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FCT FACULDADE DE CIÊNCIAS E TECNOLOGIA UNIVERSIDADE NOVA DE LISBOA

Department of Chemistry

Developing Artificial Enzymes

H.Carvalho, O. Iranzo, R.Branco, A. Cecília Roque

REQUIMTE, Biomolecular Engineering Laboratory

http://sites.fct.unl.pt/biomolecular_eng/home

Henrique F. Carvalho

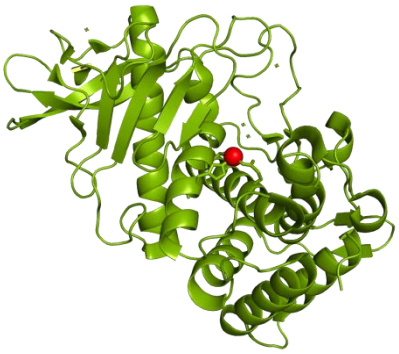
PhD Student

hd.carvalho@campus.fct.unl.pt

2010 – BSc Biochemistry, FCTUC
2010- 3% Best Students UC
2011 – MSc Biochemistry, FCTUC
2012 – Research Assistant, ITQB
2013 – PhD student in Bioengineering Systems at MIT|Portugal Program.

Objectives

There is the need of new recyclable biocatalysts for modern technological application and due to their high catalytic efficiency, enzymes represent the ideal design targets.



The objective is to create artificial and robust metalloenzymes with taylor-made characteristics immobilized in recyclable supports. The designs will be based on peptidic scaffolds that mimic the structural features of enzyme active sites.

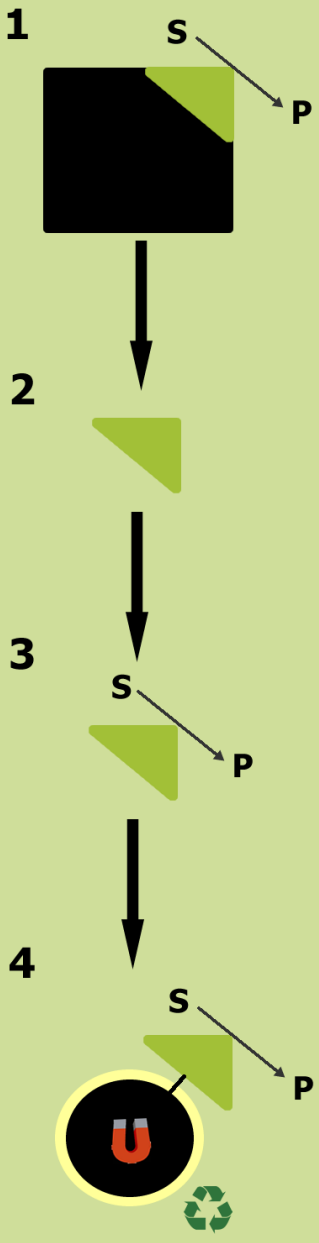
Methodology

▪Based on natural enzymes, *in silico* approaches will be used to isolate the necessary structural features to reconstruct their active sites in peptidic scaffolds (1);

▪Best candidate scaffolds will be synthesized by chemical methods and characterized by chemical and analytical techniques (2);

▪Suitable scaffolds will be tested for enzymatic activity (3);

▪Best candidates will be crafted in magnetic nanoparticles and their enzymatic activity and re-usability will be tested (4).



Expected Results

Development of catalytically active peptide scaffolds with embedded active sites of natural enzymes.

Gain further insights of the factors contributing to the catalytic power of enzymes.

Obtain nanoparticles crafted with catalytically active scaffolds suitable for biotechnological applications.

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