



Universidad
Andrés Bello

***Clostridium* SEMINAR**

JANUARY, TUESDAY 20th, 2015.

SALON ANDRÉS BELLO AUDITORIUM

Avda. República 237 interior

UNIVERSIDAD ANDRÉS BELLO, SANTIAGO.

10:30-11:20:

Dr. Nigel Minton, University of Nottingham

“Development of genetic tools for *Clostridium* spp.”

11:20-12:10

Dr. Sarah Kuehne, University of Nottingham

“New advances in *Clostridium difficile* pathogenesis”

Closing Cocktail



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Dr. Nigel Minton
Professor of Applied Molecular Microbiology
Faculty of Medicine & Health Science, University of Nottingham

Dr. Nigel is a relative newcomer to academia. He established the Clostridia Research Group (CRG) in 2004, following 25 years of service in the applied environment of the Centre for Applied Microbiology and Research (CAMR), Porton Down. At CAMR he fulfilled a number of different roles, including Head of the Department of Molecular Microbiology as well as Scientific Leader for Molecular Microbiology for the establishment. To date he has filed 15 patents, secured £15.7M in funding since arriving at Nottingham, leads one of the six programmes that together comprise the BBSRC Sustainable Bioenergy Centre (BSBEC) and is the PI of a recently awarded BBSRC sLoLa in Synthetic Biology. He belongs to the TMO Renewables Ltd Centre of Excellence in Biorefining, is on the LanzaTech Scientific Advisory Board, consults for Pfizer, MERCK and Ipsen Pharmaceuticals and is the scientific lead on *Clostridium difficile* research within Nottingham's NIHR Biomedical Research Unit on Gastrointestinal disease.

Dr. Nigel (h-index 39) is a world expert in clostridial gene technologies and leads one of the largest research groups (ca. 60) at Nottingham, the CRG. Their remit is to:- (i) develop more effective countermeasures (diagnosis, prevention & treatment) against pathogens, specifically *Clostridium difficile* and *Clostridium botulinum* and (ii) to exploit the medical and industrial properties of beneficial strains, specifically in cancer therapy and in the production of chemical commodities from renewable resources. He has a proven track record of working with Industry, and the MTA portfolio dealing with the distribution of his patented tools is the largest within the University, with >250 MTAs drafted, and 24 licences and options granted. His group currently partner with a dozen or so companies, including TMO Renewables Ltd, Green Biologics Ltd, Weyland, LanzaTech, Unilever, Novartis, Metabolic Explorer and Phicotherapeutics. Moreover, he currently (2013) receives **over £2.8M in direct industrial funding** from Evonik, Lanxess, Invista, MERCK, Astellas, LanzaTech, Summit Plc, Bioseutica, Ipsen Pharmaceuticals Ltd and MucoVax. He is experienced in collaborative grants at all levels of scale, as both coordinator (5 past + 1 current EU grant) and vice-coordinator (2 X SysMO ERANETS), is a BSBEC Programme leader, holds BBSRC China & India partnership awards and a BBSRC ERANET-IBB grant and leads a BBSRC sLoLa, part funded by LanzaTech, focused on exploiting SynGas Fermentation through systems/synthetic biology approaches.



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Dr. Sarah Kuehne
Senior Research Fellow
Faculty of Medicine & Health Science, University of Nottingham

Dr Sarah Kuehne has been a member of the Clostridia Research Group (CRG), headed by Prof Nigel Minton, since 2008.

Prior to that she completed an MSc in Biotechnology with a distinction in 2003 and moved then on to complete a PhD at the University of Nottingham working on post-transcriptional regulation in *Pseudomonas aeruginosa*.

After her PhD she joined the Health component of the CRG, first to work on a project using the benign bacterium *Clostridium sporogenes* in cancer therapy. She is still involved in this work today.

During the following four years she has then been working on a project to understand the molecular basis of virulence in *Clostridium difficile*. Investigations of *Clostridium difficile* infection have been undertaken with state of the art molecular techniques, developed within CRG, making the construction of isogenic, stable mutants in this important pathogen possible for the first time. This work focused largely on the individual role of *C. difficile*'s two main virulence factors, the large toxins A and B. Findings have shown that it is crucial to consider both toxins when developing effective countermeasures against *C. difficile* disease. This ground-breaking research has led to high impact publications and to secure internal and external funding for further projects.

In 2012 Dr Kuehne was appointed Senior Research Fellow as part of a Strategic Development Fund (SDF) by the University of Nottingham. This position is within the Centre of Excellence in Biological Engineering and part of CRG. Dr Kuehne is now looking to further understand the regulation of the toxins of *C. difficile*, in particular the binary toxin and other factors contributing to disease. She is involved with several pharmaceutical companies (Astellas, Summit, Merck) and supervises PhD students working on *C. sporogenes* (cancer therapy), *C. difficile* (binary toxin, sporulation, germination regulation) and also *C. scindens* (a component of the normal human gut micro flora).

Dr Kuehne is also part of the Biomedical Research Unit (BRU) in Nottingham, facilitating translational work and access to patient samples. Within this program she is looking at rifaxamin to prevent *C. difficile* relapse.



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