Transcriptome and ecophysiological data of *Populus nigra* genotypes during drought stress


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**Issue**

Global warming
Increase of drought in progress...

- Water movement in well-watered *Populus nigra*
- Leaf
- Vascular tissues

**Questions**

- Do poplars responses to drought stress depend on plasticity?
- Is the leaf transcriptome modified by drought treatment?

**Experimental design**

<table>
<thead>
<tr>
<th>Explained variables</th>
<th>Transcriptome</th>
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<tbody>
<tr>
<td>Phenotypes</td>
<td>Transcription</td>
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<tr>
<td>V1</td>
<td>V133</td>
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<tr>
<td>Genotype</td>
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<tr>
<td>Treatment</td>
<td>Genotype</td>
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<tr>
<td>Water Deficit</td>
<td>SPM-28</td>
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<td>Well-Watered</td>
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**Statistical analysis**

- Placticity response to drought
- Phenotypic data
  - Normalisation
- Boxcox's transformation
- Shapiro-Wilk's test
- Homoscedasticity
- Levene's test
- Selection of variables
  - Genotype effect
    - ANOVA 2
  - Statistic choice
    - CV = μ / σ
- Clustering
  - Ascendant Hierarchical Clustering
    - Distance: euclidian
    - Contrast: Ward
- Treatment impact on transcription
  - > library("DESeq2")
  - Wald's statistic
  - False Discovery Rate 0.1%
- Multivariate analysis
  - Principal Component Analysis
    - 8836 down
    - 9689 up
- Validation of aquaporins expression
  - Pearson's correlation

- Leaf transcriptome in drought
  - Transcriptional data
  - RNAseq paired-end
    - 47 samples
    - 30 M sequences/sample
    - 1,5 MM sequences

- Cleaning
  - Filtered reads
    - 7%
  - N AAAA < 60 pb
  - > 30% redundancy
  - contaminants

- Mapping
  - Reference transcriptome
    - *Populus trichocarpa* 73013
  - *Populus nigra* leaf 47739

- Treatment effect on transcription

**Experimental design**

- n = 48

**Data**

- 48 samples
- 30 M sequences/sample
- 1,5 MM sequences