

- 2005: Assistant Prof., FCT-UNL
- 2005: Post-doctoral Res., INESC-MN
- 2004-05: Post-doctoral Res., Un. Cambridge, UK
- 2004-Visiting Scientist, Catholic Un. America, Washington DC
- 2000-04: PhD in Biotechnology, UTL/Un. Cambridge.
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Biomolecular Engineering Laboratory

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Objectives

The Biomolecular Engineering Group @ REQUIMTE (FCT/UNL) develops affinity reagents and stimuli-responsive platforms to be applied in the Bioseparation, Biocatalysis, Biosensing and Biomedical areas.

Molecular modeling tools and combinatorial strategies are employed on the development of novel affinity reagents, which target biological molecules and particulates with biopharmaceutical applications. The stimuli-responsive structures, in particular magnetic nanoparticles, are custom-made according to the desired application.

Methodology

COMPUTATIONAL STUDIES

- Artificial Ligand Design
- Theozymes

LIGAND LIBRARIES

- Synthesis and Screening of Chemical and Biological libraries

LIGAND

IMMOBILIZATION

- Magnetic Platforms
- Macroporous structures
- Green Polymers

Study Applications for: Bioseparation (Purification of Biological Molecules), Biocatalysis, Biosensing and Theranostics

Expected Results

Artificial Ligand Design

- **Understanding the molecular recognition between antibody fragments and protein A biomimetic ligand.**, Ricardo J.F. Branco, Ana M.G.C. Dias, Ana C.A. Roque, *Journal of Chromatography A*, 2012, 1244, pp 106-115.
- **Platforms for enrichment of phosphorylated proteins and peptides in proteomics**, I.L. Batalha, CR Lowe, Ana C.A. Roque, *Trends in Biotechnology*, 2012, 30(2), pp 100-110

Novel supports for Antibody Purification and Biocatalyst Development

- **Bioinspired and sustainable chitosan-based monoliths for antibody capture and release**, Telma Barroso, Ana C. A. Roque and Ana Aguiar-Ricardo, *RSC Adv.*, 2012, 2, pp 11285-11294
- **Dextran-Coated Magnetic Supports Modified with a Biomimetic Ligand for IgG Purification**, Sara D.F. Santana, Vijaykumar L. Dhadge, Ana C.A. Roque, *ACS Appl. Mater. Interfaces*, 2012, 4 (11), pp 5907-5914
- **Immobilization of enterokinase on magnetic supports for the cleavage of fusion proteins**, Sara D.F. Santana, Ana S. Pina, Ana C.A. Roque, *Journal of Biotechnology*, 2012, 161, pp 378-382.

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