

**Laudatory speech of the Chairman of the Scientific Advisory  
Council of the Robert Koch Foundation on the awarding of  
the Robert Koch Prize for Hospital Hygiene and Infection  
Prevention**

**to Professor Dr. Helge Karch**

**Wednesday, 4 September 2013**

**5.00 – 8.00 pm**

**Professor Dr. Jörg Hacker**

*– Check against delivery. –*

Dear State Secretary,

Dear Madam State Secretary,

Dear Madam President,

Dear Presidents,

Dear Mr Erlen,

Dear Mr Braun,

Ladies and gentlemen, dear colleagues,

“I have conducted my investigations in the interest of healthcare, and this, I hope, will also gain the greatest benefit from it.” These words were formulated by Robert Koch when he was admitted to the Prussian Academy of Sciences in 1905. Koch has gone down in memory as a gifted basic researcher who was able to show us for the first time that infectious diseases are caused by bacteria, and who described both the tuberculosis and the cholera pathogens. However, Robert Koch never considered these basic research findings in isolation. Rather for him it was important to also reap the “greatest benefits” for practical infection control.

Consequently it is logical that the Robert Koch Foundation, which feels particularly committed to Robert Koch’s legacy, has established an award for hospital hygiene and infection prevention. I am grateful to all those who have helped to enable this prize to be awarded for the first time today. The first award winner is Professor Dr. Helge Karch, Director of the Institute of Hygiene at the Westfälische Wilhelms-Universität in Münster, along with his team. I would like to briefly present Mr Karch’s oeuvre:

It would be like carrying coals to Newcastle if I were to substantiate in detail here that science knows no boundaries, that it instead transcends boundaries so that new insights and practical applications can be developed. Nevertheless the maxim “science knows no boundaries” particularly applies to the work of Professor Karch. It applies to the technical boundaries that he has time and again overcome with his work; it applies to the political boundaries, but also to the boundaries between the generations.

First the professional aspects: Helge Karch is known for his work on the enterohemorrhagic *Escherichia coli*, EHEC for short. These dangerous pathogens are able to trigger severe intestinal infections that can spread to the kidneys and the entire organism. Right at the beginning of his microbiological activities more than 20 years ago, Mr Karch focused on why the otherwise harmless *Escherichia coli* bacterium is capable of triggering such severe infections.

Using molecular biological methods, Helge Karch has been able to demonstrate that by transferring the genetic material from other bacteria – experts refer to horizontal gene transfer – genes were built into *Escherichia coli* bacteria

that encode toxins and other pathogenic properties. This has created the dangerous intestinal pathogens. Helge Karch managed to quickly apply these basic research findings to practical applications by establishing rapid tests to detect dangerous EHEC bacteria without requiring considerable time.

During the EHEC O104: H4 epidemic in Germany in 2011, this preliminary work more than paid for itself. Through his studies Mr Karch has helped to establish and improve the diagnosis and prevention of infection in regards to enteropathogenic infections. I am sure that the Robert Koch Prize for Hospital Hygiene and Infection Prevention will give a further boost to the latest investigations by Mr Karch, for example on horizontal gene transfer.

In addition to his work on EHEC bacteria, in recent years Helge Karch has particularly focussed on the issue of hospital infections. Here he has also been able to utilise molecular biology to establish methods for typifying different pathogenic microorganisms. Mr Karch has focussed to a particular extent on the so-called MRSA germs. These bacteria – MRSA stands for methicillin-

resistant *Staphylococcus aureus* – play a major role as a cause of hospital infections. On the one hand they are pathogenic and on the other hand they are resistant to certain antibiotics, for example methicillin. A question that arises time and again is concerned with the source of these pathogens. Molecular biological typing plays an important role when considering this question. Of particular importance in this regard is so-called *spa* typing, which enables Mr Karch to identify and typify dangerous methicillin-resistant *Staphylococcus aureus* strains. Mr Karch has concerned himself not just with the basic research when it comes to his work on staphylococci. He has – and here he has crossed both political and geographic boundaries – become very quickly involved in European networks, or initiated such networks, in order to track the dangerous hospital pathogens across national borders.

A first step was the establishment of the SeqNET.org initiative in 2004, which combined 50 mainly national reference laboratories from 27 European countries so as to establish a large typing database. In 2005, the first network for the prevention of MRSA was launched, EUREGIO MRSA-net. Here hospitals from Münsterland and the neighbouring Dutch border region work together.

The most important healthcare partners in the region were involved here, quality networks were created and a typing network was established.

As part of the project, a Web-based communication portal and telephone helpdesk were established at the Institute of Hygiene in Münster. This network also made it possible to identify risk factors for MRSA colonisation. Among other things, the results led the Commission for Hospital Hygiene and Infection Prevention at the Robert Koch Institute (KRINKO) to adopt new recommendations for combating hospital infections.

The strategy of regional networking has been continued by the EurSafety-Health-net project. In particular Professor Friedrich was involved in this initiative, who then changed from Münster to the University of Groningen. It was able to be demonstrated that the network projects had an infection preventive effect. For example in 2011, after 6 years of work by the MRSA-net network, the regional incidence of MRSA bacteremias was 43.2 cases per 1,000,000 inhabitants. That is significantly lower than the incidence in the

entire state of North Rhine-Westphalia (57.6 cases per 1,000,000 inhabitants).

In addition, the Institute of Hygiene has taken over the coordination of the German Federal Ministry of Health-funded “MRE Network Northwest” project, which is aimed at developing seven networks for preventing infections with multidrug-resistant pathogens in North Rhine-Westphalia and Lower Saxony. In the German Federal Ministry of Education and Research’s MedVet-Staph network, which is coordinated by Dr Köck from the Institute of Hygiene at the University of Münster, the incidence of MRSA was detected in farm and domestic animal reservoirs and the significant regional importance of these reservoirs shown for zoonotic MRSA infections in humans. With these investigations, Mr Karch has crossed the boundary between human and veterinary medicine. His solution is now called “One health”, since it is only through the cooperation of medical practitioners and veterinarians that certain infections can be successfully combated. I am sure that the award of the Robert Koch Prize for Hospital Hygiene and Infection Prevention will also continue to promote these studies in future.

In addition to these practical activities, Mr Karch has been very actively concerned with the development of young scientists. Here he has crossed the

boundaries between the generations. This especially applies to the Westphalian Academy of Hospital Hygiene (WAK), which is involved in the education and training of young doctors and scientists. It is aimed at investigating the infection and transmission routes of nosocomial pathogens and revealing the sources of danger at an early stage. The academy is based on two pillars: science and healthcare.

It is managed by medical specialists such as Dr Kipp and Dr Mellmann. Mr Karch has overall rendered a great service when it comes to the development of young scientists. For example, six scientists from the Institute of Hygiene at Münster University's Medical Faculty have habilitated since 2004. They comprise five doctors and a natural scientist. It is only consequent that in 2013 the Prize for Hospital Hygiene and Infection Prevention was conferred to Mr Karch and his entire team at the Institute of Hygiene. This includes Andreas Bauwens as well as Alexander Mellmann, Barbara Middendorf-Bauchart and Wenlan Zhang. I have mentioned these members of the team because it demonstrates that the award-winning project is a collaborative effort of the



entire group. This work was made possible – and that should also be mentioned here – because the University of Münster, the Faculty of Medicine and the hospital have developed a powerful focus with the infection research and the hospital hygiene. And this focus has borne abundant fruit. This work is being supported by, among others, Mr Peters and our award winner, Mr Karch, whose curriculum vitae I would like to briefly present in conclusion.

During the 1970s Mr Karch studied biology at Darmstadt Technical University. In 1982 he was conferred the title Dr. rer. nat. After working as an assistant in Bochum and Hamburg, where he habilitated in 1989, he became a university professor (C3) at the University of Würzburg in 1990. This appointment was followed by very productive years in Würzburg. It was therefore no surprise that Mr Karch was then appointed Director of the Institute of Hygiene at the Westfälische Wilhelms-Universität in Münster in 2001.

Mr Karch has been involved in numerous committees and scientific societies, whereby particularly notable is the fact that from 2004 to 2012 he was an elected member of the Microbiology Review Board of the German Research Foundation (DFG), which is a challenging and important task for the whole

community. In addition, he has also been Vice President of the German Society for Hygiene and Microbiology. Although his activities in health protection have already been briefly mentioned, it should also be noted that since 2003 he has headed the National Robert Koch Institute Reference Laboratory for the hemolytic-uremic syndrome. Mr Karch has also been involved in numerous capacities within the University of Münster's academic administration.

And last but not least: an award seldom comes alone, it is often said. It is therefore no surprise that Mr Karch has already been honoured many times in the past: in 1989 with the Promotional Award from the German Society for Hygiene and Microbiology, the DGHM, in 1994 with the BioMérieux Diagnostic Award and in 1998 with the DGHM's Grand Award. In 1999 he received the H.P.R. Seeliger Foundation Award and four years ago he was conferred an honorary doctorate from the Faculty of Veterinary Medicine at Justus-Liebig University in Giessen.

And now the award of the Robert Koch Prize for Hospital Hygiene and Infection Prevention. I would once again like to offer my sincere congratulations and I

also wish Mr Karch and his team all the best for the future. I am quite sure that there will not be a lack of ideas and new concepts.

Thank you for your attention.