

Gerald Edelman

Winner of 1972 Nobel Prize in Physiology or Medicine

Gerald Edelman (b 1929; q University of Pennsylvania 1954; MD, PhD), had Parkinson's disease and prostate cancer. He died on 17 May 2014.

As a young US Army officer in the 1950s who was assigned to the European command, Gerald Edelman saw patients including generals and admirals at a military base outside Paris. Every few days he was assigned to the civilian American Hospital in Paris, where during his two years of military service he saw “thousands upon thousands of patients” and delivered “a fair number” of babies.

In his precious spare time, Edelman often visited the American Library on the Champs-Élysées, which “had books never cracked and a good section of scientific books,” he recalled half a century later in an interview in 2005.¹ It was at the library that “a very signal event” occurred—he came across a book on immunology.

The young doctor was “amazed” that the book talked only about antigens, the foreign substances—such as viruses, bacteria, or chemicals—that trigger immune responses when injected into the body. “It occurred to me that . . . this doesn't seem to me to be the central issue,” he recalled. “The central issue is antibodies. Well, my naïveté was remarkable—my ignorance was even more remarkable . . . but I got this idea that maybe I should work on antibodies.”

It was probably the most important idea, at least professionally, of Edelman's life. After leaving the army he did work on antibodies. Some 15 years later, he and biochemist Rodney Porter shared the 1972 Nobel Prize in Physiology or Medicine “for their discoveries concerning the chemical structure of antibodies.”²

In the late 1950s, when Edelman began his work, scientists did not understand how an almost identical looking collection of antibody proteins are able to target an almost infinite range of foreign agents. In order to understand the process, Edelman in the US and Porter in the UK, working independently of each other, split apart large molecule antibodies into smaller and more manageable pieces. They found that the antibody molecule is composed of two pairs of chains: two so called light chains and two heavy chains about twice as long, which can adapt to produce the best antibody to fight a foreign agent that has entered the body.



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“By this they laid a firm foundation for truly rational research, something that was previously largely lacking in immunology,” according to the Nobel committee. “Their discoveries represent clearly a breakthrough that immediately incited fervent research activity the whole world over, in all areas of immunological science, yielding results of practical value for clinical diagnostics and therapy.”

Edelman started his antibody work in 1957 after leaving Paris. He took a position as assistant physician at the Rockefeller Institute for Medical Research in New York—later renamed Rockefeller University—and wasted no time trying to unravel the secrets of antibodies. He coauthored his first research paper in 1958³ while at the same time working on a doctorate in chemistry, earning his PhD from Rockefeller in 1960.

He was lead author of a key paper published in 1961 in the *Proceedings of the National Academy of Sciences of the US*, entitled “Structural differences among antibodies of different specificities.”⁴ During the following decade, he coauthored a series of important papers, including a groundbreaking 1967 paper presenting a hypothesis on the origin of antibody diversity that was later proved to be correct.⁵ He produced the first complete sequence of the amino acids that comprise an antibody.

Gerald Maurice Edelman was born in 1929 in the Queens area of New York City. His father was a doctor. His mother worked in the insurance

business and had ties to Wall Street. As a child, Edelman became an accomplished violinist and aimed towards a career in music. But his parents were opposed, with his mother telling him that “performing music was not more than one step above juggling.”

Edelman enrolled at Ursinus College in Collegeville, Pennsylvania, where his focus shifted from music to science. After earning his bachelors degree in chemistry in 1950, he started studying medicine at the University of Pennsylvania in Philadelphia. After his third year of medical school, he was accepted to study medical biophysics under Britton Chance, focusing on the enzyme cytochrome c peroxidase. He earned his medical degree in 1954.

After a year of training under Walter Bauer, chief of medical services at Massachusetts General, Edelman entered the US Army in 1955.

In addition to immunology research in the 1960s, Edelman also took on administrative duties at Rockefeller, working for a time as associate dean of graduate studies. He became a full professor in 1966.

After winning the Nobel prize, his research efforts shifted to the brain. From the late 1970s onwards, theoretical neuroscience was his prime focus as he tried to discover, as he once put it, “how the brain gives rise to the mind.” In 1981 he founded the independent Neurosciences Institute.

He formulated a theory to explain development and organization of higher brain functions, a process he called neuronal group selection and which he first presented in the 1978 book *The Mindful Brain*.⁶ Nine years later he described in detail his theory in the 1987 book *Neural Darwinism: The Theory Of Neuronal Group Selection*.

In an interview in 2000, he explained the switch from immunology to neuroscience by saying: “There's something cognate or similar in the brain and in immunology—namely, your brain is also a recognition system.”⁷

In 1992 Edelman left Rockefeller to become chairman of the Department of Neurobiology at the Scripps Research Institute in La Jolla, California, with his Neurosciences Institute following him to California. A prolific writer of more than 450 research papers, he wrote more than half a dozen books on the mind and on consciousness.

Edelman leaves Maxine, his wife of 64 years; two sons; and a daughter.

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References are in the version on thebmj.com.

Cite this as: *BMJ* 2014;348:g3873

Victor Ariyaratnam Benjamin



Former consultant surgeon (b 1928; q Colombo 1952; MS (Ceylon), FRCS Eng), died from metastatic adenocarcinoma of the caecum on 10 May 2014.

Victor Ariyaratnam Benjamin grew up in Jaffna, Ceylon (now Sri Lanka). He excelled at medical school and was briefly professor of surgery at the newly established Jaffna Medical School (1978-9). Personal circumstances caused him to leave Sri Lanka to take up appointments in Nigeria and Fiji, before migrating to Australia in 1984, where he became a rural general practitioner in Goodooga, serving a largely Aboriginal population of 500 people. He worked there for 27 years and was highly popular with the patients, and described these last years as the “happiest of his life.” Predeceased by his son, he leaves his wife, Saras; two daughters; and two grandchildren.

Nimalan Arulantham
[Cite this as: *BMJ* 2014;349:g4563](#)

John Hugh Kelsey



Former consultant ophthalmic surgeon University College Hospital and Moorfields Eye Hospital, London (b 1931; q Cambridge 1956; FRCS Eng, FRCOphth), d 6 May 2014.

John Hugh Kelsey (“Jack”) was appointed consultant to Edgware General Hospital in 1965 and subsequently to London’s University College Hospital and Moorfields Eye Hospital. At Moorfields, his particular interest was in electrophysiological testing in clinical practice. His work

contributed to the development of the electro-oculogram and resulted in numerous publications in the literature. An amiable man, he had a keen sense of humour and was always ready with a quip. He was well read and a keen opera goer. His particular passions were for his garden and philately. He built up a vast collection of postage stamps with a medical theme and lectured widely on the subject. He leaves his wife, Jean, a nurse whom he met at University College Hospital; a son and daughter; and two grandchildren.

Irving Luke
[Cite this as: *BMJ* 2014;349:g4564](#)

Hugh Lister McMullen



Former orthopaedic surgeon Worksop, Retford, and Rotherham (b 1917; q Cambridge/Middlesex Hospital 1941; FRCS), died from head and neck cancer on 21 January 2014.

Hugh Lister McMullen served with the Royal Army Medical Corps on British India’s North West Frontier. After returning to the UK after partition he completed his orthopaedic training in Mansfield. Appointed consultant orthopaedic surgeon to the Bassetlaw hospitals in 1951, he was a member of the Holdsworth Club and the British Orthopaedic Association. Having delivered a split site service during the time of polio epidemics, tuberculous joints, and mining accidents, through to the advent of joint replacements, he remained sceptical of the need for universal subspecialisation. After retiring he continued to work part time and attended postgraduate meetings until well into his 80s. Predeceased by his wife, Joy, in 1996, he leaves three children, grandchildren, and great grandchildren.

Wendy McMullen
David McMullen
[Cite this as: *BMJ* 2014;349:g4565](#)

John P Murphy



Consultant anaesthetist (b 1921; q University College Cork 1943; FFARCS), died from metastatic malignant melanoma on 16 May 2014.

John P Murphy entered into medicine against the wishes of his mother, who wanted him to be a Carmelite priest. Once qualified he moved to Plymouth, where he started anaesthetic training and treated casualties of war. It was here he met his future wife, Joyce, a student nurse. He became the first full time consultant anaesthetist to Dudley and Stourbridge hospitals. At the Corbett hospital he established one of the first intensive care units in the country. He worked tirelessly for the hospital and anaesthetic department and was the chairman of division for many years before retiring in 1987. A keen golfer, he also had an interest in horse racing. John Murphy leaves a son, a daughter, and three grandchildren.

David Perks
Victor Gnanadurai
[Cite this as: *BMJ* 2014;349:g4568](#)

Chukwuedu Nwokolo



Professor emeritus (b 1919; q 1946; MRCS, FRCP Ed, Hon DSc), d 18 May 2014

In 1964 Chukwuedu Nwokolo started the gastroenterology unit at the University College Hospital, Ibadan, on returning from a Rockefeller fellowship in Minnesota. During Nigeria’s civil war he helped found the University of Nigeria’s medical school and, as

its dean of medicine from 1972 to 1975, supervised the graduation of its first batch of doctors. Searching for explanations for unusual clinical phenomena was his passion, and he published extensively (selected references are on thebmj.com). In later years he set up SICREP, a sickle cell charity, sharing a patent for a battery powered device for the diagnosis of sickle cell disease and trait in rural areas. He died in a hospital in New York and leaves Njide, his wife of 61 years; children; and grandchildren.

Chuka Nwokolo
[Cite this as: *BMJ* 2014;349:g4569](#)

Nilay Patel

Consultant urological surgeon



Oxford University Hospital Trust (b 1975; q Trinity Hall, Cambridge, 1998; BA, MD, FRCSUrol), died from viral myocarditis on 13 May 2014

Nilay Patel made an important contribution to the management of complex tumours in solitary kidneys, by helping to set up the renal auto-transplantation programme in Oxford, which entails nephrectomy, cooling, and bench dissection of the tumour and re-transplantation of the kidney. At the time of his death, the programme had prevented 25 people from the need to go on to dialysis. He came to Oxford in 2000 and obtained his MD in 2006, for which he was awarded the European Association of Urology thesis award. The same evening he spent the prize money on a party for his friends. After his specialist training in urology and obtaining his royal college fellowship, he was appointed to a joint consultant post between Oxford and Milton Keynes. He leaves his wife, Seetal; and two children.

David Cranston
[Cite this as: *BMJ* 2014;349:g4572](#)