



INSTITUTE OF HUMAN GENETICS

UMR9002, Université de Montpellier, Centre National de la Recherche Scientifique,



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PhD project title: Disentangle the consequences of multiple transposable element insertions on genome structure and function

DNA carries genetic information that governs the development of organisms. However, genes are not the only active constituents of the genome. Indeed, genomes have been colonized through evolution by DNA elements, such as transposable elements (TEs). TEs, which can be considered as parasites, encode proteins that enable their autonomous invasion of the genomes by inserting new copies. While these new insertions facilitate TEs' maintenance, they can also be detrimental to the host genome. Indeed, an unscheduled and uncontrolled awakening of these DNA parasites can contribute to aging, the onset of cancer, or certain neurological diseases (1,2,3,4) in the host's somatic tissues and acquisition of transmissible mutations to future generations in the host's germline. Thus, to ensure their proper maintenance, the host and TEs have developed several strategies to obtain a form of equilibrium between them that allows their coexistence throughout evolution.

To understand the real impact of the presence of TEs on the genome, we have constructed a *Drosophila* line in which we can control the activation of these DNA parasites. We have already obtained several lines with varying amounts of these DNA parasites (5). In this PhD project, we propose to study the genetic and phenotypic consequences of increasing amounts of DNA parasites and investigate whether and how gene expression is affected. This will clarify how the presence of these DNA parasites influences special nuclear organization as well as heritable epigenetic modifications.

References:

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To apply: Interested candidates should send by e-mail to Severine Chambeyron (severine.chambeyron@igh.cnrs.fr) and Charlotte Grimaud (Charlotte.Grimaud@igh.cnrs.fr):

- 1) a CV
- 2) a cover letter describing your research interests and experience related to the project
- 3) names of two referees

Closing date: Interested candidates must send their application before October 1st 2024.

