Contribution ID: **37** Type: **Poster**

mRNA Nanoparticles for parenteral Therapy

Tuesday, 27 June 2017 17:05 (5 minutes)

Messenger RNA (mRNA)-based nanomedicines constitute a new class of pharmaceutical products, with a variety of potential applications, ranging from tumor immunotherapy to protein substitution 1. In tumor immunotherapy, tumor antigen-encoding mRNA is to be delivered into APCs in order to induce T-cell mediated antitumoral responses. For systemic administration of mRNA medicines, formulations are required to deliver the RNA to the target site and promote cellular uptake and translation. Lipid- or polymer-based non-viral delivery vehicles have been demonstrated to be suitable delivery vehicles for such purpose. The formulations can be assembled by incubation of RNA to cationic counter molecules, such as liposomes, lipids, polymers or peptides using dedicated protocols under suitable boundary conditions. We have studied the molecular organization of RNA lipoplex and polyplex formulations in order to elucidate the internal molecular organization to detail and thus to derive deeper understanding of the structure function correlation within these systems. By combining small angle x-ray scattering (SAXS) and small angle neutron scattering (SANS) measurements, we obtained insight into the particle architecture of the various systems. In particular we were able to reveal how the RNA was inserted into the vehicle and correlated this with the biological activity.

Primary authors: Mr SIEWERT, Christian (JGU Mainz); Dr NAWROTH, Thomas (Gutenberg-University, Pharmaceutical Technology, Staudingerweg 5)

Co-authors: Ms ZILLER, Antje (JGU Mainz); Dr RADULESCU, Aurel (Jülich Centre for Neutron Science - Outstation at MLZ); Dr HAAS, Heinrich (BioNTech AG Mainz); Prof. LANGGUTH, Peter (JGU Mainz); Ms NOGUEIRA, Sara (JGU Mainz); Prof. SAHIN, Urgur (JGU University Medicine Mainz)

Presenter: Dr NAWROTH, Thomas (Gutenberg-University, Pharmaceutical Technology, Staudingerweg 5)

Session Classification: Poster session A

Track Classification: Main conference