SCIENCESPRINGDAY

FCT FACULDADE DE CIÊNCIAS E TECNOLOGIA UNIVERSIDADE NOVA DE LISBOA

Department of Chemistry

Iron Metabolism, *inter alia*

REQUIMTE • Biochemistry and Biophysics

Biofísica Molecular
Molecular Biophysics

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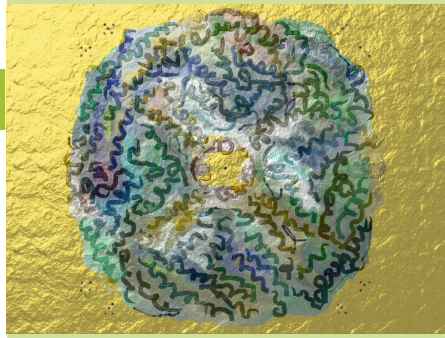
PhD in (Bio)Inorganic Chemistry (UNL, 1994)

ISI Web of Science metrics
h-index: **17**
Average Citations: **22.08**
x Cited w/o self-citations: **1025**

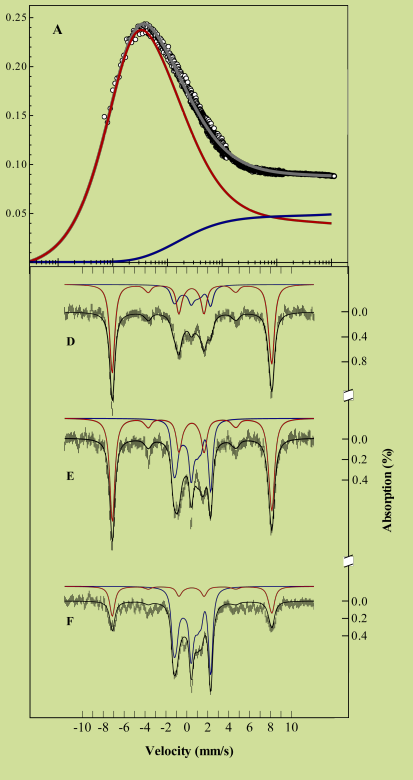
Objectives

The long term objectives in the last years have been to obtain data to establish a unified mechanism for maxi-ferritins ferroxidation and mineralization processes. A general goal has been to understand how biology uses protein structures to control the reactivity of complex metal centers, to activate molecular oxygen for a variety of catalytic functions. The PI has been particularly focused on the study of the iron oxidation reaction catalyzed by maxi-ferritins (ferrritins and bacterioferritins) from anaerobic organisms. To unveil cellular detoxification mechanisms is also a major interest.



Methodology

Multiple techniques from the scientific areas listed are used to understand the chemistry and structure of metals in proteins, their interaction and their role in macromolecular catalysis. In summary, general biochemical techniques, molecular biology methods and various spectroscopies (e.g. UV/visible, EPR and Mössbauer). Also fast kinetic techniques, such as stopped-flow and rapid-freeze quench, have been applied with great success.



Expected Results

- "NO_2^- reductase", P. Tavares, A.S. Pereira, *Encyclopedia of Metalloproteins* (2013).
- "Occupational cosmic radiation exposure in Portuguese airline pilots: Study of a possible correlation with oxidative biological markers", R. Silva, *et al, Rad. Environ. Biophys.* (2013), *in press*.
- "Spectroscopic evidence for and characterization of a trinuclear ferroxidase center in bacterial ferritin from Desulfovibrio vulgaris Hildenborough" A.S. Pereira, *et al*, *J. Am. Chem. Soc.*, 134: 10822-10832 (2012)
- "Desulfovibrio vulgaris bacterioferritin uses H_2O_2 as co-substrate for iron oxidation and reveals DPS-like DNA protection and binding activities" C.G. Timóteo, *et al*, *Biochemical J.,* ChemBio, 446: 125-133 (2012)

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