Special Issue

Advances in Physiologically-Based Pharmacokinetic Modeling

Message from the Guest Editors

Physiologically-Based Pharmacokinetic (PBPK) modeling has become an indispensable tool in modern drug research and development. By combining physiological and biochemical information with drug-specific properties, PBPK models can predict pharmacokinetic behavior across different populations, disease conditions, and dosing regimens. Recent progress in computational methods, in vitro–in vivo extrapolation, and model verification has expanded the role of PBPK from early-stage drug discovery to regulatory submissions and individualized treatment strategies. We welcome original research articles and reviews covering diverse topics such as model qualification, drug–drug interactions, population-specific applications, integration with pharmacodynamics, and regulatory considerations. In particular, innovative studies exploring synergy with pharmacometrics, systems pharmacology, and artificial intelligence-driven methodologies to expand mechanistic and predictive insights are strongly encouraged. This Special Issue aims to provide a comprehensive overview of current advances and future opportunities in PBPK modeling to support precision medicine.

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