

SEMINAR

REPURPOSING DRUG DELIVERY SYSTEMS FOR DIAGNOSTICS

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ABSTRACT

In the last two decades, a number of drug delivery systems were repurposed for diagnostic applications. Traditional uses of diagnostic delivery systems are nanocarriers of diagnostic cargo with controlled release kinetics or active targeting properties. In this seminar, I will demonstrate how established delivery systems can be used for diagnostics in less conventional ways. First, I will present the development of an enzyme-loaded vesicular reaction compartment for the quantification of lactate in whole blood. Isolating the lactate-sensing reaction in a liposome allowed this reaction to occur in whole blood as the selectively permeable liposome membrane excluded interfering substances in blood from the reaction compartment. Second, I will present the development of a non-releasing hydrogel for a diagnostic application. We immobilized a pH-sensitive dye in a hydrogel for pH monitoring in chronic wounds. The minimal release of the dye is desired to ensure the functionality of hydrogel and to minimize wound contamination with the dye. These liposomal and hydrogel systems underline the high versatility of drug delivery systems for diagnostic applications.

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He holds an MSc in Pharmaceutical Sciences from ETH Zurich, and is a board-certified clinical hospital and community pharmacist in Switzerland. He did his PhD in drug delivery with Prof. Dr. Jean Christophe Leroux (ETH Zurich) and his postdoctoral studies in bioengineering with Prof. David Mooney (Harvard University). He is an Associate Editor with ACS Pharmacology & Translational Science and a board member of the Canadian Biomaterials Society and the Canadian Chapter of the Controlled Release Society. His research interests are in formulation science and biomedical engineering with an emphasis on diagnostics and drug delivery.

AULA 6

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