IN BRIEF

ANTICANCER DRUGS

A small-molecule inhibitor of BCL6 kills DLBCL cells *in vitro* and *in vivo*

Cerchietti, L. C. *et al. Cancer Cell* **17**, 400–411 (2010)

The *BCL6* transcription factor is the most common oncogene involved in diffuse large B-cell lymphoma (DLBCL). Cerchietti and colleagues used computer-aided drug design and functional assays to identify low-molecular-mass compounds that bind to the co-repressor binding groove of the BCL6 BTB domain. One compound disrupted BCL6–co-repressor complexes, induced expression of BCL6 target genes, and killed BCL6-positive DLBCL cell lines as well as primary DLBCL cells taken from human patients. Moreover, the compound suppressed DLBCL tumours in mouse xenograft models.

AUTOIMMUNE DISEASE

T helper type 1 and 17 cells determine efficacy of interferon-β in multiple scerosis and experimental encephalomyelitis

Axtell, R. C. *et al. Nature Med.* **16**, 406–412 (2010)

Although interferon-β is the main treatment for multiple sclerosis, it is not effective in many individuals. This paper showed that interferon-β can have opposing effects depending on the type of T helper (T_H) cell driving the disease. In mouse models, interferon-β reduced symptoms of experimental autoimmune encephalomyelitis that was induced by T_H1 cells but exacerbated disease induced by T_H17 cells. In patients with relapsing-remitting multiple sclerosis, a high concentration of the T_H17 cell cytokine interleukin-17F in the serum was associated with non-responsiveness to interferon-β.

KINASE INHIBITORS

Shaping development of autophagy inhibitors with the structure of the lipid kinase Vps34

Miller, S. *et al. Science* **327**, 1638–1641 (2010)

The phosphoinositide 3-kinase (PI3K) VPS34 has roles in autophagy, membrane trafficking and cell signalling. Miller and colleagues solved the crystal structure of VPS34 at 2.9 Å resolution, which revealed a constricted adenine-binding pocket, suggesting the reason why specific inhibitors of this class of PI3K have proved elusive. The structures of VPS34 in complex with several PI3K inhibitors provided clues as to how chemical structures of potential inhibitors could be modified to increase their specificity for VPS34, which may aid the development of modulators of autophagy.

PARASITE INFECTION

N-myristoyltransferase inhibitors as new leads to treat sleeping sickness

Frearson, J. A. *et al. Nature* **646**, 728–732 (2010)

This paper describes the validation of a molecular target and the discovery of associated lead compounds with the potential to address the lack of suitable treatments for African trypanosomiasis. Inhibitors of *Trypanosoma brucei* *N*-myristoyltransferase (TBNMT) killed trypanosomes *in vitro* and *in vivo*, and an orally available lead compound cured trypanosomiasis in mice. So, although the lead compound requires further optimization, TBNMT represents a promising novel target for sleeping sickness.