

The Biopharmaceutics of ABC Transporters in the Lung

A Galenus Foundation sponsored Key Note Lecture

Monday, 30 May 2022 from 9:45 - 11:15 in Lecture Theatre 6 (HS6), UZA2



Galenus Foundation Visiting Professor 2021-22 - Carsten Ehrhardt

Carsten Ehrhardt is Professor in Pharmaceutics and Biopharmaceutics at the School of Pharmacy and Pharmaceutical Sciences, Trinity College Dublin. In addition, he is an Adjunct Associate Professor in the School of Pharmacy, University of Southern California and was elected Fellow of Trinity College Dublin in 2013. His research is focused on lung drug disposition, pulmonary epithelial transport and molecular origins of airways disease. Carsten is the proud recipient of awards from DPhG, APS and Galenus Foundation. carsten.ehrhardt@tcd.ie

Virtually every cell in the body is equipped with a tightly regulated machinery of membrane transporter proteins. These transporters facilitate cellular entry or efflux of their substrates across lipid bilayer membranes. Efflux transporters, which often require primary or secondary metabolic energy to function, have important physiological roles in maintaining barrier function and cellular detoxification and clearance. In the context of drug delivery, however, the protective function of efflux transporters sometimes negatively impacts on bioavailability, in cases where the drug in question is a substrate for such transporters. This can lead to reduced gastrointestinal absorption, increased hepatic and/or renal clearance and restricted access to certain compartments, such as the CNS. Moreover, upregulated transporter expression in cancer cells can result in resistance of tumours to chemotherapy.

Whilst a wealth of information has been published on transporter effects in drug disposition in the gut, liver, kidneys and the blood-brain-barrier, pulmonary transporter research remains a relatively poorly understood area of research. This presentation will discuss the expression of relevant members ATP-binding cassette (ABC) transporter family, namely, P-glycoprotein (P-gp), multidrug resistance-associated protein 1 (MRP1) and breast cancer resistance protein (BCRP) in the lung and in addition, will highlight the clinical impact these efflux transporters can have on pulmonary cell physiology, detoxification and drug disposition.