Publications

Invited book chapters and review articles:

- Sullivan J.M., **Herberholz J.** and MacMillan D.L. (2009) 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 (in preparation)
- Antonsen B.L. and **Herberholz J.** (2009) Amines and the modulation of aggression. *Progress in Neurobiology* (in preparation)
- **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.
- 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.
- 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.
- 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.
- 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.

Contributed peer-reviewed articles:

- Liu Y.C. and **Herberholz J.** (2009) Sensory activation and receptive field organization of the lateral giant escape neurons in crayfish. *Journal of Neurophysiology* (in preparation).
- Liden W.H. and **Herberholz J.** (2009) Neural control of behavioral choice in crayfish. *Proceedings of the Royal Society B: Biological Sciences* (submitted).
- **Herberholz J**. (2009) Recordings of neural circuit activation in freely behaving animals. *Journal of Visualized Experiments* 29: pii1297.
- 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.**, 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 (12): 3086-3094.

- **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.
- **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 (20): 9078-9085.
- **Herberholz J.** and Schmitz B. (2001) Signaling via water currents in behavioral interactions of snapping shrimp (Alpheus heterochaelis). *Biological Bulletin* 201 (1): 6-16.
- **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 (8): 2759-2767.
- **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 (2): 156-167.
- Schmitz B. and **Herberholz J.** (1998) Snapping behaviour in intraspecific agonistic encounters in the snapping shrimp (Alpheus heterochaelis). *Journal of Biosciences* 23 (5): 623-632.

Published conference contributions:

- **Herberholz J.** and Liden W. H. (2009) Escape circuit activation and behavioral choice in juvenile crayfish. *Society for Neuroscience 39th Annual Meeting*; Abstract: 287.
- Medley V.A. and **Herberholz J.** (2009) Mechanisms underlying visual activation of the medial giant escape circuit in crayfish. *Society for Neuroscience 39th Annual Meeting*; Abstract: 288.
- **Herberholz J.** and Liu Y.-C. (2008) Receptive field organization of the giant escape neurons in crayfish. *Society for Neuroscience 38th Annual Meeting*; Abstract: 198.4.
- **Herberholz J.** (2007) Manganese-enhanced Magnetic Resonance Imaging in crayfish. *Proceedings of the 8th 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 8th 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 35th Annual Meeting*; Abstract: 754.7.
- **Herberholz J.,** Sen M.M. and Edwards D.H. (2004) Patterns of neural activity during escape from predators. *Society for Neuroscience 34th Annual Meeting*; Abstract: 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 7th 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 7th 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 33rd Annual Meeting*; Abstract: 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 33rd Annual Meeting*; Abstract: 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 32nd Annual Meeting*; Abstract: 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 32nd Annual Meeting*; Abstract: 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 31st Annual Meeting*; Abstract: 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 6th 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 6th 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 6th 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 30th Annual Meeting*; Abstract: 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 30th Annual Meeting*; Abstract: 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 26th 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 26th 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 5th 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 25th 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.

Published theses:

- **Herberholz J.** (1999) The relevance of hydrodynamic signals during intraspecific interactions of the snapping shrimp (*Alpheus heterochaelis*). Ph.D. Thesis, Technical University Munich, Germany.
- **Herberholz J.** (1995) Visual mechanisms of prey selection employed by the praying mantis *Sphodromantis viridis* (Orthoptera, Mantodea, Mantidae). Masters Thesis, Albert-Ludwigs-University Freiburg, Germany.