

Supplementary data:

Figure S1: Transcription profile of Arabidopsis myosin family members according to Genvestigator in arbitrary units.

Figure S2. The subcellular localization of eGFP-IQ-tail fusions of all Arabidopsis myosins in *N. benthamiana* leaf epidermal cells.

Figure S3: (A-D) - Comparative subcellular localization of mRFP-tail and eGFP-IQ-tail myosin fusions in *N. tabacum*. mRFP-myosin tail (magenta, myosin-T) and eGFP-myosin IQ tail (green, myosin-IQT) fusions were coexpressed in *N. tabacum* leaf epidermal cells. The merged image indicates that the majority of the tail and IQtail fusions of the same myosin gene collocate to the same subcellular structures (white). Scale bar = 5 μm .

Figures S4: Subcellular localization of IQ-tail inhibitory myosin truncations compared to Golgi and mitochondria localization. eGFP-myosins and mRFP organelle markers were co-expressed in leaves of *N. benthamiana*. The panel shows confocal images of both fluorescent proteins, 48 hours after infiltration, in abaxial epidermal cells. None of the inhibitory myosins co-localized solely with the organelles whose motility is arrested. Blue is autofluorescence from plastids.

Table 1: Statistical analysis (Scheffe test) of the data obtained from displacement rate analysis for Golgi bodies and mitochondria in the presence of all Arabidopsis myosins in the two plants; *N.t.* and *N.b.*.

Supplemental movie1. Motility of Golgi bodies in the presence of Arabidopsis myosin tail fusions in *N. tabacum*. Scale bar 2 μm .

Supplemental movie 2. Motility of Golgi bodies in the presence of Arabidopsis myosin IQ-tail fusions in *N. benthamiana*. Scale bar 10 μ m.

Supplemental movie 3. Motility of mitochondria in the presence of Arabidopsis myosin IQ-tail fusions in *N. benthamiana*. Scale bar 6 μ m.

Supplemental movie 4. Motionless Golgi bodies in the presence of moving Arabidopsis MYA1 and MYA2 eGFP-IQ-tail particles in *N. benthamiana*. Scale bar 8 μ m.