**Arabidopsis thaliana** Plants with Mutations in the LRB1 and 2 Genes Show Reduced Germination Inhibition by Salt

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**Introduction**

Light is vital to plant survival and thus plants have developed sophisticated pathways to respond properly to their light environments. Plants sense specific wavelengths of light via photoreceptors, one family of which are the red (R)/far-red (FR)-absorbing phytochromes (phy). Phys regulate the activity and levels of a family of transcription factors called Phytochrome-Interacting Factors (PIFs), in response to red light the active phy cause PIFs to be ubiquitylated and degraded, which activates expression of PIF-repressed genes. Work by our lab and others has implicated two genes (called Light-Response BTB 1 and 2 (LRB1 and LRB2)) as critical regulators of the phy/PHY light-response pathway. LRB1 and LRB2 encode BTB (Bric-a-brac, Tramtrack, Broad Complex) domain-containing proteins that act as target adapters in E3 ubiquitin-ligase complexes. Plants with disruptions of the LRB1 and 2 genes (lrb1-1 lrb2-1) have reduced light-dependent degradation of phy and exhibit hypersensitivity to red light.

**Experiment 1**

- Col-O WT (harvested 2014)  
- lrb1-1 lrb2-1  
- phyB-9  

![Graph](image1)

**Experiment 2**

<table>
<thead>
<tr>
<th>[NaCl] mM</th>
<th>% Germination</th>
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<tr>
<td>0</td>
<td>1.2</td>
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<tr>
<td>50</td>
<td>1.1</td>
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<td>100</td>
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<td>200</td>
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<td>250</td>
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<td>300</td>
<td>0.7</td>
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<td>0.6</td>
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- Col-O WT (harvested 2014)  
- lrb1-1 lrb2-1 phyB-9  
- lrb1-1 lrb2-1  
- phyB-9  

**Experiment 3**

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<tr>
<th>[NaCl] mM</th>
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- Col-O WT (harvested 2016)  
- phyB-9 phyD-2  
- lrb1-1 lrb2-1 phyB-9 phyD-2  

**Conclusions**

- Presence of the phyB mutation reduces the resistance to germination inhibition by NaCl conferred by the lrb1 lrb2 mutations.

**References**


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