NEUROSCIENCE

Aging-stroke interactions

Androvic, P. et al. *Cell Rep* **31**, 107777 (2020)

The risk of ischemic stroke increases as people age, but the debilitating and often deadly occurrence tends to be studied in young mouse models. Likely as a result, preclinical results seldom translate to the clinic. To explore the influence of aging on stroke, researchers from the Czech Republic added aged animals to their experiments.

Looking genome-wide with RNA sequencing, the researchers compared transcription data from the brains of young (3 month old) and aged (18 month old) female C57Bl/6 mice three days following middle cerebral artery occlusion (MCAO), a model of ischemic stroke, and from age-matched controls. Nothing appeared particularly protective in the young animals, but the researchers recorded differential expression of genes involved in inflammation and interferon signaling in the aged mice, as well as downregulation of axon & synapse maintenance genes following MCAO. *EN*

https://doi.org/10.1038/s41684-020-0608-z

HIGH-THROUGHPUT SCREENING

C. elegans HeALTH

Le, KM. et al. *Commun Biol* **3**, 297 (2020)

Although *Caenorhabditis elegans* worms live just a few short weeks, continuously tracking the animals over the course of their lifespans without interrupting their environments and introducing unwanted biological noise has been challenging to do at scale. To add some more precise spatiotemporal control to long-term (for a worm) high-throughput studies, researchers at the Georgia Institute of Technology have developed the *C. elegans* Health and Lifespan Testing Hub (HeALTH).

The hub is a microfluidic device that can house over 1400 isolated worms from L4 larvae to death. Custom hardware controls the temperature, delivers food, and exchanges fluid without having to remove the worms from their chambers, while cameras record what they are up to for behavioral analysis. In their paper, the researchers used HeALTH to monitor individuals and populations of worms as they aged under different environmental conditions. *EN*

https://doi.org/10.1038/s41684-020-0609-y

CARDIOVASCULAR SYSTEM

Flies take red light to heart

Men, J. et al. *Commun Biol* **3**, 336 (2020)

Optogenetics allows researchers to use light to manipulate the activity of neurons in light-senstive, opsin-expressing transgenic animals. A blue light-based system has been used in *Drosophila* to control the heart rates of larvae, early pupae, and adults, but the dark cuticles of late-stage pupae have prevented effective blue light penetration. To reach the hearts of these flies, researchers at Washington University in St. Louis saw red.

The team engineered flies that expressed opsin proteins in their hearts that are responsive to red light, which can penetrate deeper into an organism and through otherwise obstructing opaque tissues. The red-light approach allowed them to manipulate cardiac pacing during all *Drosophila* developmental stages. Depending on the opsin used, the researchers could excite or inhibit activity, allowing them to model different cardiac conditions such as tachycardia, bradycardia, and cardiac arrest in the flies. *EN*

https://doi.org/10.1038/s41684-020-0610-5

CANCER

Go fish for bevacizumab

Rebelo de Almeida, C. et al. *Commun Biol* **3**, 299 (2020)

The humanized monoclonal antibody bevacizumab is supposed to inhibit the angiogenesis that solid tumors need to grow and spread, but clinical success has been inconsistent, with the therapy effective for some cancers but of negligible benefit for others. To make a personalized mouse for each and every tumor can be time- and cost-prohibitive, but larval zebrafish models are emerging as a quicker and less expensive option for screening potential therapeutics.

Researchers at the Champalimaud Centre for the Unknown in Lisbon recently screened for bevacizumab responses in larval zebrafish xenografted with triple negative breast cancer and colorectal cancer cell lines, as well as 'zAvatars' bearing tumor samples taken from patients. The models revealed differences in how the drug impacted metastasis depending on the tumor, with the personalized zebrafish mirroring clinical response in their respective patients. *EN*

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