

## The Oregonian

### Scientist's dogged work uncovered E. coli culprit

Plantenga questions patients with determination

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Water bottle in hand, Melissa Plantenga settles into a padded chair in the office of Oregon's senior epidemiologist for the daily national conference call with three dozen state and federal public health experts.

In-house laboratory coordinator Julie Hatch walks in, Plantenga recites the call-in number, Dr. William E. Keene punches the keys on his desk phone, and they wait. Plantenga scans the room. Lining the walls are shelves stacked with unsettling samples of Oregon health scares, a sort of morgue of items implicated in recent outbreaks and recalls.

"Gives you an idea of what I don't eat," she says with a shudder.

There's both the strange -- mung beans and deer jerky -- and the everyday -- cake mix, alfalfa sprouts, romaine lettuce, ramen noodles.

Plantenga, a bug and bacteria detective for the Public Health Division of the Oregon Department of Human Services, has epidemiological certainty that spinach tainted with E. coli O157:H7 is the source of a national outbreak that has killed two people and debilitated about 175 more in 25 states since last month.

The telephone conference begins, and a New Mexico epidemiologist 1,100 miles away utters words Plantenga is pleased to hear: "We have positive test results from a sample of baby spinach from one of our patients."

Keene pushes the mute button, and Plantenga, a petite, soft-spoken Army brat raised in Virginia, Texas, Germany and Italy, sighs quietly.

"Spinach," she says, sarcastically. "So now it's confirmed."

Keene nods and smiles. "It was confirmed in my mind a week ago."

#### Outbreak stumps scientists

That was Sept. 12, the day Plantenga, a 29-year-old sleuth who specializes in prevention of food-borne disease from bacteria and parasites, added one and one and one and one and one, and the sum was bunches of iron-rich leaves.

Until that day, communicable disease researchers across the country were stumped by the rising number of serious cases linked to the same bacterium.

In Manitowoc, Wis., a 77-year-old retired bank clerk died after E. coli O157:H7 ravaged her kidneys.

In Union, Ky., a 12-year-old girl was hospitalized with diarrhea.

In Salem, a 27-year-old escrow writer spent nearly two weeks in intensive care.

Health officials typically suggest that people prevent E. coli infection by washing hands vigorously, thoroughly cooking ground beef and avoiding unpasteurized milk, traditional sources of infection.

But after doggedly telephoning each of Oregon's five victims, Plantenga alone determined that four of the five had eaten fresh bagged spinach before falling ill.

She came to the answer using the "shotgun," a four-page questionnaire Keene designed to pinpoint culprits in food-borne outbreaks: what they ate, where they bought it, where they dined.

Bologna, canned whipped cream, fresh cilantro, green grapes -- Plantenga can survey a victim on hundreds of foods in as little as 30 minutes, but she gets further by embellishing the perfunctory questions, asking brand names and store locations, anything to jog the sick person's memory.

She jots the answers in lean, neat penmanship.

In the eggs and dairy column on one form, Plantenga writes "usually free-range veggie eggs." Next to breakfast sausage, she jots "fake soy."

"I'm not the first person to use this tool," says Plantenga, dressed in crisply pressed khakis and a black jersey top. "But I'm gonna ask. I'm gonna probably be a little more thorough. If there's several people who say they ate at the same restaurant, I'll remember that."

Usually after surveying people, Plantenga enters the answers into a database.

"A lot of time with four people we won't be able to figure the source out," she says of the small number of Oregon victims identified in the second week of September. "But this time, it seemed odd that I was hearing, 'Bagged spinach,' 'Bagged spinach.' Maybe it was just intuitive, but in this case I didn't go through the database process. I just came into Bill's office and said, 'You've gotta hear this.' "

Keene's early skepticism faded quickly: "I was pretty intrigued."

### **Never orders a raw steak**

Office mates tease Plantenga when they lunch together at the nearby Lloyd Center mall.

She doesn't eat sprouts. No raw milk. Nothing organic.

"I won't eat at all at a buffet. I'll never order a rare steak. I'm kind of extreme," she says, throwing her head back to laugh. "The chronic disease people on the other side of the office would hate to hear me say it, but I get deep fried stuff because I know things will have been killed."

It goes without saying that raw almonds are on Plantenga's nein list.

She was the unsung national hero in 2004, too, when she found raw almonds as the source of an outbreak of salmonella.

Keene points to a bag of nuts, among 13 million pounds of almonds recalled based on Plantenga's analysis.

"Those are from the last time she turned an industry upside down," he says wryly.

In that case, Oregon was weathering a salmonella outbreak, and public health nurses in three counties each conducted routine interviews with an afflicted patient. No common source was apparent.

When two additional cases were matched by molecular fingerprint to the outbreak, Plantenga decided to re-question all the victims. In a single evening, she got them all to pinpoint shopping and eating during the week before symptoms set in.

One survey question was about nuts in the shell, a question each victim had answered before. Under her patient inquiry, a pattern emerged.

All reported eating Kirkland Signature brand raw almonds, bought at Costco.

She compared that ratio -- 100 percent -- to a 2002 food survey that found just 9 percent of Oregon residents ate raw almonds. Then Plantenga searched online for cases of salmonella-contaminated raw almonds. She found a recent hit and alerted her boss, Dr. Paul Cieslak, the state's section manager of acute and communicable disease prevention.

Later that evening, Costco pulled the almonds from its shelves.

"What we realized is the consistency pays off," Plantenga says.

"It's smarter to have one person do them all," Keene says.

### **OSU alum**

Plantenga, born in Reno, bounced around a lot growing up.

"Every three years," she says.

Heidelberg, Germany, where she attended high school, feels most like home.

She graduated from Oregon State University with a degree in environmental health and safety, in 2000, the same year she interned at the state's public health agency.

Her assignment was to send out questionnaires evaluating hospital policies and practices concerning Hepatitis B vaccinations of infants at birth. It wasn't sexy work, pestering labor and delivery directors to comply, but Plantenga was captivated.

"I grew up wanting to become a doctor," says Plantenga, who lives in Keizer with her real estate agent husband, Alex.

"But working for public health, what intrigued me was the outbreaks, the fingerprints, what was making people sick. I just knew I wanted to work here."

Three years later, she was hired permanently as a state researcher funded by FoodNet, the principal food-borne disease component of the Centers for Disease Control's Emerging Infections Program.

"To interview and call and know people are getting sick, and we can't figure out why is so frustrating. And that's what usually happens," Plantenga says. "So there's excitement and adrenaline when things start falling together. How can I describe how rewarding and satisfying it is to be able to tell someone, 'This is why you got sick.' "

### **Bacteria as art**

Plantenga works out of a seventh-floor cubbyhole in a state office building on Northeast Oregon Street in Portland. On clear days, she looks out at Mount Hood across a tidy desk, punctuated with colorful, abstract-looking images of harmful parasites and bacteria.

Framed and magnified, they are beautiful.

There is awe in Plantenga's voice as she recites their full Latin names.

Clostridium botulinum, which can cause double vision, drooping lids, slurred speech and muscle weakness; Salmonella serotype Paratyphi, causing severe gastroenteritis; Giardia, which causes gas, nausea, stomach cramps, watery diarrhea; Listeria, which causes flulike symptoms with fever and headaches.

She respects their might: She keeps separate cutting boards in her kitchen so meat juices don't contaminate sliced bread, and she uses paper towels to clean up spills

But you'll have to ask someone else in the office for cleaners to kill them.

"Yeah, I don't have hand sanitizer gel," Plantenga says with a smile. "I'm not obsessive compulsive. Some bacteria is good. We have to have it to survive."

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