Cambridge's 92 Nobel Prize winners part 2 - 1951 to 1974: from Crick and Watson to Dorothy Hodgkin

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By Adam Care

The *News* has been rounding up all of Cambridge's 92 Nobel Laureates, celebrating over 100 years of scientific and social innovation.

In this installment we move from 1951 to 1974, a period which saw a host of dramatic breakthroughs, in biology, atomic science, the discovery of pulsars and theories of global trade.

It's also a period which saw The Eagle pub come to national prominence and the appearance of the first female name in Cambridge University's long Nobel history.

1. 1951 Ernest Walton, Trinity College: Nobel Prize in Physics, for using accelerated particles to study atomic nuclei

2. 1951 John Cockcroft, St John's / Churchill Colleges: Nobel Prize in Physics, for using accelerated particles to study atomic nuclei

Walton and Cockcroft shared the 1951 physics prize after they famously 'split the atom' in Cambridge 1932, ushering in the nuclear age with their particle accelerator, the Cockcroft-Walton generator.

In later years Walton returned to his native Ireland, as a fellow of Trinity College Dublin, while in 1951 Cockcroft became the first master of Churchill College, where he died 16 years later.

3. 1952 Archer Martin, Peterhouse: Nobel Prize in Chemistry, for developing partition chromatography

4. 1952 Richard Synge, Trinity College: Nobel Prize in Chemistry, for developing partition chromatography

The son of a GP, Martin graduated from Peterhouse in 1932, and spent the 1940s working in the research department of Boots Pure Drug Company, while Synge obtained his PhD degree at Cambridge in 1941.

Together they gave the first demonstration of partition chromatography to the Biochemical Society in 1941.

5. 1953 Hans Krebs: Nobel Prize in Medicine, for discovering the citric acid cycle

Born in Germany in 1900, Krebs' position at the University of Freiburg-im-Breisgau was terminated by the Nazi government, and he emigrated to Cambridge.

In 1935 he moved to Sheffield University, where he received his award as head of the Department of Biochemistry.

1954 Max Born, Caius College: Nobel Prize in Physics, for fundamental research into quantum mechanics

Born in 1882 in a part of Germany since passed to Poland, Born studied in Breslau and Zurich before coming to Cambridge for a short period at the turn of the century.

As with many German scientists, he was forced to emigrate in 1933, and returned to Cambridge where he studied nonlinear electrodynamic.

He shared his prize with fellow German Walther Bothe, for work they conducted together at the University of Edinburgh.

7. 1957 Alexander Todd, Christ's College: Nobel Prize in Chemistry, for work on nucleotides

Alexander Todd was born in Glasgow, and was appointed to Cambridge's Chair of Chemistry in 1944, serving as master of Christ's College from 1963 to 1978.

He was knighted in 1954 and became a life peer in 1962, serving as Baron Todd of Trumpington.

For his breakthrough, which made it possible for Crick and Watson to unlock DNA five years later, he was honoured by the Royal Society of Chemistry with a blue plaque at the Department of Chemistry building, on Lensfield Road.

8. 1958 Frederick Sanger, St John's College and fellow of King's College: Nobel Prize in Chemistry, for the structure of the insulin molecule

One of only two men to ever win two Nobels, his 1958 award didn't stop him working at the cutting edge of his field for another 22 years.

Like Todd the year before, he helped lay the groundwork for Crick and Watson, who he worked alongside at Cambridge's Cavendish Laboratory.

According to his official Nobel biography, other than his work his main interests are "gardening and what can best be described as "messing about in boats"."

9. 1959 Philip Noel-Baker, King's College: Nobel Prize in Peace, for work towards global disarmament

Like Austen Chamberlain before him, Cambridge's second Peace Prize recipient was an MP, but also led a distinguished career outside of politics.

Raised a Quaker, he read history and economics in Cambridge, served as president of the Cambridge Union, and won a silver medal in the 1920 Antwerp Olympic Games.

Elected MP for Coventry in 1929, he served in Churchill's war cabinet, but remained a steadfast supporter of disarmament until his death in 1982.

He received his Nobel in recognition for his integral work founding two of the 20th century's leading international institutions – the League of Nations and the UN.

10. 1962 Francis Crick, Caius / Churchill Colleges: Nobel Prize in Medicine, for determining the structure of DNA

11. 1962 James Watson, Clare College: Nobel Prize in Medicine, for determining the structure of DNA

12. 1962 Maurice Wilkins, St John's College: Nobel Prize in Medicine, for determining the structure of DNA

After switching from physics to biology Francis Crick met American student James Watson while working at the Medical Research Council unit at the Cavendish Laboratory.

Together with Maurice Wilkins and Rosalind Franklin, both of King's College London, they used X-ray diffraction to study DNA, uncovering the famed double helix, famously making the first announcement to the amusement of regulars at The Eagle, the pub next door to their lab.

Following Franklin's death the surviving trio shared the medicine prize nine years later.

Permanent memorials to Crick and Watson exist in each of their former Cambridge colleges, a double helix sculpture at Clare, and a stone marker at Caius.

Although not Cambridge-based at the time of the discovery, Wilkins also has links to the university, and read physics at St John's College in 1938.

13. 1962 John Kendrew, Trinity College: Nobel Prize in Chemistry, for determining the structure of haemoproteins

14. 1962 Max Perutz, Peterhouse: Nobel Prize in Chemistry, for determining the structure of haemoproteins

The son of an Oxford climatology professor and leading art historian, Kendrew studied in Cambridge in the 1930s, returning to the Cavendish in 1946, where he became deputy director of its Medical Research Council. It was here he met the Austrian Perutz, who fled the Nazis in 1936, remaining in Cambridge until his death in 2002.

Together they determine the molecular structure of the protein hemoglobin, which transports oxygen in the blood.

In 2014 to mark the centenary of his of his birth, Perutz appeared on a Royal Mail postmark stamped on all mail delivered across the CB postcode area.

15. 1963 Alan Hodgkin, Trinity College: Nobel Prize in Medicine, for the transmission of impulses along a nerve fibre

16. 1963 Andrew Huxley, Trinity College: Nobel Prize in Medicine, for the transmission of impulses along a nerve fibre

Huge figures at Trinity College throughout the 60s, 70s and 80s, Hodgkin and Huxley began their collaboration in 1939, with a series of experiments with dissected squid neurones.

After sharing the Nobel for their work on cell physiology, they both received knighthoods and continued to work closely at Trinity. Sir Alan was master from 1978 to 1984, and was succeeded by Sir Andrew, who held the post until 1990.

Last year Hogkin's Nobel medal was sold by his family for $450,000 at auction in the US.

17. 1964 Dorothy Hodgkin, Newnham / Girton Colleges: Nobel Prize in Chemistry, for the structure of compounds used to fight anaemia

Cambridge's first ever female Nobel Laureate, Hodgkin was born in Cairo and spent much of her childhood in the Sudan.

Her parents were both active archaeologists, with Hogkin reportedly coming close to giving up chemistry as a youngster to follow in their footsteps, after a summer working at an excavation site in Jordan.

During her career she advanced the technique of X-ray crystallography, confirmed the structure of penicillin and then the structure of vitamin B, for which she became the third woman to win the chemistry prize.

Diagnosed with rheumatoid arthritis aged 24, she suffered deformities in her hands and feet and was later confined to a wheelchair, but remained scientifically active throughout.

She died in 1994 after a stroke.

18. 1967 George Porter, Emmanuel College: Nobel Prize in Chemistry, for the study of fast Chemical reactions

19. 1967 Ronald Norrish, Emmanuel College: Nobel Prize in Chemistry, for the study of fast Chemical reactions


Former Perse schoolboy Ronald Norrish spent time as a German prisoner of war in 1918, and went on to spend his whole scientific career in Cambridge, after obtaining a scholarship to Emmanuel College.

In 1945 he began working with Yorkshire-born postgraduate student George Porter at the Lensfield Road Department of Chemistry, studying organic chemistry reactions. The Norrish Reaction, which describes the relationship between ketones and aldehydes, is named in his honour.

20. 1972 John Hicks, Caius College: Prize in Economics, for the equilibrium theory

21. 1972 Kenneth J Arrow, Churchill College: Prize in Economics, for the equilibrium theory

Hicks spent three years in Cambridge during in the 1930s, in which he wrote Value and Capital. He went on to work as a professor in Manchester and then Oxford, and also served as President of the Royal Economic Society.

Born in New York, Arrow became a fellow of Churchill in 1962, before becoming a Harvard professor of economics.

22. 1972 Rodney Porter, Pembroke College: Nobel Prize in Medicine, for the chemical structure of antibodies

Porter completed his PhD in Cambridge in 1948, joining the National Institute of Medical Research after one year's postdoctoral work in the city. He shared his Nobel with American professor Gerald Edelman.

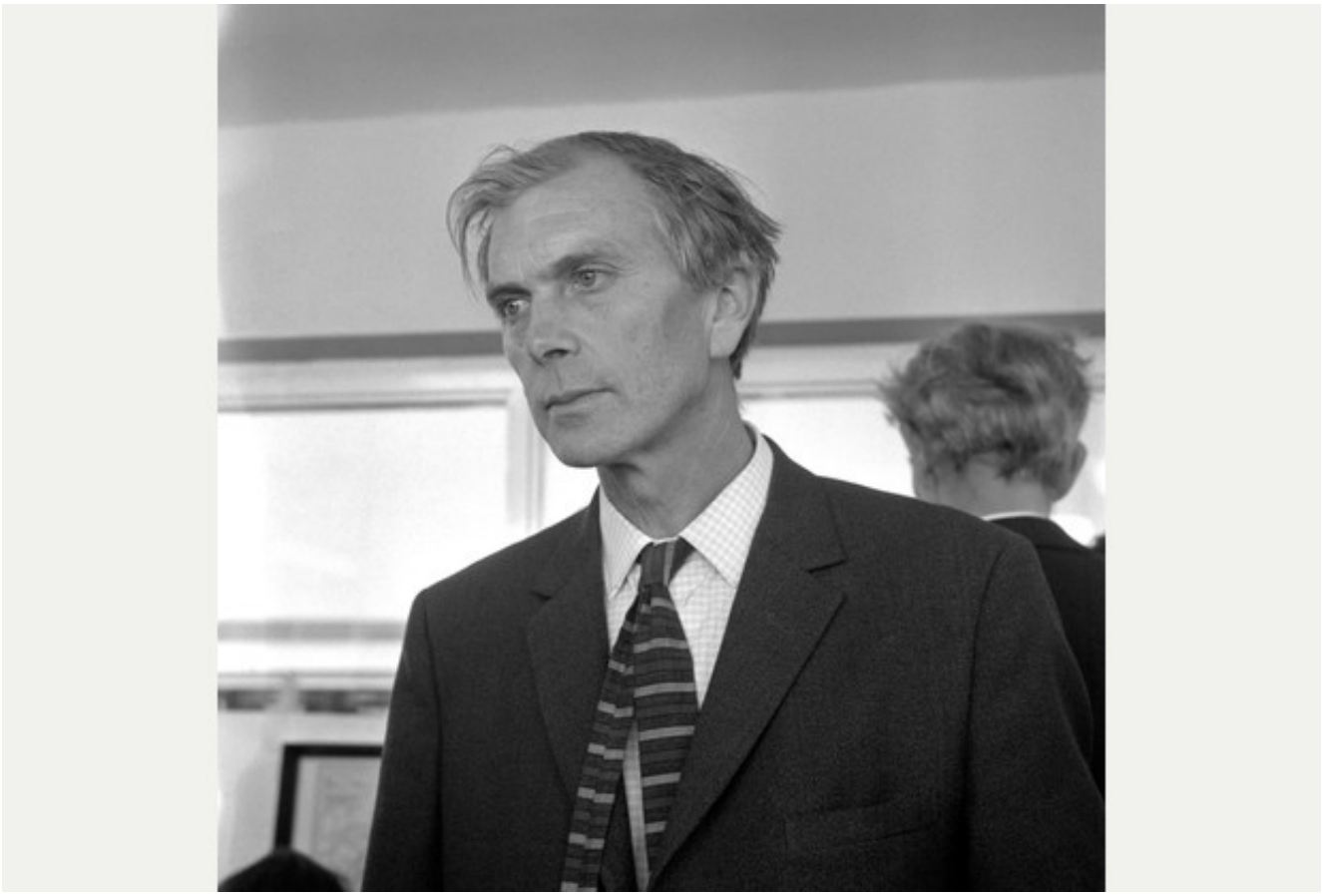
23. 1973 Brian Josephson, Trinity College: Nobel Prize in Physics, for the tunnelling in superconductors and semiconductors

The Josephson Effect describes the theoretical behaviour of a supercurrent. It was first predicted by the Welsh physicist in 1962, who received the Nobel for his breakthrough more than 10 years later.

In his later life he became interested in parapsychology, and began practising transcendental meditation. He served as head of Cambridge's Mind-Matter Unification Project where he researched paranormal phenomenon, a move which proved controversial to some fellow scientists.

24. 1974 Antony Hewish, Caius / Churchill Colleges: Nobel Prize in Physics, for the discovery of pulsars

25. 1974 Martin Ryle, Trinity College: Nobel Prize in Physics, for the discovery of pulsars



A pulsar (short for pulsating radio star) is a highly magnetised, rotating neutron star that emits a beam of electromagnetic radiation.

They were first discovered by Hewish and Ryle, researchers in Cambridge's Cavendish Laboratory, who developed the radio technology required to first observe the distant phenomenon.

However there was controversy when the Nobel committee awarded the prize to the pair, but omitted Jocelyn Bell, Hewish's doctoral student who first noted the radio source recognised as the first pulsar.

Now a Dame, and a visiting professor of astrophysics at Oxford University, she has served as president of the Royal Astronomical Society and the Institute of Physics.

Ryle, who died in 1984 aged 66, authored two books on nuclear proliferation, arguing he argued the only way to save Earth from nuclear annihilation was to ban the use of any nuclear devices indefinitely.

Hewish, now 91, is a member of the Advisory Council for the Campaign for Science and Engineering.

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