



Prof. Matthias G. Wacker

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Title: Translational Nanotechnology – Performance Assays for the Next Generation

Abstract : Nowadays, an emerging number of advanced therapies conquers the global market and improves the life quality of patients suffering from life-threatening diseases. Nanotechnology-related drug products and biopharmaceuticals are at the forefront of this development with significant market share and business potential. So far, there are few reliable *in vitro* performance assays at hand that enable early selection of formulations suitable for clinical translation. Drug release testing is traditionally used for the evaluation of solid oral dosage forms but, taking these new developments into account, novel assay systems are needed to address shortcomings of the existing technologies. In this presentation, I will provide an overview of our latest research focusing on the development of predictive *in vitro* performance assays for novel dosage forms including nanocarriers and biopharmaceuticals. In combination with physiologically-based *in silico* modeling, they are an indispensable tool in pharmaceutical formulation development.

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Professional Biography

Matthias G. Wacker is an Associate Professor in the Department of Pharmacy at the National University of Singapore (NUS). Initially, he studied Pharmacy at Goethe University in Frankfurt (Germany), where he obtained his doctoral degree in pharmaceutical technology. As a post-doc and group leader he has joined Jennifer Dressman and Jörg Kreuter in the Institute of Pharmaceutical Technology, Goethe University. There he accomplished his habilitation (post-doctoral degree) exploring the 'Rational Formulation Design of Nanocarrier Devices' and was awarded the *venia legendi* in pharmaceutical technology. Prior to joining NUS, he was heading the Department of Pharmaceutical Technology and Nanosciences at the Fraunhofer-Institute for Molecular Biology and Applied Ecology in Frankfurt led by Gerd Geisslinger. Currently, he serves the European Journal of Pharmaceutics and Biopharmaceutics and the Journal of Pharmacy and Pharmacology of the Royal Pharmaceutical Society as an editorial board member. Further, he was editing selected issues for the Beilstein Journal of Nanotechnology and is a scientific advisor to the editors of the Journal of Pharmaceutical Sciences.

In recognition of his research excellence, he was honored with the Eudragit® Best Paper Award (2014) and the Phoenix Pharmaceuticals Science Award (2017). From 2020-2025, he will join the expert panel on New Advancements in In-Vitro Performance Testing of the United States Pharmacopeia.