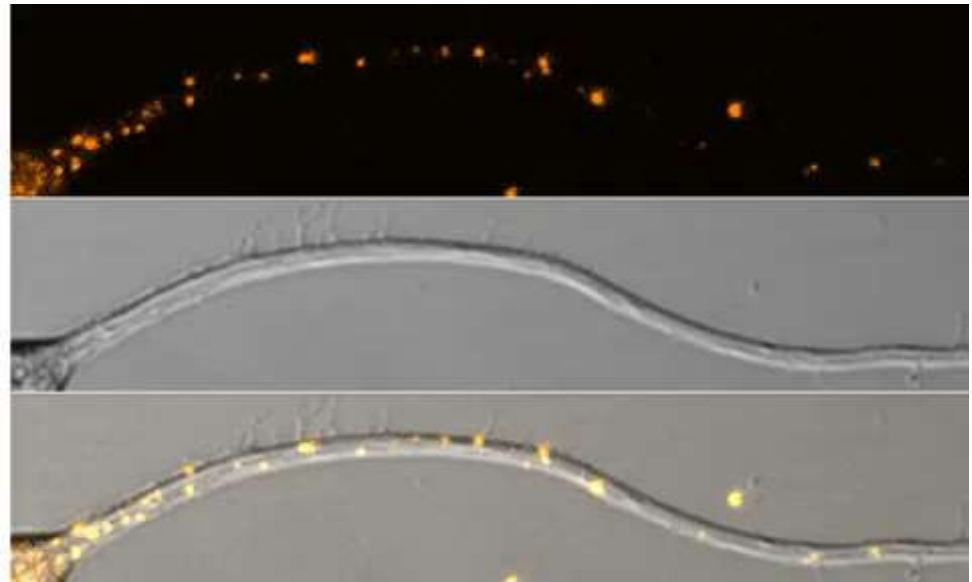


Directed Motion in the Cell



A fish keratocyte crawls rapidly using actin-based motility. Speeded up 30x.

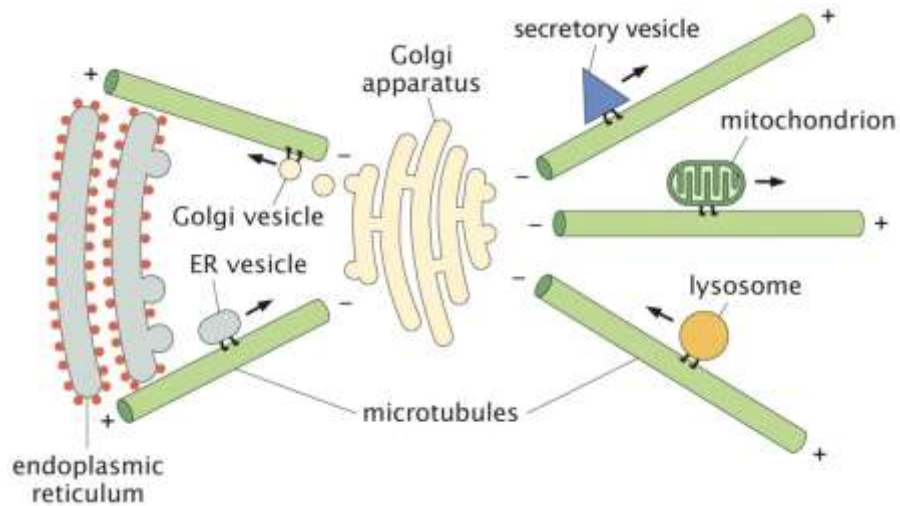
<http://www.youtube.com/watch?v=RTjYXBnMcgs>



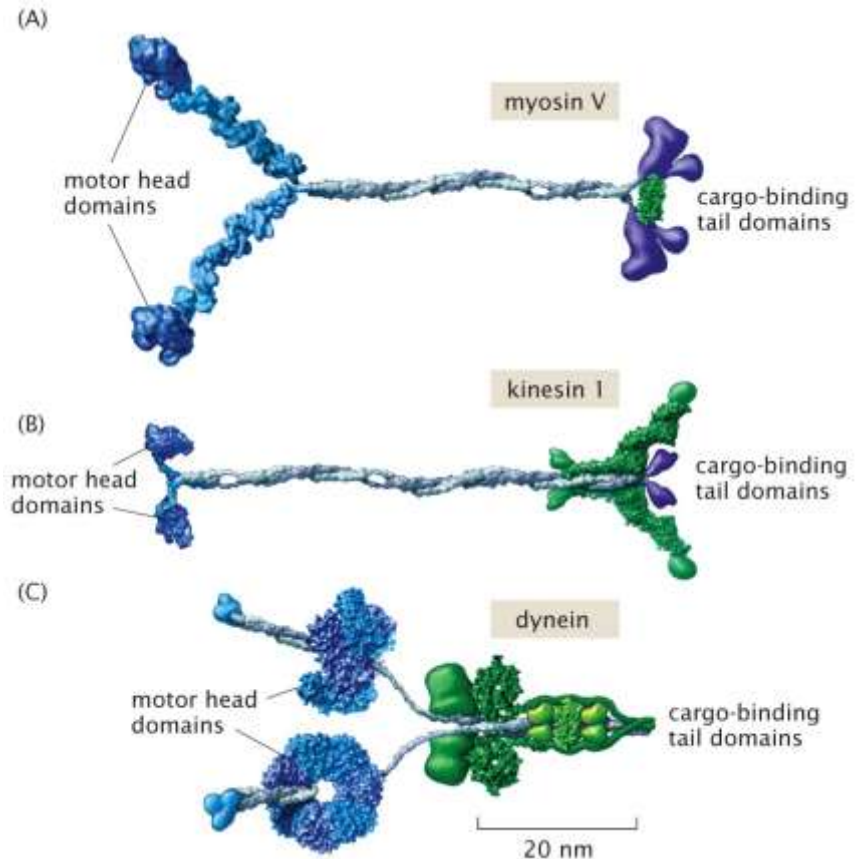
Vesicles trafficking along axon of chick dorsal root ganglia neuron.
(Upper) Fluorescent image of CM-Dil, (Middle) DIC image, (Lower) Merged image.

Goshima *et al.* J. Pharmacol. Sci. **114**: 168-79 (2010)

Translational Motors

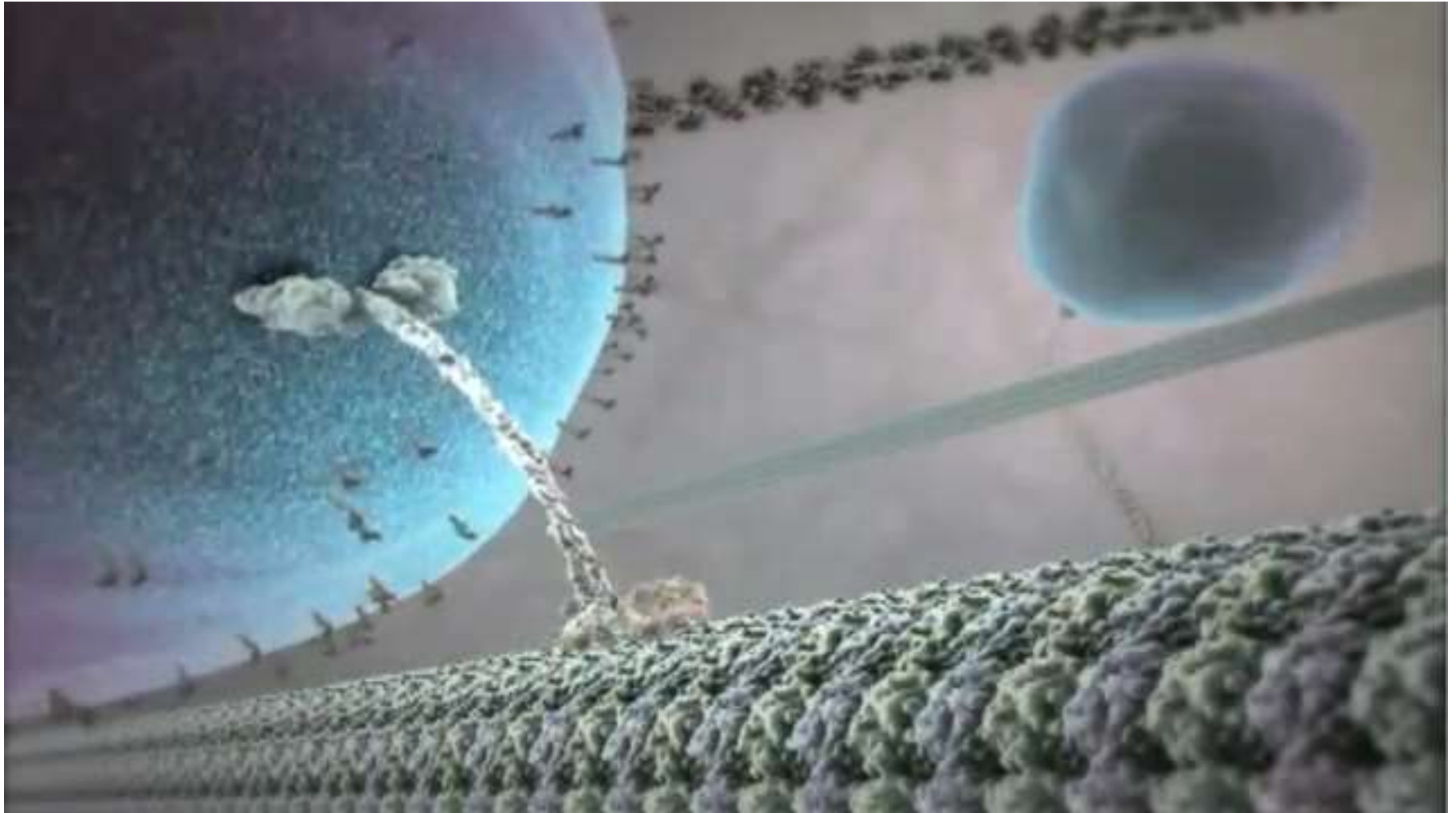


Hirokawa. Science **279** (1998)



Vale. Cell **112** (2003)

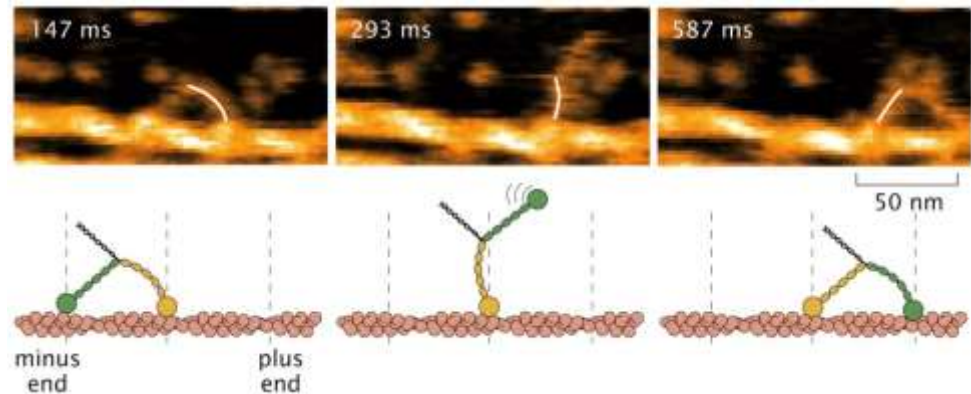
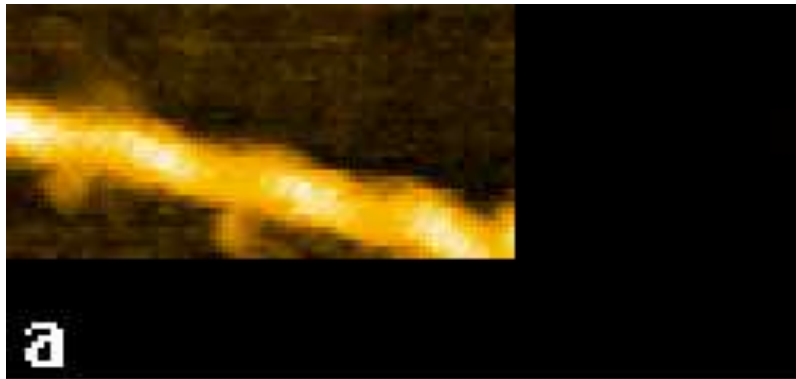
Translational Motors



Kinesin on microtubulus

<http://multimedia.mcb.harvard.edu/>
<https://www.youtube.com/watch?v=wJyUtbn0O5Y>

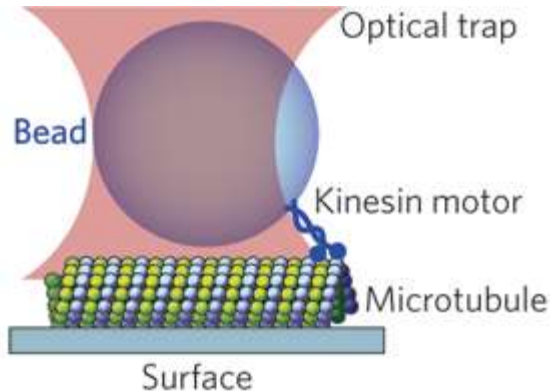
AFM Motor Protein Studies



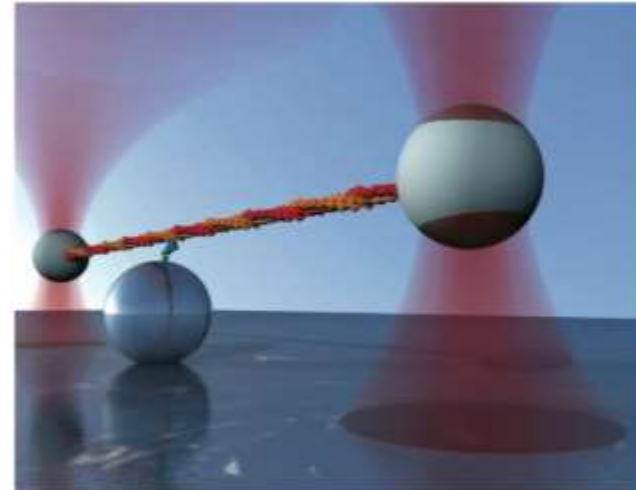
High-speed AFM video of myosin V on actin

Kodera *et al.* Nature **468** (2010)

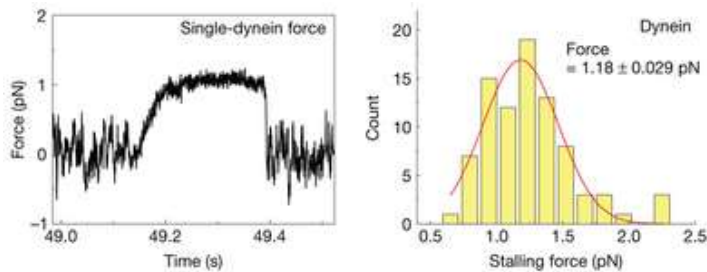
Optical Tweezer Motor Protein Studies



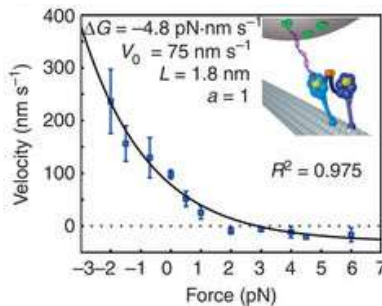
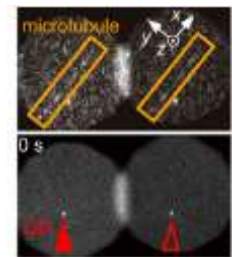
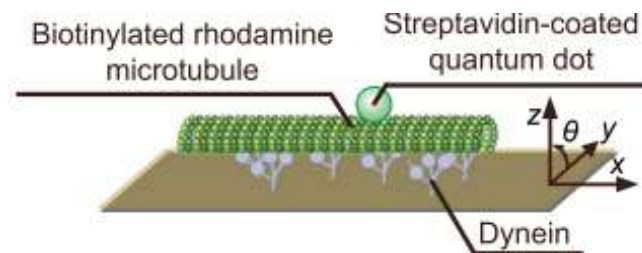
Fazal & Block. *Nature Photonics* 5 (2011)



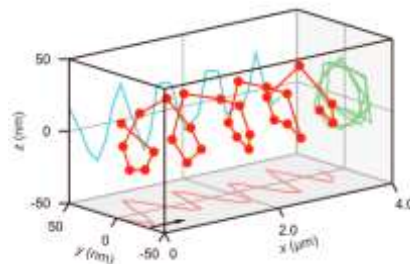
<http://www.nature.com/nmeth>



Tripathy *et al.* *Nature Cell Biology* **16** (2014)

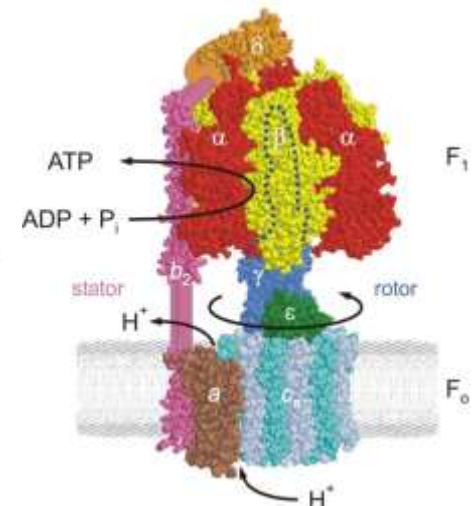
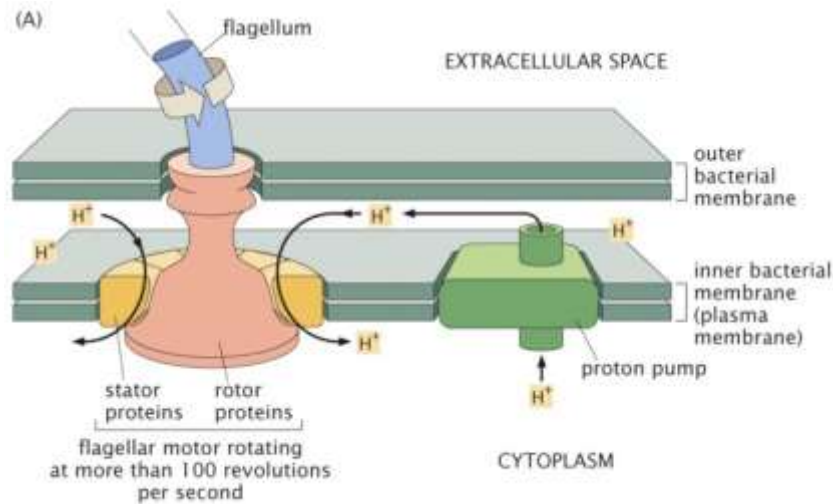
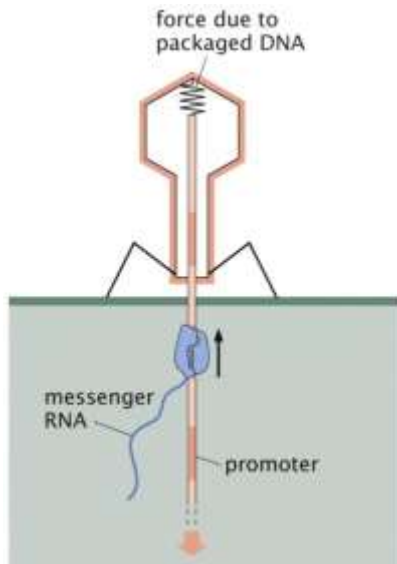
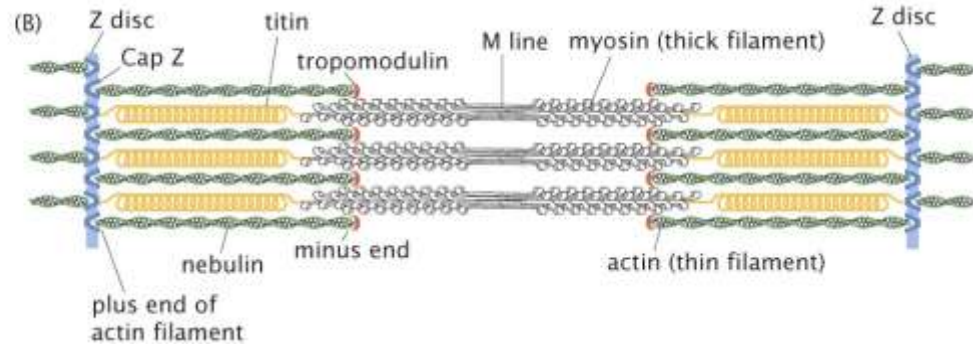
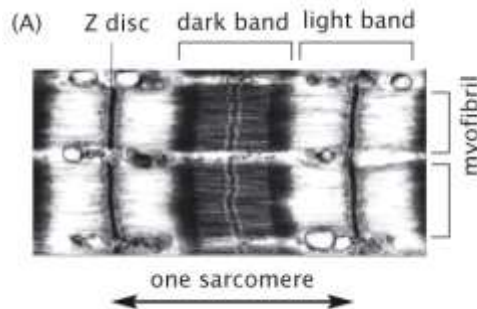


Belyy *et al.* *Nature Communications* **5** (2014)



Yamaguchi *et al.* *Biophys. J.* **108** (2015)

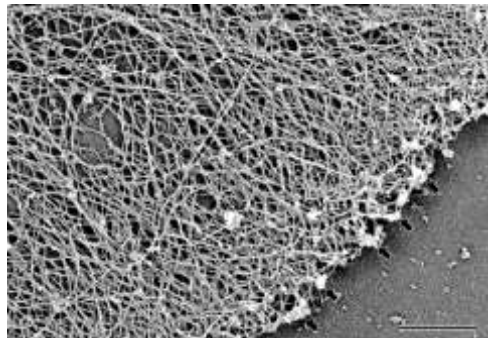
Motor Proteins



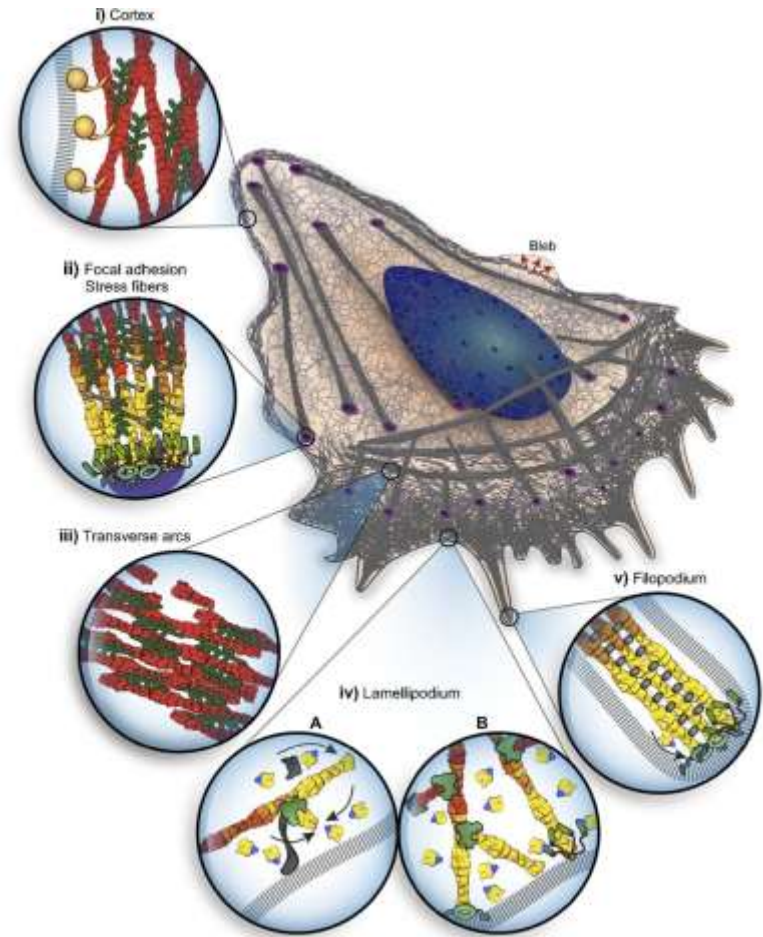
Basics of Cell Motility



<https://www.youtube.com/watch?v=2R7IYiuuL-E>

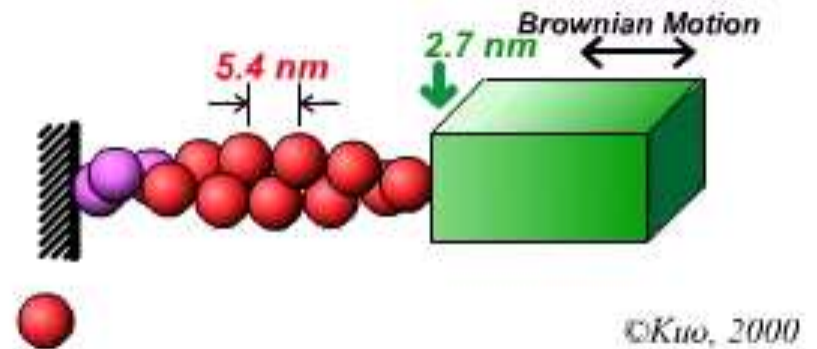
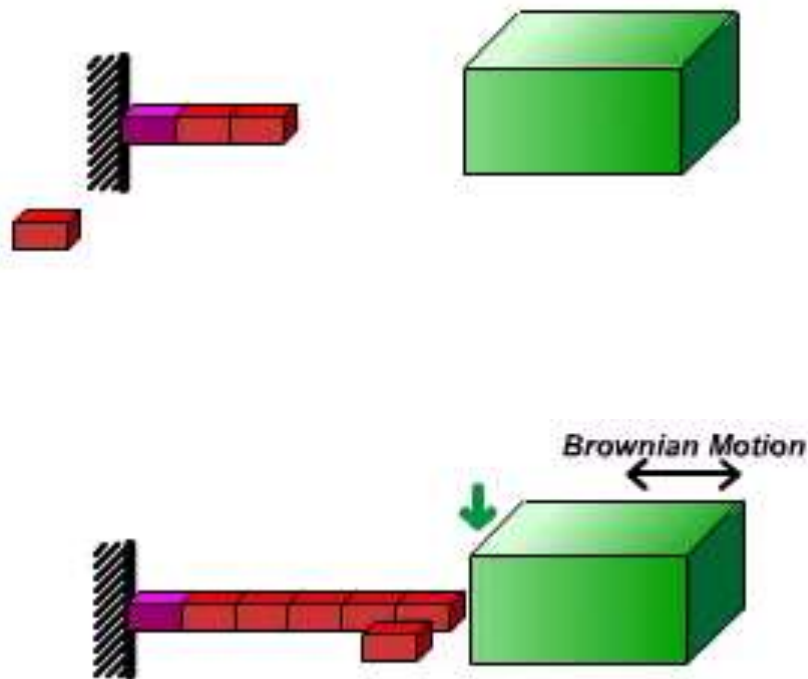


<http://scienceblogs.com/transcript/2006/07/26/actin-differentiation-through/>

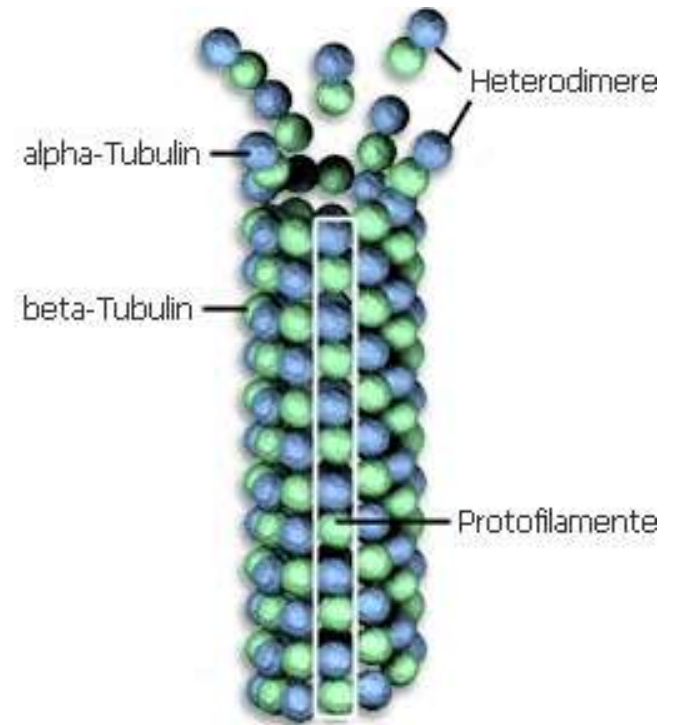
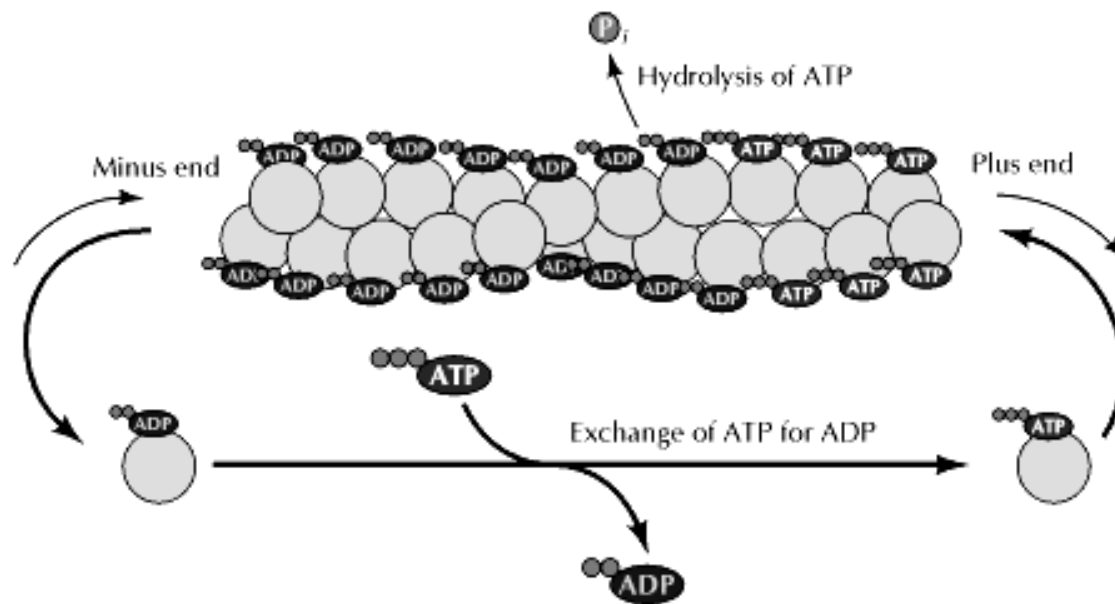


Blanchoin *et al.* Actin Dynamics, Architecture, and Mechanics in Cell Motility. *Physiol. Rev.* **94** (2014)
DOI: 10.1152/physrev.00018.2013

How can a polymer “push”?



Actin vs. Microtubuli



Forces by Polymerization of Cytoskeleton Filaments

