

Published online 5 September 2006. doi:10.1083/jcb.1746iti3

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The Journal of Cell Biology

In This Issue

Sizing up actin fences

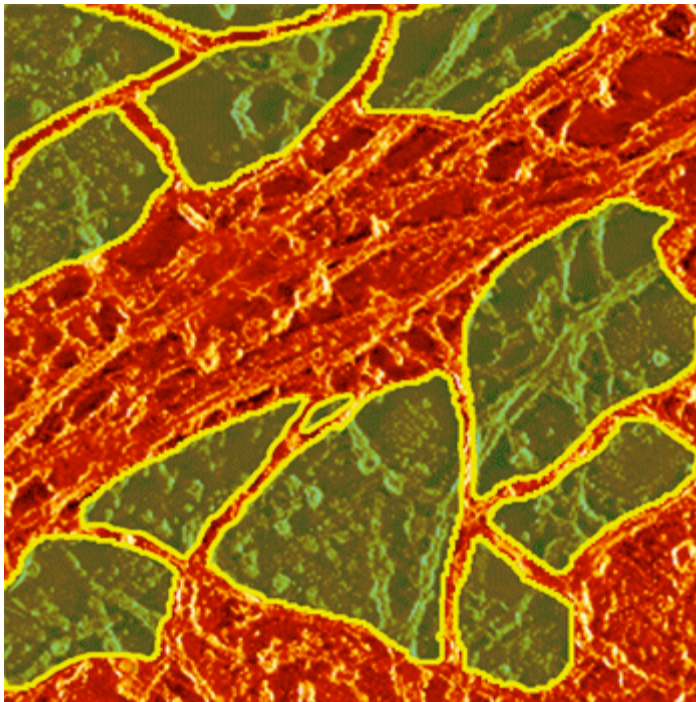
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An actin meshwork fences in areas (outlined in yellow) that are proposed to confine membrane molecules.

In some cell types, membrane molecules roam around in bigger fields than they do in others. Now, [Morone et al.](#) show that the size of their roaming area is set by the density of an actin cytoskeleton meshwork just beneath the plasma membrane.

This membrane-adjacent skeleton (or MSK) is revealed in fine detail by the authors' 3D reconstructions of large slices of the plasma membrane and its associated proteins. The images uncover a vast meshwork of mostly actin filaments lying within a nanometer of--and possibly directly against--the membrane. Gaps in the filamentous network occur only where caveolae, clathrin-coated pits, or surface membrane indentations lie.

The group also compared the distribution of mesh sizes in two cell types. A kidney fibroblast line had mesh holes that were almost five times larger than those of a keratinocyte. The sizes correspond well with previous measurements of the diffusion range of phospholipids and transmembrane proteins within those same two cell types.

The correlation lends credence to the picket fence model, which proposes that the actin network locally pens in membrane molecules, which occasionally move longer distances by hopping between compartments. Hopping might occur when actin filaments are briefly severed or dissociate from the membrane.

An estimated 25% of the MSK surface is bound by transmembrane proteins, which help to link the actin to the membrane. Corralling signaling proteins probably helps to localize a signaling response. Oligomerization of receptors upon ligand binding should make hopping even more difficult. **JCB**

Nicole LeBrasseur