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Abstract

Cell-penetrating peptides and delivery of oligonucleotides

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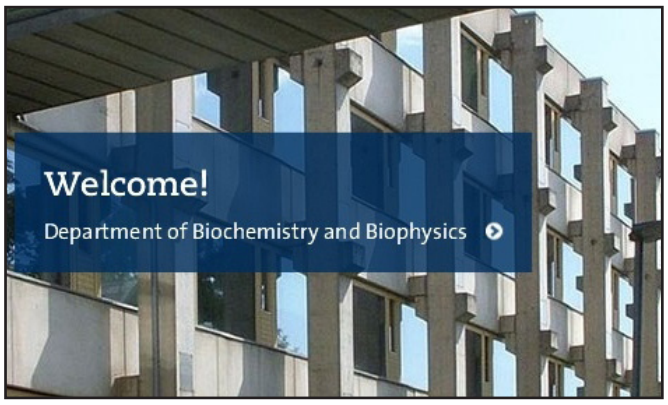
Abstract:

PepFect delivery technology for oligonucleotide transfection by transportan based cell-penetrating peptides in vitro and in vivo is described. Recent data on mechanisms and applications of PepFect strategies are summarized on the variety of different cargoes including plasmid, antisense and siRNA oligonucleotides. Nanomaterials based on cell-penetrating peptides (CPPs) are presented as promising non-viral vectors for gene delivery. The protocol is simple, offers high cell transfection compared to the CPPs-ONs complexes and can be used for further improvements using external stimuli. Possible mechanisms of oligonucleotide delivery by PepFects is discussed and novel data on genome analysis involved in these mechanisms are discussed. Further improvement of these technologies of the modulation of gene expression and identification of novel intracellular interactions in tumors after i.v. administration is discussed, aiming to find novel drug targets, and defining New Chemical Entities for drug development.

Biography:

Ülo Langel is a Professor at the Department of Biochemistry and Biophysics, Stockholm University, and at the Institute of Technology, Tartu University. Prof. Langel graduated from Tartu University, Tartu, Estonia, as bioorganic chemist in 1974; he has received his PhD degree twice: in 1980 from Tartu University, Tartu, Estonia (bio-



organic chemistry), and in 1993 from Tartu University/ Stockholm University (biochemistry/neurochemistry). He is a Honorary Professor at Ljubljana University, Slovenia. He was elected a member of Academia Europaea and foreign member of the Estonian Academy of Sciences.

Recent Publications:

1. Ülo Langel, et al Expert Opin Drug Deliv, 2019.
2. Ülo Langel, et al Curr Opin Pharmacol, 2019.
3. Ülo Langel, et al Biomater Sci, 2019.
4. Ülo Langel, et al Sci Rep, 2019.
5. Ülo Langel, et al Peptides, 2018
6. Ülo Langel, et al Nat Genet, 2018.
7. Ülo Langel, et al Adv Exp Med Biol, 2017.

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