MOLECULAR MECHANISMS OF AGING-RELATED RETROTRANSPOSON DEREPRESSION: INSIGHTS INTO NEURODEGENERATIVE DISEASES AND NEW PROPHYLACTIC STRATEGIES

https://neurodegenerationresearch.eu/survey/molecular-mechanisms-of-aging-related-retrotransposon-derepression-insights-into-neurodegenerative-diseases-and-new-prophylactic-strategies/

Name of Fellow

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Country

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Title of project/programme

MOLECULAR MECHANISMS OF AGING-RELATED RETROTRANSPOSON DEREPRESSION: INSIGHTS INTO NEURODEGENERATIVE DISEASES AND NEW PROPHYLACTIC STRATEGIES

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Research Abstract

Retrotransposable elements (REs) colonize genomes by copying themselves via an RNA-intermediate. REs are thus potential endogenous mutagens, against which their host organisms have evolved several repressive mechanisms to control their activities. Unfortunately, these control mechanisms somehow tend to fail as cells age. This phenomenon has been documented in yeast, flies, mice, and in human tissues. RE derepression has been associated with neuronal decline and many age-related degenerative diseases. However, the cause/consequence relation between RE derepression and aging remains unclear. Using the versatile model organism Drosophila melanogaster we will study the mechanisms of RE derepression in aging neurons by applying state-of-the-art tools in molecular genetics and genomics. In the longer-term, our objective is to screen for prophylactic drugs that impede de novo RE-mediated mutations in vivo, hopefully preventing age-related neuronal decline and thereby prolonging the productive life of post-mitotic neurons. We believe that the findings from this work could have a strong impact in human health.

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