Structure of the Dynein Motor Domain

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Abstract:

Dyneins are motor proteins that power the beating of cilia and flagella, transport a large variety of intracellular cargos and play important roles in mitosis. I will discuss new crystal structures of the ring-shaped *S.cerevisiae* cytoplasmic dynein motor domain in different nucleotide states at 3.3 Å – 3.6 Å which provide novel insights into how the energy of ATP hydrolysis is used to produce movement. In all our structures the linker domain, the motile element which arches over the ring and moves in response to ATP-hydrolysis, is firmly attached to ring. We use mutagenesis and in vitro motility assays to verify the relevance of this state and combine our findings into a mechanistic model of the dynein motor domain.

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