

Publications

1. Books

Heinbockel T (ed) (2023) *Learning and Memory – From Molecules and Cells to Mind and Behavior*. IntechOpen. London, United Kingdom, in preparation.

Heinbockel T (ed) (2023) *The Human Amygdala in Health and Disease*. IntechOpen. London, United Kingdom, in preparation.

Heinbockel T (ed) (2023) *Acetylcholine – Recent Advances and New Perspectives*. IntechOpen. London, United Kingdom, in preparation.

Heinbockel T (ed) (2022) *Neurophysiology – Networks, Plasticity, Pathophysiology, and Behavior*. ISBN: 978-1-80356-069-4, ISBN: 978-1-80356-069-4, eBook (PDF) ISBN: 978-1-80356-070-0. London, United Kingdom: IntechOpen, 286 pp. Available at: <https://www.intechopen.com/books/11742>

Heinbockel T, Weissert R (eds) (2022) *COVID-19, Neuroimmunology and Neural Function*. ISBN: 978-1-80355-031-2, Print ISBN 978-1-80355-030-5, E-Book (PDF) ISBN 978-1-80355-032-9. London, United Kingdom: IntechOpen, 134 pp. <https://doi.org/10.5772/intechopen.95199>
<http://www.intechopen.com/books/covid-19-neuroimmunology-and-neural-function>

Anwar M, Farooq Z, Rather RA, Tauseef M, **Heinbockel, T** (eds) (2022) *Epigenetics to Optogenetics - A New Paradigm in the Study of Biology*. ISBN: 978-1-83881-123-5, Print ISBN 978-1-83880-993-5, E-Book (PDF) ISBN 978-1-83881-124-2. London, United Kingdom: IntechOpen, 176 pages. Available at: <https://www.intechopen.com/books/9672>

Heinbockel T, Zhou Y (eds) (2021) *Connectivity and Functional Specialization in the Brain*. ISBN 978-1-83962-797-2. London, United Kingdom: IntechOpen, 162 pages. Available at: <http://www.intechopen.com/books/connectivity-and-functional-specialization-in-the-brain>

Heinbockel T, Gendeh BS (eds) (2020) *Sino-Nasal and Olfactory System Disorders*. ISBN: 978-1-83880-951-5. London, United Kingdom: IntechOpen, 201 pages. Available at: <https://www.intechopen.com/books/sino-nasal-and-olfactory-system-disorders>

Heinbockel T, Csoka AB (eds) (2019) *Neurochemical Basis of Brain Function and Dysfunction*. ISBN: 978-1-78985-999-7. London, United Kingdom: IntechOpen, 166 pages. Available at: <https://www.intechopen.com/books/neurochemical-basis-of-brain-function-and-dysfunction>

Heinbockel T, Shields VDC (eds) (2019) *Histology*. ISBN: 978-1-78984-971-4. London, United Kingdom: IntechOpen, 135 pages. Available at: <https://www.intechopen.com/books/histology>

Heinbockel T (ed) (2018) *Sensory Nervous System*. ISBN: 978-1-78923-359-9. London, United Kingdom: IntechOpen, 160 pages. Available at: <https://www.intechopen.com/books/sensory-nervous-system>

Heinbockel T (ed) (2017) *Synaptic Plasticity*. ISBN 978-953-51-3234-9. Rijeka, Croatia:
IntechOpen, 220 pages. Available at: <https://www.intechopen.com/books/synaptic-plasticity/>

Heinbockel T (ed) (2014) *Neurochemistry*. ISBN 978-953-51-1237-2. Rijeka, Croatia:
IntechOpen, 414 pages. Available at: <http://www.intechopen.com/books/neurochemistry>

Heinbockel T (ed) (2012) *Neuroscience*. ISBN 978-953-51-0617-3. Rijeka, Croatia:
IntechOpen, 138 pages. Available at: <http://www.intechopen.com/books/neuroscience>



2. Original Reports

- Alhazzaa R, McKinley R, Getachew B, Tizabi Y, **Heinbockel T**, Csoka AB (2023) Epigenetic changes induced by high glucose in human pancreatic beta cells. *Journal of Diabetes Research*, vol. 2023, Article ID 9947294, 15 pages, 2023. <https://doi.org/10.1155/2023/9947294>
- Gerkin RC, Ohla K, Veldhuizen MG, Joseph PV, Kelly CE, Bakke AJ, Steele KE, Farruggia MC, Pellegrino R, Pepino MY, Bouysset C, Soler GM, Pereda-Loth V, Dibattista M, Cooper KW, Croijmans I, Di Pizio A, Ozdener MH, Fjaeldstad AW, Lin C, Sandell MA, Singh PB, Brindha VE, Olsson SB, Saraiva LR, Ahuja G, Alwashahi MK, Bhutani S, D'Errico A, Fornazieri MA, Golebiowski J, Hwang LD, Öztürk L, Roura E, Spinelli S, Whitcroft KL, Faraji F, Fischmeister FP, **Heinbockel T**, Hsieh JW, Huart C, Konstantinidis I, Menini A, Morini G, Olofsson JK, Philpott CM, Pierron D, Shields VDC, Voznessenskaya VV, Albayay J, Altundag A, Bensafi M, Bock MA, Calcinoni O, Fredborg W, Laudamiel C, Lim J, Lundström JN, Macchi A, Meyer P, Moein ST, Santamaría E, Sengupta D, Dominguez PR, Yanik H, Hummel T, Hayes JE, Reed DR, Niv MY, Munger SD, Parma V; GCCR Group Author (2021) Recent smell loss is the best predictor of COVID-19 among individuals with recent respiratory symptoms. *Chem Senses* 46:1-12. <https://doi.org/10.1093/chemse/bjaa081>
- Shields VDC, May M, Heinbockel TK, **Heinbockel T** (2020) The nose knows: exposing elementary students to insects and the sense of smell. *Annal Behav Neurosci*, 3(1): 306-313. <https://doi.org/10.18314/abne.v3i1.2026>.
- Shields VDC, May M, Heinbockel TK, **Heinbockel T** (2020) Employing hands-on activities to understand reflex actions in the nervous system. *Annal Behav Neurosci*, 3(1): 298-305. <https://doi.org/10.18314/abne.v3i1.2025>
- Shields VDC, May M, Heinbockel TK, **Heinbockel T** (2020) A hands-on activity to illustrate action potentials and neurotransmission. *Annal Behav Neurosci*, 3(1): 284-290. <https://doi.org/10.18314/abne.v3i1.2015>
- Shields VDC, Dimitriades N, Heinbockel TK, **Heinbockel T** (2020) Picking your brain: understanding the structure and function of nerve cells and the brain. *Annal Behav Neurosci*, 3(1): 276-283. <https://doi.org/10.18314/abne.v3i1.2008>
- Gerkin RC, Ohla K, Veldhuizen MG, Joseph PV, Kelly CE, Bakke AJ, Steele KE, Farruggia MC, Pellegrino R, Pepino MY, Bouysset C, Soler GM, Pereda-Loth V, Dibattista M, Cooper KW, Croijmans I, Di Pizio A, Ozdener MH, Fjaeldstad AW, Lin C, Sandell MA, Singh PB, Brindha VE, Olsson SB, Saraiva LR, Ahuja G, Alwashahi MK, Bhutani S, D'Errico A, Fornazieri MA, Golebiowski J, Hwang LD, Öztürk L, Roura E, Spinelli S, Whitcroft KL, Faraji F, Fischmeister FPS, **Heinbockel T**, Hsieh JW, Huart C, Konstantinidis I, Menini A, Morini G, Olofsson JK, Philpott CM, Pierron D, Shields VDC, Voznessenskaya VV, Albayay J, Altundag A, Bensafi M, Bock MA, Calcinoni O, Fredborg W, Laudamiel C, Lim J, Lundström JN, Macchi A, Meyer P, Moein ST, Santamaría E, Sengupta D, Domínguez PP, Yanik H, Boesveldt S, de Groot JHB, Dinnella C, Freiherr J, Laktionova T, Mariño S, Monteleone E, Nunez-Parra A, Abdulrahman O, Ritchie M, Thomas-Danguin T, Walsh-Messinger J, Al Abri R, Alizadeh R, Bignon E, Cantone E, Cecchini MP, Chen J, Guàrdia MD, Hoover KC, Karni N, Navarro M, Nolden AA, Mazal PP, Rowan NR, Sarabi-Jamab

- A, Archer NS, Chen B, Di Valerio EA, Feeney EL, Frasnelli J, Hannum M, Hopkins C, Klein H, Mignot C, Mucignat C, Ning Y, Ozturk EE, Peng M, Saatci O, Sell EA, Yan CH, Alfaro R, Cecchetto C, Coureaud G, Herriman RD, Justice JM, Kaushik PK, Koyama S, Overdevest JB, Pirastu N, Ramirez VA, Roberts SC, Smith BC, Cao H, Wang H, Balungwe P, Baguma M, Hummel T, Hayes JE, Reed DR, Niv MY, Munger SD, Parma V (2020) The best COVID-19 predictor is recent smell loss: a cross-sectional study. *medRxiv*:2020.07.22.20157263. <https://doi.org/10.1101/2020.07.22.20157263>
- Parma V, Ohla K, Veldhuizen MG, Niv MY, Kelly CE, Bakke AJ, Cooper KW, Bouysset C, Pirastu N, Dibattista M, Kaur R, Liuzza MT, Pepino MY, Schöpf V, Pereda-Loth V, Olsson SB, Gerkin R C, Domínguez PR, Albayay J, Farruggia MC, Bhutani S, Fjaeldstad AW, Kumar R, Menini A, Bensafi M, Sandell M, Konstantinidis I, Di Pizio A, Genovese F, Öztürk L, Thomas-Danguin T, Frasnelli J, Boesveldt S, Saatci Ö, Saraiva LR, Lin C, Golebiowski J, Hwang LD, Ozdener MH, Guàrdia MD, Laudamiel C, Ritchie M, Havlíček J, Pierron D, Roura E, Navarro M, Nolden AA, Lim J, Whitcroft KL, Colquitt LR, Ferdenzi C, Brindha EV, Altundag A, Macchi A, Nunez-Parra A, Patel ZM, Fiorucci S, Philpott CM, Smith BC, Lundström JN, Mucignat C, Parker JK, van den Brink M, Schmuker M, Fischmeister FPS, **Heinbockel T**, Shields VDC, Faraji F, Santamaría E, Fredborg WEA, Morini G, Olofsson JK, Jalessi M, Karni N, D'Errico A, Alizadeh R, Pellegrino R, Meyer P, Huart C, Chen B, Soler GM, Alwashahi M K, Welge-Lüssen A, Freiherr J, de Groot JHB, Klein H, Okamoto M, Singh PB, Hsieh JW, GCCR Group Author, Reed DR, Hummel T, Munger SD, Hayes JE (2020) More than smell - COVID-19 is associated with severe impairment of smell, taste, and chemesthesis. *Chem Senses* 45:609-622. <https://doi.org/10.1093/chemse/bjaa041>
- Wang ZJ, Hu SS, Bradshaw HB, Sun L, Mackie K, Straiker A, **Heinbockel T** (2019) Cannabinoid receptor-mediated modulation of inhibitory inputs to mitral cells in the main olfactory bulb. *J Neurophysiol* 122:749-759. [doi:10.1152/jn.00100.2018](https://doi.org/10.1152/jn.00100.2018)
- Amaye IJ, **Heinbockel T**, Woods J, Wang ZJ, Martin-Caraballo M, Jackson-Ayotunde P (2018) 6 Hz active anticonvulsant fluorinated N-benzamide enaminones and their inhibitory neuronal activity. *Int J Environ Res Public Health* 15, 1784; [doi:10.3390/ijerph15081784](https://doi.org/10.3390/ijerph15081784)
- Kanherkar RR, Getachew B, Ben-Sheetrit J, Verma S, **Heinbockel T**, Tizabi Y, Csoka AB (2018) The effect of citalopram on genome-wide DNA methylation of human cells. *International Journal of Genomics*, vol. 2018, Article ID 8929057, 12 pages, <https://doi.org/10.1155/2018/8929057>
- Getachew B, Hudson T, **Heinbockel T**, Csoka AB, Tizabi Y (2018) Protective effects of donepezil against alcohol-induced toxicity in cell culture: role of caspase-3. *Neurotox Res* 34(3):757-762, doi.org/10.1007/s12640-018-9913-3
- Zou L, Xue Y, Jones M, **Heinbockel T**, Ying M, Zhan X (2018) The effects of quinine on neurophysiological properties of dopaminergic neurons. *Neurotox Res* 34:62-73. <https://doi.org/10.1007/s12640-017-9855-1>

- Wang ZJ, Tabakoff B, Levinson SR, **Heinbockel T** (2015) Inhibition of Nav1.7 channels by methyl eugenol as a mechanism underlying its antinociceptive and anesthetic actions. *Acta Pharmacol Sin* 36:791-799. <https://doi:10.1038/aps.2015.26>
- Wang ZJ, Sun L, **Heinbockel T** (2014) Resibufogenin and cinobufagin activate central neurons through an ouabain-like action. *PLoS One* 9(11): e113272. <https://doi:10.1371/journal.pone.0113272>
- Wang ZJ, Levinson SR, Sun L, **Heinbockel T** (2014) Identification of both GABA_A receptors and voltage-activated Na⁺ channels as molecular targets of anticonvulsant α -asarone. *Front Pharmacol* 5:40. <https://doi:10.3389/fphar.2014.00040>
- Zhan X, Yin PB, **Heinbockel T** (2013) The basal forebrain modulates spontaneous activity of principal cells in the main olfactory bulb of anaesthetized mice. *Front Neural Circuits* 7: 00148. <https://doi:10.3389/fncir.2013.00148>
- Young JK, **Heinbockel T**, Gondre-Lewis MC (2013) Astrocyte fatty acid binding protein-7 is a marker for neurogenic niches in the adult rat brain. *Hippocampus* 23:1476-1483
- Wang ZJ, Sun L, **Heinbockel T** (2012) Cannabinoid receptor-mediated regulation of neuronal activity and signaling in glomeruli of the main olfactory bulb. *J Neurosci* 32:8475-8479
- Wang ZJ, Sun L, Peng W, Ma S, Zhu C, Fu F, **Heinbockel T** (2011) Ginseng derivative ocotillo enhances neuronal activity through increased glutamate release: a possible mechanism underlying increased spontaneous locomotor activity of mice. *Neuroscience* 195:1-8
- Wang ZJ, Sun L, Jackson PL, Scott KR, **Heinbockel T** (2011) A substituted anilino enaminone acts as a novel positive allosteric modulator of GABA_A receptors in the mouse brain. *J Pharmacol Exp Ther* 336: 916-924.
- Reisenman CE, **Heinbockel T**, Hildebrand JG (2008) Inhibitory interactions among olfactory glomeruli do not necessarily reflect spatial proximity. *J Neurophysiol* 100: 554-564
- Heinbockel T**, Hamilton KA, Ennis M (2007) Group I metabotropic glutamate receptors are differentially expressed by two populations of olfactory bulb granule cells. *J Neurophysiol* 97: 3136-3141
- Heinbockel T**, Laaris N, Ennis M (2007) Metabotropic glutamate receptors in the main olfactory bulb drive granule cell-mediated inhibition. *J Neurophysiol* 97: 858-870
- Ennis M, Zhu M, **Heinbockel T**, Hayar A (2006) Olfactory nerve-evoked, metabotropic glutamate receptor-mediated synaptic responses in rat olfactory bulb mitral cells. *J Neurophysiol* 95: 2233-2241
- Heinbockel T**, Brager DH, Reich C, Zhao J, Muralidharan S, Alger BE, Kao JPY (2005) Endocannabinoid signaling dynamics probed with optical tools. *J Neurosci* 25: 9449-9459
(Introductory commentary in *This Week in The Journal*, "Uncaging Endocannabinoids", *J Neurosci* 25(41):i)

- Hamilton KA, **Heinbockel T**, Ennis M, Szabó G, Erdélyi F, Hayar A (2005) Functional properties of external plexiform layer interneurons in the mouse olfactory bulb. Neuroscience 133: 819-829
- Heinbockel T**, Christensen TA, Hildebrand JG (2004) Representation of binary pheromone blends by glomerulus-specific olfactory projection neurons. J Comp Physiol A 190: 1023-1037
- Heinbockel T**, Heyward P, Conquet F, Ennis M (2004) Regulation of main olfactory bulb mitral cell excitability by metabotropic glutamate receptor mGluR1. J Neurophysiol 92: 3085-3096
- Hayar A, Heyward P, **Heinbockel T**, Shipley MT, Ennis M (2001) Direct excitation of mitral cells via activation of α 1-noradrenergic receptors in rat olfactory bulb slices. J Neurophysiol 86: 2173-2182
- Szinyei C, **Heinbockel T**, Montagne J, Pape H-C (2000) Putative cortical and thalamic inputs elicit convergent excitation in a population of GABAergic interneurons of the lateral amygdala. J Neurosci 20:8909-8915
- Heinbockel T**, Hildebrand JG (2000) Cellular mechanisms of odor processing in the antennal lobes of the sphinx moth *Manduca sexta*. Mitt Deutsche Ges allg angew Entomol 12: 549-553
- Danober L, **Heinbockel T**, Driesang RB, Pape H-C (2000) Synaptic mechanisms of NMDA-mediated hyperpolarization in lateral amygdaloid neurons. Neuroreport 11: 2501-2506
- Heinbockel T**, Pape H-C (2000) Input-specific long-term depression in the lateral amygdala evoked by theta frequency stimulation. J Neurosci 20: RC68, 1-5
- Kloppenburger P, **Heinbockel T** (2000) 5-hydroxytryptamine modulates pheromone-evoked local field potentials in the macroglomerular complex of the sphinx moth *Manduca sexta*. J Exp Biol 203: 1701-1709
- Heinbockel T**, Pape H-C (1999) Modulatory effects of adenosine on postsynaptic potentials of projection neurons in the lateral amygdala of the rat. Br J Pharmacol 128: 190-196
- Heinbockel T**, Christensen TA, Hildebrand JG (1999) Temporal tuning of odor responses in pheromone-responsive projection neurons in the brain of the sphinx moth *Manduca sexta*. J Comp Neurol 409: 1-12 (including cover figure of the journal)
- Heinbockel T**, Hildebrand JG (1998) Antennal receptive fields of pheromone-responsive neurons in the antennal lobes of the sphinx moth *Manduca sexta*. J Comp Physiol A 183: 121-133
- Heinbockel T**, Kloppenburger P, Hildebrand JG (1998) Pheromone-evoked potentials and oscillations in the antennal lobes of the sphinx moth, *Manduca sexta*. J Comp Physiol A 182: 703-714

Heinbockel T, Hildebrand JG (1997) Processing of intensity and temporal structure of pheromonal signals in the brain of the sphinx moth, *Manduca sexta* (L.). Mitt Deutsche Ges allg angew Entomol 11: 501-504

Heinbockel T (1997) Functional organization of male-specific olfactory glomeruli in the sphinx moth *Manduca sexta*. Ph.D. Dissertation, The University of Arizona, 216 pp

Heinbockel T, Kaissling K-E (1996) Variability of olfactory receptor neuron responses of female silkmoths (*Bombyx mori* L.) to benzoic acid and ($\pm$)-linalool. J Insect Physiol 42: 565-578

3. Reviews, Chapters and Published Lectures

Koyama S, Shields VDC, **Heinbockel T** (2023) Precision phytochemicals for COVID-19 induced chemosensory dysfunction. In: Bioactive compounds against SARS-CoV-2. Jen-Tsung Chen (ed), CRC Press/Taylor & Francis Group, LLC, ISBN: 9781032347967. Submitted

Koyama S, **Heinbockel T** (2023) Possible use of beta-caryophyllene as an agent to facilitate the recovery from COVID-19-induced tissue and organ damage. In: Cannabis, Cannabinoids and Endocannabinoids. Victor R Preedy, Colin R Martin and Vinood B Patel (eds.). Academic Press – Elsevier, submitted

Bhatia-Dey N, Csoka AB, **Heinbockel T** (2023) Chemosensory ability and sensitivity in health and disease: epigenetic regulation and COVID-19. Int J Mol Sci, 24, 4179. <https://doi.org/10.3390/ijms24044179>

Heinbockel T (2022) Neuronal architecture and functional organization of olfactory glomeruli. In: Neurophysiology - Networks, Plasticity, Pathophysiology, and Behavior. Thomas Heinbockel (ed), London, United Kingdom: IntechOpen. <https://doi.org/10.5772/intechopen.108728>
Available at: <https://www.intechopen.com/chapters/84813>

Kashiwadani H, **Heinbockel T**, Imamura F, Yamaguchi M, Koyama S, Kondo K (2022) Editorial: Physiology and pathophysiology of the olfactory system. Frontiers in Neural Circuits, <https://doi.org/10.3389/fncir.2022.1025087>

Anwar M, **Heinbockel T**, Farooq Z (2022) Introductory chapter: epigenetics and optogenetics - the science behind the cover blanket of our genome. In: Epigenetics to Optogenetics - A New Paradigm in the Study of Biology. Mumtaz Anwar, Zeenat Farooq, Riyaz Ahmad Rather, Mohammad Tauseef, Thomas Heinbockel (eds), London, United Kingdom: IntechOpen. <https://doi.org/10.5772/intechopen.101190>
Available at: <https://www.intechopen.com/chapters/79750>

Alhazzaa RA, **Heinbockel T**, Csoka AB (2022) Diabetes and epigenetics. In: Epigenetics to Optogenetics - A New Paradigm in the Study of Biology. Mumtaz Anwar, Zeenat Farooq, Riyaz Ahmad Rather, Mohammad Tauseef, Thomas Heinbockel (eds), London, United Kingdom: IntechOpen. <https://doi.org/10.5772/intechopen.104653>
Available at: <https://www.intechopen.com/chapters/81647>

- Koyama S, **Heinbockel T** (2022) Chemical constituents of essential oils used in olfactory training: focus on COVID-19 induced olfactory dysfunction. *Frontiers in Pharmacology*, <https://doi:10.3389/fphar.2022.835886>
- Kumar D, Ashish S, Taliyan R, Uemura M, Calderon OH, **Heinbockel T**, Rahman S, Goyal R (2022) Orchestration of circadian clock and its association with Alzheimer's disease: role of endocannabinoid signalling. *Ageing Res Rev* 73:101533. <https://doi:10.1016/j.arr.2021.101533>. Epub 2021 Nov 26.
- Heinbockel T**, Bhatia-Dey N, Shields VDC (2022) Endocannabinoid-mediated neuromodulation in the main olfactory bulb at the interface of environmental stimuli and central neural processing. *Eur J Neurosci* 55: 1002-1014. <https://doi:10.1111/ejn.15186>. (Invited Paper, Special Issue: Cannabinoid Signaling in the Brain: New Vistas)
- Koyama S, Kondo K, Ueha R, Kashiwadani H, **Heinbockel T** (2021) Possible use of phytochemicals for recovery from COVID-19-induced anosmia and ageusia. *Int J Mol Sci* 22:8912. <https://doi:10.3390/ijms22168912>
- Bhatia-Dey N, **Heinbockel T** (2021) The olfactory system as marker of neurodegeneration in aging, neurological and neuropsychiatric disorders. *Int J Environ Res Public Health* 18: 6976. <https://doi.org/10.3390/ijerph18136976>
- Heinbockel T**, Straiker A (2021) Cannabinoids regulate neural signaling and synaptic plasticity in early visual and olfactory circuits. *Frontiers in Neural Circuits* 15:662349. <https://doi.org/10.3389/fncir.2021.662349> (Invited Review, Research Topic: Sensory Processing in Vision and Olfaction – Common Features of Key Players)
- Heinbockel T**, Wang ZJ, Bhatia-Dey N, Harvey JD, Austin PD (2021) Function and dysfunction of neural signaling in olfactory and limbic structures. *HUCM RESEARCH DIGEST*, vol 1, issue 1, Spring 2021, 10-11, 46
- Bhatia-Dey N, **Heinbockel T** (2020) Neurological and neuropsychiatric disorders in relation to olfactory dysfunction. In: *Sino-Nasal and Olfactory System Disorders*. Thomas Heinbockel & Balwant S. Gendeh (eds), London, UK: IntechOpen, ch. 7, 18 pp., doi:10.5772/intechopen.93888.
- Heinbockel T**, Gendeh BS (2020) Introductory chapter: dysfunction of the olfactory system and nasal disorders. In: *Sino-Nasal and Olfactory System Disorders*. Thomas Heinbockel & Balwant S. Gendeh (eds), London, UK: InTech Open Access Publisher, ch. 1, pp 1-7. <http://dx.doi.org/10.5772/intechopen.93596>.
- Koyama S, **Heinbockel T** (2020) Essential oils and terpenes in relation to routes of intake. *Encyclopedia*, 2020, v1, Available online: <https://encyclopedia.pub/item/revision/428f902a61e6c20cd6522d69955f103f>. doi: 10.32545/encyclopedia202003.0006.v1
- Bhatia-Dey N, **Heinbockel T** (2020) Endocannabinoid mediated neuromodulation in the olfactory bulb: functional and therapeutic significance. *Int J Mol Sci* 21: 2850; <https://doi:10.3390/ijms21082850>

- Koyama S, **Heinbockel T** (2020) The effects of essential oils and terpenes in relation to their routes of intake and application. *Int J Mol Sci* 21: 1558; <https://doi:10.3390/ijms21051558>; 36 pp.
- Heinbockel T** (2020) Endocannabinoid signalling in olfactory neural circuits. The Innovation Platform, Issue 1 (Debut Edition), March 2020, pp. 80-85. www.innovationnewsnetwork.com
- Heinbockel T**, Csoka AB (2019) Introductory Chapter: The Chemical Basis of Neural Function and Dysfunction. Thomas Heinbockel & Antonei B. Csoka (eds.), *Neurochemical Basis of Brain Function and Dysfunction*, ISBN: 978-1-78985-999-7. London, United Kingdom: IntechOpen, pp. 1-9, <https://doi:10.5772/intechopen.89072>
- Heinbockel T** (2019) Understanding the olfactory system. *Research Outreach* 109: 18-21. <https://doi:10.32907/RO-109-1821>
- Shields VDC, **Heinbockel T** (2019) Introductory Chapter: Histological Microtechniques. Thomas Heinbockel & Vonnice D.C. Shields (eds.), *Histology*, ISBN: 978-953-51-6798-3. London, United Kingdom: IntechOpen, pp. 3-16, doi: 10.5772/intechopen.82017
- Harvey JD, **Heinbockel T** (2018) Neuromodulation of synaptic transmission in the main olfactory bulb. *Int J Environ Res Public Health*, 15 (10), 2194; doi.org/10.3390/ijerph15102194
- Heinbockel T**, Csoka AB (2018) Epigenetic effects of drugs of abuse. *Int J Environ Res Public Health*, 15 (10), 2098; doi: [10.3390/ijerph15102098](https://doi.org/10.3390/ijerph15102098)
- Heinbockel T** (2018) Introductory chapter: Organization and function of sensory nervous systems. In: *Sensory Nervous System*. Thomas Heinbockel (ed.), ISBN: 978-1-78923-359-9. London, United Kingdom: IntechOpen, pp. 1-9. <http://dx.doi.org/10.5772/intechopen.78738>
- Wang ZJ, **Heinbockel T** (2018) Essential oils and their constituents targeting the GABAergic system and sodium channels as treatment of neurological diseases. *Molecules*, 23, 1061; doi:10.3390/molecules23051061, pp. 1-24
- Heinbockel T** (2017) Introductory chapter: Mechanisms and function of synaptic plasticity. In: *Synaptic Plasticity*. Thomas Heinbockel (ed.), Rijeka, Croatia, InTech Publisher, 3-13, <http://dx.doi.org/10.5772/67891>
- Heinbockel T**, Wang ZJ (2017) Cannabinoid receptor-mediated synaptic signaling and neural plasticity in neurons of the central nervous system. *J Reward Defic Syndr Addict Sci* 3 (Suppl 1): S20.
- Heinbockel T**, Wang ZJ, Brown EA, Austin PT (2016) Endocannabinoid signaling in neural circuits of the olfactory and limbic system. In: *Cannabinoids in Health and Disease*. Rosaria Meccariello and Rosanna Chianese (ed.), Rijeka, Croatia, InTech Publisher, ch. 2, pp. 11-37, ISBN 978-953-51-2429-0
- Wang ZJ, **Heinbockel T** (2016) Ginsenosides as brain signaling molecules and potential cures for neurological and neurodegenerative diseases. In: *Horizons in Neuroscience*

Research, vol 24. Costa A, Villalba E (eds), Nova Science Publishers, New York, ch. 4, pp. 83-100, ISBN: 978-1-63484-325-6

Heinbockel T, Wang ZJ (2016) Cellular mechanisms of action of drug abuse on olfactory neurons. *Int J Environ Res Public Health*, 13, 0005; doi:10.3390/ijerph13010005

Heinbockel T (2015) Anandamide is a fast retrograde signaling molecule in neural circuits. In: *Endocannabinoids: Chemical Structure, Role in Physiological Processes and Therapeutic Effects*. Garza T (ed), Series: Neuroscience Research Progress, Nova Science Publishers, New York, ch. 2, pp. 25-42, ISBN: 978-1-63483-642-5

Heinbockel T, Wang ZJ, Jackson-Ayotunde PL (2014) Allosteric modulation of GABA_A receptors by an anilino enaminone in an olfactory center of the mouse brain. *Pharmaceuticals* 7, 1069-1090; doi:10.3390/ph7121069 (peer-reviewed)

Heinbockel T (2014) Neurochemical communication: The case of endocannabinoids. In: *Neurochemistry*. Thomas Heinbockel (ed), ISBN 978-953-51-1237-2, Rijeka, Croatia, InTech Open Access Publisher, ch. 6, p 179-198. Available from: <http://www.intechopen.com/books/neurochemistry/neurochemical-communication-the-case-of-endocannabinoids>

Heinbockel T, Wang ZJ (2014) Cannabinoid receptor- and metabotropic glutamate receptor-mediated signaling in neural circuits of the main olfactory bulb. In: *Horizons in Neuroscience Research*, vol 13. Costa A, Villalba E (eds), Nova Science Publishers, New York, ch. 2, pp. 37-62, ISBN: 978-1-62948-426-6

Heinbockel T, Shields VDC, Reisenman CE (2013) Glomerular interactions in olfactory processing channels of the antennal lobes. *J Comp Physiol A* 199:929-46. doi: 10.1007/s00359-013-0842-6. Epub 2013 Jul 28. (peer-reviewed)

Shields VDC, **Heinbockel T** (2012) Neurophysiological recording techniques applied to insect chemosensory systems. In: *Zoology*. Maria-Dolores Garcia (ed.), ISBN 978-953-51-0360-8, Rijeka, Croatia, Intech Open Access Publisher, chapter 7, pp. 123-162. Available from: <http://www.intechopen.com/books/zoology/neurophysiological-recording-techniques-applied-to-insect-chemosensory-systems->

Heinbockel T (2012) Electrophysiological recording and imaging of neuronal signals in brain slices. In: *Neuroscience*. Thomas Heinbockel (ed.), ISBN 978-953-51-0617-3, Rijeka, Croatia, Intech Open Access Publisher, chapter 2, pp. 19-48. Available from: <http://www.intechopen.com/articles/show/title/electrophysiological-recording-and-imaging-of-neuronal-signals-in-brain-slices>

Dong HW, **Heinbockel T**, Hamilton KA, Hayar A, Ennis M (2009) Metabotropic glutamate receptors and dendrodendritic synapses in the main olfactory bulb. *Ann NY Acad Sci* 1170: 224-238 (peer-reviewed)

Heinbockel T, Heyward PM (2009) Glutamate synapses in olfactory neural circuits. In: *Amino Acid Receptor Research*. Paley BF, Warfield TE (eds), ISBN: 978-1-60456-283-5, Nova Science Publishers, New York, chapter 16, pp. 379-414

Heinbockel T, Ennis M (2008) Metabotropic glutamate receptors and neural processing in the olfactory system. In: Neural Pathways Research. Pichler FL (ed), ISBN: 978-1-60456-214-9, Nova Science Publishers, New York, chapter 1, pp. 1-30

Pape H-C, Driesang RB, **Heinbockel T**, Laxmi TR, Meis S, Seidenbecher T, Szinyei C, Frey U, Stork O (2001) Cellular processes in the amygdala: gates to emotional memory? Zoology 104: 232-240

Heinbockel T, Hildebrand JG (2000) Neuronale Mechanismen der Pheromonverarbeitung in den Antennalloben des Tabakschwärmers *Manduca sexta* (L.) (Lepidoptera: Sphingidae). Verh Westd Entomol Tag 1998: 195-205

Hildebrand JG, Christensen TA, **Heinbockel T**, Roche King J, Mechaber W, Rössler W, Shields VDC (1999) The olfactory neurobiology of host- and mate-attraction in moths. In: From Molecular Neurobiology to Clinical Neuroscience (Proc 1st Göttingen Conference of the German Neuroscience Society 1999 & 27th Göttingen Neurobiology Conference), Vol I. Elsner N, Eysel U (eds), Georg Thieme Verlag Stuttgart, New York, pp. 56-67, ISBN 3-13-118411-6

Christensen TA, **Heinbockel T**, Hildebrand JG (1996) Olfactory information processing in the brain: encoding chemical and temporal features of odors. J Neurobiol 30: 82-91