RUDOLF SCHÜLKE STIFTUNG

Hygiene Prize and Hygiene Medal 2020 awarded by Rudolf Schülke Foundation in recognition of excellent publications and outstanding lifetime commitment to the field of hygiene

Hamburg, February 28, 2020 - The **Hygiene Prize** of the Rudolf Schülke Foundation, which is endowed with € 15,000, was awarded this year to two young research teams: The Ph.D. students **Esther Sib** from the "One Health" working group of **Dr. med. Dr. agr. Ricarda Schmithausen** and **Alexander Voigt** from the working group "Chemistry" of **Dr. Harald A. Färber,** Institute for Hygiene and Public Health, and **Prof. Dr. Gabriele Bierbaum** from the Institute for Medical Microbiology, Immunology and Parasitology of **Bonn University Hospital**, were awarded the Prize for the publication of their highly interesting research work on the assessment of the risk of spreading antibiotic resistances via biofilms in wastewater systems in hospitals [1]. Dr. med. **Lukas Wisgrill**, from the **Medical University of Vienna**, received the Hygiene Prize for the publication of his influential study on the effectiveness of surveillance cultures and targeted decolonization of colonized very low birth weight infants on the infection rates with methicillin-susceptible *S. aureus* [2].

The **Hygieia Medal** was awarded to **Prof. Dr. med. Ursel Heudorf**, Frankfurt, for her outstanding lifetime commitment to hygiene, environmental medicine and public health. Her high level of scientific expertise, her ability to find practice-oriented solutions in a partnership approach, her extraordinary involvement in many committees along with her authorship of numerous publications are exemplary.

The award ceremony took place after this year's symposium on "Hygiene Policies in European Health Care Facilities – How to Harmonize the Discrepancies in Europe". A summary of the results will be published and made available online.

Hygiene Prize of the Rudolf Schülke Foundation for particularly outstanding publications on infection prevention

Sewage systems as a source of antibiotic-resistant bacteria, resistance genes and antibiotic residues

Antibiotic-resistant pathogens account for approximately 33,000 deaths in Europe and at least 700,000 deaths worldwide. This number could increase dramatically if no adequate measures are taken to reduce the spread of antibiotic-resistant bacteria [3, 4].

The German Antibiotic Resistance Strategy "DART 2020" explicitly emphasizes cross-sectoral cooperation, i.e. the one-health approach, in its action plan. One example of such cooperation is the joint project HyReKa "Biological or hygienic-medical relevance and control of antibiotic-resistant pathogens in clinical, agricultural and municipal wastewater and their significance in raw water", which has been funded by the Federal Ministry of Health since 2016 and is under the leadership of the

Institute for **Hygiene and Public Health (IHPH)** of the University Hospital Bonn. On the basis of this project, the team of the One Health department of Dr. med. Dr. agr. Ricarda Schmithausen and the Working Group Chemistry of Dr. Harald Färber at the IHPH in collaboration with Prof. Dr. Gabriele Bierbaum of the Institute for Medical Microbiology, Immunology and Parasitology of the University of Bonn is conducting research on the inputs of antibiotic-resistant bacteria through wastewater systems.

The laureates are happy to receive the Hygiene Prize (left to right): Prof. Martin Exner, M.Sc. Esther Sib, Alexander Voigt (Food Analyst), Dr. Dr. Ricarda Schmithausen, Prof. Gabriele Bierbaum

Based on the results of these investigations, M.Sc. Esther Sib (WG One Health) and Alexander Voigt (WG Chemistry) prepared the publication "**Antibiotic resistant bacteria and resistance genes in biofilms in clinical wastewater networks**", which was awarded the Schülke Prize, as part of their dissertations [1]. They found that in the direct patient environment in sanitary facilities of highrisk wards, antibiotic resistant bacteria and high concentrations of antibiotic agents were detectable in the waste water of the siphons of the washbasin and shower as well as in the toilets. In contrast, only low antibiotic residues and less resistant bacteria were found in wards with low antibiotic use [1, 5].

Interestingly, the researchers succeeded in detecting a specific resistant bacterium over a period of several years. "From this we can conclude that the hospital, more precisely the biofilms in the sanitary facilities, are a source of antibiotic-resistant bacteria, their resistance genes and antibiotic residues," says Dr. Dr. Schmithausen. Antibiotic-resistant bacteria and their resistance genes as well as antibiotic residues in higher concentrations could be detected in the facilities after the wastewater had not been used for a longer period of time or had not been used for a longer period of time. "A longer period of stagnation of wastewater in sanitary units in the direct vicinity of patients also increases the risk of possible feedback to the patient", said the specialist for hygiene and environmental medicine. A possible concrete precautionary measure as a consequence of these results is the recommendation of the researchers to increase the flushing volumes in the WC to approx. 15 l in risk areas, e.g. on oncology wards, and/or to install self-disinfecting siphons for mechanical cleaning and destruction of the biofilms as a habitat for the resistant infectious agents.

In his laudatory speech**, Priv.-Doz. Dr. med. Frank-Albert Pitten**, Gießen, praised the work of the team as an excellent example of research in hospital hygiene, in which practice-relevant topics were approached in an interdisciplinary way using pharmaceutical, chemical, microbiological and epidemiological methods. Sewage systems in hospitals, which already start with the washbasin and the siphons of the patients' toilets, have not been the focus of hygiene research up to now, and it is therefore all the more important to focus specifically on them, said Pitten.

Successful infection prevention through active monitoring and decolonization protocol

Dr. med. Lukas Wisgrill is a physician in the Clinical Department of Neonatology, Pediatric Intensive Care Medicine and Neuropaediatrics at the Medical University of Vienna. His research interests, which he is currently pursuing as a Research Fellow at the Karolinska Institutet, Stockholm, include the

microbiome of newborns, the influence of the microbiome on inflammation and the development of premature babies with extremely low birth weight, the different phases of the fetal and postnatal immune system, and hospital hygiene issues in newborns. In his Hygiene-award winning publication **Active Surveillance Cultures and Targeted Decolonization Are Associated with Reduced Methicillin-Susceptible *Staphylococcus aureus* Infections in VLBW Infants** [2] Wisgrill describes a retrospective analysis of a total of 1.056 preterm infants with very low birth weight in the neonatal ward of the University Hospital Vienna from 2011 to 2016. MSSA infection rates before and after the implementation of active surveillance cultures and decolonization of MSSA-colonized patients were compared. Mupirocin sensitivity of the isolated MSSA strains was routinely tested. The intervention resulted in a 50% reduction in the incidence/1000 patient days for MSSA infections. No adverse effects were observed from the application of mupirocin nasal and octenidine solution for washing and no development of mupirocin-resistant MSSA strains. The authors concluded that the application of an active surveillance and decolonization protocol resulted in a reduction of MSSA-associated infections. This is a result with a high practical relevance, as the morbidity and mortality of infections in preterm infants with MSSA is comparable to that for MRSA. Nevertheless, up to now the attention of clinical studies has been directed primarily towards MRSA infections rather than MSSA. This publication is therefore all the more important for the prevention of infections in premature infants' wards.

Dr. Lukas Wisgrill receives the certificate for the Hygiene Prize of the Rudolf Schülke Foundation from Prof. Martin Exner.

In his laudatory speech, Prof. Dr. med. Martin Exner once again emphasized that Wisgrill developed a prevention concept with a multidisciplinary team, which was very successfully implemented in a group of patients at particular risk of infection. Other departments for premature infants can certainly also benefit from this protocol.

Hygieia-Medal awarded to
Prof. Dr. med. Ursel Heudorf

The Hygieia Medal of the Rudolf Schülke Foundation is awarded to people who have made a decisive contribution to hygiene and health protection in society through their life's work.

Prof. Dr. Ursel Heudorf receives the Hygieia Medal of the Rudolf Schülke Foundation for her life's work, presented by Prof. Martin Exner.

Prof. Dr. med. Ursel Heudorf is a highly educated expert with many interests, and as a result of her wide professional range the network thinking skills required in hygiene suit her very well. After studying octotrophology, she went on to study human medicine and obtained her specialist certification as a paediatrician. After working as a senior physician she moved on to work in the field of environmental health protection at the Public Health Department of the City of Frankfurt and also earned a degree in Public Health. She finally habilitated at the medical

faculty of the University of Bonn. Most recently, she was the head of the Infectiology and Hygiene Department and deputy head of the Frankfurt City Health Department, and has been actively involved in the Rhine-Main MDRO Network to date.

In his laudatory speech, Prof. Dr. med. Martin Exner, Bonn, emphasized that for many colleagues in the public health service, her scientific qualifications as a professor and her work and lectures serve as a role model for the younger generation of scientists in the public health service. In this way, she has achieved a respected status for the public health service, which cannot be overestimated, said Exner. Prof. Heudorf always attached great importance to the careful collection and interpretation of data and a partnership approach in her work as a public health officer. Her warm-hearted and straightforward nature, her sound knowledge and academic competence give her a particularly positive charisma and sovereignty, which distinguish her cooperation with the institutions she supervises, from hospitals to old people's homes, from swimming pool lawns to Frankfurt Airport. In 2005, she was awarded the Cross of Merit with Ribbon of the Federal Republic of Germany for her great services to the community, and in 2015 she was awarded the Johann Peter Frank Medal for her special services to public health.

The Board of the Rudolf Schülke Foundation honoured Prof. Heudorf with the Hygieia Medal for her special work in combining hygiene and public health in the applied daily practice of a large public health department, in her scientific function and with regard to her academic writing activities.

Information on Rudolf-Schülke-Foundation

Every two years, the Rudolf Schülke Foundation organizes a two-day symposium in Hamburg to which scientists from different countries are invited to discuss important hygiene issues. This year, the agenda focused on the preconditions which are necessary in order to overcome the sometimes great differences in the successful prevention and control of (nosocomial) infections in Europe. When the Foundation decided on this agenda, nobody knew how explosive this topic would become in the spring of 2020. It is evident that even before the COVID 19 crisis, the risk assessment that "*This house in on fire*" already applied, e.g., with respect on antibiotic resistant microorganisms. The participants of the symposium agreed on several key points, which will be summarized in a later publication.

The presentation of the Hygiene Prize and the Hygieia Medal took place at a ceremony following the symposium. The announcement of the prize and the publications of previous years can be found on the Foundation's website.

Schülke & Mayr established the Rudolf Schülke Foundation in 1972 with the aim of promoting hygiene and microbiology with a focus on the prevention and control of communicable diseases, especially the development and application of prevention strategies and antimicrobial and antiviral agents and methods for cleaning, disinfection and antisepsis. The aim is also to promote a worldwide dialogue between representatives from different fields of science and research and to cooperate with universities. In addition to two experts from Schülke & Mayr, the foundation's board of directors and advisory council includes six top scientists from Germany and abroad from the fields of hygiene and microbiology. The chairman is Prof. Dr. med. Dr. h.c. Martin Exner, Director of the Institute for Hygiene and Public Health at the University of Bonn, Vice-Chairman is Priv.-Doz. Dr. med. Frank A. Pitten, IKI - Institute for Hospital Hygiene and Infection Control GmbH, Gießen.

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