

Prof. Dr. Keram Pfeiffer – Publications

REFEREED ORIGINAL PAPERS

31. Bigge R, Pfefferle M, **Pfeiffer K**, Stöckl AL (2021): Natural image statistics in the dorsal and ventral visual field match a switch in flight behaviour in a hawkmoth. *Curr Biol* 31:R267–R281.
doi: 10.1016/j.cub.2021.02.022
30. Zittrell F, **Pfeiffer K**^{*}, Homberg U^{*} (2020): Matched-filter coding of sky polarization results in an internal sun compass in the brain of the desert locust. *PNAS* 117:25810–25817.
doi: 10.1073/pnas.2005192117
^{*} Shared last author.
29. Held M, Thi Kim Chi Le, Pegel U, Dersch F, Beetz MJ, **Pfeiffer K**^{*}, Homberg U^{*} (2020): Anatomical and ultrastructural analysis of the posterior optic tubercle in the locust *Schistocerca gregaria*. *Arthropod Struct Dev* 58:100971,
doi: 10.1016/j.asd.2020.100971
^{*} Shared last author.
[Provided the cover image.]
28. Hensgen R, England L, Homberg U, **Pfeiffer K** (2020): Neuroarchitecture of the central complex in the brain of the honeybee: neuronal cell types. *J Comp Neurol*. doi: 10.1002/cne.24941.
27. Franzke M, Kraus C, Dreyer D, **Pfeiffer K**, Beetz J, Stoeckl A, Foster J, Warrant E, el Jundi B (2020): Spatial orientation based on multiple visual cues in non-migratory monarch butterflies. *J Exp Biol* 223:jeb223800, doi: 10.1242/jeb.223800
26. Adden A, Wibrand S, **Pfeiffer K**, Warrant E, Heinze S (2020): The brain of a nocturnal migratory insect, the Australian Bogong moth. *J Comp Neurol* 528:1942–1963,
doi: 10.1002/cne.24866
25. Groothuis J, **Pfeiffer K**, el Jundi B, Smid HM (2019): The Jewel Wasp Standard Brain: Average shape atlas and morphology of the female *Nasonia vitripennis* brain. *Arthropod Struct Dev* 51:41–51. doi: 10.1016/j.asd.2019.100878
24. Stöckl A, Grittner R, **Pfeiffer K** (2019): The role of lateral optic flow cues in hawkmoth flight control. *J Exp Biol* 222:jeb199406 222, doi: 10.1242/jeb.199406
23. Pegel U, **Pfeiffer K**, Zittrell F, Scholtyssek C, Homberg U (2019): Two compasses in the central complex of the locust brain. *J Neurosci* 39:3070-3080,
doi: 10.1523/JNEUROSCI.0940-18.2019
22. el Jundi B, Warrant EJ, **Pfeiffer K**, Dacke, M (2018): Neuroarchitecture of the dung beetle central complex. *J Comp Neurol* 526:2612–2630, doi: 10.1002/cne.24520

21. French AS, **Pfeiffer K** (2018): Nonlinearization: Naturalistic stimulation reveals non-linear dynamic behavior in a spider mechanoreceptor. *Biol Cybern* 112:403–413, doi: 10.1007/s00422-018-0763-0
20. Pegel U, **Pfeiffer K**, Homberg U (2018): Integration of celestial compass cues in the central complex of the locust brain. *J Exp Biol* 221:jeb.171207, doi: 10.1242/jeb.171207
19. de Vries L, **Pfeiffer K**, Trebels B, Adden AK, Green K, Warrant E, Heinze S (2017): Comparison of navigation-related brain regions in migratory versus non-migratory noctuid moths. *Front Behav Neurosci.* 11:158. doi: 10.3389/fnbeh.2017.00158
18. Held M, Berz A, Hensgen R, Muenz TS, Scholl C, Rössler W, Homberg U, **Pfeiffer K** (2016): Microglomerular synaptic complexes in the sky-compass network of the honeybee connect parallel pathways from the anterior optic tubercle to the central complex. *Front Behav Neurosci.* 10:716.
17. Beetz J, **Pfeiffer K**, Homberg U (2016): Neurons in the brain of the desert locust *Schistocerca gregaria* sensitive to polarized light at low stimulus elevations. *J Comp Physiol A*, DOI:10.1007/s00359-016-1116-x.
16. Zeller M, Held M, Bender J, Berz A, Heinloth T, Hellfritz T, **Pfeiffer K** (2015): Trans-medulla neurons in the sky compass network of the honeybee (*Apis mellifera*) are a possible site of circadian input. *PLOS ONE* 10:e0143244.
15. **Pfeiffer K**, French AS (2015): Naturalistic stimulation changes the dynamic response of action potential encoding in a mechanoreceptor. *Front Physiol* 6:303.
14. Bech M, Homberg U, **Pfeiffer K** (2014): Receptive fields of locust brain neurons are matched to polarization patterns of the sky. *Curr Biol* 24:2124–2129.
[This publication was featured in a dispatch. (Krapp H (2014): Sensory Integration: Neuronal Filters for Polarized Light Patterns. *Curr Biol* 24:R840–841)]
13. el Jundi B, **Pfeiffer K**, Heinze S, Homberg U (2014): Integration of polarization and chromatic cues in the insect sky compass. *J Comp Physiol A* 200:575-589.
[This publication is an invited submission and comprises both reviewed and original data. I contributed original data.]
12. Torkkeli PH, Meisner S, **Pfeiffer K**, French AS (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.
11. **Pfeiffer K**, Kinoshita M (2012): Segregation of visual inputs from different regions of the compound eye in two parallel pathways through the anterior optic tubercle of the bumblebee (*Bombus ignitus*). *J Comp Neurol* 520:212–229.
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10. **Pfeiffer K**, Torkkeli PH, French AS (2012): Activation of GABA_A receptors modulates all stages of mechanoreception in spider mechanosensory neurons. *J Neurophysiol* 107:196–204.
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9. el Jundi B, **Pfeiffer K**, Homberg U (2011): A distinct layer of the medulla integrates sky compass signals in the brain of an insect. *PLoS ONE* 6(11):e27855.
8. French AS, **Pfeiffer K** (2011): Measuring entropy in continuous and digitally filtered neural signals. *J Neurosc Methods* 196:81–87.
7. **Pfeiffer K**, Negrello M, Homberg U (2011): Conditional perception under stimulus ambiguity: Polarization- and azimuth-sensitive neurons in the locust brain are inhibited by low degrees of polarization. *J Neurophysiol* 105:28–35.
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4. **Pfeiffer K**, Homberg U (2007): Coding of azimuthal directions via time-compensated combination of celestial compass cues. *Curr Biol* 17:960–965.
[This publication was featured as the cover article and in a dispatch. (Krapp H (2007): Polarization vision: how insects find their way by watching the sky. *Curr Biol* 17:R557–560)]
3. Kinoshita M, **Pfeiffer K**, Homberg U (2007): Spectral properties of identified polarized-light sensitive interneurons in the brain of the desert locust *Schistocerca gregaria*. *J Exp Biol* 210:1350–1361.
[This publication was featured in "Inside JEB". Blackburn L (2007): Locusts' light response. *J Exp Biol* 210:i–a]
2. **Pfeiffer K**, Kinoshita M, Homberg U (2005): Polarization-sensitive and light-sensitive neurons in two parallel pathways passing through the anterior optic tubercle in the locust brain, *J Neurophysiol* 94:3903–3915.
1. Homberg U, Hofer S, **Pfeiffer K**, Gebhardt S (2003): Organization and neural connections of the anterior optic tubercle in the brain of the locust, *Schistocerca gregaria*, *J Comp Neurol* 462:415–430.

REVIEW ARTICLES (R=refereed, I= invited)

4. **Pfeiffer K**, Homberg U (2014): Organization and functional roles of the central complex in the insect brain. *Ann Rev Entomol* 59:165–184.^{RI}
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3. Homberg U, Heinze S, **Pfeiffer K**, Kinoshita M, el Jundi B (2011): Central neural coding of sky polarization in insects. *Phil Trans R Soc B* 366:680–687.^{RI}
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1. Homberg U, Hofer S, Mappes M, Vitzthum H, **Pfeiffer K**, Gebhardt S, Müller M, Paech A (2004): Neurobiology of polarization vision in the locust *Schistocerca gregaria*. *Acta Biol Hung* 55:81–89.

POPULAR SCIENCE ARTICLES

1. **Pfeiffer K**, Homberg U (2007): A detector for the position of the sun in the locust brain. (original title in German: “Sonnenstand-Anzeiger im Heuschreckengehirn”), *BIOforum* 30:20-21.

OTHER PUBLICATIONS

4. Heinze S, **Pfeiffer K** (2018): Editorial: The insect central complex – from sensory coding to directing movement. *Front Behav Neurosci*, doi: 10.3389/fnbeh.2018.00156
3. **Pfeiffer K** (2015): Peripheral and central nervous processing of sensory information in two arthropod species. Original title in German: Periphere und zentralnervöse Verarbeitung sensorischer Informationen bei zwei Arthropodenspezies. Habilitation thesis, Philipps-University Marburg, Germany.
2. **Pfeiffer K** (2006): Coding of sky-compass information in neurons of the anterior optic tubercle of the desert locust *Schistocerca gregaria*. Doctoral thesis, Philipps-University Marburg, Germany.
1. **Pfeiffer K** (2001): Characterization of interneurons with ramifications in the anterior optic tubercle of the locust *Schistocerca gregaria*. Original title in German: Charakterisierung von Interneuronen mit Verzweigungen im anterioren optischen Tuberkel der Heuschrecke *Schistocerca gregaria*. Diploma thesis (comparable to master thesis), Philipps-University Marburg, Germany.