

Bacterial research: novel antibiotic producers discovered in German collection

Bacteria named after well-known microbiologists from the Leibniz Institute DSMZ

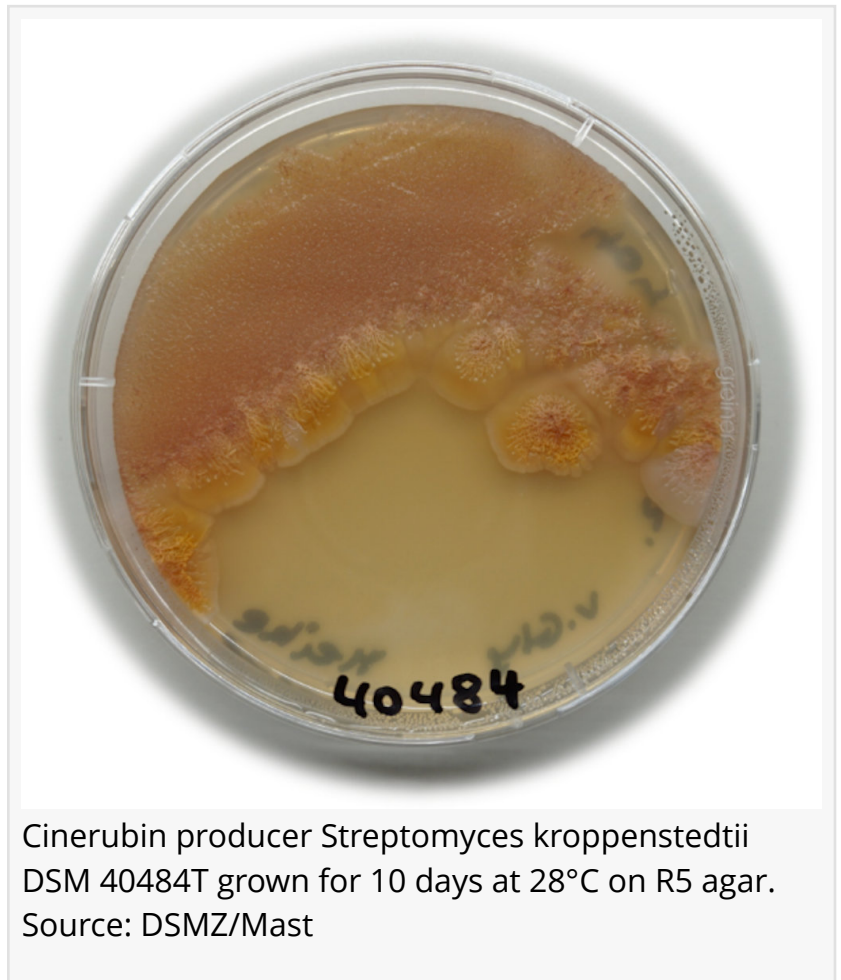
BRAUNSCHWEIG, LOWER SAXONY, GERMANY, February 5, 2024

/EINPresswire.com/ -- Researchers at the Leibniz Institute DSMZ-German Collection of Microorganisms and Cell Cultures led by Dr Yvonne Mast and Dr Imen Nouioui have published scientific descriptions for five new antibiotic-producing bacteria. Using state-of-the-art technologies to examine strains which have been in the collection for more than 40 years the researchers discovered their ability to produce antibiotics. The findings have been published in *Frontiers in Bioengineering and Biotechnology*.

Modern analyses lead to new discoveries

At the DSMZ culture collection, microbial diversity is preserved and serves as an invaluable source for the identification of products which are medically and biotechnologically important. Each microorganism is analysed in detail before it is added to the collection, with researchers documenting their characteristics. Thanks to modern analyses, it is possible to discover properties of deposited microbes that previously would have remained unrecognised, like in the case of the five *Streptomyces* strains that have now been examined. *Streptomyces* are well-known producers of bioactive compounds that produce the majority of antibiotics in use today. "Our research underlines the importance of collecting biological resources for science, as the use of new technologies can further increase the value of 'old bioresources,'" explains Professor Yvonne Mast.

In their study, the Braunschweig researchers identified five *Streptomyces* new species. In



Cinerubin producer *Streptomyces kroppenstedtii* DSM 40484T grown for 10 days at 28°C on R5 agar. Source: DSMZ/Mast

addition, genome mining was used to investigate whether these bacteria can produce antibiotics, which was experimentally verified for some of the strains. Yvonne Mast adds that, „these bacteria also possess numerous other biosynthetic gene clusters that bear little resemblance to already known gene clusters. This suggests that they could potentially produce novel natural products."

Bacteria named after Braunschweig based DSMZ researchers

In the field of microbiology, microorganisms can be named after well-known individuals in order to honour their scientific work. The DSMZ

researchers took this opportunity to name two of the five new species after distinguished German microbiologists who have a deep connection to the Leibniz Institute DSMZ. Professor Dr Erko Stackebrandt (namesake for *Streptomyces stackebrandtii* (DSM 40976T)) not only carried out significant research in the field of microbial taxonomy, but he also headed the DSMZ as

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Yvonne Mast

scientific director from 1993 to 2010 and continued to work at the institute until 2017. Another bacterium (*Streptomyces kroppenstedtii* (DSM 40484T)) was named after Prof Dr Reiner Maria Kroppenstedt, a microbiologist who worked at the DSMZ from 1979 to 2007, playing a key role in shaping the collection of actinobacteria.

Original publication:

Nouioui I., Zimmermann A., Hennrich O., Xia S., Rössler O., Makitrynsky R., Gomez-Escribano J.P., Pötter A., Jando M.,

Döppner M., Wolf J., Neumann-Schaal M., Hughes C., Mast Y. (2023) Challenging old treasures for natural compound biosynthesis capacity. *Front Bioeng Biotechnol.* 12:1255151.

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Microbiologists Dr Imen Nouioui (left) und Prof Dr Yvonne Mast (right). Source: DSMZ

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About the Leibniz Institute DSMZ

The Leibniz Institute DSMZ-German Collection of Microorganisms and Cell Cultures is the world's most diverse collection of biological resources (bacteria, archaea, protists, yeasts, fungi, bacteriophages, plant viruses, genomic bacterial DNA as well as human and animal cell lines). Microorganisms and cell cultures are collected, investigated and archived at the DSMZ. As an institution of the Leibniz Association, the DSMZ with its extensive scientific services and biological resources has been a global partner for research, science and industry since 1969. The DSMZ was the first registered collection in Europe (Regulation (EU) No. 511/2014) and is certified according to the quality standard ISO 9001:2015. As a patent depository, it offers the only possibility in Germany to deposit biological material in accordance with the requirements of the Budapest Treaty. In addition to scientific services, research is the second pillar of the DSMZ. The institute, located on the Science Campus Braunschweig-Süd, accommodates more than 86,500 bioresources and has almost 230 employees. www.dsmz.de

The Leibniz Association

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