

Louise Napier Johnson (1940–2012)



Louise Johnson, biophysicist and structural biologist, died on 25 September after a 13-month illness which she bore with quiet fortitude and grace. Her life and work affected very many people worldwide, due both to her scientific activities in protein crystallography and enzymology, and her tireless interest and effort in supporting and encouraging scientists in developing countries to establish effective research laboratories as far apart as South America, the Middle East and Pakistan.

I am one of those whose life course was pivotally changed by a chance conversation with Louise, whom I first met in 1987 when I was tutoring physics at Somerville College where Louise was then a Fellow. Over lunch, she asked me what I was going to do when my fixed-term contract at Somerville expired and since there was still a whole year to go, I threw away the comment “Oh, I don’t know, I will probably have to change fields since nuclear physics (my then research area) is no longer being funded in Oxford”. She visibly brightened and said: “We are looking for someone with just your skills at the moment to look after our new cutting-edge X-ray equipment for

protein crystallography which is about to arrive”. As a result of my rash statement and Louise’s quiet persuasiveness, I visited her the very next day at the Laboratory of Molecular Biophysics (LMB) where she and her research group were then working on the mechanism of action of glycogen phosphorylase, a large protein (842 amino acids) present in muscle which turns inert glycogen into the sugar needed to power physical activity. They had succeeded in obtaining a structure^{1,2} and showed how the enzyme was regulated by reversible phosphorylation and allosteric effects. In the early 1980s, her group was at the vanguard of those using synchrotron radiation for macromolecular crystallography at the Daresbury Laboratory near Runcorn³. Louise’s lifelong interest in applying new techniques to structural biology questions came to the fore much later when she became Life Sciences Director of Diamond Light Source in 2003. There she oversaw the building and development of this highly effective national facility which is now bearing great fruit for the UK physical and biological sciences research community.

As a result of my visit to LMB that day, I started working there a few months later, and when Louise was appointed to the David Phillips Chair in Molecular Biophysics in 1990, I worked under her until her retirement in 2007. Her management style was ‘hands off’ but ‘attention on’ in that she was always there if advice or guidance was needed, but did not offer it unless it was requested. She encouraged a highly co-operative working environment among the different groups and PIs in LMB which was extremely productive. Since synchrotron data collection time was allocated in aliquots of 24 or 48 hours and was much more efficient as a team effort, we regularly had the opportunity to work together closely with colleagues, thus developing a highly effective research effort. Although Louise did not normally accompany us on these trips to the synchrotron, during one of her sabbatical

terms, she asked to be brought up to speed in using the current X-ray equipment and software for crystallography. She determinedly and methodically worked her way through our usual training programme for new researchers, asking penetrating and pertinent questions at every stage. This was a great example to us of how a senior scientist should keep in touch with what the daily research really involved, so that challenges faced by students and postdocs could then be better appreciated and overcome.

Her book, *Protein Crystallography*, written with Tom Blundell and published in 1976⁴, although now a collector’s item judging by the price of a second-hand copy on Amazon, is a classic text in the field worthy of attention today: I still regularly consult my well-thumbed copy. Louise, with Wolfgang Baumeister, Alasdair C. Steven, and Richard Perham, had just completed work on a book, *Molecular Biology of Machines and Assemblies*, before she became ill; it will be published in 2013.

Louise was very modest and unassuming about her many achievements and honours, and this quality was brought home to me forcefully on one occasion in June 2010 when she very kindly offered to substitute for me in giving a conference lecture. At the time my husband was critically ill and I was unable to deliver it. We were trying to work out over the phone if she could give it on a Tuesday afternoon, and she mentioned she had to go to Cambridge on Sunday evening, would be there for the whole of Monday and would then travel to London on Tuesday morning, but that she might be free later in the afternoon. I assumed that the Cambridge trip was to visit her twin granddaughters, and asked after them, upon which she hesitantly told me that actually she was going to collect an honorary ScD degree from Cambridge. After some more convoluted discussion, it gradually transpired that the London engagement was at Buckingham Palace at a garden party given by the Queen, and that

getting to Cardiff in time to give the conference lecture was unfortunately just not going to be possible. I was left wondering what her Wednesday commitments might be! Her schedules were punishing, and her energy amazing.

When Louise's death was announced, I received many e-mails from ex-LMB members expressing their appreciation for Louise's role in their lives, and retrospective realization of the positive atmosphere she nurtured: e.g. "After working in other places, only now do I realize what a special place it was under her leadership.", "A great lady", and "Such a big presence within the field".

Because of Louise I am a protein crystallographer and no longer a nuclear physicist. She had an enormous and lasting influence on my life, as she also had on the lives of many others. Along with her numerous colleagues throughout the world, I will miss her inspiration both scientifically and personally. I feel privileged indeed to have known her and worked with her. ■

Elsbeth Garman (University of Oxford)

Career

1959–1962 University College, London.

Graduated with BSc (Hons) Physics

1962–1966 The Royal Institution, London. PhD supervised by David Phillips, University of London

1966–1967: Department of Biophysics, Yale University. Post-doctoral research assistant in Professor F.M. Richards' Laboratory

1967–1973: Departmental Demonstrator in the Zoology Department, University of Oxford and Janet Vaughan Lecturer in Biophysics at Somerville College, Oxford

1973–1990: University Lecturer in Molecular Biophysics, University of Oxford and Additional Fellow and Janet Vaughan Lecturer, Somerville College, Oxford

1990–2007: David Phillips Professor in Molecular Biophysics, University of Oxford and Professorial Fellow, Corpus Christi College, Oxford

1991–2012: Honorary Fellow, Somerville College Oxford

2003–2008: Director Life Sciences, Diamond Light Source

2007–2012: Emeritus Fellow of Corpus Christi College, Oxford

2008–2011: Diamond Fellow

Major Honours

1990: Elected a Fellow of the Royal Society

1992: Honorary DSc University of St Andrews

2000: Associate Fellow Third World Academy of Science

2002: Dame of the British Empire

2004: Honorary DSc University of Bath

2009: Honorary DSc Imperial College, London

2010: Honorary ScD University of Cambridge

2011: Foreign Associate of the US National Academy of Sciences

References

1. Johnson, L.N. (1992). *FASEB Journal* **6**, 2274–2282
2. Johnson, L.N. and Barford, D. (1990). *J. Biol. Chem.* **265**, 2409–2412
3. Hajdu, J., Acharya, K.R., Stuart, D.I. et al. (1987) *EMBO J.* **6**, 539–546
4. Blundell, T.L. and Johnson, L.N. (1976) *Protein Crystallography*, Academic Press