



Physiological and Molecular Adaptation to Climate Change in Forest Trees

WORKSHOP

Feb 26- March 1, 2018

[Workshop website](#)

Organizers

Rakefet David-Schwartz, Tamir Klein, Adi Faigenboim and Shabtai Cohen

About the Workshop

The purpose of the workshop is to **share knowledge and methodologies at the research frontier on adaptation mechanisms of forest trees to drought stress**. Drought is one of the major constraints in future climate conditions, and drought-induced forest mortality is already reported in forests worldwide. The workshop will highlight physiological, eco-physiological, and molecular aspects of drought adaptation, including the demonstration of measurement techniques using advanced equipment. **Physiological and molecular aspects will be taught from theory to practice**. Leading speakers from the research field (from Israel and Europe) will present the latest advancements in the field, from their labs and others. Among the methodologies that will be presented are:

- Plant array – a new method for functional phenotyping
- Hydraulic techniques in the study of xylem embolism
- Bioinformatic analysis (using existing tools) of drought related transcriptome
- *In situ* quantification of soil water availability for tree transpiration

A 1-day excursion will take the participants to the research station at Yatir forest, a semi-arid pine forest on the dry timberline. Participants will visit

multiple experimental plots in the forest, including a provenance trial, a forest thinning experiment, an irrigation experiment, and a forest flux tower.

The workshop organizers encourage European PhD and MSc students to attend the workshop in the frame of EvolTree Network. participants may claim reimbursement through Evoltree up to 600 Euros. At the workshop, each student will be required to present his/her own research in a 15 min. presentation. Participants will learn specific approaches and methods that can be used to comprehensively study about drought adaptation in forest tree species.

Registration deadline: February 1, 2018

Who should attend?

PhD and MSc students as well as early career postdocs who study forest tree physiology and forest trees genomics.

Speakers

Prof. Steven Jansen	Ulm University
Prof. Christophe Plomion	BIOGECO research unit, INRA, Univ Bordeaux
Prof. Menachem Moshelion	Institute of Plant Sciences and Genetics in Agriculture, The Hebrew University, Israel
Prof. Dan Yakir	Department of Earth and Planetary Sciences Weizmann Institute of Science, Israel
Dr. Shabtai Cohen	Soil, Water and Environmental Sciences, Volcani Center, Israel
Dr. Tamir Klein	Department of Plant and Environmental Sciences, Weizmann Institute of Science, Israel
Dr. Rakefet David-Schwartz	Plant Sciences, Volcani Center, Israel
Dr. Adi Faigenboim	Plant Sciences, Volcani Center, Israel

Logistics

- The workshop will be hosted jointly by the ARO Volcani Center and by the Weizmann Institute of Science. Both are leading research institutes with global reputation, and both are optimally situated 30 min. from Tel Aviv and the Airport.
- Accommodation will be offered at the guesthouse of the Weizmann Institute on campus in Rehovot.

- Workshop sessions will be hosted in modern, spacious presentation and meeting rooms at the ARO Volcani Center and the Weizmann Institute of Science.

Workshop Structure and tentative program

The workshop will include invited and contributed presentations, and a field trip. The schedule is presented below:

Day 1 (Feb 26) - at Weizmann Institute of Science

Time	
8:30	Opening
8:45	Menachem Moshelion – Whole plant stress performance analysis: a new tool for functional phenotyping - lecture and <u>demonstration</u>
10:45	Coffee break
11:15	Invited Speaker - Steven Jansen - structure-function relationships of xylem tissue
12:45	Lunch
13:45	Dan Yakir – The semi-arid forest as a model for forest climate change adaptation
14:45	Tamir Klien - Physiological Mechanisms of drought resistance in forest trees: Theory and practice
16:15	Coffee break
16:45	Tamir Klein –Physiological Mechanisms of drought resistance in forest trees: Theory and practice - <u>demonstration</u>
18:00	end

Day 2 (Feb 27) – at Volcani Center

Time	
8:30	Rakefet David-Schwartz - Molecular response to drought stress in forest trees
10:00	Coffee break
10:30	Rakefet and Adi - Molecular analysis of drought response in forest trees
12:00	Lunch

13:00	Adi Faigenboim - Bioinformatic analysis of drought related transcriptome - pipelines
16:00	Coffee break
16:30	Student's presentations – 15 min each
18:00	end

Day 3 (Feb 28) – at Volcani Center

Time	
8:30	Shabtai Cohen – Hydraulic measurements in trees - Lecture and presentation
10:00	Coffee break
10:30	Invited Speaker – Prof. Christophe Plomion The study of the genetic control of molecular plasticity to identify genes that matter for adaptation in forest trees
12:00	Lunch
13:00	Adi Faigenboim - Bioinformatic analysis – exercise
16:00	Coffee break
16:30	Student's presentations – 15 min each
18:00	end

Day 4 (March 1) – Field Trip

Time	
7:00	Travel to Yatir Forest
9:00	Yatir thinning experiment. Host: Tamir Klein
10:00	Visit to the Yatir central research station; flux tower. Host: Eyal Rotenberg
11:00	Yatir irrigation experiment. Host: Yakir Preisler
12:00	Lunch
13:00	Yatir Aleppo pine provenance plot. Host: Rakefet David-Schwartz
14:00	Travel to the Dead Sea
17:00	Travel back to Volcani Center
19:00	end

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