



Researcher tackles listeria in food processing

By GAIL OBERST
For the Capital Press

An Oregon State University researcher is helping save lives by investigating new techniques in agricultural food processing that prevent listeria.

Since Jovana Kovacevic's birth in the 1980s, the lethal microbe has emerged as a serious threat to the food chain, now sickening and killing more people than botulism and salmonella combined.

Kovacevic has been battling the listeria monocytogenes since she graduated from the University of Alberta in 2005. The daughter of immigrants escaping war-torn Yugoslavia —

now Croatia — she first became interested in chemistry while she was a refugee in Serbia. Her family immigrated to Alberta when she was 15. Master's and doctoral degrees in food science microbiology followed her undergraduate degree.

In 2016, she joined Oregon State University's Food Innovation Center, where she now directs the Food Safety Program, focusing on listeria

research and related food safety training, education and outreach. She is also the director of the Western Regional Center to Enhance Food Safety and an assistant professor and extension specialist, food microbiology. Her lab is in Portland, the



Stephen Ward/OSU

Jovana Kovacevic, right, and Rebecca Bland study listeria in Oregon State University's Portland laboratory.

first urban extension center in the U.S.

Kovacevic's interest in food microbiology began just as listeria spread worldwide.

"Microbiology in general was fascinating to me, but

I enjoyed the most the food aspect of it, especially learning about food-borne pathogens," she said.

She took her first food engineering class as an undergrad at the University of Alberta and instantly knew food science was her path. That same year she changed her major from chemistry to food science, finding particular interest in food microbiology and safety classes. She started studying listeria during her master's degree work and finished at the onset of a serious listeria outbreak in a Canadian meat processing plant.

Intrigued, she focused on listeria research, working in the Alberta government lab after her studies. Even before earning her highest degree, she was recruited to study listeria contamination in food processing facilities in British Columbia.

"When people start losing lives from just eating food, it really hits you as to how important and relevant food safety is. I got into this field trying to be helpful," she said.

Before it was identified in rabbits in 1924, listeria had most often been present in livestock. Its impact

was so small then that it was not named until 1940. The first recorded outbreak among humans was in 1981 in Nova Scotia. Since then, outbreaks of the pathogenic bacteria have increased, causing an average of 1,600 illnesses and 260 deaths annually in the U.S. alone, according to the Centers for Disease Control and Prevention.

In British Columbia, Kovacevic further studied listeria genetics and began looking at dairy, meat and seafood processing facilities. As genome sequencing became prevalent, she connected with other scientists as they followed the bacteria to its source and then applied what they learned to food processing.

Kovacevic's expertise led her to food safety research at the British Columbia Centre for Disease Control and put her on the lecture circuit for the University of British Columbia, followed by food safety consultant work with the B.C. Ministry of Health.

At OSU since 2016, she has helped develop programs to further prevent the spread of listeria. She leads OSU's Farm Food Safety Team, conducting on-farm readiness reviews (OFRRs) and food safety related training across the Pacific Northwest. She also directs the Western Regional Center to Enhance Food Safety (<https://agsci.oregonstate.edu/wrcfcs>). In June 2022, she was tenured and promoted to associate professor.

Although she is passionate about research, she said she prefers working in person with farmers and processors. In the field, she builds relationships with food producers and processors and offers workshops to teach workers how to

apply food safety practices, such as cleaning and sanitizing to kill environmental pathogens, such as listeria monocytogenes. In the lab, she studies microbial resistance to sanitation measures and traces the genetics of the germ back to the source.

Although listeria is usually spread during food handling and processing and problematic in ready-to-eat foods, Kovacevic's projects also includes farmers and packinghouses. Listeria naturally lives in the soil, she said, but there may be methods to reduce what leaves the field and prevent the spread during handling and packaging. "It's out there. You can't always prevent it from coming in. But you can stop the spread in the handling and processing environments," she said of listeria.

As one of Oregon's farm food safety trainers, she also works with the Oregon Department of Agriculture to provide "on-farm readiness reviews" — voluntary and anonymous — to produce farmers who are interested in preparing for the Food and Drug Administration inspections. During these anonymous visits, farmers can chat with food safety experts, with no notes or photos.

Her team's work, including innovative tips for the industry to keep food safe, is in a blog, <https://blogs.oregonstate.edu/kovaceviclab>. You can also follow them on Twitter @KovacevicLab (<https://twitter.com/kovaceviclab>).

The team is also building a listeria HELPR — a one-stop hub for food industry and food safety educators, to enhance listeria monocytogenes Prevention and Research (<https://foodsci.oregonstate.edu/listeria-helpr>).

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