

CRBM external seminar
Thursday Sept 28th 11:00 am Salle Marcel Dorée

Substantial Programmed-DNA elimination in Mesorhabditis nematodes

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Marie is a cell biologist, group leader at the LBMC, Lyon. After a PhD Evo/Devo in 2001 under the supervision of Marie-Anne FELIX in Paris, she moved to Switzerland for a post-doc in the lab of Pierre GONCZY. She was recruited at the CNRS in 2006 and became PI in 2009 at LBMC in Lyon. She uses nematodes to explore flexibility and constraints in cell biological processes over the course of evolution.

Abstract

By serendipity, we discovered that *Mesorhabditis* species, a genus of free-living nematodes close to *C. elegans*, undergo massive programmed-DNA elimination in the soma, whereby almost 30% of the genome is destroyed. The germline genome remains intact. DNA elimination occurs early in embryo development in all somatic blastomeres. Chromosomes are first fragmented during S phase and some fragments are excluded from the mitotic spindle, leading to their exclusion from the reforming nuclei. In contrast to the other multicellular organisms undergoing DNA elimination described so far (some for more than 150 years), these worms are genetically tractable, offering at last a system to explore the mechanism and the function of DNA elimination in an animal. We also extended this discovery to many other nematode species, having now in hand closely related species with or without DNA elimination (notably *C. elegans* does not eliminate)

Selected publications:

Rey C, Launay C, Wenger E, Delattre M. Programmed DNA elimination in *Mesorhabditis* nematodes. [Curr Biol. 2023 Sep 11;33\(17\):3711-3721.e5.](#)

M. Grosmaire*, C. Launay*, & al., M. Delattre. Males as somatic investment in a parthenogenetic nematode. [Science. 363, 1210–1213 \(2019\).](#)

C. Launay, M-A. Félix, J. Dieng, M. Delattre. Diversification and hybrid incompatibility in auto-pseudogamous species of *Mesorhabditis* nematodes. [BMC Evol Biol 20, 105 \(2020\).](#)