

Juvion Platform for Brain discovery: FlyGym

Leverage Drosophila melanogaster (Fruit Fly) to validate neurological targets and test therapeutic compounds in vivo

Juvion is an EPFL spin off biotech company advancing its own therapeutic programs in neuromuscular and brain health. We believe impactful discoveries require close collaboration, strong biological insight, and rigorous interpretation. Therefore, we introduce FlyGYM.

The Problem

Brain function emerges from interacting tissues, circuits, and behavior and cannot be captured in cell assays alone. It demands whole organism insight over time.

Jumping from in vitro directly to vertebrates is slow, costly, and prone to false negatives while consuming many animals. The Juvion platform identifies real signals earlier, cuts animal use, and accelerates selection before vertebrate testing.

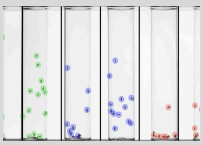
Why Drosophila melanogaster is an ideal model for understanding Brain function

Biological Relevance	About **75%** genetic homology to human neurodegeneration and aging pathways
Speed & Scale	A full lifespan in **50 days** allows affordable long term aging studies.
Complexity	Whole organism brain function and tissue interactions that cell culture cannot model.
Precision	Cell type specific genetic control with detailed behavioral readouts.
Rich, relevant behavior	Aggression, Mating, drunken, memory, sociability, Sleep, circadian clock, flirting and many more

About FlyGym

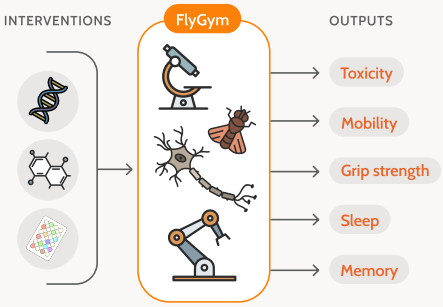
- Multi-modal, organism-level evaluation across aging and diseases such as **ALS, Parkinson's, Alzheimer's, neuromuscular decline, sarcopenia, and developmental conditions**
- Expert interpretation and actionable recommendations grounded in neurobiology research
- Early identification of toxicity, lack of efficacy, or off-target effects
- Rapid candidate prioritization to accelerate timelines
- Assessment of therapeutic potential for compounds, biologics, or genetic interventions
- Customizable experimental design for your specific questions







FlyGym: at a glance

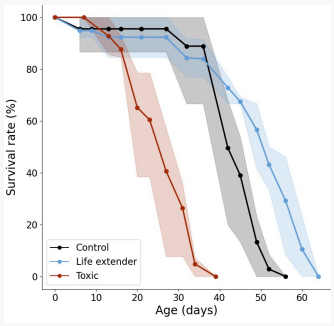


Additional Benefits

- Combine interventions to see joint effects
- Mix genes, drugs, and natural compounds
- More study on neuronal mechanisms

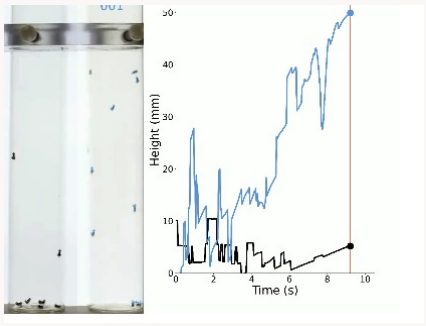
1. Life span analysis or toxicity

FlyGym automatically tracks effectiveness and toxicity of intervention. It generates a full lifespan curve and compares it with positive and negative controls at the same time. Interventions can be introduced at your chosen time point, for example from middle age or old age onward.



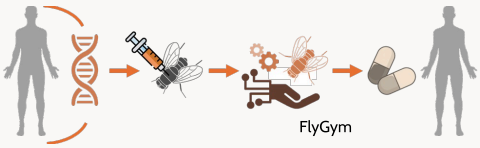
2. Mobility: real time tracking and transferability

By combining machine vision, FlyGym tracks the real-time mobility of individual animals at any time point during aging and provides data on the effectiveness of any intervention throughout the aging process.



3. Humanised Drosophila in vivo model - Memory and Sleep

Advanced genetic tools recreate key features of human biology. By inserting specific human gene mutations into the fly genome, we build precise models to test new treatments. Brain health is a systemic process that requires a multidimensional approach. FlyGym measures associative learning and sleep patterns to provide a more comprehensive profile of your solution.



Collaborative Study Design and Flexible Pricing:

Engagements are designed to foster close collaboration between your team and Juvion scientists across study design, execution, and data interpretation. Pricing and testing workflows are tailored to your specific needs. The current cost is 850 CHF to evaluate a single intervention for its impact on toxicity and mobility during aging.

Team

Dr. Soumya (Som) Banerjee
CEO / Co-founder

Prof. Brian McCabe
Chairman of the Scientific advisory Board/ Co founder

Dr. Priyanka Dutta Passecker
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