**Project Description:**
A PhD position is available to work in the chemical and structural glycobiology group of Professor Gideon Davies, FRS.

https://www.york.ac.uk/chemistry/staff/academic/d-g/gdavies/

This project, funded by the Leverhulme Trust, will support both a PhD student and a Postdoctoral worker to provide fundamental insights into an unusual metabolic pathway “sulfoglycolysis” and its diversity in nature. The project will feature gene cloning and expression, enzyme characterization, 3-D structure analysis and chemical probes to identify new pathways.

Over ten billion tonnes of sulfolipids, a class of glycolipids, are synthesised annually.¹ They function as essential components of the chloroplast thylakoid membrane where they are present at such high levels that sulfolipids represent, perhaps the, major reservoir of organic sulfur in the biosphere, with sulfur quantities at least equalling that present in the amino acids cysteine and methionine. Furthermore, in a balanced human diet we are consuming around 0.2 g of sulfolipids daily through vegetable intake, where they likely act as a pre-biotic for healthy gut bacteria. The correct name for the sulfolipid is sulfoquinovosyl diacylglycerol (SQDG, left). SQDG can be considered as having two parts, a diacylglycerol lipid and an extremely unusual sulfur containing sugar, termed sulfoquinovose (SQ, left).

The two staff on the project will dissect the enzymes of the sulfoquinovose degradation pathways (such as those shown below), apply this to expand our understanding of SQ metabolism in the biosphere

**References**
Applicants are advised to read:


Training:

Key skills training will be given in: bioinformatics, gene cloning, expression in bacterial systems, enzyme kinetics, X-ray crystallography and protein structure determination using laboratory data and Diamond Light Source.

All research students follow our innovative Doctoral Training in Chemistry (iDTC): cohort-based training to support the development of scientific, transferable and employability skills. All research students take the core training package which provides both a grounding in the skills required for their research, and transferable skills to enhance employability opportunities following graduation. Core training is progressive and takes place at appropriate points throughout a student’s higher degree programme, with the majority of training taking place in Year 1. In conjunction with the Core training, students, in consultation with their supervisor(s), select training related to the area of their research.

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.

Funding: Leverhulme Trust

Value: The studentship is fully funded either by the Leverhulme Trust, and covers: (i) a tax-free annual stipend at the standard Research Council rate (£14,777 for 2018-19), (ii) tuition fees at the UK/EU rate, (iii) research costs.

Eligibility: The studentship is available to those candidates from the UK and EU who are eligible to pay University of York tuition fees at the ‘home’ rate; https://www.york.ac.uk/study/postgraduate-research/fees/status/

Candidate selection process:

- Candidates should submit an online application for a PhD in Chemistry
- Applications will close on 31 July 2018, or sooner if a suitable candidate is appointed
- Supervisors may contact their preferred candidates either by email, telephone, web-chat or in person
- Supervisors will select their preferred candidate from those that meet the University’s entry requirements
- Candidates will be notified of the outcome by email

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