Application of RNAi Technology and Fluorescent Protein Markers to Study Membrane Traffic in C. elegans

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RNA interference (RNAi) is a powerful tool to study the intracellular membrane transport and membrane organelle behavior in the nematode Caenorhabditis elegans. This model organism has gained popularity in the trafficking field because of its relative simplicity, yet being multicellular. C. elegans is fully sequenced and has an annotated genome, it is easy to maintain, and a growing number of transgenic strains bearing markers for different membrane compartments are available. C. elegans is particularly well suited for protein downregulation by RNAi because of the simple but efficient methods of dsRNA delivery. The phenomenon of systemic RNAi in the worm further facilitates this approach. In this chapter we describe methods and applications of RNAi in the field of membrane traffic. We summarize the fluorescent markers used as a readout for the effects of gene knockdown in different cells and tissues and give details for data acquisition and analysis.
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