

Carl-Ivar Brändén, 1934–2004

On 28 April 2004, Carl-Ivar Brändén died after a longer period of illness. Carl was born in Södra Bergnäs, a very small village in Lapland. The magnificent landscape and the challenging climate of this part of northern Sweden made a lasting impression on him, and Carl would always refer to himself as a Laplander. He studied mathematics and chemistry, and in 1962 obtained a PhD in inorganic chemistry with a focus on small-molecule crystallography at the University of Uppsala, with Ingvar Lindqvist as supervisor. After his PhD, and with the encouragement of his PhD supervisor, Carl went as a post-doc to the MRC Laboratory for Molecular Biology in Cambridge to join the research group of John Kendrew. There he worked on the refinement of myoglobin, a very demanding task in those days.



After his return to Uppsala, Carl started his own research group at the chemistry department of the Swedish University of Agricultural Sciences, which, together with Bror Strandberg's group at Uppsala University, later became the nucleus of one of the leading centers in protein crystallography. The first research highlight of Carl's young and enthusiastic research group was the determination of the structure of alcohol dehydrogenase, later to be followed by the structures of thioredoxin and glutaredoxin. At that time, the determination of protein structures was a long-term project, and it took more than ten years before the high-resolution structure of alcohol dehydrogenase was completed. After this period, Carl decided to study the key enzymes of the dark reactions of photosynthesis, Rubisco and

glycolate oxidase. Owing to the large size of Rubisco, 16 subunits with a total molecular weight of 500 kDa, the structure determination was a very challenging project.

Carl early on recognized the tremendous advantage of collecting diffraction data from protein crystals at synchrotrons. Together with the Natural Science Research Council, he arranged a contract between the Council and the SRS in Daresbury that gave Swedish scientists access to synchrotron light, after peer review of their proposals. Carl and two of us were the first Swedish users of beam time at Daresbury, which was covered on the front page of *Daresbury News*. About ten years later, Carl accepted the position as Research Director of the European Synchrotron Research Facility, ESRF, where he was responsible for building up the facilities for biological research. During his five-year appointment, Carl laid the foundations for the scientific breakthroughs in chemistry and biology which have been made at the ESRF. His visionary and far-sighted efforts at the ESRF, which led to the construction of front-edge beamlines for protein crystallography, provided important prerequisites to maintain competitiveness of structural biology in Europe.

At the end of the 1980s, together with John Tooze, Carl wrote a book on structural biology, *Introduction to Protein Structure*, which has become a classical text book used in undergraduate and graduate teaching worldwide. A second, revised, edition was completed after Carl had resigned from his position at the ESRF and moved to the Karolinska Institutet. Carl, together with Wayne Hendrickson, was also one of the founders of the science journal *Structure*, which developed into a highly regarded journal in the field of structural biology.

Throughout his career, Carl was involved in science policy and science advice. He was a member of numerous scientific organizations and funding agencies, for instance the Natural Science Research Council in Sweden, the EMBO Fund Committee for post-doctoral fellowships, the Fachbeirat of the Max-Planck Institutes, and of course the scientific advisory committees of various synchrotrons. He also served on the Nobel committee in chemistry, and was for many years science adviser to the Swedish government. Early on he realised the tremendous promises and potentials of modern molecular biology, a field that was rather underdeveloped in Sweden at the end of the 1970s and the beginning of the 1980s. He actively supported and heralded efforts to strengthen this research area, against the opposition of the more conservative part of the Swedish science establishment at the time.

As a scientist, Carl was one of the pioneers in the field of structural biology. As a teacher of students and young scientists, Carl set an example with his enthusiasm, scientific rigor and modesty. He was always supportive of young scientists, in particular women, and would always be available for advice if needed. We, and many colleagues with us, will sorely miss Carl.

Gunter Schneider
Ylva Lindqvist
Inger Andersson
Stefan Knight