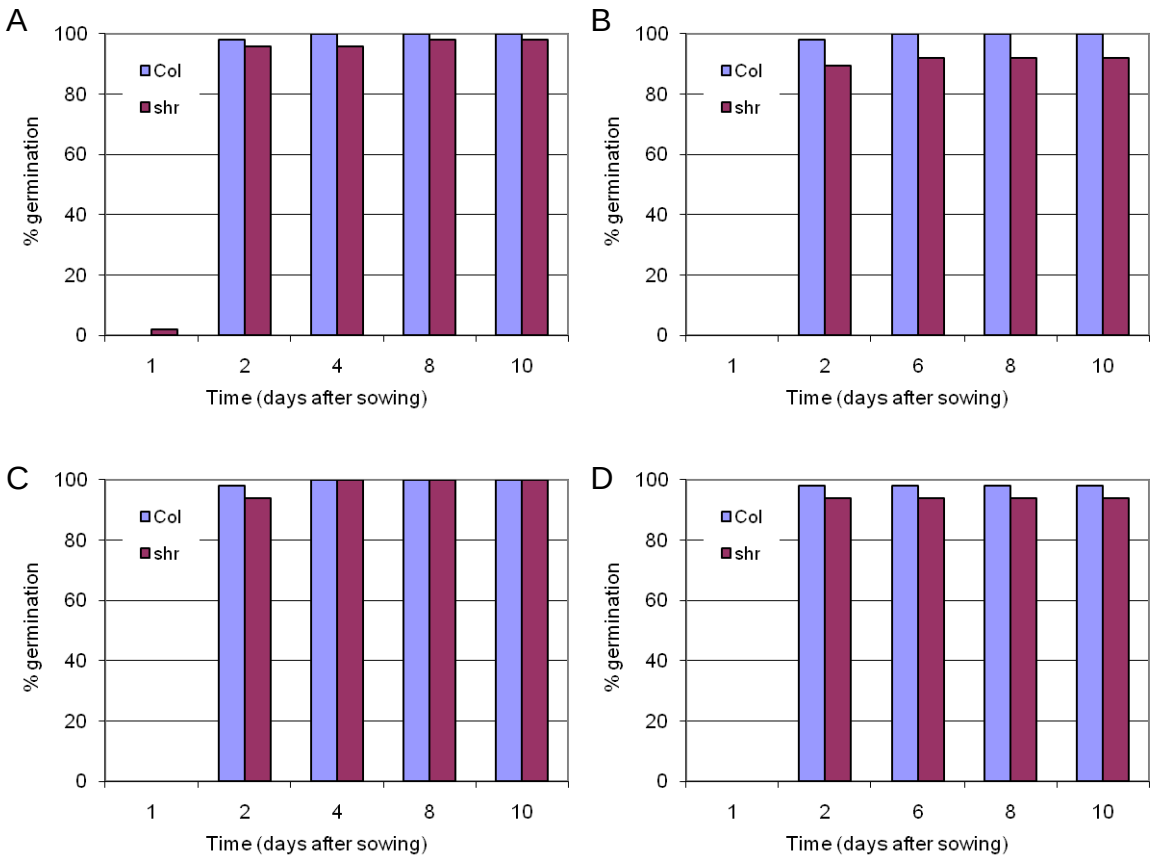
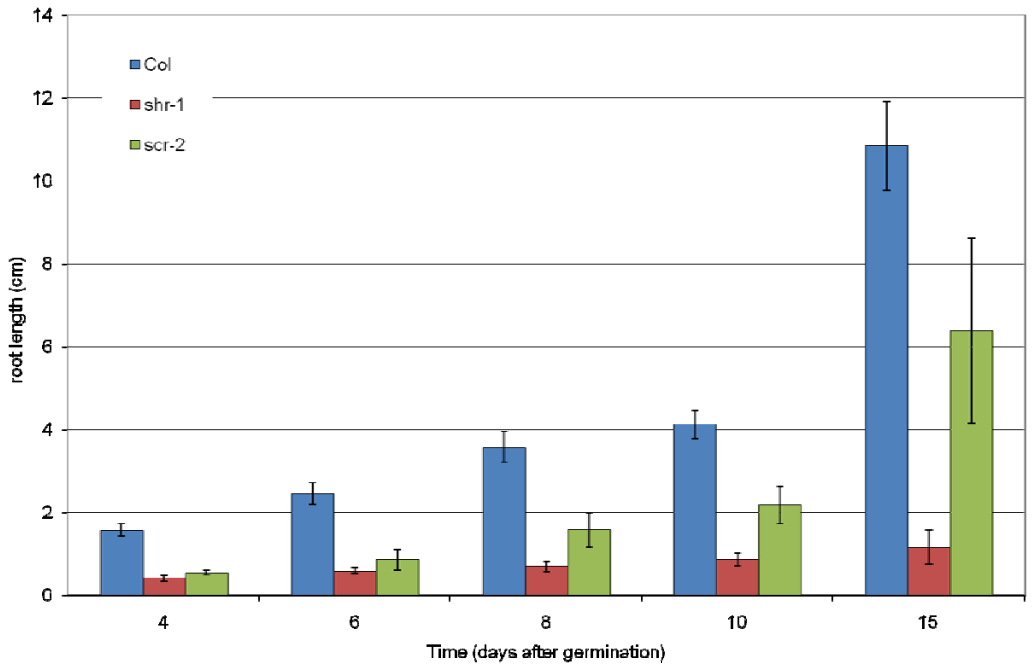


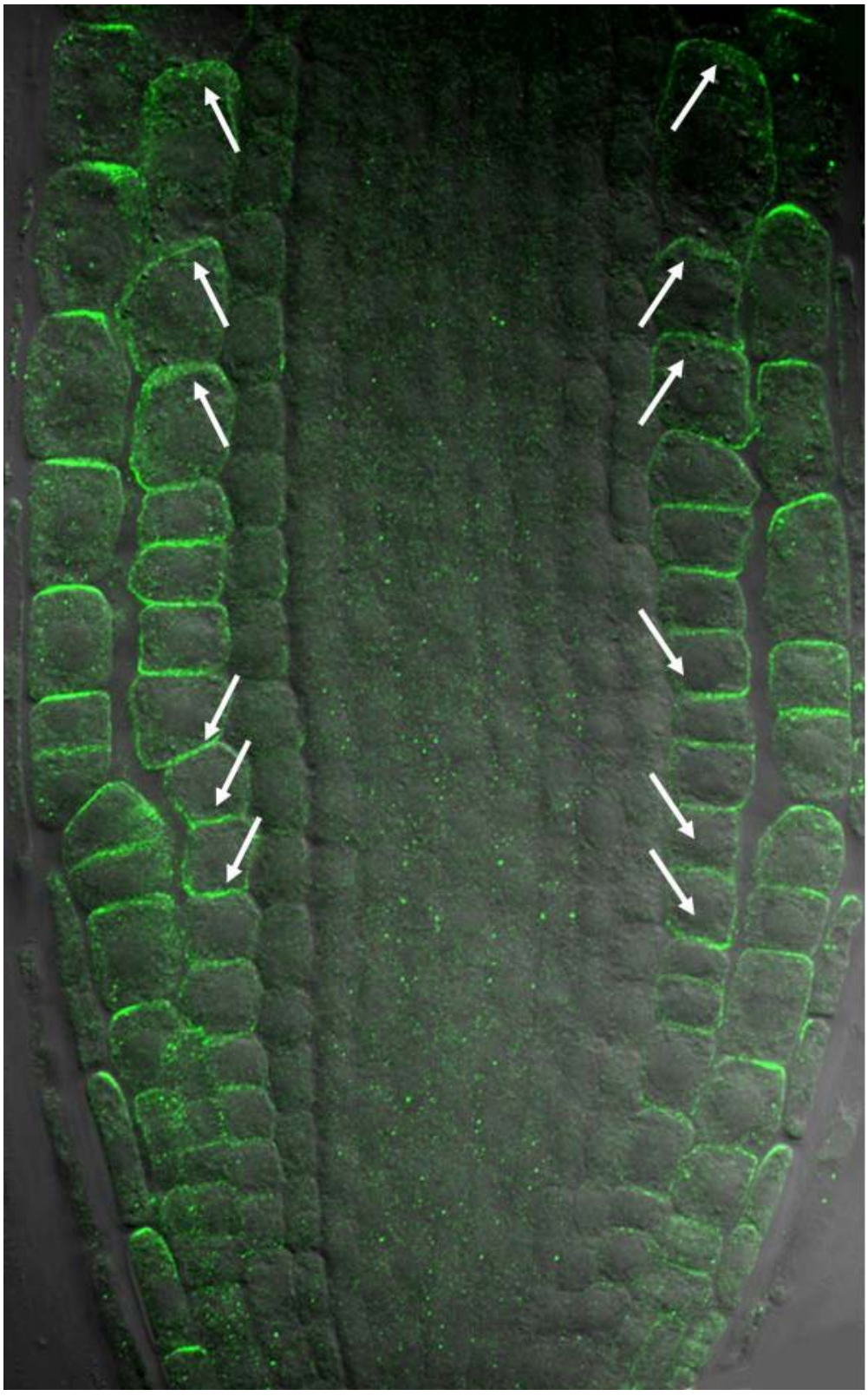
Supplemental Figure S1. Germination of the shr mutant is comparable to wildtype.

Seeds (n=50) were sowed on 1% agarose medium in water (A-B) or 1% agarose ½ MS medium (C-D), without chilling treatment (A-C) or after a chilling treatment (B-D). In all treatments except one, germination rate is slightly lower for *shr* than for the wild-type, but not significantly so.



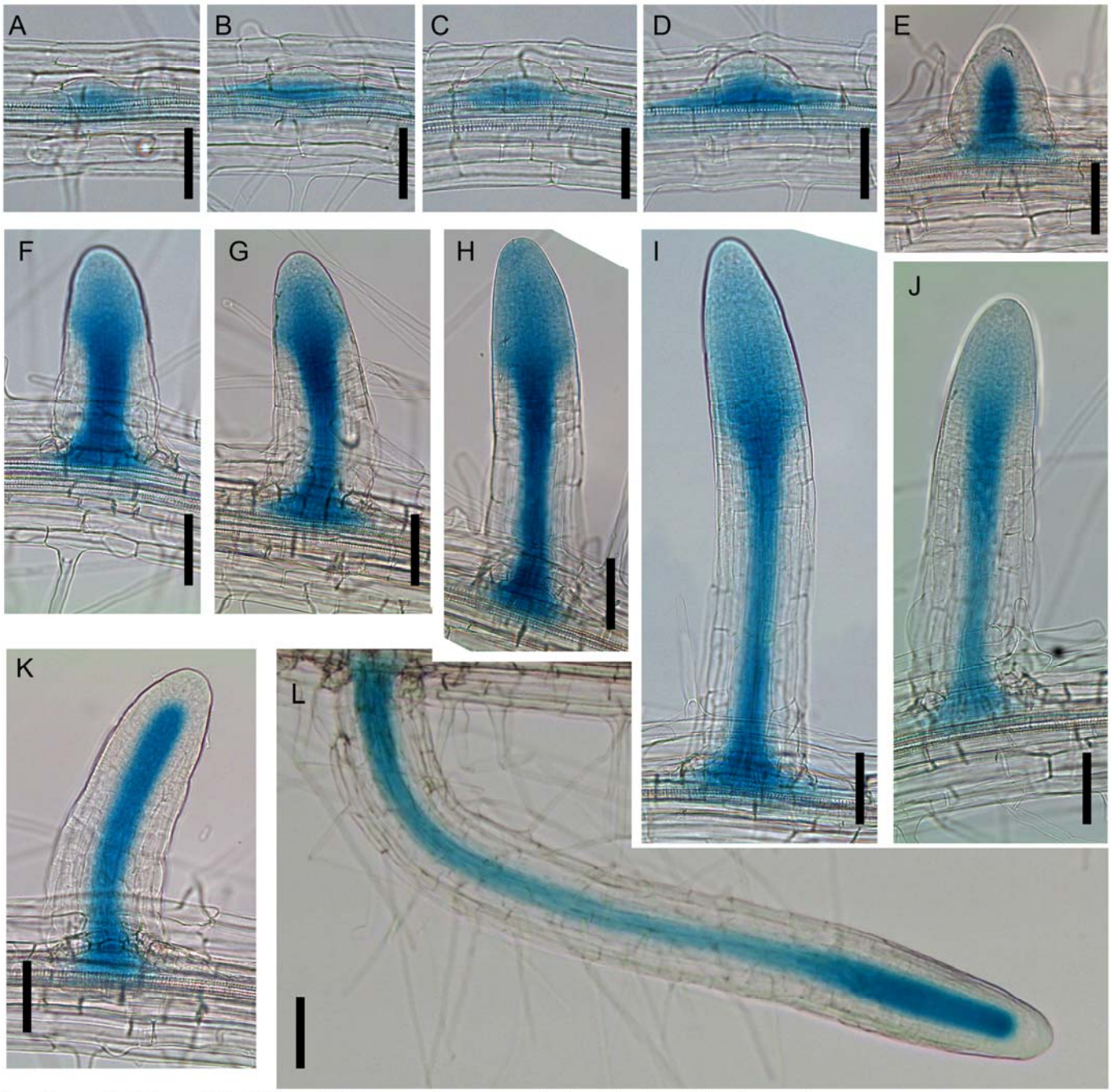
Supplemental Figure S2. Root length in shr is severely reduced compared to wildtype and scr.

While *scr* root growth is still half of wild-type root growth and occurs with a similar rate, *shr* root growth is stunted.

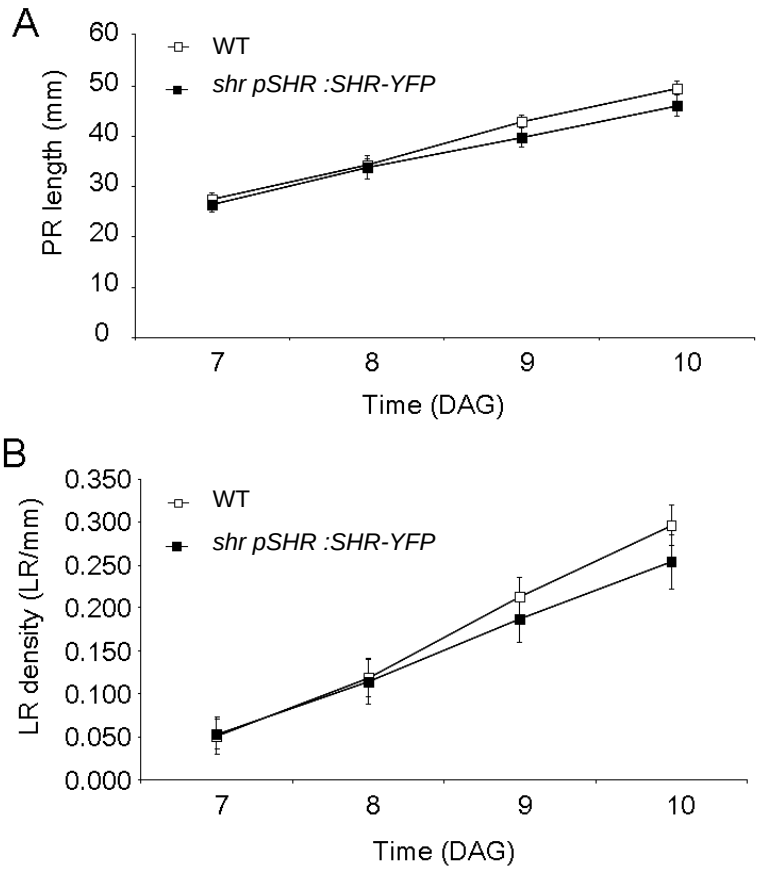


Supplemental Figure S3. Inversion of polarity of PIN2 in the cortical layer.

In wild-type root the shift from apical to basal cortical localisation for PIN2 occurs at the level of the transition from division to elongation zone.
PIN2 expression was assessed by immunolocalization.



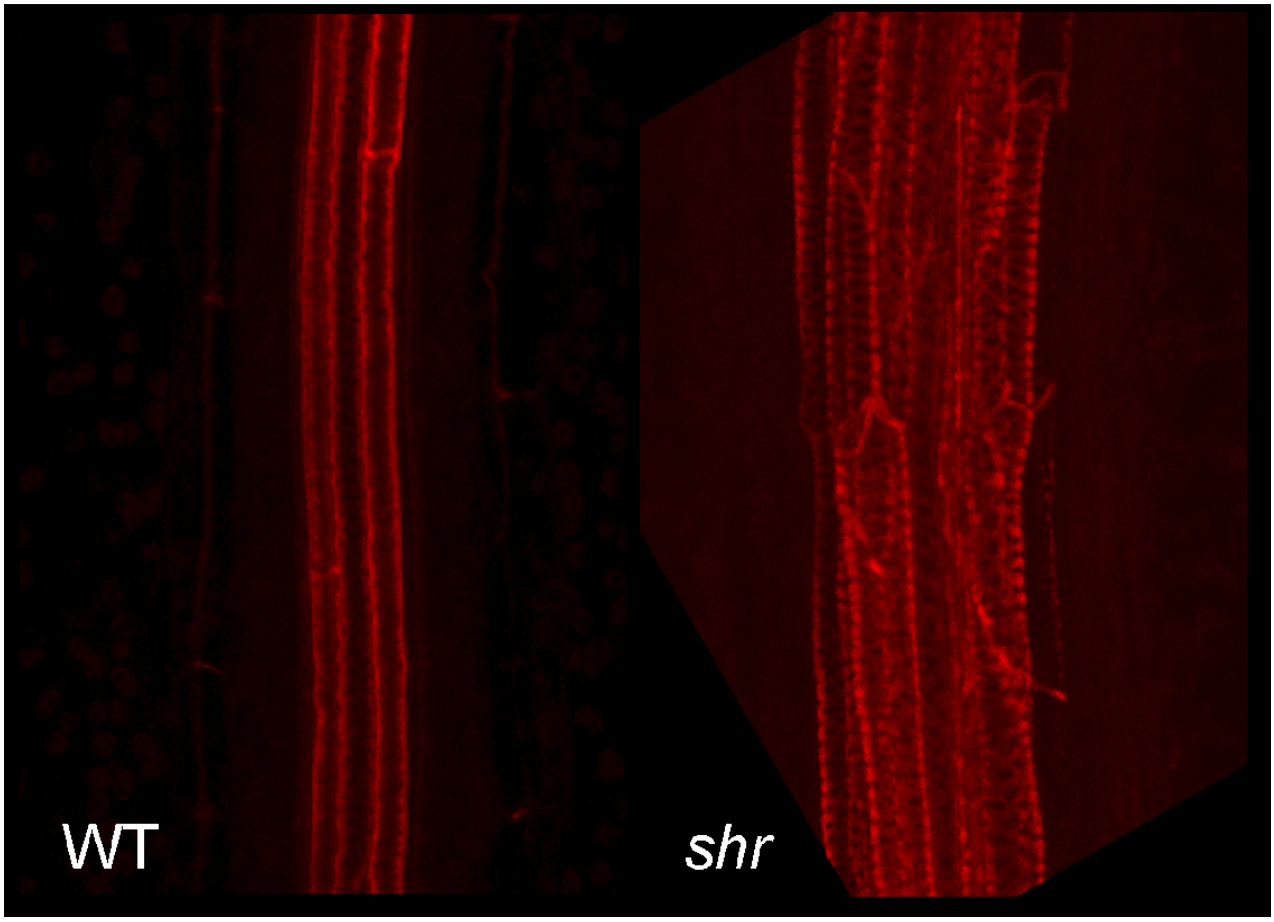
Supplemental Figure S4. *SHRpro:GUS* expression pattern during lateral root development.
DIC microscope images of lateral root primordia and lateral roots of 8-days-old SHRpro:GUS Arabidopsis.
(A & B) SHR is initially expressed in the lower half of the young primordium (stage II-IV).
(C to E) As the primordium acquires its dome-shape, SHR expression domain is progressively restricted to the central part of the primordium, corresponding to future stele tissues.
(F to J) Upon emergence, SHR expression becomes diffuse in the root cap while still being specifically expressed in the stele and anchorage domain of the young lateral root.
(K & L) SHR expression in the lateral root then resumes a stele specific pattern similar to the one observed in the primary root This change in expression pattern is not associated with a specific lateral root length but rather a certain distance from the primary root tip (change observed at 14 +/- 4mm from the root tip, n = 8). Scale bar = 50 micrometers.



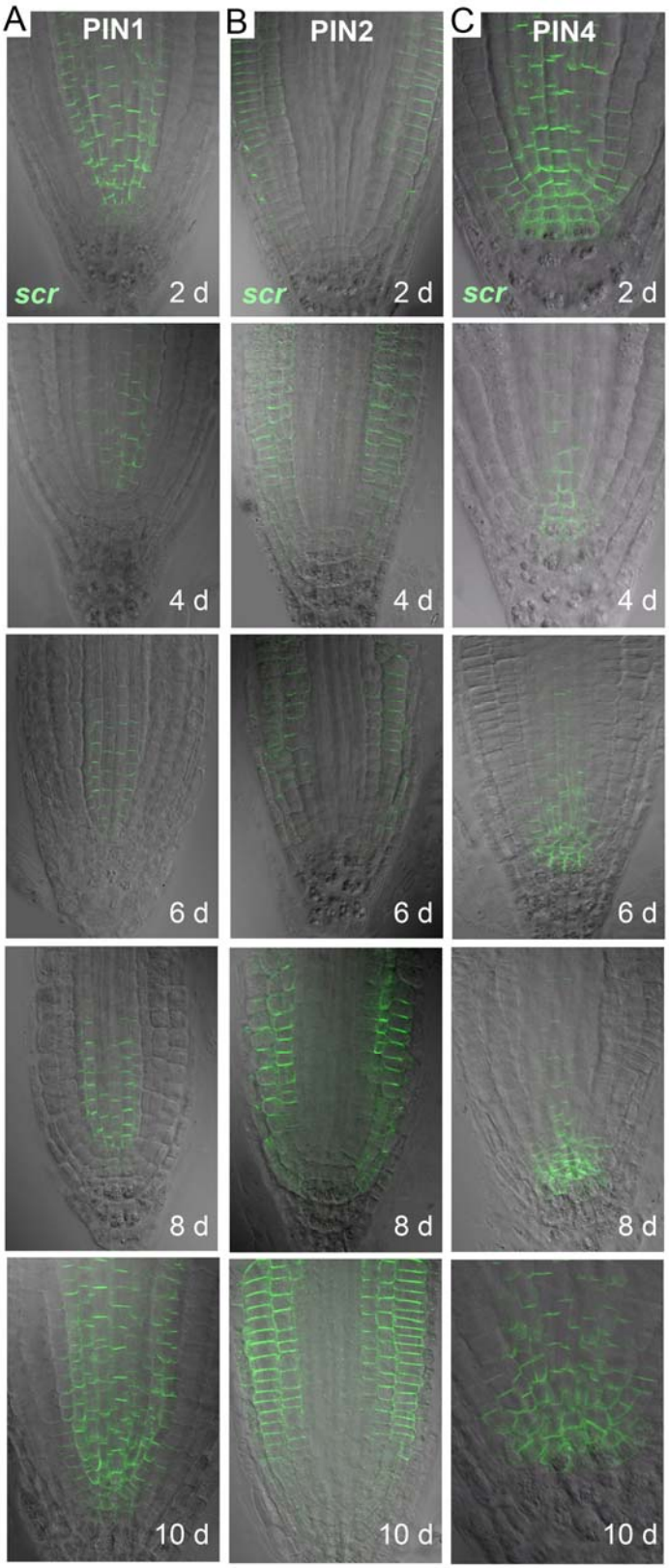
Supplemental Figure S5. The *SHR$_{pro}$:SHR-YFP* transgene rescues the *shr* mutation.

(A) Primary root (PR) length of wild-type (n=21) and *shr SHR$_{pro}$:SHR-YFP* (n=23) over time.

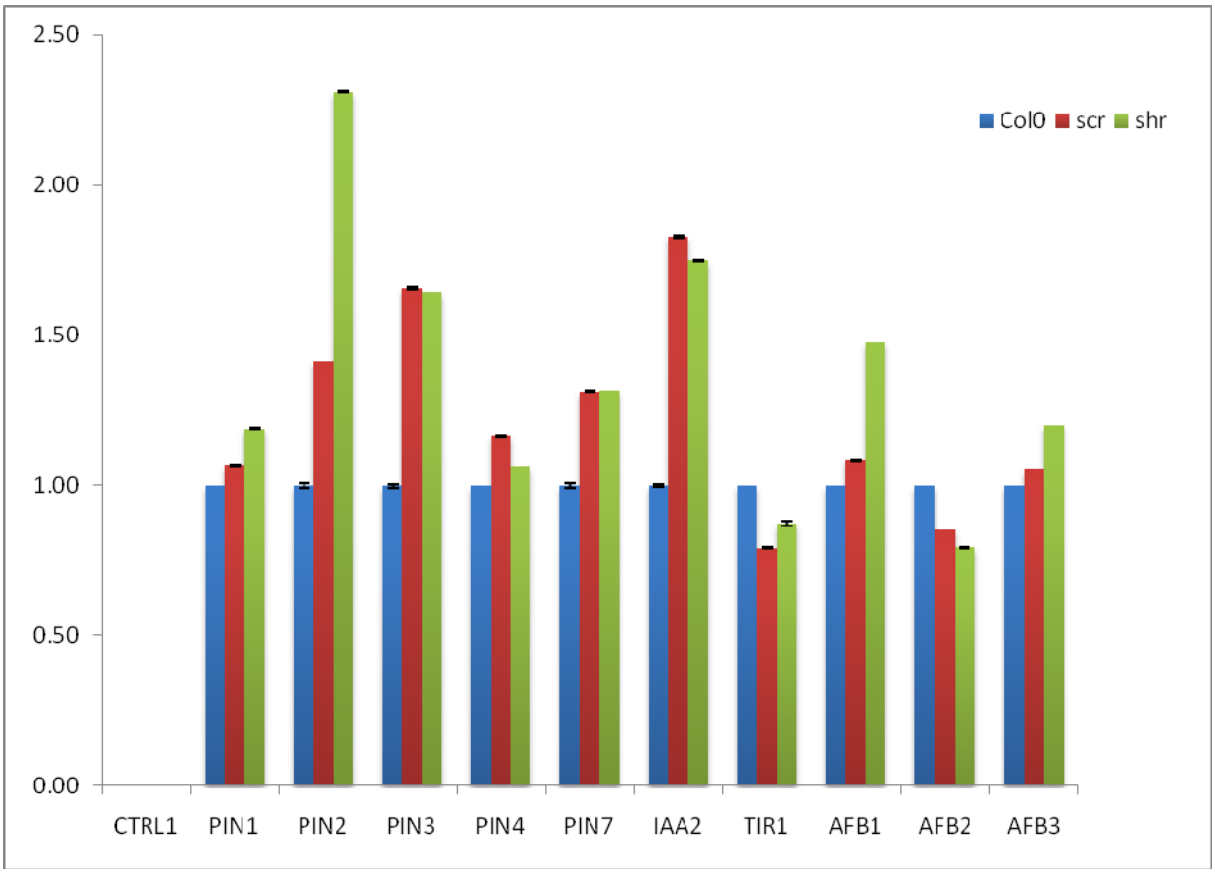
(B) Lateral root (LR) density in wild-type (n=21) and *shr SHR$_{pro}$:SHR-YFP* (n=23) over time.



Supplemental Figure S6. The *shr* mutation causes ectopic lignification in the hypocotyl. Seedlings were stained for 5 min. in 0.01% basic fuchsine and then washed twice in 70% ethanol. Stained seedlings were then clarified (Acidified methanol protocol) and mounted in 10% glycerol. Confocal microscopy was used to visualize xylem lignification (red).



Supplemental Figure S7. The loss of auxin carrier expression in *shr* is independent of SCR.
Dynamic changes of PIN1 (A), PIN2 (B) and PIN4 (C) abundance over time in *scr*.
PIN expression was assessed employing immunolocalization (see materials and methods).



Supplemental Figure S8. Expression of auxin-related genes in wild-type, *shr* and *scr* 6 days old seedlings.

Reverse transcriptase quantitative PCR was performed on RNA isolated from 6 days old seedlings using primers designed against several *PIN*, *IAA2* and *TIR/AFB* gene sequences. Values represent normalized means +/- s.d.