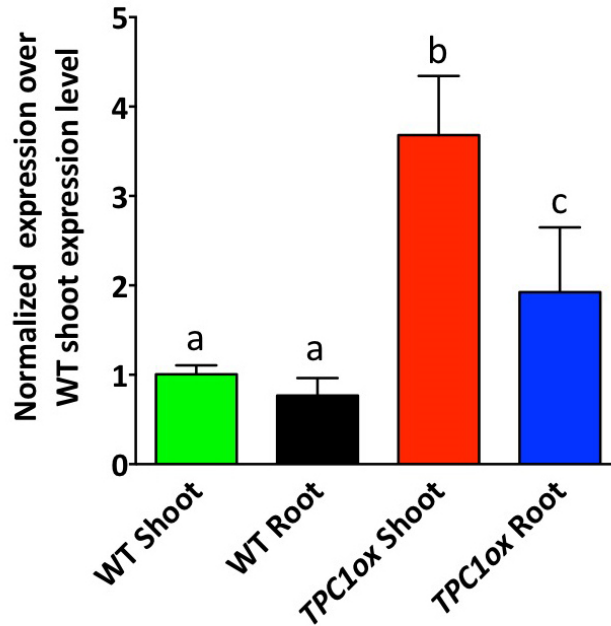


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The results of the
range of values

[Allbritton1992]. Increasing D further decreases the range of the intervacuolar distance d_v for which the model can reproduce the OxTPC1 velocity. This means that changing the buffering capacity of the cytoplasm (D) does not affect the conclusions of the paper. $L=100 \mu\text{m}$, $d=1 \mu\text{m}$. (B) The model is more sensitive to changes in TPC1 number, represented by changing distances between channels, d , in WT. Overexpressing TPC1 decrease d by a factor 0.6 (main text), native variability between different cell types should be much smaller than this.

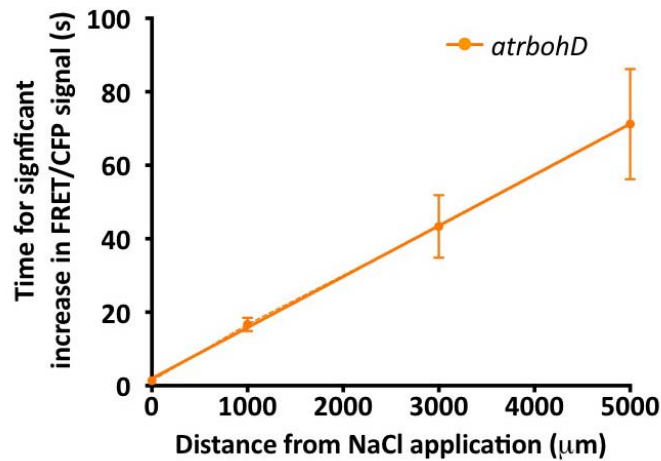


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14 **Figure S2.** *TPC1* expression in root and shoot tissues of young seedlings. QPCR
 15 analysis of *AtTPC1* expression level in root and shoot tissues of six day old seedlings of
 16 WT Col_0 and *TPC1ox* (*TPC1* overexpression line) was investigated using QPCR
 17 analysis as described in the Methods. Error bars, SEM of $n=9$ from 4 independent
 18 biological replicates. Statistical analysis was performed using multiple comparison of
 19 Student's *t*-test. Different letters denote significant differences $p<0.05$.

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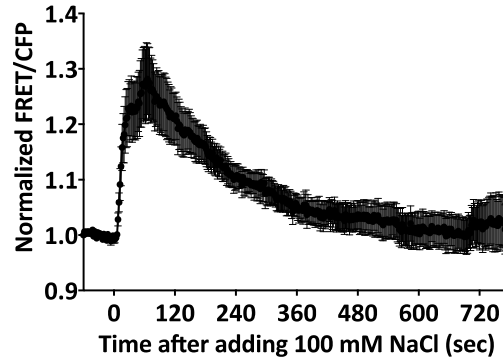


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23 **Figure S3.** Ca^{2+} wave transmission rate in the *atrbohD* background. Time for the
 24 YFP:CFP ratio to reach > 2 s.d. above the pre-stimulation levels was calculated at 0,
 25 1000, 3000 and 5000 μm from the point of local 100 mM NaCl application to the root tip.
 26 Regression analysis (solid line) indicated a rate of $73.1 \pm 18.9 \mu\text{m s}^{-1}$, $R^2=0.722$, $n=5$ for
 27 each distance. Identical analysis of wild-type in Choi et al., (2014) showed a
 28 transmission rate of $395.7 \pm 27.8 \mu\text{m/s}$, $R^2=0.99$, $n=23$.

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31 **Figure S4.** Calcium wave propagation in the OXTPC1 background pretreated with DPI.

32 OXTPC1 plants expressing YCNano-65 were pretreated with 50 μ M of the NADPH

33 oxidase inhibitor DPI for 30 min and then 100 mM NaCl added to the apical ~50 μ m of

34 the root tip. Calcium levels were monitored at 3000 μ m from the tip. Data represents

35 mean \pm s.d., n=7. Transmission rate was calculated from the time for the YFP:CFP

36 signal to increase ≥ 2 s.d. above the pretreatment levels averaged over 60 s prior to NaCl

37 addition.

38

39 **Supplementary Movie S1. Surface ROS production in response to medium**
40 **addition to the root tip.** ROS levels were imaged using OxyBurst-BSA at 3000 μm
41 shootward of the root tip. At 0 sec, growth medium was added to the apical most ~ 50 μm
42 of the root apex.

43

44 **Supplementary Movie S2. Surface ROS production in response to NaCl addition to**
45 **the root tip.** ROS levels were imaged using OxyBurst-BSA at 3000 μm shootward of the
46 root tip. At 0 sec, growth medium containing 100 mM NaCl was added to the apical most
47 ~ 50 μm of the root apex.

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