

A lecture series offered by the Jena Alliance "Life in Focus"

UKJ Guest Professor

**PROF. TWAN LAMMERS**

RWTH Aachen University Clinic



Prof. Dr. Dr. Twan Lammers received a D.Sc. in Radiation Oncology from the University of Heidelberg in 2008 and a Ph.D. in Pharmaceutical Technology from the University of Utrecht in 2009. In the same year, he started the Nanomedicine and Theranostics group at RWTH Aachen University. In 2014, he was promoted to full professor of medicine at the RWTH Aachen University Clinic. His group aims to individualise and improve disease treatment by combining drug targeting with imaging. To this end, image-guided (theranostic) drug delivery systems are being developed, as well as materials and methods for monitoring tumour growth, angiogenesis, inflammation, fibrosis and metastasis. He has received numerous grants and awards, including ERC Starting, Consolidator and Proof-of-Concept grants, the CRS Young Investigator Award, the Adritelf International Award, the Belgian Society for Pharmaceutical Sciences International Award and the JNB Trailblazer Award. He is currently president of the Controlled Release Society and a council member of the European Society for Molecular Imaging. He serves on the editorial boards of 10 journals and is an associate editor for JCR, DDTR and MIB. He has been included in the Clarivate Analytics list of Highly Cited researchers since 2019.

# NANO NEEDS LIGHT TO IMPACT LIFE: INTEGRATING IMAGING IN CANCER NANOMEDICINE CLINICAL TRANSLATION

**PROF. DR. DR. TWAN LAMMERS**

Wednesday, December 06, 2023, 4 pm

Großer Rosensaal, Fürstengraben 27, 07743 Jena

Nanomedicine formulations, such as liposomes, polymers and micelles, are being extensively studied for cancer therapy. By delivering drug molecules more efficiently to pathological sites and reducing their accumulation in healthy organs and tissues, nanomedicines help to improve the balance between efficacy and toxicity. Nanomedicines are also increasingly being used to enable in vivo delivery of nucleic acid therapeutics such as DNA, siRNA and mRNA (e.g. in Covid-19 vaccines). The tumour accumulation of nanomedicines is traditionally attributed to the enhanced permeability and retention (EPR) effect, which is highly variable in both animal models and patients. To address issues related to tumour targeting heterogeneity and to promote the clinical translation of cancer nanomedicines, we are working on systems and strategies to monitor and modulate tumour-targeted drug delivery. This guest lecture will highlight some of these strategies, including image-guided interventions to prime the tumour vasculature and microenvironment, and the use of whole-body and microscopic biomarker imaging for patient stratification. Overall, our work demonstrates a rational and realistic path towards more effective cancer nanomedicine treatments.

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