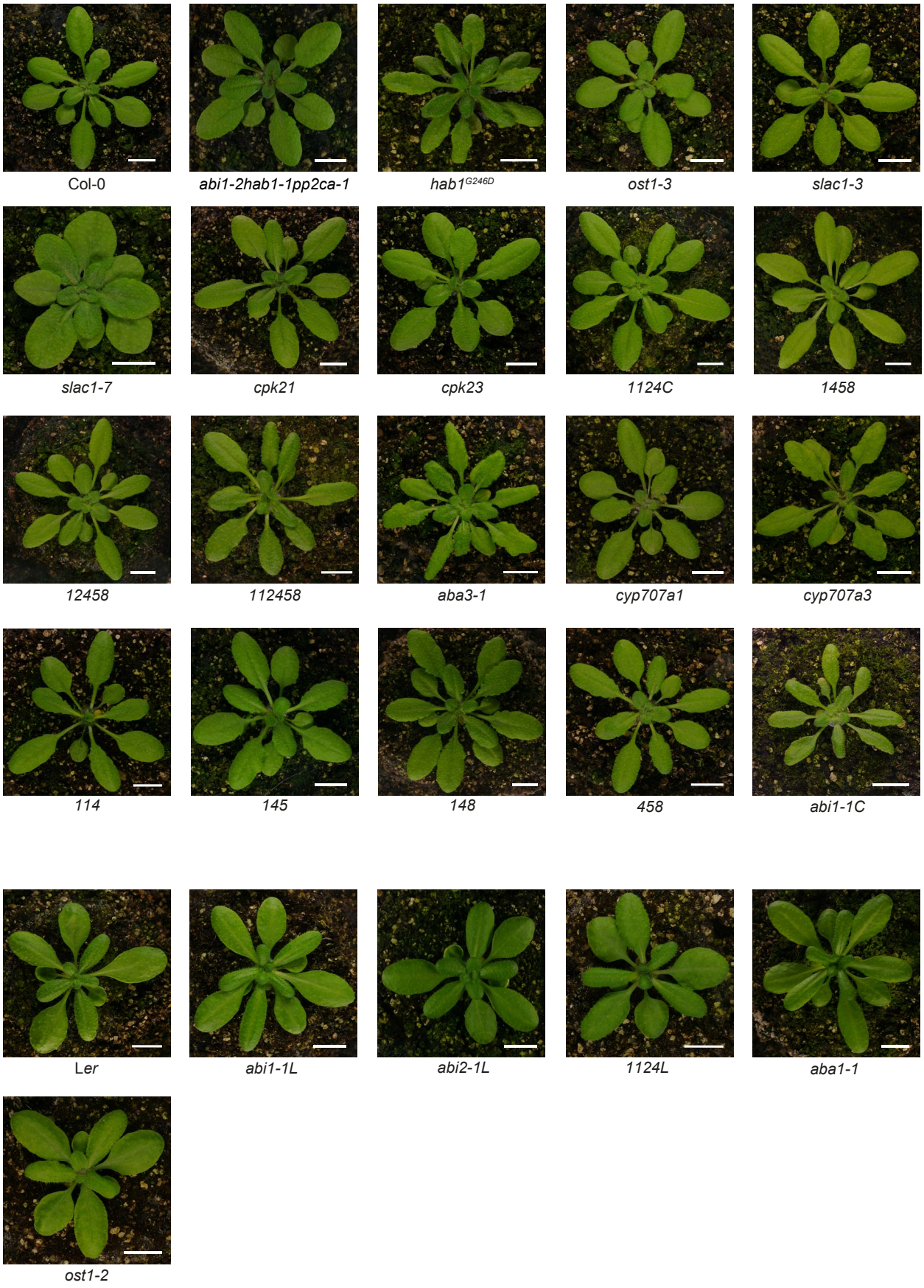

Figure S1. Representative photos of mutants and wild types used for whole-plant gas exchange experiments. Plants were grown through a hole in the middle of the glass plate covering growth pot as described in Kollist et al. (2007). Scale bar indicates 1 cm.

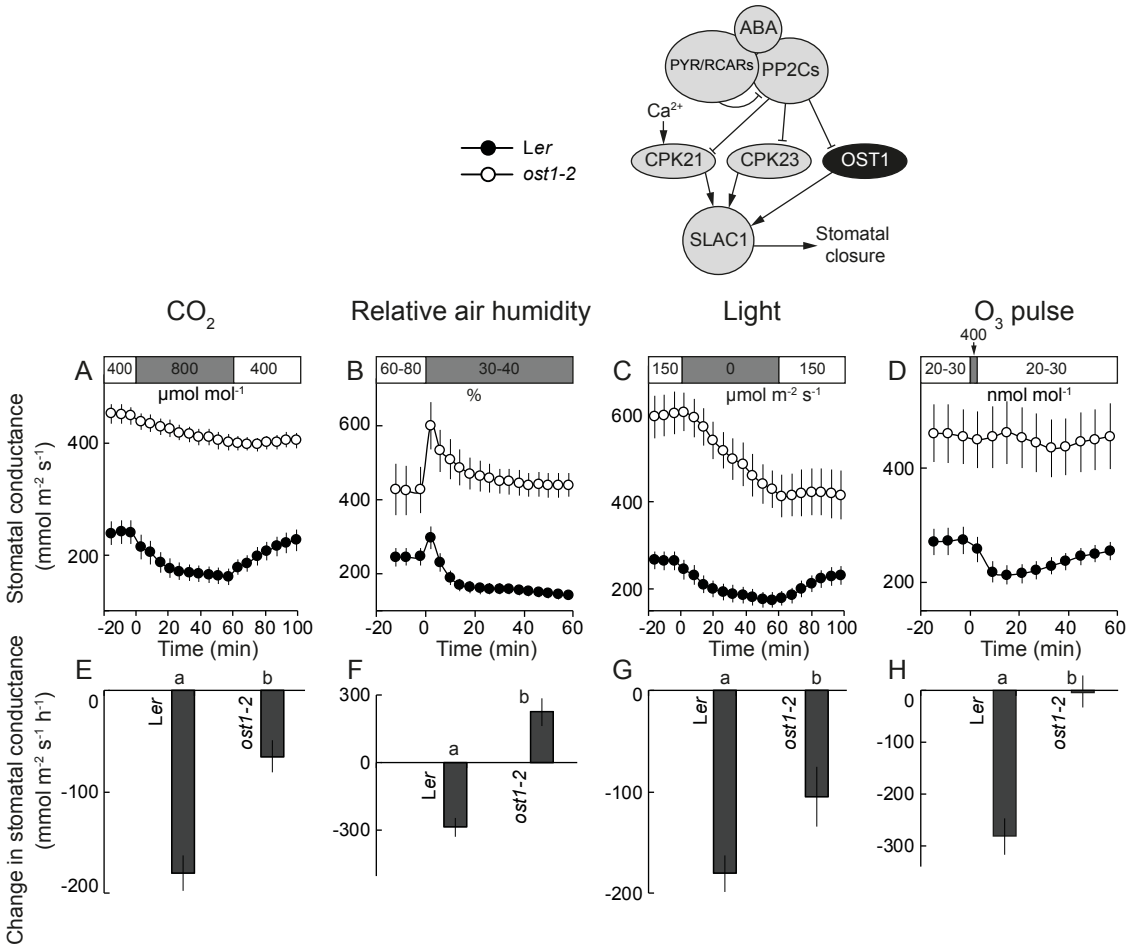

Figure S2. Time courses of stomatal conductances in response to elevated CO_2 (A), reduced air humidity (B), darkness (C) and O_3 pulse (D) together with corresponding changes in stomatal conductance (E, F, G, H) in the loss-of-function mutant of protein kinase OST1 and L*er*. Significant differences ($P<0.05$, n = 5-13) are denoted with different small letters.

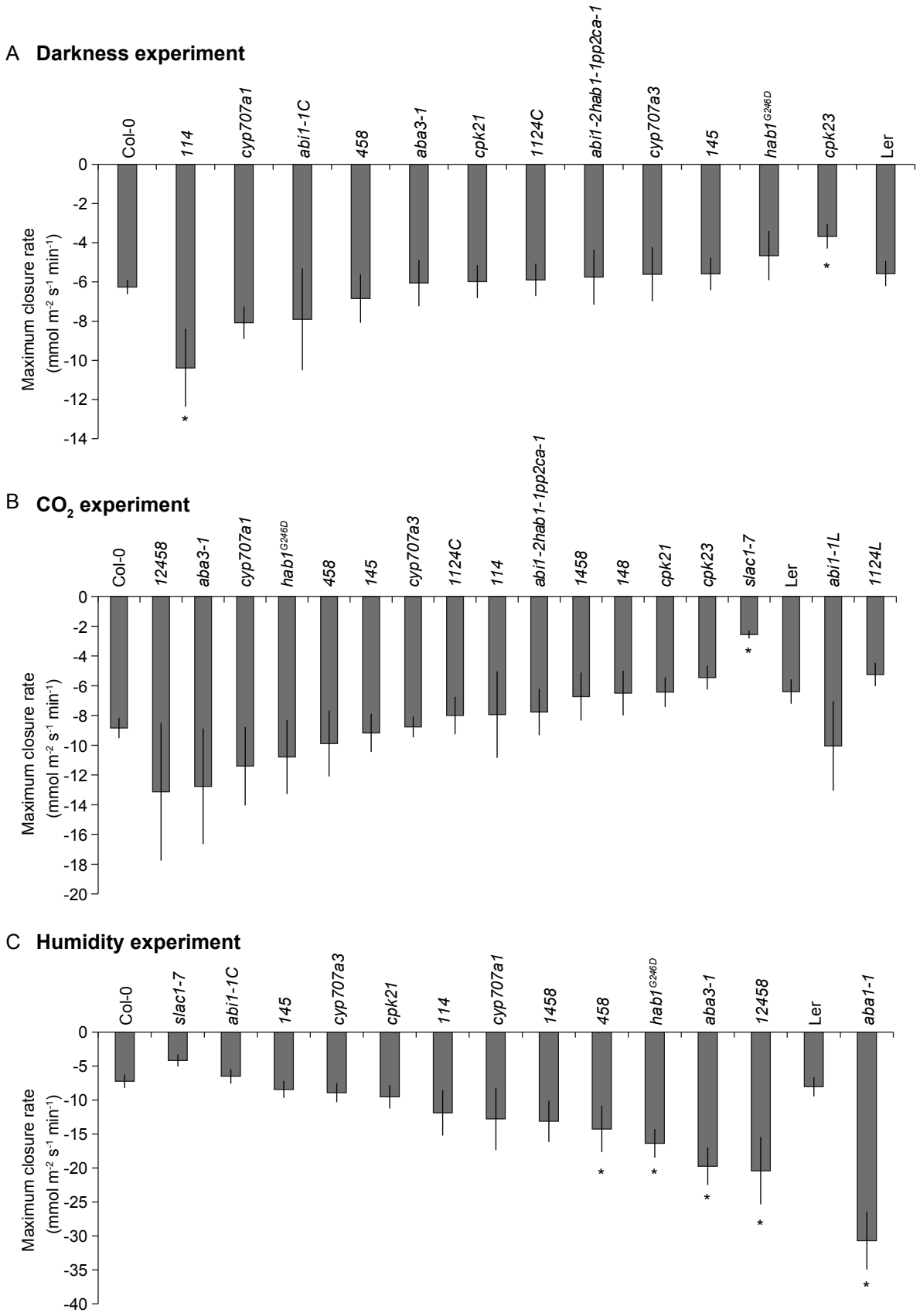

Figure S3. Maximum stomatal closure rates in response to darkness (A), elevated CO_2 (B) and reduced humidity (C) calculated using parameters of exponential fitting of stomatal closure responses.

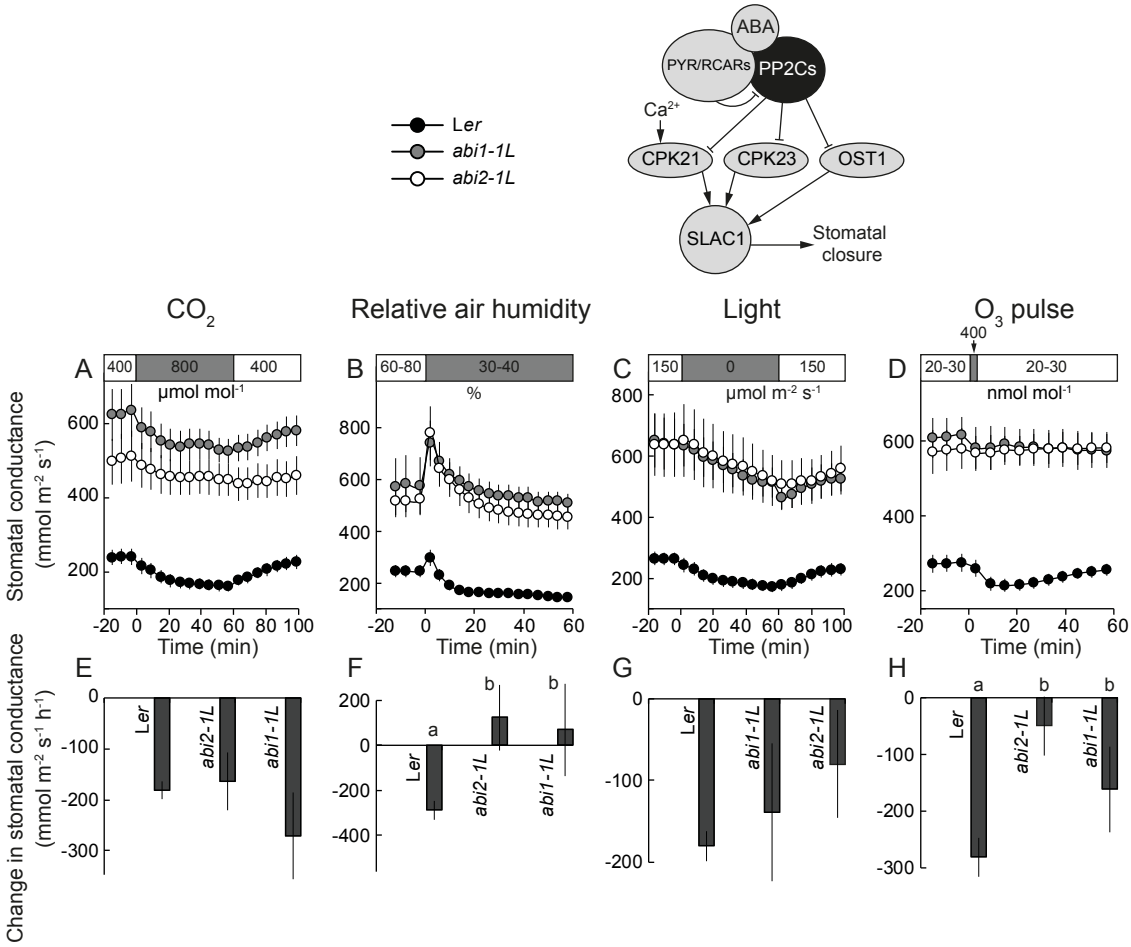

Figure S4. Time courses of stomatal conductances in response to elevated CO_2 (A), reduced air humidity (B), darkness (C) and O_3 pulse (D) together with corresponding changes in stomatal conductance (E, F, G, H) in dominant mutants of ABI1 and ABI2 phosphatases (*abi1-1L*, *abi2-1L*) and L*er*. Significant differences ($P<0.05$, n = 6-13) are denoted with different small letters.

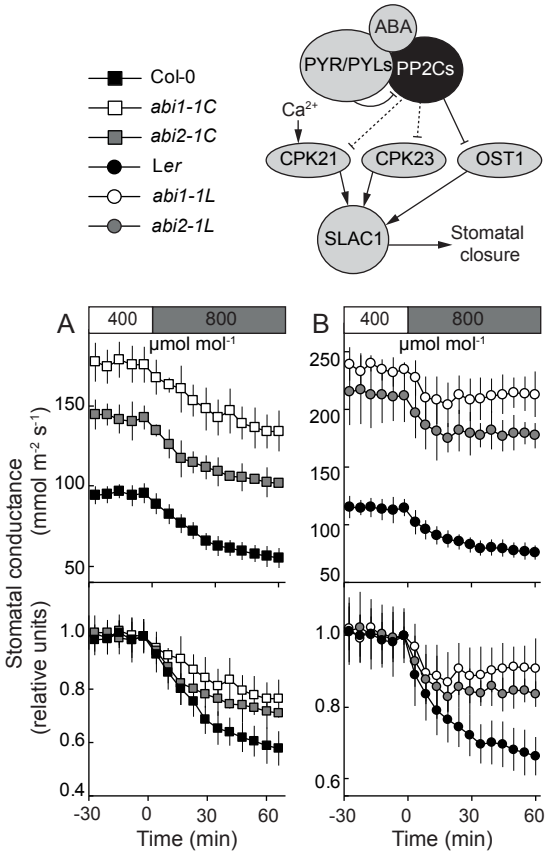

Figure S5. Time courses of absolute and relative leaf stomatal conductances in response to elevated CO_2 in plants carrying dominant *abi1-1* and *abi2-1* mutations in Col-0 (A) and L*er* (B) background (n=5 for each genotype).

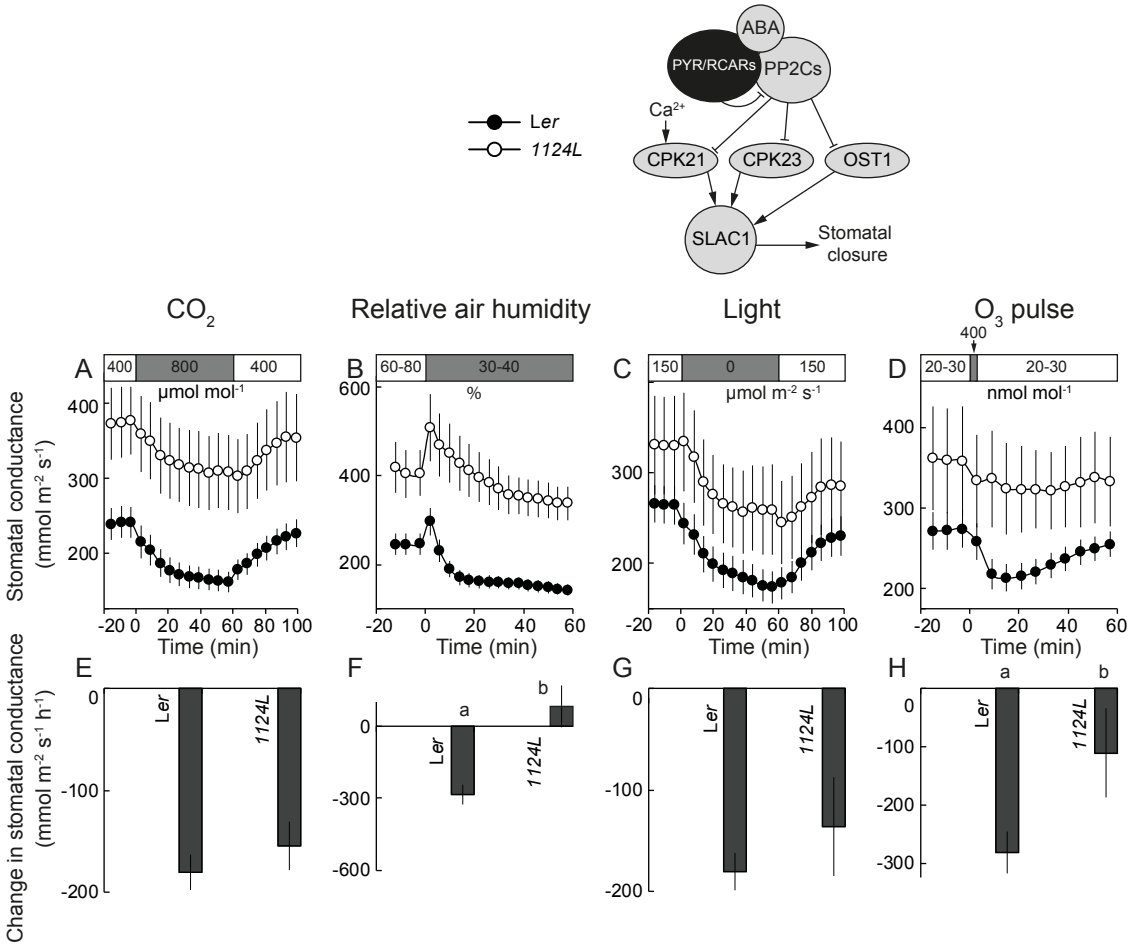

Figure S6. Time courses of stomatal conductances in response to elevated CO_2 (A), reduced air humidity (B), darkness (C) and O_3 pulse (D) together with corresponding changes in stomatal conducatances (E, F, G, H) in quadruple loss-of-function mutantof PYR/RCAR receptor proteins, *1124L* and corresponding wildtype, L*er.* Significant differences ($P<0.05$, n = 5-13) are denoted with different small letters.

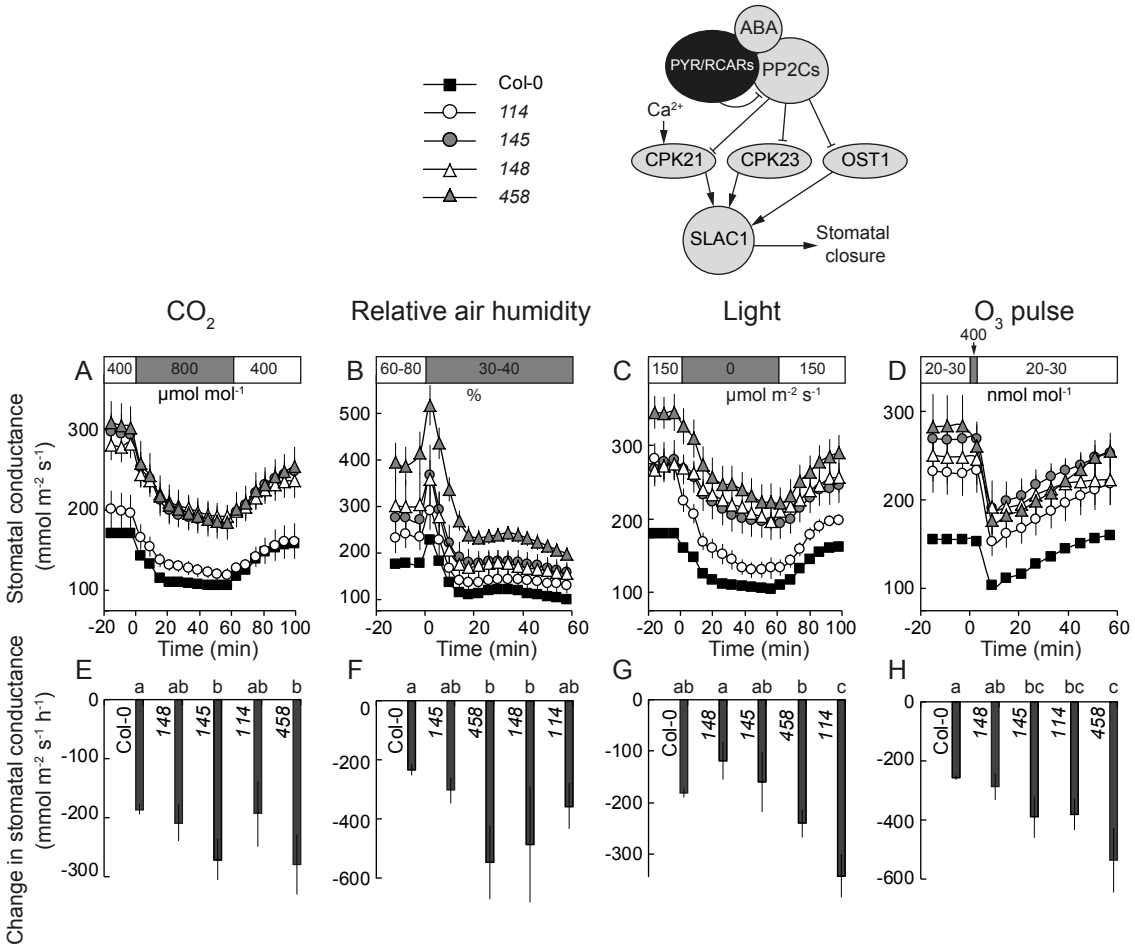

Figure S7. Time courses of stomatal conductances in response to elevated CO_2 (A), reduced air humidity (B), darkness (C) and O_3 pulse (D) together with corresponding changes in stomatal conductances (E, F, G, H) in triple loss-of-function mutants of PYR/RCAR receptors. Significant differences ($P<0.05$, n = 5-50) are denoted with different small letters.

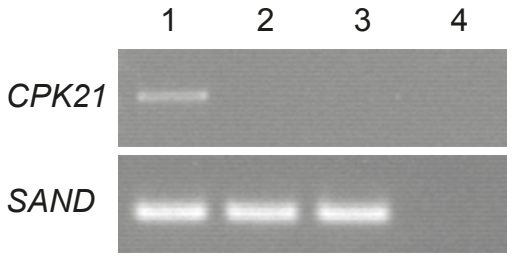

Figure S8 The *cpk21* T-DNA mutant (GABI_322A03) is a transcriptional knockout. RNA was isolated from wildtype and *cpk21* and used for RT-PCR with primers amplifying full length CPK21. Lane 1 wildtype, lane 2 and 3 two independent repeats of *cpk21*, lane 4 water control. The house keeping gene SAND was amplified in parallel from all samples.