Bioprocessing Technology Institute
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Seminar Announcement

Carbohydrates, natural products and synthetic biology

Speaker : Professor Rob Field
Department of Biological Chemistry
John Innes Centre
Norwich NR4 7UH, UK

Date : Monday, 2 November 2015
Time : 11.00am
Venue : Creation Theatrette, Level 4, Matrix

Hosts : Professor Pauline Rudd
Visiting Scientist, BTI
Dr Zhang Peiqing
Research Scientist, BTI

Please click here to register for the seminar.

Abstract

Research in the Field group is focused on developing and exploiting chemical and biological tools to understand and exploit plant and microbial metabolism. This presentation will highlight approaches to: understanding plant metabolism using anti-diabetic drugs; plant-based production of VLP glycoconjugate vaccines; de novo generation of natural product biosynthesis pathways in plant leaves; synthetic biology approaches to the generation of starches and starch-like materials; enzyme discovery of algal enzyme for de novo synthesis immune stimulatory glycans for applications in medicine and agriculture.

About the Speaker
http://www.jic.ac.uk/profile/Rob-Field.asp

Research in the Field group is focused on developing and exploiting chemical tools and principles to address questions in plant and microbial carbohydrate metabolism. Projects typically involve some combination of chemical and enzymatic synthesis, inhibitor design and assessment, biochemistry, structural biology, metabolomic, proteomic and transcriptomic analysis. From a biology perspective, we work cross-Kingdom: Arabidopsis, barley, Euglena + Prymnesium, Streptomyces, *E. coli*, Campylobacter, flu virus, norovirus, the African and American trypanosome.

Selected recent publications (full list https://www.jic.ac.uk/scientists/rob-field/)

196. Transcriptomic analysis of *Euglena gracilis* reveals unexpected capacity for carbohydrate and natural product chemistry. E. C. O'Neill, M. Trick, B. Henrissat, R. A. Field, *Mol. Biosys.*, 2015, 11, 2808-2820.

193. Standards for Plant Synthetic Biology: A Common Syntax for Exchange of DNA. Patron, N. et al; *New Phytologist*, 2015, 208, 13-19.

183. Discrimination of epimeric glycans and glycopeptides using ion-mobility mass spectrometry: towards a comprehensive carbohydrate sequencing strategy. P. Both, A. P. Green, C. Gray, R. Šardzík, J. Voglmeir, C. Fontana, M. Austeri, M. Rejzek, D. Richardson, R. A. Field, G. Widmalm, S. L. Flitsch, C. E. Eyers, *Nature Chemistry*, 2014, 6, 65-74.

182. Sugar-coated sensor chip and nanoparticle surfaces for the *in vitro* enzymatic synthesis of starch-like materials. E. C. O'Neill, A. Rashid, C. E. M. Stevenson, A.-C. Hetru, A. P. Gunning, M. Rejzek, S. A. Nepogodiev, S. Bornemann, D. M. Lawson, R. A. Field, *Chem. Sci.,* 2014, 5, 341-350.

180. A simple bacterial glucanotransferase can complement Arabidopsis mutants defective in cytosolic maltose metabolism. C. Ruzanski, J. Smirnova, M. Rejzek, D. Cockburn, H. L. Pedersen, M. Pike, W. G. T. Willats, B. Svensson, M. Steup, A. M. Smith, R. A. Field, *J. Biol. Chem.,* 2013, 288, 28581-28598.

179. Glyconanoparticles for the plasmonic detection and discrimination between human and avian influenza virus. M. J. Marín, A. Rashid, M. Rejzek, S. A. Fairhurst, S. Martin, J. W. McCauley, T. Wileman, R. A. Field, D. A. Russell, *Org. Biomol. Chem*., 2013, 11, 7101-7107.

172. Glycosyltransferases from oat (*Avena*) implicated in the acylation of avenacins. A. Owatworakit, B. Townsend, T. Louveau, H. Jenner, M. Rejzek, R. K. Hughes, G. Saalbach, X. Qi, S. Bakht, A. D. Roy, S. T. Mugford, R. J. M. Goss, R. A. Field, A. Osbourn, *J. Biol. Chem.,* 2013, 288, 3696-3704.

170. Versatile oligosaccharide microarrays for plant glycobiology and cell wall research. H. Petersen, J. Fangel, B. McCleary, C. Ruzanski, M. Rydahl, M.-C. Ralet, V. Farkas, L. von Schantz, S. Marcus, M. Andersen, R. Field, M. Ohlin, P. Knox, M. Clausen, W. Willats, *J. Biol. Chem*., 2012, 287, 39429-39438.