

# Research Projects 2013/14

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## Pharmacokinetics and Biopharmaceutical Analysis Lab

**Head of Lab: Ana Luisa Simplicio**

"Despite the success of therapeutic proteins, parenteral administration is, in most cases, the only possible route, mainly due to denaturation and/or proteolysis in the gut as well as limited intestinal permeability. To fight against the disadvantages of parenteral administration nanoparticle systems have shown improvement of bioavailability of several protein drugs. The aim of our team is to develop and evaluate the potential of a new strategy for improving oral administration of therapeutic proteins. Low intestinal permeability will be circumvented by promoting receptor mediated transcytosis. We will take advantage of the overexpression of the Receptor for advanced glycation end products (RAGE) in some pathologies, such as diabetes, for bioavailability improvement by peptide-conjugated nanoparticle targeting to this receptor. The therapeutic protein will be encapsulated in a nanoparticle that will protect it against proteolysis and promote uptake through transcytosis, while conjugated with a ligand for RAGE."