They propose that SCAR signalling induces formation of the dendritic actin network that underpins lamellipodia, and in response to additional signals this reorganizes to generate the actin bundles characteristic of filopodia.

**A life-saving prion?**

Misfolding of proteins causes several diseases, including cystic fibrosis and emphysema. Moreover, it prion diseases, such as BSE and CJD, this misfolding is infectious and thought to be transmitted by rogue proteins (prions) that impose their structure on the normal native protein. Chaperone proteins play a critical role ensuring that proteins do not misfold. The chaperone calnexin, for example, is essential for yeast survival. Luis Rokeach and co-workers now suggest that, bizarrely, a prion might allow cells to survive the otherwise disastrous consequences of protein misfolding in the absence of chaperones (see p. 907). They have isolated a yeast strain that can survive without calnexin. The genetic element responsible (Cif) displays non-Mendelian inheritance and can be transferred in cell extracts. Moreover, it is sensitive to protease treatment but not nucleases – all of which implicates a prion. Cif only seems to appear spontaneously in cells that contain a mutant form of calnexin that lacks the conserved central region. This non-functional calnexin chaperone might therefore titrate out a cellular factor that usually inhibits the structural change that converts Cif’s normal cellular counterpart into an infectious prion.

**Axonal transport: the phosphorylation connection**

The proteins that make up mammalian neurofilaments, a major constituent of the axonal cytoskeleton, are highly phosphorylated. Among other things, this is thought to regulate the transport of newly synthesized neurofilaments from the neuronal cell body to the axons, but the kinases involved are unclear. On p. 933, Thomas Shea and co-workers report that the serine/threonine kinase Cdk5 regulates phosphorylation and axonal transport of neurofilaments. They show that increased Cdk5 activity in cultured chicken dorsal-root-ganglion neurons (achieved by microinjection of Cdk5 and its activator p35 or by transfection of the Cdk5 and p35 genes) increases phosphorylation of the neurofilaments, causes abnormal thickening in the perikaryon, and reduces their axonal transport. Conversely, treatment of the cells with the Cdk5 inhibitor roscovitine reduces neurofilament phosphorylation and enhances their axonal transport. These findings indicate that Cdk5 regulates neurofilament dynamics. Since it is overactivated in amylotrophic lateral sclerosis, this might be one mechanism by which the motor neuron degeneration observed in this disorder arises.

**Sticky Wicket – designing experiments**

In a recent column, Mole used the question “What constitutes lunch?” to examine how we do science and, in particular, what questions we ask. Our insectivorous friend now takes things a stage further. On p. 801, he addresses the problem of designing experiments, taking issue with Karl Popper, kits and companies along the way.

**Development in press**

**Non-toxic role for aryl hydrocarbon receptor**

Aryl hydrocarbon receptors (AHRs) and their co-factor, aryl hydrocarbon receptor nuclear translocator 

(ARNT), are best known for their role in the mammalian response to environmental toxins. Huang and colleagues now suggest that they also play an important role in cell-fate determination. In a paper published in *Development*, they report that *ahr-1* and *aha-1*, the nematode orthologues of *AHR* and *ARNT*, specify GABAergic neuron cell fate in nematodes. GABAergic neurons use γ-amino butyric acid (GABA) as a neurotransmitter and regulate movements such as foraging behaviour. In nematodes, the four GABAergic neurons that innervate the head constitute two pairs – RMEL-RMER and RMED-RMEV – classified according to cell lineage and gene expression pattern. *ahr-1* is normally expressed in the RMEL-RMER neurons, but, in a mutant worm lacking functional *ahr-1*, the RMEL-RMER neurons become RMED-RMEV-like cells. Conversely, ectopic expression of *ahr-1* in RMED-RMEV cells converts them into RMEL-RMER cells. These results demonstrate that *ahr-1* functions as a cell-type-specific determinant, a function that the researchers show requires *aha-1*. [DOI 00959]