams \$3.75/lb

Baby Back Ribs \$5/lb

Mushroom Swiss Brats \$3.50/lb

Jalapeño Cheddar Sausage \$3.50/lb

Bacon \$4/lb

Lamb Loin and Rib Chops \$10/lb

Lamb Brats \$6.50/lb

Beef T-bones \$9.50/lb

NY Strip Loin Steak \$9/lb

2012 Basic HACCP Training Program Recap

While conversing with any meat processor, food vendor or restaurant owner/operator, simply mention the acronym 'HACCP' and instantaneously, you may observe an adverse reaction noted by frustration and even agitation. However, this is no longer the case for the 63 participants who successfully completed the 2012 Basic HACCP Training program held annually at the University of Wisconsin-Madison Animal Sciences Building. This program which is accredited by the International HACCP Alliance is coordinated by Dr. Jeff Sindelar with presentations and break out discussions by the Wisconsin Department of Agriculture, Trade and Consumer Protection and additional contributions by Professor Emeritus of Food Science from UW River Falls, Dr.

Purnendu C. Vasavada. On day 1, presentations included a HACCP Overview, FSIS Regulations on HACCP Implementation, Prerequisite Programs, Biological Hazards, and Chemical & Physical Hazards. The afternoon resumed with a video on the Heart of HACCP and hands on group development activities of Product Descriptions, Product Ingredients, and Process Flow Diagrams. Discussions and demonstrations continued with Hazard Analysis and Identifying Critical Control Points as well as Critical Limits, Monitoring and Corrective Actions. On day two, the course continued with presentations and group activities covering HACCP Plan Validation and Verification, Record Keeping, and Verification. That afternoon,

participants completed their HACCP Examination, signifying they were trained in and fully understood the seven principles of HACCP. Final discussions of program included HACCP Plan Reassessment, Microbial Sampling Programs, and Recalls.



Recognition of High Achievement

Dr. Marion Greaser Nature Medicine



As a tremendous recognition of scientific contributions, Dr. Greaser and his colleagues were recently published in the journal *Nature Medicine*. To demonstrate how prestigious this journal is, most outstanding scientists in the country will likely never be able to have their work published in this journal in their career. This journal has the highest impact factor of all journals making it the highest-cited research journal. Dr. Greaser contributed to the research that dealt with “RBM20, a gene for hereditary cardiomyopathy, regulates titin splicing”.

Dr. James R. Claus Promoted to Professor

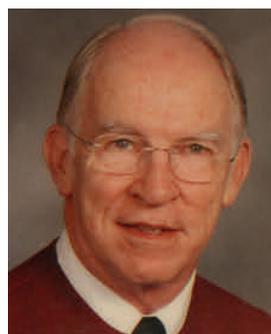


As a result of Jim’s excellence in research and instruction, he was promoted from an Associate Professor to a full Professor in July. His research focus is on various quality attributes of fresh and processed meats, with significant emphasis on meat color and meat tenderness. His research has led to discoveries in the mechanisms associated with the uncooked appearance (pink defect) in uncured fully cooked turkey

light meat. Recent effort underway has involved studying temperature abused and compromised carbon monoxide package condition effects on pathogen levels and color in inoculated ground beef, extending the bright red color of beef in frozen display utilizing nitrite-embedded film, and color reversion in cooked ground beef patties. Exciting new efforts have started on sodium reduction in processed meats and controlling lipid

oxidation using encapsulated phosphates. On the tenderness side, Jim has made significant contributions to a hydrodynamic shock wave system that he anticipates will be commercially implemented in the meat industry sometime next year. In addition to teaching Ansci 515, Jim serves as the course coordinator and one of the main instructors for Ansci 305 (Introduction to Meat Science and Technology).

Dr. Robert Kauffman WALSAA Honor



Recently, Dr. Robert Kauffman was honored by the Wisconsin Agricultural and Life Sciences Alumni Association (WALSAA). This honor goes to those individuals who have made a difference not only for WALSAA, CALS and the Farm and Industry Short Course, but also farms, classrooms, laboratories, businesses and other organizations in Wisconsin. Dr. Kauffman helped create and coordinate the national Meat-Animal Evaluation Contest, now in its 50th year. He also, organized and helped develop the Animal Sciences Academic Quadrathlon which has existed for 35 years and is conducted in some 60 Universities. From the beginning of WALSAA Fire Up programs in 1975, he has organized the Ambassadors, an old-time band, to entertain the guests. Recipients of this award are nominated by their peers and are examples of the many individuals inside and outside of the university who have made a difference and contributed in significant ways not only in the past but also toward shaping the future. Dr. Kauffman and 39 other honorees were recognized on September 15 as part of WALSAA’s Football Fire-Up event. Congratulations Dr. Kauffman and thank you for your long lasting contributions!

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Alumni/Friends/Emeriti in the News

Take a look at <http://grow.cals.wisc.edu/> to read a little about former MBL alumni and friends James Lochner, Mark Kreul, Christopher Salm, and Steven Van Lannen. When you access the site type in “meat” in the search box and then under The Grow Dozen: Meat industry, click on the Tag “Meat Industry”.

Also be sure to check out the Wisconsin Meat Industry Hall of Fame from the Departmental homepage (<http://www.ansci.wisc.edu/>) to read about some extraordinary individuals.

Keep us up to date on your contact information, promotions and career changes! Please email us at MBLNews@ansci.edu.



Greetings,

We hope you have enjoyed the Fall issue of the University of Wisconsin-Madison, Meat and Muscle Biology Laboratory: *Meat Science Quarterly*. Since we do not have record of your current email address, you have received this mailed copy. In an effort to reduce newsletter copying and mailing costs, we would prefer to deliver future newsletters to you electronically via email. If you would be agreeable to this please send us your current email address to MBLNews@ansci.wisc.edu.

Sincerely,

MBL Faculty and Staff