

Press release

SNSF support for an innovative research project

Treatment of urinary tract infections with ‘bacteria killers’

Zurich, 2 December 2019 – Bacteriophages are natural ‘bacteria killers’ that may be a silver bullet in the fight against antibiotic resistance. ‘Designer bacteriophages’ will be used for the first time to combat urinary tract infections. The Swiss National Science Foundation (SNSF) is supporting the innovative research project with a grant of more than CHF 3 millions. The Balgrist University Hospital, the ETH Zurich, and the Inselspital, Bern University Hospital, are all involved in the project.

Urinary tract infections are very common and rank among the most important health problems that our society faces. The indiscriminate use of antibiotics in particular has led to a dramatic increase in resistant bacteria worldwide, which means there are no longer any effective antibiotics available for some infections. No new powerful new antibiotics are in sight, so alternative treatment options are urgently being sought.

A possible breakthrough in the fight against antibiotic resistance

Natural ‘bacteria killers’ known as bacteriophages, which literally means ‘bacteria eaters’, are possible silver bullets in the fight against antibiotic resistance. Bacteriophages are viruses that look like miniature Mars exploration rovers. They adhere to the outer surface of bacteria, inject their genetic material into the bacteria, and reprogramme them to produce hundreds of new bacteriophages. They ultimately cause the virus to burst, releasing the new phages to attack more bacteria. These natural bacteria killers will now be used to combat urinary tract infections in a joint research project by the Balgrist University Hospital, the ETH Zurich, and the Inselspital in Bern. Prof. Martin Loessner, who leads the ETH Zurich research team, is one of the world’s leading experts on bacteriophages. “For our joint research project, they will create ‘designer bacteriophages’ (‘engineered bacteriophages’) that we can then use in a targeted manner in patients with urinary tract infections”, says Prof. Thomas Kessler, Chief of Neuro-Urology at Balgrist University Hospital and principal investigator of this very promising research project. “This therapeutic approach is unique and may lead to a breakthrough in the fight against antibiotic resistance worldwide.”

Sinergia Grant from the SNSF

The Swiss National Science Foundation (SNSF) is supporting the bacteriophage project with a Sinergia Grant. Sinergia promotes cooperation between research groups who are working on interdisciplinary projects with a view to achieving breakthrough research. The treatment of urinary tract infections with bacteriophages is a joint project with:

- ETH Zurich, Prof. Martin Loessner, Professor of Food Microbiology
- Inselspital, Bern University Hospital, Prof. Jonas Marschall, Head of Infection Prevention
- Balgrist University Hospital, Prof. Thomas Kessler, Chief of Neuro-Urology

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