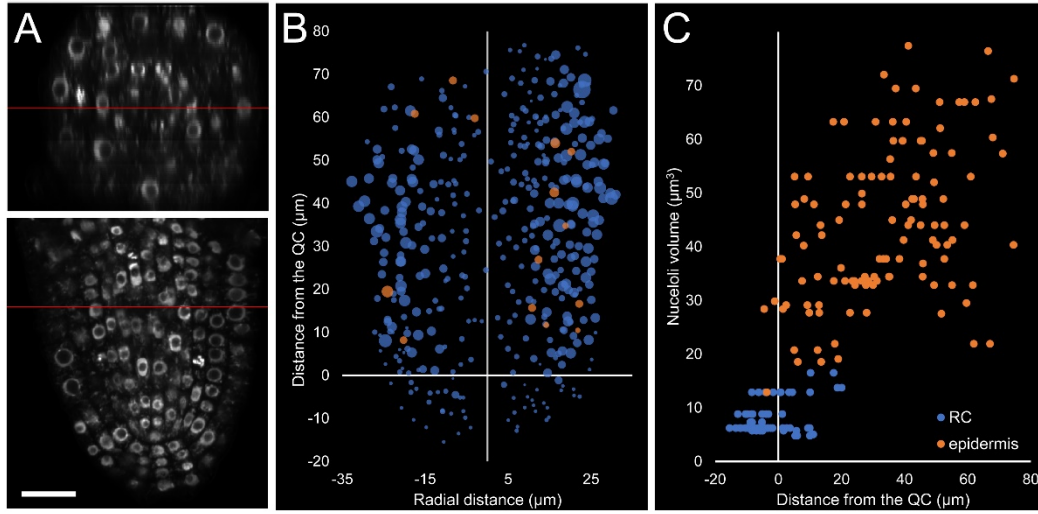
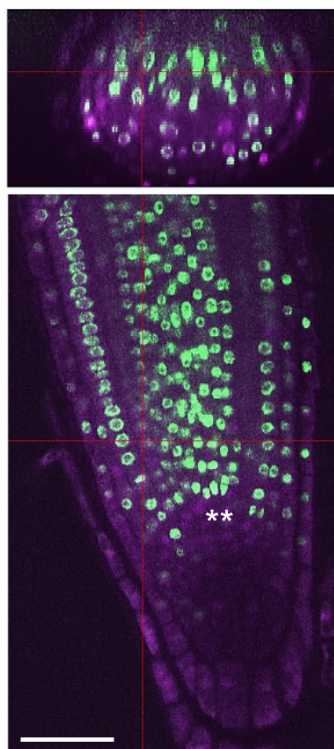


**Figure S1**



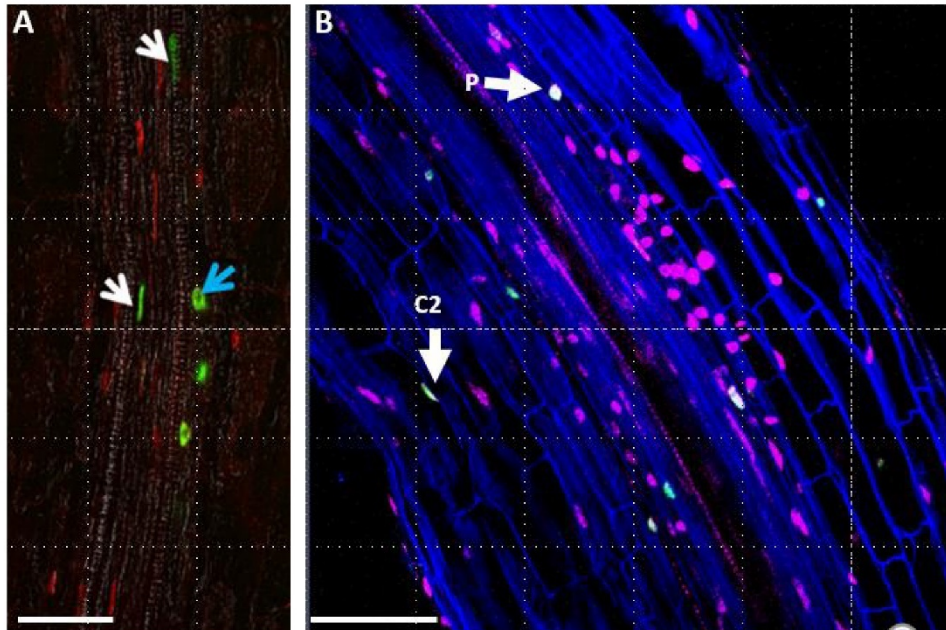
**Figure S1. Nuclei and chromatin analysis in a young Arabidopsis LR.** (A) Confocal 3D image of a young Arabidopsis LR; top: cross section, bottom: longitudinal section. (B). Nucleoli volume distribution along the longitudinal axis: orange indicate mitotic nuclei. (C) Nucleoli volume distribution along the longitudinal axis in different tissues: root cap (RC), blue; and epidermis, orange. Scale bar: 20  $\mu\text{m}$ .

**Figure S2**



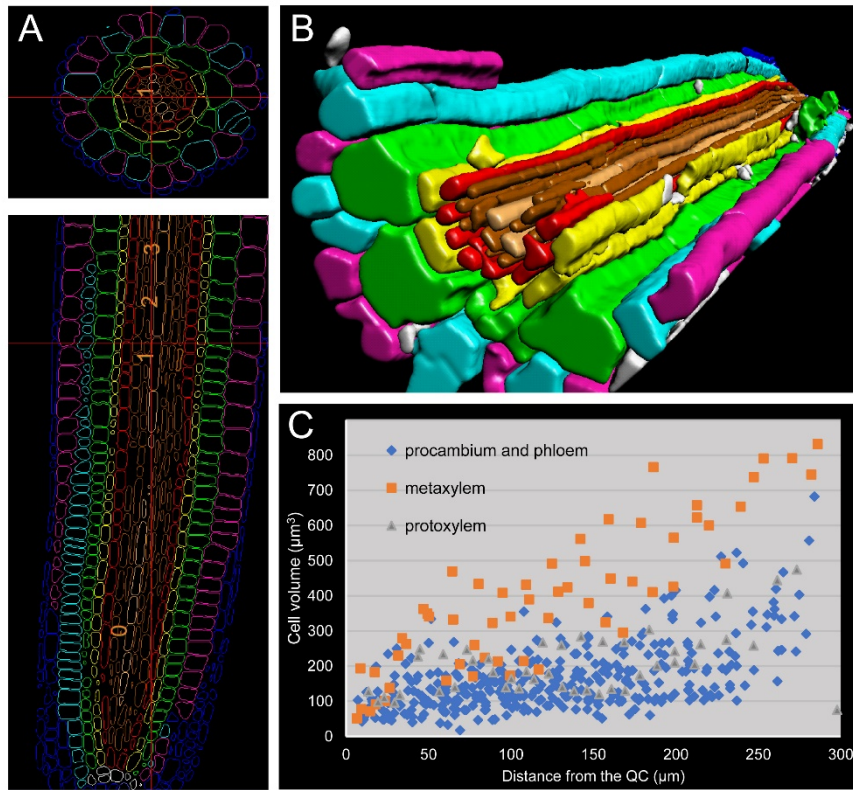
**Figure S2. Long EdU staining of Arabidopsis PR.** Seedlings were incubated with EdU for 8 h; Confocal 3D image of an Arabidopsis PR; top: cross section, bottom: longitudinal section. QC is marked with asterisks. Scale bar: 50  $\mu$ m.

**Figure S3**



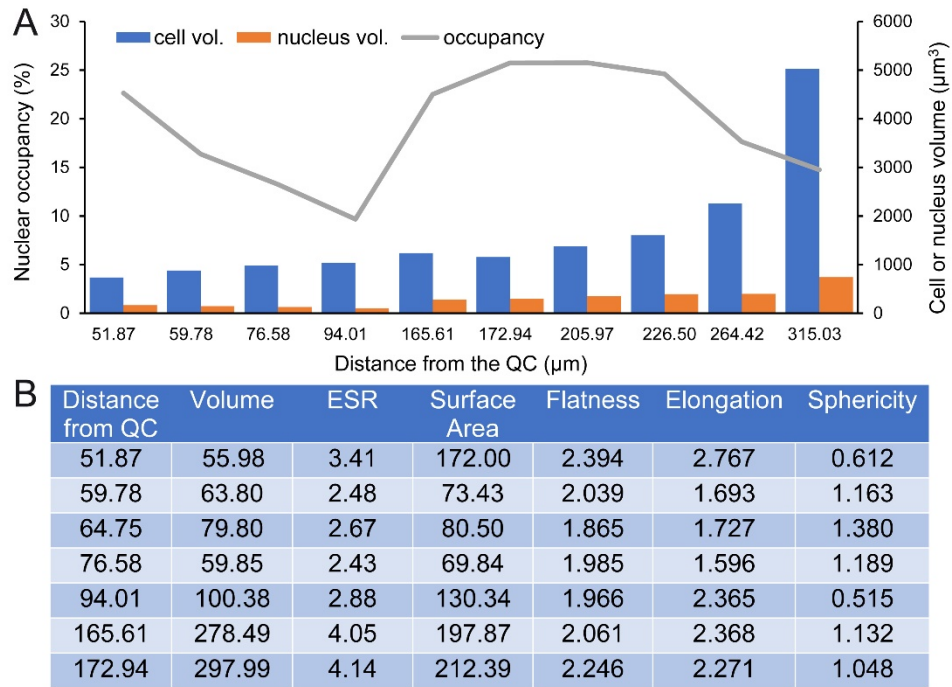
**Figure S3. Analysis of the cell cycle events in the mature part of the plants.** (A) Mature region of an Arabidopsis PR with *de novo* induction of a LR. Red: nuclei staining with DAPI; green: EdU staining; blue arrow: pericycle; white arrow: vascular cells. (B) Mature region of a PR in alfalfa. Blue: cell border staining with calcofluor white; magenta: nuclei staining with PI; green: EdU; C2 and P: DNA replication in cortex 2 and pericycle, respectively. Scale bars: 50  $\mu\text{m}$ .

**Figure S4**



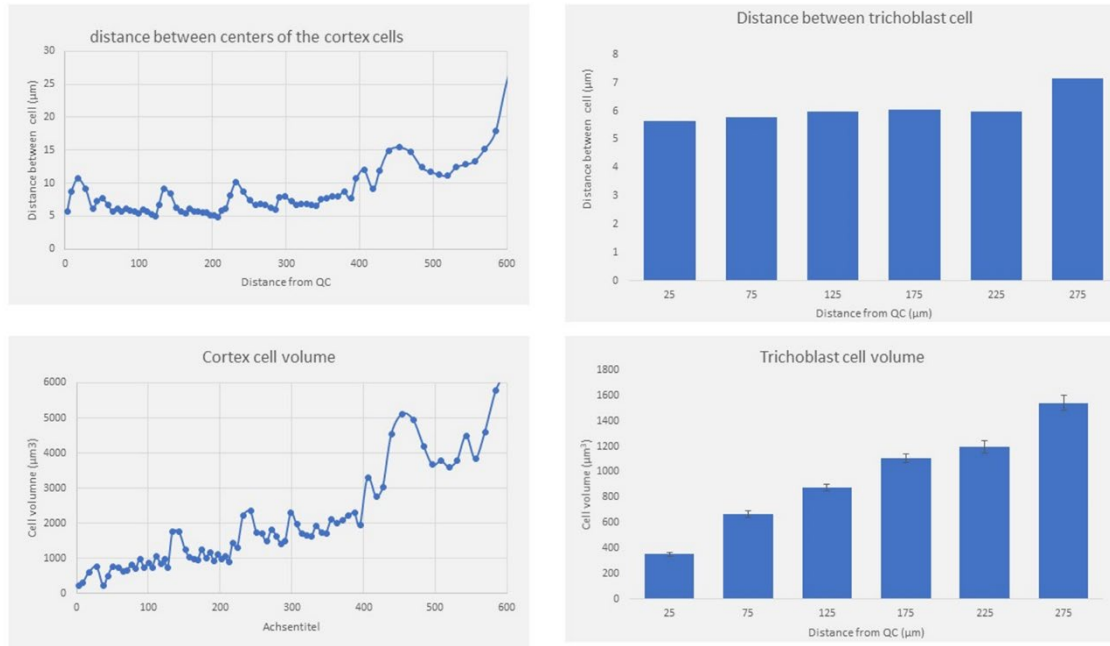
**Figure S4. Vascular analysis in Arabidopsis and foxtail millet PRs.** (A) Virtual 3D image of an Arabidopsis the PR; top: cross section, bottom: longitudinal section. (B) 3D render after segmentation. (C) Cell volume distribution along the longitudinal axis in different tissues: procambium and phloem, blue; metaxylem, orange; protoxylem, grey.

**Figure S5**



**Figure S5. Chromatin parameters and nuclear occupancy in RAM and TZ of *Arabidopsis* atrichoblast cells in the PR.** (A) Cell volume (blue bars); nuclei volume (orange bars) and cell volume/nuclei volume ratio (line). (B) Parameters of individual nuclei extracted by NucleusJ2.0 plugin (Dubos et al., 2020).

**Figure S6**



**Figure S6. Length and volume distribution in epidermal cells.** (A) Average distance between cells in the virtual 50  $\mu\text{m}$  sections of the Arabidopsis PR. (B) Average volume in the same sections. In the trichoblast/atrichoblast (and less in cortex) cell volume was continuously increasing; e.g., cell volume of G1 cells at 25  $\mu\text{m}$  is 3 time smaller as cell volume of G1 cells at 200  $\mu\text{m}$  from QC, while cell length remained constant.