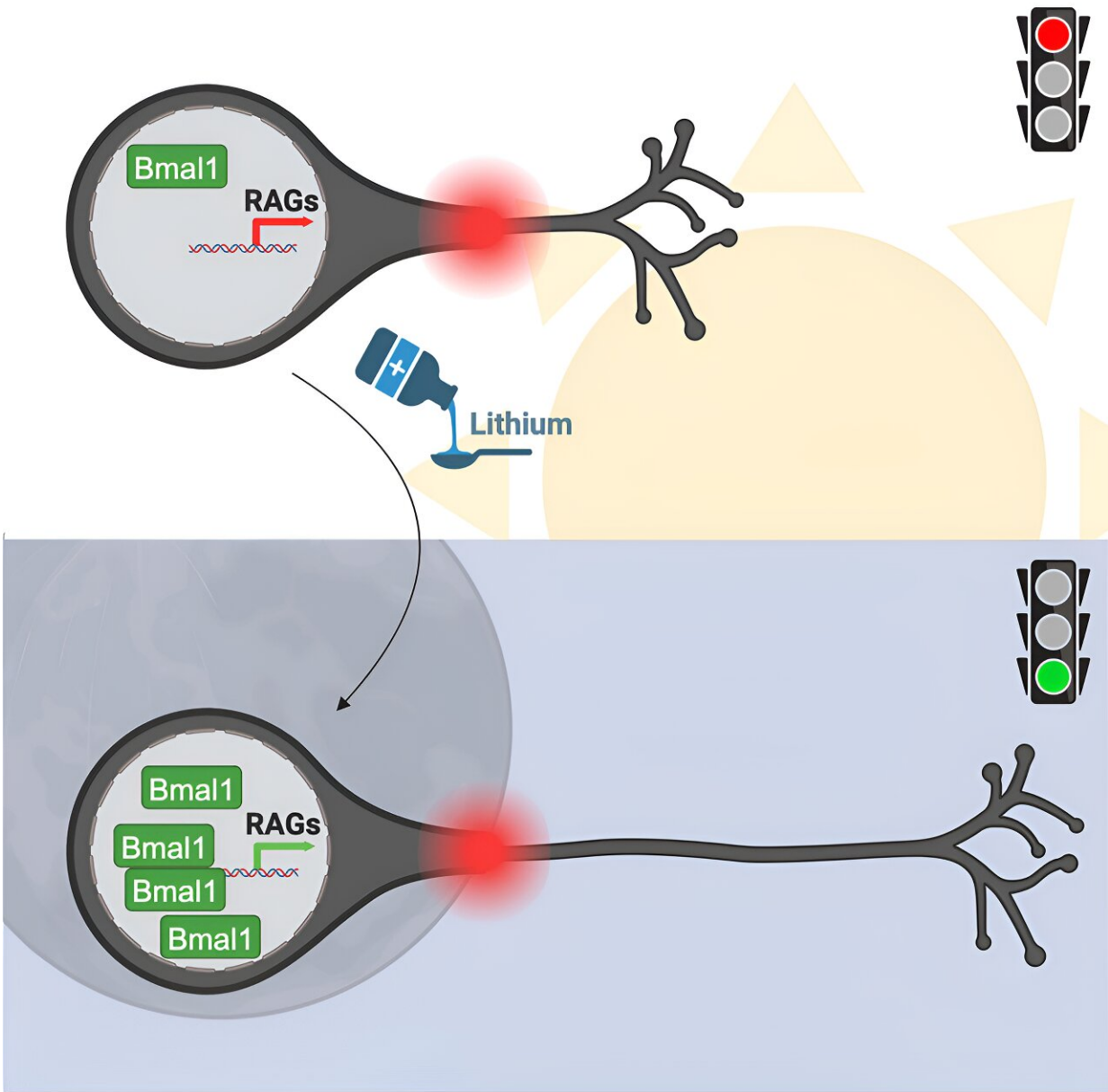


Study discovers circadian clock regulates axonal regeneration and repair

November 24 2023, by Hayley Dunning, Meesha Patel, Bryony Ravate



Graphical abstract. Credit: *Cell Metabolism* (2023). DOI: 10.1016/j.cmet.2023.10.012

Scientists from the Department of Brain Sciences have discovered that the circadian clock regulates axonal regeneration and repair.

The authors found that DRG [sensory neurons](#) have an endogenous molecular clock that optimizes axonal [regeneration](#) in a mouse model of sciatic nerve injury. The researchers also demonstrated that axonal regeneration can be promoted using chrono-active drugs, such as [lithium](#), which is currently used in clinics for treating neurological disorders.

These findings pave the way for the use of clock-associated therapies and timed neurorehabilitation for people with Peripheral Nervous System (PNS) injuries.

Dr. Francesco De Virgiliis, University of Geneva and Honorary Research Associate in the Department of Brain Sciences said, "Our study shows that the [circadian clock](#) regulates axonal regeneration, and we were able to exploit this mechanism by repurposing lithium, a chrono-active drug used for neurological disorders, to promote regeneration. Importantly, our findings put forth the concept of timed therapies and neurorehabilitation to improve nerve repair."

The paper is [published](#) in the journal *Cell Metabolism*.

More information: Francesco De Virgiliis et al, The circadian clock time tunes axonal regeneration, *Cell Metabolism* (2023). DOI: [10.1016/j.cmet.2023.10.012](https://doi.org/10.1016/j.cmet.2023.10.012)

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