IN BRIEF

THERAPY

Restoring expression of wild-type p53 suppresses tumor growth but does not cause tumor regression in mice with a p53 missense mutation

Wang, Y. et al. J. Clin. Invest. 1 Feb 2011 (doi:10.1172/JCI44504)

Restoring p53 expression in tumours that lack p53 induces tumour regression. So, Wang and colleagues investigated the effects of restoring p53 expression in tumours that express the p53-R172H mutant. The expression of p53 prevented the growth of tumours expressing p53-R172H in mice. However, the tumours did not regress, and the dominant-negative effect of the p53-R172H mutant limited the activity of p53. Therefore, p53 restoration in tumours expressing this mutant could prevent tumour progression.

■ GENOMIC INSTABILITY

Cut homeobox 1 causes chromosomal instability by promoting bipolar division after cytokinesis failure

Sansregret, L. et al. Proc. Natl Acad. Sci. USA 108, 1949–1954 (2011)

Sansregret and colleagues show that cut-like homeobox 1 (CUX1) activates a transcriptional programme that promotes the survival of tetraploid cells, which then develop genetic instability and become tumorigenic. The authors generated a CUX1-associated gene expression signature that predicted poor clinical outcome in 12 gene expression data sets of breast cancer. The signature could predict poor outcome in patients with low-risk and high-risk subtypes of breast cancer, thereby providing a useful means of stratifying patients.

CELL MIGRATION

Contractility of the cell rear drives invasion of breast tumor cells in 3D Matrigel

Poinclouxa, R. et al. Proc. Natl Acad. Sci. USA 108, 1943–1948 (2011)

Mechanisms of cancer cell motility in three-dimensional (3D) environments remain unclear. Renaud Poinclouxa \it{et} al. have now described a mechanism by which MDA-MB-231 breast cancer cells invade Matrigel with a rounded morphology through the activation of the GTPase RHOA, Rho-associated protein kinase 1 (ROCK1) and myosin II at the rear of the cell. Activation of this cascade generates traction forces that are transmitted to the matrix through F-actin and $\beta 1$ integrin, which drives propulsion and allows the cell to move.

■ MELANOMA

Eradication of melanomas by targeted elimination of a minor subset of tumor cells

Schmidt, P. et al. Proc. Natl Acad. Sci. USA 108, 2474-2479 (2011)

The authors tested the therapeutic efficacy of cytotoxic T lymphocytes engineered to target specific cell subpopulations within human melanoma xenografts. The injection of lymphocytes targeting the small proportion of cells expressing either of the putative cancer stem cell markers, CD20 or chondroitin sulphate proteoglycan 4 (CSPG4) resulted in eradication of most xenografts. By contrast, targeting a random 10% of cells, marked by forced expression of carcinoembryonic antigen, was ineffective. These results suggest a novel therapeutic approach and add to the current debate regarding the prevalence of cancer stem cells in melanoma.