Curriculum Vitae
Patrick Edwin Williams

Research Associate
Department of Neuroscience
University of Arizona
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Education

2007 New York University Center for Neural Science, Ph.D. in Neural Science
Thesis: Temporal nonlinearities in primary visual cortex

1993 Carnegie Mellon University, B.S. in Biological Sciences

Research

2007- University of Arizona Department of Neuroscience
Characterizing the functional and anatomical properties of higher-order visual processing centers in insects.

1999-2007 New York University Center for Neural Science
Measuring and modeling nonlinear temporal properties of visual cortex using VEPs in humans and extracellularly-recorded spikes in macaque V1.

1990-1993 Carnegie Mellon University
Modeling and implementation of a novel MRI-based method of measuring brain blood flow using arterial labeling.

Teaching

Classroom

2009 Introductory Biology for Allied Health, Pima Community College. Lecture and lab primarily for students pursuing careers in health professions. Sole instructor for course section.

2002 Brain and Behavior (TA), New York University. Lecture and lab for undergraduate non-science majors.

2001 Cellular and Molecular Neuroscience (TA), New York University. Lab for undergraduate neuroscience majors.

Laboratory – mentoring

2010 John Santoro, Jr., Pima Community College student – *Musca* visual behavior
2009-2010 Melissa Hughes, Pima Community College student – *Musca* visual behavior

Honors and Awards

- Center for Insect Science competitive small grants award for "Imaging insect brain activity with a novel low-cost nonlinear optical microscope." Collaborators: Khanh Kieu and Nasser Peyghambarian, University of Arizona College of Optical Sciences. $10,000.
- NIH/IRACDA Postdoctoral Excellence in Research and Teaching fellowship, University of Arizona
- Faculty of 1000 recommended paper - Jose-Manuel Alonso: Faculty of 1000 Biology, 13 Jul 2007. http://www.f1000biology.com/article/id/1087714
- Award for Outstanding Undergraduate Research, Carnegie Mellon 1993

Publications

Williams PE, Strausfeld NJ (*in preparation*) Orientation selectivity of spiking neurons in lobula and lateral protocerebrum of *Neobellieria bullata*.

Williams PE, Xing D, Hawken MJ, Shapley RM (*submitted*) Laminar dependence of complex cell response dynamics in macaque V1.

Yeh C-I, Xing D, Williams PE, and Shapley RM (2009) Stimulus ensemble and cortical layer determine V1 spatial receptive fields. PNAS 106:14652-14657.

Williams PE, Shapley RM (2007) A dynamic nonlinearity and spatial phase specificity in macaque V1 neurons. J Neurosci 27:5706-5718.

Williams PE, Mechler F, Gordon J, Shapley R, Hawken MJ (2004) Entrainment to video displays in primary visual cortex of macaque and humans. J Neurosci 24:8278-8288.

Carrasco M, Williams PE, and Yeshurun Y (2002) Covert attention increases spatial resolution with or without masks: Support for signal enhancement. Journal of Vision 2:467-479, http://journalofvision.org/2/6/4/, doi:10.1167/2.6.4.

Service and Outreach

2010	Postdoctoral representative on PERT Postdoctoral Fellow search committee (Spring, Fall)
2010	Consulted for a scientific artist who is sculpting flowers for insect vision experiments
2010	Participated in planning and running PCC student visit to University of Arizona (talks and lab tours); ran demonstrations for Brain Awareness Week tent at Tucson Book Festival; judged science fair projects at Sonoran Science Academy *(middle/high school)*; judged graduate student posters at UA Student Showcase
2008-2010	Participated in running Tucson Bat Night, an annual event that introduces Tucsonians to the local migratory bat population

Posters and Talks

Williams PE, Strausfeld NJ (2010) Visual responses of neurons in the optic lobes and central brain of the flesh fly. Soc Neurosci Abstr 673.16. *(Upcoming)*

Williams PE (2010) “Dynamic Dipteran Vision”. University of Arizona Center for Insect Science HexaPodium talk.

Williams PE, Strausfeld NJ (2010) How fly brains respond to visual orientation. IRACDA annual conference.

Williams PE, Strausfeld NJ (2009) Visual orientation sensitivity in neurons in the central brain of the flesh fly. Soc Neurosci Abstr 850.5.

Yeh CI, Xing D, Williams PE, Shapley RM (2008) Comparisons of first-order kernels calculated with different receptive-field mapping techniques in macaque primary visual cortex (V1). Soc Neurosci Abstr 163.21.

Xing D, Yeh CI, Williams P, Henrie A, Shapley R (2008) LFP gamma-band activity in primary visual cortex is sensitive to image continuity. Soc Neurosci Abstr 366.16.

Williams PE, Xing D, Yeh C-I, Joshi S, Hawken MJ, Shapley RM (2007) Laminar differences in complex cell dynamics in macaque V1. Soc Neurosci Abstr 279.6.

Yeh CI, Xing D, Williams PE, Josh S, Hawken MJ, Shapley RM (2007) Spatiotemporal receptive fields in different layers of macaque primary visual cortex (V1). Soc Neurosci Abstr 279.5.

Xing D, Burns S, Williams PE, Henrie JA, Joshi S, Hawken MJ, Shapley RM (2007) Dynamic responses to flashed gratings at different orientations in Macaque V1. Soc Neurosci Abstr 279.7.

Henry CA, Joshi S, Xing D, Williams PE, Shapley RM, Hawken MJ (2007) Contrast-response functions at the preferred and orthogonal orientations of extra-classical receptive fields in macaque V1. Soc Neurosci Abstr 279.1.

Henry CA, Joshi S, Xing D, Williams PE, Shapley RM, Hawken MJ (2006) Surround-center interaction over a wide contrast range in macaque V1. Soc Neurosci Abstr 436.14.

Williams PE, Henrie JA, Xing D, Shapley RM (2005) Stimulus-dependent temporal dynamics in simple cells in macaque V1. Soc Neurosci Abstr 285.7.

Xing D, Joshi S, Henrie JA, Williams PE, Hawken MJ, Shapley RM (2004) Dynamics of size tuning in macaque V1. Soc Neurosci Abstr 410.10.

Williams PE, Gordon J, Hau C, Kotenko K, Shapley RM (2003) Entrainment of human visual evoked responses to video refresh rate: the effect of spatial contrast. Soc Neurosci Abstr 910.5.

Williams P, Yeshurun Y, Carrasco M. (2001) Masked or not, covert attention enhances spatial resolution: Support for signal enhancement [Abstract]. Journal of Vision, 1(3), 79a, http://journalofvision.org/1/3/79/, doi:10.1167/1.3.79.

Other work experience

1994-1999	Banc One Corporation Regulatory Compliance, Columbus OH
1995-1999	Suicide Prevention Services (hotline volunteer; volunteer trainer), Columbus OH
1993-1994	Lutheran Volunteer Corps / Uptown Recycling, Chicago IL
1991	NSF Summer Undergraduate Research Scholar, Carnegie Mellon