



# FEM Seminar



## MAURO DEGLI ESPOSITI

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EVALUATING THE SCIENTIFIC WEALTH OF ITALY AND NOVEL APPROACHES IN  
GENOME RESEARCH TO DISCOVER HOW BACTERIA BECAME MITOCHONDRIA

Mitochondria are the energy-producing organelles of our cells and almost certainly derive from bacteria that engaged in a unique symbiotic association with an archaean to form eukaryotic cells. It remains unclear, and hotly debated, from which bacteria mitochondrial ancestors evolved. The novel approaches developed by Dr. Degli Espositi and coworkers [1] have indicated that methylotrophic alpha-bacteria - i.e. those metabolising methanol or other mono-carbon energy sources - could be the closest living relatives to the ancestors of mitochondria. This work opens new perspectives to understand how bacteria have moulded eukaryotic cells and could in principle be re-evolved into mitochondria [1].

[1] Mauro Degli Espositi, Bessem Chouaia, Francesco Comandatore, Elena Crotti, Davide Sassera, Patricia Marie-Jeanne Lievens, Daniele Daffonchio, Claudio Bandi. Evolution of Mitochondria Reconstructed from the Energy Metabolism of Living Bacteria. Plos One, Vol. 9 No. 5, May 2014. Latest research: [http://www.focus.it/scienza/quando-le-cellule-andavano-a-metano\\_C12.aspx](http://www.focus.it/scienza/quando-le-cellule-andavano-a-metano_C12.aspx)

MAURO DEGLI ESPOSITI currently is Senior Researcher at the Istituto Italiano di Tecnologia and previously was Lecturer in Molecular Toxicology at the University of Manchester, UK. Before that position, he has been working in Bologna, Australia (Monash University, Melbourne) and USA (Rice university, Houston, Texas and then La Jolla Institute for Allergy and Immunology, San Diego, California). He is author of more than 100 papers in international peer-review journals focusing on cell biology, biochemistry, nanotoxicology, bioinformatics and the evolution of bacteria into mitochondria. In UK, he has built the network of Via-academy, with which he has created initiatives for evaluating the excellence of Italian scientists home and abroad. The resonance of these activities, e.g. the website of Top Italian Scientists ([http://www.topitalianscientists.org/Top\\_italian\\_scientists\\_VIA-Academy.aspx](http://www.topitalianscientists.org/Top_italian_scientists_VIA-Academy.aspx)), and the accumulated expertise in bibliometry have led to his appointment as chairman of the ANVUR evaluation committee for biochemistry and molecular cell biology for the recent research assessment of Italian scientific performance (VQR2004-2010) and other evaluation committees. His most recent scientific interest regards bacterial evolution into mitochondria.

Room 6302 – Palazzo della ricerca e della conoscenza

29<sup>th</sup> April, 10.30 am



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