

Obituary

Dudley H. Williams

(1937-2010)



Born in Leeds to a family of relatively modest means and background, Dudley Williams was educated at Pudsey Grammar School and subsequently at Leeds University where as an undergraduate he shared mathematics lectures with the now Professor John Todd, a fellow student. After completing his PhD on Vitamin D chemistry, also at Leeds, Williams moved to Stanford, California to work with Carl Djerassi. In three stunningly productive years, Williams showed how mass spectrometry and NMR could transform the way that organic chemists worked. This was born out by co authoring of two books on mass spectrometry with Djerassi and Budzikiewicz and a book on the NMR of steroids with Bhacca. His reviews, text books, research papers and lectures revolutionised the practice of organic chemistry over the following 10 years.

In 1964 he was appointed by Alexander (later Lord) Todd to a junior academic position in the Chemistry Department at Cambridge. He made it a condition of his appointment that the department installed top quality nuclear magnetic resonance and mass spectrometers to bring it into line with its American competitors. For many years he continued developing new techniques to make NMR and mass spectrometry into ever more powerful tools for determining chemical structures and for probing chemical properties. Dudley was always keen that his expertise be used for practical benefit through his academic work and industrial consulting and this required him to travel all over the world.

In the late 1960s he worked with Professor Graham Cooks, a post doc in his laboratory, on unimolecular reactions in the mass spectrometer. In 1970 he determined the structure of the vitamin D metabolite - formed through reactions in the liver and kidney – that is the human hormone responsible for calcium absorption into the body, and necessary for the formation of healthy bones; this work led to life-saving therapies for patients with kidney failure. This work was carried together with his collaborators, the now Professor Howard Morris FRS and Dr Egon Kodicek. Around this time together with the now Professor Jeremy Saunders he pioneered work on the use of Lanthanide shift reagents in NMR. A year earlier, he was excited about a new problem: a powerful natural antibiotic of unknown structure called Vancomycin - at the time it was obscure, and thought to be too toxic for clinical use. There followed almost four decades of science: difficult and frustrating for several years but ultimately successful. NMR, mass spectrometry, thermodynamics, synthesis and molecular biology were all brought to bear by the group on the problem of understanding not only the structures of these molecules, but also the intermolecular interactions leading to molecular recognition and their antibiotic activity.

His contribution was enormous: Vancomycin and its analogues have become key weapons in the fight against MRSA “superbugs”, with sales in 2007 of ca. \$1 billion, and have saved tens of thousands of lives. In the 1980's Dudley was one of the most cited chemists in the UK and one of the most cited scientists in Cambridge. He was elected a Fellow of the Royal Society in 1983. Throughout those decades, he also used Vancomycin and related species as vehicles for fundamental thinking about molecular shape and flexibility, and about the thermodynamics of solvation, binding and cooperativity with constant reference to Boltzmann.

It is true to say Dudley abhorred committees and bureaucracy and was emphatically not interested in administration or management.. He saw the two-way relationship between supervisor and research group as one of the great pleasures of academic life. Dudley Williams retired as deputy director of the Cambridge Centre for Molecular Recognition in 2004.



taken from Don Daley's article in BMSS Mass Matters April 2011