

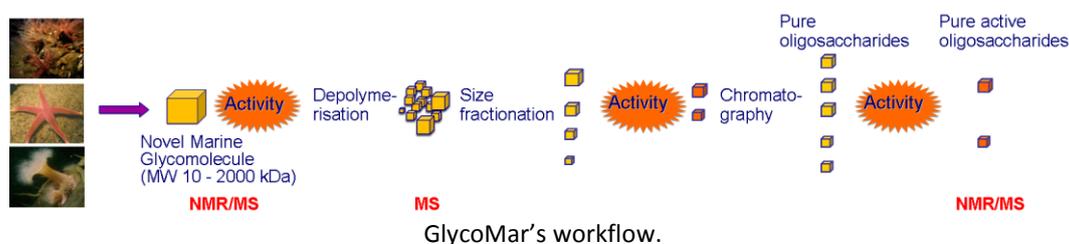
Automated Structure Characterisation of Oligosaccharide Mixtures by NMR (ASCOM-NMR)

3.5 year Postgraduate Research Studentship starting in September 2016

School of Chemistry (SoC), University of Edinburgh (UoE)

Project background: Oligosaccharides are the subject of growing commercial interest for a wide range of applications in healthcare and personal care. They are commonly prepared by depolymerisation of polysaccharides which are important industrial biotechnology products from biomass, microalgae and bacterial fermentation. The characterisation of oligosaccharide mixtures produced by the depolymerisation is one of the bottlenecks in the **discovery** and subsequent **development** of scalable downstream processing of active oligosaccharides. This project aims to develop automated Nuclear Magnetic Resonance (NMR) based characterisation of oligosaccharide mixtures without the need for their physical separation.

This project is funded by the SoC (<http://www.chem.ed.ac.uk/staff/academic-staff/dr-dusan-uhrin>), IBioIC (<http://www.ibioic.com>) and GlycoMar (<http://www.glycomar.com/>). GlycoMar, a biotech company based in Oban, Scotland, is exploring pharmaceutical potential of marine polysaccharides and needs to structurally characterise molecules^{1,2} that are selected for clinical development.



The structural characterisation by NMR and the development of NMR methods will be carried using the SoC NMR facility at the UoE, which is superbly equipped with the state-of-the-art NMR spectrometers (<http://www.chem.ed.ac.uk/research/facilities/characterisation>). The student will be expected to spend a limited amount of time in GlycoMar, situated in a beautiful location on the West Coast of Scotland, preparing poly/oligosaccharides via depolymerisation and chromatographic separation.



800 MHz NMR spectrometer, SoC.



GlycoMar Ltd, European Centre for Marine Biotechnology, Oban.

This 3.5 year studentship (£14,200 in academic year 2016-17) is starting in September 2016. Informal enquiries should be addressed to dusan.uhrin@ed.ac.uk, with applications made through the EUCLID system <http://www.ed.ac.uk/studying/postgraduate/degrees/index.php?r=site/view&id=16>

Applicants must have a 1st class or an upper 2nd class honours degree in chemistry, physics or biology and must meet the EPSRC residency requirements <https://www.epsrc.ac.uk/skills/students/help/eligibility/>, which restrict this award to UK and EU nationals. Applications will be reviewed as they are received.

References

1. Panagos, C.G *et al*, Fucosylated chondroitin sulfates from the body wall of the sea cucumber *Holothuria forskali*. Conformation, selectin binding and biological activity. *J. Biol. Chem.* **289**, 28284–28298 (2014).
2. Panagos, C.G. August, D.P., Jesson, C. Uhrin, D. Photochemical depolymerisation of dermatan sulfate and analysis of the generated oligosaccharides. *Carb. Polym.* **140**, 13-19 (2016).