

30 July 2023

# CALS Office of Research & Discovery

*“The most productive tool for generating good ideas remains a circle of humans at a table, talking shop.”*

- Steven Johnson  
*Where Good Ideas Come From*



DALL-E prompt  
"impressionist light bulb with legs  
walks into an office"

#### Who does what:

- Darwin Campbell  
Data Analyst
- Ásrún Kristmundsdóttir  
Research Development Lead
  - Kendra Lee  
AES Project Coordinator
  - Seth Wilmes  
CARES Project Coordinator

## Where do ideas come from?

I walk away from about half the meetings I attend with a new idea to support and grow the CALS research enterprise. Are they my ideas? Someone else's? Usually, those new ideas emerge in conversation – they're collaborative.

What are some of the great ideas we've turned into research supports?

- **Creating CATS: the CALS Academy for Team Science**  
Three teams are funded to bring their team science to the next level! Click the link above to check out who's on each funded team. Hint: the PI's are Thomas Lübberstedt, Matt O'Neal, and Irene Jacqz.
- **Sending researchers to visit Program Directors in DC and KC**  
Is there a federal granting agency's program director you want to have lunch with? Use the link to request to meet them on their own turf.
- **Simplifying Ag Experiment Station reporting**  
Need help initiating or reporting on a project so you have access to all the supports offered by the Office of Research and Discovery? Email [aes\\_research@iastate.edu](mailto:aes_research@iastate.edu) to set up a time to meet and work together.
- **Sharing how ISU works through your department's CAPER**  
Are you wondering what your department's CAPER has learned over the last two years? Ask them! Hopefully they're already sharing useful tidbits.
- **Offering support through the CALS For Researchers webpage**  
Who does what? How can I get travel funds? What new opportunities are open?
- **Sharing stories about what it takes to land a big grant or project**  
The linked article describing Melha Mellata's research (next page) is the second in a series Ann Robinson created to highlight CALS researchers and their journeys to finding funding and enlightenment. To every success, there's a backstory.

## What's next?

Soon CALS will have a person on staff to help with formatting and sharing research datasets. I know exactly where that idea came from: it's one Lisa Schulte-Moore walked in with.

Another good idea? Curt Youngs suggested standing office hours. Want to meet up? [Reserve a time](#) for coffee with me!

What ideas will you share for improving research support in CALS?

**Carolyn Lawrence-Dill**  
Associate Dean  
Research & Discovery

## Researcher aims to increase food safety through poultry gut health

June 14th, 2023

By Ann Y. Robinson, with excerpts from [Innovation for safer food](#) by Rachel Cramer, ISU News Service. *This article is the second in a series of articles highlighting CALS researchers and their journeys to funding and enlightenment. To every success, there's a back story. Read the [first article about research by Joshua Selsby](#), professor of animal science.*



Melha Mellata, associate professor of molecular microbiology. Photo by Chris Gannon, Iowa State University.

Around 48 million people in the U.S. get sick each year from foodborne pathogens, according to the U.S. Centers for Disease Control and Prevention. The CDC estimates one of the top culprits, salmonella (non-typhoidal) bacteria, causes 26,500 hospitalizations and 420 deaths annually. Nearly a quarter of the 1.3 million human infections each year are attributed to poultry, according to the U.S. Department of Agriculture.

Melha Mellata, associate professor of molecular microbiology at Iowa State University, is on a mission to develop new treatments and procedures to improve poultry health and mitigate bacterial infections, such as salmonella, in poultry and humans.

That's a big deal for Iowa, the top egg-producing state. Mellata emphasizes the U.S. has one of the safest food supplies in the world. But with certain bacteria becoming resistant to antibiotics, it's getting harder and more expensive to battle bacterial infections.

## **Supporting gut health to fight infection**

She wants to support the gut health of chickens and other livestock to reduce the chances for pathogens to ever become established. “If we can reduce bacteria-like salmonella at the source, we will have healthier, more productive animals and spend less money trying to remove pathogens from the food at the end of the supply chain.”

Mellata has been awarded a \$635,000 competitive grant from the USDA National Institute for Food and Agriculture’s Animal Health program to support this research for the next four years. Her project was recognized as an outstanding proposal by the program.

With the federal support, Mellata and her team aim to develop a probiotic with several key, beneficial microbes. One they have identified is segmented filamentous bacteria, considered a keystone bacterium that plays a major beneficial role in shaping a healthy gut in the early life of chickens.

Traditionally, SFB is transferred from hens to chicks shortly after they hatch, Mellata said. However, in most commercial poultry operations today, chicks hatch in incubators, away from their mothers.

The researchers found chicks inoculated with SFB shortly after hatching were able to fight salmonella infections much better over time compared to those not inoculated. Specifically, SFB in the gut microbiota triggered the production of T-cells and antimicrobials that attack salmonella.

“Through my work in Dr. Mellata’s lab, I have gained a deep appreciation for the importance of poultry health as it relates to the well-being of both animals and humans,” said Jared Meinen-Jochum, doctoral student in food science and human nutrition. “I am excited to continue working on this project. This USDA funding will greatly impact our ability to generate more data by using new tools that are now going to be accessible.”

With a pending patent through the ISU Research Foundation, the researchers want to turn their discovery into a commercial probiotic. They envision a powder that can be sprinkled onto food or mixed with water for chicks within the first 24 hours of hatching. This would be an easy and inexpensive solution for producers, according to Mellata.

“As a poultry producer, we are committed to ensuring safe products and providing excellent care for our flocks,” said Craig Rowles, CEO of Iowa Cage Free. “To achieve this goal, we are closely collaborating with scientists, like Dr. Mellata, who can bring new knowledge and solutions to problems that face the industry.”

## **Funding success has taken years**

Generating strong data to support a proposal like this has taken years and many attempts in the search for significant funding.

Mellata believes her competitiveness has been boosted by working at Iowa State, a recognized research institution with significant resources to study animals. They have also depended on services like those available through the Office of Biotechnology core facilities.

She also credits support from strong private partnerships from companies interested in the project's potential, including KENT Corporation and Iowa Cage Free Operations at Versova Management Company, LLC.

In addition to support from KENT, important help came from a USDA NIFA predoctoral fellowship for graduate student assistance.

"I've had to be creative," Mellata said. "But the importance of what we are doing has motivated me and my teams to keep working. We've been encouraged by interest in our findings from scientific journals. Those publications were important to help demonstrate the value of our data and make us competitive for this larger USDA project."

As a woman in a male-dominated field, Mellata believes she has had to work harder at times to prove her work is serious. "This has sometimes been a big challenge," she said. "Now I see myself and many other women colleagues overcoming long-standing, gender-related obstacles to succeed in research. It's very rewarding -- and not to be taken for granted."

Carolyn Lawrence-Dill, associate dean for research and discovery in the College of Agriculture and Life Sciences calls Mellata a model scientist others look up to. "Melha has such an indomitable spirit! Her research has important potential to develop solutions that keep our food system safe and people healthy."