

VAAM Research Award 2025 to Kathrin Fröhlich

How microbes use RNA to adapt to their environment



Dr. Kathrin Fröhlich from the University of Jena will be awarded the 2025 Research Award of the Vereinigung für Allgemeine und Angewandte Mikrobiologie (VAAM, Association for General and Applied Microbiology) for her research on the role of regulatory RNA molecules in bacteria. Using new methodology, she identified and characterised many of these control elements that enable bacteria to adapt to continuously changing conditions. The award-winning work helps to better understand and combat pathogens. The prize endowed with 10,000 Euro honours cutting-edge work in microbiology. It will be awarded at the VAAM annual conference in Bochum on 23 March 2025.



Kathrin Fröhlich's research group 'Bacterial RNA Biology' at the Institute of Microbiology at the University of Jena is investigating the role of regulatory RNA molecules in controlling gene expression in various bacteria. Source: Fröhlich

Due to its pronounced resistance to antibiotics, *Klebsiella pneumoniae* is a feared pathogen in hospitals worldwide. The bacterium can use various tricks to circumvent the defence mechanisms in immunocompromised patients. Kathrin Fröhlich decodes the regulation of the responsible genes by small RNAs.

Around one sixth of the bacterial genome is transcribed into RNA that does not code for proteins. These include regulatory RNA molecules that can inhibit or promote the protein synthesis by blocking or enhancing

the translation of information from the messenger RNA (mRNA). Fröhlich was able to identify a large number of these small regulatory RNAs and describe their functions. Regulatory RNAs, for example, influence cell division and also the penetration of or defence against antibiotics. Of particular interest are networks that influence antibiotic resistance. "By studying the RNA-RNA networks active in *Klebsiella*, we want to help understand this important pathogen and thus also be able to control it," says Fröhlich.

Fröhlich's research group is also investigating RNA control mechanisms in the freshwater bacterium *Caulobacter crescentus*. The RNA control mechanisms determine the ability of microorganisms to adapt to changing conditions in their environment, such as exposure to UV light or fluctuations in the availability of nutrients. The biotechnologist has established new research methods and improved them during her investigations.

The VAAM recognizes Fröhlich as a committed, highly motivated, and excellent scientist. She is highly visible internationally through publications and at conferences. "With many high-ranking publications, prestigious third-party funding and various awards, the young scientist has

earned high esteem in microbiology,” says VAAM President Stefan Pelzer. She is very committed to teaching and training young scientists, emphasizes the award committee, referring to the large number of supervised theses and doctoral dissertations. Fröhlich is also involved in scientific outreach, for example in kindergartens and schools.



Dr. Kathrin S. Fröhlich (42) is a tenured research group leader at the Institute of Microbiology at the University of Jena. She studied molecular biotechnology in Heidelberg and completed her doctorate in 2013 with Prof. Dr. Jörg Vogel at the University of Würzburg and the Max Planck Institute for Infection Biology in Berlin. This was followed by postdocs at Princeton University and LMU Munich. Since 2019, she has been head of the “Bacterial RNA Biology Group” at the University of Jena.

Details: <https://www.mikrobiologie.uni-jena.de/en/108/bacterial-rna-biology>

Dr. Kathrin Fröhlich, Foto: Carolin Bleese

VAAM (Vereinigung für Allgemeine und Angewandte Mikrobiologie, Association for General and Applied Microbiology) represents around 3300 microbiologically orientated scientists from research and industry. The spectrum of research ranges from bacteria, archaea, and fungi in food and water to pathogens, genome analyses, and the industrial use of microorganisms and their enzymes. This year's annual conference will take place on 23-26 March in Bochum (<https://vaam-kongress.de/>).

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