

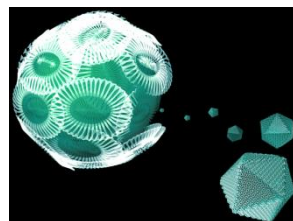
GW4+ Doctoral Training Partnership

Development of natural algal virus platforms for scalable industrial biotechnology



Note: This studentship comes associated with additional CASE funding from industrial partner Algenuity.

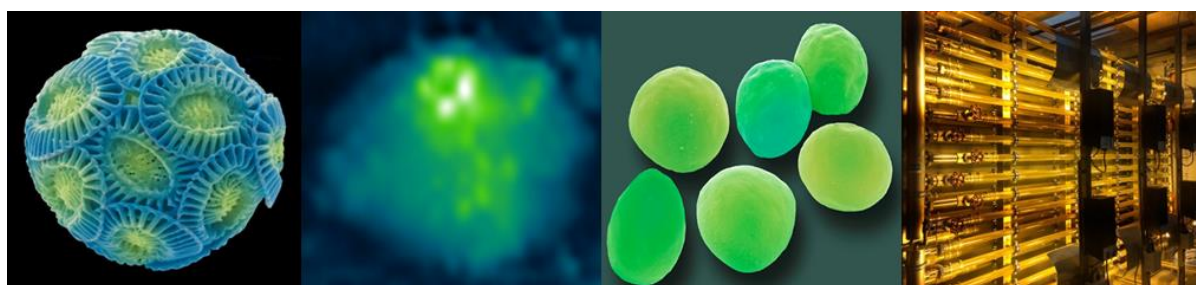
Main Supervisor: Dr Mike Allen, PML
Co-Supervisor: Prof Marian Yallop (Bristol University)
Co-Supervisor: Dr Tracey Beacham, PML
Co-Supervisor: Dr Andrew Spicer, Algenuity



Background:

NERC funded research has previously supported the isolation and characterisation of novel viruses from the natural environment that are capable of inducing the production of unique metabolites during infection of their microalgal hosts. The Chloroviruses and Coccolithoviruses (infecting *Chlorella* and *Emiliana huxleyi*, respectively) for example, induce the production of hyaluronan and ceramide-like sphingolipids, respectively, as part of their natural infection strategies. With a current market size of \$13.4billion and \$240million for hyaluronan and ceramide, the translation of ecological observations into the development of novel microalgal production platforms provides great opportunity.

Aim and methods: This project will seek to adapt two established microalgal platforms (*Chlorella* sp. and *Emiliana huxleyi*) for the production of hyaluronan and ceramide, via viral induction. The project aims to exploit existing viral strains and characterise new isolates (none of which have been used in a commercial setting previously), with the emphasis on translating the physiological and biochemical changes that occur during viral infection into industrially relevant outputs. A multi-faceted approach will involve laboratory work combining molecular, bioinformatic, microbiology, virology and physiology studies, with the ultimate aim of scale up and optimization of the algal-virus system as a biomass production platform utilising state of the art photobioreactors. The student will spend at least 3 months based at Algenuity (Bedfordshire) to experience a dynamic, cutting edge industrial environment.



The project would suit a student with a passion for environmental virology and a desire to translate fundamental academic research into commercially relevant solutions. A very good undergraduate degree in a biological science, a desire to learn new skills and the ability to interact with diverse stakeholders is essential. As a CASE project, the student will spend a minimum of 3 months (over the course of the 3.5 year studentship) at the CASE partner, Algenuity (Bedfordshire), though the balance can be adjusted to suit project progression and the interests of the candidate.