IN BRIEF

STRESS

Zebrafish don't sweat it

Jones, A.R., Mendo, T., Broell, F., and Webster, M.M. *J Exp Biol* **2018**, jeb.192971 (2018)

Endothermic or 'warm-blooded' animals will often raise their body temperature when they are stressed, a response known as 'stress-induced hyperthermia (SIH).' Some studies suggests that ectothermic animals, such as reptiles and fish, might also exhibit SIH but through behavioral means, by deliberately moving to a warmer area after an adverse event.

Recently, researchers from the University of St. Andrews completed a replication study of a prior experiment that claimed evidence of SIH in zebrafish (*Proc R Soc B* **284**, 20160681; 2015). For this study, they added extra control tanks that did not feature a temperature gradient. The fish had no preference. A second experiment with a different tank set up found that some stressed fish actually spent a little less time in warmer water. The results challenge whether SIH is a true phenomenon in zebrafish. *EPN*

https://doi.org/10.1038/s41684-019-0252-7

CELLULAR NEUROSCIENCE

DISCO boost

Cai, R. et al. *Nat Neurosci* **22**, 317–327 (2019)

A number of DISCO methods, various histological applications of "three-**d**imensional **i**maging of **s**olvent-**c**leared **o**rgans" have emerged in recent years that are letting researchers see into and through whole organisms. Opaque tissues are made transparent and fluorescent proteins light up the underlying details, but imaging resolution can still present a challenge. The latest iteration from Ali Erturk's lab gets small.

Writing in *Nature Neuroscience*, Erturk and his collaborators present vDISCO—the 'v' stands for 'nanobody ($\mathbf{V}_{\mathrm{h}}$H)-boosted.' The addition of the nanobody enhances the signal of the fluorescent proteins, allowing the researchers to see subcellular details through bones and skin and also visualize neuronal projections throughout the body of intact mice. They applied vDISCO to visualize the effects of traumatic brain injury, spinal cord injury, and stroke. *EPN*

https://doi.org/10.1038/s41684-019-0253-6

SOFTWARE

Tracking within animals

Pereira, T.D. et al. *Nat Method* **16**, 117–125 (2019)

Need a way to track an animal in motion? Take a LEAP, short for 'LEAP estimates animal pose,' a new deep-learning based method from researchers at Princeton to track the movements of individual animals in an experiment, based on similar approaches for humans. There's a graphic user interface to label a subset of raw images that train the algorithm; from there, LEAP can estimates pose and track body parts in unlabeled data. In flies, it worked better on some body parts than others, but the researchers were able to track 32 labeled reference points with less than 3% error in one example. They also analyze the gait dynamics of 59 male flies as well as unsupervised behaviors of 42 male and female flies in additional demonstrations. And it's not just good for flies—LEAP could also follow mice freely moving in an open field. *EPN*

https://doi.org/10.1038/s41684-019-0254-5

SOFTWARE

Tracking between animals

Romero-Ferrero, F. et al. *Nat Method* **16**, 179–182 (2019)

Need to track one animal moving around among many? A new species-agnostic tool, idtracker.ai, from researchers at the Champalimaud Center for the Unknown in Lisbon combines two neural networks to track unmarked animals within a larger group. Each network follows an elongated "blob" that represents an individual animal in a recording. One algorithm keeps track of each blob while the second detects when blobs touch or cross one another. The results suggest the tool can accurately track individual zebrafish and fruit flies in groups of up to 100 animals, as well as medaka fish, ants, and mice in smaller groups. For best performance, the researchers found that at least 30 images with individual animals are needed to train the algorithm but that it can perform against different backgrounds and account for unusual behavior among the animals. *EPN*

https://doi.org/10.1038/s41684-019-0255-4