Transnational Access Report

1. General Information

Project Acronym (ID):	MAGIC-DROUGHT
Project Title	Phenomics analysis of *Arabidopsis thaliana* MAGIC mapping population and chromatin remodeling mutants during Drought stress
Installation used	NPPC, IBERS, Aberystwyth University, UK
Name of Group Leader	Konstantinos Vlachonasios
Name of organization	Aristotle University of Thessaloniki

2. Project summary (max. 250 words)

Plant growth and crop production can be greatly affected by common environmental stresses. Water supply is the single most limiting factor in many countries and drought stress is one of the main factors affecting plant productivity. Chromatin modification and remodelling factors impinge on different mechanisms of abiotic stress responses in plants. Understanding the function of epigenetic mechanisms in the plant responses to drought stress will lead to major advances in the area of crop productivity and tolerance to abiotic stresses.

In this project, we characterized the phenomics of drought responses of Arabidopsis accessions (focusing on the parents of the MAGIC mapping population Kover et al., 2009). In addition we also examined the drought responses in well characterized chromatin related mutants that don't show developmental defects including histone (de)acetylation and chromatin remodelling genes. The overall aim of the project was to evaluate whether variation in (drought) stress responses in natural populations can be explained by variation in loci involved in epigenetic regulation of gene expression. We were able to define and characterize new potential drought tolerant related genes that involve in chromatin processes.

5. Main achievements (max. 250 words)

1. We defined the drought stress conditions that affect plant growth both in RILs and chromatin related mutants using the phenomics.
2. We monitored and characterized RILs and mutants that are "blind" to drought stress and those could have an impact toward breeding programs on drought tolerance of crops.

6. Publications related to the access granted, acknowledging the support by EC.

1. Carmango AVR, Gay A, Doonan J, Roberts-Yalland A, Papadopoulou D, Spyropoulou Z **Vlachonasios K**, Tsakona M (2013) Computer vision to analyse rosettes shapes of genetically-diverse *Arabidopsis* plants. SEB 2013 Annual Main Meeting, Valencia, Spain, July 3-6. pdf

2. **Vlachonasios KE**, Topouzis S, Tsakona M, Corke F, Camargo-Rodriguez A, Doonan J (2015). Phenomics analysis of *Arabidopsis thaliana* chromatin remodeling mutants during drought stress. EPPN, Plant Phenotyping Symposium "Next generation plant phenotyping for trait discovery, breeding and beyond: transnational access to European platforms". Barcelona, Spain, November 11-12, pp16.