CARGO-DEPENDENT MODE OF DRUG UPTAKE WITH IMPROVED EFFICACY AND BIOAVAILABILITY: DESIGN AND EVALUATION OF TARGET CELL SELECTIVE TRANSPORTERS AND DRUG-CONJUGATES

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Different peptide-type carriers as receptor specific, cell penetrating and antimicrobial peptides are capable of introducing a wide range of cargoes into target cells: tumor cells or host cells of microbial pathogens.[1-2] Targeted nanoparticle delivery systems conjugated with specific peptide ligands to target selective cell surface receptors could further enhance the efficacy of drug delivery.[3-4] There is increasing evidence supporting the utility of receptor or penetrating peptides in the field of nanoparticle based delivery to increase bioavailability, to improve transfer across the blood–brain barrier, and to enhance delivery of active compounds in a cell type selective manner. Mechanisms of the internalization vary from receptor binding, cell penetration of membranes to endocytic type of uptake.

To enhance cellular uptake, we have designed and synthesized peptide conjugates with different active compounds: antitumor and antimicrobial agents. To determine the mechanism of cellular uptake and the intracellular fate of peptide conjugates, flow cytometry analysis and confocal microscopy were carried out on different target cells. We have also analyzed the conjugates and nanoparticles for their subcellular distribution and intracellular fate.

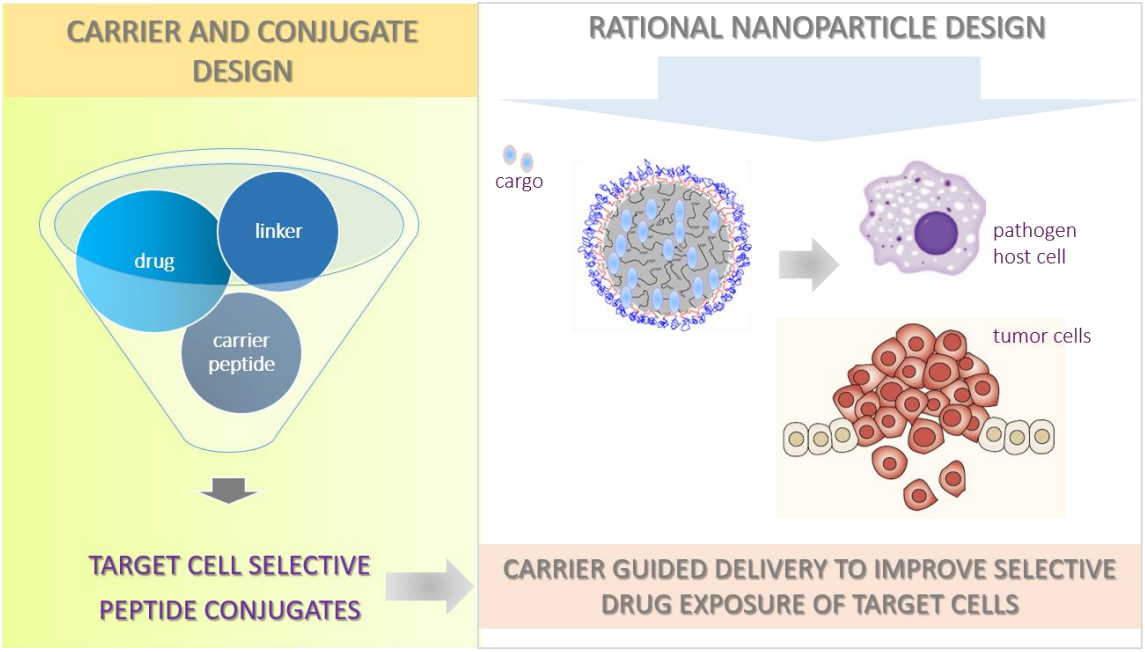

Fig. 1.: Target cell specific delivery approaches: peptide conjugates and nanoparticles

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[3]K. Horváti et. al., *Bioconjug Chem*. **2014**, 25, 2260-2268.
[4]K. Horváti et. al., *Bioconjug Chem*. **2018**, 29(5) 1495-1499.