Jens Nyborg 1942–2005

Morten Kjeldgaard

On Tuesday 19 July 2005, Jens Nyborg, the father of macromolecular crystallography in Denmark and an associate professor in the Department of Molecular Biology at Aarhus University, passed away. He was 63 years of age.

Shaped by the smiling landscape of his native island of Funen in Denmark, Jens was a gentle, lively and friendly person with a great sense of humor. He obtained his masters degree in chemistry at Aarhus University in 1968 and a PhD in inorganic chemistry and crystallography from Sweden's Gothenburg University in 1971.

Looking to the future, Jens found that his challenge lay in protein crystallography, and from 1973–1975 he worked as a postdoctoral fellow with David Blow at the Medical Research Council (MRC) Laboratory of Molecular Biology in Cambridge, UK. In this stimulating environment, he was like a fish in water as he began doing crystallographic studies on tyrosine transfer RNA synthetase. This period at the MRC had a profound influence on Jens' approach to science. It was there he formed his philosophy that basic science was essential for the advancement of humanity, on which he thereafter based his teaching and research.

In 1976 he returned to Aarhus University as an associate professor in the Department of Chemistry, where, in collaboration with Professor Brian F.C. Clark, Troels la Cour and postdoctoral fellow Kosuke Morikawa, he initiated the first studies in Denmark that examined protein and RNA molecules using X-ray crystallography.

In the following years, Jens became the leading crystallographer in the Biostructural Chemistry group, with a strong focus on protein biosynthesis and on the elongation factor EF-Tu in particular. During the 1990s, this effort led to a series of landmark structures of EF-Tu in different conformations. In 1995, the structure that he had for years considered his ultimate goal, the ternary complex of EF-Tu, GTP and tRNA (figure, center), was determined.

The 1990s were also the period when the crystallography group at Aarhus began to grow. Early on, Jens realized that future students would be cloning, expressing protein, crystallizing and solving structures. As protein crystallography techniques became better and more user-friendly, Jens was able to attract more and more students with a molecular biology background, and results from the lab mushroomed. In 1995, this strategy was confounded when the Biostructural Chemistry unit moved from the Department of Chemistry to the Department of Molecular Biology.

Jens was an excellent teacher, and he loved to interact with students. He loved what he called 'crazy ideas,' pointing out that the greatest scientific discoveries always begin with a 'crazy idea.' His ultimate goal as

a teacher and mentor was to attain 'creative chaos,' a seemingly chaotic situation where creative people are thriving and productive. He felt that if people are presented with the opportunity, the intellectual stimulation and the means, they have a great opportunity to excel.

As a supervisor, Jens was extremely patient, quietly encouraging people to go on during the inevitable but painful dry periods of experimental science. And when something succeeded, he was the most enthusiastic of all, almost jumping up and down and praising people for their skill and endurance. In this way, with happiness and optimism, he motivated everyone around him.

Jens loved to party and often invited colleagues and students to his home. He saw this as an important and enjoyable way to strengthen the social fabric of the lab. He was the initiator of the (in)famous champagne parties in the lab, held on occasions when important results or papers had to be celebrated, and he also provided most of the consumables.

Jens' human qualities, his quiet, diplomatic ways and his ability to talk to everyone made him a respected and admired member of the Molecular Biology Department. Most thought it strange that he was never appointed full professor at Aarhus University, but characteristically he was the person who was least worried about this. He was very proud of his students and co-workers, proud of the fruitful, productive environment at Aarhus University, proud of the results and proud when students from the lab went on to pursue their careers at institutions abroad, and that was enough to make him happy. But if not by his university, Jens was

honored by other institutions. In 1997, Jens received membership to the European Molecular Biology Organization, and in 1998 he became a member of the Royal Danish Academy of Science and Letters. As recently as June 2005 he was honored with a membership in the Royal Physiographic Society in Lund, Sweden. In 2003, Jens became the leader of the Center of Structural Biology, financed by the Danish Natural Research Council, and without a doubt he saw this as the peak of his career.

Rather late in life, at age 42, Jens married his beloved Bodil and was blessed with two children. This meant the end of bachelor life and late nights in the lab or in front of the computer, but for Jens the time invested with his family was returned many-fold in energy, happiness and fulfillment. To Jens, family life and science were complementary sides of life, each giving strength to the other.

Jens' untimely death leaves a huge void for all of us, one that cannot be filled. Danish science has lost an excellent scientist and a beloved human being. Those of us who knew him can only strive to keep alive his spirit. We can strive to honor his compassionate, kind and engaged approach to science and to life in general. But he will be greatly missed.

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