

FENS18

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P275-G.02 Network models - part IV

**Abstract: 4431**

## **G008 - larvalign - Software for aligning gene expression patterns to a standard CNS of the *Drosophila* larva**

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The *larvalign* package [1,2] comprises a standard central nervous system (CNS) for the *Drosophila melanogaster* larva (third instar), along with software to align gene expression patterns from different individuals to the standard CNS. The standard CNS is based on non-linear registration of a collection of neuropil stainings (anti-N-cadherin antibody) of the CNS to a population average space. Aligning a subject to the standard CNS requires a neuropil staining of the subject. By non-linear registration of the subject's neuropil channel to the standard CNS, *larvalign* computes a transformation that is then applied e.g. to the subject's GAL4 gene expression channel. In technical evaluation, we have shown that registration to the standard CNS accurately maps important anatomical landmarks annotated by an expert [1]. *Larvalign* provides the tools for merging different GAL4 lines into the same reference space, enabling e.g. the construction of a meta-CNS where every neuron is labelled.



Maximum intensity projection of the standard CNS.

### References

- [1] Sascha E.A. Muenzing, Martin Strauch, James W. Truman, Katja Bühler, Andreas S. Thum, Dorit Merhof: „*larvalign*: Aligning Gene Expression Patterns from the Larval Brain of *Drosophila melanogaster*“, **Neuroinformatics**, 16(1), pp. 65-80, Jan 2018
- [2] *larvalign* software: <https://github.com/larvalign/larvalign/releases/tag/v1.0>