

Institut d'Alembert Seminar / 26th September. 2024 at 3:00 pm
Amphi Simondon – Bât. Sud-Ouest
Niveau 1 – B26

***MICROENVIRONMENT MATTERS : ADVANCED HUMAN CELL-BASED
MICROTISSUE MODELS FOR UNDERSTANDING BLADDER DISEASES***

By Jennifer Rohn
Department of Renal Medicine,
University College London.

Presentation :

Diseases of the bladder impose an enormous economic and healthcare burden to society, but are highly understudied. Urinary tract infections (UTI) are among the most common in the world and are a critical exacerbating factor in the global antimicrobial resistance crisis. Bladder cancer rates and deaths are rising year on year, and treatment outcomes have not improved much for four decades. In both cases, therapeutic innovation has probably lagged in part due to the reliance on mouse models; although these have yielded great insights, there are nevertheless species differences in urinary tract structure, function, biomarkers and immunity whose consequences to disease relevance are not fully understood. In recent years, we and others have developed in vitro human cell-based urothelial microtissue models. Our latest one is planar, three-dimensional and fully stratified to human thickness. It is also terminally differentiated with correct biomarkers and is fully urine-tolerant, allowing the exposure of bacteria or drugs in their native environment. We have been using this model to understand bacterial/host interactions at the human cell interface. We have also developed a new platform, consisting of human cancer spheroids imbedded in the healthy urothelial environment, for testing the efficacy and safety of novel bladder cancer therapeutics. These approaches illustrate the power of human cell-based microtissue platforms to complement in vivo studies in animal models.

Biography :

Professor Jennifer Rohn is Head of the Centre for Urological Biology in the Department of Renal Medicine in the Division of Medicine at University College London. Her laboratory's research themes include tissue engineering and organ-on-a-chip; host/pathogen interactions and genomic ecology in urinary tract infection; bladder cancer; and the development of novel therapeutics. Jennifer earned her PhD in Microbiology at the University of Washington, Seattle USA. After a postdoctoral fellowship at the Cancer Research UK London Research Institute and a group leader position in a start-up company in the Netherlands, she re-joined academia at UCL in 2006 with a Wellcome fellowship and was promoted to Professor in 2021.

14h30 : Welcome coffee – 1E29

15h : Talk by Jennifer Rohn – 1B26