

A mutation in GDP-mannose pyrophosphorylase causes conditional hypersensitivity to ammonium, resulting in *Arabidopsis* root growth inhibition, altered ammonium metabolism and hormone homeostasis. Carina Barth, Zachary A. Gouzd, Hilary P. Steele, Ryan M. Imperio

Supplementary Data

Supplementary Figure S1

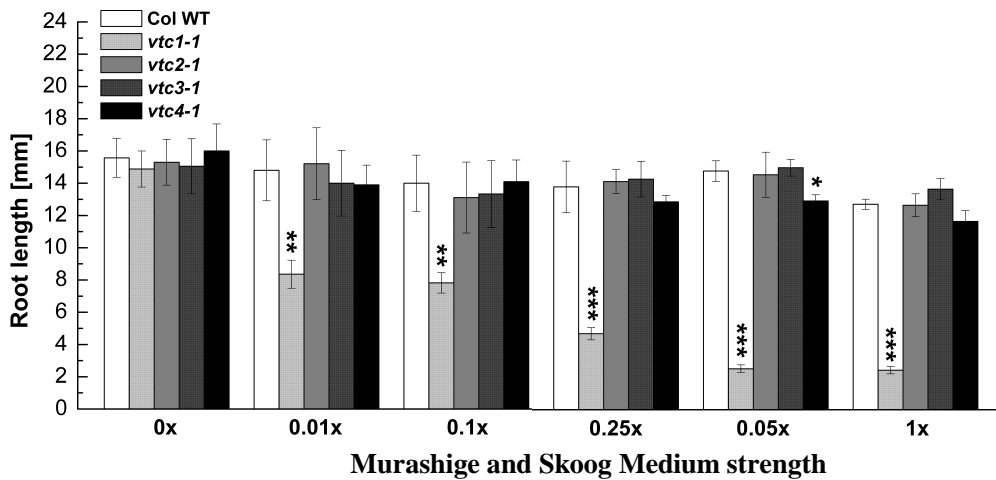


Fig. S1. Primary root length in the wild type and *vtc* mutants grown on increasing strength of MS. Data represent means \pm SE of 9-23 replicates per genotype per treatment. Asterisks indicate significant differences between the wild-type and mutant plants. ** $P < 0.01$, *** $P < 0.001$, Student's *t*-test.

Supplementary Figure S2

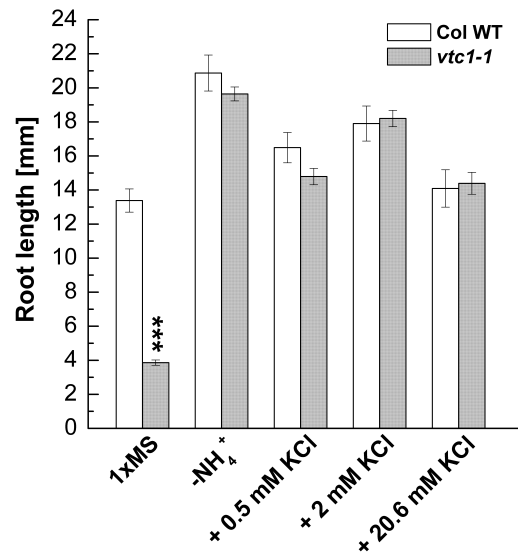


Fig. S2. Primary root length in seven-day-old wild-type and *vtc1-1* mutant plants grown on 1x MS in the absence of ammonium nitrate (-NH₄⁺) and increasing concentrations of potassium chloride (+KCl). Data represent means \pm SE of 74-98 replicates per genotype per treatment. Asterisks indicate significant differences between the wild type and *vtc1-1*. *** $P < 0.001$, Student's *t*-test.

Supplementary Figure S3

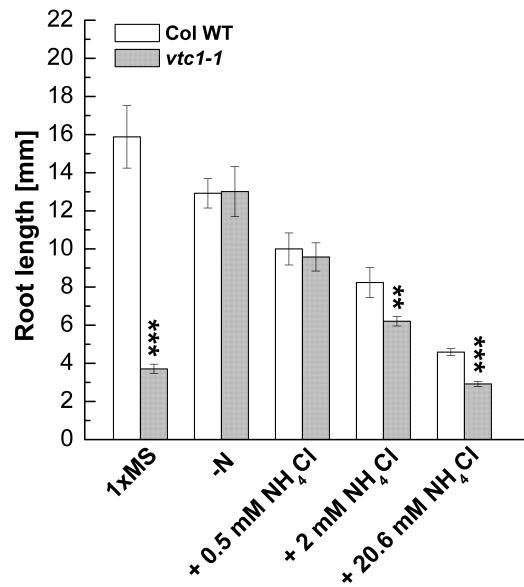


Fig. S3. Primary root length of seven-day-old wild-type and *vtcl-1* mutant plants grown on 1x MS in the absence of all nitrogen (-N, i.e. no NH_4NO_3 and no KNO_3) and increasing concentrations of ammonium chloride (+ NH_4Cl). Data represent means \pm SE of 36-91 replicates per genotype per treatment. Asterisks indicate significant differences between the wild type and *vtcl-1*. ** $P < 0.01$, *** $P < 0.001$, Student's *t*-test.

Supplementary Figure S4

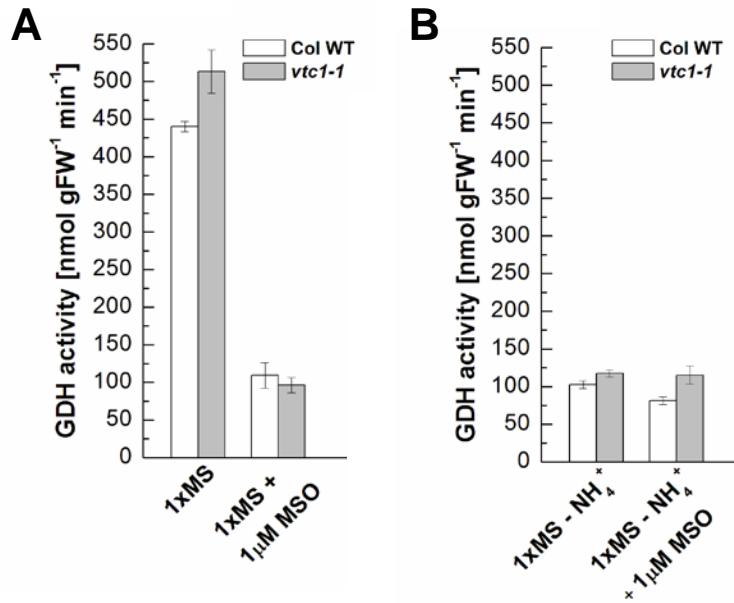


Fig. S4. Glutamate dehydrogenase (GDH) activity in whole seven-day-old seedlings of wild type and *vtc1-1*. Plants were germinated on 1x MS (A) or in the absence (B) of ammonium nitrate (-NH₄⁺) in the presence or absence of methionine sulfoximine (MSO), respectively. Mean values \pm SE of three independent replicates are shown.

Supplementary Figure S5

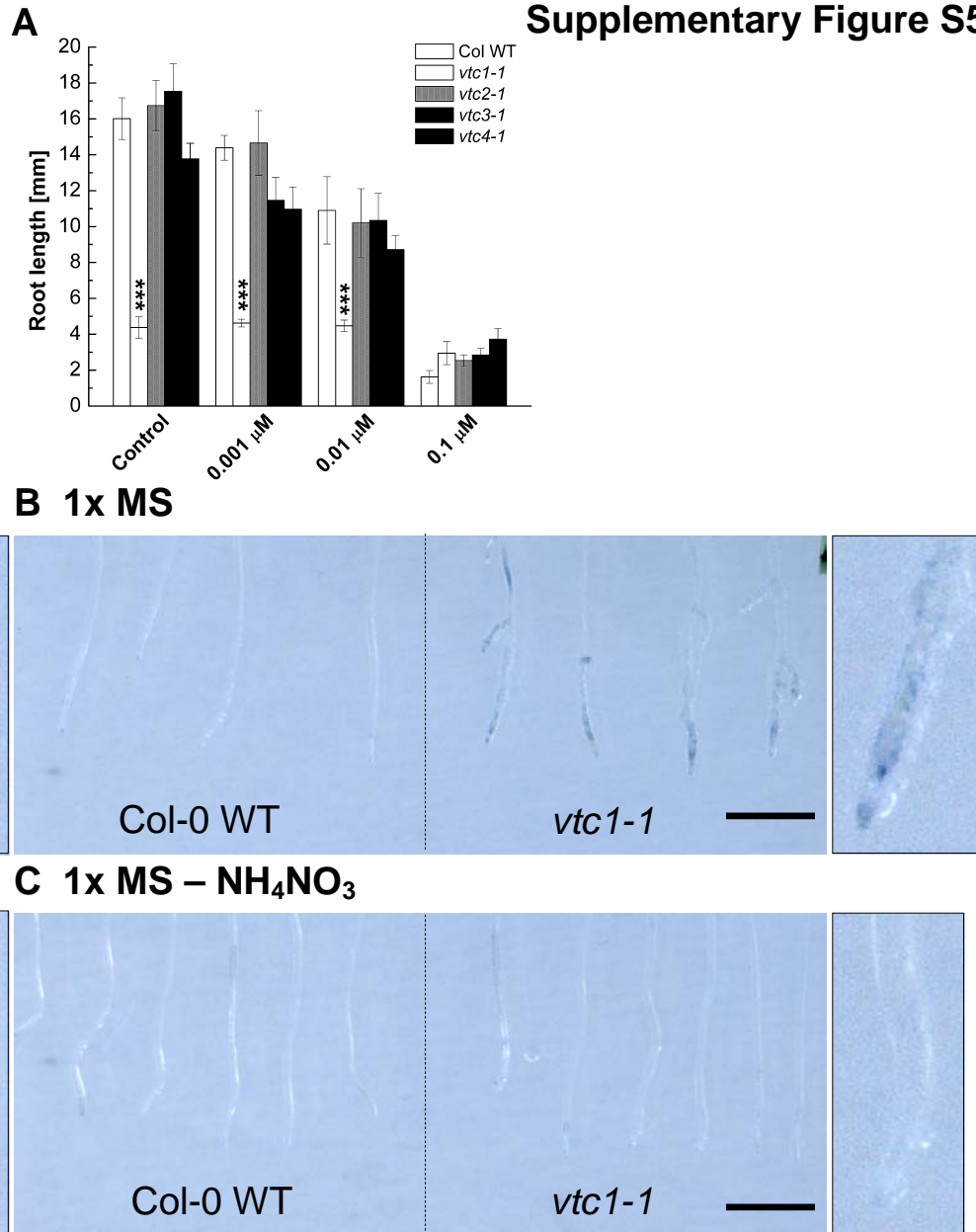


Fig. S5. Primary root growth of seven-day-old wild-type and *vtc* mutant plants grown on 1x MS in the presence of increasing concentrations of tunicamycin (A). Data represent means \pm SE of 7-11 replicates per genotype per treatment. Asterisks indicate significant differences between the wild type and *vtc* mutants. *** $P < 0.001$, Student's *t*-test. (B) and (C) Evan's Blue staining of seven-day-old wild-type and *vtc* mutant plants grown on 1x MS (B) or on 1x MS lacking NH₄⁺ (C). Magnified photographs to the left and right in (B) and (C) show representative roots of both genotypes and treatments for better visualization of staining. Seedlings were removed from the growth media and submerged in 1% Evan's blue staining for 10 min. Seedlings were then rinsed in de-ionized water for 2 hours and photographed. Bar, 1 mm.

Supplementary Figure S6

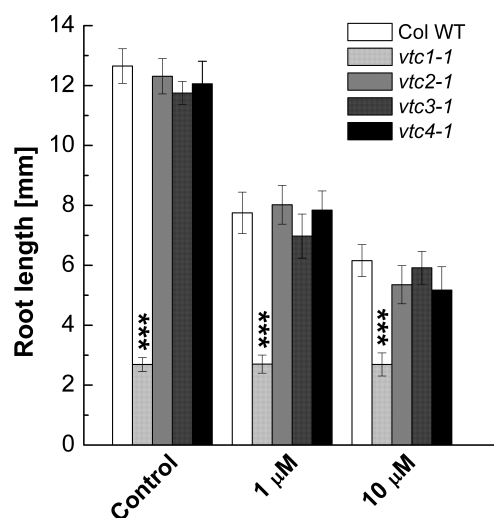


Fig. S6. Primary root growth of seven-day-old wild-type and *vtc* mutant plants grown on 1x MS in the presence of increasing concentrations of the ethylene precursor ACC. Data represent means \pm SE of 8-11 replicates per genotype per treatment. Asterisks indicate significant differences between the wild type and *vtc* mutants. *** $P < 0.001$, Student's *t*-test.