

Modeling the Structure of the Kinesin-1 Light Chain Protein

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The light chain of the kinesin-1 motor protein is responsible for binding to macromolecules during intracellular transport. The light chain consists of tetratricopeptide repeat domains that contain helical and loop regions. The long range goal of this research is to investigate and potentially disrupt the interactions between the kinesin light chain and macromolecular cargo. By studying these interactions, it may be possible to harness the kinesin motor protein as a potential drug carrier. Likewise, by interrupting kinesin-cargo interactions it may be possible to hinder intracellular transport to prevent cell division, as in the case of tumor cells. The laboratory approach includes using molecular dynamics to predict the 3D structure of the TPR region of the *Drosophila melanogaster* kinesin light chain and an experimental component in which the protein will be cultured and studied using NMR.