

## Ana Paula Pêgo, PhD

nanoBiomaterials for Targeted Therapies Group

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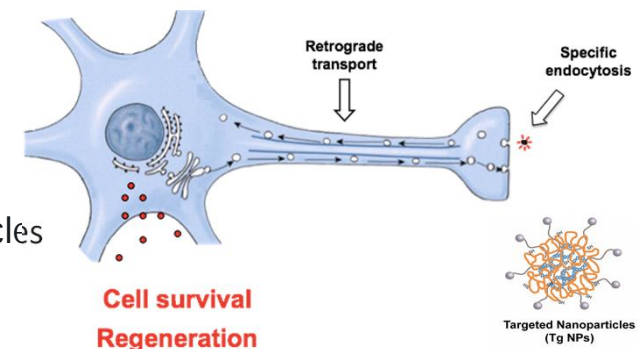


### Aims

1. Development of new polymers/dendrimers/DNA nanocages for the design of non-viral vectors for efficient nucleic acid delivery (DNA, siRNA, AON and mRNA) to neuronal cells;
2. Unravel mechanisms of transfection mediated by non-viral vectors;
3. Development of hydrogels tuned at the nanoscale to modulate cell response envisaging application in the CNS;
4. Development of highthroughput testing platforms for testing drugs/nanoparticles

### Methods and Models

1. Tailor made synthesis of drug/nucleic acid delivery vectors (includes DNA technology)
2. Advanced Bioimaging techniques (AFM; imaging flow cytometry; image analysis) for cell-material interaction assessment
3. In vitro testing platforms (3D cultures, microfluidics)
4. In vivo models (sciatic nerve crush, spinal cord injury and stroke)



Expected benefits and activities during participation in BIONECA:

- Share experience with groups who develop/test biomaterials to promote nervous tissue regeneration (e.g. neural cell transfection, stem cell transplantation, hydrogels for 3D in vitro cultures, etc.)
- Share experience and compare protocols, benefits, obstacles and strategies to progress with groups who develop and test biomaterials/new vectors (focus on translation)
- Would like to collaborate with groups working with stem cells and nucleic acid delivery towards developing new delivery strategies
- Would like to learn from groups who are experienced in new imaging modalities, image analyses and post-processing
- Would like to collaborate with groups that have access to human tissue banks.
- Would like to gather innovative combination of partners for new projects' applications

**Foreseen maximum contribution in WG1**

<https://www.ncbi.nlm.nih.gov/pubmed/28752592>  
<https://www.ncbi.nlm.nih.gov/pubmed/28694236>  
<https://www.ncbi.nlm.nih.gov/pubmed/28081461>  
<https://www.ncbi.nlm.nih.gov/pubmed/27686038>  
<https://www.ncbi.nlm.nih.gov/pubmed/26483632>