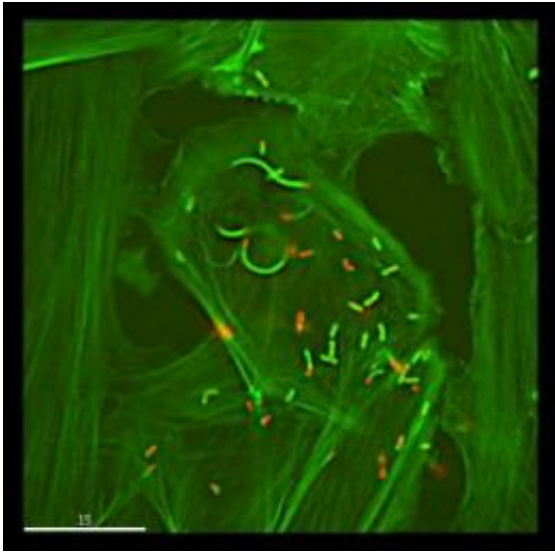


Heart-targeting *Listeria* increase cardiac disease risk

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Listeria monocytogenes cardiac-invasive strain replicating and moving within infected heart cells. The bacteria (red rods) invade heart cells, multiply, and begin to move through the cell by rearranging cell structural proteins (green) that initially coat the bacteria (green and red rods) and then form long comet tails located directly behind moving bacteria. Credit: Francis Alonzo III

Certain strains of the food pathogen *Listeria* are uniquely adapted to infect heart tissues and may put people at a higher risk from serious cardiac disease, according to a new study published in the *Journal of Medical Microbiology*. Developing new diagnostic tests to identify these potentially fatal strains could protect those most at risk, such as those with heart valve replacements.

Researchers from the University of Illinois, Chicago have shown that a sub-population of the [bacterium *Listeria* monocytogenes](#) display an enhanced ability to infect [cardiac tissue](#). They found that mice infected with certain strains of *L. monocytogenes* had 10-15-fold more bacteria in their heart tissues than mice infected with other strains.

L. monocytogenes is a serious food-borne pathogen which may be found in soft cheeses and chilled ready-to-eat products. Less severe infections lead to gastroenteritis. Serious infections are most commonly associated with the [central nervous system](#) or with the developing fetus in pregnant women. Dr Nancy Freitag who led the study explained how a subset of infections progress differently. "A significant number - about 10% - of *L. monocytogenes* infections involve the heart. In these cases death rate from cardiac illness is estimated to be up to 35% yet very little is known about how these bacteria infect heart tissues."

The results of the study suggest that these cardiac-associated strains display modified proteins on their surface that enable the bacteria to target the heart, leading to bacterial infection. "We found distinct genetic similarities between the cardioinvasive *Listeria* versus the other strains that we compared. These similarities all related to the surface proteins on the bacteria," said Dr Freitag.

The group are hoping to develop diagnostic tests based on bacterial [genetic markers](#). "These tests could be used to distinguish strains of *Listeria* isolated from food outbreaks, food processing plants, or from clinical infections that place patients at increased risk of [cardiac disease](#)," suggested Dr Freitag. "This would allow health care workers and food safety officials to closely monitor exposed individuals."

The ability to identify cardiac-targeting strains of *Listeria* could improve infection outcomes and help protect vulnerable groups. "Patients with heart valve replacements or prior cardiac illness are believed to be more

susceptible to *Listeria* cardiac infections. It is not clear exactly why this is so, but it could be that damaged tissue provides an additional entry way for infection," explained Dr Freitag. "We believe that this risk may be increased if the individuals are exposed to cardiac-targeting [strains](#)," she said.

Provided by Society for General Microbiology

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