



## Innovative In Vitro/In Silico Approaches to Drug Permeation and Absorption: The Highway to Implement the 3Rs Principles in Drug Development

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### Message from the Guest Editor

The 3Rs (*Replacement, Reduction and Refinement*) are the guiding principles for a more ethical use of animals in product testing and scientific research. These guiding principles were first spelled out as a firm legal requirement by the EU commission in the Directive 2010/63/EU on the protection of animals used for scientific purposes. Yet, 12 years on from its legal implementation, the number of animals used in pharmaceutical research has not declined. This fact does not only create a big ethical/sustainability issue, but it also raises the question: is this the correct approach to understanding complex biopharmaceutic phenomena such as drug permeation and adsorption? The answer is: probably not. This Special Issue serves to highlight and capture the contemporary progress in in vitro/in silico approaches for the reliable prediction of in vivo drug performance with special emphasis on enabling formulation testing.





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## Message from the Editor-in-Chief

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