CDB SEMINAR

Frieder Schock

Department of Biology, McGill University, Canada

Thursday, November 4, 2010

16:00~17:00 A7F Seminar Room

Integrin activation and cytoskeletal remodeling mediated by LIM domain proteins

Summary

Adequate cell-matrix adhesion is required for most developmental processes. Cell-matrix adhesion is largely mediated by heterodimeric integrin receptors, which link extracellular matrix proteins to the actin cytoskeleton. The strength of cell-matrix adhesion is regulated by inside-out integrin activation through talin binding to the β integrin cytoplasmic tail. Using an RNAi screen, we identified two LIM domain-encoding genes involved in integrin-mediated cell spreading in *Drosophila* S2R+ cells.

One gene is called *Zasp* and encodes a protein with PDZ and LIM domains. *Zasp* mutant embryos show muscle attachment defects consistent with a role for Zasp in inside-out integrin activation. Zasp directly interacts with both β integrin and talin, and overexpression of the talin head domain can partially suppress *Zasp* mutant phenotypes. Our data indicate that Zasp facilitates interaction of the talin head domain with the integrin cytoplasmic tail.

The second gene is called *Lasp* and is the only member of the nebulin family of actin-binding proteins in *Drosophila*. *Lasp* null mutants are viable, but are male sterile and exhibit muscle weakness. They have defects in myofibril assembly and in specialized integrin adhesion sites. We will report on Lasp's potential role in remodeling of the actin cytoskeleton.

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