Supplementary Information

ROS-Mediated Vascular Homeostatic Control of Root-to-Shoot Soil Na Delivery in *Arabidopsis*

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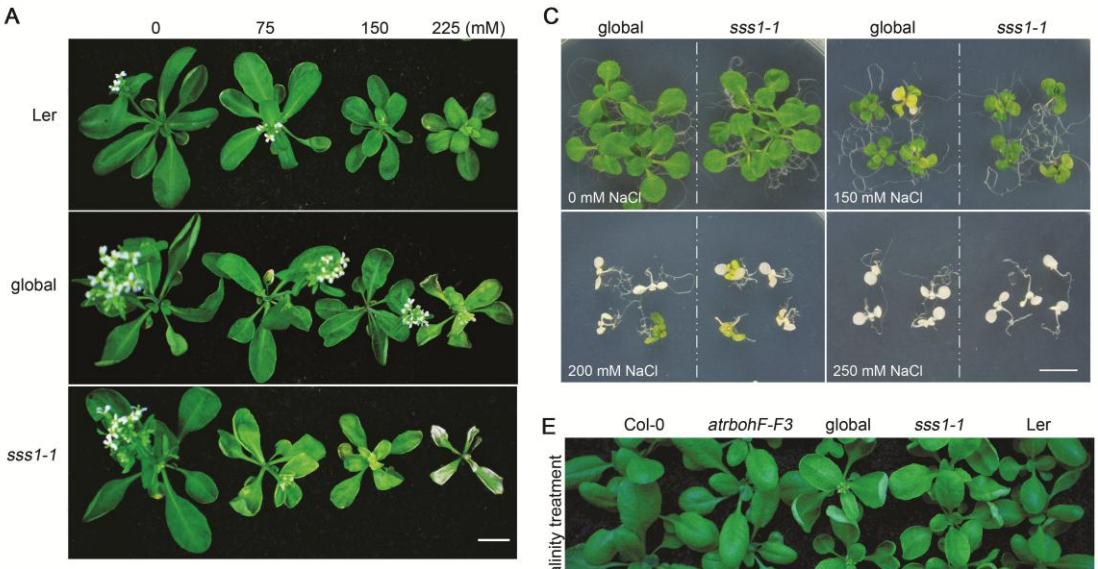
Supplementary Figure 1–3 and Legends

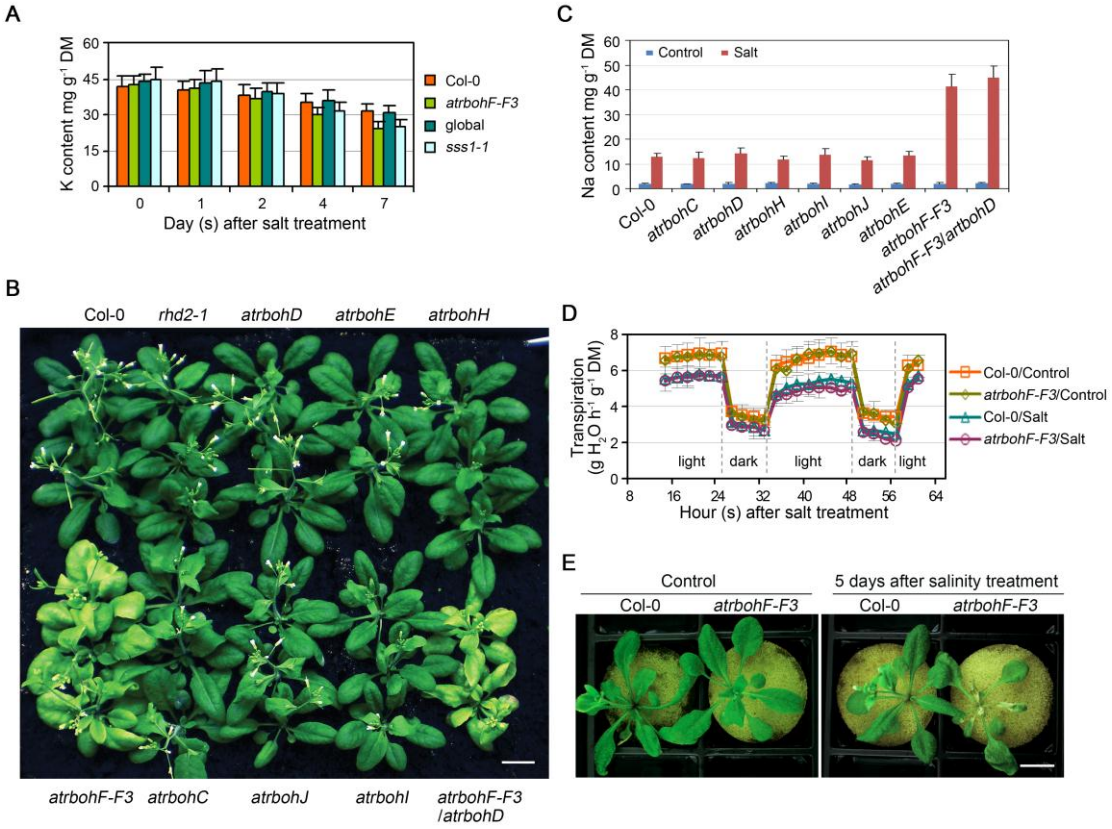


D

Mutation	Location	Gene affected
Chr1: inversion	23765370-23773866	At1G64060
Chr1: G to T	28749595	intergenic
Chr5: G to A	14247908	intergenic
Chr3: T to A	5608859	intergenic
Chr 3: G to T	28307467	At3G56400

Supplementary Figure 1 Initial characterization of *sss1-1*. (A–B) Appearance (A) and chlorophyll contents (B) of *A. thaliana* Landsberg *erecta* (Ler; WT), global (progenitor control) and *sss1-1* mutant plants 10 days after salinity treatment (NaCl concentrations as indicated). Plant growth and salinity treatments as described in Figure 1A. Data in (B) are means ± SE of three replicates. (C) Appearance of global and *sss1-1* plants 10 days after transfer to agar-based media containing

different concentrations of NaCl in petri dishes (concentrations as indicated). The global progenitor and the *sss1-1* mutant display similar *in vitro* sensitivity to NaCl. (D) List of mutations detected in *sss1-1* (versus global progenitor) via whole genome sequence analysis (see Materials and Methods). (F) Appearance of soil-grown Col-0, *atrbohF-F3*, global, *sss1-1* and Ler plants before and 7 days following salinity treatment (120 mM NaCl). Bars in A, C and E = 1 cm.



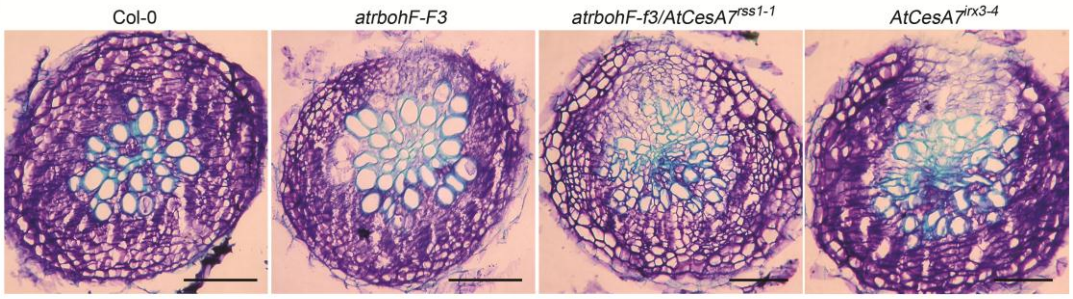
Supplementary Figure 2 Ion concentrations, transpiration rates and visible phenotypes of salt-treated plants (genotypes and treatments as indicated). (A) K content of shoot samples (genotypes and treatments as indicated; global is WT control for *sss1-1*; Col-0 for *atrbohF-F3*; DM: dry mass). Salt treatment was as described in Figure 1A. Shoot tissue was collected 0-7d following salt treatment to measure K content (see Materials and Methods). (B) Appearance of Col-0 and a variety of different *atrboh* mutants 7 days after salinity treatment (Bar = 1 cm). (C) Shoot Na content of Col-0, *atrbohC*, *atrbohD*, *atrbohH*, *atrbohI*, *atrbohJ*, *atrbohE*, *atrbohF-F3* and *atrbohF-F3*/*atrbohD* plants grown on control versus saline soil (Salt). Plant

growth and salinity treatment as described in Figure 1A. (D) Comparison of transpiration rates of salt-treated and control WT (Col-0) and *atrbohF-F3* plants over a 48h experimental period (see Materials and Methods). Values are means ± SE of at least 8 plants. (E) *atrbohF-F3* displayed a salt hypersensitive phenotype under hydroponic conditions. Photos showed WT (Col-0) and *atrbohF-F3* plants grown in normal hydroponic conditions (Control) or 5 days after salinity treatment (four-week-old plants were treated with 100 mM NaCl). Bar = 1 cm. Data shown in A and C are means ± SE of three replicates, and the error bars are standard error of the mean.

A

Mutation	Location	Gene affected
Chr3:16028794	C to T	Intergenic
Chr5:5740885	-CA	At5G17420
Chr5:21742795	G to A	Intergenic
Chr4:5709034	-TA	Intergenic

B



Supplementary Figure 3. Characterization of *rss1-1*. (A) Novel mutations detected in *rss1-1* via whole genome sequence analysis (see Materials and Methods). (B) Comparison of the xylem shape of Col-0, *atrbohF-F3*, *atrbohF-F3*/*AtCesA7* $^{rss1-1}$ and *AtCesA7* $^{irx3-4}$. *atrbohF-F3*/*AtCesA7* $^{rss1-1}$ and *AtCesA7* $^{irx3-4}$ both show marked reduction in the number of functional conducting root vasculature xylem elements (Bar = 500 µm).