

Title: **Synthesis of a new class of cellular transporter peptides.**

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In this final degree project, we have addressed the importance of peptides as cellular transporters, within the wide range of possibilities and applications at different levels of these biomolecules. In addition, a brief introduction to solid phase peptide synthesis (SPPS) is included, as well as previous works and important conclusions in these fields.

The synthesis of the compounds described in this work has been carried out in solid phase. Solid phase is a versatile tool and allows the introduction of structural modifications in the designed sequence, in a simple way, in order to improve the properties of compounds, making it a reliable candidate for obtaining pure products of different nature.

Cell penetrating peptides (CPPs) are small peptide sequences of until 30 amino acids (aas) that transport cargoes to the cellular tissues. The majority of these sequences are highly rich in basic aas, especially arginine, that is positively charged at physiological pH and mediate the cell internalization.

However, it is also known that defined secondary protein structures such as α -helix or polyprolines can translocate efficiently across the cell membrane. One of the characteristic features that defines these secondary structures is the absence of hydrogen atoms in the amide groups available to establish additional intermolecular hydrogen bonds that impair the cell uptake.

In this project we have prepared a new class of CPPs combining polyarginine tracts and N-methylated amide bonds for the future evaluation of their internalization efficiency.

Keywords: Solid phase, Peptides, CPPs, polyarginines, N-methylated peptides