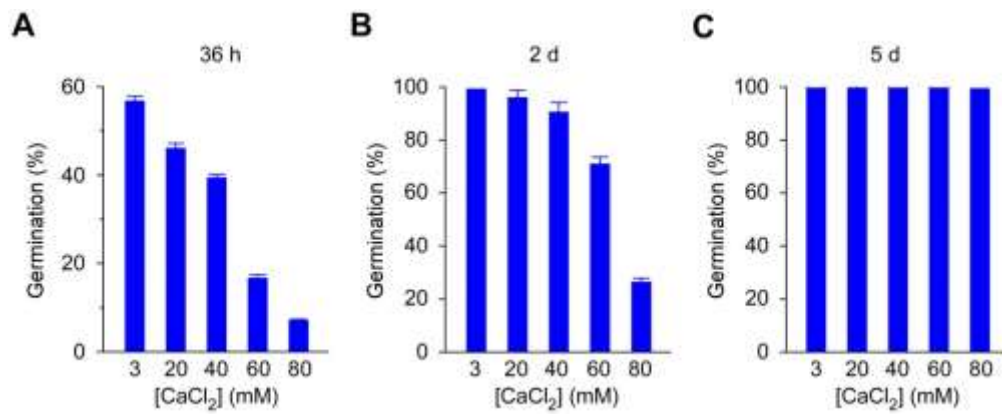
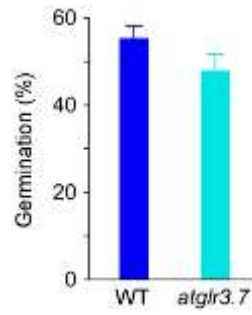


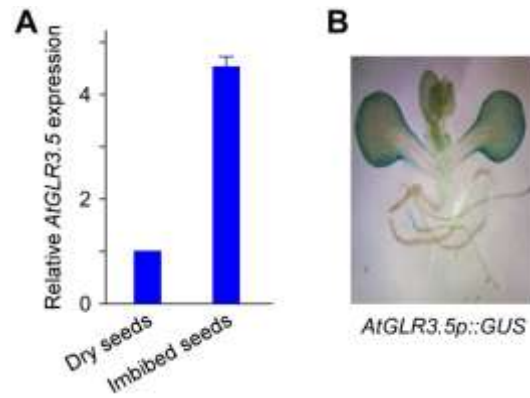
## Supplemental Data



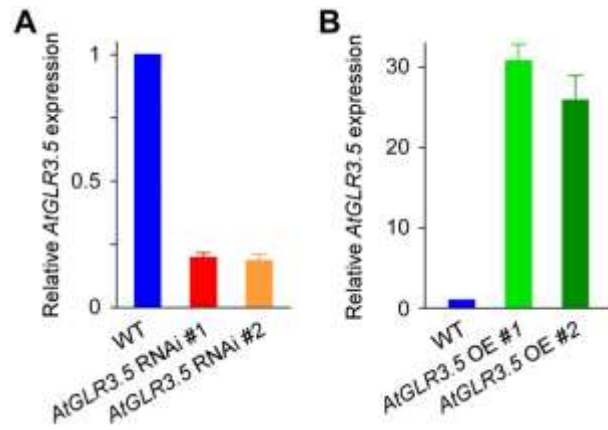
**Figure S1.** High concentrations of external calcium delay seed germination. (A-C) Germination analyses of WT seeds grown on modified MS media containing 3, 20, 40, 60, and 80 mM CaCl<sub>2</sub> after incubation under the germination conditions for 36 h (A), 2 d (B), or 5 d (C) respectively. Data shown are means  $\pm$  SEM, n=3.



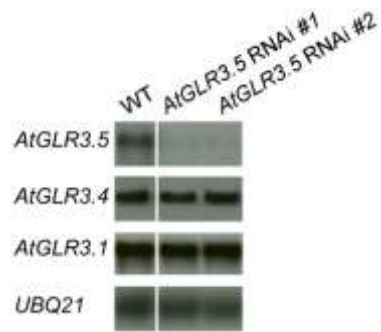
**Figure S2.** Germination analysis of *AtGLR3.7* mutant seeds. Stratified seeds grown on MS media were scored for germination 36 h after incubation under germination conditions. Data shown are means  $\pm$  SEM, n=3.



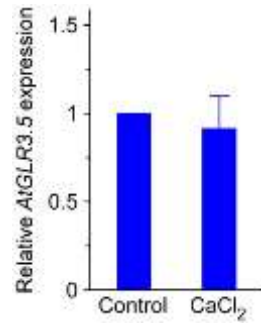
**Figure S3.** Expression of *AtGLR3.5* in seeds (dry seeds versus imbibed seeds) and seedlings. (A) qRT-PCR analysis of *AtGLR3.5* expression in dry seeds or seeds imbibed at room temperature for 24 h. Data shown are means  $\pm$  SEM,  $n=3$ . (B) *AtGLR3.5p::GUS* expression in 7-d-old seedlings. Representative image is shown.



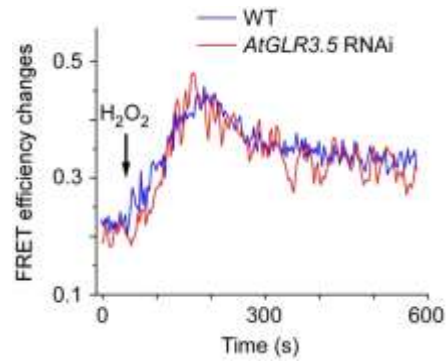
**Figure S4.** Relative *AtGLR3.5* expression in 2-wk-old *AtGLR3.5* RNAi (A) and *AtGLR3.5* OE (B) transgenic lines. Data shown are means  $\pm$  SEM, n=3.



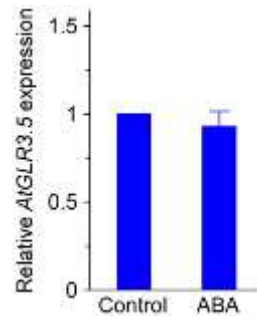
**Figure S5.** RT-PCR analyses show that the *AtGLR3.5* RNAi construct specifically silenced *AtGLR3.5* transcript but not transcripts of *AtGLR3.4* and *AtGLR3.1* in *AtGLR3.5* RNAi lines. *UBQ21* (At5g25760) was used as a loading control.



**Figure S6. Effect of CaCl<sub>2</sub> on the expression of *AtGLR3.5* in seeds. WT seeds incubated in water containing 0 mM (control) or 5 mM CaCl<sub>2</sub> were stratified and transferred to a growth chamber for 24 h prior to analysis. Data shown are means ± SEM, n=3.**

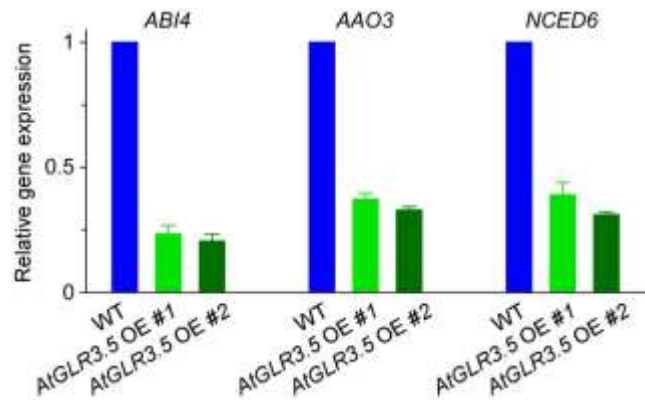


**Figure S7.** FRET-sensitized emission analysis showing  $[Ca^{2+}]_{\text{cyt}}$  changes in WT and *AtGLR3.5* RNAi seedlings in response to 10 mM  $H_2O_2$  treatment. Representative traces are shown. Seedlings were challenged with  $H_2O_2$  where arrow indicates. The primary roots of 4-d-old *Arabidopsis* seedlings expressing Yellow Cameleon 3.60 were used for the analysis.

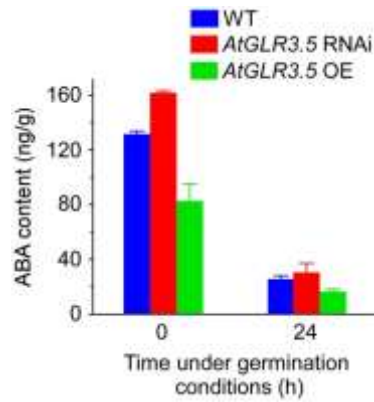


**Figure S8. Effect of ABA on the expression of *AtGLR3.5* in seeds. WT seeds incubated in water containing 0  $\mu$ M (control) or 10  $\mu$ M ABA were stratified and transferred to the growth chamber for 24 h prior to analysis. Data shown are means  $\pm$  SEM, n=3.**

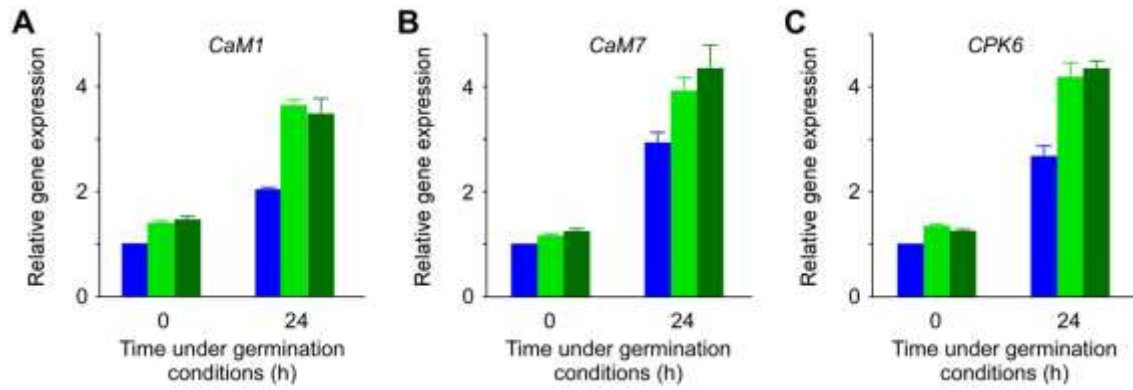




**Figure S9. Relative expression of *ABI4*, *AAO3*, and *NCED6* in stratified WT and *AtGLR3.5* OE seeds. Data shown are means  $\pm$  SEM, n=3.**



**Figure S10.** ABA contents in WT, *AtGLR3.5* RNAi, and *AtGLR3.5* OE seeds. Seeds were stratified at 4°C for 3 d and collected at 0 and 24 h respectively after incubation under germination conditions. Data shown are means  $\pm$  SEM, n=3.



**Figure 11. Relative expression of *CaM1*, *CaM7*, and *CPK3* in germinating WT and *AtGLR3.5* OE seeds. Seeds were stratified and collected at indicated time points after incubation under germination conditions. Data shown are means  $\pm$  SEM, n=3.**