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IN MEMORIAM

Prof. Heinz Tiedemann (1923-2004)
(Dr. med. Dr. rer. nat.)

Heinz Tiedemann died at the end of August. He suffered from a fall during a cruise to the Mediterranean Sea earlier this year. With the passing of Prof. Tiedemann, we lose one of the most influential and renowned biochemists of modern developmental biology. Amongst his many contributions, he was instrumental in introducing biochemical methods into classical embryology and will be remembered as a pioneer of embryonic inducing factors. His work, which he performed together with his wife, provided numerous milestones towards the differentiation of pluripotent stem cells. Heinz Tiedemann was not only a famous scientist but also a distinguished teacher, and several chairs worldwide in developmental biology are occupied by his former students.

Heinz Tiedemann was born in 1923 and spent his youth in Berlin. He studied medicine from 1941 in Berlin and Freiburg. Stimulated by Hans Spemann´s autobiography and textbook, *Experimental contributions to a theory of development*, he attended the evening seminars on experimental embryology at the Zoological Institute in Freiburg. These evenings were chaired by Otto Mangold, a former co-worker and the successor of Hans Spemann, and it was at these seminars that Heinz Tiedemann met his future wife, Hildegard Waechter. After the war, Heinz Tiedemann returned to Berlin where he continued in medicine and started to study chemistry. He completed his thesis and obtained the title Medical Doctor (Dr. med.) under the guidance of Else Knake, a pathologist and former student of Ferdinand Sauerbruch and Robert Rössle, and then went as a young postdoc to Otto Warburg, who was the most famous biochemist at the Kaiser-Wilhelm-Institut (later Max-Planck-Institut) in Berlin-Dahlem. He finished his education in chemistry and obtained the title Re-route Natural Science Doctor (Dr. rer. nat) with his thesis on glycolytic enzymes.

In 1953, Heinz Tiedemann went back to work with Otto Mangold, who had moved from Freiburg to the Heiligenberg Institute at the lake of Konstanz. Here he started his independent scientific career by introducing his knowledge of chemistry into embryology. Together with his wife, he discovered that inducing factors are proteins and as a side aspect, he developed the phenol extraction procedure for the separation of nucleic acids and proteins. In addition, he was the first to identify the vegetalizing factor, a protein from chicken embryos that induces mesoderm and endoderm in newt embryos.

In 1957, Heinz Tiedemann received the *venia legendi* (habilitation) at the University of Freiburg, then in 1963 he and his wife accepted the invitation of James Ebert, director of the Department of Embryology at the Carnegie Institution of Washington, to join the laboratory in Baltimore, USA. In his recently released autobiography *Memories and thoughts of a physician and natural scientist,* Tiedemann declared this period in the United States as the happiest time in their life. In 1965, the couple returned to Germany to take up the offer of Adolf Butenandt for Heinz Tiedemann to become a scientific member and the director of an independent research group at the Max-Planck-Institute of marine biology at Wilhelmshaven. In 1967 he took over the chair as Professor of Biochemistry at the Medical Faculty of the Free University of Berlin. Here he purified the vegetalizing factor to homogeneity using the most sophisticated biochemical methods available at that time, until he could finally show that it is identical to Activin A. Furthermore, during this time he isolated neural inducing factors, introduced molecular biological techniques into embryology and developed basic strategies for the differentiation of not yet irreversibly determined cells (stem cells). For these efforts he received the Theodor Boveri Prize at Würzburg in 1991, and, presumably, he would have been awarded with other international prizes, if he was of a more extroverted character.

However, Tiedemann did not care for the promotion of his public image and he regarded any kind of publicity as suspicious. Moreover, it should be noted that many of his colleagues did not trust the validity of his results. They did not accept that an inducing factor isolated from chicken embryos could act in newt embryos or that a protein could

retain biological activity following a hot phenol extraction. Some of his peers even refused to acknowledge the existence of inducing factors at all. Now, we know that Heinz Tiedemann was absolutely right, and that despite all the criticism from his scientific peers, he never doubted his own results, which were obtained through clear and convincing experiments. He always tackled new questions and he readily accepted every progress made in his field. His brilliant mind and sharp intellect enabled him to select important findings and his success was also based on the fact that he rapidly introduced the most modern technologies in his laboratory.

After his retirement in 1991, the Tiedemanns moved to Freiburg and, later, to Ochsenhausen near Ulm, where their daughter was living. Hildegard Tiedemann died in 2001. Heinz Tiedemann was active in his field of science until his death. He had vivid discussions and corresponded with his former students, and he published several informative and important review articles.

Although for many of his contemporaries Heinz Tiedemann appeared to be of shy character, he was a warm and friendly person. His fine personality was evident at the numerous excursions to the Harz or the Fichtelgebirge to collect newts, at common visits of art exhibitions and, especially, at unforgotten evenings in the Potsdamer Yacht Club. Heinz Tiedemann was witty and brilliant, amusing and polite, and a genuinely kind person. Sailing was his favorite passion, and even in his last year of his life he participated in a trip on a large sailing ship to the Baltic Sea. Many of us will miss Heinz Tiedemann, not only as an enthusiastic and always stimulating scientist, but even more as a kind and cordial human being.

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Ulm, Essen, Tokyo and Karlsruhe, October 2004

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