

Max Perutz, 1914–2002

Early on Wednesday 6 February, Max Perutz died of cancer after a fantastically productive life. Starting a PhD in 1936 under J. D. Bernal at the Cavendish Laboratory, he applied X-ray crystallography to proteins, and in 1953 developed the method of isomorphous replacement using heavy atoms to solve the phase problem. This led to the solution of the first protein structures, those of myoglobin by his colleague John Kendrew and his collaborators, and of haemoglobin by Perutz and his collaborators. For this, Perutz and Kendrew were awarded the 1962 Nobel Prize for Chemistry. With a great deal more work during the 1960s, Perutz and his colleagues went on to solve the atomic structures of both oxyhaemoglobin and deoxyhaemoglobin which allowed him to propose a stereochemical mechanism for the cooperative binding of oxygen to haemoglobin. Max was the first author of a recent review of cooperativity in haemoglobin in which he noted that his mechanism still appeared to be correct.



In more recent years, he worked on ligand binding to haemoglobin to help develop a clinically useful drug for increasing oxygen delivery to hypoxic tumours for radiation therapy, and to infarcted tissues. He also developed a strong interest in the structure of the polyglutamine tracts in Huntington's disease. In his youth, as a sideline, he also worked on glaciers. He studied the transformation of snowflakes that fall on glaciers into the huge single ice crystals that make up its bulk,

and the relationship between the mechanical properties of ice measured in the laboratory and the mechanism of glacier flow. He was a prolific and talented writer of popular articles and book reviews, many published in the *New York Review of Books*. He also wrote a number of books, including 'Is Science Necessary' and 'I wish I'd made you angry earlier' which are collections of essays. 'Science is Not a Quiet Life', published by World Scientific Publishing, is essentially his scientific autobiography.

At the Cavendish Laboratory, with the support of Professor Lawrence Bragg and with his first PhD student, John Kendrew, who joined him in 1945, he built up a group working on the molecular structure of biological systems, which grew to four people in 1950 and to about 40 people by 1960. Merging then with other groups from Cambridge and London to create the MRC Laboratory of Molecular Biology on the Hills Road site (now Addenbrooke's) in 1962, he became Chairman of the new Laboratory until 1979 when he 'retired'. Since then he has worked nearly every day in the Laboratory which has grown to house over 400 people. Over the years, the Laboratory has been a prolific source of discoveries and inventions. In addition to his own research achievements, Max will be remembered for his interest in, and warm support of, the work of others, and as one of the founders of molecular biology.

Reacting to the news, Professor Sir George Radda, Chief Executive of the UK's Medical Research Council, which funds the LMB, said, "The impact of Max's work remains a foundation on which science is being undertaken today. His Nobel Prize-winning work on protein structure is more relevant now than ever as we turn attention to the smallest building blocks of life to make sense of the human genome and mechanisms of disease." He added, "Our heartfelt sympathies go out to his family at this difficult time. Not only have his colleagues at the MRC and in the scientific community lost a great co-worker and friend, but Britain and the world will be mourning the loss of one of the 20th Century's scientific giants."

LMB's current director, Richard Henderson, said, "Max was an inspiration to many generations of scientists who knew him. In addition to being a brilliant and far-sighted scientist, he was a kind, thoughtful and gracious man."

Professor Samar Hasnain, one of the Editors of the *Journal of Synchrotron Radiation*, added, "I got to know Max in the early 1980s and always found him kind and generous. A simple example illustrates this. Some ten years ago when he stayed with us, our sons were 8 and 11 years old, he discovered during conversation that our younger son collected stamps. A few weeks later, our sons received a personal letter addressed to them with a whole batch of old stamps. This practice continued for some years to come. He was not only one of the greatest scientists but also a giant of a man."