



In Memoriam

Dialog Across Boundaries: A Tribute to Dieter Falkenhagen



Professor Dr. Dieter Falkenhagen, the brilliant scientist and great science organizer with a huge commitment to application science, whose work stimulated students, scientists, and physicians, passed away in Berlin, Germany on August 11, 2015.

Dieter was born on March 23, 1942 in Dresden, Germany as the eldest son of the renowned physicist and director of the Institute of Theoretical Physics at the Technical University of Dresden and the University of Rostock, Hans Falkenhagen. As a youngster, Dieter was impressed by the scientific work of his father, founder of the “Theory of Electrolytes.” Thus, it was logical that the young Falkenhagen started his academic career in Rostock in 1960 where he enrolled as a student of physics at

Rostock University. Already during his studies and falling in love with medical science, he decided not to continue his academic career as a physicist, but to supplement his education by studying medical sciences. He received his doctorate degree in 1974 with a thesis entitled “Catalase activity in the liver in patients with malign tumors,” a topic that anticipated his subsequent interest in the therapy of liver failure some years later. However, as a specialist in internal medicine, Dieter Falkenhagen regarded nephrology and blood purification as his main topic of interest. He qualified for professorship with a thesis, which was carried out jointly with Professor Jim Courtney from Strathclyde University in Glasgow entitled “Blood purification by sorption and assessment of the effectiveness and blood compatibility of selected haemosorbents.” This was the first joint thesis performed in a collaboration across borders between the East and the West. All terms from this thesis defined his area of detailed interest in the upcoming years.

We will never forget those symposia and conferences in the 1980s, which were dedicated to blood compatibility of biomaterials, where Dieter provoked speakers and the audience with detailed questions and proposals mainly related with the improvement and assessment of dialysis membranes. He always started his questions by referring to his affiliation, Rostock University, German Democratic Republic (GDR), and thus stimulated a cross-boundary dialogue from the West across the “Iron Curtain” to the East and vice versa. As a scientist with a profound knowledge in the field of biomaterials, we heard him saying from time to time: “If you really give some thought to it, you will without doubt be in agreement with me!”

Rostock University, with the Department of Professor Horst Klinkmann, developed to be one of the leading centers for research and application of artificial organs worldwide. Of course, members of the research group under the leadership of Dieter

Falkenhagen must have had the qualification of a bioengineer, an occupation that the journalist Sue Shellenbarger called the hottest job in the coming decade in the *Wall Street Journal* of May 26, 2010, and she predicted the largest percentage growth through 2018. Bioengineering, as a cross-border discipline between chemistry, physics, microbiology, and medicine was Dieter Falkenhagen's primary interest. He used his experience not only as a leader of a renowned expert group, but also, together with his colleagues, for the development of innovative medical devices. Among the numerous devices and systems were: an artificial heart for animal trials, the assessment and promotion of modified cellulosic and synthetic dialysis membranes, a super-efficient dialysis treatment based on hemodiafiltration, a dialysis monitor, and measuring devices for ions and electrolytes. Following his earlier experience with liver failure, he completed studies on adsorbents for the removal of both uremic and liver toxins. Already at the very beginning of his application research, Dieter knew about the importance of cooperation with the medical device industry. He initiated and supported joint projects with Keradenta in GDR, and crossed national borders and the Iron Curtain with AKZO ENKA AG in West Germany as well as with the Cordis Dow Corporation in the USA. The fall of the Berlin Wall let him leave Rostock for a position at Fresenius Medical Care in Bad Homburg as director of scientific affairs.

However, working exclusively in industry was not Dieter's first choice. He still considered himself to be an academic researcher. Consequently and very quickly, he accepted the offer to establish a new bioengineering research group of the so-called "Landesakademie" for Lower Austria in Krems, Austria. Working from scratch in a building that originated from a former tobacco production plant, the pioneer Falkenhagen was able to set the stage and—by means of his excellent research—put the city of Krems on the international scientific map of bioengineering. Numerous international scientific meetings with highly ranked speakers from the realms of bioengineering, biomaterials, device manufacturing, and hemodialysis, as well as from adsorber and nanotechnology were organized according to concepts of Dieter Falkenhagen and promoted the scientific reputation of the city of Krems benevolently accompanied by its mayor and administration. In addition, many of us were regularly traveling to Krems and the Wachau region for lectures, seminars, and symposia, in other words not only the "Landesakademie" profited from this

exchange of ideas, but also scientists around the world. We were all keen on getting invitations to visit Krems and profited from Dieter's hospitality and many evenings at the local wine tavern "Heurigen."

Following his expert advice and engagement as the leader of the Centre for Biomedical Technology, the Landesakademie underwent a metamorphosis and received a new status, known today as "Danube University." With the support of Fresenius Medical Care, a new therapy system for the treatment of liver failure, called Prometheus, based on his original work in Rostock, was developed and successfully tested. Prometheus is now successfully applied in more than 20 000 treatments and is available in more than 30 countries of the world. The close interaction between the academia and the medical device industry also led to the establishment of a production facility for medical adsorber technology in Krems, which has now supplied adsorber technology to the whole world for more than 12 years.

Collecting scientific results and supporting their publication was a basic understanding of Dieter. He authored or co-authored more than 300 frequently cited publications and held numerous patents. As one reason to facilitate the dissemination of research investigations of his group, friends, and colleagues, he served in many scientific organizations and societies. As a member of numerous technical scientific advisory boards, both in Germany and Austria, he used his popularity for the benefit of the Danube University. As an example, he was elected board member and president of the European Society for Artificial Organs (ESAO) from 2000 to 2002, as well as board member of the Austrian Erwin-Schrödinger Society for Natural Sciences. He served as a frequent reviewer for many scientific publications including *Artificial Organs* and *Therapeutic Apheresis and Dialysis*.

Dieter was honored with various prestigious awards in recognition of his activities: the Rudolf-Virchow Award in 1985, the Science Award of Lower Austria, the Emil-Bücherl Award for Lifetime achievements of ESAO in 2010, and the Komtur-Cross in Silver of Lower Austria in 2011.

A small detail of his life may finally illustrate Dieter's cross-boundary interests—his passion for jazz and rock'n'roll representing his permanent feeling for protest. Many of us remember his perfect performances as a drummer playing in a band for the entertainment of the participants of one of the ESAO winter schools.

Besides his family with his wife Ursula, his daughters Hilke and Maike, with their husbands and children, Paul, Richard, Bogdana and Radim, we will all miss his presence. The scientific bioengineering community has lost one of its most esteemed members and protagonists. His friends, pupils, and colleagues say farewell to a true medical revolutionary.

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