ANIMAL BEHAVIOR

Pseudoloma phenotypes

Midttun, H.L.E. et al. *Sci Rep* **10**, 8083 (2020)

Laboratory animals can harbor certain pathogens without becoming overtly sick, but subclinical infections can nevertheless influence phenotypes in subtle ways. Health monitoring is routine rodents and becoming more frequent in increasingly popular lab animals, such as the zebrafish.

One pathogen, *Pseudoloma neurophilia*, is particularly prevalent in zebrafish facilities—over 50% will test positive in a given year. As such, researchers are increasingly studying how this microspordian parasite, which infects the hindbrain and spinal nerve roots without causing clinical illness, influences its host.

A new study from researchers at the Norwegian University of Life Sciences in Oslo reveals that *P. neurophilia* infection can, in sex- and context-specific manners, reduce locomotor activity and increase freezing. These results point to a potential—and potentially confounding—influence on anxiety-like behavior in *P. neurophilia*-infected fish. *EPN*

https://doi.org/10.1038/s41684-020-0589-y

VISUAL SYSTEM

cbsa in vestigial eyes

Ma, L. et al. *Nat. Commun.* **11**, 2772 (2020)

As *Astyanax mexicanus* tetras descended into the dark caves of Mexico, they no longer needed their sight. Some eye development still occurs in embryos, but these cells die and become disorganized as larvae mature. There are several genetic factors that may contribute to the cave morphs' vestigial eyes, but candidates hadn't been well characterized. New work from researchers at the University of Maryland and NIH takes a closer look at one gene in particular: *cystathionine ß-synthase a (cbsa)*.

cbsa encodes an enzyme involved in eye development; in humans and mice, mutations in related genes lead to homocystinuria, a disease that causes eye abnormalities similar to those observed in the cavefish. The researchers show that disrupted optic vasculature resulting from their hypomorphic *cbsa* gene contributes to cavefish eye degeneration. Overexpressing *cbsa* rescued lens size and decreased apoptosis, but that didn't restore the eyes entirely. More genes remain to be seen. *EPN*

https://doi.org/10.1038/s41684-020-0591-4

EXPERIMENTAL ORGANISMS

Keeping up with quails

Serralbo, O. et al. *eLife* (2020) https://doi.org/10.7554/eLife.56312

The domestic chicken has long been a valuable model organism, but their relatively long generation time—it takes about 6 months for a hatched chicken to mature—has kept them towards the bottom of the pecking order for applying genome editing technologies. As an alternative avian genetic model with a quicker turnaround time, researchers from Monash University propose the Japanese quail, *Coturnix corturnix japonica*, a close relative to the chicken that matures in about six weeks.

Writing in *eLife*, the team describes a new method for generating transgenic quail, demonstrating its application by producing transgenic quail lines that express fluorescent reporters in different tissues. They also introduce The QuailNet Project, an online resource being developed for those interested in the quail model. *EPN*

https://doi.org/10.1038/s41684-020-0590-5

NEUROSCIENCE

3 photons for rat research

Klioutchnikov, A. et al. *Nat. Method* **17**, 509–513 (2020)

For nearly two decades, two-photon imaging has enabled researchers to visualize neuronal activity throughout relatively shallow layers of the rodent brain at single-cell resolution. Adding a third photon can extend the depth that can be visualized, but the approach can risk photodamage when used *in vivo*.

Work recently published in *Nature Methods* from researchers at Research Center Caesar in Bonn, Germany presents a new miniature head-mounted 3-photon microscope that can deliver the necessary high-energy, ultrashort pulses to safely be used with rats. In the paper, the team uses the microscope to image GCaMP-expressing neurons up to 1.1 µm below the cortical surface for up to an hour in freely behaving rats as they groomed, ate, and ran about their enclosure. *EPN*

https://doi.org/10.1038/s41684-020-0592-3

Alexandra Le Bras and Ellen P. Neff