DEVELOPMENT

How killifish hit pause

Hu, C. et al. *Science* **367**, 870–874 (2020)

Once an embryo starts developing, it usually doesn't stop. Unless that embryo happens to be an African turquoise killifish, *Nothobranchius furzeri*. These fish must survive long dry seasons in which their transient ponds evaporate from under them. To make it 'til the next rainy season, embryos will enter a period of suspended development called diapause.

But all is not idle—a new study in *Science* reveals the patterns of gene activity that let the developing fish hit pause yet come out unscathed months later.

The team of researchers, led by Anne Brunet at Stanford, assembled a transcriptomic time course for killifish embryos in diapause to determine gene expression at different points. In particular, they observed that a collection of chromatin regulators in the Polycomb complex kick in while the embryos are otherwise shut down, preserving organ tissues and muscles until it rains down in Africa again. *EPN*

https://doi.org/10.1038/s41684-020-0519-z

ANIMAL BEHAVIOR

Three's not a crowd for male CD-1 mice

Jirkof, P. et al. *Sci. Rep.* **10**, 2253 (2020)

Male CD-1 mice, commonly used outbred animals, have a reputation as aggressive. As such, they tend to be housed separately, despite growing evidence that social housing is good for social species such as the mouse. There are however many variables that can influence a mouse's demeanor, and fostering harmony may just be a matter of finding the right combination.

Paulin Jirkof and colleagues recently tested how group size, timing of initial group allocation, and handling contributed to incidences of aggression in CD-1 males, as well as the physical well-being of the animals over a 14-week study. Overall levels of aggression were low and decreased as the mice aged, with an unclear impact from group timing and an apparent aggression-reducing benefit from daily scruffing. Trios got on better than pairs, while solo males scored the lowest on measures of well-being. *EPN*

https://doi.org/10.1038/s41684-020-0521-5

NEUROSCIENCE

ZEBrA for zebra finches

Lovell, P.V. et al. *J. Comp. Neurol.* https://doi.org/10.1002/cne.24879 (2020)

The zebra finch is a popular model organism among neurobiologists interested in vocal learning. It's an ability that zebra finches and a few other birds share with primates, including humans, and a handful of other mammals, but bird brains can differ considerably from those of their warm-blooded cousins. Those interested in the details now have a new resource: the Zebra finch Expression Brain Atlas, or ZEBrA.

Assembled by teams at the Oregon Health and Science University in Portland and Cold Spring Harbor Laboratory in New York, the resource consists of six data portals: markers of the song system; speech and language; diseases and phenotypes; comparative neuroanatomy; gene function; and songbird discoveries. In each, users will find gene expression data mapped onto *in situ* hybridization images of the male zebra finch brain. *EPN*

https://doi.org/10.1038/s41684-020-0520-6

COMPUTER MODELING

Stripe prediction

McGuirl, M.R., Volkening, A., and Sandstede, B. *PNAS* https://doi.org/10.1073/pnas.1917763117 (2020)

The characteristic pattern found on the body of the zebrafish is comprised of three different pigment cells that come together as the fish develop: black melanophores, yellow/orange xanthophores, and silver/blue iridophores. The exact pattern differs from fish to fish, so how exactly does a particular zebrafish get its stripes?

Combining a technique called topological data analysis with machine learning, researchers at Brown University have developed a new algorithm to help describe the 'rules' that dictate pattern formation. The approach takes into account the variability in size, shape, and placement of the different pigments of the fish to create simulated patterns. The authors suggest that real fish might be compared against the expected simulations to help tease apart the underlying mechanisms that contribute to pattern formation in different animals. *EPN*

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Alexandra Le Bras and Ellen P. Neff