IN BRIEF

CANCER

Specific activation of microRNA-127 with downregulation of the proto-oncogene BCL6 by chromatin-modifying drugs in human cancer cells.

Saito, Y. *et al. Cancer Cell* **9**, 435–443 (2006)

Following the recent discovery that micro RNAs (miRNAs) have a role in cancer, Saito *et al.* show that several miRNAs are subject to epigenetic silencing in tumours and that their expression can be induced by chromatin-modifying drugs. The oncogene *BCL6* was found to be a direct target of miRNA-127, and was downregulated by activation of miRNA-127 induced by a DNA-demethylating agent and a histone deacetylase inhibitor. Regulation of miRNA expression by epigenetic treatment might be a novel strategy in anticancer drug development.

HUNTINGTON'S DISEASE

Cleavage at the caspase-6 site is required for neuronal dysfunction and degeneration due to mutant Huntingtin.

Graham, R. K. *et al. Cell* **125**, 1179–1191 (2006)

Huntington's disease is a devastating condition for which there is currently no treatment or cure. Hayden and co-workers have discovered the first molecular target for drug development in Huntington's disease. They show that the major pathology is caused by a specific toxic fragment of the molecule huntingtin, which is generated after specific cleavage of the huntingtin protein by caspase-6. Mice lacking this cleavage site are protected from the disease.

IMAGING

Photodynamic therapy agent with a built-in apoptosis sensor for evaluating its own therapeutic outcome *in situ*.

Stefflova, K. *et al. J. Med. Chem.* **49**, 3850–3856 (2006)

Functional photoacoustic microscopy for high-resolution and noninvasive *in vivo* imaging.

Zhang, H. F. *et al. Nature Biotechnol.* **24**, 848–851 (2006)

Two papers report advances in imaging technology that can be used to evaluate the effectiveness of drug treatment. The first is an elegant study in which the authors designed a probe that acts as a drug for photodynamic therapy of cancer but is also able to simultaneously detect apoptosis, and is capable thereby of measuring its own success at killing cancer cells. The probe consists of a photosensitizer that acts as the therapeutic modality and as a fluorescent label, and a fluorescence quencher that is bound to opposing sides of a caspase-3-cleavable peptide linker. Once this probe is activated by light in a cell, and if the damage is sufficient to initiate apoptosis (but insufficient to cause cell death), the subsequent activation of caspase-3 will cleave the quencher from the fluorescent label and the resulting fluorescence can be measured. The second paper describes an advance in the resolution of *in vivo* optical imaging for visualizing angiogenesis, melanoma and haemoglobin parameters in animals and humans. Existing methods to determine physiological status do not measure optical absorption of tissue directly and are unable to measure deeper than 1 mm below the tissue surface because of optical scattering. This paper describes a new technique called functional photoacoustic microscopy (fPAM) that detects absorbed photons ultrasonically through a so-called photoacoustic effect and enables spatial resolution beyond the 1-mm depth limit.