Infectious Diseases Labs

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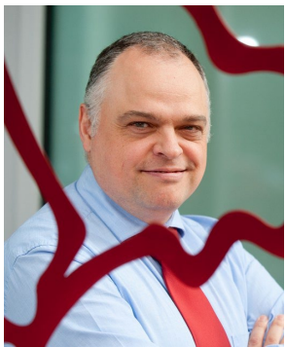

Prof Jose Bengoechea

School of Medicine, Dentistry and Biomedical Sciences
Wellcome Wolfson Institute for Experimental Medicine
Queen's University Belfast, UK

Join zoom meeting **here**
Meeting ID: 914 5946 3064
Passcode: 078040

Monday, 5 September 2022
4:00pm to 5:00pm (SGT)

Webinar is open to all
No registration required

Deciphering Klebsiella pneumoniae rewiring of immune cells communications to overcome innate immunity

Antibiotic resistance is a pandemic claiming more than 750,000 deaths per year. Klebsiella pneumoniae exemplifies the threat of this pandemic by the increasing number of strains resistant to fluoroquinolones, third-generation cephalosporins, aminoglycosides, and even carbapenems. These infections are associated with high mortality rates and prolonged hospitalization. Not surprisingly, the World Health Organization includes K. pneumoniae in the "critical" group of pathogens for which new therapeutics are urgently needed. Less obvious but critical for pathogenesis are K. pneumoniae adaptations to the human immune system allowing the pathogen to flourish in human tissues such as the airways. This is an aspect often overlooked because K. pneumoniae is not considered a pathogen able to manipulate the host cells because it does not encode type III or IV secretion systems known to deliver effectors into immune cells, or any of the toxins affecting cell biology.
Here, I will present the research models leverage by the Bengoechea laboratory to dissect the infection biology of K. pneumoniae. Particularly, I will focus on the K. pneumoniae-macrophage interface in vivo. I will describe how the pathogen rewires these cells to overcome host restriction during pneumonia. , and I will present data illustrating the potential of inhibiting this virulence strategy to control Klebsiella infections in vivo.

Prof Bengoechea completed his degree in Biology and acquired further specialisation in Microbiology in the University of Navarra (Pamplona, Spain) during his PhD. In 1998, he took a postdoc position in the laboratory of Prof Mikael Skurnik (Turku, Finland) to receive advanced training on molecular microbiology. In 2002, after obtaining a "Miguel Servet" tenure-track contract, funded by the Spanish Ministry of Health, Prof Bengoechea started his independent research career at University Hospital Son Dureta (Palma de Mallorca, Spain). In 2007, he earned a tenure position in the Spanish Research Council (CSIC). Prof Bengoechea joined Queen's University Belfast in July 2013, as Professor of Molecular Microbiology and he is the founding Director of the Wellcome-Wolfson Institute for Experimental Medicine.
Prof Bengoechea is an international recognized leader in the antimicrobial resistance field with a major focus on understanding how multidrug-resistant microbes avoid immune defences. Prof Bengoechea has established a unique reputation in the study of Klebsiella pneumoniae infections. This pathogen has been singled out as an "urgent threat to human health" due to drug resistant strains. Research from his laboratory has led to a paradigm shift in the understanding of the virulence of the pathogen. He pioneered the study of the interface between the pathogen and the innate immune system leveraging in vitro and translational in vivo models (mice, and ex vivo lung perfusion model) and applying a multidisciplinary approach interfacing immunology, cellular biology, molecular microbiology, and functional genomics approaches. Research from his laboratory has provided the foundation for new treatment against this microbe, including the first-in-kind host-directed therapeutics approach. His research programme is supported by the BBSRC, and MRC.

Questions? Contact us at **seminars@idlabs.a-star.edu.sg**

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