

nature REVIEWS

NATURE REVIEWS MOLECULAR CELL BIOLOGY

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Much of cell biology today seems to involve networks of intra- and intercellular interactions. Where once we might have thought in terms of pathways, it's becoming increasingly clear that, for a more complete picture, we now need to take into account the entire cellular street map.

At the heart of this map lie the myriad signal-transduction networks, aspects of which appear in several articles this month. On page 276, Steven Clark reviews the mechanisms behind cell signalling at the shoot meristem, while Gilroy and Trewavas (page 307) compare signal transduction in plants with that in animals, and ask whether plasticity and individuality might be the key to understanding complex plant responses.

The study of signalling networks — specifically at the plasma membrane — is one of the problems tackled by Steyer and Almers (page 268). They describe how technical advances have renewed interest in evanescent field fluorescence microscopy, allowing dynamic events at the plasma membrane to be studied more closely. And Thien and Langdon, on page 294, review how signals detected at the plasma membrane are transduced through Cbl, which specifically targets, and regulates the signalling of, activated tyrosine kinases.

There are other types of network too — vascular networks, for example, which are the subject of a review by Kari Alitalo and colleagues on page 257. Here they describe some of the molecular interactions behind angiogenesis and lymphangiogenesis in mice, focusing specifically on the Tie family of receptors and their ligands.

From plants to mammals, then, networks seem to be central to understanding intermolecular interactions. And as this cellular street map becomes more complex, the hope is that we will, in time, develop the tools to navigate it more accurately.



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