

## P. H. Torkkeli - publications

### A) Refereed Journals (63)

63. Saari P., Immonen E.-V., Kemppainen J., Heimonen K., Zhukovskaya M., Novikova E., French A.S., **Torkkeli P.H.**, Liu H. & Frolov R. 2018: Changes in electrophysiological properties of photoreceptors in *Periplaneta americana* associated with the loss of screening pigment. *J. Comp. Physiol. A* 204:915-928.
62. Saari P., Immonen E.-V., French A.S., **Torkkeli P.H.**, Liu H., Heimonen K. & Frolov R. 2018: Electrical interactions between photoreceptors in the compound eye of *Periplaneta americana* In Press *J. Exp. Biol.*
61. Frolov R., Immonen E.-V., Saari P., **Torkkeli P.H.** Liu H. & French A.S. 2018: Phenotypic plasticity in *Periplaneta americana* photoreceptors. *J. Gen. Physiol.* 150:1386-1396.
60. Sukumar V., Liu H., Meisner S., French A.S. & **Torkkeli P.H.** 2018: Multiple biogenic amine receptor types modulate spider, *Cupiennius salei*, mechanosensory neurons. *Front. Physiol.* 9:857. doi: 10.3389/fphys.2018.00857
59. Fabian-Fine R., Anderson C., Roush M., Johnson, J.A.G. Liu H., French A.S. & **Torkkeli P.H.** 2017: The distribution of cholinergic neurons, and their co-localization with FMRFamide in central and peripheral neurons of the spider *Cupiennius salei*. *Cell Tissue Res.* 370:71-88.
58. Immonen E.-V., French A.S., **Torkkeli P.H.**, Liu H., Vähäsöyrinki M., & Frolov R. 2017: EAG-based channelomes of microvillar photoreceptors are unsuited to diurnal vision. *J. Physiol.* 595:5465-5479.
57. Saari P., French A.S., **Torkkeli P.H.**, Liu H., Immonen E.-V. Frolov RV 2017: Distinct roles of light-activated channels TRP and TRPL in photoreceptors of *Periplaneta americana*. *J. Gen. Physiol.* 149: 455-464.
56. Liu H., French A.S & **Torkkeli P.H.** 2017: Expression of Cys-loop receptor subunits and acetylcholine binding protein in the mechanosensory neurons, glial cells and muscle of the spider *Cupiennius salei*. *J. Comp. Neurol.* 525:1139-1154.
55. **Torkkeli P.H.**, Liu H. & French A.S. 2015: Transcriptome analysis of the central and peripheral nervous systems of the spider *Cupiennius salei* reveals multiple putative Cys-loop ligand gated ion channel subunits and an acetylcholine binding protein. *Plos One* 10(9): e0138068. DOI: 10.1371/journal.pone.0138068
54. French A.S. & **Torkkeli P.H.** 2015: Some recent advances in spider sensory physiology. *Physiology News* 99: 34-37 (invited contribution)
53. French A.S., Meisner S., Liu H., Weckström M. & **Torkkeli P.H.** 2015: Transcriptome

analysis and RNA interference of cockroach phototransduction indicate three opsins and suggest a major role for TRPL channels. *Frontiers of Physiology* doi: 10.3389/fphys.2015.00207

52. Fabian-Fine R., Meisner S., **Torkkeli P.H.** & Meinertzhagen I.A. 2015: Co-localization of gamma-aminobutyric acid and glutamate in neurons of the spider central nervous system. *Cell Tissue Res.* 362: 461-479

51. French A.S., Li A.W., Meisner S. & **Torkkeli P.H.** 2014: Upstream open reading frames and Kozak regions of assembled transcriptome sequences from the spider *Cupiennius salei*. Selection or chance? *Gene* 539: 203–208.

50. French A.S., Meisner S., Su C.-Y. & **Torkkeli P.H.** 2014: CO<sub>2</sub> and fruit odor transduction in *Drosophila* olfactory neurons. What controls their dynamic properties? *PLOS One* 9(1):e86347 doi: 10.1371/journal.pone.008634

49. **Torkkeli P.H.**, Meisner S., Pfeiffer K. & French A.S. 2012: GABA and glutamate receptors have different effects on excitability and are differentially regulated by calcium in spider mechanosensory neurons. *Eur. J. Neurosci.* 36: 3602-3614.

48. Schmitz J., Höger U., **Torkkeli P.H.** & French A.S. 2012: Calcium buffering and clearance in spider mechanosensory neurons. *J. Comp. Physiol A.* 198: 477-483.

47. Pfeiffer K., **Torkkeli P.H.** & French A.S. 2012: Activation of GABA<sub>A</sub> receptors modulates all stages of mechanoreception in spider mechanosensory neurons. *J. Neurophysiol.* 107: 196-204.

46. **Torkkeli P.H.**, Panek I. & Meisner S. 2011: Ca<sup>2+</sup>/calmodulin dependent protein kinase II mediates the octopamine-induced increase in sensitivity in spider VS-3 mechanosensory neurons. *Eur. J. Neurosci.* 33: 1186-1196.

45. French A.S., **Torkkeli P.H.** & Schuckel J. 2011: Dynamic characterization of *Drosophila* antennal olfactory neurons indicates multiple opponent signalling pathways in odor discrimination. *J. Neurosci.* 31: 861-869.

44. Höger U., **Torkkeli P.H.** & French A.S. 2010: Feedback modulation of transduction by calcium in a spider mechanoreceptor. *Eur. J. Neurosci.* 32: 1473-1479.

43. Schuckel J., **Torkkeli P.H.** & French A.S. 2009: Two interacting olfactory transduction mechanisms have linked polarities and dynamics in *Drosophila melanogaster* antennal basiconic sensilla neurons. *J. Neurophysiol.* 102: 214-223.

42. Pfeiffer K., Panek I., Höger U., French A.S. & **Torkkeli P.H.** 2009: Random stimulation of spider mechanosensory neurons reveals long-lasting excitation by GABA and muscimol. *J. Neurophysiol.* 101: 54-66.

41. Höger U., Meisner S., **Torkkeli P.H.** & French A.S. 2008: Regional distribution of calcium elevation during sensory transduction in spider mechanoreceptor neurons. *Neurosci. Res.* 62: 278-285.
40. Panek I., Höger U., French A.S. & **Torkkeli P.H.** 2008. Contributions of voltage- and Ca<sup>2+</sup>-activated conductances to GABA induced depolarization in spider mechanosensory neurons. *J. Neurophysiol.* 99: 1596-1606
39. Schuckel J., Meisner S., **Torkkeli P.H.** & French A.S. 2008: Dynamic properties of *Drosophila* olfactory electroantennograms. *J. Comp. Physiol. A.* 194:483-489.
38. French A.S. & **Torkkeli P.H.** 2007: The power law of sensory adaptation: Simulation by a simple model of excitability in spider mechanoreceptor neurons. *Ann. Biomed. Eng.* 36: 153-161.
37. Höger U., **Torkkeli P.H.** & French A.S. 2007: Ratiometric calcium concentration estimation by LED excitation during mechanotransduction in single sensory neurons. *J. Neurosci. Methods.* 164: 255-260.
36. French A.S., Panek I. & **Torkkeli P.H.** 2006: Shunting versus inactivation: simulation of GABAergic inhibition in spider mechanoreceptors suggests that either is sufficient. *Neurosci. Res.* 52: 189-196.
35. Widmer A., Panek I., Höger U., Meisner S., French A.S. & **Torkkeli P.H.** 2006: Acetylcholine receptors in spider peripheral mechanosensilla. *J. Comp. Physiol.* 192: 85-95.
34. Höger U., **Torkkeli P.H.** & French A.S. 2005: Calcium concentration changes during sensory transduction in spider mechanoreceptor neurons. *Eur. J. Neurosci.* 22: 3171-3178.
33. Panek I. & **Torkkeli P.H.** 2005: Inhibitory glutamate receptors in spider peripheral mechanosensory neurons. *Eur. J. Neurosci.* 22: 636-646.
32. Widmer A., Höger U., Meisner S., French A.S. & **Torkkeli P.H.** 2005 Spider peripheral mechanosensory neurons are directly innervated and modulated by octopaminergic efferents. *J. Neurosci.* 25: 1588-1598.
31. Clark J., Meisner S. & **Torkkeli P.H.** 2005: Immunocytochemical localization of choline acetyltransferase and muscarinic ACh receptors in the antenna during development of the sphinx moth *Manduca sexta*. *Cell Tissue Res.* 320: 163-173.
30. **Torkkeli P.H.**, Widmer A. & Meisner S. 2005: Expression of muscarinic acetylcholine receptors and choline acetyltransferase enzyme in cultured antennal sensory neurons and non-neural cells of the developing moth *Manduca sexta*. *J. Neurobiol.* 62: 316-329.
29. Gingl E., French A.S., Panek I., Meisner S & **Torkkeli P.H.** 2004: Dendritic excitability and localization of GABA mediated inhibition in spider mechanoreceptor neurons. *Eur. J. Neurosci.*

20: 59-65.

28. French A.S. & **Torkkeli P.H.** 2004: Mechanotransduction in spider slit sensilla. *Can. J. Physiol. Pharmacol.* 82: 637-644.

27. Panek I., Meisner S. & **Torkkeli P.H.** 2003: Distribution and function of GABA<sub>B</sub> receptors in spider peripheral mechanosensilla. *J. Neurophysiol.* 90: 2571-2580.

26. French A.S., Höger U., Sekizawa S.-i. & **Torkkeli P.H.** 2003: A context free data compression approach to measuring information transmission by action potentials. *BioSystems.* 69: 55-61.

25. **Torkkeli P.H.** & Panek I. 2002: Neuromodulation of arthropod mechanosensory neurons. *Micros. Res. Tech.* 58: 299-311. (Invited contribution).

24. Panek I., French A.S., Seyfarth E.-A., Sekizawa S.-i. & **Torkkeli P.H.** 2002: Peripheral GABAergic inhibition of spider mechanosensory afferents. *Eur. J. Neurosci.* 16: 96-104.

23. **Torkkeli P.H.** & French A.S. 2002: Simulation of different firing patterns in paired spider mechanoreceptor neurons: The role of Na<sup>+</sup> channel inactivation. *J. Neurophysiol.* 87: 1363-1368.

22. French A.S., **Torkkeli P.H.** & Seyfarth E.-A. 2002: From stress and strain to spikes: mechanotransduction in spider slit sensilla. *J. Comp. Physiol. A.* 188: 739-752.

21. French A.S., Höger U., Sekizawa S.-i. & **Torkkeli P.H.** 2001: Frequency response functions and information capacities of paired mechanoreceptor neurons. *Biol. Cybern.* 85: 293-300.

20. **Torkkeli P.H.**, Sekizawa S.-i. & French A.S. 2001: Inactivation of voltage-activated Na<sup>+</sup> currents contributes to different adaptation properties of paired mechanosensory neurons. *J. Neurophysiol.* 85: 1595-1602.

19. French A.S., Sekizawa S.-i., Höger U. & **Torkkeli P.H.** 2001: Predicting the responses of mechanoreceptor neurons to physiological inputs by nonlinear system identification. *Ann. Biomed. Eng.* 29: 187-194.

18. Sekizawa S.-i., French A.S. & **Torkkeli P.H.** 2000: Low-voltage activated calcium current does not regulate the firing behavior in paired mechanosensory neurons with different adaptation properties. *J. Neurophysiol.* 83: 746-753.

17. **Torkkeli P.H.** & French A.S. 1999: Primary culture of antennal mechanoreceptor neurons of *Manduca sexta*. *Cell Tissue Res.* 297: 301-309.

16. Sekizawa S.-i., French A.S., Höger U. & **Torkkeli P.H.** 1999: Voltage-activated potassium outward currents in two types of spider mechanoreceptor neurons. *J. Neurophysiol.* 81: 2937-2944.

15. French A.S. & **Torkkeli P.H.** 1998: Information transmission at 500 bits/s by action potentials in a mechanosensory neuron. *Neurosci. Lett.* 243: 113-116.
14. Sanders E.J., **Torkkeli P.H.** & French A.S. 1997: Patterns of cell death during gastrulation in chick and mouse embryos. *Anat. Embryol.* 195: 147-154.
13. Höger U., **Torkkeli P.H.**, Seyfarth E.-A. & French A.S. 1997: The ionic selectivity of mechanically-activated channels in spider mechanoreceptor neurons. *J. Neurophysiol.* 78: 2079-2085.
12. **Torkkeli P.H.** & French A.S. 1995: Slowly inactivating outward currents in an insect mechanoreceptor neuron. *J. Neurophysiol.* 74: 1200-1211.
11. **Torkkeli P.H.** & French A.S. 1994: Characterization of a transient outward current in a rapidly adapting insect mechanoreceptor neuron. *Pflügers Arch.* 429: 72-78.
10. McKay R.R., Miller K., Weckström M., **Torkkeli P.**, Järvilehto M. & Shortridge R.D. 1994: The *rpa* (receptor potential absent) visual mutant of the blowfly (*Calliphora erythrocephala*) is deficient in phospholipase C in the eye. *J. Neurogenet.* 9: 177-187.
9. French A.S. & **Torkkeli P.H.** 1994: The basis of rapid adaptation in mechanoreceptors. *News in Physiol. Sci.* 9: 158-161.
8. French A.S. & **Torkkeli P.H.** 1994: The time course of sensory adaptation in the cockroach tactile spine. *Neurosci. Lett.* 178: 147-150.
7. French A.S., Sanders E.J., Duszyk E., Prasad S., **Torkkeli P.H.**, Haskins J. & Murphy R.A. 1993: Immunocytochemical localization of sodium channels in an insect central nervous system using a site-directed antibody. *J. Neurobiol.* 24: 939-948.
6. **Torkkeli P.H.** & French A.S. 1993: Mapping extracellular excitability in an insect mechanoreceptor neuron. *Brain Res.* 632: 317-320.
5. Zhang B.G., **Torkkeli P.H.** & French A. S. 1992: Octopamine selectively modifies the slow component of sensory adaptation in an insect mechanoreceptor. *Brain Res.* 591: 351-355.
4. **Torkkeli P.**, Weckström M. & Järvilehto M. 1991: Membrane maintenance and electrical properties of photoreceptors of wild type and *rpa*-mutant (receptor potential absent) blowflies (*Calliphora erythrocephala*). *Cell Tissue Res.* 266: 97-106.
3. Stockbridge L.L., **Torkkeli P.H.** & French A.S. 1991: Intracellular nonlinear frequency response measurements in the cockroach tactile spine neuron. *Biol. Cybern.* 65: 181-187.
2. **Torkkeli P.** & Järvilehto M. 1989: Fotoreseptorien elinehto: Kalvoston uusiutuminen.

*Solubilogi* 3:11-16.

1. **Torkkeli P.**, Weckström M., Kouvalainen E. & Järvilehto M. 1989: Morphological and functional characteristics of *rpa* (receptor potential absent) visual mutant of the blowfly (*Calliphora erythrocephala*). *J. Comp. Physiol. A*. 165: 333-341.

#### B) Book Chapters (7)

French A.S. & **Torkkeli P.H.** 2012: Sensory receptors and mechanotransduction. In: Sperelakis N., (Ed.) Cell Physiology Source Book. Academic Press, San Diego, London, Boston, New York, Sydney, Tokyo, Toronto. 4<sup>th</sup> edition. Pp.633-647 (Invited contribution).

French A.S. & **Torkkeli P.H.** 2009: Mechanoreception (touch, sensillar structure). In: Resh V.H. and Carde R. (Eds.) Encyclopaedia of Insects. 2<sup>nd</sup> edition. Academic Press. Pp. 610-611.

French A.S. & **Torkkeli P.H.** 2009: Mechanoreceptors. In: Squire L. (Ed.). Encyclopaedia of Neuroscience. Elsevier 5: 689-695.

French A.S. & **Torkkeli P.H.** 2007: Mechanosensitive ion channels of spiders: Mechanical coupling, electrophysiology and synaptic modulation. In: Current topics in Membranes. Vol. 59. Mechanosensitive Ion Channels. Part B. Hamill O.P.(Ed.) Elsevier. pp. 1-20

French A.S. & **Torkkeli P.H.** 2003: Mechanoreception (touch, sensillar structure). In: Resh V.H. and Carde R. (Eds.) Encyclopaedia of Insects. Academic Press. Pp. 689-690.

Panek I. & **Torkkeli P.H.** 2002: A strategy for survival: Modulation of spider mechanosensation. In: Konopinska D. (Ed.) Arthropods: Chemical, Physiological and Environmental Aspects. Wydawnictwo Uniwersytetu Wrocławskiego. Pp. 223-227.

French A.S. & **Torkkeli P.H.** 2001: Sensory receptors and mechanotransduction. In: Sperelakis N., (Ed.) Cell Physiology Source Book. Academic Press, San Diego, London, Boston, New York, Sydney, Tokyo, Toronto. 3<sup>rd</sup> edition. Pp. 761-773. (Invited contribution).

#### C) Abstracts (77)

Johnson J.A.G., Liu H., French A.S. & **Torkkeli P.H.** 2018: Is Piezo protein the mechanotransduction channel in spider mechanosensilla? 1<sup>st</sup> Dalhousie University Bachelors of Medicine Honor's Research Day.

**Torkkeli P.H.**, Johnson J.A.G., Liu H., Sivapalan K. & French A.S. 2018: Is Piezo protein the mechanotransduction channel in spider *Cupiennius salei* mechanosensilla? 13<sup>th</sup> International Congress of Neuroethology.

**Torkkeli P.H.**, Liu H., Johnson J.A.G., DePalma A. & French A.S. 2017: Transcriptome-based investigation of transmitters and receptors involved in synaptic modulation of spider

mechanotransduction. The 16<sup>th</sup> International Meeting of Invertebrate Sound and Vibration.

Johnson J.A.G., Liu H., Fabian-Fine R. & French A.S., **Torkkeli P.H.** 2017: Localization of cholinergic markers in the central nervous system of the spider, *Cupiennius salei*. 10<sup>th</sup> Dalhousie University Department of Physiology and Biophysics Graduate Student Research Day.

**Torkkeli P.H.**, Sukumar V., Meisner S., Panek I. & French A.S. 2015: Spider, *Cupiennius salei*, mechanosensory neurons have multiple biogenic amine receptor types, including constitutively active receptors. *Soc. Neurosci. Abstr.* 2015.

French A.S., **Torkkeli P.H.**, Meisner S., Liu H., Immonen E.-V., Frolov R. & Weckström M. 2015: Molecular and functional characterization of opsins and TRP channels in compound eyes of the cockroach, *Periplaneta americana*. *Soc. Neurosci. Abstr.* 2015.

**Torkkeli P.H.** & French A.S. 2014: The Cys-loop ligand-gated ion channel gene family of the spider *Cupiennius salei* nervous system. *11<sup>th</sup> International Congress of Neuroethology*.

French A.S., Li A.W., Meisner S. & **Torkkeli P.H.** 2014: The transcriptome of the spider *Cupiennius salei* peripheral nervous system – identifying genes involved in mechanosensation. *11<sup>th</sup> International Congress of Neuroethology*.

Sukumar V., French A.S. & **Torkkeli P.H.** 2014: Tyramine effects on spider (*Cupiennius salei*) mechanosensory neurons. 7<sup>th</sup> Department of Physiology and Biophysics Graduate Student Research Day.

**Torkkeli P.H.** Li A.W., Meisner S. & French A.S. 2013: Several octopamine receptor subtypes are involved in modulation of spider mechanosensory neurons. *The 14<sup>th</sup> International Meeting of Invertebrate Sound and Vibration*.

French A.S., Höger U., Schmitz J. & **Torkkeli P.H.** 2013: Calcium ions modulate transduction, and are strongly buffered in spider mechanosensory neurons. *The 14<sup>th</sup> International Meeting of Invertebrate Sound and Vibration*.

French A.S., Li A., Meisner S. & **Torkkeli P.H.** 2013: Transcriptome assembly of neurotransmitter receptors in spider mechanoreceptors. International Union of Physiological Sciences Meeting.

**Torkkeli P.H.**, Meisner S. & French A.S. 2012: Ionotropic GABA and glutamate receptors have different effects on excitability and are differentially regulated by calcium in spider mechanosensory neurons. *Soc. Neurosci. Abstr.* 2012

French A.S., Meisner S., Lowe J. & **Torkkeli P.H.** 2012: Dynamic characterization of carbon dioxide transduction in *Drosophila melanogaster* antennal olfactory sensilla. *Soc. Neurosci. Abstr.* 2012

**Torkkeli P.H.**, Panek I. & Meisner S. 2011: Octopamine-induced increase in sensitivity in spider VS-3 mechanosensory neurons is mediated by Ca<sup>2+</sup>/calmodulin dependent protein kinase II. *8<sup>th</sup> IBRO World conference in Neuroscience*. C270

Schuckel J., **Torkkeli P.H.** & French A.S. 2011: Dynamic properties of multiple olfactory neurons in *Drosophila* antennal basiconic sensilla. *8<sup>th</sup> IBRO World conference in Neuroscience*. C222

Pfeiffer K., **Torkkeli P.H.** & French A.S. 2011: Information transmission is limited by entropy in spider mechanoreceptors. *9<sup>th</sup> Göttingen meeting of the German neuroscience Society*

Morris B.J., Meisner S. & **Torkkeli P.H.** 2010: Immunocytochemical labeling of the mechanotransduction channel in the slit sensilla of the spider, *Cupiennius salei*. 24<sup>th</sup> Annual Cameron Conference for Biology & Marine Biology Honours Students. Department of Biology, Dalhousie University.

**Torkkeli P.H.**, Pfeiffer K., Meisner S. & French A.S. 2009: Long and short term effects of glutamate on spider mechanosensory neurons during random stimulation. *Journal of Physiological Sciences* 59: Supp 1, 203.

French A.S., Höger U., Meisner S. & **Torkkeli P.H.** 2009: Calcium-based negative feedback on sensory transduction in spider mechanoreceptors. *Journal of Physiological Sciences* 59: Supp. 1, 203

Pfeiffer K., Höger U., French A.S. & **Torkkeli P.H.** 2009: Differing effects of GABA and glutamate on spider (*Cupiennius salei*) mechanoreceptors *8<sup>th</sup> Göttingen meeting of the German neuroscience Society*

Schuckel J., **Torkkeli P.H.** & French A.S. 2009: Different fruit odors produce widely divergent dynamic responses in *Drosophila* antennal olfactory receptor neurons. *8<sup>th</sup> Göttingen meeting of the German neuroscience Society*

Höger U., Meisner S., **Torkkeli P.H.** & French A.S. 2009: Mechanically induced regional changes in free intracellular Ca<sup>2+</sup>, and the effect of intracellular Ca<sup>2+</sup> on mechanotransduction in spider sensory neurons. *8<sup>th</sup> Göttingen meeting of the German neuroscience Society*.

French A.S., Schuckel J., & **Torkkeli P.H.** 2009: Excitatory and inhibitory pathways with differing dynamics in *Drosophila* olfactory receptors. *Canadian Physiological Society Winter Meeting, Beaupré, Québec*. 24.

Pfeiffer K., Höger U., French A.S. & **Torkkeli P.H.** 2008: Mechanisms of GABA<sub>A</sub> receptor mediated excitation of spider mechanosensory neurons. *Soc. Neurosci. Abstr.* 38

Höger U., Meisner S., **Torkkeli P.H.** & French A.S. 2008: Regional calcium changes in spider mechanoreceptors during sensory transduction. *Soc. Neurosci. Abstr.* 38.



Schuckel J., Stengl M., Torkkeli P.H. & French A.S. 2008: Dynamic characterization of *Drosophila* olfactory sensilla by random binary sequence stimulation. *Soc. Neurosci. Abstr.* 38.

Schuckel J., Meisner S., **Torkkeli P.H.** & French A.S. 2008: Controlled dynamic stimulation of *Drosophila* olfactory receptors. *Canadian Physiological Society Winter meeting. Lake Louise Alberta*

Pfeiffer K., Höger U., French A.S. & **Torkkeli P.H.** 2008: Membrane depolarization and excitatory action of GABA and muscimol in spider mechanosensory neurons. *Canadian Physiological Society Winter meeting. Lake Louise Alberta*

Pfeiffer K., Höger U., French A.S. & **Torkkeli P.H.** 2007: Excitatory effects of GABA<sub>A</sub> receptor activation in spider mechanosensory neurons. *8<sup>th</sup> International Congress of Neuroethology.* 236.

Schuckel J., Meisner S., **Torkkeli P.H.** & French A.S. 2007: Controlled dynamic stimulation of *Drosophila* olfactory receptors. *8<sup>th</sup> International Congress of Neuroethology* 80.

Panek I., Höger U., French A.S. & **Torkkeli P.H.** 2007: Effects of voltage-gated conductances and intracellular calcium on the GABA response of spider mechanosensory neurons. *7<sup>th</sup> IBRO World conference in Neuroscience.* 383

Höger U., **Torkkeli P.H.** & French A.S. 2007: Ratiometric measurements of calcium concentration during sensory transduction in spider mechanoreceptors. *7<sup>th</sup> IBRO World conference in Neuroscience.* 147.

Widmer A., Höger U., Meisner S., French A.S. & **Torkkeli P.H.** 2005: Spider peripheral mechanosensory neurons are directly innervated and modulated by octopaminergic efferents. *9<sup>th</sup> European Symposium for Insect Taste and Olfaction.* P. 59.

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Widmer A., Höger U., Meisner S., French A.S. & **Torkkeli P.H.** 2004: Immunocytological and electrophysiological characterization of octopamine receptors in spider mechanosensilla. *Soc. Neurosci. Abstr.* 30.

Widmer A., Höger U., Meisner S., French A.S. & **Torkkeli P.H.** 2003: Muscarinic ACh receptors on spider mechanosensilla. *Soc. Neurosci. Abstr.* 29: 269.2.

Gingl E., Panek I., **Torkkeli P.H.** & French A.S. 2003: Localization of GABA mediated peripheral inhibition in spider mechanoreceptor neurons. *Soc. Neurosci. Abstr.* 29: 269.3.

Panek I., Meisner S. & **Torkkeli P.H.** 2003: The distribution and function of metabotropic GABA<sub>B</sub> receptors in spider peripheral mechanosensilla. *29<sup>th</sup> Göttingen Neurobiology Conference*. Georg Thieme Verlag. Pp. 774-775

Panek I. & **Torkkeli P.H.** 2001: GABA induced presynaptic inhibition of spider cuticular mechanosensory neurons. *Acta Neurobiol. Exp. (Warsz.)* 61(3): p. 248.

Panek I. & **Torkkeli P.H.** 2001: GABA induced presynaptic inhibition of spider cuticular mechanosensory neurons. *Central European Conference of Neurobiology. Krakow, Poland 11-15th of August.* p.153.

Widmer A., French A.S. & **Torkkeli P.H.** 2001: Acetylcholine receptors on cultured antennal cells of the moth *Manduca sexta*. *Soc. Neurosci. Abstr.* 27: 392.11.

Panek I., French A.S., Seyfarth E.-A., Sekizawa S.-i. & **Torkkeli P.H.** 2001: GABAergic modulation of spider mechanosensory afferents. *Soc. Neurosci. Abstr.* 27: 156.8.

**Torkkeli P.H.** & French A.S. 2001: A model of excitability in spider mechanoreceptor neurons confirms that sodium inactivation controls their rapid adaptation. *Soc. Neurosci. Abstr.* 27: 820.10.

Panek I. & **Torkkeli P.H.** 2001: GABA induced presynaptic inhibition of peripherally located parts of spider cuticular mechanosensory neurons. *Proc. Int. Union Physiol. Sci.* XXXIV A374.

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French A.S., Sekizawa S.-i., Höger U. & **Torkkeli P.H.** 2000: Nonlinear models of action potential firing in paired mechanoreceptor neurons. *Ann. Biomed. Eng.* 28: S33.

French A.S., Höger U., Sekizawa S.-i & **Torkkeli P.H.** 2000: Frequency response functions for mechanical and electrical stimulation of a spider slit sense organ. *Soc. Neurosci. Abstr.* 26: 66.7.

**Torkkeli P.H.**, Sekizawa S.-i. & French A.S. 2000: Inactivation of Na<sup>+</sup> currents contributes to the adaptation of paired mechanosensory neurons. *Soc. Neurosci. Abstr.* 26: 66.8.

**Torkkeli P.H.** & French A.S. 1999: Stretch-activated ion channels in cultured mechanosensory neurons of *Manduca sexta*. *Biophys. J.* 76: A203.

Sekizawa S.-i., French A.S., Höger U. & **Torkkeli P.H.** 1999: Voltage-activated outward

currents in two types of spider mechanoreceptor neurons. *Biophys. J.* 76: A77.

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D) GenBank Accession numbers:

- 23. KT183364 *Cupiennius salei* Glutamate-gated Cl<sup>-</sup> channel
- 22. KT183363 *Cupiennius salei* ACh bindin protein
- 21. KT183362 *Cupiennius salei* Nicotinic ACh receptor  $\alpha$

20. KY074556 *Cupiennius salei* Vesicular amine transporter
19. KX892709 *Cupiennius salei* Choline acetyltransferase
18. KY074555 *Cupiennius salei* FMRF-amide
17. KY074554 *Cupiennius salei* FMRF-amide
16. KX966397 *Cupiennius salei* Vesicular ACh transporter
15. KX892708 *Cupiennius salei* Carnitine O-palmitoyltransferase
14. KX892707 *Cupiennius salei* Carnitine O-acetyltransferase
13. KT183361 *Cupiennius salei* Nicotinic ACh receptor non- $\alpha$
12. KT363688 *Cupiennius salei* Histamine-gated Cl<sup>-</sup> channel
11. KX714078 *Periplaneta americana* K<sup>+</sup> KCNQ channel
10. KF010813 *Periplaneta americana* K<sup>+</sup> EAG channel
9. KP981367 *Periplaneta americana* green opsin
8. KP941115 *Periplaneta americana* UV opsin
7. KP861985 *Periplaneta americana* green opsin
6. GBFC01000001 to GBFC01000102 *Cupiennius salei* leg hypodermis transcriptome  
(Next 102 sequences)
5. GAKT01000001 to GAKT01000155 *Cupiennius salei* leg hypodermis transcriptome  
(First 155 sequences)
4. KF010814 *Periplaneta americana* antennal EAG ion channel
3. KF010813 *Periplaneta americana* retinal EAG ion channel
2. KC329816 *Periplaneta americana* retinal TRP ion channel
1. KC292630 *Periplaneta americana* retinal TRPL ion channel