Postdoctoral position in Autophagy, Stress and Development
Institute for Integrative Biology of the Cell, Paris-Saclay University

Title	**Characterization of the inter-individual variability in stress response and its effects on resilience**
Team and Institute	Autophagy, Stress and Development Institute for Integrative Biology of the Cell CNRS, Avenue de la Terrasse 91198 Gif-sur-Yvette, France
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Summary: Living beings are constantly subjected to environmental variations, such as temperature, which can induce stress and lead to physiological dysfunction. The implementation of relevant preventive and/or curative strategies requires improving knowledge of the regulation of stress adaptation systems, as well as developing diagnostic strategies that integrate individuals' adaptive response levels and resilience capacities.

Technological advances in imaging, sequencing, and data analysis enable us to study stress responses and their effects on adaptation in animal models such as the nematode *C. elegans*. Our team recently developed an acute, non-lethal heat stress in *C. elegans* to characterize the adaptive response at the individual level (1, 2). Such a stress produces 2 populations of worms with distinct growth, fertility, and longevity characteristics (3).

This project aims to identify the gene regulatory network and characterize the mechanisms underlying individual variability in stress adaptation, as well as the subsequent effects on fitness and health.

Mainly based on transcriptomic analyses in *C. elegans*, including single-nucleus RNA-Seq, the project will combine experimental work with *C. elegans* and bioinformatic analyses. The postdoctoral researcher will benefit from the I2BC sequencing and bioinformatic facilities.

Application: We are seeking highly motivated candidates with solid experience in global transcriptomic analysis and in using specialized computational tools. Experience with the C. elegans model is a significant asset. The position requires a high degree of independence and the ability to collaborate with various partners within the team, across technological platforms, and with external collaborators. Fluency in English is required. The position is fully funded by the ANR project InVariStress (2027-2029), bringing together two academic laboratories and a company's Research and Innovation department.

Candidates should apply through the CNRS platform and submit a motivation letter, a CV, and recommendation letters.

https://emploi.cnrs.fr/Offres/CDD/UMR9198-CHROUL1-165/Default.aspx?lang=EN

The project is scheduled to start at the beginning of 2027.

1) Chen, Y., Leboutet, R., Largeau, C., Zentout, S., Lefebvre, C., Delahodde, A., Culetto, E., & Legouis, R. (2021). *Autophagy facilitates mitochondrial rebuilding after acute heat stress via a DRP-1-dependent process*. **The Journal of Cell Biology**, 220(4), e201909139.

2) Serot, C., Scarcelli, V., Pouget, A., Largeau, C., Sagot, A., El-Hachami, K., ... & Legouis, R. (2025). *Reticulon-dependent ER-phagy mediates adaptation to heat stress in C. elegans.* **Current Biology,** *35*(10), 2365-2378.

3) Serot, C., Kong, D., Largeau, C., Gallopin, M., Lescure, A., & Legouis, R. (In preparation). *Analysis of the interindividual variability in response to heat stress identifies two subpopulations and a negative regulator of the autophagy flux in C. elegans.*