

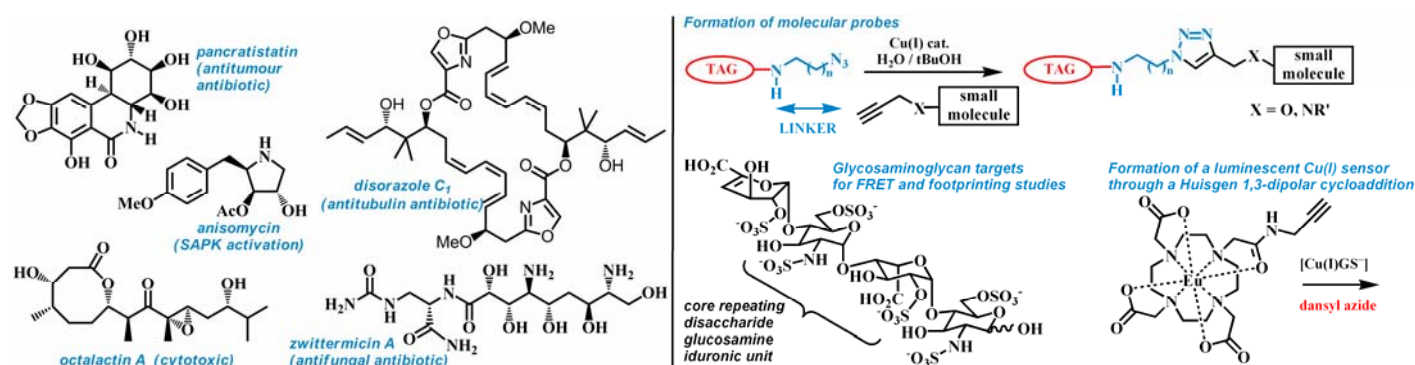
# Dr Alison Hulme Senior Lecturer in Organic Chemistry

e-mail: [Alison.Hulme@ed.ac.uk](mailto:Alison.Hulme@ed.ac.uk) tel: 0131 650 4711

Research Interests: natural product synthesis, asymmetric synthetic methodology, chemical biology, tagging and imaging in biological systems, historical dyestuffs



The Hulme group's research interests in natural products chemistry cover diverse fields, from synthetic organic chemistry and chemical biology, to historic textile dyestuffs. The group has a particular interest in the synthesis of natural products which interact with their biological targets through several, or many, chiral groups. The Hulme group has developed new stereocontrolled glycolate aldol reactions, and novel applications of the Evans-Tishchenko, Heck and ring-closing metathesis (RCM) reactions. This methodology has allowed us to tackle the synthesis of a range of natural product targets including: iminosugars such as DAB-1; the protein synthesis inhibitor anisomycin; polyketides such as octalactin A; tetrahydroisoquinoline antibiotics such as pancratistatin; and products of mixed PKS-NRPS biosynthetic pathways, such as the C<sub>2</sub>-symmetric di-lactone, disorazole C<sub>1</sub>, and the unusual aminopolyol zwittermicin A.



At the Chemical Biology interface the Hulme group have pioneered the development of enabling synthetic methodology to allow the tagging and imaging of a range of biomolecules within the complex medium of a cell, or organism. The Hulme group has pioneered new approaches towards small-molecule target identification, and has developed a linker for affinity chromatography which is compatible with "click" chemistry, offering exciting new possibilities for target isolation. Their work on a RET-based sensor for copper(I), which is compatible with biological systems has been widely cited. The Hulme group has also developed new synthetic methodology to selectively label the non-reducing end of glycosaminoglycans (GAGs) for the first time; and studies of protein-GAG interactions are being carried out with collaborators in Edinburgh and Manchester. The Hulme group also collaborates with the groups of Prof. Malcolm Walkinshaw (Institute of Structural and Molecular Biology, University of Edinburgh) and Profs. Ted Hupp and Kathryn Ball (Edinburgh Cancer Research Centre) on the design of interfacial inhibitors for the oncogenic protein MDM2.

## SELECTED RECENT PUBLICATIONS

1. Synthesis and Application of a New Cleavable Linker for "Click"-Based Affinity Chromatography, F. Landi, C. M. Johansson, D. J. Campopiano, A. N. Hulme, *Org. Biomol. Chem.*, 2010, **8**, 56-59.
2. A Ring Rearrangement Approach to the Synthesis of Benzo[*b*]quinolizine and Benzoindolizine Architectures, L. R. Donaldson, D. Haigh, A. N. Hulme, *Synlett*, 2009, 1587-1590.
3. *Anti* and *Syn* Glycolate Aldol Reactions with a Readily Displaced Thiol Auxiliary, S. Fanjul, A. N. Hulme, *J. Org. Chem.*, 2008, **73**, 9788-9791.
4. Enabling Methodology for the End Functionalisation of Glycosaminoglycan Oligosaccharides, E. Gemma, O. Meyer, D. Uhrin, A. N. Hulme, *Mol. BioSyst.*, 2008, **4**, 481-495.
5. Biotinylated Anisomycin: A Comparison of Classical and "Click" Chemistry Approaches, I. A. Inverarity, R. F. H. Viguier, P. Cohen, A. N. Hulme, *Bioconj. Chem.* 2007, **18**, 1593-1603.
6. An Evans-Tishchenko – Ring Closing Metathesis Approach to Medium Ring Lactones, J. I. Aird, A. N. Hulme, J. W. White, *Org. Lett.* 2007, **9**, 631-634
7. A Sensitised Europium Complex Generated by Micromolar Concentrations of Copper(I): Towards the Detection of Copper(I) in Biology, R. F. H. Viguier, A. N. Hulme, *J. Am. Chem. Soc.* 2006, **128**, 11370-11371.
8. The Natural Constituents of Historical Textile Dyes, E. S. B. Ferreira, A. N. Hulme, H. McNab, A. Quye, *Chem. Soc. Rev.* 2004, **33**, 329-336.