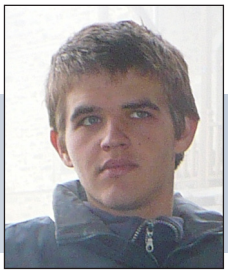
CONSTANTINE GARAGOUNIS



I first became interested in plant science when I did a series of projects for my undergraduate plant physiology course and I am now particularly interested in the area of plant metabolic regulation

First Degree	BSc Biochemistry and Biotechnology University of Thessaly, Greece
PhD	Sainsbury PhD Studentship Moving proteins around the cell: control of enzyme docking with the mitochondrial surface' Dept. of Plant Sciences, University of Oxford Supervisor - Dr. Lee Sweetlove Started October 2010

Summary of Research Project

Glycolysis is an ancient metabolic pathway found even in the most primitive of organisms. It is a central part of anaerobic energy production and is coupled to respiratory metabolism in aerobic organisms by providing pyruvate to the TCA cycle for maintenance of respiration. Also, metabolic intermediates of glycolysis are the starting point for other metabolic pathways which provide compounds essential for cellular function. It has been demonstrated that many of the glycolytic enzymes are functionally associated with the outer surface of mitochondria where they form a glycolytic complex in response to respiratory demand. Enzymes functioning in other metabolic pathways have been shown to form complexes, implying the existence of a finer subcellular organization. The importance of this for cellular function is not yet known. It is conceivable that these enzyme clusters fulfil functions which could be part of the integration of metabolic cues into regulatory pathways.

The aim of this project is to investigate the role of multi-enzyme clusters in cellular function, using the known association of glycolytic enzymes to the mitochondrial surface as a test case.

Aside from providing greater insights into plant metabolic regulation, answering these questions will serve to elucidate the extent to which enzymes related to glucose metabolism are involved in other primary cell functions which enable the existence and survival of plant organisms.