The Dark Side of NAD+: The Role of NAD+ synthase NMNAT in Cellular Resilience

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Online Webinar

For Researchers

Speaker:

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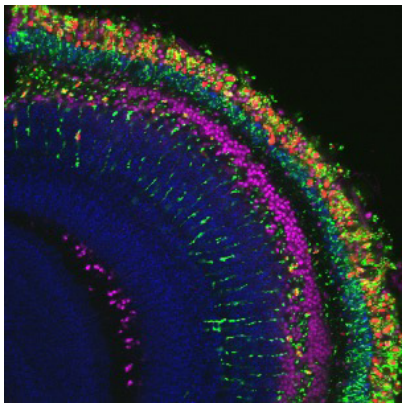
Abstract

Research in the Zhai lab is focused on understanding the genetic and molecular mechanisms of neural degeneration and protection in the context of both common and rare neurodegenerative diseases. We use a 'Drosophila - mammalian tissue culture two-model' systems, to identify genetic components in Drosophila and characterize the cellular mechanisms in mammalian cells. We have identified and characterized several neuroprotective factors. Among them, NMNAT (nicotinamide mononucleotide adenylyltransferase) was the first discovered and most extensively characterized so far. We were the first show that NMNAT functions as an essential neuronal maintenance factor in vivo, and discovered a chaperone function of NMNAT that contributes to its robust neuroprotective activity. In this talk, we will discuss the role of NMNAT in protein homeostasis and cellular resilience in neurons and glia, and the cell type specific mechanisms and consequences of enhanced NAD+ synthesis.



1. Ruan, K, Li C, Zhu Y, Brazill J, and Zhai RG (2015) **Alternative splicing of Drosophila NMNAT acts as a switch to enhance neuroprotection under stress.** Nature Communications 6:10057 DOI:10.1038/ncomms10057. PubMed PMID: 26616331; PubMed Central PMCID: PMC4674693

2. Zhu Y, Li C, Tao X, Brazill JM, Park J, Diaz-Perez Z, and Zhai RG. (2019) **Nmnat restores neuronal integrity by neutralizing mutant Huntingtin aggregates-induced progressive toxicity.** Proceedings of the National Academy of Sciences USA 116 (38) 19165-19175. PMID: 31484760; PMCID: PMC6754563

3. Liu J, Tao X, Zhu Y, Li C, Ruan K, Diaz-Perez Z, Rai P, Wang H, and Zhai RG. (2021) **NMNAT promotes glioma growth through regulating post-translational modifications of p53 to inhibit apoptosis.** eLIFE 10:e70046. DOI: https://doi.org/10.7554/eLife.70046.

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