

**Supplemental Movie 1.** Nucleation of new MTs on extant cortical MTs in a control pavement cell expressing GFP-TUB6. Two nucleation sites are indicated by an arrowhead and an arrow with respective microtubule-branching angles of  $39.7^\circ$  and  $41.6^\circ$ . The polymerizing plus ends of the newly-born MTs are highlighted by 1 and 2, respectively. Scale bar =  $2.5\ \mu\text{m}$ .

**Supplemental Movie 2.** Nucleation of new MTs on extant cortical MTs in an amiR-GCP4 pavement cell expressing GFP-TUB6. The two nucleation sites are indicated by an arrowhead and an arrow with respective microtubule-branching angles of  $14.0^\circ$  and  $30.6^\circ$ . The polymerizing plus ends of the newly-born MTs are marked by 1 and 2, respectively. Scale bar =  $2.5\ \mu\text{m}$ .