

Obituary

Maurice Wilkins (1916–2004)

The death on 5 October of Maurice Wilkins, following so soon on that of Francis Crick, inevitably invites reflections on the differences in character between these two close friends — who, with James Watson, shared the Nobel prize for the discovery that changed the face of biology, and indeed of medicine. The contrast in personality could scarcely have been greater. It was encapsulated by the television interviews that followed the announcement of the award in 1962. Crick, ebulliently expansive, threw off aphorisms. Wilkins, his coat collar turned up, eyed his interlocutor morosely. Invited to share the euphoria of the quest after scientific truth, he gave a characteristic response: “Oh, it’s all just fiddle, fiddle, fiddle.” Wilkins was never given to hyperbole.

In his research, Wilkins was neither a visionary nor a deep thinker like Crick. Rather, he was a meticulous, inventive and infinitely patient experimentalist. He loved instruments, and had an especial rapport with the workshop machinists. He adhered to the old string-and-sealing-wax tradition of experimental physics. He would prod about in dustbins for useful bits of metal, and visitors to the laboratory were sometimes startled to see a condom put to use as a gas box surrounding an X-ray camera. Wilkins had an almost tactile appreciation of interference and diffraction phenomena, and a pictorial perception of molecular structure. He liked models and mistrusted mathematical abstraction. His approach to structure, in the words of one collaborator, was “incredibly shrewd”.

Maurice Wilkins was born in New Zealand into an Anglo-Irish family of progressive Unitarian views. The family returned to England when he was six. He showed an early interest in microscopes and telescopes, and a precocious aptitude for building instruments. He graduated in physics from the University of Cambridge and then from Birmingham, where his PhD supervisor was the young John Randall. Thus began a close but never entirely congenial relationship.

Wilkins’s research was interrupted by the Second World War, when the department switched to radar research. Randall and his colleague Harry Boot developed the cavity magnetron, the all-important source of centimetric radar waves, while Wilkins was dispatched to E. O. Lawrence’s cyclotron laboratory in California to help fractionate uranium. When the war ended, Randall was



From DNA to the social responsibility of science

appointed professor of physics at the University of St Andrews in Scotland, where Wilkins joined him. Thence they moved to King’s College in London, where Randall first showed his remarkable — and, to the staid mandarins of the college, alarming — capacity for gathering funds and enlarging his department. He persuaded the Medical Research Council to establish a biophysics unit with Wilkins as deputy director.

Some three years earlier, Oswald Avery and his colleagues had demonstrated that DNA was the genetic material, but their work was largely ignored and, by many, disbelieved. But Wilkins thought otherwise and resolved to study its structure. After a period of skirmishing, using ultraviolet microscopy, with the disposition of DNA in cells, he began his studies on X-ray diffraction. He designed cameras and devices for pulling DNA fibres, and was fortunate in procuring some high-molecular-weight material from Rudolf Signer in Berne. By 1950 he had obtained diffraction pictures of unprecedented quality of what we now know as the A-form of DNA. These he showed at a meeting in Naples. In the audience was the young Jim Watson, who later wrote that Wilkins’s presentation “stood out like a beacon”, for it implied that the greatest prize — the structure of the gene — could be explicitly determined. When Watson asked to join Wilkins’s research group he received no encouragement. But from then on Watson’s course was clear, and quickly took him to Cambridge and his assignation with Francis Crick, so vividly described in *The Double Helix*.

Wilkins’s laborious progress towards

the structure of DNA was rudely disturbed by the arrival at King’s of Rosalind Franklin, to whom (behind Wilkins’s back) Randall had promised sole charge of the DNA problem. The disastrous consequences have been often related; the ensuing controversy caused Wilkins lasting pain, and most of all the jibe that he was against women.

The immediate upshot, at all events, was that he was cruelly elbowed out of his cherished project. He had surrendered Signer’s DNA to Franklin and she made good use of it. It was her superior B-form diffraction patterns that proved especially useful to Watson and Crick. Wilkins was too intimidated by Franklin’s formidable persona to begin model-building as he had planned, and by the time she left King’s it was too late: Crick and Watson had shot his fox.

We know now that Crick set out the reasons why Wilkins merited a share in the Nobel prize: Wilkins had initiated and almost single-handedly carried the DNA problem. He had “done numerous extensive, accurate and painstaking studies”. True, he had “worked rather slowly, but then hardly anybody else ha[d] done anything”. It was he who had recognized that the structure must be helical. Moreover, compelling as the DNA model appeared, it was still only a model; Watson in particular feared that it might after all be no more than a mirage. Wilkins and his colleagues at King’s spent the next years gathering experimental evidence that the structure was indeed essentially correct and refining its details.

After DNA, Wilkins began to think about neurobiology. There were notable publications on the structure of cell membranes, but gradually extramural interests supervened. Troubled by the misuse of science, Wilkins became the first president of the British Society for Social Responsibility in Science, and an active member of the Pugwash disarmament group. He organized an undergraduate course on the social aspects of science, which was hugely popular with the students and still thrives. He sat in on the course, a benevolent presence in the background, until a few months ago.

Amidst the furore about DNA, the merits of the participants and the apotheosis of Rosalind Franklin, Wilkins kept his peace until, only last year, he published his memoir, *The Third Man of the Double Helix*. It bears the stamp of the modesty and restraint that pervaded his whole career.

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