Precision Nanomedicine: Preparation and Characterization of Nanocarriers Made from Natural Biopolymers

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The laboratory of Precision Nanomedicine at TAU have capabilities for preparation and characterization of nanocarriers made from natural biopolymers such as lipids (liposomes, micelles) , sugars and proteins.

Lab Description

• State-of-the-art preparation and process development of lipid based nanoparticles including sythesisi capabilities of lipids.
• cell culture facility including the culturing of hybridomas and antibody purification.
• Expertise in packaging of nucleic acids (pDNA, siRNAs, ncRNAs etc') with high efficiency transfections.
• Flow cytometry to determine surface markers as well as intracellular proteins is available in the lab as well as state-of-the-art real-time RT-PCR in a 96 well plate format and have a capability of doing 384 wells.
• PK and biodistribution of drugs in mice models are also available.
• In addition, the lab specialized in in vivo discovery and validation of new drug target using RNA interference (mainly siRNAs and miRNA mimetic).

Specific research topics are:

• Developing novel strategies for targeted drug delivery.
• Probing and manipulating the immune system with nanomaterials.
• Developing non-invasive theranostic systems for inflammatory bowel diseases and blood cancer.
• Studying the role of cell cycle regulators during inflammatory bowel diseases and blood cancers.
• Investigating novel cancer multidrug resistance inhibitors.
• Studying novel approaches to target adult stem cells (hematopoietic; bulge, cancer).
• Harnessing RNAi as a tool for drug discovery and for therapeutic applications.
• Developing tools to study immuno-nanotoxicity.
• Investigating polysaccharides as building blocks for Nanotherapeutics

Available Research Services

1. Packaging of nucleic acids for in vivo work including target validation and therapeutics.
2. Synthesis of special lipids for improve packaging of n.ucleic acids
3. In vivo animal models and imaging capabilities including (IVIS Spectrum CT and from Dec. 2016 also small animal PET/CT).

Potential industries

1. Pharma
2. Biotech

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