

Professor Norman Bowery:
A British Pharmacologist Who Discovered The GABA_B Receptor

Professor Norman Bowery was born on June 23, 1944 and died on October 25, 2016. He was a rare pharmacologist, who actually discovered a receptor - the GABA_B receptor, the impact of which increases as more therapeutics targeting this molecular entity are developed to treat conditions such as spasticity and neuropathic pain. His innovative and often simple pharmacological experiments led to great scientific achievements during his lifetime that will leave a lasting legacy. Despite his World-leading research, Norman was a man who's humility was evident to all who met him.

Norman began his scientific career at CIBA Laboratories, Horsham, Sussex, in the early 60's where he met his beloved wife of 46 years Barbara. Following the swinging 60's, Norman gained his PhD in 1973 working in Professor David Brown's Department at University of London. Professor David Brown, Honorary Fellow BPS commented - "Norman joined us at St. Barts Hospital Medical College in 1970 as a PhD student and then came over with me as a postdoc for a couple of years when I moved to the School of Pharmacy in 1973. As might be expected from his technical background at CIBA, Norman proved a superb experimentalist, with wonderful "green fingers" for getting experiments to work. He took a very "no-nonsense" approach to research: no sooner had we discussed a question than Norman had exactly the right experimental protocol up-and-running and had the answer in hours rather than days.

His PhD topic was the extrasynaptic transport and actions of GABA in sympathetic ganglia (which are devoid of GABAergic neurons). He first characterized a GABA-uptake system [*Nature New Biology*, 1972: 238,89-91], later shown to be neuroglial in origin; then went on to define the pharmacology of the GABA-A mediated depolarization of the sympathetic neurons [*Br.J.Pharmacol.*, 1974:50,205-218]; and finally showed that the ganglion metabolized GABA via the transaminase [*J.Neurochem.*, 1974: 22,1145-7]. PostPhD, he also did some clever experiments showing that some gabamimetic compounds could exert their effects on neurons indirectly by driving the release of GABA from neighbouring glial cells. In all, from the 5 years he was with us he published 12 research papers, including 3 in *Nature*, 4 in *BJP*, and 2 in *J.Physiol* - an impressive start to a great career.

Throughout his time with us, every now-and-again Norman would test his special CIBA drug baclofen on the ganglion system he was using, but always without effect (and often to our misplaced amusement). Eventually (soon after he left us), he discovered just such a system – the release of noradrenaline from sympathetic nerve endings - on which baclofen *could* imitate GABA and which was insensitive to bicuculline (see *BJP* 1979: 66,108P and 67,444P) – hence the birth of the GABA-B receptor. “

His prolific scientific contribution over the next decade led to numerous high impact scientific papers none more so during his time as lecturer/senior lecturer in pharmacology at St Thomas’s Hospital Medical School, London. As Norman would mention, ‘it was in a tiny cupboard of a laboratory that the GABA_B receptor was discovered’. At the time, Norman led a team of three, Dave Hill, the late Gary Price and Alan Hudson, that identified this subtype of the GABA receptor (see *Nature*, 1980, 283,92-94). David Hill recounts; “the hours we spent in the tiny laboratory in the Department of Pharmacology at St. Thomas' Hospital Medical School. Under the beady eye of the stuffed seagull that hung from the ceiling in tribute to another passion of Norman’s - Brighton and Hove Albion. It was like working for a scientific King Midas; almost everything we did in that tiny laboratory resulted in some new and wonderful discovery worthy of publication in very prestigious scientific journals. I recall we also spent a great deal of our time laughing!”

Norman’s work on the pharmacology of the GABA_{A&B} receptors was duly recognized in 1987, resulting in the award of DSc, Doctor of Science from his *alma mata*. It was 1987 having held a number of senior academic appointments that Norman made his second move into the pharmaceutical world with MSD Laboratories at Terlings Park, Essex, as Section Head, in the Neuroscience Department. Three years later Norman was back at the School of Pharmacy but this time as Wellcome Professor and Head of Department of Pharmacology. Eight very happy and productive years ensued. During this period Norman was honored to be awarded the honorary degree of *Laurea Honoris Causa* from the University of Florence – a further fitting tribute given his love of Italy.

This was followed by ten years as Professor of Pharmacology at the University of Birmingham. Professor Nick Barnes, recalls, “When he told his colleagues at The Square he was leaving, he said he wanted to build one more thing Well he certainly built something in Birmingham – characteristically he led from the front and built a

vibrant Department, instilling an inclusive 'family' atmosphere reflecting his values. He was a brilliant teacher of pharmacology – able to convey complex mechanisms with apparent ease." On leaving the University of Birmingham, he became Professor Emeritus in 2004.

Norman's last position was as Vice President, of GlaxoSmith Kline's Centre of Excellence for Drug Discovery, based in Verona. Many years previously Norman had fallen in love with Italy. He was attending a meeting in Soverato, Calabria. At the end of the meeting there was a final celebration. This took place on the beach, under the stars. Professor Nistico arranged for jazz music to be played by Mussolini's son, a gifted musician, and with a glass of excellent Italian wine in his hand, replete with fine Italian food, Norman found another passion – Italy.

He was honoured to take up the position with GSK in Verona and enjoyed the interaction with the people there. Norman was at his best working at the bench alongside and mentoring his students and colleagues and sitting in an office was not in his DNA, his passion was for science and pharmacology. He retired in 2006, and spent his time between his homes in Verona and Romsley near Birmingham.

During all his working scientific life Norman was a strong and passionate supporter of the British Pharmacological Society. He was Honorary Meeting Secretary from 1991-1994, Honorary General Secretary 1995-1997 and President 1999-2000. This work was rewarded by the camaraderie and pleasure he took in seeing a thriving Society flourish. He was elected an Honorary Fellow of the British Pharmacological Society in 2004, in recognition of his contributions to pharmacology. For his research on the Pharmacology of GABA_B receptors, he was awarded the prestigious Gaddum Memorial Gold Medal Award in 2008, the highest honor the Society awards for outstanding contributions to Pharmacology. A Festschrift BPS symposium in his honor was also organized in 2006 and a book entitled; GABA_B Receptor Pharmacology: A Tribute to Norman Bowery, was published in 2010, edited by his friends and colleagues, Professor S.J. Enna and Dr Tom Blackburn.

Norman's wife Barbara, said of Norman that "he had many PhD students pass through his guidance and mentorship. He always gave them every opportunity to achieve their potential; many of them are now close friends. Students came from home and abroad,

many of them Italian. Norman also enjoyed interaction with the undergraduate students, his love and knowledge of Pharmacology being enthusiastically passed on. Norman enjoyed a rewarding and productive life, with plenty of laughter along the way. We have all truly been very fortunate and privileged to know him."

Professor Norman Bowery was 72 years old, when he passed away. He leaves a beloved wife Barbara, children, Nicole, Andrew, Annette, son-in-law Russ and grandchildren, Jenna and Jake.