



INVITATION TO SEMINAR

Molecular basis for the emergence of new enzymatic functions

Research stay at Diamond Light Source Ltd, Harwell Science and Innovation
Campus, Didcot, Oxfordshire, UK

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Date: 20.5.2014, 9:00

Venue: lecture room RCX1 (A29/252), 2nd floor, Research Centre for Toxic
Compounds in the Environment, Faculty of Science, Masaryk University,
Kamenice 5, Brno

Syllabus of lecture:

Understanding the structural basis of evolutionary events leading to the emergence of new enzymatic function at the molecular level is among the key questions in biology. The main objective of the project is to provide structural insights into catalysis of resurrected ancestors of selected haloalkane dehalogenases and functionally distinct luciferase from *Renilla reniformis*. This objective will be achieved by X-ray crystallographic analysis of the enzymes and their complexes combined with molecular modeling, site-directed mutagenesis, steady-state and pre-steady-state kinetics. The lecture will summarize results of crystallographic analysis of two ancestral enzymes, ancestor of eukaryotic haloalkane dehalogenase DspA from *Strongylocentrotus purpuratus* and luciferase RLuc from *Renilla reniformis* – ancDspA-RLuc – as well as ancestor of two haloalkane dehalogenases DbjA from *Bradyrhizobium japonicum* USDA110 and DbeA from *Bradyrhizobium elkanii* USDA94 – ancDbjA-DbeA. The study was performed during the research visit at Diamond Light Source Ltd, Harwell Science and Innovation Campus (Didcot, Oxfordshire, UK).