SCIENCESPRINGDAY



Chemistry Department

Biomolecular Engineering Laboratory

A. Cecília Roque

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A. Cecília Roque

Principal Investigator

- 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.
- 1994-99: BSc. Chemical Eng.-Major in Biotechnology, IST-UTL

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 biopharmaceutical applications. particulates with 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

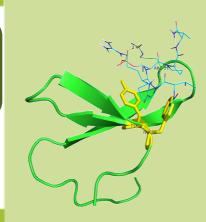
- Understanding the molecular recognition between antibody fragments and protein A biomimetic ligand., Ricardo J.F. Branco, Ana M.G.C. Dias, Ana C.A. Roque, Journal of Chromatography A, 2012, 1244, pp 106-115.
- Platforms for enrichment of phosphorylated proteins and peptides in proteomics, I.L. Batalha,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

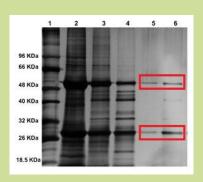
Novel supports for Antibody Purification and Biocatalyst Development

- 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.

GROUP MEMBERS

Ana Cecília Roque, PI Abid Hussain, Post-doc Res. Ricardo Branco, Post-doc Res. Ana Pina, PhD student Íris Batalha. PhD Student Telma Barroso, PhD student Ana Margarida Dias, PhD student Susana Palma, PhD student Vijaykumar Dhadge, PhD student Henrique Carvalho, PhD student Ana Teresa Semeano, MSc student Bianca Gonçalves, MSc student Cláudia Gonçalves, MSc student







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