## IN BRIEF

CARDIAC REGENERATION

### Taking cavefish to heart

Stockdale, W.T. et al. *Cell Rep.* **25**, 1997–2007.e7 (2018)

When groups of *Astyanax mexicanus* tetra fish took to the caves below Mexico 1.5 million years ago, they began to diverge from their relatives that remained at the surface. Not enough to split into separate species, but the distinct populations present a unique opportunity to compare the underlying mechanisms that give rise to phenotypic differences. Recent work from researchers at Oxford looks at the heart.

Like zebrafish, Mexican tetras can regenerate cardiac tissue. Or rather, surface fish can; fish from cave populations have lost the ability. Their hearts scar after injury, more like that of a human. The new study revealed that a number of genes are upregulated in the cavefish. One in particular, *lrrc10*, when knocked out in zebrafish, disrupted heart regeneration even though cardiac cells were proliferating near the experimental injury. *EPN*

https://doi.org/10.1038/s41684-018-0230-5

ANIMAL DISEASE MODELS

### A fly for Sly

Bar, S., Prasad, M. and Datta, R. *Dis. Model Mech.* **11**, dmm036954 (2018)

Sly syndrome is a recessive lysosomal storage disorder that leads to premature death in humans. It has a mouse model and, as of November 2017, an FDA-approved enzyme therapy. But there's still much to learn about the mechanisms behind this form of mucopolysaccharidosis and others like it. As an alternative to the mouse, researchers in India recently developed a fly model of Sly syndrome.

The deficient enzyme responsible for the syndrome in humans, β-glucuronidase, has an orthologue in *Drosophila melanogaster, CG2135*. When that gene is knocked out, the fly experiences similar cardiac problems, motor impairments and neuropathologies, and shortened lifespans. The authors relate those phenotypes to apoptosis in dopaminergic neurons and muscle cells and show that treatment with resveratrol can help attenuate abnormalities in *CG2135*$^{-/-}$ flies. *EPN*

https://doi.org/10.1038/s41684-018-0232-3

DEVELOPMENT

### A stomach atlas develops

Li, X. et al. *Nat. Commun.* **9**, 4910 (2018)

Researchers interested in the developing stomach have a new resource, following efforts from scientists at the National Center for Protein Sciences in Beijing to describe the proteomic and transcriptomic changes along the way. The team sampled whole mouse stomachs at fifteen time points, from the earliest embryonic stages at which the stomach can be sampled through several weeks of postnatal development as the organ (and animal) matured. Out of an analysis of 12,108 gene products, they identify 2890 proteins that they consider to be core components of the stomach proteome. Their new atlas also suggests that the mouse stomach develops in three distinct phases, reflected in changes in which proteins and pathways are active. The data are available online in *Nature Communications*. *EPN*

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SLEEP

### Dreamy cuttlefish

Iglesias, T.L., Boal, J.G., Frank, M.G., Zeil, J., and Hanlon, R.T. *J. Exp. Biol.* doi:10.1242/jeb.174862 (2018)

To sleep, therefore…to alternate between quiescent slow-wave sleep and rapid-eye-movement sleep. Such cycles are observed in most mammals, birds, and reptiles that are known to sleep. It occurs outside vertebrates too, including, as a recent report in the *Journal of Experimental Biology* demonstrates, cephalopods like the common cuttlefish, *Sepia offinalis*. In the current study, the researchers video recorded six cuttlefish and observed that the animals appear to experience a REM-like state: following a quiet period, the cuttlefish would twitch their arms, squint their eyes, and randomly change the patterns displayed on their skin. As in other sleepers, the behaviors were cyclical in nature, suggesting another animal that may be able to provide insight into the science of sleep. *EPN*

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