Unveiling Molecular Mechanisms of Kinesin-5

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***Short Abstract* — Molecular motor protein Kinesin-5 (Eg5) is a member of kinesin superfamily that is critical for bipolar spindle assembly and spindle maintenance during mitosis. As a result it is a promising chemotherapeutic target for cancer treatment. While a number of small-molecule drugs that interact with Eg5 have been identified, little is known about the molecular mechanisms by which they inhibit Eg5 function. Furthermore, multi-motor systems can exhibit qualitatively diverse behavior for different drugs, in some cases showing non-linear dependence of motor velocity on drug concentration. We study molecular mechanisms behind function of individual Eg5 and multi-motor systems involving it using computational modeling techniques. Besides apparent fundamental value this work has direct implications for clinical applications, where in depth understanding of Eg5-drug interaction is important.**

***Keywords* — Motor proteins, Kinesin-5, computational modeling.**

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