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Novel pharmacologic and phenotypic methods to characterize carrier-mediated and nanoparticle agents as part of preclinical and clinical development

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Abstract

Nanoparticle drugs consist of the inactive-drug that remains encapsulated within or conjugated to the nanoparticle carrier and the active-drug that is released from the carrier.The pharmacokinetics and pharmacodynamics of nanoparticle agents is dependent on their recognition and interaction with the mononuclear phagocyte system (MPS) where the encapsulated drug is cleared via the MPS and the drug may be released from the carrier via interactions with the MPS. Thus, it is critically important to evaluate the encapsulated and released forms of nanoparticle agents and how nanoparticle agents interact with the MPS in preclinical models and in patients. The following issues will be discussed: 1) pharmacologic methods to characterize nanoparticle agents in vivo and in vivo; 2) animal models for pharmacologic and toxicology studies of nanoparticle agents; and the development of phenotypic probes of the MPS to profile nanoparticle agents, animal models and as a method to individualize nanoparticle therapy in patients

Biography

Dr. Zamboni is an expert in translational studies of anticancer agents. The Zamboni lab, in the Genetic Medicine Building, is a drug development and clinical pharmacology lab that focuses on the translational development of drugs, anticancer agents, and nanoparticles. Dr. Zamboni also supervises the Good Laboratory Practice Analytical Facility in Kerr Hall, which supports the development of newly discovered drugs and medical testing procedures.