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# IN BRIEF

## ANTIVIRALS

### Topical therapy for ocular herpes

Nucleoside analogue-based drugs control herpes simplex virus type 1 (HSV-1) infection of the eye, but are limited by potential drug resistance and adverse effects. Jaishankar and colleagues report that the small-molecule TANK-binding kinase 1 (TBK1) inhibitor, BX795, suppresses HSV-1 infection in transformed and primary human cells, organ cultures of human and pig corneas, and in a mouse model of ocular HSV infection. This antiviral activity was mediated by an off-target effect, comprised of inhibition of AKT phosphorylation in infected cells, leading to blockade of viral protein synthesis.

**ORIGINAL ARTICLE** Jaishankar, D. et al. An off-target effect of BX795 blocks herpes simplex virus type 1 infection of the eye. *Sci. Transl Med.* **10**, eaan5861 (2018)

## IMMUNOTHERAPY

### iPSC-based cancer vaccine

Pluripotent cells share antigens with cancer cells, suggesting that they could be used to prime the immune system to target cancer. Here, Kooreman and colleagues report the development of a vaccine based on irradiated mouse induced pluripotent stem cells. Prophylactically, the vaccine inhibited tumour growth in mouse models of breast cancer, melanoma and mesothelioma. Used as an adjuvant therapy after tumour resection, the vaccine prevented tumour recurrence and reduced tumour load in draining lymph nodes in mice. Adoptive transfer models showed that the vaccine promoted an antigen-specific antitumour T cell response.

**ORIGINAL ARTICLE** Kooreman, N. G. et al. Autologous iPSC-based vaccines elicit anti-tumour responses in vivo. *Cell Stem Cell* https://doi.org/10.1016/j.stem.2018.01.016 (2018)

## SEPSIS

### Gut bacteria induce protective IgA

The mechanisms mediating serum immunoglobulin A (IgA) responses and their potential role in protective immunity remain unknown. Wilmore and colleagues show that members of the Proteobacteria phylum in the gut of mice promote a T cell-dependent increase in serum IgA and IgA-secreting bone marrow plasma cells. A recent study suggested that individuals with IgA deficiencies may be more susceptible to sepsis. Accordingly, transfer of proteobacteria-rich microbiotia to mice conferred serum IgA-mediated protection against sepsis.

**ORIGINAL ARTICLE** Wilmore, J. R. et al. Commensal microbes induce serum IgA responses that protect against polymicrobial sepsis. *Cell Host Microbe* https://doi.org/10.1016/j.chom.2018.01.005 (2018)

## INFECTIOUS DISEASE

### Virus-based tuberculosis vaccine

The bacille Calmette–Guérin vaccine can protect children from tuberculosis (TB), but is not effective in adults, probably owing to *Mycobacterium tuberculosis* (Mtb) manipulating human innate immune responses to enable persistent infection. A recent study reports a promising alternative vaccine approach — the use of cytomegalovirus vectors encoding Mtb antigen inserts. "Our approach works in a highly Mtb-susceptible species — rhesus monkeys — challenged with a highly pathogenic Mtb strain. For the first time, we saw a vaccine completely control Mtb challenge in a substantial proportion of vaccinated animals, such that the innate immune response to challenge was largely abrogated, and no granulomatous disease developed," notes Louis Picker, lead author of the study. The authors plan to refine the vaccine and further understand the mechanisms mediating protection.

**ORIGINAL ARTICLE** Hansen, S. G. et al. Prevention of tuberculosis in rhesus macaques by a cytomegalovirus-based vaccine. *Nat. Med.* **24**, 130–143 (2018)