

Ian G. Davison

Howard Hughes Medical Institute / Dept. of Neurobiology
Box 3209 Duke University Medical Center
Durham, NC 27710

tel. 919 684 1829
fax 919 684 4524
davison@neuro.duke.edu

Education

Ph.D., Dept. of Biological Sciences, Simon Fraser University, Vancouver, Canada. 2003.
Thesis: Dopaminergic modulation of inhibitory networks in the frog olfactory bulb.
Advisor, Dr. K.R. Delaney.

B.Sc., joint hons. Biology / Physics, St. Francis Xavier University, Antigonish, Canada. 1994.
Thesis: Structure and mechanical properties of invertebrate and primitive vertebrate arteries.
Advisor, Dr. M.E. DeMont.

Research / Teaching Experience

Postdoctoral fellow, Duke Neurobiology / Howard Hughes Medical Inst., Jan 2006–present.
Effect of early sensory experience on mammalian CNS development. Advisor, Dr. M.D. Ehlers

Postdoctoral fellow, Duke Neurobiology / Howard Hughes Medical Inst., Oct 2003–Dec 2005.
Sensory coding in the mouse olfactory system *in vivo*. Advisor, Dr. L.C. Katz

Grass Fellowship in Neuroscience, Marine Biological Lab, Woods Hole, May-Sept 2003.
Regulation of receptor inputs to the olfactory bulb by lateral synaptic inhibition.

Ph. D., Simon Fraser University, 2003. Modulation of synaptic inhibition in the olfactory system by dopamine at the single-neuron and network level.

Demonstrator, International 3D Microscopy of Living Cells Course, University of British Columbia, 2002. 2-photon scanning measurement of Ca²⁺ signals in neuronal processes.

Teaching assistant, Imaging Structure & Function in the Nervous System, Cold Spring Harbour Labs, 2001. Various electrophysiology and imaging experiments.

Teaching assistant, Biosciences SFU, 1999-2000, 2002. Undergraduate animal and cell physiology courses and labs.

Research assistant, Biology Dept. St. F.X., 1992-93, 1994-95. Biomechanical analysis of bivalve locomotion and blood vessel properties.

Lab demonstrator, Biology, Physics, St. F.X., 1992-1995.

Scholarships, Fellowships, Awards

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| Grass Fellowship in Neuroscience | Marine Biological Lab, Woods Hole | 2003 |
| NSERC Postgraduate Scholarships A & B | Simon Fraser University | 1996-1999 |
| Frank A. Linville Scholarships in Olfaction | SFU | 2000, 2002 |
| Graduate Fellowships | SFU | 1996, 2000 |
| Canada Scholarship | St. Francis Xavier University. | 1990-1994 |
| Dr. J.J. Carrol Memorial Scholarship | St. F.X. | 1990-1994 |
| NSERC Undergrad. Research Scholarship | St. F.X. | 1993 |
| University Council for Research Award | St. F.X. | 1992 |

Mentoring

Yifan Xu. Undergraduate directed studies, Sept. 2005 - May 2006.

Publications

Davison IG and Katz LC. 2007. Sparse and selective coding in the mouse main olfactory bulb. J. Neurosci., in press.

Arenkiel BR, Peca JR, **Davison IG**, Feliciano C, Deisseroth K, Augustine GJ, Ehlers MD, and Feng G. 2007. In vivo light-induced activation and mapping of neural circuitry in mice expressing Channelrhodopsin-2. Neuron, revision submitted.

Davison IG, Boyd JD, and Delaney KR. 2004. Dopamine inhibits mitral/tufted to granule cell synapses in the frog olfactory bulb. J. Neurosci. **24** (3): 8057-8067.

Delaney KR, **Davison IG**, and Denk W. 2001. Odour-evoked $[Ca^{2+}]$ transients in mitral cell dendrites of frog olfactory glomeruli. Eur. J. Neurosci. **13** (9): 658-72.

Mulligan SJ, **Davison IG**, and Delaney KR. 2001. Mitral cell presynaptic $Ca(2+)$ influx and synaptic transmission in frog amygdala. Neuroscience **104** (1):137-51.

Cheng J-Y, **Davison IG**, and DeMont ME. 1996. Dynamics and energetics of scallop locomotion. J. Exp. Biol. **199**: 1931-19461

Davison IG, Wright GM, and DeMont ME. 1995. The structure and mechanical properties of invertebrate and primitive vertebrate arteries. J. Exp. Biol. **198**: 2185-2196

Joshi YN, Tauheed A, and **Davison IG**. 1992. The analysis of the $5s^25p^2$, $5s5p^3$, $5s^25p5d$, and $5s^25p6s$ configurations of Te III. Can. J. Phys. **70**: 740-744

Invited lectures

Encoding smells in the brain: selective neurons in the olfactory bulb. Dept. Biology / Neuroscience Program, Bowdoin College, Brunswick, ME, Sept. 2006

Sparse and selective odor coding in the mammalian olfactory bulb. Dept. of Neurobiology, University of Texas at Austin, April 2006

Selective mitral/tufted cell responses in the mouse olfactory bulb. Cosyne workshop on olfactory coding, Salt Lake City UT, March 2005

Encoding smell information in the mammalian olfactory bulb. Dept. of Biology, St. Francis Xavier University, Antigonish Canada, October 2004

Presentations, Abstracts

Davison IG and Katz LC. Tuning and selectivity of mitral cells in the mammalian olfactory bulb. Soc. Neurosci. annual meeting, 2004.

Davison IG, Shtoyerman E, and Katz LC. Mitral/tufted and granule cell response specificity in the mouse olfactory bulb. Association for Chemoreception Sciences Annual Meeting, 2004.

Davison IG and Delaney KR. Dopamine-dependent modulation of inhibition in the frog olfactory bulb. Soc. Neurosci. Abstr., 2002.

Davison IG and Delaney KR. Control of odor-evoked mitral cell firing in the vertebrate olfactory bulb. Soc. Neurosci. Abstr., 2000.

Davison IG and Delaney KR. Whole-cell recording of excitatory currents in mitral cells of the vertebrate olfactory bulb. Soc. Neurosci. Abstr., 1999

Davison IG and Delaney KR. Control of odor-induced Ca²⁺ influx in mitral cell apical dendritic tufts. Soc. Neurosci. Abstr., 1998

Davison IG and Delaney KR. Pharmacology of odor-evoked calcium transients in mitral cell apical dendritic tufts. Soc. Neurosci. Abstr., 1997

Hall BJ, Davison IG, and Delaney KR. Opioid modulation in the olfactory bulb and cortex of frog. Soc. Neurosci. Abstr., 1996

DeMont M.E., MacGillivray P.S., Davison I.G., and McConnell C.J. 1996. Measuring how elastic arteries function. Amer. Biol. Teacher, 59 (8): 1-5.

Professional activity

Society for Neuroscience

Association for Chemoreception Sciences

ad hoc referee, Journal of Neurophysiology, Neuroscience Letters