

CURRICULUM VITAE

Daniel Lewis Adams PhD

Assistant Professor
Beckman Vision Center, Department of Ophthalmology
University of California, San Francisco

Revised December 2007.

Personal data:

Date of Birth: October 14th 1970

Marital Status: Married, 2 children

Place of Birth: Royston, England

Citizenship: British citizen
US permanent resident

Languages: English – Native
Italian – Proficient

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Education:

University College London
Gower Street,
London, WC1E 5BT.

B.Sc. (1990-93). Neuroscience. (2:1). Personal Tutor: M. Glickstein, PhD. (Department of Anatomy and Developmental Biology).

Thesis: Detection of K⁺ transported out of isolated salamander glial cells on the glutamate uptake carrier. (1993) Supervisor: D. Attwell, PhD (Department of Physiology).

Ph.D. (1993-97). Visual Neuroscience. Wellcome Department of Cognitive Neurology.

Thesis: Functional organization of the monkey visual cortex for stereoscopic depth. (1997) Supervisor: S. Zeki, PhD (Department of Anatomy).

- Licenses, certifications:** Institute of Biology accredited training for personnel working under the Animals (Scientific Procedures) Act of Great Britain 1986. Modules 1-5. Completed October 1994, refreshed December 2007.
- UCSF Committee on Animal Research (CAR) training program:
"Basic Regulatory Training, Ethical Requirements and Species-Specific Training (Primate)" Completed September 1998.
- Grants and awards:** The Biotechnology and Biological Sciences Research Council (BBSRC)
Three-year post-graduate research grant.
- The Royal Society.
Exchange scholarship to 1st Department of Physiology, Nihon University School of Medicine, Tokyo, Japan.
- Research experience:** Department of Physiology, University College London. (1990-93)
Title: Under-graduate Researcher.
Supervisor: Professor David Attwell (Department of Physiology).
Studies of neurotransmitter uptake carriers in the salamander retina using whole cell patch clamp and ion sensitive electrodes.
- Wellcome Department of Cognitive Neurology, Laboratory of Neuroscience, University College London. (1993-97)
Title: PhD Student.
Supervisor: Professor Semir Zeki (Department of Anatomy).
Studies of the physiology and anatomical connections of the macaque monkey visual cortex.
Single cell recordings in the anaesthetized monkey visual cortex.
Computerized stereoscopic visual stimulation techniques.
Sterile surgical techniques.
Injection of anatomical tracing agents.
Histological preparation and staining techniques.
Computer aided reconstruction of the brain and its connections.
- Nihon University School of Medicine, Tokyo, Japan. (1/24/98 - 4/17/98)
Title: Royal Society Post-Doctoral Exchange Scholar.
Supervisor: Professor H. Sakata (Department of Physiology).
Single cell recording in visual cortex of awake behaving macaque monkeys.
Studies of the visual representation of the third dimension in parietal cortex.
Behavioral training techniques in macaque monkeys.
Eye position monitoring techniques using eye-coils.

Wellcome Department of Cognitive Neurology, Laboratory of Neuroscience, University College London. (1998)

Title: Post-doc. (4/20/98 - 5/29/98)

Supervisor: Professor Semir Zeki (Department of Anatomy).

The design of equipment required for single cell recording in visual cortex of awake behaving macaque monkeys.

Koret Vision Research Center, University of California, San Francisco. (6/1/98 - present)

Titles: Visiting Post-doc. (6/1/98 - 6/29/01).

Postgraduate Researcher. (6/30/01 - 3/31/03).

Assistant Professor (4/1/03 - present).

Supervisor: Professor Jonathan C. Horton (Departments of Ophthalmology and Physiology).

Studies of the organization and function of striate cortex of the macaque and squirrel monkey.

Ophthalmic and neuro-surgery techniques.

Ophthalmic examination techniques including streak retinoscopy, fundus photography and indirect ophthalmoscopy.

Histological brain flattening and processing.

Training of macaque monkeys to perform visual fixation and tracking.

Single unit recording with electrodes and tetrodes in anaesthetized and awake primate cortex and LGN.

Information analysis of LGN responses in anaesthetized macaque LGN.

Other experience:

1999 - 2004

I played a major role in the architectural planning of a new laboratory at the Koret Vision Research Centre in the Department of Ophthalmology, UCSF. This 1800 square foot facility includes animal housing, a cage washer, physiology surgery and histology suites, and a data analysis center. Its primary function is for conducting awake-behaving physiology experiments in macaque monkeys.

I helped design and implement equipment necessary for awake-behaving physiology experiments in macaque monkeys, including a novel 'DLP' back projection stimulus screen, driven by a 'VSG' graphics system, dual 'SMI' infra-red eye-trackers, 'Spike 2' data acquisition and a food-reward delivery system.

Professional activity:

Current Memberships:

1997- Honorary member of the Wellcome Laboratory of Neurobiology, Department of Anatomy, University College London.

1998- Member of the Society for Neuroscience.

2001- Member of the Cognitive Neuroscience Society.

2001- Member of the Vision Sciences Society.

2005- Member of the American Association for the Advancement of Science.

2006- Member of the American Physiological Society.

Services to Professional Publications:

2004- Current Medical Imaging Reviews.	Ad hoc referee.
2005- Journal of Neurophysiology.	Ad hoc referee.
2005- Journal of Neuroscience.	Ad hoc referee.
2007- Experimental Brain Research	Ad hoc referee.

Other:

2006- Ad hoc grant reviewer for The Wellcome Trust.

- Lectures, presentations:**
- 1994 Wellcome Department of Imaging Neuroscience, Functional Imaging Laboratory, Queens Square, London, UK. Opening ceremony. Presented poster entitled, "*A columnar organization of disparity tuned cells in the V3 complex*".
- 1998 Invited Speaker, 1st Department of Physiology, Nihon University School of Medicine, Tokyo, Japan. Presented lecture entitled, "*The functional organization of the V3 complex for stereoscopic depth*".
- 1998 Society for Neuroscience, 28th Annual Meeting, Los Angeles, CA. Presented poster entitled, "*Effects of different types of disparity cues on the response of axis-orientation selective (AOS) cells in the monkey parietal cortex*".
- 1999 Society for Neuroscience, 29th Annual Meeting, Miami, FL. Presented talk entitled, "*Representation of the Purkyně retinal tree in primate striate cortex*".
- 2000 Invited Speaker, Functional Imaging Laboratory, Queens Square, London, UK. Presented lecture entitled "*Perceptual suppression and ocular dominance in VI*".
- 2001 Society for Neuroscience, 31st Annual Meeting, San Diego, CA. Presented poster entitled, "*A precise retinotopic map of the primate striate cortex generated from angioscotomas*".
- 2001 Invited Speaker, Department of Human and General Physiology, University of Bologna, Italy. Presented seminar entitled "*The representation of retinal blood vessels in the brain*".
- 2002 Invited speaker, Smith-Kettlewell Eye Research Institute, San Francisco, CA. Presented colloquium entitled "*V3: An area specialized for 3D?*"
- 2002 Invited symposium speaker, Basic/Clinical Science Symposium, ARVO (The Association for Research in Vision and Ophthalmology) Annual Meeting, Fort Lauderdale, FL. Presented lecture entitled "*Angioscotomas generate local amblyopia during normal development*".
- 2002 VSS (Vision Sciences) 2nd Annual Meeting, Sarasota, FL. Presented talk entitled "*Shadows from retinal blood vessels cause local amblyopia by deprivation of photoreceptors*".

- 2002 Society for Neuroscience, 32nd Annual Meeting, Orlando, FL. Presented talk entitled “*Size and density of retinal blood vessel shadows required to induce re-modeling of geniculate afferents in monkey striate cortex*”.
- 2003 VSS (Vision Sciences) 3rd Annual Meeting, Sarasota, FL. Presented talk entitled “*Cortical columns without a function*”.
- 2003 Larry L. Hillblom Foundation 2nd Annual Scientific Meeting, San Francisco, CA. Presented talk entitled “*Neural mechanisms of strabismus*”.
- 2003 Society for Neuroscience, 33rd Annual Meeting, New Orleans, LA. Presented poster entitled “*Areal comparisons and new projections in complete flattened hemispheres of the macaque cortex*”.
- 2004 UCSF Ophthalmology Department, Grand Rounds. Presented lecture entitled “*Shadows in the brain: the cortical representation of angioscotomas*”.
- 2004 Society for Neuroscience, 34th Annual Meeting, San Diego, CA. Presented talk entitled “*Ocular preference of cells in layer 4c of the squirrel monkey*”.
- 2005 Society for Neuroscience, 35th Annual Meeting, Washington, DC. Presented poster entitled “*Ocular motor behavior in macaques with surgical strabismus*”.
- 2005 Society for Neuroscience, 35th Annual Meeting, Washington, DC. Presented poster entitled “*Coordinated burst firing in the retina and lateral geniculate nucleus of the macaque*”.
- 2006 Invited speaker, Smith-Kettlewell Eye Research Institute, San Francisco, CA. Presented colloquium entitled “*Neural maps of perceptual suppression in strabismus*”.
- 2006 Society for Neuroscience, 36th Annual Meeting, Atlanta, GA. Presented poster entitled “*Ocular Dominance Columns in Strabismus*”.
- 2006 Society for Neuroscience, 36th Annual Meeting, Atlanta, GA. Presented poster entitled “*Perceptual suppression revealed by dichoptic visual field mapping in strabismus*”.
- 2007 Invited speaker. Barrow Neurological Institute, Phoenix, AZ. Presented lecture entitled “*Shadows in the brain: the cortical representation of retinal vessels*”.
- 2007 Invited speaker. Department of Neurological and Visual Sciences, University of Verona, Italy. Presented lecture entitled “*Binocular integration and monocular suppression in strabismus*”.
- 2007 Society for Neuroscience, 37th Annual Meeting, San Diego, CA. Presented poster entitled “*The complete pattern of ocular dominance columns in human striate cortex*”.

2007 Invited speaker. Neurospin, Paris, France. Presented lecture entitled “*Binocular integration and suppression in visual cortex*”.

Formal teaching:

1996 UCL C 26, "Neurobiology of Vision" for undergraduate and MSc students. Gave guest seminar entitled, “*Disparity tuning in visual cortex*”. 1 hour.

1999 UCSF Neuroscience Graduate Program. Jointly supervised a 1st year PhD student, Robin LeWinter, during her three month rotation in the Laboratory of Visual Neuroscience.

2000 UCSF Anatomy 103, “*Nervous system Form and Function*” for postgraduate and medical students, Lab and discussion leader. 14 hours.

2001 UCSF Anatomy 103, “*Nervous system Form and Function*” for postgraduate and medical students, Lab and discussion leader. 14 Hours.

2003 UCSF IDS 104 “*Brain, Mind and Behaviour*” for postgraduate and medical students. Tutorial and discussion leader. 14 hours.

2003 UCSF Physiology 110 “*Integrative and Nutritive Systems*” for medical and dental students. Tutorial and discussion leader. 10 hours.

2004 UCSF IDS 104 “*Brain, Mind and Behavior*” for medical students. Tutorial and discussion leader. 14 hours.

2005 UCSF IDS 104 “*Brain, Mind and Behavior*” for medical students. Tutorial and discussion leader. 14 hours.

2006 UCSF IDS 104 “*Brain, Mind and Behavior*” for medical students. Small group discussion leader. 14 hours.

2007 UCSF IDS 104 “*Brain, Mind and Behavior*” for medical students. Small group discussion leader. 14 hours.

Total teaching hours:

Last year: 75

Current year: 75

Next year: 75

Publications:

Original Peer Reviewed Articles

Horton, J.C., D.R. Hocking, and D.L. Adams, *Metabolic mapping of suppression scotomas in striate cortex of macaques with experimental strabismus*. Journal of Neuroscience, 1999. **19**: p. 7111-29.

Endo, K., Y. Haranaka, W.N. Shein, D.L. Adams, M. Kusunoki and H. Sakata, *Effects of different types of disparity cues on the response of axis-orientation selective cells in the monkey parietal cortex*. Nippon Ganka Gakkai Zasshi. Acta Societatis Ophthalmologicae Japonicae, 2000. **104**: p. 334-43.

Horton, J.C., D.R. Hocking, and D.L. Adams, *Rapid identification of ocular dominance columns in macaques using cytochrome oxidase, Zif268, and dark-field microscopy*. Visual Neuroscience, 2000. **17**: p. 495-508.

Adams, D.L. and S. Zeki, *Functional organization of macaque V3 for stereoscopic depth*. Journal of Neurophysiology, 2001. **86**: p. 2195-203.

Adams, D.L., and J.C. Horton, *Shadows cast by retinal blood vessels mapped in primary visual cortex*. Science, 2002. **298**: p. 572-6.

Adams, D.L. and J.C. Horton, *Capricious expression of ocular dominance columns in the primate brain*. Nature Neuroscience, 2003. **6**: p. 113-4.

Adams, D.L. and J.C. Horton, *A precise retinotopic map of primate striate cortex generated from the representation of angioscotomas*. Journal of Neuroscience, 2003. **23**: p. 3771-89.

Adams, D.L. and J.C. Horton, *The representation of retinal blood vessels in primate striate cortex*. Journal of Neuroscience, 2003. **23**: p. 5984-97.

Sincich, L.C., D.L. Adams, and J.C. Horton, *Complete flatmounting of the macaque cerebral cortex*. Visual Neuroscience, 2003. **20**: p. 663-86.

Horton, J. C., and D. L. Adams, *The cortical column: a structure without a function*. Philosophical Transactions of the Royal Society, 2005. **360**: p. 837-62.

Adams, D.L. and J.C. Horton, *Monocular cells without ocular dominance columns*. Journal of Neurophysiology, 2006. **96**(5): p. 2253-64.

Adams, D.L. and J.C. Horton, *Strabismus and ocular dominance columns*. Visual Neuroscience, 2006. **23**: p. 795-805.

Sincich, L.C., D.L. Adams, J.R. Economides and J.C. Horton, *Transmission of spike trains at the retinogeniculate synapse*. Journal of Neuroscience, 2007. **27**(10): p. 2683-92.

Adams, D.L., J.R. Economides, C.M. Jocson and J.C. Horton, *A biocompatible titanium headpost for stabilizing behaving monkeys*. Journal of Neurophysiology, 2007. **98**: p.993-1001.

Adams, D.L., L.C. Sincich and J.C. Horton, *Complete pattern of ocular dominance columns in human primary visual cortex*. Journal of Neuroscience, 2007. **27**(39): p.10391-403.

Economides, J.R., D.L. Adams, C.M. Jocson and J.C. Horton, *Ocular motor behavior in macaques with surgical exotropia*. Journal of Neurophysiology, 2007; doi:10.1152/jn.00839.2007.

Shipp, S.D., D.L. Adams, K. Moutoussis and S. Zeki, *Feature binding in the feedback layers of area V2*. **Under review**.

Abstracts

Amato, A., D.L. Adams, and D. Attwell, *Detection of K^+ transported out of isolated salamander glial cells on the glutamate uptake carrier*. Journal of Physiology, London, 1993. **473**: p. 26P.

Endo, K.Y. Haranaka, D.L. Adams, M. Kusunoki and H. Sakata, *Effects of different types of disparity cues on the response of axis-orientation selective (AOS) cells in the monkey parietal cortex*. Society for Neuroscience Abstracts, 1998. **24**(2): p. 1397.

Adams, D.L., D.R. Hocking, and J.C. Horton, *Representation of the Purkyně retinal tree in primate striate cortex*. Society for Neuroscience Abstracts, 1999. **25**(1): p. 1315.

Hocking, D.R., D.L. Adams, and J.C. Horton, *A new method for rapid visualization of ocular dominance columns in macaque striate cortex*. Society for Neuroscience Abstracts, 1999. **25**(2): p. 1424.

Horton, J.C., D.R. Hocking, and D.L. Adams, *Comparison of ocular dominance columns in normal and strabismic squirrel monkeys*. Society for Neuroscience Abstracts, 1999. **25**(2): p. 1808.

Adams, D.L., and J.C. Horton, *A precise retinotopic map of the primate striate cortex generated from angioscotomas*. Society for Neuroscience Abstracts, 2001. 619.45.

Adams, D.L., and J.C. Horton, *Shadows from retinal blood vessels cause local amblyopia by deprivation of photoreceptors* [Abstract]. Journal of Vision, 2002. **2**(7): 123.

Adams, D.L., and J.C. Horton, *Size and density of retinal blood vessel shadows required to induce re-modeling of geniculate afferents in monkey striate cortex*. Society for Neuroscience Abstracts, 2002. 325.5.

Adams, D.L., and J. C. Horton, *Cortical columns without a function* [Abstract]. Journal of Vision, 2003. **3**(9):108.

Adams, D.L., L.C. Sincich, and J.C. Horton, *Proportional scaling of visual cortical areas revealed in complete flatmounts of macaque cerebral cortex*. Society for Neuroscience Abstracts, 2003. 818.11.

Adams, D.L., and J.C. Horton, *Ocular preference of cells in layer 4c of the squirrel monkey*. Society for Neuroscience Abstracts, 2004. 18.3.

Sincich, L.C., K.F. Park, D.L. Adams, J.R. Economides and J.C. Horton. *Temporal reliability of primate lateral geniculate neurons to the luminance dynamics of natural scenes*. Society for Neuroscience Abstracts, 2004. 598.2.

Economides, J.R., K.F. Park, D.L. Adams and J.C. Horton. *Ocular motor behavior in macaques with surgical strabismus*. Society for Neuroscience Abstracts, 2005. 745.17.

Sincich, L.C., K.F. Park, D.L. Adams, J.R. Economides and J.C. Horton. *Coordinated firing in the retina and lateral geniculate nucleus of the macaque*. Society for Neuroscience Abstracts, 2005. 506.20.

Adams, D.L. and J.C. Horton. *Ocular dominance columns in strabismus*. Society for Neuroscience Abstracts, 2006. 545.25.

Economides, J.R., D.L. Adams and J.C. Horton. *Perceptual suppression revealed by dichoptic visual field mapping in strabismus*. Society for Neuroscience Abstracts, 2006. 801.18.

Adams, D.L., L.C. Sincich and J.C. Horton. *The complete pattern of ocular dominance columns in human striate cortex*. Society for Neuroscience Abstracts, 2007. 393.8.

Sincich, L.C., Y. Zhang, P. Tiruveedhula, D.L. Adams, Q. Yang, C.R. Vogel, D.W. Arathorn, J.C. Horton and A. Roorda. *Mapping LGN receptive fields by single cone stimulation with adaptive optics scanning laser ophthalmoscopy*. Society for Neuroscience Abstracts, 2007. 228.5.

Other Publications

Adams, D.L., *Functional organization of the monkey visual cortex for stereoscopic depth*, Ph.D. Thesis, Wellcome Laboratory of Neurobiology. 1997, University College London.

Horton, J.C. and D.L. Adams, *The cortical representation of shadows cast by retinal blood vessels*. Transactions of the American Ophthalmological Society, 2000. **XCVIII**: p. 33-40.

Adams, D.L., and J.C. Horton, *What you see...* Book review of Inouye, T. (1909) *Visual disturbances following gunshot wounds of the cortical visual area*. Nature, London, 2001. **412**: p. 482-3.

Adams, D.L., and J.C. Horton, *Blood Vessels Casting a Shadow*. Response to a letter from Levick, W.R. Science, 2003. **299**: p. 1983 - 4.

Adams, D.L., *Normal and Abnormal Visual Development*. In: Pediatric Ophthalmology and Strabismus, 2004, 3rd Edition, Eds: Taylor, D and Hoyt, C. Elsevier Science.

Adams, D.L., *Striate cortex function*. In: Encyclopedia of Neuroscience, 2008, Eds: Binder, M.D., Hirokawa, N., Windhorst, U., Hirsch, M.C. Springer Reference.

Adams, D.L., and J.C. Horton, *Ocular dominance columns in the primate brain*. Invited Review: The Neuroscientist, 2008. In preparation.

Independent reviews of publications:

2002 Heather Wood: Review of “Shadows cast by retinal blood vessels mapped in primary visual cortex”. Nature Reviews Neuroscience **3** (2002), p. 914 – Highlights.

2002 Tobias Bonhoeffer: Evaluation of “Shadows cast by retinal blood vessels mapped in primary visual cortex”. Faculty of 1000, factor 6.0 (*Must read*).

2003 Tobias Bonhoeffer: Evaluation of “Capricious expression of cortical columns in the primate brain”. Faculty of 1000, factor 3.0 (*Recommended*).

2003 David Heeger: Evaluation of “A precise retinotopic map of primate striate cortex generated from the representation of angioscotomas”. Faculty of 1000, factor 3.0 (*Recommended*).

2007 Andrew Derrington: Evaluation of “Complete pattern of ocular dominance columns in human primary visual cortex. Faculty of 1000, factor 6.6 (*Must read*).

2007 Corinna Darian-Smith: Evaluation of “Complete pattern of ocular dominance columns in human primary visual cortex. Faculty of 1000, factor 6.6 (*Must read*).

2007 Jose-Manuel Alonso: Evaluation of “Complete pattern of ocular dominance columns in human primary visual cortex. Faculty of 1000, factor 6.6 (*Must read*).