

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

[View this email in your browser](#)



FRI News

FRESH seminars are continuing! These seminars will be on Tuesdays at 11 a.m. and will be held online (webinar links can be found [here](#)).

- Nov. 12: **Byron Brehm-Stecher** (Iowa State) will present “**Food safety applications of magnetic liquids.**”



Tu Anh Huynh, an FRI affiliate member and assistant professor in the department of food science has been appointed as the **Fritz Friday Chair in Vegetable Processing Research**, an appointment that includes research support for five years. Congratulations, Tu Anh!

Megan Dixon (recipient of FRI's **2023 Schreiber Foods Graduate scholarship, 2022 Deibel Distinguished Graduate**

Fellowship in Food Safety, and 2024 PhD recipient) and FRI executive committee member **Jeri Barak** and UW-Madison colleagues published a new report providing evidence that **high humidity promotes the survival of enteric pathogens such as *Salmonella* in crops such as leafy greens through humidity's role in promoting plant pathogen disease.** While higher humidity did not impact *Salmonella* survival in healthy plants, it facilitated (and was necessary for) *Salmonella* growth in plants infected with a plant pathogen. The disease associated with the plant pathogen allows *Salmonella* to enter the plant where it is protected from solar UV irradiation. *Salmonella* growth occurs when disease caused by the plant pathogen progresses to a point where nutrients within the plant are liberated (something *Salmonella* by itself cannot do) and thus available to *Salmonella*. Importantly, this work (which was featured recently in [Newsweek](#) and [WebMD](#)) demonstrated **the relationship between heat and humidity with *Salmonella* and plant pathogens suggests that climate change could increase the survival of the enteric pathogen in crop fields and *Salmonella* contamination in raw produce.**



In a new podcast, FRI affiliate **Steve Ricke** explains some of the



inflammation. Listen [here](#).

FRI Applied Food Safety Lab researchers **McKenna Mahnke, Max Golden, Brandon Wanless, and Melissa Bohn**, led by FRI research assistant professor **Kristin Schill**,

FRI associate director **Kathy Glass**, FRI executive committee member **Jeff Sindelar**, FRI affiliate member **Steve Ricke**, MSABD lab manager **Cindy Austin**, and Cargill's **Subash Shrestha** have recently published open-access papers investigating **growth inhibition of *Clostridium perfringens* during extended cooling** of cooked meat products. The research, funded by the Foundation for Meat and Poultry Research and Education and/or FRI, shows the effect pH, salt and clean-label antimicrobials, with applications not only to large-diameter meats but also to other foods that may utilize slow cooling.



- [Inhibition of *Clostridium perfringens* in high-moisture, uncured turkey products by vinegar-based clean-label ingredients during extended cooling](#)
- [Comparison of growth inhibition of *Clostridium perfringens*, *Clostridium botulinum*, and *Bacillus cereus* during extended cooling of uncured poultry](#)
- [Inhibition of *Clostridium perfringens* and *Bacillus cereus* by dry vinegar and cultured sugar vinegar during extended cooling of uncured beef and poultry products](#)

If you are in the Madison area, make plans to hear **FRI outreach coordinator Adam Borger** speak about food microbiology at **Badgers on Tap** at 7 p.m. on Oct. 18 at Delta Beer Lab in Fitchburg, Wisc.

Save the dates for these upcoming meetings in spring 2025:

- March 25–26: **FRI's Better Process Cheese School** in Madison, Wisc.
- April 29–30: IAFNS/IFSH/FRI meeting on **Innovations in Cleaning and Sanitation for Low-moisture Foods** in Arden Hills, Minn.
- May 20–21: **FRI Annual Spring Meeting** in Madison, Wisc.

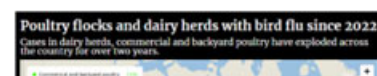
Food Safety News



Highly pathogenic avian influenza (HPAI) H5N1 clade 2.3.4.4b genotype B3.13 in cows and milk continues to be an important topic in the news.

What is the current status (as of Oct. 1) of the outbreak in dairy herds and domestic poultry flocks?

• **At least 44 dairy herds in California have now tested positive for H5N1** (up



across 14 states (up from 196 herds in 14 states last month). FRI affiliate member (and director of the Wisconsin Veterinary Diagnostic lab) **Keith Poulsen** reports that infected herds have been hit hard, with **cows sick, dying, and also aborting in large numbers**.

- Many of the new infected herds in California have close connections to or are located close to dairy herds with confirmed infections.
- A cool animation on the Investigate Midwest website by John McCracken plots **H5N1 outbreaks in poultry and dairy cattle in the U.S. over time** during the last two years.



What about human infections with avian influenza?

- **One human avian influenza H5N1 infection was reported in Missouri** last month.
- This infection was confirmed by CDC, bringing the number of **human H5 cases reported in the U.S. this year to a total of 14**.
- The individual, who is the first U.S. case with **no known exposure to potentially infected animals**, has now recovered.
 - The case was identified by **routine influenza surveillance**.
 - The individual also reported no contact with any unpasteurized dairy products, leaving the source of the infection unknown.
 - **Genetic testing** (which was limited due to low amounts of genetic material) suggests the virus that infected the patient is part of the 2.3.4.4b clade and is closely related to the virus infecting cows. **No mutations that suggest an increased risk of human-to-human transmission were identified**.
 - This person also had an unspecified **pre-existing medical condition** and was reported to have “**unusual symptoms**” (chest pain, nausea, vomiting, diarrhea, and weakness) and required hospitalization (unlike the other 13 human cases this year).
 - **One household contact of the patient developed symptoms similar to those of the index patient** on the same day as the patient. The household contact was not tested and has since recovered.
 - **At least 18 health care workers were exposed to this hospitalized individual, including at least six individuals who developed mild respiratory symptoms**. One of the workers with symptoms tested negative for influenza. The other exposed workers were either not tested or their results are still pending.
- **Missouri has had no dairy herds test positive for the virus**, but it has been found in commercial and backyard flocks and in wild birds in that state.



New regulatory agency initiatives related to HPAI have also been announced in the past month:

- On Sept. 29, FDA and USDA sent letters to dairy



H5N1 monitoring programs and emphasized the agencies' confidence that **pasteurization is effective at inactivating H5N1 in raw milk.**



- FDA's Center for Veterinary Medicine announced establishment of four **Animal and Veterinary Innovation Centers** which will receive funding to advance regulatory science and development of products and approaches to better support animal health and veterinary interventions.
 - One of the three areas of concentration for these centers is HPAI.
 - The University of Wisconsin-Madison is one of the four designated centers and will explore the **development of genome-edited chickens to reduce susceptibility to H5N1.**
- Additional work that FDA is doing, in collaboration with research partners, includes investigations into **thermal inactivation kinetics in fluid milk, viral inactivation in aged raw-milk cheeses, and practical disposal methods for raw milk waste (at UW-Madison).**

Other H5N1 news:

- For a deep dive into H5N1's rapid spread among birds; its spread into other animals, including dairy cattle; evidence of **mammal-to-mammal transmission**; and assessment of various zoonotic pathways that could lead to an H5N1 pandemic (including **worries of spillover from cattle to swine**, which has played a role in other pandemics), read this new review published in Nature.
- For some insight into **how the pork industry and its partners are stepping up surveillance of swine for influenza A viruses such as H5N1**, read here.
- Another new article in Nature investigates susceptibility of cows and calves to infection by different routes and concludes that **"milk and milking procedures, rather than respiratory spread, is the primary route of H5N1 transmission between cattle."**



A new **Salmonella Enteritidis** outbreak was identified last month and linked to eggs supplied by Milo's Poultry Farms, LLC of Bonduel, Wisc. Three clusters of cases associated with restaurants led Wisconsin Department of Health Services (DHS) to this source. As of FDA's and CDC's latest updates on Sept. 6, at least 65 people in nine states have

been sickened, with 24 requiring hospitalization. However, Wisconsin DHS reports that as of Sept. 26, Wisconsin alone has at least 57 confirmed cases linked to this outbreak. The company voluntarily recalled all eggs supplied by the farm, which are also marketed under "Tony's Fresh Market" brand.

Two new cases (and hospitalizations) and one new death were added within the past month to the **Listeria monocytogenes outbreak linked to Boar's Head brand deli-sliced meats**, leading to a total of 59 people in 19 states sickened as of Sept 25. **Fifty-nine required hospitalization and 10 deaths were reported, with more cases possible given the long shelf-life of the product and the sometimes lengthy time (up to 10 weeks) between infection and symptoms.**

that the agency's testing of the facility in late July identified *L. monocytogenes* contamination of a **pallet jack used to move racks of product around in a post-lethality processing environment**. The isolate closely matched the outbreak strain.

- The outbreak and the lengthy list of alarming USDA inspection findings in the year prior to the outbreak **has led lawmakers to propose changes at USDA** to prevent future outbreaks and to hold Boar's Head fully accountable for its responsibility in the outbreak.

- Boar's Head is already making changes, including closing the Jarratt facility where the problems originated and forming an expert food safety council. The company is also permanently discontinuing production of liverwurst, with the company stating that its investigation identified a specific production process only used at the Jarratt facility and only used for liverwurst as the root cause of the outbreak.



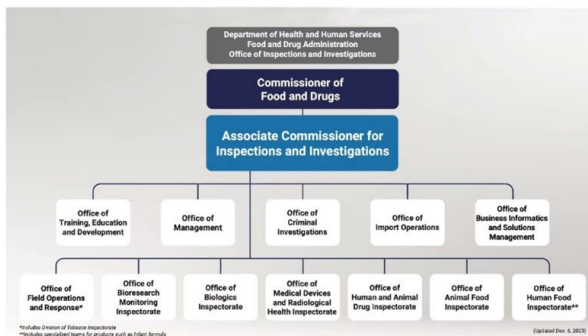
More severe illnesses have been associated with consumption of Diamond Shroomz brand chocolate bars, cones, and gummies which are marketed as containing a proprietary blend of mushrooms. There are now at least 175 illnesses associated with these products, including **70 hospitalizations and three potentially associated deaths**.

As of Oct. 3, FDA is investigating several ongoing outbreaks for which **food sources have not yet been identified**:

- An ***E. coli* O157:H7** outbreak has sickened 27 people.
- A ***L. monocytogenes*** outbreak has reported four cases.
- A ***Salmonella* Newport outbreak** has sickened at least seven people.
- Two ongoing ***Cyclospora cayetanensis*** outbreaks have sickened 46 and 60 people.
- An ongoing ***Salmonella* Typhimurium** outbreak has sickened at least 90 people.



Government & Regulatory News



As of Oct. 1, the long-planned **FDA reorganization to establish a unified human foods program has officially begun**. What does this mean? Among other things: **a unified human foods program**, restructuring of the field operations, increased importance for nutrition, stronger state partnerships, better utilization of new technology of new technology, **greater enforcement of FSMA**, more

scrutiny of foreign supply chains, **more thorough inspections**, and more. Read [here](#), [here](#), and [here](#).

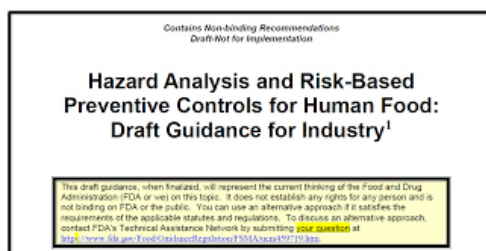
would classify certain poultry products contaminated with certain levels and certain serotypes of *Salmonella* as **adulterated**, is due to close on Nov. 7; however, **both the poultry industry and consumer interest groups are asking for the comment period to be extended by six months** to allow for more opportunity for meaningful discussion of potential changes.



The **European Food Safety Authority (EFSA)** has published updated guidelines for **how to prepare and submit applications to market novel foods in the EU**.

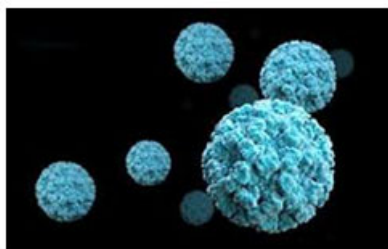
The new guidelines include more details regarding scientific requirements, production processes, and proposed uses. The document covers both food ingredients and cell culture-derived foods. The goal of these guidelines is to allow applications to be reviewed within nine months.

Current Literature



Although **very small and small food processing businesses are exempt** from some of the requirements in **FSMA's Preventive Controls for Human Foods (PCHF) Rule**, such companies are actively encouraged to follow all the standards. **How much does this actually cost such a company to fully implement PCHF?** A new study from the University of Massachusetts Amherst found that **initial costs average ~\$20,000 per business, with ongoing costs of about \$8,000 per year**.

A new study assessed the **microbiological quality of plant-based meat and dairy analogs available in England**. Of 937 products tested, 92% were of satisfactory quality. Those found to be unsatisfactory had elevated levels of Enterobacteriaceae and *E. coli*, not pathogens, although a few samples (of tofu, vegan "beef," and vegan "chicken" products) were found to **have *Listeria monocytogenes* present** at levels <100 CFU/g. **The pH and water activities of the products were also measured, with 62% having a pH >5.0 and 82% having water activity levels >0.94, suggesting that microbial growth in the foods could occur.**



Two new articles discuss **antiviral activities associated with natural components/extracts of foods and essential oils**. Many of these components (such as **grape seed extract and green tea extract**) have substantial efficacy *in vitro* against enteric viruses, but there is a need for more research demonstrating efficacy and practicality for specific food applications of these agents (such as an antiviral coating for berries, sanitizers for produce, etc.).

many food components (proteins, fats, etc.) may promote changes (generally a decrease) of antimicrobial activity, new (not yet fully developed) technologies that might overcome such problems are also discussed.

Other News



You can watch a new **CBS documentary on ultra-processed foods** ([described by IFT](#) as being “fairly balanced”) [here](#).

One of this year’s **Ig Nobel** prizes went to **Saul Justin Newman** at University College London Centre for Longitudinal Studies, [who has debunked](#) the “**Blue Zone diet**.” The Blue Zone diet recommends following the

dietary patterns (**very heavily plant-based**) consumed by those in the so-called “blue zones (those regions of the world where remarkable numbers of people reportedly live to more than 100 years). Newman’s work has shown that **the longevity data underlying the diet’s premise has serious flaws: Many of those reported to be centenarians were actually dead, missing, or “essentially pension fraud cases.”**



Both **PFAS** and **microplastics** were reviewed recently in relatively reader-friendly articles in high-profile publications, with a [20-year retrospective on research on microplastics](#) in the journal *Science* and a [investigative report on PFAS contamination of farm land](#) in the New York Times.

UW-Madison and Wisconsin News



UW-Madison was recently [named](#) a Center of Excellence in PFAS Environmental Science. The new center (which will be led by a recent FRI FRESH speaker, **Dr. Christy Remucal**) will be housed at the UW [Water Science and Engineering Lab](#) (WSEL), where students and scientists from around the state and across academic disciplines research chemical contaminants in water and throughout the environment. Funding for the center will allow the purchase of a **dedicated high-resolution mass spectrometer to greatly expand the scope of PFAS work.**

UW-Madison’s football team may not be at the top of the NCAAF college power rankings, **but at least our ice cream store is #1!** Read or listen [here](#) for the details.



Wisconsin’s 11th annual Great Apple Crunch will be Thursday, Oct. 10 this year! Eat an apple that day and register your apple consumption [here](#) to be included in the official count. Last year’s tally was 144,661 apples. The event is sponsored

The **Wisconsin Lab Association Fall Conference** will be held Oct. 29–30 in La Crosse, Wisc. For more information, including the agenda, please see [here](#).



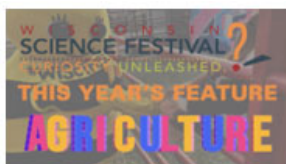
UW-Madison’s Meat Science and Animal Biologics Discovery Extension is looking for an outreach specialist to join their group. For more information about the position and how to apply, go [here](#).

Join us for the 3rd Annual
**WISCONSIN
 ANIMAL & MEAT INDUSTRY
 COALITION CONFERENCE**
"A Unified Voice for the Wisconsin Animal & Meat Industries"
October 17 – 18, 2024
The Pyle Center, Madison, WI

Join us to hear from industry leaders about applicable and relevant topics impacting *your* business, including environmental, safety and labor issues, understanding your customer, product innovation, and supply chain challenges.

Thursday evening, we will celebrate the past year’s successes and accomplishments of Wisconsin’s meat industry, culminating with the Wisconsin Meat Industry Hall of Fame induction ceremony!

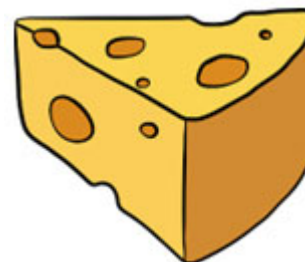
Look for conference and registration details in future communications



The **2024 Wisconsin Science Festival**, to be held Oct. 14–20, will focus on **agriculture** this year. Events will be held throughout the state, and a full list of events can be found on the [Wisconsin Science Festival website](#).

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

- [Preventive Controls Qualified Individual \(PCQI\) training course](#) (Nov. 6–8), hosted by CDR
- [Advanced Cheesemaking Artisan Varieties](#) (Oct. 22–24); hosted by CDR
- [New Meat Technologies Short Course: Thermal Processing](#) (Oct. 22–24); hosted by **MSABD**



[Subscribe](#)

[Past Issues](#)

[Translate](#) ▼

receive future FRI e-newsletters!



Website



LinkedIn



Facebook



Instagram

Copyright © 2024 Food Research Institute, University of Wisconsin–Madison, All rights reserved.

[unsubscribe from this list](#) [update subscription preferences](#)

