# research highlights

## IN BRIEF

CANCER

### New sensor measures tumor size changes in mice

Abramson, A. et al. *Sci. Adv.* **8**, eabn6550 (2022)

Animal studies use tumor size to assess responses to anticancer therapy. Current tumor measurement tools include calipers and imaging techniques, which can't be used for continuous measurement. A new study reports the development of a device with an electronic sensor that can be applied to the skin of cancer-bearing mice to monitor changes in tumor size in real time.

The study shows that, when comparing cancer-bearing mice dosed with drug or vehicle, the FAST (Flexible Autonomous Sensor measuring Tumors) device, which can read out measurements every 5 min for >24 hours on a 150-mA·h battery, could detect a decrease in tumor volume within 5 h after treatment initiation – sooner than other existing methods. The sensor, which was validated in two cancer mouse models, could be valuable for high-throughput screening of cancer therapies. *ALB*

https://doi.org/10.1038/s41684-022-01078-w

EXPERIMENTAL MODEL

### Fruit flies on a space mission

Mhatre, S.D., Iyer, J. et al. *Cell Rep.* **40**, 111279 (2022)

During spaceflights, astronauts are exposed to several hazards, including microgravity, that pose substantial risks to their health. Animal models have been valuable in assessing and attempting to mitigate the negative effects of spaceflight on space travelers, but further research is needed to understand the effects of spaceflight on the central nervous system (CNS). A new report presents the results of an International Space Station (ISS)-based study (the MVP-Fly-01 mission) that used *Drosophila melanogaster* as a model to understand CNS responses to spaceflight and the value of artificial gravity as a countermeasure.

The findings show that while both spaceflight microgravity flies and artificially simulated Earth gravity flies presented with alterations in metabolic, oxidative stress and synaptic transmission pathways, artificial gravity partially protected the flies from the neurological deficits associated with spaceflight. *ALB*

https://doi.org/10.1038/s41684-022-01080-2

INFECTIOUS DISEASE

### *APOE* genotype linked to COVID-19 severity

Ostendorf, B.N. et al. *Nature* (2022) https://doi.org/10.1038/s41586-022-05344-2

While most COVID-19 cases only have mild or no symptoms, some patients develop serious illness. Therefore, there is a pressing need to identify the factors that predispose patients to severe COVID-19. A new study links *APOE2* and *APOE4* variants to adverse outcomes in SARS-CoV-2 infection.

To assess the effect of *APOE* variation on SARS-CoV-2 infection, the researchers infected mice in which the murine *Apoe* gene was replaced with one of the three human *APOE* alleles (*APOE2*, *APOE3* and *APOE4* knock-in mice) with a mouse-adapted strain of SARS-CoV-2. Compared with *APOE3* mice, *APOE2* and *APOE4* mice exhibited rapid disease progression, poor survival outcomes, elevated viral loads and blunted adaptive immune responses early after infection. The study also shows that the *APOE* genotype was associated with survival in SARS-CoV-2 infected patients in the UK Biobank. *ALB*

https://doi.org/10.1038/s41684-022-01079-9

NEUROSCIENCE

### A new technique for visceral pain research

Kyloh, M.A., Hibberd, T.J. et al. *Commun. Biol.* **5**, 915 (2022)

The dorsal root ganglia (DRG) contain the cell bodies of sensory neurons that relay sensory information, including pain signals, from the body to the central nervous system. DRG span the length of the spinal cord, and consist of ganglia at different spinal levels that project to different abdominal organs. A lack of techniques allowing the study of DRG from a particular spinal level has limited our understanding of the role of specific DRG in visceral pain signaling.

In a new study, researchers at Flinders University describe a surgical approach allowing the selective removal of DRG of interest in mice. Using this technique to remove lumbosacral or thoracolumbar DRG in mice, they were able to eliminate pain responses in specific areas of the colon, which indicates that the technique can be applied to study pain pathways in live mice. *ALB*

https://doi.org/10.1038/s41684-022-01081-1