

Neuronal Intrinsic Inhibitors Regulating Axon Regeneration

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Online Webinar

For Researchers



Speaker:

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Host: **Jian Zhong, Ph.D.**

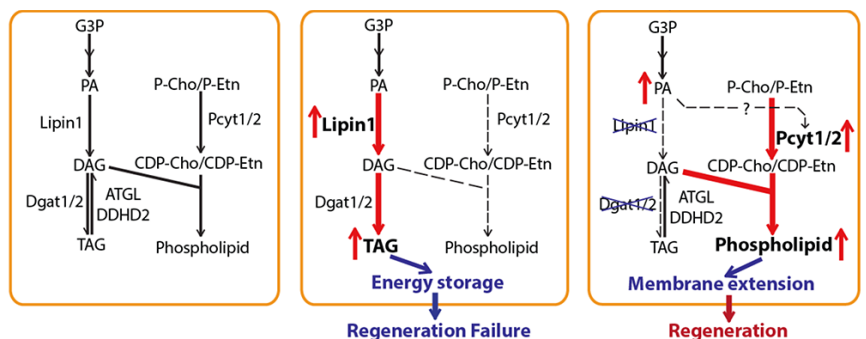
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Abstract

The failure of axon regeneration in the adult mammalian central nervous system (CNS) attributed to two properties of the adult CNS, the inhibitory extrinsic environment and a diminished intrinsic regenerative capacity of mature CNS neurons. Successful regeneration through modulating neuronal intrinsic mechanisms in CNS neurons requires activation of proregenerative transcription and translation, epigenetic regulation, cytoskeletal dynamics and transport, mitochondrial mobility, among other processes. Our recent study reveals a critical role of phosphatidate phosphatase lipin1 and diglyceride acyltransferases (DGATs) as intrinsic regulators of glycerolipid metabolism in neurons. In both the optic nerve and spinal cord injury models, we found that inhibiting these enzymes can promote axon regrowth. We propose another strategy for neural repair by directing neuronal lipid synthesis away from triglyceride synthesis and toward phospholipid synthesis.



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2. Li S, Yang C, Zhang L, Gao X, Wang X, Liu W, Wang Y, Jiang S, Wong YH, Zhang Y, Liu K. **Promoting axon regeneration in the adult CNS by modulation of the melanopsin/GPCR signaling.** *Proc. Natl. Acad. Sci. USA*. 2016 Feb 16;113(7):1937-42.
3. Du K, Zheng S, Zhang Q*, Li S, Gao X, Wang J, Jiang L, Liu K. **Pten deletion promotes regrowth of corticospinal tract axons 1 year after spinal cord injury.** *Journal of Neuroscience* 2015 July 1;35(26): 9754-9763.