QBiC SEMINAR

Speaker

Robert A. Cross, Ph.D.

Centre for Mechanochemical Cell Biology, Warwick Medical School

Date & Location

Friday, November 9, 2012
11:30 - 12:30

OLABB 1F Lounge
(6-2-3, Furuedai, Suita, Osaka 565-0874)
***There will be a video broadcast in CDB Bldg.A 2F Meeting Room S202**

Title

Neck linker docking controls the unbinding of kinesin from microtubules

Abstract

The neck linker docking reaction of kinesin is crucial for motility, but its exact role in the motor mechanism remains controversial. To elucidate, we engineered rewired kinesin monomers that can be tethered to surfaces via their N-terminal cover strands, leaving their C-terminal neck linkers mechanically disconnected. We find that both N-tethered and wild type C-tethered monomers drive plus-end-directed microtubule sliding and that in both connectivities, mutations that inhibit neck linker docking superactivate the kinesin ATPase and inhibit microtubule unbinding, producing drag in motility assays. Our data show that neck linker docking accelerates the unbinding of kinesin from microtubules and thus that the neck linker has the properties required to allow it to act as the controller for a biased unbinding mechanism.

Host

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