

Professor Alison Brading

Professor Alison Brading, a leading figure in smooth muscle research, died in Oxford on the 7th January 2011, at the age of 71. A popular and well-known scientist, she will be missed by her many friends and colleagues around the world.

Alison was born in Bexhill-on-sea on 26th February 1939. She had a mixed primary education in many different schools, but had a good secondary education at the Maynard School in Exeter, where she excelled, and was

offered a place to read medicine at Oxford. She contracted poliomyelitis in 1957 in Nigeria when visiting her parents, the Brigadier Norman & Helen Brading. She was flown back to the UK in an iron lung, and spent around 18 months receiving treatment first in the Churchill Hospital and then the Orthopaedic hospital in Oxford where she received excellent physiotherapy, recovering some of her strength and losing none of her determination, though she was unable to enrol as a medical student.

Alison obtained a first class degree in Zoology at Bristol University in 1962, and completed her PhD under the late Professor Peter Caldwell, working on the physiology of roundworm smooth muscle cells - igniting the interest in smooth muscle that became her lifelong research theme. Alison would comment glowingly on the quality of her undergraduate training and the opportunities Bristol provided her with despite her physical disability. She held a lifelong belief in the importance of zoological training for a deep understanding of physiology. The fact that her training hadn't progressed quite as far as mammals did not hold her back; Alison soon corrected this minor oversight. From Bristol,



she moved to Oxford in 1965 as a post-doctoral fellow in the Department of Pharmacology to work in the laboratory of Edith Bülbring. She was appointed Fellow and Tutor in Physiology at Lady Margaret Hall in 1968 and University Lecturer in

Pharmacology in 1972, becoming a Professor in 1996, before retiring officially in 2005. After retiring, she remained active as a Visiting Scholar in the Nuffield Department of Surgery, yet maintained her close contact with the Oxford Department of Pharmacology. A truly remarkable career for a

woman struggling throughout with a severe physical disability.

Smooth muscle preparations, because of the ease with which they could be set up in organ baths and hitched up to simple levers inscribing traces on smoked drums, had always been a popular readout system for pharmacologists. The challenge was to move beyond contraction for a deeper understanding of smooth muscle physiology, both for dissecting function and to provide a more discriminating pharmacological tool. Bülbring, an inspiring scientist who joined the Oxford department in 1938, was the first person to study, using microelectrode techniques, the workings of the muscle cells themselves. Her laboratory became a hive of activity, attracting aspiring scientists from all over the world. Alison quickly settled into this lively group, and used radioisotope flux measurements to study the movement of ions across the membrane of smooth muscle cells, linking in very productively with ongoing work on the electrophysiological, contractile and pharmacological properties carried out by others in the group. Her careful and rigorous work revealed the importance - now widely

accepted - of processes such as electrogenic ion transport, $\text{Na}^+/\text{Ca}^{2+}$ exchange, and Na^+/Cl^- co-transport in smooth muscle function. Much of this basic work, published in major journals between 1968 and 1980, was done on the guinea-pig taenia coli preparation that Bülbring had introduced - a tissue very convenient for experimentalists, but of very little functional importance, even for a guinea-pig. Rather than following the reductionist trend into molecular biology, Alison chose to focus on functional physiology, particularly the physiology of the urinary tract in relation to autonomic function and the clinical problem of urinary incontinence. From the mid-1980s, she collaborated with several clinical urologists, physiologists and pharmacologists in exceptionally broad-ranging studies of bladder and anal sphincter function, working with human tissues, animal models and in vitro smooth muscle preparations. She realised that the solution to common and disabling clinical problems of incontinence and bladder instability required a better understanding how bladder smooth muscle functions at all levels, including the role of membrane ion channels and membrane potential changes, neurotransmitters and their receptors, calcium storage and release mechanisms, autonomic innervation, and drug effects. A remarkable feature of her work was the ability to bring key new pharmacological developments to the urogenital field. Examples of this include her early work on purinergic transmission and K^+ channel openers in the bladder (late 1980s), nitregic transmission in the human anal sphincter (from the early 1990s), and in the last decade, the physiology and pharmacology of Interstitial Cells. Her work, published in more than 100 high quality papers in leading journals, including 25 in the British Journal of Pharmacology, established her as a leading international authority in this field. Alison's collaborations with urological surgeons, through her headship of the Oxford Continence Group, kept her fundamental science focused on clinically important problems, and provided excellent training in fundamental research techniques to a generation of urological trainees. Her contributions to Urology were recognised in 2006, when she was the first non-clinician to be awarded the St Peter's Medal of the British Association of Urological Surgeons. Alison was an inspiring and conscientious teacher. She cared deeply about the generations of undergraduates for whom she was responsible at Lady Margaret Hall, many of whom remained her friends for years afterwards. Though sympathetic to their problems, she drove them hard, applying the same sharply critical standards as she applied to her own scientific work. She took the same line with the junior scientists who came to work with her, many of whom found themselves having to rethink principles that they had thought they understood. Of the scientists who received training with her, a remarkable feature is the number that remain active within the field of smooth muscle research, both within academia and in the Pharmaceutical industry. For example, three of her former DPhil students, postdoctoral researchers or fellows subsequently became Professorial heads of department in Japan. Within the Department of Pharmacology, she drove the development of Oxford's first dedicated Pharmacology course, an MSc in Pharmacology. Her commitment to academic Pharmacology can be seen in her willingness to take a long-saved year-long sabbatical away from her other teaching duties, in order to be a constantly-available senior academic for the first cohort of MSc students.

She had a wide circle of friends and colleagues around the world, and, though travelling was difficult for her, frequently gave invited lectures overseas. Her breadth of knowledge of smooth muscle physiology, made her a popular journal reviewer and editor. Alison was a discerning assessor of good scientific technique and important conclusions. Non-native English writers were frequently assisted by Alison, receiving carefully annotated text revisions sent independently of her official opinions. Her aim was that language should not be a barrier to publication, but that the use of clear English in published papers was important to accurately and engagingly convey meaning. In 2008, she was elected to an Honorary Fellowship of the British Pharmacological Society, and Honorary Membership of the Physiological Society.

An outgoing, cheerful and optimistic person, Alison bore her physical disability uncomplainingly, with extraordinary courage and determination, throughout her life. Walking with crutches was difficult, but she avoided using a wheelchair for as long as she possibly could. Starting with a special invalid car, a primitive contraption that she found frustrating and ridiculous, she progressed from an adapted mini to a regular version, in which she drove everywhere - rather too fast - in great style. Fiercely independent, she lived on her own in a small cottage, idyllically situated on the bank of the canal a few miles from Oxford, and for a while owned a narrow boat moored outside her front door, in which she enjoyed taking trips with friends, family and students to do the physical part. She and Edith Bülbring - similar forceful personalities in many ways - became very close friends. Though her disability grew more burdensome in her later years, she coped very well, continuing to work from her office in the pharmacology department, until her final illness, a sudden and severe attack of pneumonia in October 2010, took her into hospital for the last time.

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