Anthony James Pawson

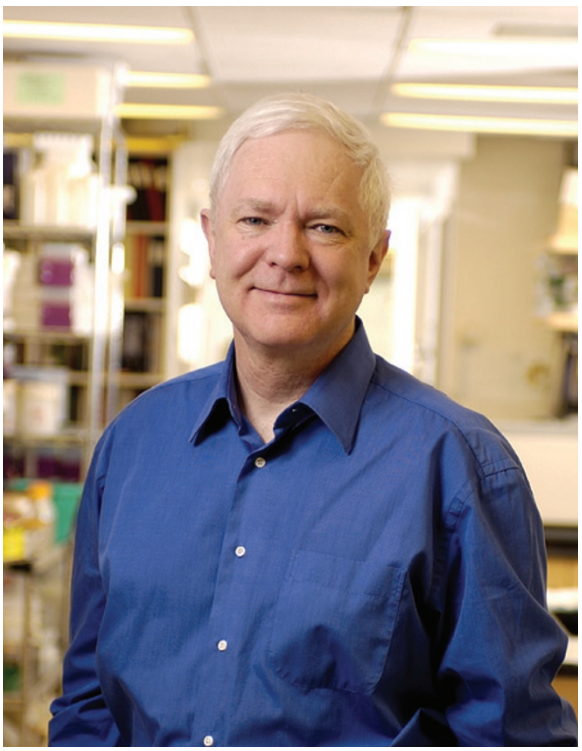
(1952–2013)

Biochemist whose vision of cell signalling transformed cancer research.

Tony Pawson's research on protein interactions transformed the thinking about how cells communicate, how proteins evolve and how cellular messaging goes awry in cancer. A creative experimenter, his synthesis of diverse observations in areas from biochemistry to mouse genetics and developmental biology led to a coherent picture of how cellular processes work.

In the 1980s, early in his career, Pawson and his team discovered the Src homology region 2 (SH2). A subunit, or domain, of many proteins, SH2 directs how proteins interact and governs how cells respond to external cues. This finding set a path for all his future work.

Pawson went on to show that combinations of a small number of domains could produce an enormous range of cellular responses. This 'modular' vision reshaped scientists' understanding of cellular regulation and paved the way for the development of drug classes that interfere with these protein interactions.



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But recognition did not come immediately for Pawson. The existence of modular binding domains, now standard textbook fare, was initially received with scepticism by biochemists, and with benign neglect by molecular biologists. But as the evidence, largely from Pawson's lab, grew more compelling, it could no longer be ignored.

Pawson, who died suddenly at home on 7 August aged 60, was born in Maidstone, UK, to an eminent British family. His father, to some the more famous Tony Pawson, was a champion sportsman and a household name in Britain. A fly fisher, cricketer, footballer and, later, sports writer, his multivalent skills loomed large for the younger Pawson, who was often mistaken for his father. It was his mother, Hilarie, a biology teacher, who stimulated his interest in science.

Pawson read biochemistry at the University of Cambridge, UK, and obtained his PhD in 1976, working with Alan Smith at the Imperial Cancer Research Fund (now Cancer Research UK) on proteins encoded by the Rous sarcoma retrovirus. While visiting a friend in Cambridge, Tony met his American wife-to-be, Maggie. They married in 1975, and in 1976 moved to Berkeley, California, where Tony began postdoctoral work on the protein products of avian retroviruses.

In 1981, the couple moved to Vancouver, Canada, where Pawson was assistant professor in the department of microbiology at the University of British Columbia. Pawson's lab became immediately productive, publishing important papers on oncoproteins — proteins coded by genes that have the potential to cause cancer. There, Pawson struck up collaboration with Mike Smith, a Nobel-prizewinning chemist who invented the technique of site-specific mutagenesis that Pawson used in his SH2 discovery.

In 1985, when a research institute was launched at the Mount Sinai Hospital in Toronto (now the Lunenfeld–Tanenbaum Research Institute), Pawson joined us as one of the first appointments in its molecular and developmental biology division. With the addition of developmental biologist Alexandra Joyner and the late molecular biologist Martin Breitman, the five of us — young, ambitious and with a pioneering spirit — knew that we were building something important.

The division was created at a propitious time: developmental biology was about to be transformed by the latest genetic technologies from a descriptive to a mechanistic science, and cancer research was accelerating with the discovery of oncogenes, tumour-suppressor genes and related signalling pathways. The two fields were about to converge with the discovery that the normal equivalents of viral oncogenes have crucial roles in embryo development.

Within a few years, the division grew from having just a handful of students and postdocs to having more than 100 members. Pawson was at the centre, partly because cell signalling was core to all our science, but largely because he loved to collaborate. To him, collaboration was as much about camaraderie and friendship as it was about getting a piece of science done. Working with Tony was fun, and although he was invited to give ten times the number of talks as everybody else, he would always give credit to his collaborators.

Pawson's seminars were virtuoso performances, and they were eagerly attended. His talks and more than 450 published papers were not just assemblages of data, but elegantly presented expositions of how cells and organisms evolve, develop and function. At the time of his death, he was one of the most highly cited biomedical researchers.

When Pawson received the Heineken Prize for biochemistry and biophysics in 1998, he spoke at the ceremony in Amsterdam about the joy of discovery, the privilege of working with talented young people, the potential for advances to lead to new treatments for disease, and about the importance of family in a scientist's life. One could have heard a pin drop.

Our strongest memories of Tony are in those early years at the Lunenfeld, sharing our latest results, writing grants, exchanging gossip and sharing family joys and sorrows — and watching Tony gesticulating wildly with his arms when he got excited. His enthusiasm was infectious. He will be greatly missed. ■

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