

## **EVOLTREE training school and PhD course (4 ECTS)**

### **Analysis of genetic structure within and among populations based on common garden trials**

**Venue:** 27-30 June 2017, University of Copenhagen, Frederiksberg, Denmark. Host: Forest Genetics and Diversity (FGD), University of Copenhagen.

Deadline for applications May 1, 2017

#### **EVOLTREE training school and PhD course**

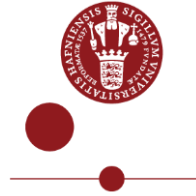
The predicted change in climate and emerging pests and diseases stresses the importance of knowing the adaptive processes-, the adaptive potential- and phenotypic plasticity of trees. In this context, common garden field trials are of high value and the course focus on data analysis on genetic structures developed as results of the interplay between local adaption (response to selection), genetic drift and gene flow.

The training school target PhD students and other young scientists involved in on-going studies of genetics of woody plant species. MSc students can also benefit from the course provided they already have some background knowledge in population genetics or quantitative genetics, and are working with genetic analysis of populations in their MSc thesis. The training school will consist of a combination of lectures, exercises, field visits and supervised student discussion of selected articles. Active participation is therefore a requirement of all students, and the students must have read the literature before the course. After the course, the student will submit a small report to document their learning outcome.



### Tentative program

	Monday, June 26	Tuesday, June 27	Wednesday, June 28	Thursday, June 29	Friday, June 30	
9:00	Arrival	Introduction (EDK)	Excursion: Common garden field trials.	Introduction to linear Mixed Models (LMMs) and BreedR (LS)	Exercise on quantitative genetic analysis cont. (LS)	
9:30		Population genetics and adaptation (EDK)				Presentation of results from analysis of common garden field trials
10:30		Coffee	Phenotyping of traits of importance for adaptation	Coffee	Coffee	
10:45		Some concepts in quantitative genetics (JKH)		Demonstration of ecophysiological methods	Genotype by environment and multi-trait models (LS)	Discussion of results from quantitative genetic analysis (LS)
11:15		Scale of adaptation and assisted migration (EDK)				
12:00		Lunch	Lunch	Lunch		
13:00		Ecophysiological tools for phenotyping (ARE)	Presentation and discussion of scientific papers (EDK, JKH)	Exercise on quantitative genetic analysis. Own data or ash data (LS)	Genetic variation in phenotypic plasticity (LS)	
13:45		Presentation and discussion of scientific papers (EDK, JKH)				Discussion and wrap-up
14:30		Coffee	Coffee	Coffee	Coffee	
15:45		Presentation and discussion of scientific papers (EDK, JKH)	Genetic analysis – ash case (EDK) Preparation for exercises the next two days (JKH)	Exercise on quantitative genetic analysis cont. (LS)	Departure	
16:30		Genetic management and use of native (DCO). Introduction to excursion Wednesday				
17:00		Coffee	Coffee	Coffee		
17:15			Participants present their research	Participants present their research	Participants present their research	

**Topics:**

- Use of common gardens to predict response to climate change
- Quantitative genetics and local adaptation
- Experimental approaches for evaluating local adaptation
- Approaches to analyzing local adaptation to inform genetic resource management in a changing climate
- Phenotyping climate-related traits
- Role of epigenetics in adaptation

**Lecturers:**

- Erik Dahl Kjær (EDK)  
Department of Geosciences and Natural Management, University of Copenhagen
- Anders Ræbild (ARE)  
Department of Geosciences and Natural Management, University of Copenhagen
- Ditte Cristina Olrik (DCO)  
Natural Agency, Ministry of Environment
- Leopoldo Sanchez-Rodriguez (LS)  
Forest tree breeding, Genetics and Physiology Research Unit, INRA, France
- Jon Kehlet Hansen (JKH)  
Department of Geosciences and Natural Management, University of Copenhagen

**Contact:**

Jon Kehlet Hansen ([jkh@ign.ku.dk](mailto:jkh@ign.ku.dk)). Please, provide a short scientific background of yourself along with the registration.