

# Curriculum Vitae

Serge O. Dumoulin

January 18, 2008

## Contact Information

Department of Psychology  
Bldg 420, Jordan Hall, Main Quad  
Stanford University  
Stanford, CA, 94305-2130, USA

Ph: 650 725-4014  
Fax: 650 725-5699  
Web: [white.stanford.edu/~dumoulin](http://white.stanford.edu/~dumoulin)  
Email: [serge.dumoulin@stanford.edu](mailto:serge.dumoulin@stanford.edu)

## Education

**Stanford University** Stanford, USA  
Post-Doctoral Research Fellow, Dept. of Psychology 2005–present  
Advisor: Dr. BA Wandell. My research investigates the functional and structural changes (plasticity) that occur in the visual cortex during retinal degeneration. In addition, we are developing a novel method to reconstruct population receptive fields using fMRI.

**McGill University** Montréal, Canada  
Post-Doctoral Research Fellow, Dept. of Ophthalmology 2003–2005  
Advisor: Dr. RF Hess. My research focused on the properties and organization of the human visual system in healthy subjects and subjects with amblyopia and polymicrogyria using fMRI, MEG and psychophysical techniques.

**McGill University** Montréal, Canada  
Ph.D., *Dean's Honor List*, Dept. of Neurology and Neurosurgery 1998–2003  
Advisors: Drs. CL Baker Jr, AC Evans, RF Hess.  
Thesis: Motion mechanisms and cortical areas in human vision: psychophysics and fMRI.

**Utrecht University** Utrecht, The Netherlands  
Doctorandus (M.Sc.), *Cum Laude*, Biology 1992–1998  
Advisors: Drs. AC Evans (McGill), WA van de Grind, RJA van Wezel.  
Thesis(2): Quantification of the variability of human area V5/MT in relation to the sulcal pattern in the parieto-temporo-occipital cortex: a new anatomical landmark.  
Thesis(1): Spatial and temporal correlation properties of visual motion detection of cats and humans: electrophysiology and psychophysics.

## Awards

**Fellowship** (2005) Larry L Hillblom Foundation Fellowship, Petaluma, USA.  
**Fellowship** (2005) Bio-X Interdisciplinary Postdoctoral Fellowship, Stanford, USA. [Declined to accept LLHF Fellowship]  
Ph.D., **Dean's Honor List** (2003) McGill University, Montréal, Canada.  
**McGill Day Prize** for best presentation (2002) Montréal, Canada.  
**McGill Day Prize** for best presentation (2001) Montréal, Canada.  
**Scholarship** (1998) Stichting Dondersfonds, Utrecht, The Netherlands.  
M.Sc., **Cum Laude** (1998) Utrecht University, Utrecht, The Netherlands.  
**Scholarship** (1996) Stichting Dondersfonds, Utrecht, The Netherlands.

**Teaching Experience**

**Guest lecture** in *Computational Neuroimaging* (2007) Stanford University, Stanford, USA.  
**Guest lecture** in *Brain Imaging Methods* (2002) Montréal Neurological Institute, McGill University, Canada.  
**Supervisor of internship** (2001) Dept. of Ophthalmology, McGill University, Canada.  
**Teaching assistant** 2 courses *Neuroanatomy* (1997–1998) Dept. of Neuroanatomy, McGill University, Canada.  
**Teaching high school** classes biology and math for two weeks as part of a university course “Orientation to the teaching profession” (1996) high school Dingstede, Meppel, Utrecht University, The Netherlands.  
**Teaching assistant** 4 courses *Statistics* (1993–1995) Dept. of Biology & Pharmacy, Utrecht University, The Netherlands.

**Impact of Publications**

Total citations: 300 (Web of Science)  
 H-index: 7 (Web of Science, 7 articles with at least 7 citations)  
 Highlighted work: Dumoulin et al (2008): “Recommended” in *Faculty of 1000 Biology*.  
 Hess et al (2006): Commentary in *Current Biology*.  
 Hess et al (2006): Press coverage in *Medical News Today*.

**Peer-Reviewed Articles**

20. Lee JH, **Dumoulin SO**, Saritas EU, Glover GH, Wandell BA, Nishimura DG, Pauly JM (2008) Full-brain coverage and high-resolution imaging capabilities of passband b-SSFP fMRI at 3T. *Magnetic Resonance in Medicine*. In Press.
19. Masuda Y, **Dumoulin SO**, Nakadomari S, Wandell BA (2008) V1 projection zone signals in human macular degeneration depend on task, not stimulus. *Cerebral Cortex*. In Press.
18. **Dumoulin SO**, Wandell BA (2008) Population receptive field estimation using fMRI. *NeuroImage*. 39(2): 647–660.  
**Evaluation:** Hyvärinen A (2007) “Recommended” Tech Advance. *Faculty of 1000 Biology*: [www.f1000biology.com/article/id/1095861](http://www.f1000biology.com/article/id/1095861).
17. **Dumoulin SO**, Jirsch JD, Bernasconi A (2007) Functional organization of human visual cortex in occipital polymicrogyria. *Human Brain Mapping*. 28(12): 1302–1312.
16. Wandell BA, **Dumoulin SO**, Brewer AA (2007) Visual field maps in human cortex. *Neuron*. 56(2): 366–383.
15. **Dumoulin SO**, Hess RF (2007) Cortical specialization for concentric shape processing. *Vision Research*. 47(12): 1608–1613.
14. Li X, **Dumoulin SO**, Mansouri B, Hess RF (2007) The fidelity of the cortical retinotopic map in human amblyopia. *European Journal of Neuroscience*. 25(5): 1265–1277.
13. Li X, **Dumoulin SO**, Mansouri B, Hess RF (2007) Cortical deficits in human amblyopia: their regional distribution and their relationship to the contrast detection deficit. *Investigative Ophthalmology and Visual Science*. 48(4): 1568–1591.
12. Mullen KT, **Dumoulin SO**, McMahon KL, De Zubicaray GI, Hess RF (2007) Selectivity of human retinotopic visual cortex to S cone opponent, L/M cone opponent, and achromatic stimulation. *European Journal of Neuroscience*. 25(2): 491–502.
11. **Dumoulin SO**, Hess RF (2006) Modulation of V1 activity by shape: image-statistics or shape-based perception? *Journal of Neurophysiology*. 95(6): 3654–3664.
10. Hess RF, Schmid KL, **Dumoulin SO**, Field DJ, Brinkworth DR (2006) What image properties regulate eye growth? *Current Biology*. 16(7): 687–691.  
**Commentary:** Schaeffel F (2006) Myopia: the importance of seeing fine detail. *Current Biology*. 16(7): R257–R259.  
**Press coverage:** Hardman H (2006) Beyond ‘blur’: image quality shapes eye growth, but limited criteria apply. *Medical News Today*. April 6.

9. **Dumoulin SO**, Baker CL Jr, Hess RF, Evans AC (2003) Cortical specialization for processing first- and second-order motion. *Cerebral Cortex*. 13(12): 1375–1385.
8. Hess RF, Barnes G, **Dumoulin SO**, Dakin SC (2003) How many positions can we perceptually encode: one or many? *Vision Research*. 43(14): 1575–1587.
7. **Dumoulin SO**, Hoge RD, Baker CL Jr, Hess RF, Achtman RL, Evans AC (2003) Automatic volumetric segmentation of human visual retinotopic cortex. *NeuroImage*. 18(3): 576–587.
6. **Dumoulin SO**, Baker CL Jr, Hess RF (2001) Centrifugal bias for second-order but not first-order motion. *Journal of the Optical Society of America A*. 18(9): 2179–2189.
5. Barnes GR, Hess RF, **Dumoulin SO**, Achtman RL, Pike GB (2001) The cortical deficit in strabismic amblyopia. *The Journal of Physiology*. 533(1): 281–297.
4. **Dumoulin SO**, Bittar RG, Kabani NJ, Baker CL Jr, Le Goualher G, Pike GB, Evans AC (2000) A new anatomical landmark for reliable identification of human area V5/MT: A quantitative analysis of sulcal patterning. *Cerebral Cortex*. 10(5): 454–463.
3. Bittar RG, Ptito A, **Dumoulin SO**, Andermann F, Reutens DC (2000) Reorganization of the visual cortex in callosal agenesis and colpocephaly. *Journal of Clinical Neuroscience*. 7(1): 13–15.
2. Bittar RG, Ptito M, Faubert J, **Dumoulin SO**, Ptito A (1999) Activation of the remaining hemisphere following stimulation of the blind hemifield in hemispherectomized subjects. *NeuroImage*. 10(3): 339–346.
1. Bittar RG, Andermann F, Olivier A, Dubeau F, **Dumoulin SO**, Pike GB, Dureza RC, Reutens DC (1999) Interictal spikes increase cerebral glucose metabolism and blood flow: a PET study. *Epilepsia*. 40(2): 170–178.

#### Book Chapters & Invited Articles

3. Wandell BA, **Dumoulin SO**, Brewer AA (2008) Visual field maps in human visual cortex. In: L Squire et al (Eds) *New Encyclopedia of Neuroscience*. In Press.
2. Wandell BA, **Dumoulin SO**, Brewer AA (2006) Computational neuroimaging: color signals in the visual pathways. *Neuro-Ophthalmology Japan*. 23: 324-343.
1. Van Wezel RJA, **Dumoulin SO** (2001) Van neuron tot cortex: de structuur van het brein [From neuron to cortex: the structure of the brain]. In: F Wijnen & FAJ Verstraten (eds) *Het brein te kijk: een verkenning van de cognitieve neurowetenschap*. Lisse: Zwets & Zeitlinger, pp. 25–38.

#### Submitted Articles

2. Barnes GR, Singh KD, Li X, **Dumoulin SO**, Hess RF (Submitted) The cortical functional deficit in humans with amblyopia correlates with structural changes in the LGN but not visual cortex.
1. **Dumoulin SO**, Dakin SC, Hess RF (Submitted) Sparsely distributed contours dominate extra-striate response to complex scenes.

#### Peer-Reviewed Conference Abstracts Selected for a Talk

10. Masuda Y, **Dumoulin SO**, Nakadomari S, Wandell BA (2007) V1 projection zone signals in human macular degeneration depend on task, not stimulus. *Soc. Neurosci. Abstr.* 451.10. [Society for Neuroscience]
9. Lee JH, **Dumoulin SO**, Glover GH, Wandell BA, Nishimura DG, Pauly JM (2007) Full-brain coverage and high-resolution imaging capabilities of passband SSFP fMRI at 3T. *Proc. 15th Int. Soc. Magn. Reson. Med.* 694. [International Society for Magnetic Resonance in Medicine]

8. **Dumoulin SO**, Brewer AA, Ben-Shachar M, Dougherty RF, Wandell BA (2006) Cortical visual population receptive field estimation using fMRI. *Soc. Neurosci. Abstr.* 114.3. [Society for Neuroscience]
7. Mullen KT, **Dumoulin SO**, McMahon KL, Bryant M, De Zubicaray GI, Hess RF (2005) A comparison of the BOLD fMRI response to achromatic, L/M opponent and S-cone opponent cardinal stimuli in human visual cortex: I. perceptually matched vs contrast matched stimuli. *J. Vision.* 5(8): 95. [Vision Sciences Society]
6. **Dumoulin SO**, Dakin SC, Hess RF (2004) FMRI responses to energy, contours, texture and sparseness in visual stimuli. *Soc. Neurosci. Abstr.* 713.10. [Society for Neuroscience]
5. **Dumoulin SO**, Dakin SC, Hess RF (2004) Cortical responses to contours, texture and sparseness: an fMRI investigation. *J. Vision.* 4(8): 14. [Vision Sciences Society]
4. **Dumoulin SO**, Baker CL Jr, Hess RF, Evans AC (2002) Cortical specialization for processing first- and second-order motion in parietal and occipital lobe: an fMRI study. *Soc. Neurosci. Abstr.* 219.1. [Society for Neuroscience]
3. **Dumoulin SO**, Hess RF, Baker CL Jr, Evans AC (2001) FMRI responses to first and second-order motion. *Invest. Ophthalmol. Vis. Sci.* 42(4): S322. [Association for Research in Vision and Ophthalmology]
2. **Dumoulin SO**, Hoge RD, Achtman RL, Baker CL Jr, Hess RF, Evans AC (2000) Volumetric retinotopic mapping without cortical surface reconstruction. *NeuroImage.* 11(5): S613. [Organization for Human Brain Mapping]
1. Bohbot VD, **Dumoulin SO**, Petrides M, Allen JJB, Evans AC, Dagher A (2000) Experience dependent modulation of medial temporal lobe fMRI activity. *NeuroImage.* 11(5): S367. [Organization for Human Brain Mapping]

#### Invited Talks

Neuroimaging Centre, **University of Groningen** (2007) Groningen, The Netherlands.  
 Dept. of Ophthalmology, **University of Groningen** (2007) Groningen, The Netherlands.  
 Neuroscience Institute at Stanford, **Stanford University** (2007) Stanford, USA.  
 McConnell Brain Imaging Centre, **McGill University** (2005) Montréal, Canada.  
 Dept. of Psychology, **Birmingham University** (2005) Birmingham, UK.  
 School of Applied Psychology, **Griffith University** (2004) Brisbane, Australia.  
**Netherlands Organization for Scientific Research** (2004) Utrecht, The Netherlands.  
 Dept. of Psychology, **Aston University** (2004) Birmingham, UK.  
 Dept. of Biomedical Engineering, **Boston University** (2003) Boston, USA.  
**Dutch Society for Psychonomics** (1998) Utrecht, The Netherlands.

**Other Academic Activities**

Ad Hoc Reviewer:

**Journals:** Cerebral Cortex, Journal of Neurophysiology, NeuroImage, Neuroscience Letters, Optical Society of America, Vision Research.

**Conferences:** Organization for Human Brain Mapping.

Released Software:

**COBRA package** (2003) A free MatLab toolbox to automatically segment early visual areas. [see article nr. 7]

**pRF toolbox** (2007) A free set of MatLab functions to reconstruct population receptive field properties. It is distributed as part of the VISTA software. [see article nr. 18]

The software or methods are used (in publications) at:

- Aston University, Birmingham, UK.
- Boston University, Boston, USA.
- Forschungszentrum Jülich, Jülich, Germany.
- McGill University, Montréal, Canada.
- Stanford University, Stanford, USA.

**References**

Available upon request.