was confirmed by selective perturbation of the hepatic sensory afferents to the left nodose ganglion not the dorsal root ganglion. Accordingly, left but not right vagal stimulation was essential for maintaining intestinal T<sub>reg</sub> cells and aldehyde dehydrogenase activity in APCs.

Genetic ablation of mAChR signalling by the parasympathetic neurotransmitter acetylcholine, but not abrogation of signalling by the sympathetic neurotransmitter noradrenaline, in intestinal APCs also reduced T<sub>reg</sub> cells in the colon. Accordingly, treatment with a mAChR agonist restored aldehyde dehydrogenase expression by APCs and colonic T<sub>reg</sub> cell frequency in HVx mice, which suggests that the liver–brain–gut reflex, independent of the sympathetic system, creates the intestinal T<sub>reg</sub> cell niche.

Finally, although HVx did not cause notable changes in gut microbiome diversity or composition, tonic microbial signals were required for functioning of the liver–brain–gut neural arc, as antibiotic-treated mice and Myd88-knockout mice did not develop worse colitis after HVx.

In summary, the liver–brain–gut neural arc — connecting the hepatic vagal sensory afferents, the brainstem, vagal efferents and enteric neurons to mAChR<sup>+</sup> APCs — serves as a feedback loop to protect the intestine from excessive inflammation.

Lucy Bird

In this preprint, Gallais et al. investigated humoral and cellular immune responses to SARS-CoV-2 in 9 index and 8 contact patients from 7 households. All index patients developed SARS-CoV-2-specific antibodies and T cells, with the responses directed against multiple structural and accessory proteins. However, none of the contact patients had detectable antibodies to SARS-CoV-2. Despite the lack of seroconversion, SARS-CoV-2-specific T cells were detected in 6 contact patients at similar frequencies to in index patients. This suggests that testing for SARS-CoV-2-specific T cells may be better than serological tests for assessing prior infection and immunity to SARS-CoV-2. However, further study is warranted to rule out cross-reactivity with prior coronavirus infections.

Lucy Bird

To confirm these findings in vivo, the authors used various FMF knock-in mice. Mice lack the B30.2 domain of human pyrin that contains the FMF mutations (including MEFV<sub>p.M680I</sub>). Therefore, the authors compared systemic Y. pestis infection in MEFV<sub>B30.2</sub> and MEFV<sub>M680I</sub> knock-in mice — they found that the latter showed significantly increased survival. By contrast, IL-1 receptor-deficient MEFV<sub>M680I</sub> mice were highly susceptible to Y. pestis infection. This indicates that FMF-associated mutant pyrin provides a survival advantage during Y. pestis infection that is mediated by the IL-1β signalling pathway.

Yvonne Bordon

In this preprint study of the RECOVERY clinical trial involving 6,425 hospitalized patients with COVID-19, Horby et al. report that patients receiving a 6 mg daily dose of the corticosteroid dexamethasone had a reduced 28-day mortality compared with those receiving standard of care. Importantly, dexamethasone reduced death by one-third in patients receiving invasive mechanical ventilation and by one-fifth in patients requiring oxygen only but showed no benefit in patients who did not require respiratory support. Overall, the results of this study suggest that dexamethasone, an inexpensive and widely available anti-inflammatory drug, is a valuable treatment for severe cases of COVID-19.

Lucy Bird