Project title: Watching enzymes work: the role of dynamics in Amide Bond Synthetases
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Project Description:

NMR spectroscopy is a routine technique for the analysis of small molecules in organic synthesis, but its increasing sophistication means that it can also be used to investigate and describe chemical reactions involving complex biomolecular systems. In our groups, we apply NMR spectroscopy to the study of the structure and mechanism of enzymes, in order to reveal details about dynamic structural changes involved in enzyme catalysis that cannot be investigated using crystallography. In this project, we will apply NMR spectroscopy to the investigation of enzymes that catalyse the formation of amide bonds, important in biochemistry, but also one of the most important bond forming reactions in the industrial synthesis of pharmaceuticals. Information gained using NMR approaches will permit rational engineering of this important class of enzymes for important applications in enzyme catalysis and synthetic biology. The project will involve aspects of molecular biology, protein chemistry, biomolecular NMR spectroscopy and other biophysical techniques, all within the broader context of the investigation of enzymes for biotechnological application.

Training:

This prestigious BBSRC funded Doctoral Training Partnership (DTP) brings together the very best molecular, chemical and cellular bioscience research across the White Rose Consortium of Universities (Leeds, Sheffield and York), which maps on to the research themes of the BBSRC. Students will benefit from a regional PhD training programme that has interdisciplinary collaboration at its core. The aim is to enable students to develop a range of research skills in biological and biochemical areas as well as equip them with core mathematical, data analysis and generic professional skills that are necessary for bioscience research in the coming decades. At York, the White Rose Partnership brings together researchers from the Departments of Biology and Chemistry. Additionally, all Chemistry research students have access to our innovative Doctoral Training in Chemistry (iDTC): cohort-based training to support the development of scientific, transferable and employability skills.

Equality and Diversity:

The Department of Chemistry holds an Athena SWAN Gold Award and is committed to supporting equality and diversity for all staff and students. The Department strives to provide a working environment which allows all staff and students to contribute fully, to flourish, and to excel. Chemistry at York was the first academic department in the UK to receive the Athena SWAN Gold award, first attained in 2007 and then renewed in October 2010 and in April 2015. This PhD project is available to study full-time or part-time (50%).

Funding:

Value: Studentships are fully funded by BBSRC and cover: (i) a tax-free annual stipend at the standard Research Council rate (£14,296 for 2016-2017, to be confirmed for 2017-2018 but typically increases annually in line with inflation), (ii) research costs, and (iii) tuition fees at the UK/EU rate.

Eligibility: The studentships are available to UK and EU students who meet the UK residency requirements. Students from EU countries who do not meet the residency requirements may still be eligible for a fees-only award. Further information about eligibility for Research Council UK funding can be found at the following website: http://www.bbsrc.ac.uk/documents/studentship-eligibility-pdf/
Candidate selection process:

- Applicants should submit an application for a PhD in Biological Chemistry by midnight on Sunday 7 January 2018.
- Supervisors will contact their preferred candidates either by email, telephone, web-chat or in person.
- Supervisors may nominate up to two candidates to the assessment panel.
- The assessment panel will shortlist candidates for interview from all those nominated.
- Shortlisted candidates will be invited to a panel interview at the University of York on Tuesday 6 February 2018.
- The York BBSRC White Rose DTP awarding committee will award studentships following the panel interviews.
- Candidates will be notified of the outcome of the panel’s decision by email.

For more information contact chemgrad@york.ac.uk
or see our web page: http://www.york.ac.uk/chemistry/postgraduate/