IBN SEMINAR SERIES

New Approaches in Biodetoxification: From Small Molecules to Polymers and Vesicles

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Creation Theatrette, Level 4 • The Matrix, 30 Biopolis Street, Biopolis

ABSTRACT

Traditionally, colloids such as liposomes, nanoparticles and polymers have been used in pharmaceutical sciences as delivery systems for drugs and imaging agents. There are, however, cases where they can treat diseases or intoxications by removing endogenous or exogenous toxic compounds from the body. Well known examples are activated charcoal and the polymeric binder sevelamer, which are indicated in the treatment of drug overdose and hyperphosphatemia, respectively. In the past few years, the field of biodetoxification has indeed experienced a rapid growth with the emergence of highly active sequestering colloids, and their evaluation in novel indications (e.g. infections, inflammation). In this presentation, we will cover three applications, namely the treatment of Clostridium difficile infection, celiac disease (i.e. autoimmune enteropathy triggered by gluten in genetically sensitive individuals) and drug overdose. In each one of these applications, we will introduce detoxification approaches involving novel therapeutics agents starting from small organic molecules to larger systems such as polymers and nano/microvesicles. Financial support from the Swiss National Science Foundation is acknowledged.

ABOUT THE SPEAKER

Jean-Christophe Leroux received his B.Pharm. from the University of Montreal, followed by a Ph.D. in Pharmaceutical Sciences from the University of Geneva. From 1996 to 1997 he completed a postdoctoral training at the University of California, San Francisco and then joined the University of Montreal as an assistant professor. He was promoted to the ranks of associate professor in 2002 and full professor in 2007. In 2001, he was awarded the Canada Research Chair in Drug Delivery. Prof. Leroux joined the Institute of Pharmaceutical Sciences at ETH Zürich as ordinary professor at the end of 2008. His research interests include the design of novel biopolymers and drug delivery systems (liposomes, nanoparticles, micelles and gels) as well as the targeting of anticancer drugs and nucleic acids. Recently, he has been involved in the development of new polymer therapeutics for Celiac disease (currently in clinical phase 1/2) and in the evaluation of colloidal antidotes for the treatment of drug overdose. He is the author or coauthor of more than 160 refereed articles, 13 book chapters and 15 patents/patent applications. He is associate editor of the *Journal of Controlled Release*, and serves in the editorial board of 5 scientific journals including *Biomacromolecules*, the *Journal of Pharmaceutical Sciences*, and the *Journal of Drug Delivery Science and Technology*. He has received several prestigious distinctions such as the CRS Young Investigator Award (2004), the Steacie Fellowship (2008), the Debiopharm Life Sciences Award (2010) and the APV Research Award (2014) for innovative research in pharmaceutical technology.

This seminar is free and no pre-registration is required.
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