SUPPLEMENTARY MATERIAL

Supplementary video file S1. Pollen tube interaction with the synergid cell in an *in vitro* guidance assay, example 1. Time-lapse imaging of DsRed-tagged pollen tubes entering the ovule and traveling within the ovule before approaching the GFP-tagged synergid cell within the female gametophyte. Left video, time-lapse images captured in the red and green channels. Right video, time-lapse images captured in the green channel only. The time elapsed between frames is 10 minutes (indicated on the top left hand corner of each movie). In this example, the pollen tube arrives at the synergid cell at 120 minutes and synergid degeneration initiates at 200 minutes.

Supplementary video file S2. Pollen tube interaction with the synergid cell in an *in vitro* guidance assay, example 2. Time-lapse imaging of DsRed-tagged pollen tubes entering the ovule and traveling within the ovule before approaching the GFP-tagged synergid cell within the female gametophyte. Left video, time-lapse images captured in the red and green channels. Right video, time-lapse images captured in the green channel only. The time elapsed between frames is 10 minutes (indicated on the top left hand corner of each movie). In this example, the pollen tube arrives at the synergid cell at 30 minutes, synergid degeneration initiates at 330 minutes (note the change in cell volume, indicated by a black star next to the synergid cell in the left movie), and pollen tube discharge occurs at 350 minutes. Pollen tube discharge occurs ~20 minutes after the synergid cell has begun to degenerate.

Supplementary video file S3. Pollen tube interaction with the synergid cell in an *in vitro* guidance assay, example 3. Time-lapse imaging of DsRed-tagged pollen tubes entering the ovule and traveling within the ovule before

approaching the GFP-tagged synergid cell within the female gametophyte. Left video, time-lapse images captured in the red and green channels. Right movie, time-lapse images captured in the green channel only. The time elapsed between frames is 10 minutes (indicated on the top left hand corner of each movie). After arriving at the synergid cell, the pollen tube continues to elongate near the synergid cell. In this example, the pollen tube grows perpendicular to the synergid cell, extending one (110 minutes frame) or two times (190 minutes frame) around the synergid cell.

Supplementary video file S4. Pollen tube interaction with the synergid cell in an *in vitro* guidance assay, example 4. Time-lapse imaging of DsRed-tagged pollen tubes entering the ovule and traveling within the ovule before approaching the GFP-tagged synergid cell within the female gametophyte. Left video, time-lapse images captured in the red and green channels. Right video, time-lapse images captured in the green channel only. The time elapsed between frames is 10 minutes (indicated on the top left hand corner of each movie). In this example, the pollen tube arrives at the synergid cell at 180 minutes and synergid degeneration initiates at 220 minutes (reduction in GFP signal from the lower right hand corner of the GFP-marked synergid) and completes at 240 minutes (note the reduction in GFP signal and cell volume). Subsequently, the pollen tube extends parallel to the synergid cell.