

New class of antibiotics against resistant bacteria

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Studies at umeå university show that a new class of antibiotics is effective against certain multi-resistant bacteria. Credit: Mattias Pettersson

Bacterial resistance to antibiotics is a growing threat to human health. In an article published in the journal *PNAS*, Umeå researcher Fredrik Almqvist and his colleagues present a new type of antibiotic that effectively kills hard-to-fight bacteria.

"This is the start of a new class of antibiotic substances that work on many bacteria associated with healthcare-associated infections, such as VRE and MRSA," says Fredrik Almqvist.

Fredrik Almqvist is a professor at the Department of Chemistry at Umeå University and has been researching new alternatives to antibiotics since the late 1990s.

Effective antibiotics are crucial for saving lives in areas such as surgery, [cancer treatment](#) and [intensive care](#), but also for treating common diseases such as chlamydia or pneumonia. But as [antibiotic resistance](#) increases, the clock is ticking for the scientific community.

"Antibiotic resistance is listed by the WHO as one of the planet's greatest challenges. It's being talked about as being on a par with the climate threat," says Fredrik Almqvist.

Results of collaboration

Studies conducted at Umeå University and Washington University in St. Louis could be an important piece of the puzzle in the fight against the dangerous bacteria. The new class of antibiotics, which the researchers call GmPcides, fights so-called Gram-positive bacteria. According to the studies, they are effective on their own, but also enhance their effectiveness when combined with existing antibiotics.

"This is the fruit of a long collaboration between chemists and molecular biologists in Umeå and the team in St. Louis led by Professor Scott Hultgren. It's a privilege to work with so many fantastic researchers," says Fredrik Almqvist.

The research shows that the GmPcides can not only stop bacteria from dividing, but also kill bacteria that are not growing. Something that other

[antibiotics](#) often struggle to do.

Fredrik Almqvist is very hopeful about the results published in *PNAS*.

"This is a first step, a new class that has exciting properties, and now of course we are working to develop these into something that can also help people in the future. Our goal is to come up with a substance to which bacteria do not easily become resistant."

More information: Taylor M. Nye et al, Ring-fused 2-pyridones effective against multidrug-resistant Gram-positive pathogens and synergistic with standard-of-care antibiotics, *Proceedings of the National Academy of Sciences* (2022). [DOI: 10.1073/pnas.2210912119](https://doi.org/10.1073/pnas.2210912119)

Provided by Umea University

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