IN BRIEF

TUMORIGENESIS

BOC's plot thickens

Mille *et al.* have shown that the sonic hedgehog (SHH) receptor BOC, which is required to form a functional complex with Patched (PTCH1), mediates medulloblastoma progression. The authors found that BOC is upregulated in medulloblastomas with activated SHH signalling. Inactivation of *Boc* in medulloblastoma mouse models reduced tumour size and progression. BOC increases cell proliferation by regulating levels of cyclin D1. BOC also promotes DNA damage, increasing the incidence of *Ptch1* loss of heterozygosity, which drives tumour progression.

ORIGINAL RESEARCH PAPER Mille F. *et al.* The Shh receptor Boc promotes progression of early medulloblastoma to advanced tumors. *Dev. Cell* http://dx.doi.org/10.1016/j.devcel.2014.08.010 (2014)

THERAPEUTICS

Delivered in a tea bag

Chung *et al.* have designed a therapeutic nanocarrier for drug delivery using compounds derived from epigallocatechin gallate (EGCG), an antioxidant found in green tea. The sequential self-assembly of the EGCG derivative with trastuzumab led to the formation of stable micellar nanocomplexes. The authors then added a protective shell of polyethylene glycol and EGCG. When injected in breast cancer xenograft mouse models, these nanocomplexes had greater tumour selectivity and reduction — and longer blood half-life — than free trastuzumab.

ORIGINAL RESEARCH PAPER Chung, J. E. *et al.* Self-assembled micellar nanocomplexes comprising green tea catechin derivatives and protein drugs for cancer therapy. *Nature Nanotechnol.* http://dx.doi.org/10.1038/nnano.2014.208 (2014)

IMAGING

Marking the boundaries

Failure to discern the margins of breast cancer adequately increases the likelihood of incomplete resection and risk of local recurrence. Desorption electrospray ionization mass spectrometry imaging (DESI-MSI) allows direct tissue analysis in terms of molecular distribution of proteins, lipids and metabolites with no sample preparation. Tumour tissue has different lipid distribution and abundance than normal tissue; a new study has shown that cancer margins can be delineated by characteristic lipid profiles obtained from DESI-MSI. Importantly, the cancer margins obtained by DESI-MSI were consistent with those obtained with standard histological staining.

ORIGINAL RESEARCH PAPER Calligaris, D. *et al.* Application of desorption electrospray ionization mass spectrometry imaging in breast cancer margin analysis. *Proc. Natl Acad. Sci. USA* http://dx.doi.org/10.1073/pnas.1408129111 (2014)

PROTEOMICS

Follow your heat

Drug–target interactions can be assessed through a cellular thermal shift assay (CETSA) that assesses changes in protein thermal stability. Savitski *et al.* have combined CETSA with quantitative mass spectrometry to determine the affinity of a drug for all its potential targets. They measured how binding of small molecules can change individual melting profiles of over 7,000 human proteins, and found, for instance, over 50 targets for the inhibitor staurosporine, known to bind a broad spectrum of kinases. Interestingly, drug treatment affected not only direct target proteins but also downstream effectors.

ORIGINAL RESEARCH PAPER Savitski, M. M. *et al.* Tracking cancer drugs in living cells by thermal profiling of the proteome. *Science* http://dx.doi.org/10.1126/science.1255784 (2014)