

Transnational Access Report

1. General Information

Project Acronym (ID):	NatVar AnnAt1
Project Title	Natural variation of drought tolerance in Arabidopsis accessions with different ANNAT1 expression levels
Installation used	PHENOPSIS, INRA Montpellier
Name of Group Leader	Jacek Hennig
Name of organization	Institute of Biochemistry and Biophysics, Polish Academy of Sciences

2. Access to the Installation

PHENOPSIS, INRA

3. Project summary (max. 250 words)

Plant response to soil water deficit involves complex survival strategies. Among others, they include efforts to maintain constant water potential by limitation of water loss e.g. decrease of transpiration rate and arrest of growth. Plants have also evolved dehydration tolerance mechanisms, leading to reorganization of global transcription patterns and accumulation of osmotically active solutes inside cells. We utilized the phenotyping platform PHENOPSIS to conduct an experiment on 18 Arabidopsis accessions in order to study natural variation in response to water deficit. Our set of accessions was chosen on the basis of annexin 1 (*AtAnn1*) mRNA level, that was previously related to drought tolerance. Plants were grown in control conditions or were subjected to moderate and severe soil water deficit. Measured traits were associated with growth, transpiration and the state of photosynthetic apparatus, allowing us to assess responses of different accessions to applied environmental stresses. Additionally, we harvested leaf samples to determine changes in gene expression patterns induced by different levels of cell dehydration. Utilized set of accessions displayed high variation in response to water deficit both on physiological and molecular level. We are now combining phenotyping and expression analysis to acquire a more complete description of plant responses to water deficit and to link measured variables of both types.

4. Main achievements (max. 250 words)

Dataset obtained during the first experiment is still being analyzed. However, we have been already able to get a thorough description of responses to water deficit among studied accessions, both on physiological and molecular level. Multiple interesting correlations have been found and they are being examined in detail. After the end of the second experiment, datasets will be analyzed together and submitted for publishing.