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 resume this month! These seminars will be on Tuesdays at 11 a.m. and will be held online (webinar links can be found here).

- Sept. 10: **Keith Poulsen** (Director of the Wisconsin Veterinary Diagnostic Lab and FRI affiliate) will present an update on highly pathogenic avian influenza in dairy herds.
- Sept. 24: Matt Stasiewicz (University of Illinois) will present "Academic risk assessments to predict salmonellosis risk from poultry."

FRI executive member **Jeri Barak** has been named **associate dean for academic affairs for the College of Agricultural and Life Sciences, UW-Madison.** The associate dean for academic affairs leads the Office of Academic Affairs and advances high quality, innovative, and productive instructional programs. Congratulations, Jeri!

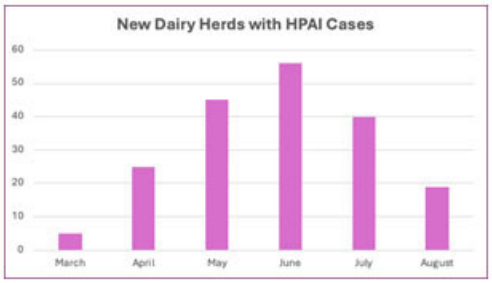
Two former graduate students with FRI executive committee member **Jae-Hyuk Yu**, **Dasol Choi** (2022 Schreiber Foods Scholarship recipient) and **Ahmad Alshannaq** (2017 Foster Fellowship recipient) have published a report on the **safe and effective degradation of aflatoxins** by food-grade culture broth of *Aspergillus oryzae*. *(Photo by Michael P. King, CALS)*

FRI science writer **Wendy Bedale** and FRI executive committee member **Andy Milkowski** will present a webinar sponsored by the **American Meat Science Association** and the **Meat Institute** on Thursday, Sept. 26, at 1 p.m. to discuss the **mechanisms by which certain health effects might be linked to processed meats**. Register here.

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. Importantly, **the rate of new cases in dairy cattle herds is declining, no new human cases have been reported since July, and accumulating evidence consistently indicates that properly cooked beef and pasteurized dairy products are safe for consumers.**

What is the current status (as of Aug. 29) of the outbreak in dairy herds and domestic poultry flocks?



- California Department of Food and Agriculture has reported **that cows at three central California dairy farms have tested positive for HPAI,** with test results confirmed by the National Veterinary Services Laboratory on Aug. 30. **California is now the 14th state** (and the first since June) to have HPAI-infected dairy herds.
- **The rate of new dairy herds being infected has decreased since June.**
- A total 196 herds in 14 states have had confirmed infections.
- No HPAI cases in dairy or other cattle have been reported in **Canada** or other countries as of Aug. 29.
- **HPAI cases in commercial and backyard poultry flocks are also decreasing**, as is typical at this time of year. No cases in commercial poultry flocks have been reported so far in August.

What about HPAI in humans?

- **No new HPAI cases in humans have been reported in the U.S. since July**, per CDC.
- **The number of human HPAI cases in the U.S. this year thus remains at 13 cases** (four in individuals exposed to infected dairy cattle and nine in individuals exposed to infected poultry). To date, more than 4,500 people have been monitored after exposure to infected animals and more than 230 people who developed flu-like symptoms after exposure to infected animals have been tested.
- A joint FAO/WHO/WOAH assessment issued in August considers the **global public health risk of H5N1 viruses to be low.** The **risk of infection for occupationally exposed persons is now low to moderate** depending on the risk mitigation measures in place.
- With input from numerous clinical laboratories (including the **Wisconsin State Laboratory of Hygiene in Madison**), The American Society for Microbiology and the Association of Public Health Laboratories **published a FAQ sheet for clinical**

What about HPAI in foods? Anything new?

- **Dairy foods:**
  - FDA released the results of its **second survey of retail dairy products**, which have also been published in more detail in a preprint. Although 29 of the 167 samples tested were positive for viral RNA, **none contained viable virus** (consistent with earlier survey results). For the first time, this survey also included 23 **raw milk cheese samples** (none of which contained viral RNA, however, so whether the required 60 days of aging for such cheeses inactivates virus is still unknown).

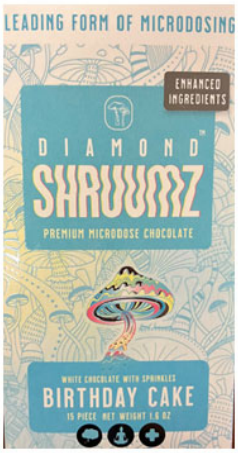
  - USDA and FDA scientists also published a research paper in which **raw milk samples from 275 bulk storage tanks** at farms located in four affected states were tested by PCR for influenza A viral RNA. **More than half (57.5%) of samples tested positive for the presence of RNA**, and **of these, about a quarter (24.8%, or 39 samples) contained infectious virus** with a median titer of 3.5 log EID_{50}/mL

  - The study also included results **again demonstrating that milk pasteurization methods used in the U.S. are adequate to ensure that the U.S. milk supply is safe.**
  - FDA and USDA is asking states to **voluntarily participate in collecting bulk raw cow milk stared at dairy processing facilities** for double-blinded testing to better assess the current nationwide prevalence of HPAI in bulk raw milk.
- Other foods:
  - USDA FSIS announced it will be adding **H5N1 influenza A monitoring by PCR in dairy cows at slaughter** beginning Sept. 16 as part of its existing National Residue Program. USDA will work with industry to ensure that carcasses that test positive will not enter the food supply.
  - The U.S. **dairy, turkey, and egg (but not chicken) industries** recently petitioned Agriculture Secretary Tom Vilsack for USDA and other federal agencies to **support development (and economically feasible utilization) of vaccines against H5Nx (H5N1 and other H5 influenza viruses) for dairy cows, turkeys, and egg-laying hens.** On Aug. 28, Vilsack announced a **field trial of an H5N1 vaccine in dairy cattle began last week**.

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

The ***Listeria monocytogenes*** **outbreak linked to Boar's Head brand deli-sliced meats** has led to more illnesses, hospitalizations, and deaths. A total of 57 people in 18 states have been sickened as of Aug. 28, with **all 57 requiring hospitalization and nine deaths reported**. CDC expects that the true number of cases is likely higher than this. The outbreak strain was found in an unopened Boar's Head liverwurst product obtained from a retail store in Maryland but has not been found in any other products to date; however, Boar's Head recalled all ready-

Va., had been documented by **USDA inspectors** to have numerous problems in the year prior to the outbreak, with findings of insects (flies, gnats, water bugs, beetles, etc.), leaky pipes, puddles of blood, residual meat on a variety of food-contact surfaces that in some cases gave off odors, mold on walls, etc. The non-compliance reports do not mention swab tests or *Listeria*. It has been reported that the facility used **Alternative 3 (no post-lethality treatment or antimicrobial agent or process, just relying upon sanitation**) for *Listeria* control in its ready-to-eat products.



More severe illnesses have been associated with consumption of Diamond Shruumz brand chocolate bars, cones, and gummies which are marketed as containing a proprietary blend of mushrooms. There are now at least 145 illnesses associated with these products, including **59 hospitalizations and 2 potentially associated deaths**. FDA and state partners continue to test and analyze the products and have found **psychoactive compounds** related to psilocybin, a prescription drug (pregabalin, an anticonvulsant also used to treat nerve pain), kavalactones (the major pharmacologically active compounds in the kava plant), and muscimol (found in the certain **poisonous mushrooms)**. These compounds were found in some but not all products and **do not explain all of the symptoms experienced** by those who used the product. Additional testing is underway. According to a recent news article on the Diamond Shruumz illnesses, some of the many mushroom microdosing products that have become popular lately have been found to contain **"a kitchen sink" of chemicals,** including amphetamines and synthetic analogs of hallucinogens.

As of Aug. 28, FDA is investigating several recent outbreaks for which **food sources have not yet been identified**:

- A new ***E. coli* O157:H7** outbreak has sickened 25 people.
- A ***L. monocytogenes*** outbreak has reported three cases.
- A ***Salmonella* Newport outbreak** has sickened at least six people.
- Two ongoing ***Cyclospora cayetanensis*** outbreaks has sickened 41 and 46 people.
- An **ongoing *Salmonella* Typhimurium** outbreak has sickened at least 89 people.

Government & Regulatory News

FDA has released a **new draft guidance for "Phase II" of the agency's voluntary sodium reduction goals** for foods. The new guidance includes the 2022 baseline levels (sales weighted mean mg sodium/100 g of food), Phase II (3-years goals) for **163 categories of commercially processed foods**. Goals for some foods are relatively small (for example, for packaged Parmesan cheese, the Phase II goal is 1350 mg sodium/100 g food) compared to the 2022

down from the 2022 baseline level of 859 mg sodium/100 g). Comments should be submitted by Nov. 14 to ensure FDA consideration.

The **National Advisory Committee on Microbiological Criteria for Foods** (of which FRI assistant research professor Kristin Schill is a member) will hold a hybrid (in-person and virtual) public meeting on Sept. 24 and 26 to provide an update on the **FSIS genomics charge and the FDA *Cronobacter spp.* in powdered infant formula charges**. Additional information can be found on the FSIS website.

As part of **FDA's efforts to improve the safety of food chemicals**, FDA will be hosting a **public meeting (with virtual options)** on Sept. 25 to discuss an enhanced systematic process to conduct post-market assessments of chemicals in foods, including **GRAS-listed ingredients, food additives, color additive, food-contact substances, and contaminants**.

A joint **NIH-FDA Nutrition Regulatory Science Workshop** will be held on Dec. 17–18 in Bethesda, Md. with both in-person and virtual attendance possible. The workshop will highlight **how nutrition science can generate evidence and data to inform food-related policy and regulatory decision making**. Examples of topics that will be discussed include **ultra-processed foods**, impact analysis and implementation science related to regulatory actions, and emerging technological innovations related to nutrition regulatory science.

USDA is holding a free webinar on **mycotoxins** (followed by a **live Wikipedia editing demonstration/training session**) on Tuesday, Sept. 10 at 10:30 a.m. ET.

Current Literature

A new publication used **epidemiological (from >200,000 people followed for up to 36 years) and blood marker data to link heme iron intake to increased risks for type 2 diabetes**. The highest quintile of heme iron (but not non-heme iron) intake was associated with a multivariable-adjusted **hazard ratio of 1.26** (95% confidence interval of 1.20 to 1.33, $p<0.001$) when compared to the lowest quintile of heme iron intake. Heme iron intake was positively correlated with intake of red meat, especially unprocessed red meat. **Higher heme iron intake was associated with unfavorable levels of some (but not all) metabolic biomarkers associated with diabetes risk**. Using the biomarker data, the researchers developed an algorithm that could predict diabetes risk. Read here for a thoughtful discussion of the study (**and the media frenzy that has accompanied it)**, which points out some of the problems and limitations of using these nutritional epidemiological study data to support a causal role of red meat in the development of diabetes. And see here for **an even newer publication** (with even more participants) of another epidemiology study that came to similar

Two publications and a free webinar this month provide information on **how climate change might affect food safety**:

- A systematic review and meta-analysis assessed the impact of ambient temperature and precipitation on the incidence of foodborne disease caused by *Salmonella*, *Shigella*, *Campylobacter*, *Vibrio*, and *Listeria* species. In North America, Europe, and Australia, **rates of campylobacteriosis and salmonellosis increased with a rise in ambient temperature**, with increases in precipitation having less of an effect on the incidence of these illnesses. **Shigellosis and *Vibrio* infections, which predominate in Asia and Africa, showed increased numbers of cases with both increased temperature and excess precipitation**.
- Another new publication discusses detailed plans for a scoping review that will examine **how climate change could affect biological and chemical contamination of preharvest foods**, with an emphasis on contaminants and foods relevant to Canada. Study results should be available sometime after December 2024.
- Food Safety Magazine is sponsoring a free webinar, "**Climate change: Managing the risk impact on the food supply chain**" on Sept. 10 at 10 a.m. EDT.

A new report compared the efficacy of **cold plasma using oxygen vs. air against *Bacillus cereus*** cells in a **low water activity food (soy powder)**. **Both gases were effective** with air (vs. oxygen) cold plasma showing more inactivation at shorter treatment times (≤15 min), and oxygen better than air when treated for longer time periods (20–30 min). **More than 5 log reductions were obtained** with oxygen at 300 W of input power for 30 minutes.

Other News

A new article in Food Safety Magazine discusses the challenges of conducting **sanitation in a low-moisture food processing facility**.

The safety of recycled plastic in food applications is discussed in a new investigative report and is also the topic of a free upcoming science symposium sponsored by Michigan State University's Center for Research on Ingredient Safety on Oct. 2.

UW-Madison and Wisconsin News

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.

The **2024 Wisconsin Science Festival**, to be held Oct. 14–20, will focus on **agriculture** this year. You can **find out how you can**

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

- Wisconsin Meat Processing School (Sept. 17–19); hosted by MSABD
- New Technologies Short Course: Thermal Processing (October 22–24); hosted by MSABD

Did someone forward this newsletter to you? Click here to sign up to receive future FRI e-newsletters!

Website | LinkedIn | Facebook | Instagram | Twitter