

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

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FRI News

FRESH seminars are continuing! These seminars will be on Tuesdays at 11 a.m.

- Nov. 12: **Byron Brehm-Stecher** (Iowa State) will present “**Food safety applications of magnetic liquids.**” This seminar will be held both in person (in room 205 Babcock Hall) and as a [webinar](#).

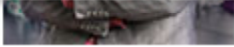


FRI welcomes its newest affiliate member, Dr. **Zifan Wan**. Dr. Wan is an assistant professor of animal, dairy, and veterinary sciences at the **University of Wisconsin-Platteville** and an affiliate of the **Dairy Innovation Hub**. Her research program focuses on the application of **nonthermal technologies (including cold plasma)** for **enhanced food safety and quality**.

Past FRI Schreiber Foods Scholarship recipient **Dasol Choi**, former FRI Foster Fellowship awardee **Ahmad Alshannaq**, former FRI summer scholar **Yohan Bok**, and FRI executive committee member **Jae-Hyuk Yu** [recently published work](#) characterizing the **broad-spectrum antimicrobial activities of a food fermentate of *Aspergillus oryzae***. Besides demonstrating **activity against foodborne pathogens and spoilage fungi**, the study found that the **natural antimicrobial product (named “NP”)** works against microorganisms by disrupting cell membranes, and in fungi, by disrupting membranes and associated metabolic pathways. Importantly, **NP is thermally stable and shows minimal *in vitro* cytotoxicity at relevant dose levels**, holding promise for addressing foodborne illnesses and drug-resistant infections through the development and widespread application of a new generation of food-grade antimicrobials. *(Photo by Michael P. King, CALS)*



Using bioengineered bacteria to produce and deliver therapeutics in the body has tremendous potential. However, a significant concern with using such organisms is their potential to **colonize the host**, making it impossible to ever shut off delivery of



mutations in nine (known and putative) adhesins (bacterial molecules that allow bacteria to attach to a host). In collaboration with FRI executive committee member **Laura Knoll** and her lab, they showed that the “**nonuple**” mutant had **reduced adhesion ability** to enteroid epithelial cells compared to the wild-type strain. However, ***in vivo* therapeutic efficacy of the “nonuple” mutant** was comparable to the wild-type strain.



Registration is now open for the **IAFP Challenge Study Workshop**, to be held April 2–3, 2025 at the Hilton Garden Inn - O'Hare Airport. FRI executive committee member **Kristin Schill** along with the Kaitlyn Casulli (University of Georgia) and Ann Charles Vegdahl (Cornell) will teach this course.

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.

A new **FRI brief** on the **contamination of potatoes with spore-forming pathogens (*Clostridium botulinum*, *C. perfringens*, and *Bacillus cereus*)** is now available on the FRI website to **FRI sponsors**. Email Lindsey Jahn at lindsey.jahn@wisc.edu for login information.



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.

More human cases have occurred in the U.S., with CDC now reporting 41 human cases of bird flu this year:

- At least **six states have now reported human cases of bird flu** this year (see table).
- All human cases except one (the case in Missouri discussed in last month's eNews) had exposure to cattle and poultry.
- More details on the Missouri case were released by CDC, with CDC reporting that person-to-person transmission has not been identified and concluding that the current public health risk is still low.
- CDC continues to monitor avian influenza in wastewater as part of its influenza surveillance program. For the week ending Oct. 26, 2024, six

Confirmed human case summary during the 2024 outbreak, by state and exposure source				
Exposure Source				
State	Cattle	Poultry	Unknown	State Total
California	17	0	0	17
Colorado	1	9	0	10
Michigan	2	0	0	2
Missouri	0	0	1	1
Texas	1	0	0	1
Washington	0	9	0	9
Jurisdiction Pending	0	1	0	1
Source Total	21	19	1	41



H5 sites were in California (five sites) and Idaho (one site).



- A study led by UW-Madison virologist **Yoshihiro Kawaoka** published in October demonstrated that a **human isolate of bovine H5N1 could be transmitted to ferrets**. Despite causing only mild disease in the human patient, the isolate was lethal to mice and to ferrets. Importantly, ferrets were able to transmit the disease to sentinel animals. The viral strain of the isolate contained a mutation that has been shown to cause severe disease; however, the strain containing this particular mutation seems to have died out and is no longer circulating.

More cases of HPAI in dairy cattle have been reported in the past month:

- As of Nov. 4, 403 U.S. herds have been infected, of which 160 cases were reported in the last 30 days. All of the new cases were in California, Utah, and Idaho.
- **These outbreaks are resulting in many sick and dying cows (with reported mortalities up to 15%)**. For example, at one dairy farm in Ohio that was affected in April, 777 cows affected. Of these, 53 died and 245 were culled. Older cows and lactating cows are more likely to be affected (per Elisha Frye, Cornell, Multidisciplinary Working Group Meeting on Oct. 24).
- **In Colorado, the mandatory testing and quarantine of lactating herds has demonstrated remarkable success**. As of the last testing period in early October, all herds were negative, down from ~75% of herds at peak. (per Maggie Baldwin, Multidisciplinary Working Group Meeting on Oct. 24).
- **California now has had 203 dairies with H5N1 outbreaks**. New efforts have now begun in California to halt the spread of bird flu in cattle within that state.
- USDA announced on Oct. 30 that they will **enhance testing and monitoring for H5N1**, emphasizing that **biosecurity is the best weapon against the spread of H5N1**. More details are expected to be announced soon.



The first U.S. H5N1 pig infection has now been reported:

- The concern of the virus moving to pigs, which was mentioned in last month's eNews, is discussed in some detail here and here. These concerns have led to **increased surveillance of other animals at farms where bird flu has been found** in birds or cattle.
- This first U.S. H5N1 infection in a pig occurred at a backyard farm in Oregon that was experiencing an H5N1 outbreak in poultry. **The pig did not show symptoms of infection**, but did test positive via a nasal swab test. More detailed test results on this pig (and other pigs at the farm which may have also been infected) are pending. It is anticipated that **the strain infecting the pig is not the H5N1 strain circulating in dairy cattle**, but rather a new strain introduced from waterfowl in the Pacific flyway.



Understanding the prevalence and potential pathogenicity of avian influenza within milk and dairy products continues to be a hot topic:

understand the **prevalence of H5N1 in bulk Grade A raw cow's milk received by processing facilities across the U.S.** This double-blinded study is designed for data-gathering purposes only, with **no intent or means of traceback or trace forward.**

- **A new study**, this one from Canadian researchers, has again examined the effectiveness of pasteurization of H5N1 virus in raw whole milk. Consistent with other studies, **standard vat pasteurization at 63°C for 30 minutes “guarantees virus inactivation and food safety.”** Pasteurization at 72°C for 15 seconds achieved viral inactivation in seven of eight replicates. In the final replicate, a 4.44 log reduction (~1 log greater than the average viral quantities detected in bulk milk in affected areas) was obtained.



In other food safety news:

An *E. coli* O157:H7 outbreak linked to slivered onions served on McDonald's Quarter Pounder burgers has sickened at least 90 people from 13 states.

- Of the 83 individuals for whom information is available, 27 required hospitalization and two developed hemolytic uremic syndrome (HUS).
- One individual (who was not one of those with HUS) has died.
- The beef patties were ruled out as a cause of the outbreak.
- In connection with this recall, Taylor Farms initiated a voluntary recall of some yellow onions and contacted food service customers who were impacted.
- McDonald's in some locations have stopped using slivered onions; diced onions were not part of this outbreak and are still being used.



In October, FDA reported **four other new outbreaks currently active and under investigation. Food sources for these outbreaks have not yet been identified:**

- *E. coli* O26:H11 (nine cases)
- *Listeria monocytogenes* (four cases)
- *Salmonella* Thompson (27 cases)
- *Salmonella* Liverpool (three cases)



Repercussions from the ***Listeria monocytogenes* outbreak associated with Boar's Head processed meats** manufactured at its Jarratt, Va., continue:

- The case count (which CDC has not updated since last month) stands at 59 cases (all of whom required hospitalization) and 10 deaths.
- **Sell-by dates have passed** for affected products.
- At least six wrongful death and personal injury **lawsuits have been filed**.
- USDA **is investigating** its own internal operations, given the many food safety and sanitation violations itemized in its inspections of the facility in recent years.



- **Boar's Head closed the Jarratt facility and discontinued production of liverwurst. It has also appointed a food safety council, with Frank Yiannis servng as interim Chief Food Safety Officer.**

Another processed meat recall, this one fortunately not associated to date with any illnesses, occurred in October.

- BrucePac recalled almost 12 million pounds of ready-to-eat meat and poultry products due to possible *Listeria* contamination.
- The recall was issued after RTE chicken tested positive for *L. monocytogenes*.
- Recalled products were produced in Durant, Okla., from May 31 through Oct. 8, 2024.
- **Some of the recalled products had been distributed to schools** (but were not part of USDA's National School Lunch and Breakfast Programs). **The distribution list for the recalled products is more than 400 pages long.**



The food vehicle behind a ***Staphylococcus aureus* outbreak** at a Maryland company that **sickened 46 employees** is believed to be a homemade noodle dish that an employee brought and shared with coworkers. At least 26 of those sickened were treated at a local hospital, but all have now recovered. Helicopter footage taken after the event shows numerous employees of the company sitting at picnic tables with their heads down. (Photo by pulaw)

Government & Regulatory News



FDA's Human Foods Program **announced its priority deliverables for the 2025 fiscal year**. Activities focus on three main areas: **microbiological safety, food chemical safety, and nutrition**. Among its ambitious plans: implementing FDA's Food Traceability Final Rule, issuing final guidance for the Produce Safety Rule, new public outbreak reports, combatting HPAI, strengthening pre-market review of food and color additives/food

contact substances/GRAS substances; issuing a draft guidance on preventive controls specific to chemicals hazards, improved understanding of PFAS exposure, updating FDA's definition of "healthy," and much more.

FDA published its Supplement to the 2022 Food Code.

Among the changes in this supplement are new provisions related to **disinfection of food contact, non-food-contact, and equipment surfaces**; clarifying when containers can be refilled/reused in a food establishment, and **updating testing requirements to reinstate employees** diagnosed with STEC, *Shigella*, or nontyphoidal *Salmonella* to include **culture-independent diagnostic tests**.



USDA FSIS will host two virtual public meetings on Dec.

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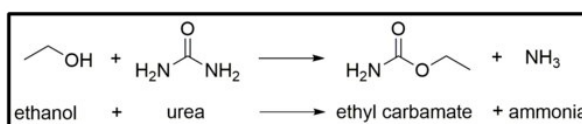
regarding the [Salmonella Framework for Raw Poultry Products proposed rule.](#)



A prolonged outbreak of *L. monocytogenes* in **Switzerland** that sickened at least 34 individuals (and led to seven deaths) was tracked to persistent contamination of a production line at a factory that produced **baker's yeast**. The baker's yeast products were sold in retail establishments and also supplied to the food industry. While the manufacturer had identified *L. monocytogenes* in yeast product samples several years ago, the fact that yeast products were not

considered to be ready-to-eat foods did not require such findings to be reported. However, (as has been shown with dough products in the U.S. that have led to *Salmonella* and *E. coli* outbreaks), **contaminated raw dough is sometimes consumed or can result in cross-contamination** in a home or food facility.

Ethyl carbamate (EC) is a group 2A carcinogen commonly found in **fermented foods, particularly alcoholic beverages such as wine and beer**. EC is formed in alcoholic



beverages when carbamyl compounds (such as urea, which is generated by yeast during fermentation) comes in contact with ethanol. Various methods can be used to reduce EC levels in foods, although these methods increase production costs, can alter product sensory characteristics, or may introduce other undesirable agents (heavy metals or GMO yeast) into food products. A new study found that a common plant (*Polygonum hydropiper*, a member of the **smartweed family** also known as water pepper) that is used in **Chinese rice wine (Huangjiu)** production, can help reduce EC levels by >300%. Water pepper (or its flavonoid-rich extract) enhances the presence of *Bacillus subtilis* in Huangjiu fermentations. *B. subtilis*, in turn, **interacts with *S. cerevisiae* to upregulate genes that increase urea uptake and metabolism**.



A new report investigated the **prevalence and serovars of *Salmonella*** in **lymph nodes** collected from **culled dairy cattle** obtained from **different U.S. geographic regions** during **different seasons** and with **different food additive status (specifically, the use of a postbiotic *S. cerevisiae* product)**. While feed additive status did not affect the probability of isolating *Salmonella*, the geographic region and the season did have an effect. **A higher prevalence of *Salmonella***

(20.3%) was observed in the southwest U.S. region vs. the northeast U.S. (7.7%). Across both regions, ***Salmonella* prevalence was 10.6% in summer, 12.8% in fall, 20.0% in winter, and 12.8% in spring**. *Salmonella* concentrations were low, with only one of >2,816 lymph nodes having quantifiable *Salmonella* levels. The **serotypes found most commonly were Montevideo (27.1%), Mbandaka (16.4%), Muenster (14.1%) and Cerro (10.5%)**.

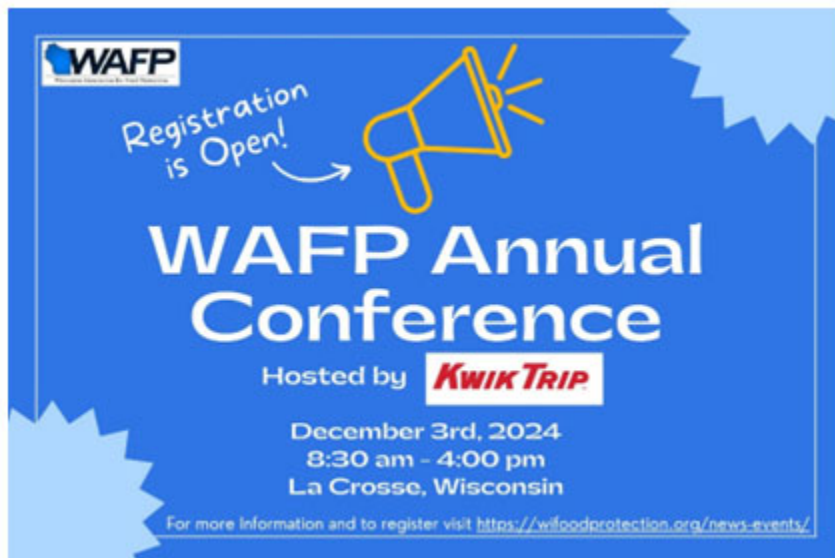
Other News

A free IAFP webinar **on attaining better food safety culture** will be held on Nov. 14, from 12:30 to 1:30 pm ET. For more on **food safety culture**, read this recent story from Food Safety News.





UW-Madison and Wisconsin News



How long is it safe to eat your leftover Halloween candy? UW-Madison food science professor and renowned candy expert Rich Hartel explains it is more about personal choice (how hard can you still stand to eat candy corn or dusty-looking chocolate) than food safety [in this recent news article](#).



Did you know that the D.C. Greenhouse just across the street from FRI's home on the UW-Madison campus has a **hydroponics test facility where tilapia and low-THC cannabis share a symbiotic relationship?** Read more [here](#). (Photo by Keegan Gering, UW-Madison)

In other Wisconsin cannabis-related [news](#), at least **five people (and possibly dozens) were sickened after eating pizza at Famous Yeti's Pizza in Stoughton, Wisc.** The pizzeria ran out of oil while making pizza, so an employee borrowed some food-grade hemp oil from a nearby industrial kitchen. The hemp oil was labeled to note it contained "delta-9" tetrahydrocannabinol (THC), the primary psychoactive component of marijuana, but this was apparently not understood by the employee. **Hemp oil containing delta-9 THC can be legally sold in many U.S. states** (including Wisconsin, where marijuana is not legal) as long as the delta-9 THC contains no more than 0.3% delta-9 THC by dry weight.

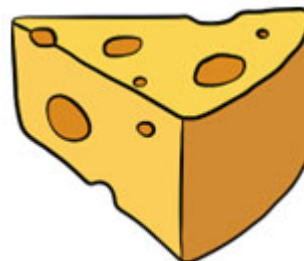


The **2024 Midwest Food Products Association Convention**, which will be held Dec. 3–5 in the Wisconsin Dells, will include a **Listeria workshop** on Dec. 3 (focusing on understanding the

covering a wide range of topics important to water and wastewater operators).

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

- [Successful Ice Cream Retailing](#) (Jan. 13–14, 2025)
- [Batch Freezer Workshop](#) (Jan. 15–17, 2025)
- [Meat Curing School](#) (Jan. 21–23)
- [Meat Snacks Short Course](#) (Feb. 25–27, 2025)
- [Cheesemaking Fundamentals](#) (March 11–12, 2025)
- [Confectionary Technology Course](#) (“Candy School”) (July 21–Aug. 1, 2025) (Registration opens Nov. 14)



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