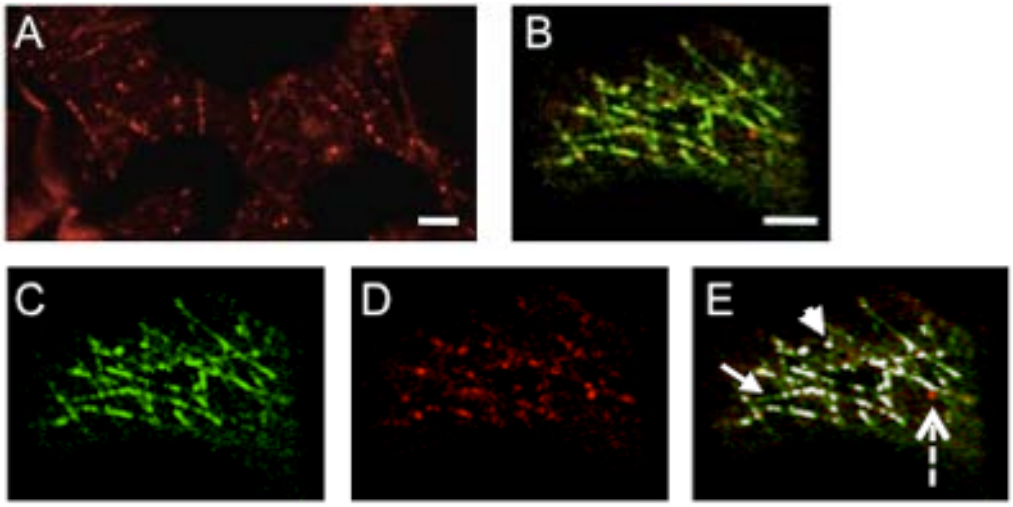
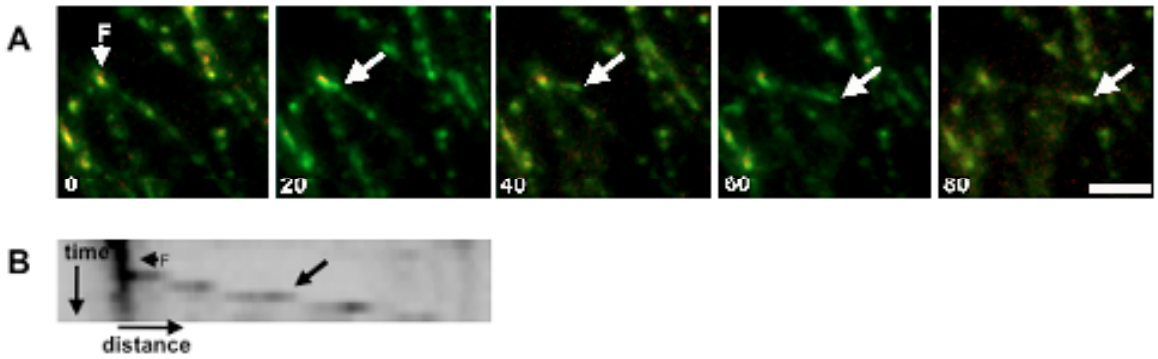


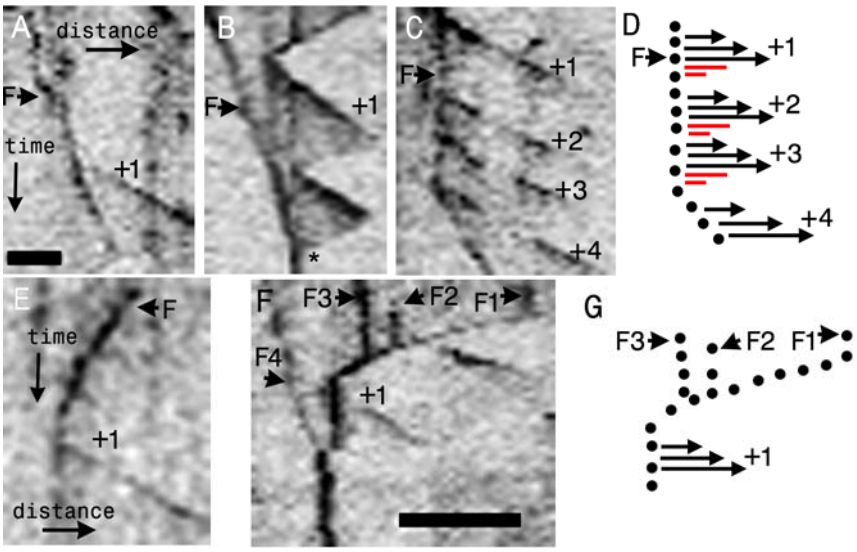
Supplemental Figure 1: AtEB1a-GFP foci co-localize with spots of NEDD1-RFP along microtubules

(**A**) Cortical plane of a leaf epidermal cell (*N. benthamiana*) transiently expressing NEDD1-RFP alone. (**B**) Cortical view of *N. benthamiana* leaf epidermal cell co-expressing EB1a-GFP and NEDD1-RFP. (**C and D**). The separated green and red channels from (B). (**E**) A co-localization map was obtained using the ImageJ plugin "Colocalization Finder"; this shows that some EB1a-GFP and NEDD1-RFP co-localize (white spots and arrowhead) at foci along microtubule bundles. Some EB1a-GFP foci (arrow) and NEDD1-RFP spots do not co-localize (dashed arrow). Scale bars A = 10 μm, B = 5 μm. The scale bar in B applies for C-E.



Supplemental Figure 2: Microtubules emerge from foci double-labelled with AtEB1a-GFP and NEDD1-RFP

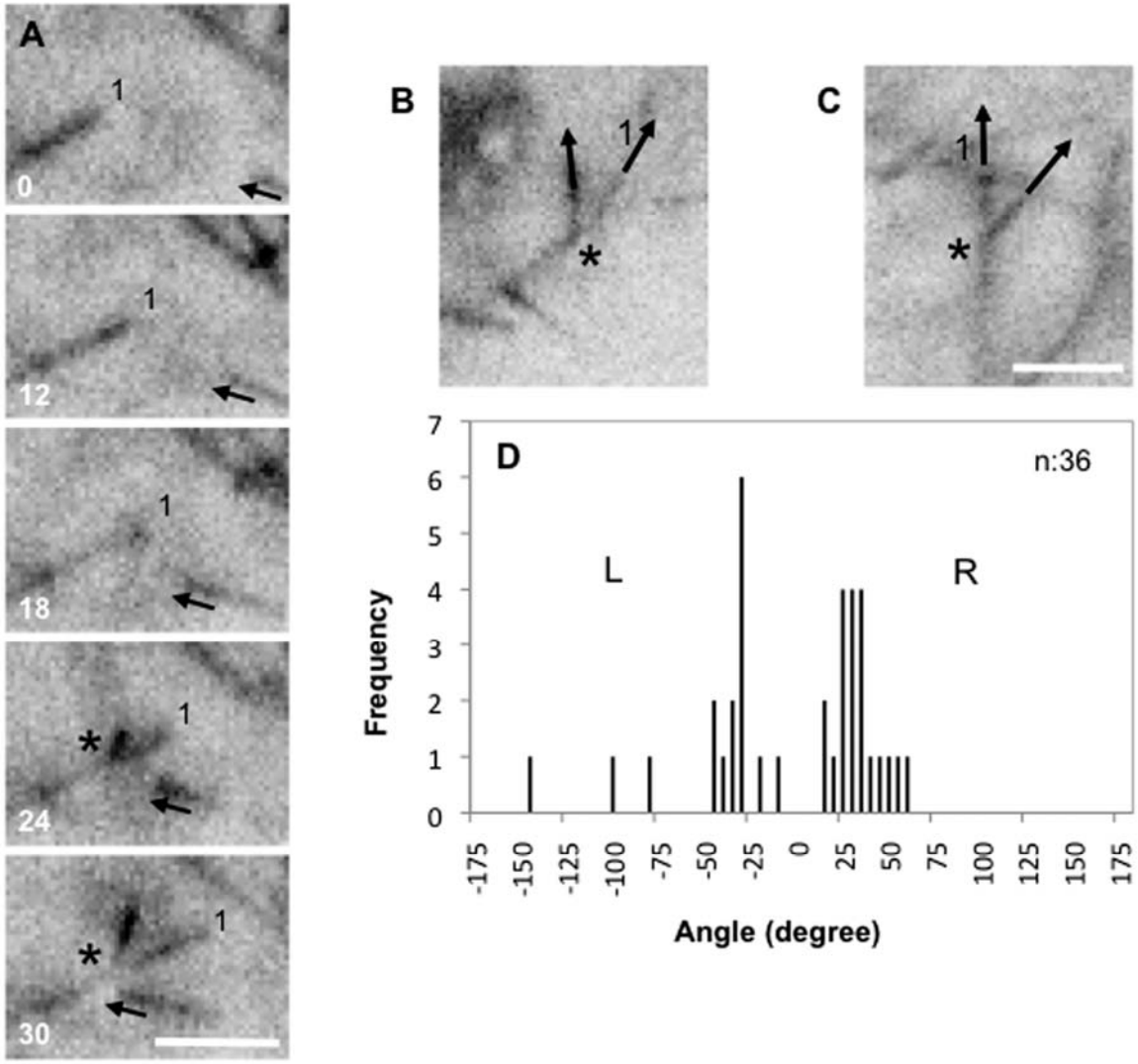
(A) Frames from a time-lapse series showing the emergence of a single microtubule (arrow) from a focus (F) that is doubly-labelled with EB1a-GFP and NEDD1-RFP (and is, hence, yellow) in a leaf epidermal cell (*N. benthamiana*) **(B)** Kymograph analysis along the axis of the microtubule (arrow) emerging from the focus (F), shown in panel A. Scale bar A = 2 μm. Time is indicated in seconds.



Supplemental Figure 3. Plus- and minus end directed movements of cortical sites of microtubule emergence.

(**A**) Kymograph showing a focus (F) displaying plus end-directed motility as a comet (+1) is initiated from it. (**B**) A focus (F) moving towards the plus end of a microtubule undergoing catastrophe and rescue (+1). Note the plus-end eventually depolymerises back to the line marking the focus (asterisk). (**C**) A focus that displays multiple initiations of comets (+1-4) then moves towards the growing plus ends as shown by change of slope of the focus line. (**D**) A schematic showing the events in (C). Key: the focus F is marked by a black dot, a growing microtubule by the arrow, and a red line denotes a depolymerising microtubule. **(E)** A focus (F) is moving in the opposite direction to the AtEB1a-GFP comet (+1) that subsequently emerges from it. This is therefore interpreted as minus end motility of the focus. Note that the focus then becomes stationary after microtubule growth. (**F**) Multiple foci (F1-4) move in a minus-end direction (as in E) and gather to become a single focus during microtubule depolymerization. Note a comet (+1) initiates from the focus following the gathering of foci 1-3. **(G)** A schematic showing the events in (F). Key: the focus F is marked by a black dot, a growing microtubule by the arrow, and a line without an arrowhead denotes a depolymerising microtubule. Scale

bars: A-C: x-axis = 2 μm, y-axis = 50 sec ; E-F: x-axis = 5 μm, y-axis = 114 sec. The scale bar shown in A applies to B and C. The bar in F applies to E.



Supplemental. Figure 4: Microtubules branch to left and right in ProSPR1:SPR1-GFP plants

(**A**) Time-lapse series showing the emergence of a single microtubule (asterisk) from a mother microtubule (1) growing into an empty area. Note that the second microtubule marked with an arrow is not branching from microtubule 1 but growing towards it. Scale bar = 3 µm. Time in seconds. **(B)** Projection showing a microtubule branch to the left of a mother microtubule (1) from a branch point (asterisk). (**C**) Projection showing a microtubule branch in the opposite direction, towards the right of the mother microtubule (1). **(D)** Frequencies of branching

angles relative to the axis defined by the plus end of the mother microtubule. Note that microtubules predominantly show forward-facing branching. Scale bar = 3 μm.