

**Supplemental Movies.** Time course of Ws (SM1) and *mar2-1 arg1-2* (SM2) roots following 90° reorientation. In both genotypes, plastids settle to the new bottom of the central columella cells over the course of the movies. The first frame of Ws (SM1) was captured 75 seconds after reorientation. The first frame of *mar2-1 arg1-2* was captured 61 seconds after reorientation. 10 seconds elapse between frames.