Curriculum Vitae
Alexander R. Wade Ph.D.
DOB 03.17.1972

Title:	Principal Investigator
Address:	Smith-Kettlewell Eye Research Institute 2318 Fillmore St San Francisco CA 94114
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Email:	wade@wadelab.net
Website:	www.wadelab.net
Education:	1991-1994 Cambridge University, UK. BA in Natural sciences, Major in Genetics
	1995-1998 Institute of Ophthalmology / University College London, UK. PhD in Neuroscience. Thesis title "*High resolution in vivo imaging of the human photoreceptor mosaic using a scanning laser ophthalmoscope*"
	1999-2002 Stanford University, CA. Postdoctoral training in functional neuroimaging in the laboratory of Brian Wandell.
Appointments:	2002-2005 Coordinator of the Smith-Kettlewell Eye Research Institute Brain Imaging Center.
	2005-2007 Sponsored Principal Investigator, SKERI
	2008- Principal Investigator, SKERI
	2009- Adjunct Assistant Professor, UCSF Neurology Department
Honors:	**Chair** (SEC member), Optical Society of America (OSA) Vision and Color Division *2007-* **Publicity Chair**, Computational System Neuroscience Meeting (COSYNE) *2008* **SKERI Brain Imaging Center Core Grant Supervisor**, 2008-

	Section Editor: *Frontiers in Neuroscience,* 2008- **Chair**, Optical Society of America (OSA) Vision and Color Technical Group *2004-2006* **Vice Chair**, Optical Society of America (OSA) Vision and Color Technical Group *2002-2004* **Ad Hoc Reviewer** for *Journal of the Optical Society of America A, Journal of Vision, Nature Neuroscience, Neuron, Vision Research, Journal of Neurophysiology, Perception, Magnetic Resonance in Medicine, Journal of Neuroscience, UK Wellcome Trust*
Professional societies:	Optical Society of America Society for Neuroscience Society for Cognitive Neuroscience International Society for Magnetic Resonance in Medicine
Postdoctoral fellows:	Darren Weber (2007- 2008) Jun Wang (2009-2010) Thomas Lauritzen (2007-) Bei Xiao (2009-) Jeff Tsai (2009-)
Public service:	I have created and maintain websites (www.vischeck.com, www.tinyeyes.com) that offer online simulations of color blindness, distance and infant vision free of charge. The color blindness correction algorithm is also available at www.vischeck.com/daltonize/. This service has been mentioned in numerous reports on human factors 'best practices' and has been recommended by several Federal agencies including the National Oceanic and Atmospheric Administration, the United States Geological Survey and 'section508.gov'
Media coverage:	I have made several appearances in the media in relation to my work with recovered sight patient Mike May: • Dateline Discovery Documentary (08.2001) "Mike May" • BBC Documentary (04.2002) "The man who learned to see" • Der Spiegel (German TV) Documentary (10.2004) "Mike May" • Esquire Magazine (06.2005) "Blind but now he sees" I was also interviewed recently on KQED regarding a SKERI project on tactile maps.(2008)
US Residency:	US Permanent Resident,

Peer-Reviewed Publications.

Webster MA, **Wade** AR, Mollon JD. (1996) Colour in natural images and its implications for visual adaptation. *Proc. SPIE*, **2657**: 144-152.

Wade AR, Fitzke FW. (1998) In vivo imaging of the human cone photoreceptor mosaic using a confocal LSO. *Lasers and Light in Ophthalmology*, **8**: 129-136.

Wade AR, Fitzke FW. (1998) A fast, robust pattern recognition system for low light level image registration and its application to retinal imaging. *Optics Express*, **3**: 190-7.

Press WA, Brewer A, Dougherty RF, **Wade** AR, Wandell BA. (2001) Visual Areas and Spatial Summation in Human Visual Cortex. *Vision Research*, **41**(10-11): 1321-32.

Wade AR, Brewer AA, Rieger JW, Wandell BA. (2002) Functional measurements of human ventral occipital cortex: retinotopy and color. *Philos Trans R Soc Lond B Biol Sci.,* **357**: 963-72.

Wade AR, Wandell BA. (2002) Chromatic light adaptation measured using functional magnetic resonance imaging. *Journal of Neuroscience*, **22**: 8148-57.

Fine I, **Wade** AR, Brewer AA, May MG, Goodman DF, Boynton GM, Wandell BA, MacLeod DIA. (2003) The effects of long-term deprivation on visual perception and visual cortex. *Nature Neurosci.,* **6**(9): 915-6.

Wandell BA, **Wade** AR. (2003) Functional imaging of the visual pathways. *Neurologic Clinics North America*, **1**: 417-43.

Tyler CW, Baseler HA, Kontsevich LL, Likova LT, **Wade** AR, Wandell BA. (2005) Predominantly extra-retinotopic cortical response to pattern symmetry. *Neuroimage,* **15**: 306-14.

Brewer AA, Liu J, **Wade** AR, Wandell BA. (2005) Visual field maps and stimulus selectivity in human ventral occipital cortex. *Nature Neuroscience,* **8:** 1102-9.

Tyler CW, Likova LT, Kontsevich LL, Schira M, **Wade** AR. (2005) Enhanced concepts of occipital retinotopy. *Current Medical Imaging Reviews,* **1**(3): 319-30.

Tyler CW, Likova LT, Kontsevich LL, **Wade** AR. (2006) The specificity of cortical region KO to depth structure. *Neuroimage,* **30**: 228-38.

Cornelissen FW, **Wade** AR, Vladusich T, Dougherty RF, Wandell BA. (2006) No fMRI evidence for brightness and color filling-in in early human visual cortex. *Journal of Neuroscience,* **26**(14): 3634-41.

Lee KM, **Wade** AR, Lee BT. (2006) Differential correlation of frontal and parietal activity with the number of alternatives for cued choice saccades. *Neuroimage,* **33**: 307-15.

Appelbaum LG, **Wade** AR, Vildavski VY, Pettet MW, Norcia AM. (2006) Cue-invariant networks for figure and background processing in human visual cortex. *Journal of Neuroscience,* **26**(45): 11695-708.

Heinen SJ, Rowland J, Lee BT, **Wade** AR. (2007) An Oculomotor Decision Process Revealed by Functional Magnetic Resonance Imaging. *Journal of Neuroscience,* **26**: 13515-22.

Winawer J, Witthoft N, Frank MC, Wu L, **Wade** AR, Boroditsky L. (2007) The Russian Blues: Effects of language on color discrimination. *Proceedings of the National Academy of Sciences,* **104**(19): 7780-5.

Schira MM, **Wade** AR, Tyler CW. (2007) Two-dimensional mapping of the central and parafoveal visual field to human visual cortex. *Journal of Neurophysiology,* **97**(6): 4284-95.

Wade, AR, Augath M, Logothetis N, Wandell BA (2008) fMRI measurements of color in human and macaque. *Journal of Vision* **8**(10): 6, 1-19

Appelbaum, LG, **Wade, AR**, Pettet, MW, Vildavski, VY, Norcia, AM (2008) Figure-ground interaction in the human visual cortex. *Journal of Vision* **8**(9):8 1-819

Wade, AR. (2009) Long-range suppressive interactions between S-cone and luminance channels, *Vision Research,* **49**(12): 1554-62

Busse L, **Wade AR**, Carandini M. (2009) Representation of concurrent stimuli by population activity in visual cortex *Neuron* **64**(6): 931-42

Wade AR, Rowland J. (2010) Early suppressive mechanisms and the negative BOLD response in human visual cortex *Journal of Neuroscience* (In press)

Book Chapters

Podoleanu AG, Seeger M, Dobre GM, Webb DJ, Jackson DA, Fitzke FW, **Wade** AR. (1998) Digital signal processing for fast OCT imaging. In: *Applied Optics and Optoelectronics*, Grattan KTV (ed.), 140-4.

Wade AR, Wandell BA, Glover G, Burg TS. (2000) MR Image visualization and signal processing methods. In: *Signal Processing for Magnetic Resonance Imaging and Spectroscopy*. Yan H (ed.) Marcel Dekker, Inc., NY; 189-207.

Conference Presentations

Podoleanu AG, Rogers JA, Webb DJ, Jackson DA, Dunne S, **Wade** AR, Fitzke FW. (1999) Image presentation in a standalone OCT-Confocal imaging system of the retina. *Proceedings: Medical Image Understanding and Analysis '99*, 4 pages.

Wade AR, Dougherty , Brewer AA, Wandell BA. (2001) Red priests, fast houses: Cortical regions involved in reading color and motion specific adjectives. SFN Presentation: 119.11.

Koch VM, **Wade** AR, Dougherty RF, Wandell BA. (2001) Automatic identification of retinotopic visual areas. SFN Presentation: 620.14.

Dougherty RF, Brewer AA, **Wade** AR, Wandell BA. (2002) Measurement of human visual areas across individuals. SFN Presentation: 658.12.

Fine I, **Wade** AR, Brewer AA, May MG, Boynton GM, Wandell BA, MacLeod DIA. (2002) Long–term deprivation has differential effects on color, motion and pattern processing in human visual cortex. SFN Presentation: 721.14.

Brewer AA, **Wade** AR, Logothetis NK, Wandell BA. (2002) Is V4 dorsal alive and well in human ventral cortex? SFN Presentation: 721.8.

Brewer AA, **Wade** AR, Wandell BA. (2002) Visual field maps and color signals in human ventral occipital cortex. *Journal of Vision,* **2**(7): 549. http://journalofvision.org/2/7/549/

Tyler CW, Likova LT, **Wade** AR, Kontsevich LL. (2003) Cortical area KO responds well to stereoscopic structure. SFN Presentation: 339.11.

Wade AR, Brewer AA, Augath M, Logothetis NK, Wandell BA. (2003) Color responses in human and macaque. SFN Presentation: 439.9.

Brewer AA, **Wade** AR, Liu J, Wandell BA. (2003) Visual field maps in human ventral occipitotemporal cortex. SFN Presentation: 818.15.

Tyler CW, Likova LT, **Wade** AR. (2003) Widespread cortical specializations for disparate lateral motion. *Journal of Vision*, **3**(9): 98. http://www.journalofvision.org/3/9/98/

Likova LT, Tyler CW, **Wade** RA. (2003) Brain activation during stereomotion perception: An fMRI study. *Journal of Vision*, **3**(9): 802. http://www.journalofvision.org/3/9/802/

Likova LT, Tyler CW, **Wade** AR. (2003) Stereomotion processing in human superior occipital cortex. ECVP 03. *Perception,* **32**(supp): 74.

Wade AR, Norcia AM, Vildavski VY, Mark Pettet MW. (2003) fMRI of Glass patterns. *Journal of Vision,* **3**(12): 50. http://journalofvision.org/3/12/50/

Cornelissen FW, **Wade** AR, Dougherty RF, Wandell BA. (2003) fMRI of brightness perception. *Journal of Vision,* **3**(9): 57. http://journalofvision.org/3/9/57/

Brewer AA, Liu J, **Wade** AR, Wandell BA. (2004) Human ventral occipitotemporal cortex contains several visual field maps with differential stimulus selectivity. SFN Presentation: 300.23.

Lee K, **Wade** AR. (2004) Functional differentiation of brain areas activated during choice response. SFN Presentation: 378.10.

Tyler CW, Likova LT, Norcia AM, **Wade** AR. (2004) A functional map of object processing in occipital cortex. SFN Presentation: 824.12.

Norcia AM, Vildavski VY, **Wade** AR, Pettet MW, Keller EL. (2004) Evidence for feedback in the processing of global motion signals. SFN Presentation: 935.2.

Wade AR, Vildavski VY, Pettet MW, Tyler CW, Norcia AM. (2004) Glass patterns look like noise to human MT. SFN Presentation: 935.10.

Tyler CW, Likova LT, **Wade** AR. (2004) Properties of object processing in lateral occipital cortex. *Journal of Vision*, **4**(8): 91a. http://www.journalofvision.org/4/8/91/

Norcia AM, Vildavski VY, **Wade** AR, Pettet MW. (2004) Modulation of local motion signals by the global structure of optic flows: evidence for feedback from high-density EEG recordings. *Journal of Vision.* http://journalofvision.org/4/8/105/

Likova LT, Tyler CW, **Wade** AR. (2004) Cortical representation of motion induction in the stereodomain: an fMRI study. *Journal of Vision*, **4**(8): 612. http://www.journalofvision.org/4/8/612/

Wade AR, Tyler CW. (2005) Human lateral occipital cortex contains a non-retinotopic map of visual space. Human Brain Mapping.

Norcia AM, Han Y, Pettet MW, **Wade** AR, Vildavski VY. (2005) Differential modulation of local and global motion responses by sustained visual attention. SFN Presentation: 136.3.

Wade AR, Petrov Y, McKee SP, Norcia AM. (2005) High−density EEG analysis of surround suppression in human visual cortex. SFN Presentation: 389.19.

Heinen SJ, Rowland J, Velisar A, **Wade** AR. (2005) fMRI reveals neural correlates of trajectory evaluation in ocular baseball. SFN Presentation: 509.8.

Brewer AA, Liu J, **Wade** AR, Wandell BA. (2005) New subdivisions of the human VO cluster derived from visual field mapping and stimulus selectivity. SFN Presentation: 582.11.

Schira MM, **Wade** AR, Carandini M, Kontsevich LL, Tyler CW. (2005) Metric reconstruction of human striate cortex: An average V1 map spanning 0.37−12 of eccentricity. SFN Presentation: 582.7.

Appelbaum LG, **Wade** AR, Pettet MW, Vildavski VY, Norcia AM. (2005) Dynamics of texture segmentation. *Journal of Vision.* http://journalofvision.org/5/12/12/

Heinen SJ, Rowland R, Velisar A, **Wade** AR. (2005) Cortical evaluation of a rule-based trajectory revealed by fMRI. *Journal of Vision.* http://journalofvision.org/5/8/845/

Schira MM, **Wade** AR, Kontsevich LL, Tyler CW. (2005) Geometric and metric properties of visual areas V1 and V2 in humans. *Journal of Vision.* http://journalofvision.org/5/8/897/

Appelbaum LG, Vildavski V, Pettet MW, **Wade** AR, Norcia AM. (2006) Cortical networks underlying visual scene segmentation. SFN Presentation: 115.3.

Wade AR, McKee SP, Petrov Y, & A. M. Norcia AM. (2006) The neural correlates of surround suppression measured with high density EEG. Human Brain Mapping.

Wade AR, McKee SP. (2006) Chromatic independence of surround suppression mechanisms is evidence for an early cortical site of contrast normalization. *Journal of Vision.* http://journalofvision.org/6/13/10/

Norcia AM, Pettet MW, Vildavski VY, **Wade** AR, Appelbaum LG. (2006) Regions of human visual cortex sensitive to small vernier offsets as determined by EEG source-imaging. *Journal of Vision.* http://journalofvision.org/6/13/21/

Appelbaum LG, Vildavski VY, Pettet MW, **Wade** AR, Norcia AM. (2006) Dynamics of scene segmentation: The role of boundary information. *Journal of Vision.* http://journalofvision.org/6/13/42/

McKee SP, **Wade** AR, Petrov Y, Norcia AM. (2006) The neural correlates of human surround suppression. *Journal of Vision.* http://journalofvision.org/6/6/202/

Appelbaum LG, Vildavski VY, Pettet MW, **Wade** AR, Norcia AM. (2006) Cortical networks underlying scene segmentation. *Journal of Vision.* http://journalofvision.org/6/6/475/

Norcia AM, Han Y, Pettet MW, VildavskiVY, **Wade** AR, Appelbaum LG. (2006) Modulation of local and global motion responses by sustained visual attention. *Journal of Vision.* http://journalofvision.org/6/6/588/

Wade AR, Norcia AM (2008) Interactions between chromatic signals in human visual cortex measured with high-density source-imaged EEG , *Computation Systems Neuroscience Meeting, 2008*

Wade AR (2008) Is the negative BOLD response a contrast gain mechanism? *International Society for Magnetic Resonance in Medicine Meeting, Toronto 2008*

Wade AR, Rowland J (2009) Is the negative BOLD response a contrast gain mechanism? *Computation Systems Neuroscience Meeting, 2009*

Lauritzen, TZ, **Wade AR**. (2009) Different cortical areas are modulated in different ways by spatial attention in human visual cortex. Optical Society of America, Fall vision meeting. September 24-26, 2009, Seattle, Washington, and Journal of Vision, 9(14):44, 44a.

Wade AR, (2009) Source-localized EEG reveals neural basis of surround-suppression in human V1 and hMT+, *Annual meeting of the Organization for Human Brain Mapping*, San Francisco, CA

Lauritzen, TZ, **Wade AR**. (2009) Spatial attention modulates steady state visually-evoked potentials in human visual cortex by a multiplicative gain function. *Annual meeting of the Organization for Human Brain Mapping*, San Francisco, CA

Xiao, B, **Wade, AR** (2009) Surround suppression between S-cone and luminance signals measured with psychophysics and source-imaged EEG, *Optical Society of America, Fall vision meeting*, Seattle, WA

*Wang, J., **Wade, AR**. (2009).* The role of the superior colliculus in the attentional blink. *Society For Neuroscience annual meetings,* Chicago, IL

Tsai, J, Norcia AM, **Wade, AR** (2009) An imbalance of excitation and inhibition revealed in the visual eviked response of idippathic generalized epilepsy patients. *Annual meeting of the American Epilepsy Society*, Boston MA

Invited Talks

ARVO Special Interest Group 05.1998
"A magnifying attachment to a scanning laser ophthalmoscope and its application to high resolution retinal imaging"

Moorfield's Eye Hospital, Glaucoma Group 10.1998
"High resolution in vivo imaging of the cone photoreceptor mosaic using a scanning laser ophthalmoscope"

NASA Ames, Vision Group 04.1999
"High resolution in vivo imaging of the cone photoreceptor mosaic using a scanning laser ophthalmoscope"

Stanford Psychology Dept 06.1999
"Imaging the cone photoreceptors in the living eye"

SKERI, San Francisco 09.2002
"fMRI of human visual pathways"

Lighthouse, San Francisco 11.2002
"An evening with Mike May"

Cambridge University, Craik Club 07.2003
"fMRI of color pathways in humans and macaques"

MRC Cognition and Brain Sciences Unit, Cambridge 07.2003
“fMRI of color pathways in humans and macaques”

UCSF Dynamic Imaging Laboratory 03.2003
“Retinotopic mapping of human visual areas using fMRI”

CPMC ‘Jampolsky Day’, 03.2004
“The man who learned to see”

Stanford Neuroscience Colloquium 07.2004
“Imaging the color pathways in humans and macaques”

ECVP, Budapest 08.2004
“Colour constancy and colour pathways in human and macaque”

Institute of Ophthalmology, UK 09.2004
“Imaging the color pathways in humans and macaques”

Rochester Center for Vision Science 10.2004
“fMRI in humans and macaques”

Oxford University fMRIB 06.2006
“Imaging surround suppression with high density EEG”

UCSF Cognitive Neuroscience Colloquium 05.2007
“High density EEG measurements of early visual processing”

York University UK, 06.2008
“Multimodal imaging of gain control mechanisms in human visual cortex”

Medical College of Wisconsin 06.2009
“Studying normalization processes in the human visual system using fMRI and source-imaged EEG”

University of South Australia, Adelaide 01.2010
“Computational mechanisms of gain control measured with EEG and fMRI”

Australian Neuroscience Society, Satellite Vision 2010 Meeting 01.2010
“Neural computations underlying the Negative BOLD response”

Ongoing Research Support – Direct Grants

5 R01 EY018157-02 Wade (PI) 01/01/08 – 12/31/10
NIH/NEI
“A Multimodal Study of Human Chromatic Pathways”
We will study the spatiotemporal dynamics of chromatic and achromatic signals as they enter the early visual system and pass into higher visual areas. We are particularly focused on the degree to which signals in independent early visual pathways interact in V1 and later areas and the natures of these interactions.
Role: PI

3 R01 EY018157-02S1 Wade (PI) 09/01/09 – 02/28/11
NIH/NEI
“A Multimodal Study of Human Chromatic Pathways”
The goal of this ARRA supplement is to support a postdoctoral researcher investigating the effect of attention of different early visual pathways. The project uses source-imaged EEG to study the amplitude changes in

signals arising from stimuli in different parts of the visual field as subjects switch their attention to and from these stimuli. We expect to see substantial differences in the way in which spatial attention affects different chromatic signals because of the different ways in which these signals are processed in early visual cortex.
Role: PI

BCS-0719973 Wade (PI) 09/01/07 – 08/31/10
NSF
"Multimodal Neuroimaging of the Human Koniocellular Pathway"
This work uses fMRI, EEG and psychophysics to study the spatial locations and temporal dynamics of signals carried in the human koniocellular pathway. These signals originate in the S-cones of the retinal photoreceptor mosaic and may carry both slow chromatic as well as fast motion-related information.
Role: PI

Wade (PI) 06/01/09 – 05/31/10
Pacific Vision Foundation
“A Study of Neural Suppression in the Amblyopic Fovea”
We are using a combination of fMRI and behavioral psychophysics to examine suppressive mechanisms present in the amblyopic fovea.
Role: PI

Completed Research Support – Direct Grants
Wade (PI) 01/01/06 – 12/31/07

The Smith-Kettlewell Eye Research Institute
“Multimodal Study of Human Chromatic Pathways”
The goal of the project is to study the distribution and computational functions of chromatic pathways in human visual cortex using a combination of psychophysics, source-localized EEG and fMRI.
Role: Sponsored PI
$160,000