

Eric A. Newman Publications

Original Reports:

1. Newman, E.A., and Raymond, S.A. (1971) Activity dependent shifts in excitability of frog peripheral axons. *Quart. Prog. Report*, Research Laboratory of Electronics, MIT 102:165-187.
2. Newman, E.A. (1972) Contraction in *Stentor coeruleus*, a cinematic analysis. *Science* 177:447-449.
3. Newman, E.A. (1974) Scanning electron microscopy of the cortex of the ciliate *Stentor coeruleus*, a view from the inside. *J. Protozool.* 21:729-737.
4. Newman, E.A., and Lettvin, J.Y. (1978) Relation of the e-wave to ganglion cell activity and rod responses in the frog. *Vision Res.* 18:1181-1188.
5. Newman, E.A. (1979) b-Wave currents in the frog retina. *Vision Res.* 19:227-234.
6. Gruberg, E.R., Kicliter, E., Newman, E.A., Kass, L., and Hartline, P.H. (1979) Connections of the tectum of the rattlesnake *Crotalus viridis*: an HRP study. *J. Comp. Neurol.* 188:31-41.
7. Newman, E.A., Gruberg, E.R., and Hartline, P.H. (1980) The infrared trigemino-tectal pathway in the rattlesnake and in the python. *J. Comp. Neurol.* 191:465-477.
8. Newman, E.A. (1980) Current source-density analysis of the b-wave of frog retina. *J. Neurophysiol.* 43:1355-1366.
9. Newman, E.A., and Hartline, P.H. (1981) Integration of visual and infrared information in bimodal neurons of the rattlesnake optic tectum. *Science* 213:789-791.
10. Newman, E.A., and Hartline, P.H. (1982) Infrared "vision" in snakes. *Scientific American* 246(3):116-127 (March).
11. Newman, E.A. (1984) Regional specialization of retinal glial cell membrane. *Nature* 309:155-157.
12. Newman, E.A., Frambach, D.A., and Odette, L.L. (1984) Control of extracellular potassium levels by retinal glial cell K⁺ siphoning. *Science* 225:1174-1175.
13. Newman, E.A., and Odette, L.L. (1984) Model of electroretinogram b-wave generation: a test of the K⁺ hypothesis. *J. Neurophysiol.* 51:164-182.

14. Gruberg, E.R., Newman, E.A., and Hartline, P.H. (1984) 2-Deoxyglucose labeling of the infrared sensory system in the rattlesnake, *Crotalus viridis*. *J. Comp. Neurol.* 229:321-328.
15. Newman, E.A. (1985) Membrane physiology of retinal glial (Müller) cells. *J. Neurosci.* 5:2225-2239.
16. Karwoski, C.J., Newman, E.A., Shimazaki, H., and Proenza, L.M. (1985) Light-evoked increases in extracellular K⁺ in the plexiform layers of amphibian retinas. *J. Gen. Physiol.* 86:189-213.
17. Newman, E.A. (1985) Voltage-dependent calcium and potassium channels in retinal glial cells. *Nature* 317:809-811.
18. Newman, E.A. (1986) High potassium conductance in astrocyte endfeet. *Science* 233:453-454.
19. Newman, E.A. (1986) Physiological properties and possible functions of Müller cells. *Neurosci. Res.* 4:S209-S220.
20. Newman, E.A. (1986) Regional specialization of the membrane of retinal glial cells and its importance to K⁺ spatial buffering. *Annals New York Acad. Sci.* 481:273-286.
21. Newman, E.A. (1987) Regulation of potassium levels by Müller cells in the vertebrate retina. *Can. J. Physiol. Pharmacol.* 65:1028-1034.
22. Newman, E.A. (1987) Potassium conductance distribution in mammalian Müller (glial) cells. A comparative study. *J. Neurosci.* 7:2423-2432.
23. Paulson, O.B. and Newman, E.A. (1987) Does the release of potassium from astrocyte endfeet regulate cerebral blood flow? *Science* 237:896-898.
24. Odette, L.L. and Newman, E.A. (1988) Model of potassium dynamics in the central nervous system. *Glia* 1:198-210 .
25. Newman, E.A. (1988) Potassium conductance in Müller cells of fish. *Glia* 1:275-281.
26. Karwoski, C.J. and Newman, E.A. (1988) Generation of the e-wave of the electroretinogram in the frog retina. *Vision Res.* 28:1095-1105.
27. Karwoski, C.J., Lu, H.-K. and Newman, E.A. (1989) Spatial buffering of light-evoked potassium increases by retinal Müller (glial) cells. *Science*, 244:578-580.
28. Newman, E.A. (1989) Potassium conductance block by barium in amphibian Müller cells. *Brain Res.* 498:308-314.

29. Newman, E.A. and Astion, M.L. (1991) Localization and stoichiometry of electrogenic sodium-bicarbonate cotransport in retinal glial cells. *Glia* 4:424-428.
30. Newman, E.A. (1991) Sodium-bicarbonate cotransport in retinal Müller (glial) cells of the salamander. *J. Neurosci.* 11:3972-3983.
31. Newman, E.A. (1993) Inward rectifying potassium channels in retinal glial (Müller) cells. *J. Neurosci.* 13:3333-3345.
32. Newman, E.A. (1994) A physiological measure of carbonic anhydrase in Müller cells. *Glia*, 11:291-299.
33. Newman, E.A. (1996) Acid efflux from retinal glial cells generated by sodium-bicarbonate cotransport. *J. Neurosci.*, 16:159-168.
34. Newman, E.A. and Zahs, K.R. (1997) Calcium waves in retinal glial cells. *Science*, 275:844-847.
35. Zahs, K.R. and Newman, E.A. (1997) Asymmetric gap junctional coupling between glial cells in the rat retina. *Glia*, 20:10-22.
36. Newman, E.A. and Zahs, K.R. (1998) Modulation of neuronal activity by glial cells in the retina. *J. Neurosci.* 18:4022-4028.
37. Newman, E.A. (1999) Sodium/bicarbonate cotransport in astrocytes and Müller cells of the rat. *Glia*, 26-302-308.
38. Newman, E.A. and Bartosch R. (1999) An eyecup preparation for the rat and mouse. *J. Neurosci. Methods*, 93:169-175.
39. Kofuji, P., Ceelen, P., Zahs, K.R., Surbeck, L.W., Lester, H.A., and Newman, E.A. (2000) Genetic inactivation of an inwardly rectifying potassium channel (Kir4.1 subunit) in mice: phenotypic impact in retina. *J. Neurosci.* 20:5733-5740.
40. Newman, E.A. (2001) Propagation of intercellular calcium waves in retinal astrocytes and Müller cells. *J. Neurosci.* 21: 2215-2223.
41. Ceelen, P.W., Lockridge, A., and Newman, E.A. (2001) Electrical coupling between glial cells in the rat retina. *Glia* 35:1-13.
42. Newman, E.A. (2003) Glial cell inhibition of neurons by release of ATP. *J. Neurosci.* 23:1659-1666.

43. Stevens, E.R., Esquerra, M., Kim, P.M., Newman, E.A., Snyder, S.H., Zahs, K.R. and Miller, R.F. (2003) D-serine and serine racemase are present in the vertebrate retina and contribute to the physiological activation of NMDA receptors. *Proc. Natl. Acad. Sci. USA* 100: 6789-6794.
44. Li, M-g, Serr, M., Newman, E.A., and Hays, T.S. (2004) The *Drosophila* Tctex-1 light chain is dispensable for essential cytoplasmic dynein functions but is required during spermatid differentiation. *Mol. Biol. Cell.* 15: 3005-3014.
45. Newman, E.A. (2004) A dialogue between glia and neurons in the retina: Modulation of neuronal activity. *Neuron Glia Biology* 1:245-252.
46. Newman, E.A. (2005) Calcium increases in retinal glial cells evoked by light-induced neuronal activity. *J. Neurosci.* 25:5502-5510.
47. Metea, M.R. and Newman, E.A. Glial Cells Both Dilate and Constrict Blood Vessels: A Mechanism of Functional Hyperemia. Submitted.
48. Fohlmeister, J.F., Cohen, E.D. and Newman, E.A. Impulse-characteristics of the encoder of retinal ganglion cells in a comparison with the squid axon. Submitted.

Reviews:

1. Newman, E.A. (1985) Regulation of extracellular potassium by glial cells in the retina. *Trends in Neurosci.* 8:156-159.
2. Newman, E.A. (1988) Electrophysiology of retinal glial cells. *Prog. Retinal Res.* 8:153-171.
3. Newman, E.A. (1989) Blood flow and neuronal activity. In: Supplement to the Grass Instrument Company Calendar, 1989 (October essay).
4. Newman, E.A. (1996) Regulation of the neuronal microenvironment by polarized ion fluxes in retinal glial cells. *The Neuroscientist*, 2:110-119.
5. Newman, E.A. and Reichenbach, A. (1996) The Müller cell: a functional element of the retina. *Trends in Neurosci.* 19:307-312.
6. Newman, E.A. and Zahs, K.R. (1998). Modulation of neuronal activity by glial cells: Calcium waves in retinal astrocytes and Müller cells. The Third Great Basin Visual Science Symposium. 3:26-33.
7. Newman, E.A. (2003) Glial cell regulation of synaptic transmission. *Trends in Neurosci.* 26:536-542.

8. Newman, E.A. (2004) Glial modulation of synaptic transmission in the retina. *Glia*. 47:268-274.
9. Newman, E.A. and Volterra, A. (2004) Editorial. Glial control of synaptic function. *Glia*. 47:207-208.
10. Kofuji, P. and Newman, E.A. (2004) Potassium buffering in the central nervous system. *Neuroscience*, 129:1045-1056.
11. Newman, E.A. (2005) A purinergic dialogue between glia and neurons in the retina. Novartis Foundation Symposium. In press.

Chapters in Books:

1. Newman, E.A. and Hartline, P.H. (1986) Infrared "vision" in snakes. In: *The Mind's Eye*. Wolfe, J.M. (Ed), W.H. Freeman and Company. (Reprinted from *Scientific American* 246:116-127.)
2. Newman, E.A. (1986) The Müller cell. In: *Astrocytes*, Volume 1. Fedoroff, S. and Vernadakis, A.(eds), Academic Press, pp. 149-171.
3. Newman, E.A. and Frishman, L.J. (1991) The b-wave. In: Principles and practice of clinical electrophysiology of vision. Heckenlively, J.R. and Arden, G.B. (eds.), Mosby Year Book, chapter 11, 101-111.
4. Newman, E.A. (1993) Inward rectifying potassium channels in retinal Müller cells. Functions of Neuroglia: proceedings of the international symposium. Roitbak, A.I. and Ocherashvili, E.V., eds.
5. Newman, E.A. (1994) Müller cells and the retinal pigment epithelium. In: The principles and practice of ophthalmology, Basic Sciences. Albert, D.M. and Jakobiec, F.A. (eds.), W.B. Saunders, chapter 24, 398-419.
6. Newman, E.A. (1995) Glial cell regulation of extracellular potassium. In: Neuroglia. Helmut Kettenmann and Bruce R. Ransom (eds.), Oxford University Press. pp. 717-731.
7. Newman, E.A. (2000) Müller cells and the retinal pigment epithelium. In: Principles and practice of ophthalmology, 2nd edition. Albert, D.M. and Jakobiec, F.A. (eds.), W.B. Saunders, chapter 118, 1763-1785.
8. Newman, E.A. (2001) Glia of the retina. In: Retina, 3rd edition. Ryan, S.J. (ed.), Mosby, chapter 6, 89-103.

9. Newman, E.A. (2001) Calcium signaling in retinal glial cells and its effect on neuronal activity. In: Glial cell function. Castellano-Lopez, B. and Nieto-Sampedro, M. (eds.) Progress in Brain Research, Elsevier Science, Chapter 21, Vol. 132, pp 241-254.
10. Newman, E.A. (2002) Modulation of neuronal activity by glial cells in the retina. In: Tripartite synapses, synaptic transmission with glia. Volterra, A., Magistretti, P. and Haydon, P.G. (eds.), Oxford University Press, Chapter 15, pp 199-211.
11. Newman, E.A. (2004) Glia and synaptic transmission. In: Neuroglia, 2nd edition. Helmut Kettenmann and Bruce R. Ransom (eds.), Oxford University Press, Chapter 28, pp. 355-366.

Educational Publications:

1. Newman, E.A. (2002) MetaNeuron computer program and instruction manual. The program models the basic electrical properties of neurons and axons. MetaNeuron is currently being used in courses at Harvard University; University of Minnesota; University of California, San Francisco; University of Michigan, Ann Arbor; University of Illinois at Urbana-Champaign; University of Illinois College of Medicine; University of Richmond; Hope College, Holland MI; Wartburg College; University of Leipzig; Charles University, Prague.
2. Leslie, Mitch. (2004) The Desktop Neuron. Description of the MetaNeuron web site on the *NetWatch* page. *Science*. 306:205.