

# Simple, model-free analysis of voltage-gated channels

December 12 2011

---

A new study in the *Journal of General Physiology* provides fresh insight into voltage-gated channels—transmembrane ion channels that play a critical role in the function of neuronal and muscle tissue.

Voltage-gated ion channels underlie signaling of most electrically active cells. These important [ion channels](#) have long challenged physiologists with the question of how membrane voltage drives the structural transitions between closed and open states. For more than 60 years, researchers have tackled this question with elaborate models that rely on difficult-to-assess assumptions. A new study by Sandipan Chowdhury and Baron Chanda, from the University of Wisconsin-Madison, provides a key analysis of the free energy of channel opening in a virtually model-free way.

According to Christopher Miller in a commentary accompanying the article, the study gives a rare example of the power of thermodynamic reasoning and provides "a path to circumvent the tyranny and heartbreak of model fitting."

**More information:** Chowdhury, S., and B. Chanda. 2011. *J. Gen. Physiol.* [doi:10.1085/jgp.201110722](https://doi.org/10.1085/jgp.201110722). Miller, C. 2011. *J. Gen. Physiol.* [doi:10.1085/jgp.201110745](https://doi.org/10.1085/jgp.201110745)

Provided by Rockefeller University

Citation: Simple, model-free analysis of voltage-gated channels (2011, December 12) retrieved 27 April 2024 from

<https://medicalxpress.com/news/2011-12-simple-model-free-analysis-voltage-gated-channels.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.