

**ORIGINAL PUBLICATIONS**

1. Hu H, **Jonas P** (2014) A supercritical density of Na<sup>+</sup> channels ensures fast signaling in GABAergic interneuron axons. *Nature Neuroscience* 17:686-693.
2. Studer D, Zhao S, Chai X, **Jonas P**, Graber W, Nestel S, Frotscher M (2014). Capture of activity-induced ultrastructural changes at synapses by high-pressure freezing of brain tissue. *Nature Protocols* 9:1480-1495.
3. Vyleta NP, **Jonas P** (2014). Loose coupling between Ca<sup>2+</sup> channels and release sensors at a plastic hippocampal synapse. *Science* 343:665-670.
4. Pernía-Andrade AJ, **Jonas P** (2014) Theta–gamma modulated synaptic currents in hippocampal granule cells *in vivo* define a mechanism for network oscillations. *Neuron* 81:140-152.
5. Hosp JA, Strüber M, Vida I, Yanagawa Y, Obata K, **Jonas P**, Bartos M (2014) Morpho-physiological criteria divide dentate gyrus interneurons into classes. *Hippocampus* 24:189-203.
6. Pernia-Andrade AJ, Goswami SP, Stickler Y, Fröbe U, Schlögl A, **Jonas P** (2012) A deconvolution-based method with high sensitivity and temporal resolution for detection of spontaneous synaptic currents *in vitro* and *in vivo*. *Biophys J* 103:1429-1439.
7. Goswami SP, Bucurenciu I, **Jonas, P** (2012) Miniature IPSCs in hippocampal granule cells are triggered by voltage-gated Ca<sup>2+</sup> channels via microdomain coupling. *J Neurosci* 32:14294-14304.
8. Kim S, Guzman SJ, Hu H, **Jonas P** (2012) Active dendrites support efficient initiation of dendritic spikes in hippocampal CA3 pyramidal neurons. *Nature Neuroscience* 15:600-606.
9. Eggermann E, **Jonas P** (2012) How the “slow” Ca<sup>2+</sup> buffer parvalbumin affects transmitter release in nanodomain coupling regimes at GABAergic synapses. *Nature Neuroscience* 15:20-22.
10. Nörenberg A, Hu H, Vida I, Bartos M, **Jonas P** (2010) Distinct non-uniform cable properties optimize rapid and efficient activation of fast-spiking GABAergic interneurons. *Proc Natl Acad Sci USA* 107: 894-899.
11. Bucurenciu I, Bischofberger J, **Jonas P** (2010) A small number of open Ca<sup>2+</sup> channels trigger transmitter release at a central GABAergic synapse. *Nature Neuroscience* 13: 19-21.

## PUBLICATIONS PETER JONAS

12. Hu H, Martina M, **Jonas P** (2010) Dendritic mechanisms underlying rapid synaptic activation of fast-spiking hippocampal interneurons. *Science* 327: 52-58 ["Must read" according to Faculty of 1000 Biology].
13. Schwenk J, Harmel N, Zolles G, Bildl W, Kulik A, Heimrich B, Chisaka O, **Jonas P**, Schulte U, Fakler B, Klöcker N (2009) Functional proteomics identify *Cornichon* proteins as auxiliary subunits of AMPA receptors. *Science* 323:1313-1319 [see comment by Tigaret C, Choquet D (2009) *Science* 323:1295-1296]
14. Doischer D, Hosp JA, Yanagawa Y, Obata K, **Jonas P**, Vida I, Bartos M (2008) Postnatal differentiation of basket cells from slow to fast signaling devices. *J Neurosci* 28:12956-12968.
15. Kerr AM, Reisinger E, **Jonas P** (2008) Differential dependence of phasic transmitter release on synaptotagmin 1 at GABAergic and glutamatergic hippocampal synapses. *Proc Natl Acad Sci USA* 105:15581-15586.
16. Aponte Y, Bischofberger J, **Jonas P** (2008) Efficient  $Ca^{2+}$  buffering in fast-spiking basket cells of rat hippocampus. *J Physiol (Lond)* 586:2061-2075 [see comment by Neher E (2008) *J Physiol (Lond)* 586:2031].
17. Schmidt-Hieber C, **Jonas P**, Bischofberger J (2008) Action potential initiation and propagation in hippocampal mossy fibre axons. *J Physiol (Lond)* 586:1849-1857.
18. Bucurenciu I, Kulik A, Schwaller B, Frotscher M, **Jonas P** (2008) Nanodomain coupling between  $Ca^{2+}$  channels and  $Ca^{2+}$  sensors promotes fast and efficient transmitter release at a cortical GABAergic synapse. *Neuron* 57:536-545 ["Must read" according to Faculty of 1000 Biology].
19. Li L, Bischofberger J, **Jonas P** (2007) Differential gating and recruitment of P/Q-, N-, and R-type  $Ca^{2+}$  channels in hippocampal mossy fiber boutons. *J Neurosci* 27:13420-13429.
20. Rollenhagen A, Sätzler K, Rodríguez EP, **Jonas P**, Frotscher M, Lübke JHR (2007) Structural determinants of transmission at large hippocampal mossy fiber synapses. *J Neurosci* 27:10434-10444.
21. Schmidt-Hieber C, **Jonas P**, Bischofberger J (2007) Subthreshold dendritic signal processing and coincidence detection in dentate gyrus granule cells. *J Neurosci* 27:8430-8441.
22. Bischofberger J, Engel D, Li L, Geiger JRP, **Jonas P** (2006) Patch-clamp recording from mossy fiber terminals in hippocampal slices. *Nature Protocols* 1:2075-2081.

## PUBLICATIONS PETER JONAS

23. Aponte Y, Lien CC, Reisinger E, **Jonas P** (2006) Hyperpolarization-activated cation channels in fast-spiking interneurons of rat hippocampus. *J Physiol (Lond)* 574:229-243 [see comment by Debanne D, Gastrein P, Campanac E (2006) *J Physiol (Lond)* 574:2].
24. Vida I, Bartos M, **Jonas P** (2006) Shunting inhibition improves robustness of gamma oscillations in hippocampal interneuron networks by homogenizing firing rates. *Neuron* 49:107-117 [see comment by Mann EO, Paulsen O (2006) *Neuron* 49:8-9].
25. Hefft S, **Jonas P** (2005) Asynchronous GABA release generates long-lasting inhibition at a hippocampal interneuron–principal neuron synapse. *Nature Neuroscience* 8:1319-1328 [see comment by Hestrin S, Galarreta M (2005) *Nature Neuroscience* 8:1283-1284].
26. Engel D, **Jonas P** (2005) Presynaptic action potential amplification by voltage-gated Na<sup>+</sup> channels in hippocampal mossy fiber boutons. *Neuron* 45:405-417 [see comment by Pelkey KA, McBain CJ (2005) *Neuron* 45:327-329].
27. Schmidt-Hieber C, **Jonas P**, Bischofberger J (2004) Enhanced synaptic plasticity in newly generated granule cells of the adult hippocampus. *Nature* 429:184-187.
28. Oliver D, Lien C-C, Soom M, Baukrowitz T, **Jonas P**, Fakler B (2004) Functional conversion between A-type and delayed rectifier K<sup>+</sup> channels by membrane lipids. *Science* 304:265-270 [see comment by Hilgemann DW (2004) *Science* 304:223-224].
29. Kampa BM, Clements J, **Jonas P**, Stuart GJ (2004) Kinetics of Mg<sup>2+</sup> unblock of NMDA receptors: Implications for spike-timing dependent synaptic plasticity. *J Physiol (Lond)* 556:337-345.
30. Hallermann S, Pawlu C, **Jonas P**, Heckmann M (2003) A large pool of releasable vesicles in a cortical glutamatergic synapse. *Proc Natl Acad Sci USA* 100:8975-8980. [see comment by Kushmerick C, von Gersdorff H (2003) *Proc Natl Acad Sci USA* 100:8618-8620].
31. Lien CC, **Jonas P** (2003) Kv3 potassium conductance is necessary and kinetically optimized for high-frequency action potential generation in hippocampal interneurons. *J Neurosci* 23:2058-2068.
32. Bischofberger J, Geiger JRP, **Jonas P** (2002) Timing and efficacy of Ca<sup>2+</sup> channel activation in hippocampal mossy fiber boutons. *J Neurosci* 22:10593-10602.
33. Bartos M, Vida I, Frotscher M, Meyer A, Monyer H, Geiger JRP, **Jonas P** (2002) Fast synaptic inhibition promotes synchronized gamma

## PUBLICATIONS PETER JONAS

- oscillations in hippocampal interneuron networks. Proc Natl Acad Sci USA 99:13222-13227.
34. Hefft S, Kraushaar U, Geiger JRP, **Jonas P** (2002) Presynaptic short-term depression is maintained during regulation of transmitter release at a GABAergic synapse in rat hippocampus. J Physiol (Lond) 539:201-208.
  35. Lien CC, Martina M, Schultz JH, Ehmke H, **Jonas P** (2002) Gating, modulation and subunit composition of voltage-gated K<sup>+</sup> channels in dendritic inhibitory interneurons of rat hippocampus. J Physiol (Lond) 538:405-419.
  36. Geiger JRP, Bischofberger J, Vida I, Fröbe U, Pfitzinger S, Weber HJ, Haverkamp K, **Jonas P** (2002) Patch-clamp recording in brain slices with improved slicer technology. Pflügers Arch 443:491-501.
  37. Alle H, **Jonas P**, Geiger JRP (2001) PTP and LTP at a hippocampal mossy fiber-interneuron synapse. Proc Natl Acad Sci USA 98:14708-14713.
  38. Jerecic J, Schulze CH, **Jonas P**, Sprengel R, Seeburg PH, Bischofberger J (2001) Impaired NMDA receptor function in mouse olfactory bulb neurons by tetracycline-sensitive NR1 (N598R) expression. Mol Br Res 94:96-104.
  39. Jones MV, **Jonas P**, Sahara Y, Westbrook GL (2001) Microscopic kinetics and energetics distinguish GABA<sub>A</sub> receptor agonists from antagonists. Biophys J 81:2660-2670.
  40. Bartos M, Vida I, Frotscher M, Geiger JRP, **Jonas P** (2001) Rapid signaling at inhibitory synapses in a dentate gyrus interneuron network. J Neurosci 21:2687-2698.
  41. Geiger JRP, **Jonas P** (2000) Dynamic control of presynaptic Ca<sup>2+</sup> inflow by fast-inactivating K<sup>+</sup> channels in hippocampal mossy fiber boutons. Neuron 28:927-939.
  42. Martina M, Vida I, **Jonas P** (2000) Distal initiation and active propagation of action potentials in interneuron dendrites. Science 287:295-300 [see comment by Miles R (2000) Science 287:244-246].
  43. Normann C, Peckys D, Schulze CH, Walden J, **Jonas P**, Bischofberger J (2000) Associative long-term depression in the hippocampus is dependent on postsynaptic N-type Ca<sup>2+</sup> channels. J Neurosci 20:8290-8297.

## PUBLICATIONS PETER JONAS

44. Kraushaar U, **Jonas P** (2000) Efficacy and stability of quantal GABA release at a hippocampal interneuron-principal neuron synapse. *J Neurosci* 20:5594-5607.
45. Martina M, Schultz JH, Ehmke H, Monyer H, **Jonas P** (1998) Functional and molecular differences between voltage-gated K<sup>+</sup> channels of fast-spiking interneurons and pyramidal neurons of rat hippocampus. *J Neurosci* 18:8111-8125.
46. **Jonas P**, Bischofberger J, Sandkühler J (1998) Corelease of two fast neurotransmitters at a central synapse. *Science* 281:419-424 [see comment by Nicoll RA, Malenka RC (1998) *Science* 281:360-361].
47. Bischofberger J, **Jonas P** (1997) Action potential propagation into the presynaptic dendrites of rat mitral cells. *J Physiol (Lond)* 504:359-365.
48. Martina M, **Jonas P** (1997) Functional differences in Na<sup>+</sup> channel gating between fast-spiking interneurons and principal neurons in rat hippocampus. *J Physiol (Lond)* 505:593-603.
49. Geiger JRP, Lübke J, Roth A, Frotscher M, **Jonas P** (1997) Submillisecond AMPA receptor-mediated signaling at a principal neuron-interneuron synapse. *Neuron* 18:1009-1023.
50. Ceranic K, Bender R, Geiger JRP, Monyer H, **Jonas P**, Frotscher M, Lübke J (1997) A novel type of GABAergic interneuron connecting the input and the output regions of the hippocampus. *J Neurosci* 17:5380-5394.
51. Götz T, Kraushaar U, Geiger J, Lübke J, Berger T, **Jonas P** (1997) Functional properties of AMPA and NMDA receptors expressed in identified types of basal ganglia neurons. *J Neurosci* 17:204-215.
52. Koh DS, Burnashev N, **Jonas P** (1995) Block of native Ca<sup>2+</sup>-permeable AMPA receptors in rat brain by intracellular polyamines generates double rectification. *J Physiol (Lond)* 486:305-312.
53. Geiger JRP, Melcher T, Koh DS, Sakmann B, Seeburg PH, **Jonas P**, Monyer H (1995) Relative abundance of subunit mRNAs determines gating and Ca<sup>2+</sup> permeability of AMPA receptors in principal neurons and interneurons in rat CNS. *Neuron* 15:193-204.
54. Koh DS, Geiger JRP, **Jonas P**, Sakmann B (1995) Ca<sup>2+</sup>-permeable AMPA and NMDA receptor channels in basket cells of rat hippocampal dentate gyrus. *J Physiol (Lond)* 485:383-402.

## PUBLICATIONS PETER JONAS

55. Spruston N, **Jonas P**, Sakmann B (1995) Dendritic glutamate receptor channels in rat hippocampal CA3 and CA1 pyramidal neurons. *J Physiol (Lond)* 482:325-352.
56. **Jonas P**, Racca C, Sakmann B, Seeburg PH, Monyer H (1994) Differences in  $\text{Ca}^{2+}$  permeability of AMPA-type glutamate receptor channels in neocortical neurons caused by differential GluR-B subunit expression. *Neuron* 12:1281-1289.
57. Major G, Larkman AU, **Jonas P**, Sakmann B, Jack JJB (1994) Detailed passive cable models of whole-cell recorded CA3 pyramidal neurons in rat hippocampal slices. *J Neurosci* 14:4613-4638.
58. Koh DS, **Jonas P**, Vogel W (1994)  $\text{Na}^+$ -activated  $\text{K}^+$  channels localized in the nodal region of myelinated axons of *Xenopus*. *J Physiol (Lond)* 479:183-197.
59. **Jonas P**, Major G, Sakmann B (1993) Quantal components of unitary EPSCs at the mossy fibre synapse on CA3 pyramidal cells of rat hippocampus. *J Physiol (Lond)* 472:615-663.
60. Ruppertsberg JP, Ermler M, Knopf M, Kues W, **Jonas P**, Koenen M (1993) Properties of *Shaker*-homologous potassium channels expressed in the mammalian brain. *Cell Physiol Biochem* 3:250-269.
61. Koh DS, **Jonas P**, Bräu ME, Vogel W (1992) A TEA-insensitive flickering potassium channel active around the resting potential in myelinated nerve. *J Membrane Biol* 130:149-162.
62. Colquhoun D, **Jonas P**, Sakmann B (1992) Action of brief pulses of glutamate on AMPA/kainate receptors in patches from different neurones of rat hippocampal slices. *J Physiol (Lond)* 458:261-287.
63. **Jonas P**, Sakmann B (1992) Glutamate receptor channels in isolated patches from CA1 and CA3 pyramidal cells of rat hippocampal slices. *J Physiol (Lond)* 455:143-171.
64. Burnashev N, Khodorova A, **Jonas P**, Helm PJ, Wisden W, Monyer H, Seeburg PH, Sakmann B (1992) Calcium-permeable AMPA-kainate receptors in fusiform cerebellar glial cells. *Science* 256:1566-1570.
65. **Jonas P**, Koh DS, Kampe K, Hermsteiner M, Vogel W (1991) ATP-sensitive and Ca-activated K channels in vertebrate axons: novel links between metabolism and excitability. *Pflügers Arch* 418:68-73.
66. Bräu ME, Dreyer F, **Jonas P**, Repp H, Vogel W (1990) A  $\text{K}^+$  channel in *Xenopus* nerve fibres selectively blocked by bee and snake toxins: binding and voltage-clamp experiments. *J Physiol (Lond)* 420:365-385.

## PUBLICATIONS PETER JONAS

67. **Jonas P**, Bräu ME, Hermsteiner M, Vogel W (1989) Single-channel recording in myelinated nerve fibers reveals one type of Na channel but different K channels. *Proc Natl Acad Sci USA* 86:7238-7242.
68. **Jonas P** (1989) Temperature dependence of gating current in myelinated nerve fibers. *J Membrane Biol* 112:277-289.
69. **Jonas P**, Vogel W, Arantes EC, Giglio JR (1986) Toxin  $\gamma$  of the scorpion *Tityus serrulatus* modifies both activation and inactivation of sodium permeability of nerve membrane. *Pflügers Arch* 407:92-99.

## REVIEWS, PERSPECTIVES

1. Hu H, Gan J, **Jonas P** (2014) Fast-spiking, parvalbumin<sup>+</sup> GABAergic interneurons: From cellular design to microcircuit function. *Science*. 345, DOI: 10.1126/science.1255263.
2. Eggermann E, Bucurenciu I, Goswami SP, **Jonas P** (2012) Nanodomain coupling between Ca<sup>2+</sup> channels and sensors of exocytosis at fast mammalian synapses. *Nature Reviews Neuroscience* 13:7-21 [Featured Article].
3. Pernía-Andrade A, , **Jonas P** (2011) The multiple faces of RIM. *Neuron* 69:185-187.
4. Guzman SJ, **Jonas P** (2010) Beyond TARPs: the growing list of auxiliary AMPAR subunits. *Neuron* 66:8-10.
5. **Jonas P**, Hefft S (2010) GABA release at terminals of CCK-interneurons: synchrony, asynchrony, and modulation by cannabinoid receptors. *Eur J Neurosci* 31:1194-1195.
6. Kerr AM, **Jonas P** (2008) The two sides of hippocampal mossy fiber plasticity. *Neuron* 57:5-7.
7. Bartos M, Vida I, **Jonas P** (2007) Synaptic mechanisms of synchronized gamma oscillations in inhibitory interneuron networks. *Nature Reviews Neuroscience* 8:45-56.
8. Frotscher M, Jonas P, Sloviter R (2006) Synapses formed by normal and abnormal hippocampal mossy fibers. *Cell Tissue Res* 326:361-367.

## PUBLICATIONS PETER JONAS

9. Bischofberger J, Engel D, Frotscher M, **Jonas P** (2006) Mechanisms underlying the efficacy of transmitter release at mossy fiber synapses in the hippocampal network. *Pflügers Arch Eur J Physiol* 453:361-372.
10. **Jonas P**, Bischofberger J, Fricker D, Miles R (2004) Interneuron diversity series: Fast in, fast out - temporal and spatial signal processing in hippocampal interneurons. *TINS* 27:30-40.
11. Bischofberger J, **Jonas P** (2002) TwoB or not TwoB: differential transmission at glutamatergic mossy fiber-interneuron synapses in the hippocampus. *TINS* 25:600-603.
12. **Jonas P** (2000) The time course of signaling at central glutamatergic synapses. *NIPS* 15:83-89.
13. Melcher T, Geiger JRP, **Jonas P**, Monyer H (1996) Analysis of molecular determinants in native AMPA receptors. *Neurochem Int* 28:141-144.
14. **Jonas P**, Burnashev N (1995) Molecular mechanisms controlling calcium entry through AMPA-type glutamate receptor channels. *Neuron* 15:987-990.
15. **Jonas P**, Spruston N (1994) Mechanisms shaping glutamate-mediated excitatory postsynaptic currents in the CNS. *Curr Opin Neurobiol* 4:366-372.

## BOOK ARTICLES

1. B. Fakler, **Jonas P** (2010) Grundlagen zellulärer Erregbarkeit. In: *Physiologie des Menschen* (Schmidt RF, Heckmann M, Lang F eds). Heidelberg:Springer-Verlag.
2. **Jonas P**, Unsicker K (2003) Molekulare und zelluläre Grundlagen des Nervensystems. In: *Lehrbuch vorklinische Medizin* (Schmidt RF, Unsicker K, eds). Köln:Deutscher Ärzte-Verlag.
3. Geiger JRP, Roth A, Taskin B, **Jonas P** (1999) Glutamate-mediated synaptic excitation of cortical interneurons. In: *Handbook of experimental pharmacology Vol. 141* (Jonas P, Monyer H, eds), pp. 363-398. Berlin:Springer Verlag.
4. Monyer H, **Jonas P**, Rossier J (1999) Molecular determinants controlling functional properties of AMPARs and NMDARs in the mammalian CNS. In: *Handbook of experimental pharmacology Vol. 141* (Jonas P, Monyer H, eds), pp. 309-339. Berlin:Springer Verlag.



## PUBLICATIONS PETER JONAS

5. **Jonas P** (1995) Fast application of agonists to isolated membrane patches. In: Single-channel recording (Sakmann B, Neher E, eds), pp. 231-243. New York:Plenum.
6. Monyer H, **Jonas P** (1995) Polymerase chain reaction analysis of ion channel expression in single neurons of brain slices. In: Single-channel recording (Sakmann B, Neher E, eds), pp. 357-373. New York:Plenum.
7. von Kitzing E, **Jonas P**, Sakmann B (1994) Quantal analysis of excitatory postsynaptic currents at the hippocampal mossy fiber-CA3 pyramidal cell synapse. In: Molecular and cellular mechanisms of neurotransmitter release, pp. 235-260. New York:Raven Press.
8. **Jonas P** (1993) AMPA-type glutamate receptors - nonselective cation channels mediating fast excitatory transmission in the CNS. In: Nonselective cation channels: Pharmacology, Physiology and Biophysics, pp. 61-76. Basel:Birkhäuser Verlag.
9. **Jonas P** (1993) Glutamate receptors in the central nervous system. Ann N Y Academy of Sciences 707:126-135.

## OTHER PUBLICATIONS

1. **Jonas P**, Buzsáki G (2007) Neural inhibition. Scholarpedia 2:3286.