

Introduction

Another year has passed by very quickly and it does not seem long since I was writing the Introduction to last years' Astbury Annual Report! 2014 proved to be another busy and successful year for the Centre, as this letter and the scientific reports that follow portray. In the following pages you will find new and exciting research which spans fundamental research in Structural Molecular Biology, Biophysics, Chemical Biology and Cell Biology, alongside the exploitation of the results obtained in biotechnology, bioengineering and medicine, each made possible by the inter- and multidisciplinary research within the Centre. I would like to thank every member of the Centre for their hard work over the year: our Support staff, Technicians, Facility Managers, Students, Post-docs, Fellows and Academic staff. Our success comes from our strong multidisciplinary science, as well as our collegiality and teamwork.

During 2014 the Centre continued in its quest of "Understanding Life in Molecular Detail" through multiple different activities, including seminars, publications, public lectures and other events. We continued to enjoy an excellent seminar series (organised by one of our recently appointed PIs, Anastasia Zhuravleva), hosting 11 lectures during 2014 with speakers from the UK, Germany, Belgium, Sweden, New Zealand and the USA. The eighth Annual Astbury Lecture was given by Professor Andrew Hamilton, FRS (University of Oxford) on "Targeting protein surfaces using designed proteomimetics". This annual event was its usual success, with a brilliant lecture, much fun and physical exertion at the sports day, and a much enjoyed barbecue hosted by the Astbury Society. The Centre's Biennial Away Day, held this year on September 19th at the Thackray Medical Museum was a sell-out, with 130 members attending the day to share their recent exciting scientific discoveries, through the popular "Flash Poster" presentations, as well as posters and talks. Finally, we were proud and excited to host our first joint research symposium with the Max Planck Institute for Biochemistry (Martinsried, Germany). This involved seminars, discussions, posters, networking events and a grand dinner attended by the Vice Chancellor, Sir Alan Langlands. Superb science was enjoyed by all who participated. We hope this will develop into strong on-going research links into the future.

The Centre welcomed seven new academic staff members in 2014 (Junk-uk Shim (Microfluidics and Single Molecule Science), John Ladbury (Protein Signalling and Cancer Biology), Alex Breeze (NMR and Chemical Biology Approaches for the Study of Cancer and Bacterial Infection), Patricija van Oosten-Hawle (Protein Conformational Disorders studies using *C. elegans*), Alison Baker (Peroxisomes and Protein Trafficking), Ryan Siepke (Natural Products and Synthetic Biology) and Joe Cockburn (X-ray crystallography, Molecular Motors and Transport)). We were sorry to lose Nigel Hooper from the membership in 2014 as he took up an academic position elsewhere and Arwen Pearson changed her status to "Visiting Member" following her move to the University of Hamburg. Sadly, Steve Baldwin died following a long illness, leaving behind many friends and collaborators, and an active research group who are continuing on the projects he had initiated. We were delighted to welcome many PhD students and postdocs to the Centre this year, bringing our total numbers to >300, including 61 academic staff, 150 PhD students, 89 postdoctoral researchers and 8 research fellows.

Astbury Centre members published their research in a wide range of journals in 2014, with a total of 149 manuscripts being published, including >20 papers in the highest impact journals (including Nature Structural and Molecular Biology, Nature Chemistry, Nature Methods, EMBO J, Angewandte Chemie, JACS, Nucleic Acids Research, Cell, and Molecular Cell). A full list can be found in the Annual Report. In terms of grant income, Astbury members also enjoyed success in 2014. Highlights included a €1.9M ERASynBio grant on "Synthetic Glycobiology" headed by

Bruce Turnbull with partners across Europe, a BBSRC Alert 14 grant to Alison Ashcroft and nine Astbury colleagues for new equipment for biological mass spectrometry (£680k investment); and an ~£880k investment (Wellcome Trust) in new equipment to enhance biological NMR (750MHz) headed by Sheena Radford and ten other Astbury and University colleagues. Finally, the renewal (valued at ~£11M) of the White Rose BBSRC Doctoral Training Partnership (a partnership between the Universities of Leeds, York and Sheffield) which funds 4 year PhDs in “Mechanistic Biology and its Strategic Application” led by Michelle Peckham ensures that future generations of PhD students can enjoy all the Astbury Centre and the partner Universities offer. Together with £8.3M new grant income raised for project and programme grants, this brings the Astbury portfolio to a £44.5M share of £77M of grants in 2014: an impressive figure that is testament to the hard work and success of our members. We are much indebted to the funding agencies that support our science, including BBSRC, EPSRC, MRC, the Wellcome Trust, other charities, ERC, EU and Industry. We also acknowledge, with thanks, the support of the University of Leeds; the Faculties of Biological Sciences and Maths and Physical Sciences and the Schools of Chemistry, Molecular and Cellular Biology and Physics and Astronomy for their support of the Centre and our research.

2014 saw continuing success of the members of the Astbury Centre in terms of peer recognition. Sheena Radford was delighted to be elected as FRS, following in Bill Astbury’s footsteps. To celebrate, the Vice Chancellor and university hosted 450 guests to attend her celebratory lecture (a copy can be viewed at <https://www.youtube.com/watch?v=r1eK3DLCMcM>). Congratulations also to Alison Ashcroft who was awarded the 2014 Harold Edwin Potts Medal from the University of Liverpool for “Outstanding contributions to Chemistry”. Our students and post-docs also were awarded many prizes for their contributions at conferences and meetings that span the globe, including Caroline Pritchard (Cogent Life Sciences Postgraduate of the year), Diana Monteiro (best oral presentation PPI-Net Young Researcher Symposium), Daniel Hurdiss (poster and oral presentation Society of General Microbiology) and Sam Hickman, Shaun Rawson, Sophie Schumann and Jo Shaw who all won awards at the Faculty of Biological Sciences Postgraduate Symposium. Well done all.

The Astbury Society, led by the presidents Katherine Horner and Claire Windle in 2014, alongside the current presidents Paul Devine and Matt Balmforth, played a magnificent role in Astbury activities in 2014. Events included a Games night, Easter Bake-off, Wine Ale and Cheese night, the now-famous Christmas quiz night, and a highly successful second May Ball. Through an Astbury Tough-Mudder team and much-enjoyed cake bakes and coffee mornings, the Society has now raised a magnificent £2150 for the “Leeds Children’s Charity”.

I hope that you enjoy reading this Annual Report whether you are a member of the Centre, a visitor, a member of our Industrial Advisory Board, a member of a funding agency that supports our activities or a passing reader with an interest in Structural Molecular Biology and the activities of our Centre. Thank you to David Brockwell and Lucy Gray for editing this report, everyone who contributed to it, and all who participated in the Astbury Centre’s activities in 2014. I look forward to continuing our successes in 2015!

Sheena E. Radford
Director, Astbury Centre for Structural Molecular Biology,
Leeds, April 2015

Please note that this report (as well as those from previous years) is also available as a PDF document which can be downloaded from our website (www.astbury.leeds.ac.uk).