IN BRIEF

METASTASIS

STAT3 promotes premetastatic niche formation

Deng *et al.* investigated whether signal transducer and activator of transcription 3 (STAT3), an oncogenic mediator of chemokine signalling, affects premetastatic niche formation. Activation of sphingosine 1-phosphate receptor 1 (S1PR1) causes persistent activation of STAT3, and the injection into mice of conditioned medium from tumour cells that overexpress S1PR1 induced premetastatic niche formation and STAT3 phosphorylation in the lung. *Stat3* or *S1pr1* ablation in myeloid cells prevented the formation of lung metastases, indicating that STAT3 activation at premetastatic sites promotes metastasis.

ORIGINAL RESEARCH PAPER Deng, J. *et al.* S1PR1-STAT3 signaling is crucial for myeloid cell colonization at future metastatic sites. *Cancer Cell* **21**, 642–654 (2012)

MIGRATION

To migrate or protrude

Culturing cells in three-dimensional (3D) matrices is a more accurate method of evaluating migratory properties than culturing cells on plastic (2D culture). However, 2D culture remains popular so Meyer *et al.* investigated which cell properties in 2D culture reflected an ability to migrate in 3D culture. Breast cancer cells cultured in 2D that had increased levels of membranous protrusions correlated with an ability to migrate in 3D culture, whereas migration in 2D culture did not.

ORIGINAL RESEARCH PAPER Meyer, A. S. *et al.* 2D protrusion but not motility predicts growth factor-induced cancer cell migration in 3D collagen. *J. Cell Biol.* 4 Jun 2012 (doi:10.1083/jcb.201201003)

SIGNALLING

Suppressing local disorder

This paper indicates that partial unfolding (disorder) within the amino-terminal-lobe dimerization interface of the kinase domain of the epidermal growth factor receptor (EGFR) restricts the capacity of the protein to form active dimers. The authors found that cancer-associated EGFR mutations distal to the dimerization interface suppress disorder within the interface and so promote dimerization and activity. Interestingly, phosphorylation of Tyr845 in the kinase domain also seems to suppress intrinsic disorder and promotes dimerization in the absence of ligand.

ORIGINAL RESEARCH PAPER Shan, Y. *et al.* Oncogenic mutations conteract intrinsic disorder in the EGFR kinase and promote receptor dimerization. *Cell* **149**, 860–870 (2012)

INVASION

An external role for RB?

The effects of loss of the tumour suppressor RB in cancer cells is well characterized, but this paper indicates that RB loss might also affect the stroma. Having found evidence that RB expression is lost in cancer-associated fibroblasts in oropharyngeal tumours, Pickard *et al.* examined the effect of RB-deficient stromal fibroblasts on the growth of transformed epithelial cells in three-dimensional cultures. These stromal cells increased the invasive growth of the epithelial cells. Further analyses indicated that this was in part through increased expression of keratinocyte growth factor, which promoted the expression of matrix metalloproteinase 1 by the transformed epithelial cells.

ORIGINAL RESEARCH PAPER Pickard, A. *et al.* Inactivation of RB in stromal fibroblasts promotes epithelial cell invasion. *EMBO J.* 29 May 2012 (doi:10.1038/emboj.2012.153)