

FRI eNews provides updates on research and events at FRI and UW-Madison and other current food safety news.

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Food Safety News

Highly pathogenic avian influenza (HPAI) H5N1 virus continues to be an important topic in the news.

- **H5N1 continues to be found in more U.S. dairy herds:**

- As of May 28, 67 dairy herds in nine states have tested positive for HPAI.
- No Canadian dairy herds have yet tested positive for HPAI.
- Nearly all (11/12) environmental samples collected from a dairy with an infected herd tested positive for the virus by PCR testing.



- **No viable H5N1 was found in 297 U.S. retail dairy samples** from 17 states, representing processing locations in 38 states. No viral fragments have been found in Canadian milk samples.

- **UW-Madison scientists (including FRI affiliate member Keith Poulsen, with pasteurization testing led by virologist Yoshihiro Kawaoka)** collaborated with Texas A&M researchers to demonstrate in laboratory scale experiments that **time/temperature combinations used for milk pasteurization greatly reduce viable virus** levels in milk that harbors live virus.

- 63°C for 5 to 30 minutes reduced virus titers to undetectable levels.
- 72°C for 15 to 20 seconds reduced virus titers by >4.5 logs.



- While these data continue to build upon other evidence that **pasteurized milk is safe, consumption of raw milk** (in addition to other food safety risks) has some potential to lead to H5N1 infection. Perhaps paradoxically, **the demand for raw milk has increased 21–65%** in recent weeks.

- **H5N1 in beef is being investigated by USDA:**

- H5N1 virus particles were identified (by PCR, which does not differentiate between



and condemned dairy cows (which do not enter the food supply).

- Testing of **retail ground beef** has not identified the presence of H5N1 in any samples to date.
- **Cooking to 145 or 160°F** was sufficient to eliminate high levels of H5N1 present in the ground beef.

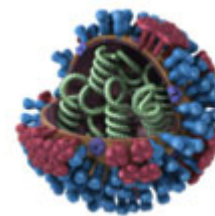
- **Two more U.S farmworkers (both in Michigan but on different farms) have been infected with H5N1**, bringing the total number of human cases in the U.S. this year to three.

- One of the new cases had very mild symptoms consistent with an eye infection and has since recovered.
- Unlike the first two farmworkers, the latest farmworker infected with H5N1 also had respiratory symptoms.
- The Wisconsin Cheese Makers Association has reported that CDC confirmed its recommendation that “anyone working with confirmed affected or potentially affected raw milk — **which means all raw milk** — **wear personal protective equipment (PPE)**. This includes dairy haulers and dairy processing personnel involved in raw milk handling.”
- Anecdotal reports of additional human cases in farmworkers have led some experts to believe there are more human cases than are being reported due to the relatively mild symptoms in humans but also because of barriers (including lack of significant incentives and individual risks) to testing for farmworkers.



- **Genomic analysis of the virus is continuing on many fronts and revealing new details.**

- Sequencing work suggests that the H5N1 virus strain affecting cows likely jumped from an infected wild bird to a cow, possibly late in 2023.
- The virus is acquiring genomic changes that make it better at replicating in mammals but is still believed to be “a long way from being able to transmit easily to and between humans.”
- Wastewater surveillance testing in Texas cities found H5N1 virus present in 19 of 23 monitored sites (representing 9 of 10 cities). Levels of the virus were in some cases as high as levels observed for seasonal influenza.



- **Numerous U.S. government initiatives have been announced to reduce the impact and spread of H5N1:**

- USDA announced it will provide financial support to dairy producers for biosecurity efforts, certain costs associated with H5N1 testing, and for loss of milk production.
- USDA also issued a request for information from companies with the ability to develop and produce H5N1 vaccines in cows. The pros and cons of such a vaccine are discussed here.
- The U.S. Department of Health & Human Services announced new funding investments through CDC and FDA totaling \$101 million to mitigate the risk of



Other U.S outbreaks and food safety warnings have been in the news, including the following:

- At least 141 people have been sickened in a ***Salmonella* Africana** (a very rare serovar) outbreak that has not yet been associated with a specific food.
- **An *E. coli* O157:H7 outbreak linked to organic walnuts** has sickened at least 12 individuals in **California and Washington**, with seven hospitalizations reported. Almost all of the 10 cases interviewed reported buying organic walnuts from **bulk bins in food co-ops or natural food stores**. The organic walnuts were traced to Gibson Farms, Inc. of Hollister, Calif., which issued a voluntary recall and contacted distributors and retailers in 19 states who had received their walnuts.
- **A *Salmonella* outbreak associated with fresh organic basil** (marketed in clamshell packaging by Infinite Herbs brand and Melissa's brand) sickened 12 individuals (one requiring hospitalization) in seven states, with distribution of the product occurring in numerous other states. The product has been recalled, is past its shelf life, and should no longer be available for sale.
- **A new *Listeria monocytogenes* outbreak of unknown origin was identified** recently, with two cases so far. FDA has initiated a traceback investigation.
- **FDA issued a warning to consumers to stop using Apricot Power apricot seed products** and to contact their health care provider immediately. Apricot seeds contain **amygdalin, a cyanogenic glycoside that can result in the production of cyanide** in the body and cause cyanide poisoning. No illnesses appear to have been associated with the product, but a state lab found concerning amygdalin levels in these products. Amygdalin and its notorious derivative, **laetrile**, have been promoted as alternative cancer treatments. However, clinical studies have not demonstrated any efficacy (but can result in serious cyanide toxicity). Apricot Power has declined several FDA requests to voluntarily recall the products, which is still available for sale online.



FRI News

FRI welcomes **Sara Gragg** as our **newest affiliated faculty member!** Sara is an associate professor in the department of animal and dairy sciences, part of the Meat Science and Animal Biologics Discovery program. Among her research goals are the following:

- Identifying and validating **post-harvest interventions to prevent and/or reduce the presence of *Salmonella*** or other foodborne pathogens in **meat products**.
- Describing the **pre-harvest transmission of foodborne pathogens in food animals**, including the relationship between the pathogen, the animal host, and the environment.



- **Identifying and validating pre-harvest interventions** to reduce foodborne pathogens in live animals.

You can hear **Sara Gragg**, along with FRI executive committee members **Jeff Sindelar** and **Kristin Schill** and others, by attending **The Meat Institute's Regional Event** on June 12 at the University of Wisconsin-Madison's Meat Science and Animal Biologics Discovery Building. For more information and to register, go [here](#).

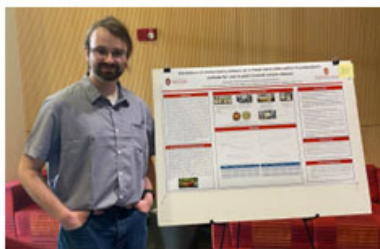


Thank you to everyone who attended last month's FRI Annual Spring Meeting! Pictured to the left is FRI associate director **Kathy Glass** presenting **Don Schaffner** the **2024 Frazier Award** for his outstanding contributions to food microbiology. **Save the date for next year's meeting, May 20–21, 2025.**

Congratulations to the recipients of the student awards presented at the FRI Spring Meeting!

- **Calvin Slaughter**, mentored by FRI's **Kristin Schill** and **Kathy Glass**, received the **John H. Nelson Undergraduate Research Award** for his project, "Thermal inactivation of *Salmonella* in plant-based process cheese as a function of pH and water activity." **Calvin also received the Gale Prince IAFP Travel award.**
- **Justin Eagan**, mentored by FRI's **Nancy Keller**, received the **Schreiber Foods Graduate Scholarship.**
- **Jessica Brown**, mentored by **Steve Ricke**, received the **Food Research Institute Graduate Research Award, sponsored by Sargento Foods**, for her work on "Qualitative and quantitative *Salmonella* biomapping of commercial pork harvest facilities."
- **Billy Erazo**, mentored by FRI's **Laura Knoll**, received the **Robert H. and Carol L. Deibel Distinguished Graduate Fellowship in Food Safety Research.**
- **Mark Heggen**, mentored by FRI's **JP van Pijkeren**, received the **Robert H. and Carol L. Deibel Distinguished Graduate Fellowship in Probiotic Research.**

Congratulations are also due to FRI Applied Food Safety undergraduate researchers and 2024 UW-Madison graduates (from left to right below): **Calvin Slaughter** (B. S. in food science), **Christopher Sailing** (B.S. in microbiology), and **Jakob Gryniewski** (B.S. in biochemistry and B.S in microbiology).



Registration will open June 4 for the biennial Food Safety and Meat Microbiology School, which will be held Aug. 13–15. The short course, **co-led by FRI and the Meat Science &**



design, thermal processing, and ingredients/new technologies. Several hands-on and small group microbiology lab exercises and interactive demonstrations are also scheduled. For more information, see [here](#).

Government & Regulatory News

The National Advisory Committee on Microbiological Criteria for Foods (which includes FRI's **Kristin Schill**) will meet on June 24 from 1 to 3 p.m. ET to provide updates on the **Genomics** and ***Cronobacter* spp. in powdered infant formula** charges. You can attend virtually by [pre-registering by June 19](#).

Following the [~400 adverse event reports](#) in 2022 associated with consumption of **Daily Harvest's meat analog** that contained **tara flour**, FDA [conducted a post-market assessment](#) of tara flour and concluded that it does not meet the Generally Recognized As Safe (GRAS) standard and is therefore an **unapproved food additive**.

Current Literature



What happens to the thermotolerance of a desiccation-stressed bacteria (such as *E. coli* O157:H7 present on a food contact surface) when it cross contaminates a food (such as a ground beef hamburger), and how can you estimate its survival kinetics in that food? [A new study](#) found that the thermostability of desiccation-stressed *E. coli* O157:H7 did not increase in the hamburger; in fact, at higher temperatures (60°C), the desiccation-stressed bacteria were less resistant to heat than were unstressed bacteria. A **predictive model** was also developed that very accurately predicted the kinetic behavior of cross-contaminated *E. coli* O157:H7 in hamburger.

Should the presence of ANY level of ANY serotype of *Salmonella* in chicken be considered a high risk (and considered an adulterant)? [A new risk assessment](#) using recent USDA sampling and survey data concluded that >99.0% of illnesses were attributed to the 0.4% of chicken products that contained high (>10 CFU/g) levels of *Salmonella*. The analysis found that even greater proportions of risk were due to high levels of **high-virulence serotypes**. The researchers concluded that **only limited benefit would be derived from trying to control of low virulence serotypes**, and that more benefit to public health would be achieved by focusing on high-virulence serotypes when they are present in high levels in chicken.



How much does the way you choose to conduct your data analysis affect the outcome of a nutritional epidemiology study? What happens if you analyze the data in every conceivable (but justifiable) way (or a large, random sample of these ways)? [A recently published study](#) did just this, using different analytical models, covariates, etc. that had previously been used in

published studies investigating the relationship between unprocessed red meat

demonstrated statistical significance; or these analyses, 40 indicated unprocessed red meat reduced mortality and eight suggested increased mortality.

It sounds like a joke (and in fact, the idea won an Ig Nobel Prize last year), but the Japanese company **Kirin Holdings** is marketing an “electric salt spoon” that makes food taste saltier, thus makes reduced sodium foods tastier. The spoon passes a weak electric field from the spoon to **concentrate sodium ions on the tongue**, enhancing the perception of saltiness for the user.



UW-Madison and Wisconsin News

The UW-Madison Food Safety Extension’s **Shelf Stability Predictor and THERM2.0 tools are again available** for industry, regulators, and academics to use in support of decision-making regarding food safety of meat products. The tools are also available through the Food Safety @ UW website. Summaries that support **research-based Critical Limits at CCPs** are also available:

- Raw Products Critical Limits Table for Meat and Poultry Products
- Shelf Stability of Fully-Cooked RTE Meat Products
- Critical Limit Summary for Whole Muscle Beef Jerky



It’s June Dairy Month! You can check here to find dates and **locations of dairy breakfasts** (there is one in each county of the state) and other events celebrating dairy products occurring around Wisconsin here.

The application deadline for the **Wisconsin Association for Food Protection’s Student Scholarships** is **June 30**.



Upcoming training opportunities on the UW-Madison campus in the coming months include the following:

- Wisconsin Meat Processing School, Sept. 17–19 at MSABD
- New Technologies Short Course: Thermal Processing will take place October 22–25 at MSABD.

The **Center for Dairy Research** and the **UW-Madison food science department** have several short courses now open for registration, with more opening up this summer:

- Buttermaking (June 18–20)
- Candy School (July 22–Aug. 2, waitlisted)

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