

New species of antibiotic-resistant bacteria found in infected wound

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Credit: University of Gothenburg

A hitherto unknown antibiotic-resistant bacteria species, in the same family as *E. coli* and *Salmonella* spp., has been found and classified in Sweden. The proposed taxonomic name of the species—the first of the new genus—is *Scandinavium goeteborgense*, after the city of Gothenburg, where the bacterium was isolated and the research was done.

Knowing which [bacteria](#) cause infections and which antibiotics are effective and ineffective against them is crucial for treatment choices. Ignorance can have grave consequences, even from what are normally uncomplicated infections.

The discovery of the bacteria and its novel genetic variant of antibiotic resistance is described in a study published in the journal *Frontiers in Microbiology*. The starting point was bacteria found in an infected wound of an adult patient at Kungälv Hospital north of Gothenburg.

Using a sample from this patient, the Clinical Microbiology laboratories at Sahlgrenska University Hospital in Gothenburg isolated the bacteria, which proved to belong to the family Enterobacteriaceae. Species identification, however, required more comprehensive investigations and analyses.

Using [next generation](#) sequencing (NGS), the researchers were then able to characterize and classify the new species. Moreover, it proved to belong to a completely new genus of bacteria.

More specific antibiotics

The bacteria concerned are most likely to have caused infections before and after they were detected in Kungälv Hospital, where the patient samples were taken in 2014. However, it is only now that the species has been identified and its more specific traits have become known.

Francisco Salvà Serra, one of two first authors of the study, does research at the Culture Collection University of Gothenburg (CCUG) and the Centre for Antibiotic Resistance Research (CARE), at the University of Gothenburg.

"This is a clear example of how important it is to be able to identify the

direct causes of an infection. If the bacteria are identified accurately, doctors can prescribe specific antibiotics rather than needing to rely on [broad-spectrum antibiotics](#)," Salvà Serra said.

"Broad-spectrum [antibiotics](#) favor the development of antibiotic resistance in bacteria, including those causing disease. By extension, this results in reduced potential for treating infectious diseases."

Improved diagnostics and surveillance

Hedvig Engström Jakobsson, the senior researcher in charge of the study, works at the Department of Infectious Diseases at Sahlgrenska Academy, University of Gothenburg, and heads the Molecular Microbiology Unit at Sahlgrenska University Hospital.

She emphasizes that [next-generation sequencing](#) has revolutionized DNA-based strategies for bacterial diagnosis and surveillance.

"This study called for many different analyses, in which the technology gave us both more extensive and more in-depth knowledge about the new bacterium and its classification than had been possible before," says Engström Jakobsson.

The name proposed by the scientists for the bacteria [species](#), *Scandinavium goeteborgense*, will be validly published in the International Journal of Systematic and Evolutionary Microbiology (IJSEM) in March 2020.

More information: Nachiket P. Marathe et al. *Scandinavium goeteborgense* gen. nov., sp. nov., a New Member of the Family Enterobacteriaceae Isolated From a Wound Infection, Carries a Novel Quinolone Resistance Gene Variant, *Frontiers in Microbiology* (2019). [DOI: 10.3389/fmicb.2019.02511](https://doi.org/10.3389/fmicb.2019.02511)

Provided by University of Gothenburg

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