

## ***Drosophila* Echinoid is an antagonist of Egfr signalling, but is not a member of the L1-type family of cell adhesion molecules**

Two recent articles published in *Development* describe the role of the *Drosophila* Echinoid (Ed) protein in R8 photoreceptor cell development and in Egfr signalling (Rawlins et al., 2003; Spencer and Cagan, 2003). Bai et al. first described Ed as an Ig-domain membrane protein and as an antagonist of Egfr signalling in the developing *Drosophila* eye (Bai et al., 2001). Both recent publications, which were highlighted in the 'In this issue' feature, speculate that Ed might be an L1-type cell adhesion molecule (CAM). Similar to L1-type proteins, Ed is a homophilic CAM (Islam et al., 2003), and both proteins are members of the Ig-domain superfamily. However, Ed is not part of the L1 family and has a different protein domain structure (usually six Ig- and five FNIII-protein domains for L1-type proteins versus seven plus two for Ed). Furthermore, Ed, as well as its *Drosophila* paralogue Fred (Chandra et al., 2003), has a strikingly different cytoplasmic domain and lacks the landmark ankyrin binding site of L1-type CAMs. The *Drosophila* genome contains only one L1-type gene, called *Neuroglian* (*Nrg*) (Hortsch, 2000). Interestingly, the *Nrg* protein is a heterophilic ligand of Ed and triggers the Egfr

antagonist activity of Ed in a synergistic manner (Islam et al., 2003).

### References

- Bai, J., Chiu, W., Wang, J., Tzeng, T., Perrimon, N. and Hsu, J. (2001). The cell adhesion molecule Echinoid defines a new pathway that antagonizes the *Drosophila* EGF receptor signaling pathway. *Development* **128**, 591-601.
- Chandra, S., Ahmed, A. and Vaessin, H. (2003). The *Drosophila* IgC2 domain protein friend-of-echinoid, a paralogue of echinoid, limits the number of sensory organ precursors in the wing disc and interacts with the Notch signaling pathway. *Dev. Biol.* **256**, 302-316.
- Hortsch, M. (2000). Structural and functional evolution of the L1-family: are four adhesion molecules better than one? *Mol. Cell. Neurosci.* **15**, 1-10.
- Islam, R., Wei, S.-Y., Chiu, W.-H., Hortsch, M. and Hsu, J.-C. (2003). Neuroglian activates Echinoid to antagonize the *Drosophila* EGF receptor signaling pathway. *Development* **130**, 2051-2059.
- Rawlins, E. L., White, N. M. and Jarman, A. P. (2003). Echinoid limits R8 photoreceptor specification by inhibiting inappropriate EGF receptor signalling within R8 equivalence groups. *Development* **130**, 3715-3724.
- Spencer, S. A. and Cagan, R. L. (2003). Echinoid is essential for regulation of Egfr signaling and R8 formation during *Drosophila* eye development. *Development* **130**, 3725-3733.

### Michael Hortsch

Department of Cell and Developmental Biology, University of Michigan, Ann Arbor, MI, USA  
(e-mail: hortsch@umich.edu)

Development 130, 5295  
© 2003 The Company of Biologists Ltd  
doi:10.1242/dev.00852