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11:00

Pedro Tavares
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BACKGROUND

Pedro Tavares completed a Ph.D. in Biochemistry in June 1994 at Universidade Nova de Lisboa Faculdade de Ciências e Tecnologia (FCT-UNL) and spent 3 years as a post-doc fellow in the Department of Physics of Emory University in Atlanta, USA. During this period he develops skills in several spectroscopic methods, with emphasis in Mössbauer spectroscopy and Electron Paramagnetic Resonance, advanced kinetic methods such as stopped-flow and rapid-freeze quench. Upon returning to Portugal, he was appointed Assistant Professor in the Chemistry Department of FCT/UNL. A member of UCIBIO - Applied Molecular Biosciences Unit – where he is co-responsible for the Molecular Biophysics Research Laboratory (that he co-founded in 2009). His research is focused on the study of enzymes involved on iron metabolism, cellular detoxification, and other enzymes involved in oxygen activation such as desaturases and oxygenases.

Life's ubiquitous solution for iron managing and oxidative stress protection

Abstract

Life, as we know it, is inherently dependent on iron. Most essential biochemical processes (such as nitrogen fixation, oxygen transport and activation, denitrification, DNA biosynthesis and protection or gene regulation just to name a few) are achieved by metalloenzymes that contain iron. In effect, no other transition metal is more used by organisms than iron and only 10 other elements have higher usage than iron. On average, one can find 0.25 to 0.8 iron atoms per 1000 carbon atoms. However, using iron and oxygen together at pH ranges suitable for life can be quite a challenge. First availability becomes an issue since the most stable redox states, ferrous and ferric ions, have extremely low solubility. Second ferrous ions readily react with oxygen to generate the ferric form oxygen free radicals which are extremely toxic within cells. To overcome these problems, living organisms devised a family of nanocage proteins capable of oxidizing ferrous iron at different rates and storing it in a soluble, mineral core form, binding and protecting DNA, and removing reactive oxygen species from cellular environments.

https://videoconf-colibri.zoom.us/j/82726221024?pwd=QmE3elhQelJGeU91d1dheXhkdlMvZz09