Supplemental Movie Legends

Supplemental Movie 1. Actin Filament Dynamics in a Growing Wild-Type Pollen Tube.

Short fine actin filaments are visible in the wild-type pollen tube tip. This movie corresponds to the image in Figure 3D. Images were captured every 30- s for 10 min and were compressed into an AVI movie.

Supplemental Movie 2. Actin Filament Dynamics in a Growing *map18* Pollen Tube.

Actin cables protrude into the apical region and lack short fine actin filaments in the *map18* mutant. This movie corresponds to the image in Figure 3E. Images were captured every 30 s for 10 min and were compressed into an AVI movie.

Supplemental Movie 3. Actin Filament Dynamics in a Growing *MAP18 OX* Pollen Tube.

In the apical region of a *MAP18 OX* pollen tube, excessive fine actin structures were observed in scattered patterns in the tip. This movie corresponds to the image in Figure 3F. Images were captured every 30 s for 10 min and were compressed into an AVI movie.

Supplemental Movie 4. Time-Lapse Series of Actin Filament Severing Following the Addition of 10 nM GST-MAP18 in the presence of 50 μM Ca^{2+}.

This movie corresponds to the time-lapse series in Figure 4Q. Images were captured every 20 s for 10 min and were compressed into an AVI movie.

Supplemental Movie 5. MAP18 Associates with the Apical Plasma Membrane When Pollen Tube Growth Slows or Stops.

The MAP18-eGFP fluorescence signal was detected initially at the apical

plasma membrane, but disappeared once pollen tube growth resumed. This movie corresponds to the time-lapse series in Supplemental Figure 6B. Images were captured every 5 s for 25 min and were compressed into an AVI movie.