

Abstract Submitted
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The formation of axonal caliber and nodes of Ranvier¹ YINYUN LI, PETER JUNG, Department of Physics and Astronomy, Ohio University, ANTHONY BROWN, Department of Neuroscience, Ohio State University — A remarkable feature of myelinated neurons is that their axons are constricted at the nodes of Ranvier. These are the locations where axons are directly exposed to the extracellular space and where the vast majority of the ion channels are located. These constrictions emerge during development and have been observed to reduce axonal cross sectional area by factors of more than 10. Combining fluorescent imaging methods with computational modeling, we describe how the nervous system regulates the local caliber of its axons through the regulation of the transport kinetics of its most important cytoskeletal elements, the neurofilaments, matching axon caliber and shape to its physiologic function.

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Yinyun Li
Department of Physics and Astronomy, Ohio University

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