

Date / No

Sights set on resistant bacteria and pandemic viruses – Double award ceremony at St. Paul’s Church in Frankfurt

Today sees the award of the Paul Ehrlich and Ludwig Darmstaedter Prizes for 2021 and 2022.

For the first time in its history, the Paul Ehrlich and Ludwig Darmstaedter Prize will today be awarded for two consecutive years at the same time. The 2021 prize honours Bonnie Bassler and Michael Silverman, whose discovery of how bacteria communicate with each other paves the way for a whole new class of antibiotics. Three laureates share the 2022 prize: Katalin Karikó, Uğur Şahin and Özlem Türeci, whose research work on messenger RNA culminated in the spectacularly fast development of a highly effective vaccine against COVID-19 and also offers promising prospects for the battle against cancer.

FRANKFURT. Last year, the award ceremony for the Paul Ehrlich and Ludwig Darmstaedter Prize had to be cancelled due to the pandemic. “This year, now that we’ve regained the possibility to attend in person, we’re honouring laureates who have made a significant contribution to overcoming the pandemic,” says Thomas Boehm, Chairman of the Scientific Council of the Paul Ehrlich Foundation and Director at the Max Planck Institute of Immunobiology and Epigenetics in Freiburg. “At the same time, we’re commending a discovery that offers a new approach to the global problem of antibiotic resistance.”

Bacteria that render antibiotics useless are gaining ground worldwide. This constitutes a deadly threat, which according to the World Health Organization has assumed alarming proportions and makes new antibiotics necessary. However, most of the new substances developed follow the old principle. They stop the bacteria from growing or kill them off. That microorganisms use mutations to counter this attack lies in their nature. This is followed by the selection of more resistant strains, and it is then only a question of time until these too become resistant to new antibiotics. [The Paul Ehrlich and Ludwig Darmstaedter laureates of 2021](#) have laid the groundwork for a new principle of antibiotic action. Michael Silverman and Bonnie Bassler have discovered and deciphered the language that bacteria use to communicate with each other. By exchanging certain signal molecules, the bacteria agree on when they have reached a quorum sufficient to be able to act against a host organism with a high probability of success. Interrupting this microbial chit-chat pharmacologically through “quorum quenching” makes the bacteria “shut up” without killing them off. They do not experience any selection pressure to create resistance. Researchers throughout the world are now working on the development of such new antibiotics. They have

already achieved remarkable progress in combating multi-resistant pathogens such as *Pseudomonas aeruginosa*.

Viruses that appear as if from nowhere are capable of abruptly throwing the lives of all humankind into disarray – something we have all learnt since the outbreak of the COVID-19 pandemic. That it has nonetheless been possible to contain this pandemic is largely thanks to the achievements of the [Paul Ehrlich and Ludwig Darmstaedter laureates of 2022](#). Through their quick-witted reaction to the sudden emergence of the SARS-CoV-2 coronavirus, they succeeded in developing a vaccine in record time that has saved the lives of millions of people worldwide. The basis for this success was their research work over decades on the messenger mRNA molecule and its optimisation for medical purposes. Unperturbed by many obstacles along the way, Katalin Karikó has been searching since the beginning of her career for methods to stimulate intracellular protein production by introducing mRNA. In the process, she made the ground-breaking discovery of how the body's immune defence against externally applied mRNA can be switched off. Uğur Şahin and Özlem Türeci primarily concentrated on developing cancer vaccines that present a patient's immune system with the antigens of their own tumour so that it can destroy it. In the process, they discovered how mRNA can be stabilised and significantly increased in its messages' efficiency. In 2008, they founded their own company – BioNTech, where they have already developed several mRNA-based therapeutic cancer vaccines up to the point of clinical trials.

Apart from the main prizes, the Paul Ehrlich and Ludwig Darmstaedter Prize for Young Researchers will also be awarded for two consecutive years at the same time. Biologist [Elvira Mass](#) will receive the prize for 2021. Through the skilful use of genetic marking methods, she has discovered that an organism's healthy development is already controlled from a very early stage by specialised immune cells originating from the yolk sac of the embryo. The 2022 prize for young researchers goes to physician [Laura Hinze](#). With the help of genome-wide screening, she has discovered how leukaemia cells' resistance to a certain chemotherapeutic agent can be overcome. From this she has derived a new potential strategy for treating solid tumours such as colorectal cancer.

Further information:

Press Office Paul Ehrlich Foundation

Joachim Pietzsch

Tel.: +49 (0)69 36007188

j.pietzsch@wissenswort.com

www.paul-ehrlich-stiftung.de

The **Paul Ehrlich and Ludwig Darmstaedter Prize** is Germany's most renowned medical award, endowed with €120,000. It is traditionally awarded on Paul Ehrlich's birthday, 14 March, in Frankfurt's Paulskirche. It honours scientists who have made special contributions in areas of research represented by Paul Ehrlich's achievements, namely in immunology, cancer research, haematology, microbiology and chemotherapy. The prize, which has been awarded since 1952, is funded by the Federal Ministry of Health, the German Association of Research-based Pharmaceutical Companies (Verband Forschender Arzneimittelhersteller e.V.) and by earmarked donations from the following companies, foundations and institutions: Else Kröner-Fresenius-Foundation, Sanofi-Aventis Deutschland GmbH, C.H. Boehringer Sohn AG & Co. KG, Biotest AG, Hans und Wolfgang Schlessner-Foundation, Fresenius SE & Co. KGaA, F. Hoffmann-LaRoche Ltd., Grünenthal Group, Janssen-Cilag GmbH, Merck KGaA, Bayer AG, Georg von Holtzbrinck GmbH & Co.KG, AbbVie Deutschland GmbH & Co. KG., B. Metzler seel. Sohn & Co KGaA. The award winners are selected by the Scientific Council of the Paul Ehrlich Foundation. A list of the members of the Scientific Council is available on the website of the Paul Ehrlich Foundation.

The **Paul Ehrlich and Ludwig Darmstaedter Prize for Young Researchers**, first awarded in 2006, is presented once a year by the Paul Ehrlich Foundation to a young scientist working in Germany for outstanding achievements in biomedical research. The prize money of €60,000 must be used for research-related purposes. University professors and senior scientists at German research institutions are eligible to nominate candidates. The award winners are selected by the Foundation Council on the recommendation of an eight-member selection committee.

The **Paul Ehrlich Foundation** is a legally dependent foundation administered in trust by the Association of Friends and Sponsors of Goethe University. Honorary President of the Foundation, which was established in 1929 by Hedwig Ehrlich, is Professor Katja Becker, President of the German Research Foundation, who also appoints the elected members of the Scientific Council and the Board of Trustees. The Chairman of the Scientific Council of the Paul Ehrlich Foundation is Professor Thomas Boehm, Director at the Max Planck Institute for Immunobiology and Epigenetics in Freiburg; Chairman of the Board of Trustees is Professor Jochen Maas, Managing Director Research & Development, Sanofi-Aventis Deutschland GmbH. In his function as Chairman of the Association of Friends and Benefactors of Goethe University, Professor Wilhelm Bender is also a member of the Scientific Council of the Paul Ehrlich Foundation. The President of Goethe University is in this capacity also a member of the Board of Trustees.

Goethe University is a research-oriented university in the European financial centre Frankfurt am Main. The university was founded in 1914 through private funding, primarily from Jewish sponsors, and has since produced pioneering achievements in the areas of social sciences, sociology and economics, medicine, quantum physics, brain research, and labour law. It gained a unique level of autonomy on 1 January 2008 by returning to its historic roots as a “foundation university”. Today, it is one of the three largest universities in Germany. Together with the Technical University of Darmstadt and the University of Mainz, it is a partner in the inter-state strategic Rhine-Main University Alliance. **Internet:** www.uni-frankfurt.de

Publisher: The President of Goethe University **Editors:** Joachim Pietzsch / Dr Markus Bernards, Science Editor, PR & Communication Department, Theodor-W.-Adorno-Platz 1, 60323 Frankfurt am Main, Tel: +49 (0) 69 798-12498, Fax: +49 (0) 69 798-763 12531, bernards@em.uni-frankfurt.de.