# **Molecular Memories in Worms**

## November 8

Tuesday, 12:30pm

Zoom Webinar - Virtual Only

**For Researchers** 

#### Speaker:

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Host: Julia Kaiser, Ph.D.

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### Abstract

In C. elegans nematodes, dedicated machinery enables transmission of small RNAs which regulate gene expression across multiple generations, independently of changes to the DNA sequence. Different environmental challenges, including exposure to starvation, genomic parasites, bacterial pathogens, and heat stress generate heritable small RNA responses, that in certain cases can be adaptive. Recently we have also shown that even neuronal activity can produce small RNA-mediated heritable responses, and that the decisions that the progeny makes are affected by whether their ancestors experienced stress or not. I will discuss the underlying mechanisms, and the potential of small RNA inheritance to affect the worms' fate. Lastly, I will examine how these new findings might affect our view of the process of evolution and the limits of inheritance and provide evidence that transgenerational inheritance of small RNAs is possible even in other, very different organisms.



1. I.Toker, I.Lev, Y.Mor, Y.Gurevich, D.Fisher, L.Houri-Zeevi, O.Antonova, L.Hadany, S.Shaham, O.Rechavi. Transgenerational inheritance of sexual attractiveness via small RNAs enhances evolvability in C. elegans. (2022) Dev Cell.

2. Houri-Ze'evi L, Korem Kohanim Y, Antonova O, Rechavi O. Three Rules Explain Transgenerational Small RNA Inheritance in C. elegans. (2020) Cell.

**3.** Posner R, Toker IA, Antonova O, Star E, Anava S, Azmon E, Hendricks M, Bracha S, Gingold H, Rechavi O. (2019) **Neuronal Small RNAs Control Behavior Transgenerationally.** Cell. 2019 Jun 13;177(7):1814-1826.e15. doi: 10.1016/j.cell.2019.04.029. Epub 2019 Jun 6.



