Press Release, September 3, 2018

Tiny Conspiracies
HOW BACTERIA TALK TO EACH OTHER

Schering Stiftung awards Ernst Schering Prize 2018 to molecular biologist Bonnie L. Bassler for her pioneering work on bacterial quorum sensing

Professor Bonnie L. Bassler, PhD, has paved the way for a new, important research field in microbiology: intercellular bacterial communication, or so-called quorum sensing. Professor Bassler is a Howard Hughes Medical Institute Investigator and the Chair of the Department of Molecular Biology at Princeton University, New Jersey, USA. She described the universal use of chemical communication among bacteria leading to a new paradigm of bacteria as interacting organisms.

For her outstanding research, Prof. Bonnie L. Bassler is awarded this year's **Ernst Schering Prize**. The 50,000-euro prize is one of the most prestigious German science awards. Given annually by the Schering Stiftung, Berlin, it honors scientists worldwide whose pioneering basic research has yielded new, inspiring models or led to fundamental shifts in biomedical knowledge.

Photographer: Zach Donnell

Professor Bassler was nominated for the Ernst Schering Prize by **Prof. Dr. Ned Wingreen**, a professor in the Department of Molecular Biology and the Lewis-Sigler Institute at Princeton University. "Bonnie Bassler's groundbreaking basic research on bacterial communication spans biology, chemistry, and medicine – establishing a paradigm for brilliantly integrated science. She has been a leader throughout her career in establishing a dialogue between scientists and the greater society, and she does all this with a contagious enthusiasm for the rigorous practice and communication of science that spreads to all those around her. As one who has benefited from the energy and inspiration that radiates from her, I am personally thrilled and gratified that Bonnie Bassler is the newest recipient of the Ernst Schering Prize," says Wingreen.

Prof. Dr. Kai Papenfort, head of the RNA-Microbiology group at LMU Munich and former postdoc of Bonnie Bassler, who will give the presentation speech at the award ceremony, says about Professor Bassler: "Bonnie Bassler's research has revolutionized the study of microbiology and transformed the way in which we consider bacteria and the profound importance of their interactions in nature. Her discoveries pave the way to biological solutions to the world's most pressing problems: food, health, energy, and the environment."

Award Ceremony of the Ernst Schering Prize
September 26, 2018, 5:30 p.m.
Leibniz Hall at the Berlin-Brandenburg Academy of Sciences and Humanities
Markgrafenstr. 38 | 10117 Berlin
Registration is possible until September 19 at www.scheringstiftung.de/Preisverleihung2018.

The award ceremony features a musical performance by students of the **Al-Farabi Music Academy** and the Jordanian pianist **Karim Said**. The Al-Farabi Music Academy started in Berlin in the fall of 2016 under the aegis of Daniel Barenboim and under the direction of the internationally renowned musicians Felix Krieger and Saleem Ashkar. The Academy makes it possible for music-loving children and youth, both refugee and local, to become part of an orchestra or a choir. The experience of making music in a group and thriving together on stage strengthens their self-confidence and promotes their potential and social learning. The Al-Farabi Music Academy is a program of the German Children and Youth Foundation in cooperation with the State of Berlin, the Spandau District Authority, and the Schering Stiftung.

Lectures by Bonnie L. Bassler

September 27, 2018
Lecture to high-school students: *How Bacteria Talk to Each Other*
Schulfarm Insel Scharfenberg, Berlin-Tegel (not open to the public)

September 27, 2018, 4 p.m.
Scientific lecture: *Bacterial Quorum Sensing and Its Control*
Humboldt-Universität zu Berlin | Campus North | Building 4 (Ostertaghaus)
Philippstr. 13 | 10115 Berlin
This public lecture is aimed at scientists and students and will be in English. | Registration is not required.

Background Information

Bacteria are tiny ancient organisms. Harmful bacteria have the capacity to kill humans, animals, and plants, while beneficial bacteria play vital roles in keeping humans, animals, and plants alive. How do bacteria do it? They are so small yet they carry out such big jobs. The answer is that bacteria work in groups: They communicate, count their numbers, and act as collectives. Bacteria communicate with one another using chemical molecules that they release into the environment. These molecules travel from cell to cell and the bacteria have receptors on their surfaces that allow them to detect and respond to the build-up of the molecules. This process of cell-to-cell communication in bacteria is called “quorum sensing” and it allows bacteria to synchronize behavior on a population-wide scale. Bacterial behaviors controlled by quorum sensing are ones that are unproductive when undertaken by an individual bacterium acting alone but become effective when undertaken in unison by the group. For example, quorum sensing controls virulence, biofilm formation, and the exchange of DNA. Current biomedical research is focused on development of therapies to interfere with quorum sensing. Such therapies could be used to combat bacterial pathogenicity.

Illustration: Bioluminescent bacteria – these are the organisms in which quorum sensing was discovered. When the cells perform quorum sensing, at high cell density, they glow blue. This picture shows a flask and some petri plates with bioluminescent bacterial colonies.

Bonnie L. Bassler is a member of the National Academy of Sciences, the National Academy of Medicine, and the Royal Society. She is a Howard Hughes Medical Institute Investigator and the Squibb Professor and Chair of the Department of Molecular Biology at Princeton University. Her research focuses on the molecular mechanisms bacteria use for intercellular communication. This process is called quorum sensing. Bassler’s discoveries are paving the way to the development of novel therapies for combating bacteria by disrupting quorum-sensing-mediated communication. Bassler has many honors and she is well recognized for her teaching and service to science. As one example, she served on the National Science Board for six years and was nominated to that position by President Barack Obama.

More Information

More information, images and detailed information on quorum sensing are available at https://scheringstiftung.de/en/presse/.

Films about Bonnie Bassler’s research

Andrea Bölling | Public Relations
Schering Stiftung | Unter den Linden 32-34 | 10117 Berlin
Phone: +49 (0)30-20 62 29-60 | boelling@scheringstiftung.de