



School of Pharmacy PhD Projects 2014

Project Title Isolation of Novel Bioactive and Biocatalytic Agents from Extreme Halophiles

Supervisors Dr Brendan Gilmore, Dr Christopher Allen (Biological Sciences)

Description The overall aim of this research project is to establish the potential of extreme halophilic microorganisms, isolated from ancient (Triassic) halite evaporites, as a source of novel biocatalytic enzymes for application in active pharmaceutical ingredients (APIs) and fine chemical synthesis. To date, over 100 bacterial and archaeal species, representing over 20 genera have been isolated from ancient halite deposits, aged between 220-250 million years old. The microbiome of this unique environment (both culturable and non-culturable) represents an exciting, untapped, potential resource for novel biocatalysts for active pharmaceutical ingredient (API) synthesis.

Specifically, the research will focus on the high throughput screening (using biofilm cultures of isolated halophiles) and isolation of enzymes (with a wide range of substrates) from extreme halophilic species and their optimization through directed evolution approaches. Isolated enzymes will be evaluated for their ability to operate in a wide range of solvents, with a focus on *a*-alkyl-3-methylimidazolium ionic liquids.

The student will join a dynamic biodiscovery consortium and obtain skills in extremophile microbiology, biocatalytic enzyme isolation and identification, pharmaceutical analysis, proteomics and molecular microbiology. Close collaboration with a major industry partner is anticipated.

Start Date October 2014

Keywords API Bioactalysis, biodiscovery, biofilm, metagenomics, ionic liquids

Contact Details

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How to Apply

Postgraduate applications should be made using Queen's Online:

<http://go.qub.ac.uk/pgapply>

Please note that there are two application processes: one for admission to the university and another for postgraduate awards.

Further Information

Additional information for prospective postgraduate students can be found on the School of Pharmacy website:

<http://www.qub.ac.uk/pha>

and the Queen's Postgraduate website:

<http://www.qub.ac.uk/home/ProspectiveStudents/PostgraduateStudents/>