

# Curriculum Vitae

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## **Education**

- 1998-2002**      **PhD in Biology, University of Cologne**, Institute for Zoology, Cologne, Germany.
- 2000**              Summer School: “Neural Systems and Behavior” at the Marine Biological Laboratory, Woods Hole, MA, USA.
- 1994-1998**      **Diploma degree in Biology, University of Bielefeld**, Bielefeld, Germany.
- 1989-1993**      **Bachelor degree in Fishery Engineering, Süleyman Demirel University**, Eğirdir-Isparta, Turkey.

## **Research Experience**

- 2014-present**      **Assistant Professor** in the Department of Medical Neuroscience, **Dalhousie University**, Halifax, NS, Canada.
- 2012-2014**      *Associate Research Scientist*, Department of Neurological Surgery and Center for Motor Neuron Biology and Disease, **Columbia University**, New York, NY, USA.
- 2009-2012**      *Howard Hughes Medical Institute Research Specialist* in the laboratory of Dr. Thomas M. Jessell, **Columbia University**, New York, NY, USA.
- 2007-2009**      *Howard Hughes Medical Institute Associate* in the laboratory of Dr. Thomas M. Jessell, **Columbia University**, New York, NY, USA.
- 2004- 2007**      *Postdoctoral researcher* with Dr. Keir G. Pearson, **University of Alberta**, Dept. of Physiology, Edmonton, AB, Canada.
- 2002-2004**      *Postdoctoral researcher* with Dr. Michael P. Nusbaum, **University of Pennsylvania**, School of Medicine, Philadelphia, PA, USA.
- 1998-2002**      *Research assistant* with Dr. Ansgar Büschges, **University of Cologne**, Institute for Zoology, Dept. for Animal Physiology, Cologne, Germany.
- 1996-1998**      *Research assistant* with Dr. Holk Cruse, **University of Bielefeld**, Faculty for Biology, Dept. for Biological Cybernetics, Bielefeld, Germany.

## **Honors/Awards**

- 2007** “Emmy-Noether Fellowship” from the German Science Foundation (DFG) to start an independent laboratory at the University of Cologne as a “Group Leader” (returned).
- 2000** Stipend granted by the Howard Hughes Medical Institute scholarship fund.
- 2000** Travel allowance from Käthe-Hack-Stiftung, Cologne, Germany.

## **Bibliography**

### **Peer-reviewed primary publications:**

1. Kariya S, Obis T, Garone C, Akay T, Sera F, Iwata S, Homma S, and Monani UR (2014). Requirement for enhanced Survival Motoneuron protein imposed during neuromuscular junction maturation.  
*J. Clin. Invest.* 124(2):785-800.
2. Akay T. Long-term measurement of muscle denervation and locomotor behavior in individual wild type and ALS model mice.  
*J. Neurophysiol.* 111(3):694-703.
3. Kaplan A, Spiller KJ, Towne Ch, Kanning KC, Choe GT, Geber A, Akay T, Aebischer P, and Henderson ChE (2014). Neuronal matrix metalloproteinase-9 is a determinant of selective neurodegeneration.  
*Neuron* 81(2):333-348.
4. Bui TV, Akay T, Loubani O, Hnasko TS, Jessell TM, and Brownstone RM (2013). Circuits for grasping: spinal dI3 interneurons mediate cutaneous control of motor behavior.  
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5. Mendes C, Bartos I, Akay T, Márka S, and Mann RS (2013). Automated visualization and quantification of gait parameters in freely walking *Drosophila melanogaster*.  
*Elife*: 2:e00231.
6. Sürmeli G, Akay T, Tucker PW, and Jessell TM (2011). Patterns of spinal sensory-motor connectivity prescribed by a dorsoventral positional template.  
*Cell* 147(3):653-665.
7. Zagoraiou L, Akay T, Martin JF, Brownstone RM, Jessell TM, and Miles GB (2009). A cluster of cholinergic pre-motor interneurons modulates locomotor activity in mouse.  
*Neuron* 64:645-662.
8. Liu J, Akay T, Hedlund PB, Pearson KG, and Jordan LM (2009). Spinal 5-HT<sub>7</sub> receptors are critical for alternating activity during locomotion: *in vitro* neonatal and *in vivo* adult studies using 5-HT<sub>7</sub> receptor knockout mice.  
*J. Neurophysiol.* 102(1):337-348.
9. Hooper SL, Guschlbauer Ch, Blümel M, Rosenbaum Ph, Gruhn M, Akay T, and Büschges A (2009). Neural control of unloaded leg posture and leg swing in stick insect, cockroach, and mouse differs from that in larger animals.  
*J. Neurosci.* 29(13):4109-4119.
10. Zhang Y, Narayan S, Geiman E, Lanuza GM, Velasquez T, Shanks B, Akay T, Dyck J, Pearson KG, Gosgnach S, Fan C-M, and Goulding M (2008). V3 spinal neurons establish a robust and balanced locomotor rhythm during walking.  
*Neuron* 60:64-96.

11. Akay T, Fouad K, and Pearson KG (2008). New technique for drug application to the spinal cord of walking mice.  
*J. Neurosci. Methods* 171(1):39-47.
12. Akay T, Ludwar BCh, Göritz ML, Schmitz J, and Büschges A (2007). Segment specific reflex-reversal depends on walking direction in stick insect leg.  
*J. Neurosci.* 27(12):3285-3294.
13. Akay T and Büschges A (2006). Influence of load signals on generation of reflex reversal in femur-tibia joint in stick insects *Carausius morosus*.  
*J. Neurophysiol.* 96(6):3532-3537.
14. Akay T, McVea D, Tachibana A, and Pearson KG (2006). Coordination of fore and hind leg stepping in cats on a transversely-split treadmill.  
*Exp. Brain Res.* 175(2):211-222.
15. Akay T, Acharya H, Fouad K, and Pearson KG (2006). Behavioral and electromyographic characterization of mice lacking EphA4 receptors.  
*J. Neurophysiol.* 96(2):642-651.
16. Akay T, Haehn S, Schmitz J, and Büschges A (2004). Signals from load sensors underlie interjoint coordination during stepping movements of the stick insect leg.  
*J. Neurophysiol.* 92(1):42-51.
17. Bucher D, Akay T, DiCaprio RA, and Büschges A (2003). Interjoint coordination in the stick insect leg control system: The role of positional signaling.  
*J. Neurophysiol.* 89(3):1245-1255. **(Joint first authorship)**
18. Akay T, Bässler U, Gerharz P, and Büschges A (2001). The role of sensory signals from the insect coxa-trochanteral joint in controlling motor activity of the femur-tibia joint.  
*J. Neurophysiol.* 85(2):594-604.

**Reviews:**

1. Jordan LM, Liu J, Hedlund P, Akay T, and Pearson KG (2008). Descending command systems for the initiation of locomotion in mammals.  
*Brain Res. Rev.* 57:183-191.
2. Büschges A, Akay T, Gabriel JP, and Schmidt J (2008). Organizing network action for locomotion: Insights from studying insect walking.  
*Brain Res. Rev.* 57:162-171.

**Manuscript in preparation:**

Akay T, Arber S, Tourtellotte W, and Jessell TM. Modular degradation of elemental locomotor pattern in the absence of proprioceptive sensory feedback.

Bui TV, Akay T, and Brownstone RM. Confluence of spinal sensory and motor microcircuits in locomotion.