Gerhard Quinkert (1927–2015)

Chemist Who Opened the Field to Biology

Photochemistry, stereoselective natural product synthesis with light-induced key steps, and the opening of organic chemistry towards biology are topics that will always be associated with Gerhard Quinkert. Born on February 7, 1927 in Lüdenscheid, he commenced his studies at the Technische Hochschule Braunschweig in 1948. He completed his doctorate with Hans-Herloff Inhoffen in 1955 on a topic related to the chemistry of vitamin D. This introduced him not only to photochemistry but also to the world of steroids, which remained for him prime examples of chemically attractive and biologically active natural products.

In 1957, when he was a postdoctoral fellow with Derek H. R. Barton, Quinkert discovered the photochemical ring opening of linearly conjugated cyclohexadienones, which served as the basis for several later studies. After returning to Braunschweig, he completed his habilitation in 1961, and subsequently became professor. He investigated the photolysis of cyclic ketones, namely the opening of benzocyclobutenes to form quinodimethanes, and their subsequent cycloaddition reactions. In 1970, Quinkert moved to the University of Frankfurt, and, even after his retirement in 1995, could be found there almost daily. He refined his photochemical-mechanistic studies through low-temperature experiments, flash photolysis, and the introduction of theoretical methods, and used, for the first time, the ring opening of cyclohexadienones for the synthesis of a natural product, dimethylcrocetine. The photochemical synthesis of natural products dominated his research interests in the following years. One particular highlight was the synthesis of estrone from a photochemically produced *ortho*-quinodimethane. In order to synthesize estrogen as a pure enantiomer, Quinkert dedicated considerable efforts to the development of chiral auxiliaries and catalysts. Stereochemical considerations had already played a large role in his mechanistic studies. Norgestrel, methyl jasmonate, aspicilin, confertin, rosaranolide, and the macrolide antibiotic A 26771B were just some of the target compounds for which he developed the synthesis in the 1980s. Once again, he returned to the field of steroids: in the 1930s, Elisabeth Dane had proposed (but not realized) the concept of constructing the skeleton by an intermolecular Diels–Alder reaction. Quinkert was successful with the help of chiral catalysts and discovered an efficient approach to estrone and norgestrel.

Quinkert was a passionate teacher. Conformational analysis, which he had learnt with Barton, the qualitative MO model, and the Woodward–Hoffmann rules were core topics of his lectures. He loved clear and succinct aphorisms, and he taught through the in-depth discussion of significant examples. His students had to acquire a breadth of knowledge through private study. Precise definitions of basic concepts and maximum linguistic clarity were extremely important for Quinkert, who happily quoted Popper and Wittgenstein. His style was unorthodox but motivating, and resulted in generations of successful PhD graduates and a number of university professors. He was convinced early on that organic chemistry had to open up to address questions in biology. He maintained this position, which at the time was more provocative than generally accepted, not only through his words but also through appointments and investments. As such, one of the first DNA synthesizers to be delivered in Europe was set up in his institute in 1985. The book *Aspekte der Organischen Chemie*, which was written with Ernst Egert and Christian Griesinger and received the Literaturpreis of the Fonds der Chemischen Industrie, documented his approach to science, which is also known as the "Frankfurt Model".

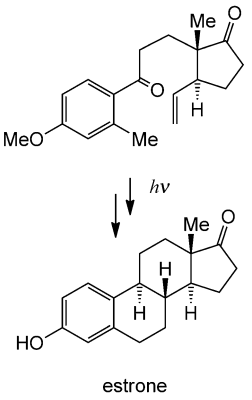
Quinkert's foresight and his independent and firm opinions meant that he was a sought-after, if not always easygoing advisor on the Boards of the Gesellschaft Deutscher Chemiker (GDCh; German Chemical Society) and the Fonds der Chemischen Industrie, as well as the Foundation Board of the Beilstein Institute, where he advocated the provision of computerized databases. He initiated the GDCh Photochemistry Division and the organic chemistry conference ORCHEM. He was also involved in the founding of *Tetrahedron* and *Tetrahedron Letters*. From 1990 he assisted with the reorganization of the Hans Knöll Institute, and, as he himself had been a visiting professor in the USA, Canada, and Israel, he played an important part in the successful founding of the Rolf Sammet and Degussa Visiting Professorships in Frankfurt.

In recognition of his achievements, Quinkert was awarded the Emil Fischer Medal, Windaus Medal, and Inhoffen Medal. He was elected to the National Academy of Sciences Leopoldina in 1988, and to the Academia Europaea in 1989. After his retirement, he remained active in research through industrial collaborations. Right up until his last few months his main question: "How does one teach organic chemistry?" dominated his thinking. He passed away on May 6, 2015 in Lüdenscheid, shortly after the death of his wife Magdalena, to whom he was married in 1953.

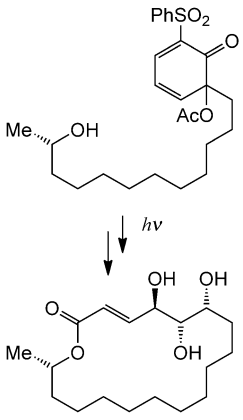
Michael Göbel, Harald Schwalbe
Goethe-Universität Frankfurt

International Edition: DOI: 10.1002/anie.201504950
German Edition: DOI: 10.1002/ange.201504950

Gerhard Quinkert



estrone



(+)-aspicilin