IN BRIEF

ANTIBACTERIAL DRUGS

Parallel pathways of kanamycin biosynthesis

Park *et al.* have discovered a new pathway for the biosynthesis of the widely used aminoglycoside antibiotic kanamycin. This pathway — which consists of two branches — contains previously unknown intermediates that are subject to further modification and lead to the independent production of kanamycin A and kanamycin B. Glycosyltransferase activity controlled the flux through the pathway and, importantly, the addition of other biosynthetic enzymes could be used to synthesize new antibiotics that are active against Gram-negative bacteria, including some resistant strains.

ORIGINAL RESEARCH PAPER Park, J. W. *et al.* Discovery of parallel pathways of kanamycin biosynthesis allows antibiotic manipulation. *Nature Chem. Biol.* **7**, 843–852 (2011)

CANCER

Targeting cytomegalovirus fights medulloblastoma

Medulloblastomas are the most common malignant brain tumours in children. This paper showed that a large proportion of primary medulloblastomas are infected with human cytomegalovirus (HCMV), and the virus directly modulates the expression of cyclooxygenase 2 (COX2) and levels of prostaglandin E_2 (PGE_2). A combination of the antiviral drug valganciclovir and the COX2 inhibitor celecoxib prevented HCMV replication in neuroblastoma cells, and it inhibited PGE_2 production and reduced medulloblastoma tumour growth in mice, implying that targeting HCMV is beneficial in medulloblastoma.

ORIGINAL RESEARCH PAPER Baryawno, N. *et al.* Detection of human cytomegalovirus in medulloblastomas reveals a potential therapeutic target. *J. Clin. Invest.* **121**, 4043–4055 (2011)

OBESITY AND DIABETES

A novel way of inhibiting a protein tyrosine phosphatase

Protein tyrosine phosphatase 1B (PTP1B) is an established target for diabetes and obesity but identifying drug-like PTP1B inhibitors has proved challenging. Haque *et al.* generated single-chain variable fragments of antibodies that stabilized the oxidized form of PTP1B and so inhibited its phosphatase function. Intracellular expression of the antibodies enhanced insulin-induced tyrosyl phosphorylation of the β-subunit of the insulin receptor and its substrate, and increased insulin-induced phosphorylation of AKT, suggesting that stabilization of the oxidized form of PTP1B could be a useful approach to design PTP inhibitors.

ORIGINAL RESEARCH PAPER Haque, A. *et al.* Conformation-sensing antibodies stabilize the oxidized form of PTP1B and inhibit its phosphatase activity. *Cell* **147**, 185–198 (2011)

ANTICANCER DRUGS

Redirecting alternative splicing

Signal transducer and activator of transcription 3 (STAT3) exists in two main isoforms: STAT3α and STAT3β. STAT3β is generated by alternative splicing, and its overexpression can induce apoptosis and inhibit tumour growth. This study used phosphorodiamidate morpholino oligomers to redirect STAT3 alternative splicing from STAT3α to STAT3β. This splicing switch was associated with a reduced viability of cancer cells and tumour regression in a xenograft model, highlighting that redirection of alternative splicing could be a novel approach for cancer therapy.

ORIGINAL RESEARCH PAPER Zammarchi, F. *et al.* Antitumorigenic potential of STAT3 alternative splicing modulation. *Proc. Natl Acad. Sci. USA* **108**, 17779–17784 (2011)