



DEPARTMENT OF
ANIMAL &
AVIAN SCIENCES

FALL 2017





American Association for the Advancement of Science Announces Dr. Iqbal Hamza as a 2017 Fellow

Dr. Iqbal Hamza has been named a Fellow of the American Association for the Advancement of Science (AAAS). He was elected for groundbreaking discoveries and distinguished contributions on the biochemical and cell biology mechanisms underlying heme and iron trafficking and their regulation.

Anemia affects more than a quarter of the global human population. Iron deficiency is the most common cause of anemia, making the study of iron metabolism a field with a large public health footprint. By understanding the mechanisms around iron metabolism and heme production and transport,

Dr. Hamza is ultimately working to understand, prevent, and treat anemia caused by iron deficiency, as well as to kill common para-

sites that feed on heme supplies through improved drug development. When Dr. Hamza joined the University of Maryland in 2002 and was asked what he wanted out of his career, he said, “I want to be able to look back and say I solved a major scientific problem in an imaginative and creative way. That is how I started studying heme and iron metabolism,” explained Dr. Hamza. “So little was known about the mechanisms, and I wanted to tackle a challenging problem head on.”

To address this issue, Dr. Hamza started studying these processes in bloodless worms called *Caenorhabditis elegans*. “These microscopic worms don’t make their own heme, but they need it to survive and are a great genetic model to study anemia. They are also transparent, making it easy to observe transport processes in an actual living organism,” said Dr. Hamza.

He currently has grants from the National Institutes of Health which include studying mutations in humans with defects in heme transport, how organs communicate with one another to signal when they need heme, how parasites steal heme from hosts, how to block parasites with pharmaceuticals to improve human and animal health, and how to develop sensors to track iron and heme movement in living cells and tissues. “Being a AAAS Fellow is a great honor to me because it essentially tells me that my peers and colleagues appreciate the science we are doing here,” said Dr. Hamza. “To me, science is about exploration and adding to a new body of knowledge. I feel like a kid in a candy shop. I’m so excited coming to work each day because I just don’t know what I’m going to discover.” This year’s AAAS Fellows will be awarded on February 17, 2018 at the AAAS Annual Meeting in Austin, Texas.



Shelley Sandmaier.

TRIENNIAL REPRODUCTION SYMPOSIUM POSTER AWARD WINNER

Shelley Sandmaier, graduate student in the Telugu lab, was recognized as a poster winner for her poster entitled, “Investigating the role of PRDM14 in the porcine germ cell program” at the Triennial Reproduction Symposium held on July 13th in Washington, DC.

This symposium was a joint meeting of the Society for the Study of Reproduction (SSR) and the American Society of Animal Science (ASAS) that was held in honor of SSR’s 50th anniversary. The Triennial Reproduction Symposium is focused on large animal/domestic livestock reproduction.



Dr. Kathleen Hartman.

ALUM KATHLEEN (HUGHES) HARTMAN IN THE NEWS

A former graduate student in Dr. Joe Soares laboratory, Kathleen (Hughes) Hartman is now a national leader in the field of aquaculture. Dr. Hartman is the Aquaculture Program Leader for USDA/APHIS Veterinary Services and was featured in an article in “Fish Farming News.”

Dr. Hartman received her MS from the University of Maryland and both her DVM and Ph.D. from Virginia Tech. She has served two consecutive terms on both the AVMA’s Food Safety Advisory Committee and the Aquatic Veterinary Medicine Committee. Dr. Hartman is a current member of the World Aquaculture Society (WAS) and Past President of the U.S. Aquaculture Society.



Dr. Stephanie Lansing speaking to the dairy field day attendees.

DAIRY FIELD DAY

The University of Maryland Department of Animal Sciences had their second annual Dairy Field Day and Tour at the Central Maryland Research and Education Center Wednesday, October 18, 2017. The focus was on the environmental and nutrient management programs and research currently taking place at the facility including manure management, cover crops and antibiotics in manure waste.

Speakers included Rich Erdman, Stephanie Lansing, Gary Felton, Robert Kratochvil, Jeff Selmer and Curt Gooch (Cornell University). The Field Day was an overwhelming success with increased attendance and industry participation.

All educational resources, including presentations, can be found at: ansc.umd.edu/extension/dairy-extension/dairy-field-day-cmrec/field-day-resources



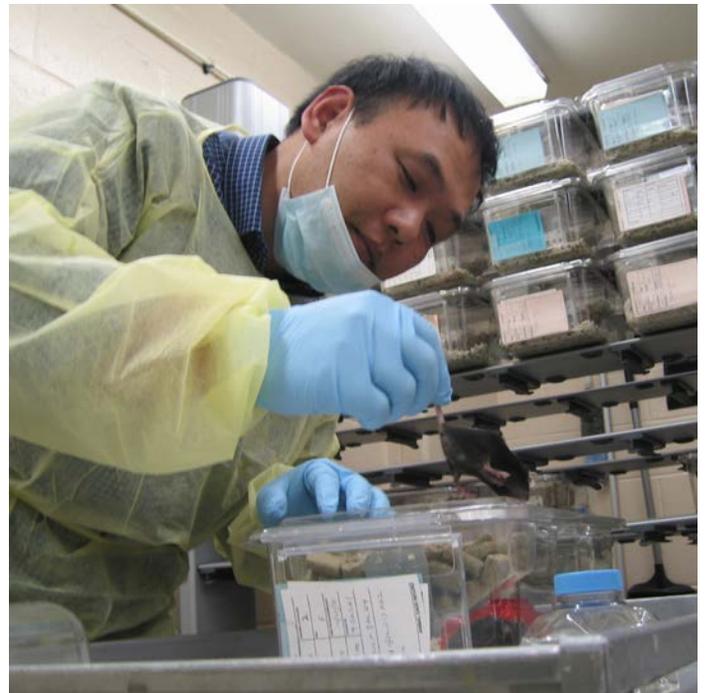
Dr. Kim Receives \$1.39 Million in New Funding to Improve Animal and Human Health

Most people think of copper as a metal used for pipes, wires, or old pennies. But it is also an essential nutrient needed for normal organ functioning, growth, and development in humans and other animals.

When copper levels are either too low or too high, it can cause several diseases. The heart is especially sensitive to copper levels, and sudden cardiac arrest is the leading cause of natural death in the United States. To study this issue and fight the numerous diseases and health issues caused by low or high copper levels, Dr. Byung-Eun Kim has been awarded a prestigious grant from the National Institutes of Health for \$1.39 million.

Dr. Kim's groundbreaking work in the field of copper signaling and regulation identified a mechanism by which tissues within the body communicate with one another to try to correct imbalances in tissue copper concentrations. In this new project, Dr. Kim will explore this communication pathway and the molecules responsible. Most people are familiar with insulin and how it relates to diabetes. Insulin is a molecule that signals and regulates glucose levels. In this case, Dr. Kim identified a candidate molecule that can be functionally equivalent to insulin, but instead of regulating glucose, it regulates copper levels in your system. Without the discovery of insulin, diabetics would have no treatment for their illness. This discovery for copper consequently has huge health implications for many forms of disease, and certainly for heart attacks.

With this new grant, Dr. Kim will be examining what happens to the body under stressful conditions when this communication pathway breaks down. The heart needs large amounts of copper, and it needs even more when you are physically active, exercising, or putting stress on your body. Understanding this communication pathway and the copper transport system has huge implications to both animal and human health. Through this work, Dr. Kim hopes learn how to treat copper related heart diseases through the development of medications and techniques to address low or high copper levels in the body.



Dr. Tom Porter Awarded a \$500K Grant from National Institute of Food and Agriculture



Dr. Tom Porter has been awarded a five hundred thousand dollar grant from the National Institute of Food and Agriculture for his grant proposal titled “Mitigation of heat stress in broiler chickens through early-life thermal conditioning.”

Heat stress in chickens can occur in the summer, when temperatures often exceed 95°F in the regions of the United States where most broiler chickens are raised. Notable effects of heat stress on broiler production include increased death of chickens in the flock and reduced feed intake and growth by the birds that survive. In addition to the financial costs, heat stress in commercial poultry operations represents a serious issue of animal well-being. Thermal conditioning using temporarily elevated brooding temperatures during early development imparts long-term resistance to heat stress in broiler chickens, so that they can survive and grow at higher temperatures during a heat wave.

However, the underlying mechanisms of early-life thermal conditioning are unknown. In this project, Dr. Porter and his colleagues in the Department of Animal and Avian Sciences and at North Carolina State University will perform a comprehensive physiological analysis of the effects of heat stress, with and without prior thermal conditioning, across multiple tissues that are likely to play a role in the bird’s metabolic and stress responses to heat stress. This project will provide new information on body temperature regulation required to develop future strategies for improving the well-being of poultry, while sustaining or improving broiler meat production during summer heat waves.



Dr. Tom Porter and Dr. Laura Ellestad Awardees a \$500K Grant from National Institute of Food and Agriculture

Dr. Tom Porter and Dr. Laura Ellestad have been awarded a five hundred thousand dollar grant from the National Institute of Food and Agriculture for their grant proposal titled “Mechanisms affecting posthatch growth following embryonic induction of growth hormone in broiler chickens.”

In this project, Dr. Porter and Dr. Ellestad will define the mechanisms regulating the chicken’s production of its own growth hormone and the effects of its own growth hormone on meat production and feed efficiency in broiler chickens. Their specific objectives are to (1) characterize effects of premature growth hormone production resulting from corticosterone injection into the incubating eggs on the growth performance of broiler chickens, (2) determine the effect of corticosterone injection on metabolic indicators, hormone levels, and gene expression in broiler chickens, and (3) identify key mechanisms within the growth hormone system of chickens. Completion of this research will lead to the identification of new information that can be used in breeding programs and the poultry industry to produce more food for the growing world’s population. This award marks 24 years of funding from the United States Department of Agriculture for Dr. Porter’s research into the hormonal control of growth in broiler chickens.

RESEARCH

Dr. Sunny Awarded \$1.86 Million R01 Grant

Dr. Nishanth Sunny has been awarded a \$1.86 million grant from the National Institute of Diabetes & Digestive & Kidney Diseases, NIH (NIDDK/NIH) for his R01 grant proposal entitled, “Metabolic Origins of Nonalcoholic Steatohepatitis.”

Nonalcoholic steatohepatitis, also referred to as nonalcoholic fatty liver disease (NAFLD), is a serious public health concern which affects over 70% of obese people and people with type 2 diabetes. Mitochondrial dysfunction is central to the etiology and progression of NAFLD. Alterations in mitochondrial metabolism can promote inflammation, which is thought to be critical for the development of NAFLD.



In this project, Dr. Sunny and his collaborators will probe for novel mechanisms through which dysfunctional mitochondrial oxidative metabolism promotes inflammation, oxidative stress and progression of nonalcoholic fatty liver disease (NAFLD). Through these studies, they expect to identify key strategies to reduce oxidative stress and inflammation during NAFLD, specifically by attenuating dysfunctional mitochondrial oxidative flux.

While these strategies are expected to lead to better treatments for NAFLD and type 2 diabetes mellitus, they are also expected to provide insight into these same processes that lead to fatty liver disease in domestic animals. This project clearly addresses the goals of the College of Agriculture and Natural Resources’ new “One Health Strategic Initiative” by creating fundamental knowledge that is needed in order to develop strategies to improve both human and animal health.



Chaitra Surugihalli



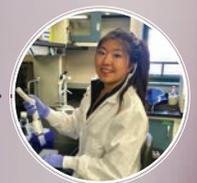
Sambhu Pillai, Ph.D.



Meghan Maguire, Ph.D.



Annette Folgueras



Jennifer Zhang



The winners: Zhengguo Xiao, Amy Burk, Kasey Moyes, Carol Keefer, Byung Kim, John Song, Janice Barber, Francine Vercese, Victoria Pearlman and Monica VanKlompberg.

ANNUAL EVENT

Faculty & Staff Cookoff 2017

The Annual Faculty/Staff Cookoff was held on September 14 in the concourse and had 19 cooks pitted against each other for prize ribbons and four trophies for Best of Dairy, Pork, Poultry, and Beef – new this year. Many students came out to get a taste of the delicious entries and use their marbles to vote for their favorites. Here are the winners:

The Main Dish:

- ▶ 1st place: Pigs on the Pasture - Byung Kim
- ▶ 2nd place: It's Not My Birthday But My Food's Homemade - Monica VanKlompberg
- ▶ 3rd place: Apple Harvest Chicken - Janice Barber

Side Dish:

- ▶ 1st place: Cheesy Bacon Corn Dip! - Victoria Lake Pearlman
- ▶ 2nd place: First class food in a village somewhere in the world - Cranberry chicken dip - Zhengguo Xiao
- ▶ 3rd place: Coxinha - Francine Vercese

Dessert:

- ▶ 1st place: Chocolate Lasagna - Kasey Moyes
- ▶ 2nd place: Fearless Dessert Bars - Amy Burk
- ▶ 3rd place: Very Dairy Berry Cheesecake Trifle - Carol Keefer

Winners of the Best of Categories:

- ▶ Dairy: Amy Burk
- ▶ Pork: Victoria Lake Pearlman
- ▶ Poultry: Zhengguo Xiao
- ▶ Beef: Chad Stahl



1 Chad Stahl serving Great Eggspectations

2 Voting with marbles

3 Kasey Moyes and her Chocolate Lasagna

4 Francine Vercese and Fernanda Laranjeira

5 Keefer's Very dairy berry cheesecake trifle

6 Laranjeira's Brigadeiro

7 Crowd of tasters

8 Bob Peters serving Slow Cooker Vegetarian Chili





NICKOLAS G. ZIMMERMANN, Ph.D. (1950-2017)

Dr. Nick Zimmermann, retired Associate Professor and Poultry Specialist, passed away on September 29 after many years battling a brain tumor. Dr. Zimmermann earned his B.S. in 1972 and MS. in 1975 from the University Wisconsin, Madison and was awarded a joint Ph.D. in poultry science and veterinary science from UW in 1981.

From 1994–2002 he worked at the Lower Eastern Shore Research & Education Center in Princess Anne, Maryland as a Broiler Extension Specialist at the rank of Associate Professor in the Department of Animal and Avian Sciences of the University of Maryland. In 2002, he came to the College Park campus as a Poultry Specialist in the department and taught Avian Physiology, Animal Food Safety and Processing, and Commercial Poultry Management.

Dr. Zimmermann was a member of the Poultry Science Association since 1973, and served as Secretary–Treasurer from

2006–2009. He published over 50 manuscripts and abstracts in Poultry Science or Journal of Applied Poultry Research (JAPR).

Dr. Zimmermann provided leadership for the Mid-Atlantic Nutrition Conference and was the treasurer for the Maryland Feed Industry Council. He was active in many Delmarva Poultry Industry activities including the annual Chicken Festival and the Delmarva Poultry Conference. He served as the Superintendent of the Maryland 4-H Poultry Judging Contest and was active in the Small Flock Owner Educational Program.

A member of American Poultry Historical Society since 1995, he served on the Board of Directors (1997–2005) and as president (2004–2006) and received the American Poultry Historical Society Award in 2010.