

**A) Peer-reviewed articles and book chapters**

- Venuti L.S., Pena-Flores N.L., and **Herberholz J.** (2020) Cellular interactions between social experience, alcohol sensitivity, and GABAergic inhibition in a crayfish neural circuit. *Journal of Neurophysiology*; doi: 10.1152/jn.00519.2020
- Rajasekaran P.R., Chapin A., Quan D.N., **Herberholz J.**, Bentley W.E., and Ghodssi R. (2020) 3D printed electrochemical sensor-integrated transwell systems. *NPJ Microsystems and Nanoengineering* 6: 100.
- Chapin A., Rajasekaran P.R., Quan D.N., Hu L., **Herberholz J.**, Bentley W.E., and Ghodssi R. (2020) Electrochemical measurement of serotonin by AU-CNT electrodes fabricated on porous cell culture membranes. *NPJ Microsystems and Nanoengineering* 6: 90.
- Chapin A., Han J., Ho T., **Herberholz J.**, and Ghodssi R. (2020) A hybrid biomonitoring system for gut-neuron communication. *IEEE Journal of Microelectromechanical Systems* 29: 727-733. doi:10.1109/JMEMS.2020.3000392.
- Exum A., Sun L., and **Herberholz J.** (2020) Discrete modulation of antipredatory and agonistic behaviors by sensory communication signals in juvenile crayfish. *Journal of Experimental Biology* 223: 1-11. doi:10.1242/jeb.226704
- **Herberholz J.**, Swierzbinski M.E., Widjaja A., and Kohn A. (2019) Not so fast: giant interneurons control precise movements of antennal scales during escape behavior of crayfish. *Journal of Comparative Physiology A* 205: 687-698.
- Algarin J.M., Ramaswamy B., Venuti L., Swierzbinski M.E., Baker-McKee J., Weinberg I.N., Chen Y.J., Krivorotov I.N., Katine J.A., **Herberholz J.**, Araneda R.C., Shapiro B., and Waks E. (2019) Activation of microwave signals in nanoscale magnetic tunnel junctions by neuronal action potentials. *IEEE Magnetics Letters* 10: DOI 10.1109/LMAG.2019.2896307
- Weinberg I.N., Mair L.O., Jafari S., Algarin J., Benlloch Baviera J.M., Baker-McKee J., English B., Chowdhury S., Malik P., Watson-Daniels J., Hale O., Stepanov P.Y., Nacev A., Hilaman R., Ijanaten S., Koudelka C., Araneda R., **Herberholz J.**, Martinez-Miranda L.J., Shapiro B., Villar P.S., Krivorotov I., Khizroev S., and Fricke S. (2018) Image-guided Placement of Magnetic Neutroparticles as a Potential High-Resolution Brain-Machine Interface. In: [Evolving BCI Therapy-Engaging Brain State Dynamics](#). IntechOpen; x.doi.org/10.5772/intechopen.75522
- Swierzbinski M.E. and **Herberholz J.** (2018) Effects of ethanol on sensory inputs to the medial giant interneuron of crayfish. *Frontiers in Physiology* 9: 448. doi: 10.3389/fphys.2018.00448
- Swierzbinski M.E., Lazarchik A.R., and **Herberholz J.** (2017) Prior social experience affects the behavioral and neural responses to acute alcohol in juvenile crayfish. *Journal of Experimental Biology* 220: 1516-1523. [Editor's choice][2017 Outstanding Paper Prize nomination]
- Schadegg A.C. and **Herberholz J.** (2017) Satiation level affects anti-predatory decisions in foraging juvenile crayfish. *Journal of Comparative Physiology A* 203: 223-232.
- **Herberholz J.**, Swierzbinski M.E., and Birke J.M. (2016) Effects of different social and environmental conditions on established dominance relationships in crayfish. *Biological Bulletin* 230: 152-164. [Cover picture]
- **Herberholz J.** (2014) Neurobiology of social status in crustaceans. In: [The Natural History of the Crustacea, Vol. 3: Crustacean Nervous Systems and Their Control of Behavior](#), C. Derby and M. Thiel (eds). Oxford University Press, 457-483.

- **Herberholz J.** (2013) Serotonergic modulation of aggression. In: Serotonin: Biosynthesis, Regulation and Health Implications, F.S. Hall (ed.). NOVA Science Publishers, 27-51.
- Sullivan J.M. and **Herberholz J.** (2013) Structure of the nervous system: general design. In: The Natural History of the Crustacea, Vol. 1: Functional Morphology and Diversity, L. Watling and M. Thiel (eds). Oxford University Press, 451-484.
- **Herberholz J.** and Marquart G. (2012) Decision making and behavioral choice during predator avoidance. *Frontiers in Neuroscience* 6:125. doi: 10.3389/fnins.2012.00125.
- **Herberholz J.**, Mishra S.H., Uma D., Germann M.W., Edwards D.H., and Potter K. (2011) Non-invasive imaging of neuroanatomical structures and neural activation with high-resolution MRI. *Frontiers in Neuroscience* 5:16. doi: 10.3389/fnbeh.2011.00016.
- Liden W.H., Phillips M.L., and **Herberholz J.** (2010) Neural control of behavioral choice in crayfish. *Proceedings of the Royal Society B: Biological Sciences* 277: 3493-3500.
- Liu Y.C. and **Herberholz J.** (2010) Sensory activation and receptive field organization of the lateral giant escape neurons in crayfish. *Journal of Neurophysiology* 104: 675-684.
- **Herberholz J.** (2009) Recordings of neural circuit activation in freely behaving animals. *Journal of Visualized Experiments* 29, doi: 10.3791/1297.
- Graham M.E. and **Herberholz J.** (2009) Stability of dominance relationships in crayfish depends on social context. *Animal Behaviour* 77, 195-199.
- Liden W.H. and **Herberholz J.** (2008) Behavioral and neural responses of juvenile crayfish to moving shadows. *Journal of Experimental Biology* 211, 1355-1361.
- **Herberholz J.** (2007) The neural basis of communication in crustaceans. In: Evolutionary ecology of social and sexual systems: crustaceans as model organisms, J. E. Duffy and M. Thiel (eds). Oxford University Press, 71-89.
- **Herberholz J.**, McCurdy C., and Edwards D.H. (2007) Direct benefits of social dominance in juvenile crayfish. *Biological Bulletin* 213, 21-27.
- Song C.-K., **Herberholz J.**, and Edwards D.H. (2006) The effects of social experience on the behavioral response to unexpected touch in crayfish. *Journal of Experimental Biology* 209, 1355-1363.
- Antonsen B.L., **Herberholz J.**, and Edwards D.H. (2005) The retrograde spread of synaptic potentials and recruitment of presynaptic inputs. *Journal of Neuroscience* 25, 3086-3094.
- Edwards D.H. and **Herberholz J.** (2005) Crustacean models of aggression. In: The Biology of Aggression, R. J. Nelson (ed). Oxford University Press, 38-61.
- **Herberholz J.**, Mims C.J., Zhang X., Hu X., and Edwards D.H. (2004) Anatomy of a live invertebrate revealed by manganese-enhanced Magnetic Resonance Imaging. *Journal of Experimental Biology* 207, 4543-4550.
- **Herberholz J.**, Sen M.M., and Edwards D.H. (2004) Escape behavior and escape circuit activation in juvenile crayfish during prey-predator interactions. *Journal of Experimental Biology* 207, 1855-1863.
- Edwards D.H., Issa F.A. and **Herberholz J.** (2003) The neural basis of dominance hierarchy formation in crayfish. *Microscopy Research and Technique* 60, 369-376.

- **Herberholz J.**, Sen M.M., and Edwards D.H. (2003) Parallel changes in agonistic and non-agonistic behaviors during dominance hierarchy formation in crayfish. *Journal of Comparative Physiology A* 189, 321-325.
- **Herberholz J.**, Antonsen B.L., and Edwards D.H. (2002) A lateral excitatory network in the escape circuit of crayfish. *Journal of Neuroscience* 22, 9078-9085.
- Drummond J., Issa F.A., Song C.K., **Herberholz J.**, S.R. Yeh, and D.H. Edwards (2002) Neural mechanisms of dominance hierarchies in crayfish. In: The Crustacean Nervous System, K. Wiese (ed). Springer Verlag, Berlin, 124-135.
- **Herberholz J.**, Issa F.A., and Edwards D.H. (2001) Patterns of neural circuit activation and behavior during dominance hierarchy formation in freely behaving crayfish. *Journal of Neuroscience* 21, 2759-2767.
- Edwards D.H., Antonsen B.L., and **Herberholz J.** (2001) Network, neuronal and biochemical computations in the escape circuit of crayfish. In: Proceedings of the Eleventh Yale Workshop on Adaptive and Learning Systems, K. S. Narendra (ed). Center for Systems Science, Yale University, New Haven, 225-232.
- **Herberholz J.** and Schmitz B. (2001) Signaling via water currents in behavioral interactions of snapping shrimp (*Alpheus heterochaelis*). *Biological Bulletin* 201, 6-16.
- **Herberholz J.** and Schmitz B. (1999) Flow visualisation and high speed video analysis of water jets in the snapping shrimp (*Alpheus heterochaelis*). *Journal of Comparative Physiology A* 185, 41-49.
- **Herberholz J.** and Schmitz B. (1998) Role of mechanosensory stimuli in intraspecific agonistic encounters in the snapping shrimp (*Alpheus heterochaelis*). *Biological Bulletin* 195, 156-167.
- Schmitz B. and **Herberholz J.** (1998) Snapping behaviour in intraspecific agonistic encounters in the snapping shrimp (*Alpheus heterochaelis*). *Journal of Biosciences* 23, 623-632.

## B) Published conference proceedings

- Chapin A., Rajasekaran P.R., **Herberholz J.**, Bentley W.E., and Ghodssi R. (2019) Dynamic In Vitro Biosensing with Flexible Microporous Multimodal Cell-Interfacial Sensors. *Transducers 2019 Eurosensors XXXIII, Berlin*.
- **Herberholz J.** (2018) The effects of alcohol on crayfish neural circuitry and behavior depend on prior social experiences. *International Behavioral Neuroscience Society 18<sup>th</sup> Annual Meeting*; 162.
- Rajasekaran P.R., Chapin A., Quan D.N., Jang S.-H., **Herberholz J.**, Hu L., Bentley W.E., and Ghodssi R. (2018) Multimodal Intelligent Transwell System (MITS). *Solid-State Sensors, Actuators, and Microsystems Workshop, Hilton Head*; MP-04 [invited paper]
- **Herberholz J.**, Swierzbinski M.E., Venuti L.S., Lee H.J., and Exum A.C. (2017) Neuropharmacology of alcohol effects on crayfish neural circuitry. *Society for Neuroscience 47<sup>th</sup> Annual Meeting*; 156.27.
- Rajasekaran P.R., Quan D.N., Chapin A., Bentley W.E., **Herberholz J.**, and Ghodssi R. (2017) A bio-electronic membrane to investigate the gut brain microbiome axis. *254<sup>th</sup> American Chemistry Society National Meeting*; 159.

- Algarin J.M., Ramaswamy B., Venuti L., Swierzbinski M., Villar P., Chen Y.J., Weinberg I., **Herberholz J.**, Araneda R., Shapiro B. and Waks E. (2017) Modulation and detection of single neuron activity using spin transfer nano-oscillators. *Spintronics X* 10357; 27 [invited paper]
- **Herberholz J.**, Swierzbinski M.E., and Hu R. (2014) Modulation of neural thresholds in a decision-making circuit. *Conference Abstract: Eleventh International Congress of Neuroethology*; PO2194
- **Herberholz J.**, Swierzbinski M.E., and Lazarchik A.R. (2014) Interactions between social status and alcohol intoxication in crayfish. *Society for Neuroscience 44<sup>th</sup> Annual Meeting*; 181.16
- Hu R., Murphy M. and **Herberholz J.** (2014) Monoaminergic modulation of sensory inputs to the crayfish medial giant escape neurons. *Society for Neuroscience 44<sup>th</sup> Annual Meeting*; 181.17
- Swierzbinski M.E. and **Herberholz J.** (2014) Inhibitory properties of the medial giant escape circuit in crayfish. *Society for Neuroscience 44<sup>th</sup> Annual Meeting*; 181.18
- Venuti L.S., Swierzbinski M.E. and **Herberholz J.** (2014) Investigation of fast autoinhibition in the lateral giant circuit of crayfish. *Society for Neuroscience 44<sup>th</sup> Annual Meeting*; 181.19
- Swierzbinski M.E. and **Herberholz J.** (2012) Interactions between alcohol and GABAergic inhibition in the escape circuit of crayfish. *Front. Behav. Neurosci. Conference Abstract: Tenth International Congress of Neuroethology*. doi: 10.3389/conf.fnbeh.2012.27.00327
- Uma D. and **Herberholz J.** (2012) Are juvenile crayfish attracted to their natural predators? *Front. Behav. Neurosci. Conference Abstract: Tenth International Congress of Neuroethology*. doi: 10.3389/conf.fnbeh.2012.27.00196
- Swierzbinski M.E. and **Herberholz J.** (2011) Effects of alcohol on escape behavior and underlying neural circuitry in crayfish. *Society for Neuroscience 41<sup>th</sup> Annual Meeting*; 944.09.
- Richards J.M., Leonard J.R., Meshera N., **Herberholz J.**, Lejeuz C.W. and Daughters S.B. (2011) HPA axis response to stress predicts distress tolerance in a sample of cocaine users. *The College on Problems of Drug Dependence Annual Meeting*; 585.
- **Herberholz J.**, Phillips M.L., Sichler, K. and Medley V.A. (2010) Crayfish select escape strategies based on external conditions and internal states. *Proceedings of the 9<sup>th</sup> International Congress of Neuroethology, Salamanca, Spain*; P150.
- **Herberholz J.** and Liden W. H. (2009) Escape circuit activation and behavioral choice in juvenile crayfish. *Society for Neuroscience 39<sup>th</sup> Annual Meeting*; 287.
- Medley V.A. and **Herberholz J.** (2009) Mechanisms underlying visual activation of the medial giant escape circuit in crayfish. *Society for Neuroscience 39<sup>th</sup> Annual Meeting*; 288.
- **Herberholz J.** and Liu Y.-C. (2008) Receptive field organization of the giant escape neurons in crayfish. *Society for Neuroscience 38<sup>th</sup> Annual Meeting*; 198.4.
- **Herberholz J.** (2007) Manganese-enhanced Magnetic Resonance Imaging in crayfish. *Proceedings of the 8<sup>th</sup> International Congress of Neuroethology, Vancouver, Canada*; SY45.
- **Herberholz J.** and Liden W. H. (2007) Behavioral and neural responses of juvenile crayfish to visual threat stimuli. *Proceedings of the 8<sup>th</sup> International Congress of Neuroethology, Vancouver, Canada*; PO219.
- **Herberholz J.** and Edwards D.H. (2005) The control of escape in crayfish through interactions of command neurons. *Society for Neuroscience 35<sup>th</sup> Annual Meeting*; 754.7.

- **Herberholz J.**, Sen M.M. and Edwards D.H. (2004) Patterns of neural activity during escape from predators. *Society for Neuroscience 34<sup>th</sup> Annual Meeting*; 870.4.
- Mims C.J., **Herberholz J.**, Zhang X., Hu X. and Edwards D.H. (2004) Anatomical and functional studies in the crayfish brain by means of manganese-enhanced Magnetic Resonance Imaging. *Proceedings of the 7<sup>th</sup> International Congress of Neuroethology*, Nyborg, Denmark; 251.
- **Herberholz J.**, Sen M.M. and Edwards D.H. (2004) Behavioral and neural responses in crayfish to attacks from a natural predator. *Proceedings of the 7<sup>th</sup> International Congress of Neuroethology*, Nyborg, Denmark; 233.
- Zhang X., **Herberholz J.**, Mims C. J., Edwards D.H. and Hu X. (2004) Observation of neural activity in crayfish with Mn-enhanced MRI. *Proceedings of the International Society of Magnetic Resonance in Medicine* 11: 1115.
- **Herberholz J.**, Mims C.J., Zhang X. , Hu X. and Edwards D.H. (2003) Manganese-enhanced MRI of the crayfish brain. *Society for Neuroscience 33<sup>rd</sup> Annual Meeting*; 270.5.
- Versteeg S., Antonsen B.L., Agran J., **Herberholz J.** and Edwards D.H. (2003) Simulation of the lateral excitatory network in crayfish based on anatomical and physiological data. *Society for Neuroscience 33<sup>rd</sup> Annual Meeting*; 270.8.
- **Herberholz J.**, Antonsen B.L. and Edwards D.H. (2002) Lateral and retrograde amplification of sensory inputs to the lateral giant escape circuit of crayfish. *Society for Neuroscience 32<sup>nd</sup> Annual Meeting*; 60.9.
- Antonsen B.L., **Herberholz J.** and Edwards D.H. (2002) Interactions between primary afferent neurons mediated through the dendrites of the lateral giant interneuron in crayfish. *Society for Neuroscience 32<sup>nd</sup> Annual Meeting*; 60.10.
- **Herberholz J.**, Antonsen B.L. and Edwards D.H. (2001) Coupled sensory afferents form a presynaptic excitatory network in the terminal ganglion of crayfish. *Society for Neuroscience 31<sup>st</sup> Annual Meeting*; 307.8.
- Antonsen B.L., **Herberholz J.** and Edwards D.H. (2001) The organization of sensory input to the lateral giant escape command neuron of crayfish. *Proceedings of the 6<sup>th</sup> International Congress of Neuroethology*, Bonn, Germany; 196.
- Issa F.A., **Herberholz J.** and Edwards D.H. (2001) Patterns of tailflip escape behavior in crayfish during agonistic interactions. *Proceedings of the 6<sup>th</sup> International Congress of Neuroethology*, Bonn, Germany; 249.
- Song C.K., **Herberholz J.**, Drummond J. and Edwards D.H. (2001) The behavioral response to unexpected touch depends on the agonistic condition in socially experienced crayfish. *Proceedings of the 6<sup>th</sup> International Congress of Neuroethology*, Bonn, Germany; 195.
- **Herberholz J.**, Issa F.A., and Edwards D.H. (2000) The role of tailflip behavior in crayfish during dominance hierarchy formation. *American Zoologist* 40: 1053.
- **Herberholz J.**, Issa F.A., and Edwards D.H. (2000) Hands-off-electrophysiology reveals a new offensive type of tail flip in fighting juvenile crayfish. *Society for Neuroscience 30<sup>th</sup> Annual Meeting*; 1725.
- Song C.-K., **Herberholz J.**, Drummond J. and Edwards D.H. (2000) Social experience changes the behavioral response to unexpected touch in crayfish. *Society for Neuroscience 30<sup>th</sup> Annual Meeting*; 174.

- **Herberholz J.** and Schmitz B. (1998) The visible water jet: flow visualisation in snapping shrimp (*Alpheus heterochaelis*). N. Elsner and R. Wehner (eds). Thieme, Stuttgart. *Proceedings of the 26<sup>th</sup> Göttingen Neurobiology Conference*; 242.
- Schmitz B. and **Herberholz J.** (1998) Snapping movements and laser Doppler anemometry analysis of water jets in the snapping shrimp *Alpheus heterochaelis*. N. Elsner and R. Wehner (eds). Thieme, Stuttgart. *Proceedings of the 26<sup>th</sup> Göttingen Neurobiology Conference*; 241.
- Schmitz B., **Herberholz J.**, Schultz S. and Wuppermann K. (1998) Behavioral and biophysical analysis of rapid waterjets in the snapping shrimp *Alpheus heterochaelis*. *Proceedings of the 5<sup>th</sup> International Congress of Neuroethology, San Diego, USA*; 183.
- **Herberholz J.** and Schmitz B. (1997a) The role of visual and mechanosensory input during intraspecific agonistic encounters in the snapping shrimp (*Alpheus heterochaelis*). N. Elsner and H. Wässle (eds). Thieme, Stuttgart. *Proceedings of the 25<sup>th</sup> Göttingen Neurobiology Conference*; 251.
- **Herberholz J.** and Schmitz B. (1997b) Sex-specific behaviour in intraspecific agonistic encounters in the snapping shrimp (*Alpheus heterochaelis*). *Verhandlungen der Deutschen Zoologischen Gesellschaft* 90: 355.