

Guy Dodson (1937–2012)

Guy Dodson, an internationally renowned structural biologist and a great friend of India, passed away at York, England on 24 December 2012. He was an outstanding macromolecular crystallographer and an unobtrusive, but effective leader. Above all, he was a splendid human being, full of fun, warmth and generosity.

Guy was born on 13 January 1937 at Palmerston North, New Zealand. He had his education in New Zealand. After obtaining his PhD degree from the University of New Zealand, Guy joined Dorothy Hodgkin at Oxford in 1962 to work on the structure of insulin. Not long afterwards, he met and married Eleanor, who had come to Oxford from Australia. Since then Guy and Eleanor have been inseparable, in life and science. Both remained in Dorothy's insulin group till 1976 when they moved to York to establish a vibrant structural biology group at the University of York. In 1993, Guy accepted an additional appointment at the National Institute for Medical Research, Mill Hill, London, where the focus of his attention was on proteins from pathogens, particularly *Mycobacterium tuberculosis*.

Macromolecular crystallography had its origin when J. D. Bernal and his then student Dorothy Crowfoot (subsequently Hodgkin) recorded the X-ray diffraction pattern from pepsin crystals in 1934 at Cambridge. Dorothy returned to Oxford and recorded the diffraction pattern from insulin crystals in 1935 as her first effort as an independent researcher. Although since then she determined the structures of many important molecules such as cholesterol, penicillin and vitamin B₁₂ and got a Nobel Prize in the bargain, insulin remained the problem closest to her heart. She worked on insulin off and on without much success. She renewed her efforts in the wake of the successful determination of the structures of haemoglobin and myoglobin in the late fifties of the last century. It was during this period that Guy and Eleanor joined the insulin group. Guy, along with Eleanor, spent many frustrating years on insulin, but they persevered. Three-dimensional structure of insulin was finally solved in 1969. None of those associated with Dorothy's macromolecular crystallography group during that time, which included, in addition to Guy and Eleanor,

Tom Blundell, Ted Baker, Margaret Adams and myself, was even born when she initiated the work on insulin in 1935. Guy continued to work on insulin, first at Oxford and subsequently at York. Next to Dorothy, Guy has spent the maximum number of years working on insulin. Indeed, Guy has been associated with Dorothy longer than anyone else.

Guy's contribution to the structural biology of insulin has been truly breathtaking. He and his colleagues have studied in considerable detail the structure and assembly of insulin and the allosteric



transitions in them. They examined insulin from different species and explored evolutionary relationships. They investigated many mutants of insulin and elucidated the roles of different segments of the molecule in biological action. They produced a monomeric insulin. Guy's work on insulin has been closely aligned with pharmaceutical requirements.

Another system which Guy and his colleagues investigated is haemoglobin. That brought him in close contact with Max Perutz, a giant among structural biologists. Guy's research activities encompassed a wide spectrum. His studies on penicillin acylase and bile salt hydrolase are well known. Incidentally, this is an area in which C. G. Suresh of the National Chemical Laboratory, Pune collaborated with Guy's group. Also well known is Guy's work on circular assemblies of proteins and catalytic triads. His contributions encompassed proteins involved in signal transduction and

enzymes that act on carbohydrates. His efforts on TB proteins included those on proteins involved in regulation of transcription, an effort in which B. Gopal, currently at Indian Institute of Science in Bangalore, was involved as a postdoctoral fellow. He has also worked on prion proteins and proteins from *Salmonella typhimurium*. His studies on DNA gyrase are also well known. Guy has been well recognized through awards and fellowships. He was a fellow of the Royal Society, EMBO fellow and fellow of the Academy of Medical Sciences. The other recognitions he received included the honorary fellowship of the Indian Academy of Sciences and the foreign fellowship of Indian National Science Academy.

Guy and Eleanor have indeed been the true heirs of Dorothy not only in science, but also in the benevolent approach to colleagues, friends and even to strangers. Like Dorothy, the network of friends of Guy and Eleanor has been truly international. They travelled widely and mentored innumerable scientists from different parts of the world. Their hospitality is legendary; they kept an open house at Oxford and York.

I cannot but be personal when writing about Guy. We shared many exciting scientific moments. My most abiding memory is on our looking at the first interpretable electron-density map of insulin on a summer day in 1969. Only Guy and I were present in the lab on that day. We had already stuck sections of the map, hand drawn on mylar sheets, on hard perspex sheets and stacked them on a light box. (Those were pre-graphics days. Even Richard's comparator was not widely used then.) Both of us were trying to interpret a protein electron-density map for the first time. What struck us first was the unmistakable density for what turned out to be of the central α -helix of the B-chain. It was almost a moment of revelation. We furiously began to build an approximate model. Dorothy joined us the next day and with her Midas touch, corrected our mistakes and proceeded to build further. The rough model was ready within a few days. The rest, as they say, is history.

Continuing on a personal vein, Guy and Eleanor have been family for my wife Kalyani and myself. This has been

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true in relation to many other friends of theirs as well. Those from India among their close friends include late S. Ramaseshan and M. A. Viswamitra and K. Venkatesan, apart from many younger colleagues. Guy, often along with Eleanor, frequently visited India and inter-

acted closely with the structural biology community in the country. As mentioned earlier, he was associated as fellow with two science academies of India.

In the passing away of Guy, the scientific community has lost a valuable colleague and a dear friend.

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