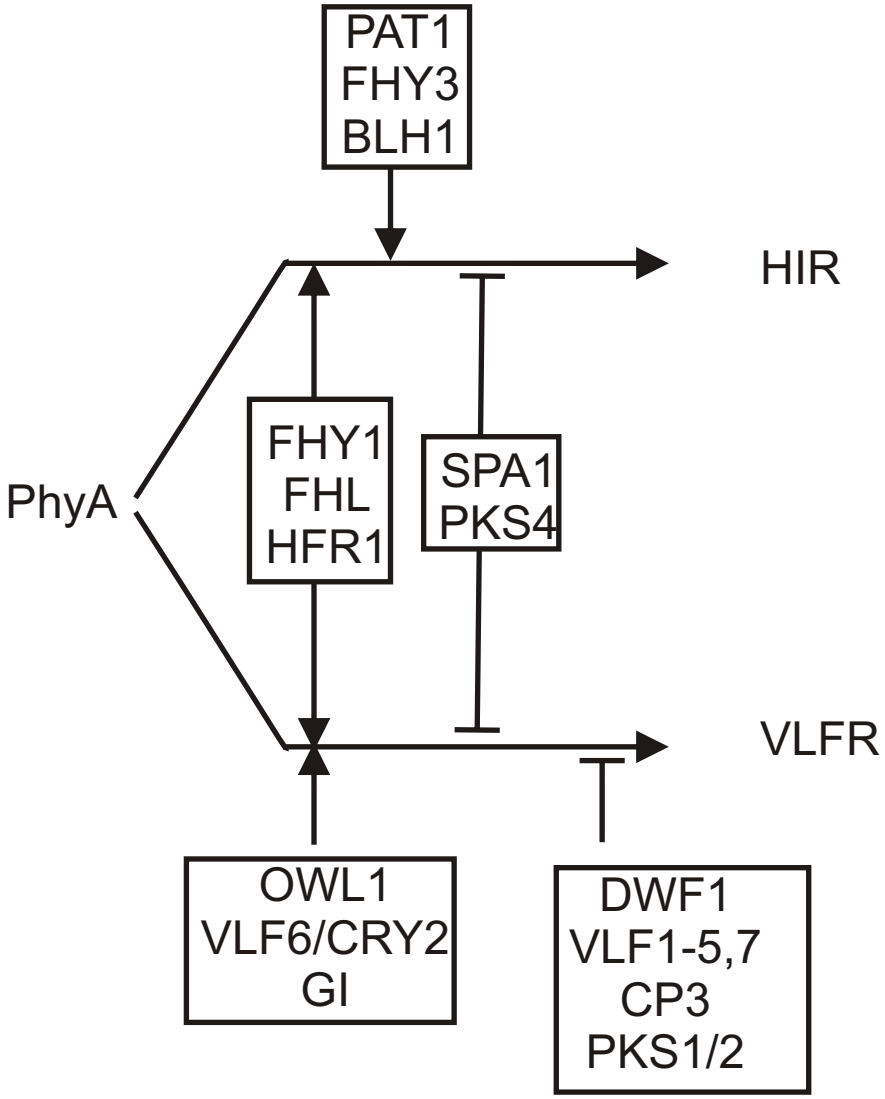
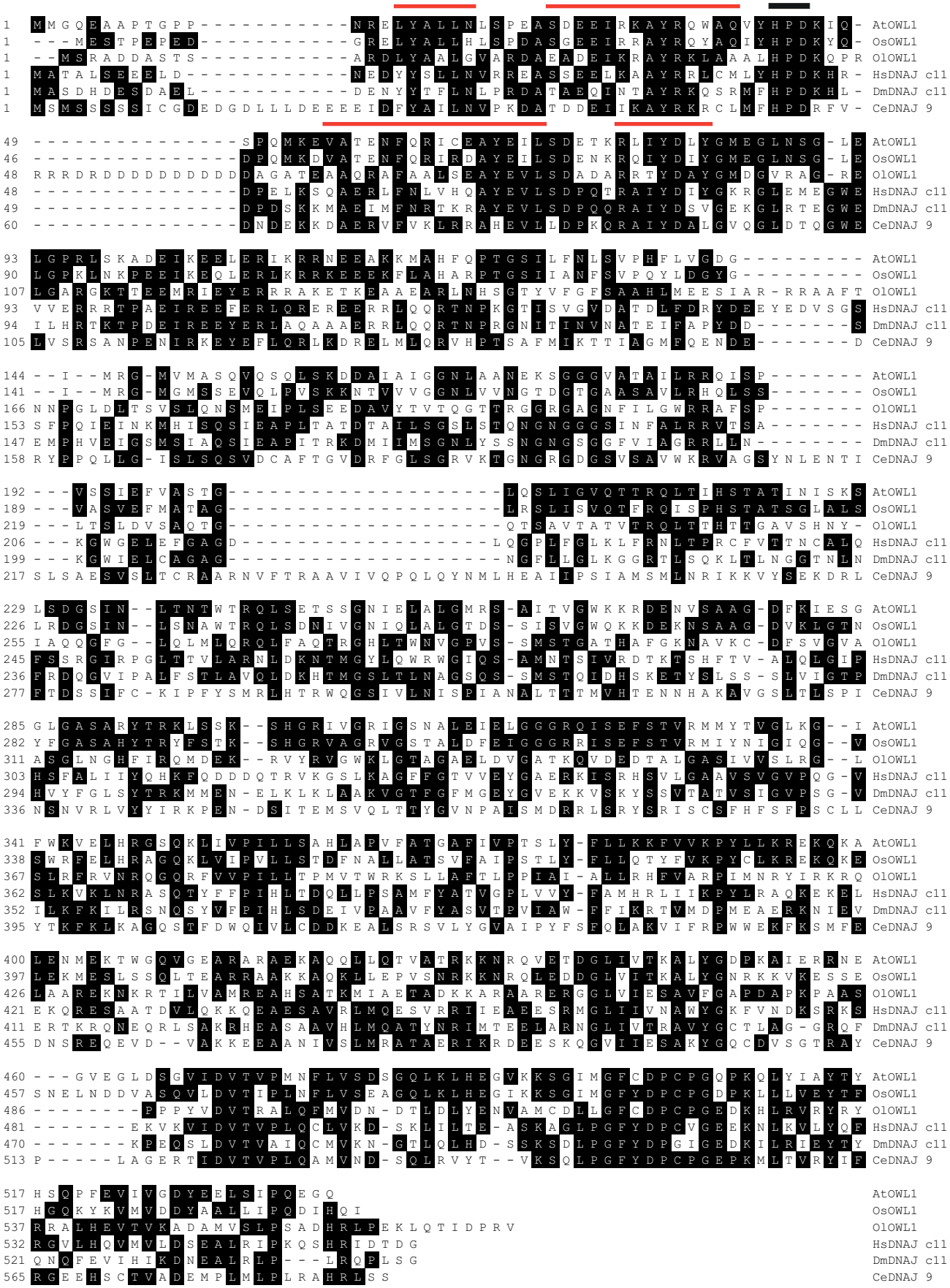
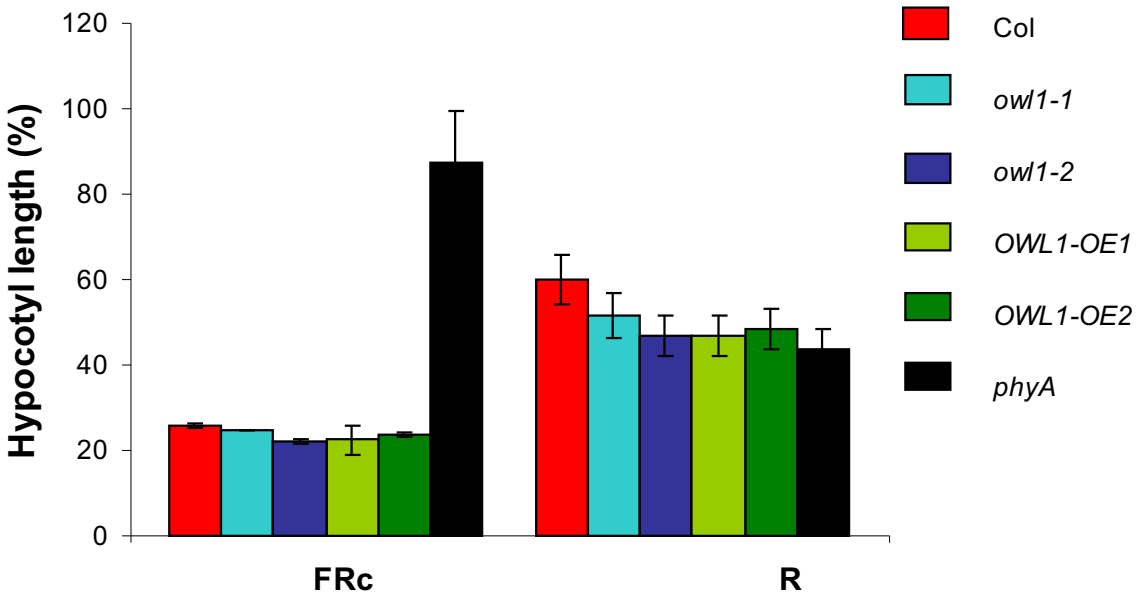
Supplemental Data. Kneissl et al., 2009. OWL 1: An Arabidopsis J-domain protein involved in perception of very low light fluences.



Supplemental Figure 1: Schematic depiction of the VLFR and HIR signaling pathways. Model depicting the relationship between the different factors in the phyA signal transduction chain and how they influence VLFR and FR-HIR, respectively. Downstream of phyA several components have been identified that are at least in part important for the VLFR signaling. Among them are SPA1, PKS1 and PKS2 that regulate VLFR signaling negatively, whereas FHY1 and FHL, which are considered important for the nuclear localization of phyA, are positive regulators. Interestingly, a component of the brassinosteroid signaling pathway, DWF1, also influences the VLFR. Known interactions of the components with other light signaling pathways have been omitted for clarity. For references see text.



Supplemental Figure 2: Alignment of the OWL1 protein with its orthologs.
ClustalW alignment of the Arabidopsis OWL1 (AtOWL1) with the rice (OsOWL1), *Ostreococcus lucimarinus* (OlOWL1), human (HsDNAJ c11C), Drosophila (DmDNAJ c11) and *C. elegans* (CeDNAJ 9) proteins. Identical residues are shaded black. The locations of the four α-helices are marked with red lines, the conserved HPD motif with a black line.

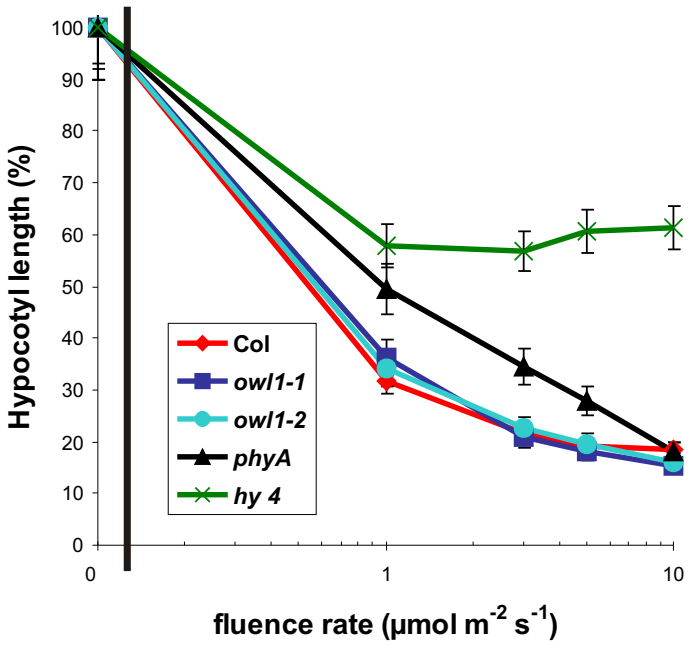


Supplemental Figure 3. Hypocotyl elongation under LFR and FR-HIR.

Hypocotyl elongation under continuous FR (0.5 µmol m^{-2} s^{-1}) and R (1 µmol m^{-2} s^{-1}) light. Seedlings were grown for 4 d under these conditions. Hypocotyl elongation is displayed as % elongation relative to dark grown seedlings of the same genotype.

Error bars are sd.

A



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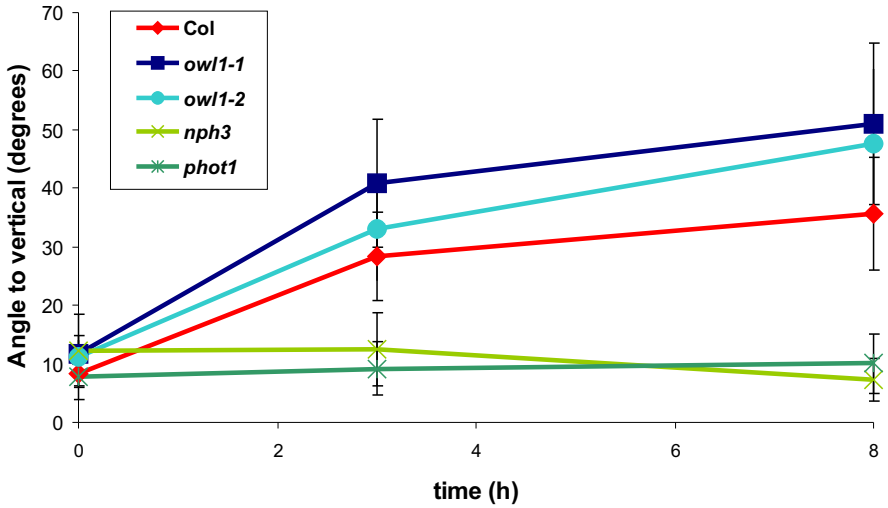
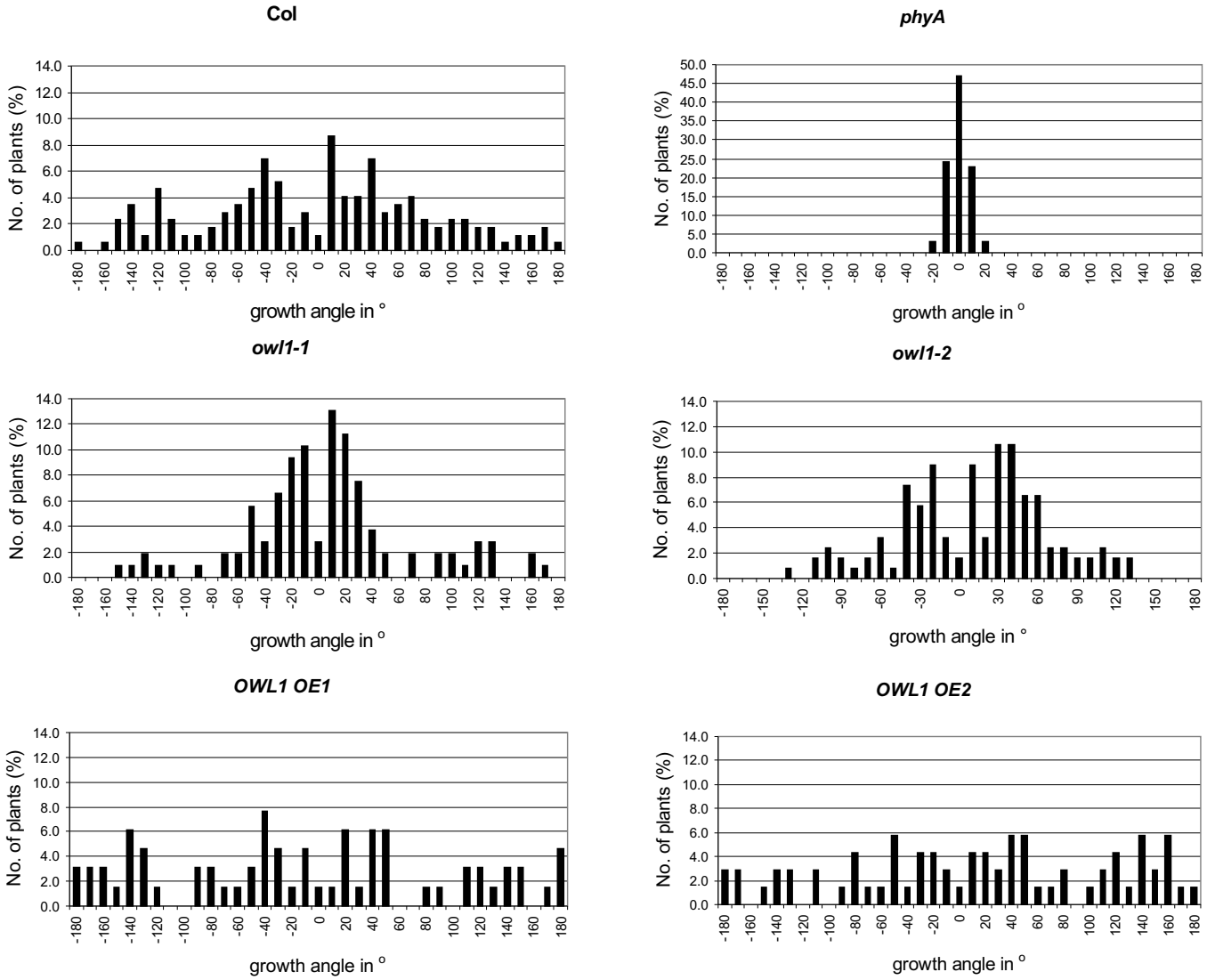


Supplemental Figure 4. OWL1 plays no role in blue light signaling.

(A) Fluence response curve under B light for four days. Hypocotyl length is displayed as % elongation relative to dark grown seedlings of the same genotype.

(B) Non-saturating unilateral blue light (0.3 µmol m^{-2} s^{-1}) was applied to 3d-old dark-grown seedlings on vertical plates for 3 and 8 hours. The curvature of the seedlings towards the light was measured. 0° represents vertical growth. The mutants *phot1* and *nph3* were used as controls, as they are unable to perform phototropic movements under these conditions. Error bars are sd.

A



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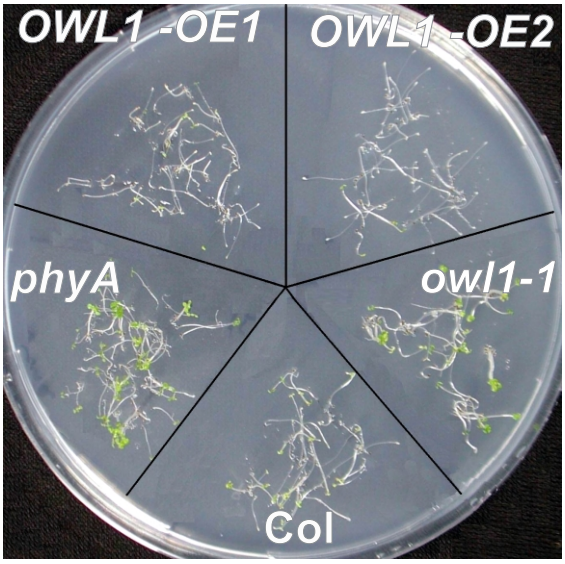
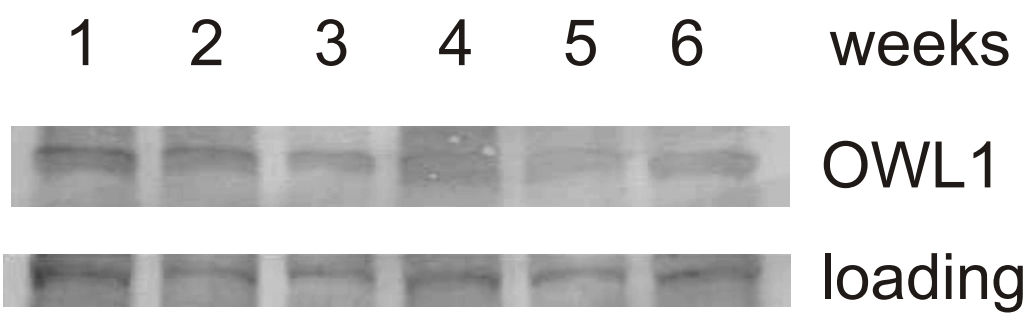


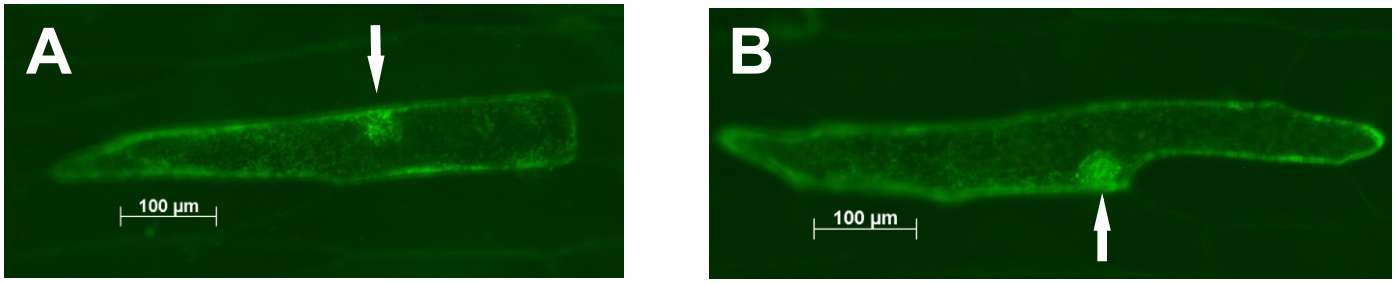
Supplemental Figure 5: OWL1 is important for agravitropic growth and the far-red light killing response.

(A) Orientation of growth of seedlings on vertical plates under continuos FR light (0.5 µmol m^{-2} s^{-1}). The circle was divided in steps of 10 degrees and number of seedlings per step was counted (n(Col)=172, n(*phyA*)=66, n(*owl1-1*)=107, n(*owl1-2*)=123, n(*OWL1 OE*)=65, n(*OWL1 OE2*)=70).

(B) Greening of mutants and overexpression lines of seedlings exposed to 3 d of hourly pulses of FR light (0.5 µmol m^{-2} s^{-1}) and subsequently transferred into W light (80 µM m^{-2} s^{-1}) for 3 d.

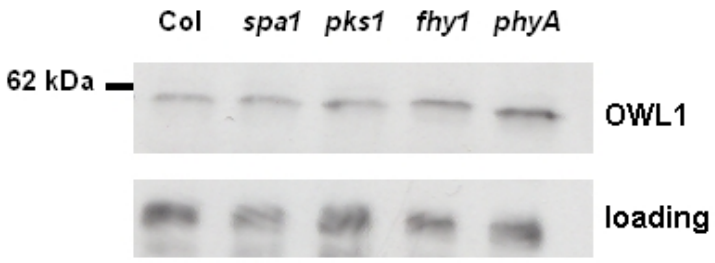


Supplemental Figure 6: Developmental time course of OWL1 protein levels.
1-week to 6-week old plants were grown in climate-controlled growth chambers under long-day conditions and harvested at 9 am. OWL1 was detected immunologically. Lower, cross-reacting band indicates equal loading.



Supplemental Figure 7. Subcellular localization of OWL1.

(A) N-Terminal and **(B)** C-Terminal fusion of OWL1 with GFP was transiently expressed in onion epidermis cells under the control of the 35S cauliflower mosaic virus promoter. Expression was analyzed by fluorescence microscopy and localization of the nucleus is indicated by arrows.



Supplemental Figure 8. OWL1 protein levels are not affected in different phyA signaling mutants. Plants were grown in climate-controlled growthchambers under long-day conditions for 3 weeks and OWL1 was detected immunologically. Lower, cross-reacting band indicates equal loading.

Supplemental Table 1. Summary of oligonucleotide primers used for genotyping

Mutant	Gene specific	Insertion specific
owl1-1	5´- GCGTCAACAAGCGAGCTAAAGCC-3´ 5´- GTTGTCTGCACTCCAATAAGCG-3´	5´- GCGTCAACAAGCGAGCTAAAGCC-3´ 5´- GATTTGGGTGATGGTTCACGTAGTGGGCC-3´
owl1-2	5´- GTAGAGCTACACCGTGGTAG-3´ 5´- CTGGCCTTCTTGTGGTATACTC-3´	5´- GTAGAGCTACACCGTGGTAG-3´ 5´- ATATTGACCATCATACTCATTGC-3´