Actin and Myosin: I have a question regarding actin and I guess it now also applies to the microtubules. In class it was said that an actin with ATP has high affinity for the filament and will go to it. Then you wait a certain amount of time and if another one doesn't come, it will hydrolyze the atp, lose its affinity for the filament and fall off. What happens if another actin comes though. I know it would get trapped, but does it still hydrolyze its atp or will it stay as an atp?

Yes, soon after an ATP-bound G actin monomer is added to an F actin filament its ATP will be hydrolyzed. If it is not located directly on one of the ends, it will be stuck in the filament and cannot fall off. It would be problematic if the ATP bound to G actin was never hydrolyzed, since it would make it impossible for actin to depolymerize and the cell would not be able to adjust to rapidly changing conditions.

Unique solution ID: #2470
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Last update: 2014-01-03 19:56