

Featured Story

When Injured Microbes Go Underground.



David Nyachuba

So what about that sliced ham sitting in the cold cut drawer of your fridge . . . you know, the package that’s been sitting there for a while? A little off-color? You could cook it up and extend its life a little. After all, it was inspected, it has been preserved with nitrates, and you’ve kept it well chilled.

No problem, right?

Not so fast.

David Nyachuba would like you to know that nasty little microbes – like *Listeria monocytogenes*, if present in food – can essentially go into hiding when they are “injured” but not killed by the very things we do to keep them at bay. And then, just when we are pretty sure that everything is fine, they start to grow again, even in the refrigerator. *Listeria* contamination can make you very sick, causing diseases like encephalitis and meningitis, especially in people with compromised immune systems.

“*Listeria* is able to grow in a refrigerator. It is an exception. It grows very slowly. The danger is that injured *Listeria* may not show up in testing,” he notes, adding that it generally makes an appearance in ready-to-eat foods like processed meats, smoked fish and soft cheeses.

Much his recent work focuses on new ways to detect even those microbes that have been injured and gone underground.

“I believe the same thing happens with other pathogens,” he says.

David Nyachuba joined Extension’s Nutrition Education Program this year as a food safety specialist, and – in the wake of news headlines regarding contamination of everything from spinach to pet food – found himself in an area of intense public interest. Later this year, he will start teaching ServSafe ® food safety certification courses for food industry workers and regulators.

He came to UMass Amherst by way of the University of Vermont . . . and there by way of the University of Ghent, in Belgium . . . and there by way of the University of Nairobi, in Kenya . . . and there by way of a boarding high school in Kisii, Kenya . . . and there by way of a small village in western Kenya called Bogusero.

Globalization, which makes such movement possible, also poses one of the biggest challenges to food safety, says Nyachuba.

“Globalization has brought about an enormous increase in the exchange of products,” he notes. “And with those new products come new pathogens, and new opportunities for them to become resistant.” The number of people at risk for foodborne illness is increasing. Data indicate that one in every five people in the U.S. today (20% of the population) may be at an increased risk for foodborne illness.

Nyachuba also believes that active surveillance at FoodNet sites, enhanced foodborne outbreak reporting system, and epidemiological systems coupled with improved and more sophisticated detection methods – of the kind he is helping to develop – may be leading to many more warnings and a much higher news profile for contamination. The apparent increase in the number of outbreaks, he adds, could reflect these efforts and not a true increase in outbreak frequency.

“Every week several alerts come across my desk. There is a danger that people won’t take safe food handling information seriously in the absence of a foodborne outbreak or illness of themselves or someone close to them. We need an effective way to convince them that foodborne illness is serious,” he says. He concurs with the USDA Food Safety and Inspection Service view that food safety educators should be ready to help people learn when their attention is drawn to food safety issues in the news.

Finally, says Nyachuba, the increasing centralization of food processing (mass production) also poses a growing challenge. When something goes wrong, it tends to be something big, and it tends to have a far reaching impact.

So what does a microbe hunter like David Nyachuba eat on his own time and his own dime? Despite its reputation for potentially nurturing *Listeria*, Nyachuba confesses to having developed a taste for smoked salmon since his move to more northern climes. He also notes that despite all the adjustments that the move from western Kenya to western Massachusetts has involved, one item of local fare is surprisingly familiar: Tilapia, the tender and tasty fish being bred as part of the state’s growing aquaculture industry, is a native to Kenya’s own Lake Victoria.