Movie 1

Time-lapse confocal movie of mitochondria in *Xenopus laevis* melanophores. (a) Channels 1 (in green, microtubules) and 2 (in red, mitochondria) merged. (b) Channel 2 showing mitochondria and Jfilament tracking overlapped. Mitochondrion preserved shape during experiment.

Image size = 128 x 128 pixels
Pixel size = 0.082 μm
Movie duration = 100 frames = 50.6 s
Time per frame = 0.51 s
Mitochondrion's length= 2.3μm

Movie 2

Time-lapse confocal movie of mitochondria in *Xenopus laevis* melanophores. (a) Channels 1 (in green, microtubules) and 2 (in red, mitochondria) merged. (b) Channel 2 showing mitochondria and Jfilament tracking overlapped. Mitochondrion switches from smile- to rod-like shape and displays a processive motion.

Image size = 128 x 128 pixels
Pixel size = 0.082 μm
Movie duration = 50 frames = 25.06 s
Time per frame = 0.51 s
Mitochondrion's length= 3.3μm

Movie 3

Time-lapse confocal movie of mitochondria in *Xenopus laevis* melanophores. (a) Channels 1 (in green, microtubules) and 2 (in red, mitochondria) merged. (b) Channel 2 showing mitochondria and Jfilament tracking overlapped. Mitochondrion switches from snake- to smile-like and then to rod-like shape.

Image size = 256 x 256 pixels
Pixel size = 0.055 μm
Movie duration = 100 frames = 164.3 s
Time per frame = 1.66 s
Mitochondrion's length= 4.2 μm

Movie 4

Same as movie 3(a) representing time-lapse two-channels confocal movie of mitochondria (in red) and microtubules (in green) in *Xenopus laevis* melanophores. From 1.06 s to 2.14 s the orange dots indicate the tips of two polymerizing microtubules. Notice the deformation of the intercepting mitochondrion. From 2.17 s to 3.30 s a yellow dot shows

the region where a bunch of microtubules converge and display coupled motion. A nearby elongated mitochondrion deforms accordingly, suggesting a cross linking of this organelle with the microtubules.

Image size = 256 x 256 pixels
Pixel size = 0.055 μm
Movie duration = 100 frames = 164.3 s
Time per frame = 1.66 s

Movie 5

Time-lapse two-channels confocal movie of mitochondria (in red) and microtubules (in green) in *Xenopus laevis* melanophores. From 1.24 s to 2.18 s, green lines roughly indicate the orientation of two intercepting microtubules. At 1.34 s s a transported rod-like mitochondrion arrives to the interception and switches tracks. As a consequence, the organelle bends and changes to smile-like shape.

Image size = 256 x 256 pixels
Pixel size = 0.055 μm
Movie duration = 100 frames = 164.3 s
Time per frame = 1.66 s