JOURNAL OF APPLIED CRYSTALLOGRAPHY
ISSN 1600-5767

Olga Kennard OBE FRS (1924–2023)

Michael Francis*

Cambridge Crystallographic Data Centre, Cambridge, United Kingdom. *Correspondence e-mail: mfrancis@ccdc.cam.ac.uk

Keywords: obituary; Cambridge Structural Database; Cambridge Crystallographic Data Centre.

Figure 1
Dr Olga Kennard giving opening remarks at the CSD's 50th anniversary celebration. From the CCDC.

It is with great sadness that we learn of the passing of Dr Olga Kennard. Her long, successful life was full of many achievements, including founding the Cambridge Structural Database (CSD) which is now a fundamental resource that supports the global development of new drugs and materials that benefit us all, is used in chemistry education and contributes to the advancement of science. In this obituary for Dr Kennard we celebrate and recognize her many achievements in the scientific community.

Born in Hungary, Dr Kennard moved to the UK in 1939 just before the outbreak of the Second World War. After graduating from the University of Cambridge in 1944, she joined the Cavendish Laboratory under Lawrence Bragg as an assistant to Max Perutz in the Department of Physics.

After completing the first X-ray structure at the Laboratory (albeit on a very small structure), Dr Kennard moved to London in 1948 and then to the Chemistry Department at Cambridge University in 1962. At this point it was difficult to solve larger structures with crystallography and very unusual for crystallographers to be in a chemistry department. Crystallographers often experienced suspicion from more traditional chemists who thought this 'upstart subject' was taking over their territory.

Dr Kennard persevered and persuaded the department to purchase a diffractometer, the first to be used for small-molecule studies. With a small but gradually increasing group, supported by the Medical Research Council, Dr Kennard and colleagues worked on a variety of medical compounds including antibiotics and (excitingly) the structure of adenosine triphosphate.

As the volume of structural data increased, Dr Kennard along with Dr J. D. Bernal had a vision that the collective use of data would lead to new knowledge and generate insights:

> 'We [J. D. Bernal and I] had a passionate belief that the collective use of data would lead to the discovery of new knowledge which transcends the results of individual experiments' (Dr Olga Kennard).

This vision led to the founding of the CSD in 1965. From its humble beginnings, the CSD now contains over 1.2 million small-molecule organic and metal–organic crystal structures and is continually growing. Big-data learnings from the collective results are used globally to advance scientific research into pharmaceuticals, functional materials, catalysts and more in both commercial and academic research.

During her 1995 J. D. Bernal lecture, Dr Kennard had no doubt as to the future value of the database:

> 'I think that the great ocean of truth is still in front of us and we will continue to discover new aspects of this truth' (Dr Olga Kennard).

Dr Kennard went on to lead the CCDC until 1997 and authored over 140 structures during her career. One of her first structures with coordinates was published back in 1963 and was a chlorobenzoate salt (CSD refcode MSCBZO). Her more recent examples include a uridine structure, which was published in 1991 (CSD refcode JOSCAV).

Dr Kennard's huge contribution to crystallography was recognized by many prestigious awards, prizes and elections to learned societies.

In 1987 she was elected a Fellow of the Royal Society and, in recognition of her work, there is the Royal Society Olga Kennard Research Fellowship in crystallography.

An OBE for 'Services to Scientific Research on the Structure of Biological Molecules' followed in 1988.

In 1993 Dr Kennard was elected a member of the Academia Europaea, and a Doctor of Law *honoris causa* was awarded to her by the University of Cambridge in 2003.

She won the Gmelin–Beilstein Memorial Medal in 2007, awarded by the German Chemical Society for scientists and scholars who have made an outstanding contribution to the history of chemistry, chemistry literature or chemical information.

In 2020 Dr Kennard was awarded the twelfth Ewald Prize by the International Union of Crystallography (IUCr) for 'her invaluable pioneering contribution to the development of crystallographic databases, in particular the Cambridge Structural Database (CSD), which as she early foresaw, has led to the discovery of new knowledge which transcends the results of individual experiment'.

Recognition for Dr Kennard's huge contribution to structural science continued right up to the end of her life with the award by the Royal Swedish Academy of Sciences of the Gregori Aminoff Prize for 2023 for establishing a crystallographic database. Dr Kennard was due to receive the award at the Aminoff Prize Symposium at the end of March.

This obituary is an edited version of that originally published by the Cambridge Crystallographic Data Centre (https://www.ccdc.cam.ac.uk/discover/news/celebrating-dr-olga-kennard-1924-2023/).