

New species of the listeria genus discovered and baptised

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UCH Professor Juan José Quereda. Credit: Asociación RUVID

It is estimated that only 1% of bacteria are pathogenic for humans or animals. Among them, the bacterial genus *Listeria* has been widely studied as it contains two species, *Listeria monocytogenes* and *Listeria ivanovii*, which are pathogenic, causing the disease known as listeriosis. Until now, the genus *Listeria* consisted of a total of 20 species. Researchers from the CEU Cardenal Herrera University of Valencia (CEU UCH) and the Institut Pasteur have expanded this list with the discovery of a new species: *Listeria valentina*, named for having been discovered in Valencia.

As a result of the international collaboration between the group of researchers led by Juan José Quereda Torres, a Spanish specialist in the study of listeriosis from CEU UCH, and the National Reference Centre and WHO Collaborating Centre for *Listeria* at the Institut Pasteur in Paris led by Professor Marc Lecuit, this new species of the genus *Listeria* called *Listeria valentina* (in Latin, "from Valencia") has been discovered. This finding has just been published in the prestigious *International Journal of Systematic and*

Evolutionary Microbiology. *L. valentina* has been discovered in feces obtained from sheep as well as on the surface of a trough from the same animals. In this sense, the ProVaginBio research group of CEU UCH, which is specialized in the study of the microbiota of ruminants, also collaborated in the study.

Understanding the infection

According to the professor and Juan José Quereda, who has co-led this study with Professor Marc Lecuit from the Institut Pasteur, "The sequencing of the complete genome of *L. valentina* has revealed that this bacterium lacks most virulence factors of its relatives *L. monocytogenes* and *L. ivanovii*, meaning that a priori it could be considered a new non-pathogenic species. *L. valentina* will enable a better understanding of the evolution, life and adaptation to different environments of the pathogenic species of the genus."

The new species *L. valentina* has been recorded and is stored in the microorganism collections of the Institut Pasteur in Paris and the DSMZ Institute in Germany. This scientific finding is the result of two projects funded by the Generalitat Valenciana (GV/2018/A/183) and by the Ministry of Science and Innovation of Spain (PID2019-110764RA-I00), as well as various French research organizations.

Regarding the discovery of this new [species](#) of the genus *Listeria* in Valencia, CEU UCH Professor Juan José Quereda explains: "Bacteria are the most widespread form of life on earth, they inhabit practically all ecosystems. Spain is one of the European Union countries with the greatest biological diversity due in part to its geographical position and its geological, orographic, edaphic and climatic diversity. These peculiarities make it possible to discover new microorganisms in future studies carried out in our environment."

Listeriosis: A recent increase in cases

Professor Quereda says, "in 2017 the number of confirmed infections of listeriosis cases in the EU increased to 2,480, and 225 deaths were reported. This data is even more worrying because since 2008 the cases of listeriosis in the European Union are increasing." Cases of listeriosis can also occur in the form of outbreaks: "The largest outbreak of listeriosis reported in history had 937 cases and 216 deaths, taking place in 2018 in South Africa due to the consumption of a processed meat product."

Humans, as well as animals, are infected via food by consuming products contaminated with *Listeria*. The clinical signs of listeriosis are very similar in all susceptible hosts. In immunocompetent humans *L. monocytogenes* produces febrile gastroenteritis, while in immunocompromised individuals it produces septicaemia and meningoenzephalitis. In [pregnant women](#) it causes abortions, perinatal mortality, generalised infection and meningitis in the neonate called neonatal listeriosis.

More information: Juan J. Quereda et al. *Listeria valentina* sp. nov., isolated from a water trough and the faeces of healthy sheep, *International Journal of Systematic and Evolutionary Microbiology* (2020). [DOI: 10.1099/ijsem.0.004494](https://doi.org/10.1099/ijsem.0.004494)

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