

# The time is ripe for Salmonella

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This image shows the association of *Escherichia coli* with rocket leaves. Credit: Rob Shaw

The ripeness of fruit could determine how food-poisoning bacteria grow on them, according to scientists presenting their work at the Society for General Microbiology's Spring Conference in Dublin this week. Their work could lead to new strategies to improve food safety, bringing many health and economic benefits.

A wide range of [fresh produce](#) has been linked to outbreaks of [Escherichia coli](#) and [Salmonella enterica](#) including melons, jalapeño and serrano peppers, basil, lettuce, horseradish sprouts and tomatoes. Researchers at Imperial College London are looking at how these bacterial pathogens latch onto fruits and vegetables and establish themselves in the first place.

They have discovered that strains of *Salmonella* behave differently when attached to ripe and unripe tomatoes. "[Bacteria](#) that attach to ripe tomatoes produce an extensive network of filaments, which is not seen when they attach to the surface of unripe tomatoes. This could affect how they are maintained on the surface," explained Professor Gad Frankel who is leading the research. "We are not completely sure yet why this happens; it might be due to the surface properties of the tomatoes or alternatively the expression of ripening hormones."

This is just one example of the subtle interplay between food-poisoning microbes and the fresh produce they contaminate, that determines how pathogens become established in the food chain. "Apart from *Salmonella*, strains of *E. coli* are also particularly devious in the way they interact with plant surfaces. They have hair-like appendages and flagella they can use as hooks to successfully secure themselves onto things like salad leaves."

Although fresh fruits and vegetables are recognized as important vehicles that transmit harmful bacteria, they are still important components of a healthy and balanced diet. "By and large, raw fruits and vegetables are safe to eat and provide numerous health benefits. By working out the reasons behind sporadic outbreaks of infections, we can control these better and help maintain consumer confidence. By improving [food safety](#) we would also see important economical and health benefits."

Understanding how bacteria interact with fresh produce is a crucial but only the first step, explained Professor Frankel. "Translating research into new policies or methods for decontamination is the challenge for future studies," he said.

Provided by Society for General Microbiology

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