Fluorinated tools for chemical biology

A PhD studentship is available in the group of Dr Chris Coxon, School of Chemistry, University of Edinburgh, https://www.chem.ed.ac.uk/staff/academic-staff/dr-christopher-r-coxon

The studentship is fully funded for 42 months by the University of Edinburgh and covers tuition fees and an annual stipend (starting at £19,723 per annum) for a candidate satisfying EPSRC residency criteria. https://www.ukri.org/councils/esrc/career-and-skills-development/funding-for-postgraduate-training/eligibility-for-studentship-funding/#contents-list

Project Summary
In this project you will design, test and optimise new fluorinated chemical probes for the study of biological processes e.g. protein folding, oligomerisation, and the detection of biomarkers of disease using ^{19}F NMR. ^{19}F NMR gives no background signals in biological samples due to the (almost) absence of organic fluorine in biology, therefore, fluorinated probes provide clear and well-resolved signals in biological samples against an otherwise complex background. We envisage that these probes will be used to better understand complex protein conformational changes in disease and for the screening of new drugs. The Coxon Lab have already developed prototype fluorinated probes based on a peptide that binds to fibrils of α-synuclein, which are found in Lewy bodies in Parkinson's disease. The project will involve organic synthesis of small molecule protein 'tags', solid phase peptide synthesis, product characterisation by e.g. NMR, mass spectrometry and HPLC, and preparation and handling of biological samples.

In the first instance, the initial application (including cover letter and CV) should be directed to:
Dr Chris Coxon, School of Chemistry, University of Edinburgh, David Brewster Road, Edinburgh EH9 3FJ, UK. Email: chris.coxon@ed.ac.uk

The position will remain open until 31 May 2024

References
Killoran, P.M., Hanson, G.S., Verhoork, S.J., Smith, M., Del Gobbo, D., Lian, L.Y. and Coxon, C.R., Probing Peptidylprolyl Bond cis/trans Status Using Distal 19F NMR Reporters. *Chem. Eur. J.*, 2023, *29*, e202203017.

Dognini, P., Chaudhry, T., Scagnetti, G., Assante, M., Hanson, G.S., Ross, K., Giuntini, F. and Coxon, C.R., 5, 10, 15, 20-Tetrakis (pentafluorophenyl) porphyrin as a Functional Platform for Peptide Stapling and Multicyclisation. *Chem. Eur. J.*, 2023, *29*, e202301410.

Brittain, W.D. and Coxon, C.R., Perfluoroaryl and perfluoroheteroaryl reagents as emerging new tools for peptide synthesis, modification and bioconjugation. *Chem. Eur. J.*, 2022, *28*, p.e202103305.

IMPORTANT
Before Submitting your cover letter and CV, please complete the online School of Chemistry Equality, Diversity and Inclusion Form 2024.

The form will automatically generate a unique "Receipt Number" that you MUST include in your cover letter.

Equality and Diversity
The School of Chemistry holds a Silver Athena SWAN award in recognition of our commitment to advance gender equality in higher education. The University is a member of the Race Equality Charter and is a Stonewall Scotland Diversity Champion, actively promoting LGBT equality. The University has a range of initiatives to support a family friendly working environment. See our University Initiatives website for further information. University Initiatives website: https://www.ed.ac.uk/equality-diversity/help-advice/family-friendly