

References

1. Platzter, J. *et al.* Congenital deafness and sinoatrial node dysfunction in mice lacking class D L-type Ca²⁺ channels. *Cell* 102, 89–97 (2000).
2. Zampini, V. *et al.* Elementary properties of CaV1.3 Ca(2+) channels expressed in mouse cochlear inner hair cells. *J Physiol* 588, 187–199 (2010).
3. Zampini, V. *et al.* Burst activity and ultrafast activation kinetics of CaV1.3 Ca²⁺ channels support presynaptic activity in adult gerbil hair cell ribbon synapses. *J Physiol* 591, 3811–3820 (2013).
4. Meyer, A. C. *et al.* Tuning of synapse number, structure and function in the cochlea. *Nat Neurosci* 12, 444–453 (2009).
5. Frank, T. *et al.* Bassoon and the synaptic ribbon organize Ca²⁺ channels and vesicles to add release sites and promote refilling. *Neuron* 68, 724–738 (2010).
6. Grant, L. & Fuchs, P. Calcium- and Calmodulin-Dependent Inactivation of Calcium Channels in Inner Hair Cells of the Rat Cochlea. *J Neurophysiol* 99, 2183–2193 (2008).
7. Brandt, A., Khimich, D. & Moser, T. Few CaV1. 3 channels regulate the exocytosis of a synaptic vesicle at the hair cell ribbon synapse. *J Neurosci* 25, 11577 (2005).
8. Wolf, M., Eberhart, A., Glossmann, H., Striessnig, J. & Grigorieff, N. Visualization of the domain structure of an L-type Ca²⁺ channel using electron cryo-microscopy. *J. Mol. Biol.* 332, 171–182 (2003).
9. Neef, J. *et al.* The Ca²⁺ Channel Subunit beta2 Regulates Ca²⁺ Channel Abundance and Function in Inner Hair Cells and Is Required for Hearing. *J Neurosci* 29, 10730 (2009).
10. Hess, P., Lansman, J. B. & Tsien, R. W. Different modes of Ca channel gating behaviour favoured by dihydropyridine Ca agonists and antagonists. *Nature* 311, 538–544 (1984).
11. Naraghi, M. & Neher, E. Linearized buffered Ca²⁺ diffusion in microdomains and its implications for calculation of [Ca²⁺] at the mouth of a calcium channel. *J Neurosci* 17, 6961 (1997).
12. Faas, G. C., Schwaller, B., Vergara, J. L. & Mody, I. Resolving the fast kinetics of cooperative binding: Ca²⁺ buffering by calretinin. *PLoS Biol.* 5, e311 (2007).
13. Faas, G. C., Raghavachari, S., Lisman, J. E. & Mody, I. Calmodulin as a direct detector of Ca²⁺ signals. *Nat. Neurosci.* 14, 301–304 (2011).
14. Hackney, C. M., Mahendrasingam, S., Penn, A. & Fettiplace, R. The concentrations of calcium buffering proteins in mammalian cochlear hair cells. *J Neurosci* 25, 7867 (2005).
15. Lee, S.-H., Schwaller, B. & Neher, E. Kinetics of Ca²⁺ binding to parvalbumin in bovine chromaffin cells: implications for [Ca²⁺] transients of neuronal dendrites. *J Physiol* 525, 419–432 (2000).
16. Bollmann, J. H. & Sakmann, B. Control of synaptic strength and timing by the release-site Ca²⁺ signal. *Nat Neurosci* 8, 426–434 (2005).

17. Schmidt, H., Schwaller, B. & Eilers, J. Calbindin D28k targets myo-inositol monophosphatase in spines and dendrites of cerebellar Purkinje neurons. *Proc. Natl. Acad. Sci. U.S.A* 102, 5850–5855 (2005).
18. Schmidt, H., Brown, E. B., Schwaller, B. & Eilers, J. Diffusional Mobility of Parvalbumin in Spiny Dendrites of Cerebellar Purkinje Neurons Quantified by Fluorescence Recovery after Photobleaching. *Biophysical Journal* 84, 2599–2608 (2003).
19. Sinha, S. R., Wu, L.-G. & Saggau, P. Presynaptic Calcium Dynamics and Transmitter Release Evoked by Single Action Potentials at Mammalian Central Synapses. *Biophys J* 72, 637–651 (1997).
20. Beutner, D., Voets, T., Neher, E. & Moser, T. Calcium dependence of exocytosis and endocytosis at the cochlear inner hair cell afferent synapse. *Neuron* 29, 681–690 (2001).
21. Pangršič, T. *et al.* Hearing requires otoferlin-dependent efficient replenishment of synaptic vesicles in hair cells. *Nat Neurosci* 13, 869–876 (2010).
22. Gillespie, D. T. Exact stochastic simulation of coupled chemical reactions. *J Phys Chem* 81, 2340–2361 (1977).