

Thursday, 22<sup>nd</sup> March, 12.00 pm, Seminar Room

*Host: Dr. Niels C. Reichardt*

## **Sugars, Natural Products and Algal Blooms**

*Prof. Rob Field*

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The algae are a diverse set of organisms that have enormous but largely unexplored capacity for carbohydrate and natural product chemistry. In principle, they represent an amazing resource of new small molecule bioactives and new enzymes for industrial biotechnology. In the process of investigating this prospect, we were drawn to engage with the local angling community, who were concerned about fish-killing algal blooms in our local waterways. This in turn led to new and unexpected opportunities for discovery science as well as public engagement. This presentation will highlight the efforts of a chemistry lab to learn about algal biology.

Insights into toxic *Prymnesium parvum* blooms: the role of sugars and algal viruses. *Biochem. Soc. Trans.*, 2018, doi.org/10.1042/BST20170393

Identification of *Euglena gracilis*  $\beta$ -1,3-glucan phosphorylase and establishment of a new glycosyl hydrolase family GH 149. *J. Biol. Chem.*, 2018, 293, 2865-2876.

Exploring the glycans of *Euglena gracilis*. *Biology*, 2017, 6, 45 doi:10.3390/biology6040045.

Isolation and characterization of a double stranded DNA megavirus infecting the toxin-producing haptophyte, *Prymnesium parvum*. *Viruses*, 2017, 9, article 40 doi:10.3390/v9030040.

Fluorescent mannosides serve as acceptor substrates for glycosyltransferase and sugar-1-phosphate transferase activities in *Euglena gracilis* membranes. *Carbohydr. Res.*, 2017, 438, 26-38.

Gene Discovery for Synthetic Biology: Exploring the Novel Natural Product Biosynthetic Capacity of Eukaryotic Microalgae. *Methods in Enzymology*, 2016, 576, 99-120.

*Euglena* in time: evolution, control of central metabolic processes and multi-domain proteins in carbohydrate and natural product biochemistry. *Perspectives in Science*, 2015, 6, 84-93.

The transcriptome of *Euglena gracilis* reveals unexpected metabolic capabilities for carbohydrate and natural product biochemistry. *Molecular Biosystems*, 2015, 11, 2808-2820.