

Obituary for Roland Schauer

Hans-Christian Siebert¹ · Tibor Kožár² · Athanasios K. Petridis³

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Roland Schauer left us on October 24, 2019. The chemical, biological and biomedical communities have lost a unique personality that will not easily be forgotten by those who have known him as friend and colleague. Although it is not unusual to hear that someone dedicated their life to science, this statement takes on a special meaning for Roland. He was fully active and an inspiring researcher until the very last days of his life.

Roland Schauer was born on April 8, 1936, in Stuttgart-Bad Cannstatt. After finishing his studies of medicine, in Tübingen (1955–1961), he was one of the first five students to study the newly introduced curriculum of biochemistry (Diploma 1966) also in Tübingen. In the spring of 1967 he moved to the newly founded Ruhr

University in Bochum and concentrated on the research of sialic acids. After his habilitation in 1970, Roland Schauer was promoted to full professorship and director of the Institute of Biochemistry at the Christian-Albrechts-Universität Kiel in 1976. He headed the institute until his retirement in 2001.

During these 25 years, Prof. Schauer focused his research on the vast field of sialic acids and consolidated his international reputation as Mr. Sialic Acid. Even as an emeritus, Schauer continued his untiring research, exchanging new insights with his colleagues around the world and passing on his research results to his students and colleagues.

In 2002, Prof. Schauer received the “Lifetime Achievements in Sialoglycoscience Award” from Griffith University, Australia, and in 2009 the “Rosalind Kornfeld Award for Lifetime Achievements in Glycobiology” from the American Society for Glycobiology. He was a corresponding member of the Royal Academy of Pharmacy, Madrid (Spain). The establishment of the “Roland and Elfriede Schauer Foundation” at the Stifterverband für die Deutsche Wissenschaft, Essen, in December 2008 is dedicated to promote science and research in the field of glyco-biochemistry with a focus on sialic acids.

As part of his international lectures, Schauer visited frequently Japan and made close professional and personal contacts with Japanese researchers. A few years after moving from Bochum to Kiel, together with his wife Elfriede, he joined the German-Japanese Society Schleswig-Holstein.

Although their common free time was short, due to many research activities of Roland Schauer, the Schauer couple dedicated one of their hobbies to exploring the diversity of botany in the regions of Japan. A special highlight was when they discovered the white Japanese orchid *Atsumorisou* on a vacation trip in 2010 with Japanese friends to Hokkaido and to the offshore islands of Rebun.

To celebrate Prof. Schauer’s 80th birthday an internationally attended conference on sialic acids took place in

✉ Hans-Christian Siebert
hcsiebert@aol.co

¹ RI-B-NT - Research Institute of Bioinformatics and Nanotechnology, Schauenburgerstr. 116, 24118 Kiel, Germany

² Center for Interdisciplinary Biosciences, TIP-UPJS, Jesenna 5, 04001 Kosice, Slovakia

³ Neurochirurgische Klinik, Universität Düsseldorf, Geb. 11.54, Moorenstraße 5, 40255 Düsseldorf, Germany



Fig. 1 Elfriede and Roland Schauer and the sign of the sialic acid society

Bad Lauterberg from April 23–25, 2016, to which scientists and friends from all over the world traveled. Close collaborations with scientists from the University of Utrecht, the Netherlands (Prof. J.F.G. Vliegthart and Prof. J. Kamerling) in the field of glyco-biochemistry resulted in numerous fruitful projects and scientific publications. The collaboration had started in Lille 1973 at the second International Symposium on Glycoconjugates. The fifth International Symposium on Glycoconjugates took place in Kiel/Damp in 1979 under guidance of Roland Schauer. In a collaboration with Prof. Diet den Boer († December 3, 2015) and Dr. Joop van Lenthe, who unfortunately passed away after a long sickness on November

15, 2019, it was possible to show that it leads to deeper structural insights when analyzing sialic acids also on a quantum physical level in order to test new strategies for drug design and drug encapsulation.

The sign of the sialic acid society (Fig. 1, right side) has been created by the painter Carl Lambertz, who had carefully listened to the descriptions of Roland Schauer explaining his field of research. *Echinodermata* (e.g. starfishes) are the first evolutionary multi-cellular organisms that use sialic acids as contact structures. *Cnidaria* (e.g. jellyfishes) react with their stinging cells on presence of sialic acids on the skin surfaces of predators and preys. Roland Schauer was fascinated by these mechanisms which clearly shows the

Fig. 2 H.-C. Siebert, R. Schauer, K. Kitajima discussing the sialic acid patterns on fish-eggs and fish skin

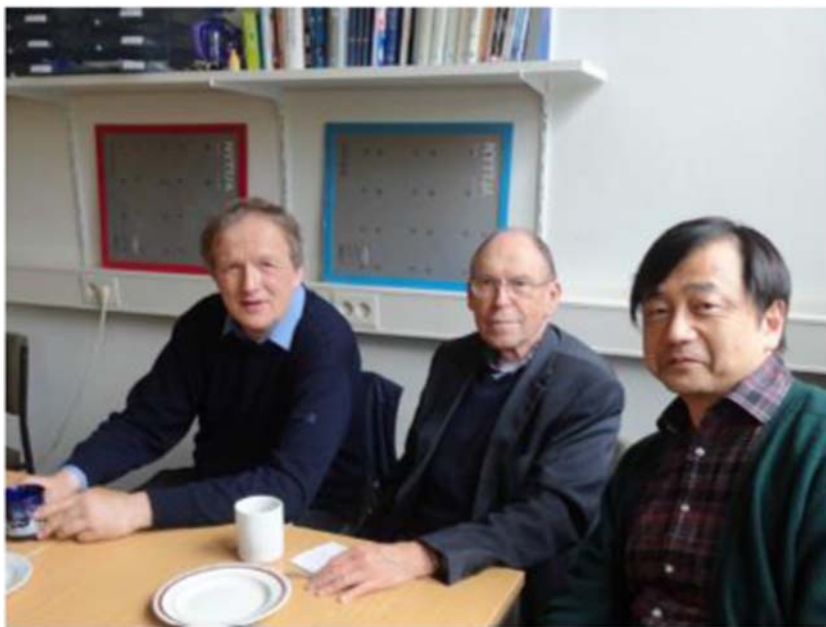




Fig. 3 Clown fishes and sea anemones have established a symbiotic life-form

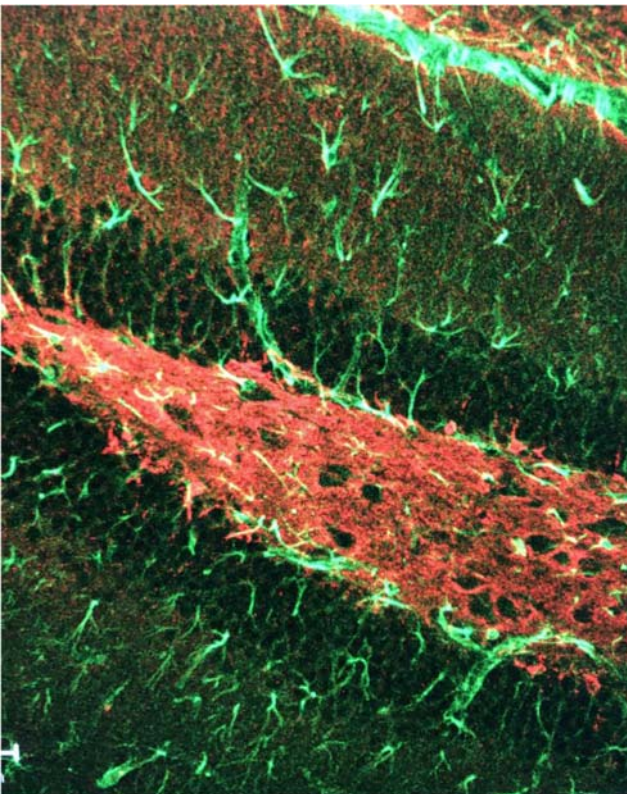


Fig. 4 The polysialic acid molecules on stem cells are colored in red. The glia cells are colored in green

complex relations between sialic acid molecules and living organisms. An exception to most other fishes is the clown fish, which has no sialic acid molecules present on its skin. This enables clown fishes to hide in and be protected by sea anemones which are also cnidarian species. In one of Roland Schauer and his colleagues last papers, he and his colleagues were able to analyze this mechanism in detail and discuss possible applications and adaptations to the field of nanomedicine (Figs. 2 and 3).

A summary of Rolands scientific work is published in an actual review article: R. Schauer; J. P. Kamerling (2018) Sialic acids, Part I: Historical background and development, and chemical synthesis. *Adv. Carbohydr. Chem. Biochem.* 75, 1–354.

The scope of Roland Schauer's activities as well as his knowledge and enthusiasm that he imparted to his colleagues continue to inspire many young scientists, especially in the field of bio-medicine (Fig. 4). Roland Schauer will be remembered with love and utmost respect by his many friends, colleagues, and disciples worldwide.

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