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SPATELIS Initiative: Exploring Listeria's sophisticated infection strategies

Project Coordinator

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Project Description

The *Listeria* bacterium is usually acquired through the consumption of contaminated food. Once in the body, the bacteria go on to develop dangerous side effects thanks to a sophisticated survival and reproduction strategy. Individuals with a weak immune system are especially at risk as *Listeria* can also cause a number of deadly infections. For example, *Listeria monocytogenes* is considered to be responsible for those foodborne infections which have the potential to develop into deep meningitis. A group of ten researcher teams from five different countries have now founded the SPATELIS network under the umbrella of *ERA-NET Pathogenomics* with the aim of analysing in detail the disease-causing factors in *Listeria monocytogenes* infections.

Working on the basis of the now fully sequenced genome of *Listeria monocytogenes*, the scientists want to find out what types of weapons the bacteria are employing when entering the cellular apparatus during the infection process and which factors on the host side enable them to spread so freely. Ultimately, once in the cell, the bacterial reproduction proceeds so ingeniously that the microbes are not recognised by the human immune system. Previous studies have already identified some gene sequences and, with these, signalling pathways in the bacteria that are assumed to be responsible for this hiding capability. The scientists also have certain groups of proteins from the host side in mind, which play an important role during *Listeria* infections. The researchers goal in the SPATELIS initiative is to shed light on these complex interactions: With the help of a broad range of methods, they hope to uncover disease-related signalling pathways, their genetic location and any related metabolic mechanisms in the bacteria as well as the host cells, which might also play a role. The results produced by these different scientific approaches are stored in huge databases, which are then used as the starting point in the search for therapeutic strategies.