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Professor of NMR and Structural Biology

Area of research

Protein Structure and Function using Biological NMR

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Summary

[Group webpages can be found here!](#) This has a more up to date list of publications than I can ever get the Bristol system to log!

My group's work has centred around the use of nuclear magnetic resonance spectroscopy to study protein structure and function. The most high profile of these are based in areas such as cancer, antibiotics and structure aided drug design that are of central importance to the well being of today's society.

A major highlight of our recent work has been the solution NMR structure of the domain 11 from the Insulin Growth factor receptor 2 and its interaction with IGF2. This milestone work has paved the way for CRUK and CRT funding (with Prof. Bass Hassan, University of Oxford) and it is an important step along the way to developing a therapeutic receptor to be used in the treatment of several different cancers. This work is currently the major theme within my laboratory alongside the application of NMR for screening potential small ligands for proteins of pharmaceutical interest (funded by UCB).

Finally we increasingly use X-ray crystallography for the structure determination of larger proteins and we have and have over ten collaborative NMR/X-ray projects running in the laboratory (funded by BBSRC, MRC and EPSRC).

Professor Crump is a supervisor in the [EPSRC Centre for Doctoral Training in Chemical Synthesis](#)

Biography

I completed my BSc (Hons) and PhD in Chemistry at the University of Bristol. My PhD (1995) was supervised by Professor Tom Simpson where I completed the first NMR structure of a protein (actinorhodin ACP) using 500 and 600 MHz homonuclear NMR spectra (never ever again). Actually I did then go on to this again at the University of Alberta, Canada where I completed post-doctoral studies with Professor Brian Sykes. During my three years in Canada we solved numerous NMR structures of chemokines, coiled coils, peptides and bacterial surface proteins. In 1999 I established a 600 MHz biological NMR centre in the School of Biological Sciences in Southampton followed by a new biological NMR centre at Bristol in 2003. This facility has grown to encompass two 600 MHz spectrometers as well as associated low field spectrometers as part of the chemistry NMR facility (under Dr Craig Butts). My group works on a range of structural biology problems and to date has deposited over **30** novel protein structures.

Keywords

- proteins
- protein structure
- protein function
- NMR spectroscopy
- cancer
- cancer related proteins
- polyketide synthase enzymes

Memberships

Organisations

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- [Organic and Biological Chemistry](#)

Links

-  [Crump Group Research](#)

Selected publications

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Recent publications

- Hughes, J, Surakhy, M, Can, S, Ducker, M, Davies, N, Szele, F, Bührenmann, C, Carter, E, Trikin, R, Crump, MP, Frago, S & Hassan, AB, 2019, '[Maternal transmission of an Igf2r domain 11: IGF2 binding mutant allele \(Igf2r^{11565A}\) results in partial lethality, overgrowth and intestinal adenoma progression](#)'. *Scientific Reports*, vol 9.
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- Landin, E, Lovera, S, Fabritiis, Gd, Kelm, S, Mercier, J, McMillan, D, Sessions, R, Taylor, RJ, Sands, Z, Joedicke, L & Crump, M, 2019, '[The Aminotriazole Antagonist Cmpd-1 Stabilises a Novel Inactive State of the Adenosine 2A Receptor](#)'. *Angewandte Chemie - International Edition*, vol 58., pp. 9399-9403
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