



Research Internship (M2)

Title: Understanding the multigenerational impact of social environment perception on *C. elegans* behaviour.

Where: Quantitative regulatory genomics team, LBMC
<http://www.ens-lyon.fr/LBMC/equipes/quantitative-regulatory-genomics>
ENS de Lyon, 46, allée d'Italie, 69364 LYON CEDEX 07, France.

When: Beginning of 2024

Duration: 6 months (M2)

Team leader and scientific Tutor: Mirko Francesconi, CRCN, Inserm

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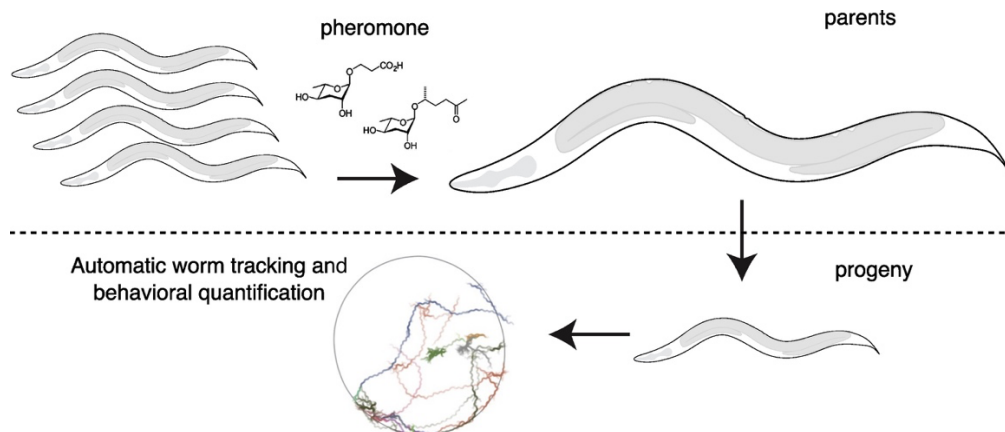
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Keywords: Epigenetic inheritance, behaviour, machine learning

Background and description of the project:

We discovered that information about the social environment (pheromone) perceived by the nervous system of the nematode *C. elegans* is transmitted to the progeny impacting their germline development and minimum generation time¹. We are currently investigating the mechanisms of signal transmission and interpretation in the progeny and exploring if other phenotypes are impacted by neuronal perception of the environment in the previous generation. Our transcriptomic data highlight differential regulation of neuronal genes in the progeny of pheromone exposed animals, including genes involved in behavioural phenotypes. We therefore now want understand if social environment can influence behaviour in the next generation(s) and what could be the genetic bases of this multigenerational transmission.

You in this project you will systematically quantify behavioural differences induced by ancestral perception of pheromone both in wild type and mutants by using an automatic worm tracking and behavioural phenotyping software that can extract hundreds of behavioural phenotypes in parallel from movies^{2,3}.



A good level English is absolutely required.

For further information and to apply contact mirko.francesconi@ens-lyon.fr

References

1. Perez, M. F. *et al.* Neuronal perception of the social environment generates an inherited memory that controls the development and generation time of *C. elegans*. *Current Biology* (2021) doi:10.1016/j.cub.2021.07.031.
2. Javer, A. *et al.* An open-source platform for analyzing and sharing worm-behavior data. *Nat Methods* **15**, 645–646 (2018).
3. Javer, A., Ripoll-Sánchez, L. & Brown, A. E. X. Powerful and interpretable behavioural features for quantitative phenotyping of *Caenorhabditis elegans*. *Philosophical Transactions of the Royal Society B: Biological Sciences* **373**, 20170375 (2018).