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**CONTACT INFORMATION**

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**RESEARCH**

- Multi-disciplinary, international, background in cognitive/visual neuroscience
- Single/multichannel microelectrode recording in the primate oculomotor and visual system
- Human visual psychophysics, colour/spatial vision, eye movements; EEG/ERP experience
- Neural mechanisms of visual saliency and gaze control
- Functional roles of superior colliculus layers and visual corticotectal circuitry

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**EDUCATION AND TRAINING**

- 2006 - 2011    **Post-Doctoral Training**, Centre for Neuroscience Studies, Queen's University, Kingston, ON, Canada. (Advisor: Dr. D. Munoz; Co-advisor 06-07: Dr. L. Itti)
- 2006            **Ph.D.** (*Dr. rer. nat. "Doctorate of Natural Sciences"*, Psychology - Neuroscience), Justus Liebig Universität, Giessen, Germany. (Advisor: Dr. K. R. Gegenfurtner)
- 2002            **M.A.** (Experimental Psychology) Wilfrid Laurier University, Waterloo, ON, Canada
- 2000            **B.A. Hons.** (Psychology) Memorial University of Newfoundland, NL, Canada.

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**WORK EXPERIENCE**

- 2011 -            **Research Associate**, Queen's U., CNS, Kingston, ON, Canada.
- 2007 - 2011    **Post-Doctoral Researcher**, Queen's U., CNS, Kingston, ON, Canada.
- 2006 - 2007    **Post-Doctoral Researcher**, University of Southern California, LA, CA, USA.
- 2009 Jan        **Visiting Scientist**, National Institute for Physiological Sciences, Okazaki, Japan. (*laboratory of Tadashi Isa, Masatoshi Yoshida*).
- 2008 June       **Visiting Scientist**, Vrije Universiteit, Dept. Psychology, Amsterdam, Netherlands. (*laboratory of Jan Theeuwes; EEG/ERP training*).
- 2004 - 2006    **Research Scientist**, Justus Liebig University, Dept. Psychology, Giessen, Germany.
- 2000 - 2002    **Research assistant**, Wilfrid Laurier University, Dept. Psychology, Waterloo, ON, Canada.

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**GRANTS AND FELLOWSHIPS**

- 2014 Co-recipient of awarded CIHR grant: *Neural mechanisms of saliency and orienting*. (\$608,000); PIs: D. Munoz, L. Itti, B. White.
- 2011 Co-contributor of awarded CIHR Grant: *Understanding the Neuronal Circuitry Controlling Voluntary and Automatic Saccade Generation*. (\$897,750); PIs: D. Munoz, L. Itti.
- 2008 Co-contributor of awarded CRCNS Grant: *Neural Basis of Active Perception in Natural Environments*. (\$320,000); PIs: L. Itti, D. Munoz.
- 2009 - 2013 Travel awards, Queen's University, Kingston, ON, Canada (\$400, \$750, \$1000).
- 2004 - 2006 Doctoral Stipend, *Federal Ministry of Education and Research*, Justus Liebig University, Giessen, Germany (~€30000).
- 2000 - 2001 Graduate Fellowship, Wilfrid Laurier University, Waterloo, ON, Canada (\$4450).
- 2002 Recipient of Gold Medal for Master's Thesis, Faculty of Science, Wilfrid Laurier University, Ontario, Canada.

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**SCHOLARLY ACTIVITIES AND CONTRIBUTIONS**
**Selected Invited Speaking Engagements**

- 2015 *Gordon Research Conference: Eye Movements, Waltham, MA. (Terrence Stanford)*
- 2015 Justus Liebig University, Dept. of Psychology, Giessen, Germany (*Karl Gegenfurtner*)
- 2014 *44rd Annual Society for Neuroscience Meeting, Washington, DC. (Symposium invitation, Douglas Crawford).*
- 2012 *42nd Annual Society for Neuroscience Meeting, New Orleans (Symposium invitation, Jacqueline Gottlieb).*
- 2011 16<sup>th</sup> European Conference on Eye Movements (ECEM), Marseille, France. (Symposium invitation, *Petroc Sumner*).
- 2009 National Institute for Physiological Sciences, Okasaki, Japan (*Tadashi Isa*).
- 2008 8th annual Optical Society of America Vision Meeting, University of Rochester, NY, USA. (Symposium invitation, *Jay Neitz*).
- 2008 Vrije Universiteit Dept. of Cog. Psychology, Amsterdam, Netherlands (*Jan Theeuwes*)
- 2008 Vrije Universiteit, Faculty of Human Movement Sciences, Amsterdam, Netherlands (*Eli Brenner & Jeroen Smeets*).

**Symposium Organizer**

- 2015 18<sup>th</sup> European conference on eye movements, Vienna, Austria. *Title: Neural mechanisms of saliency, attention and orienting.*
- 2014 14<sup>th</sup> Annual Vision Science Society Meeting, St. Pete Beach, Florida, USA. *Title: Vision and eye movements in natural scenes.*
- 2012 22<sup>nd</sup> Annual Canadian Society for Brain, Behaviour and Cognitive Science Meeting (CCBBCS), Queen's University, Kingston, ON, Canada. *Title: Visual Attention, Saliency, and the Brain.*

## Adjunct Reviewer

Journal of Vision (9); Vision Research (9); European Journal of Neuroscience (3); Journal of Neuroscience (2); Proceedings of the Royal Society B: Biological Sciences (2); The Journal of Physiology (1); Journal of Neurophysiology (1); Cerebral Cortex (1); Neuroscience & Biobehavioral Reviews (1); Experimental Brain Research (1); Neuroscience (1); Attention, Perception and Psychophysics (1); Perception (1); Brain and Cognition (1); Cortex (1); National Science Foundation (1).

## Professional Affiliations

Society for Neuroscience, Vision Sciences Society, Canadian Association for Neuroscience, Canadian Physiological Society, Canadian Society for Brain, Behavioural & Cognitive Sciences.

## Teaching

- 2009 **Lecture:** 2<sup>nd</sup> year Medical course (*Neuroanatomy of Visual Pathways*, MEDS-421, Ophthalmology Block), Queen's University, Kingston, Ontario, Canada.
- 2007 **Lecture:** Graduate-level seminar on Sensorimotor Neuroscience (*Current Concepts in Sensorimotor Neuroscience*, LISC 426/826), Physiology Dept., Queen's University, Kingston, Ontario, Canada.
- 2005 **Lecture:** Graduate-level Psychology course (*Sensorimotor Neuroscience*), Justus Liebig University, Giessen, Germany.
- 2004 **Lecture:** Undergraduate Psychology course (*Visual Cognition*), Justus Liebig University, Giessen, Germany.
- 2000-2001 **Lab assistant:** Psychophysics Methods Course. Dept. of Psychology, Wilfrid Laurier University, Waterloo, Ontario, Canada.
- 1998 - 2000 **Teaching assistant:** Undergraduate TA in Statistics, Mathematics and Psychology for three consecutive years.

## Mentorship

- 2015 - Janis Kan – Doctoral Candidate Co-supervision, Centre for Neuroscience Studies, Queen's University.
- 2007 - 2008 Joshua Hwang - Undergraduate Thesis Co-supervision, Centre for Neuroscience Studies, Queen's University. '
- 2004 - 2005 Daniela Wimmer- Undergraduate Thesis Co-supervision, Dept. of Psychology, Justus Liebig University, Giessen, Germany.
- 2004 - 2005 Carina Marchand - Undergraduate Thesis Co-supervision, Dept. of Psychology, Justus Liebig University, Giessen, Germany.

## Leadership

- 2013 - Post-Doctoral representative on Executive Council Meetings for the Centre for Neuroscience Studies, Queen's University.
- 2008 Judge, Queen's University Annual Brain Bee

**Public Awareness of Neuroscience**

- 2006 - 2011 Annual Brain Awareness Day: Queen's University, Kingston, Ontario, Canada. Responsibilities: Active demonstrations of the neural control of eye movements using video-based eye tracking for elementary and middle school students.
- 2011 Canadian Medical Hall of Fame "Discovery Days in Health Sciences": Queen's University Kingston, Ontario, Canada. Responsibilities: Lecture plus active demonstrations on the fundamentals of vision and eye movements, for middle- and high-school students considering a career in Neuroscience.

**Technical**

Programming Proficiency in Matlab (*Mathworks, Inc.*); C/C++ (graphics and eye tracking using OpenGL and SDL library), REX Unix-based real-time data acquisition system (Hays et al. 1982); Developed custom software in C for real-time control of visual graphics for NHP experiments; Built a functional 60Hz eye tracker using a commercial infrared camera and open source software; Experience programming microcontrollers (*Arduino*); Expertise in video display calibration and gamma correction (Photo Research PR-655; UDT instruments optometer; Minolta CS-100); Eye-tracking (Eyelink-1000, Scleral search coil technique); Extracellular recording and microstimulation (Narishige, NAN, Plexon); Non-human primate training, surgical experience, implantation of extracellular recording chambers for superior colliculus, frontal eye field, primary visual cortex, and chronic implantation of 96 channel 'Utah' array (*Blackrock Microsystems, UT*).

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**PUBLICATIONS** (*h-index = 11, Google Scholar 2017; \*equal contributors*)

19. **White B.J.**, Kan J.Y., Levy R., Itti L., Munoz D.P. (2017) Superior colliculus encodes visual saliency before the primary visual cortex. *Proceedings of the National Academy of Sciences*, (accepted).
18. \***White B.J.**, Berg D.J., Kan J.Y., Marino R.A., Itti L., Munoz D.P. (2017). Superior colliculus neurons encode a visual saliency map during free viewing of natural dynamic video, *Nature Communications*, 8, 14263.
17. **White B.J.**, Munoz D.P. (2016). Neural Mechanisms of Saliency, Attention, and Orienting. In *Computational and Cognitive Neuroscience of Vision, Cognitive Science and Technology*. Ed. Q. Zhao, Springer.
16. Ikeda T., Boehnke, S.E., Marino, R.A., **White, B.J.**, Wang, C., Levy, R., Munoz, D.P. (2015) Spatio-temporal response properties of local field potentials in the primate superior colliculus. *European Journal of Neuroscience*, 41(6), 856-64.
15. **White B.J.**, Marino R.A., Boehnke S.E., Itti L., Theeuwes J., Munoz D.P. (2013) Competitive integration of visual and goal-related signals on neuronal accumulation rate: A correlation of oculomotor capture in the superior colliculus. *Journal of Cognitive Neuroscience*, 25(10), 1754–1768.
14. \*Talsma D., \***White B.J.**, Mathôt S., Munoz D.P., Theeuwes J. (2013) A retinotopic attentional trace after saccadic eye movements: Evidence from event-related potentials. *Journal of Cognitive Neuroscience*, 25(9), 1563–1577.
13. \*Higenell V., \***White B.J.**, Hwang J.R., Munoz D.P. (2013). Localizing the Neural Substrate of Reflexive Covert Orienting. *Journal of Eye Movement Research*, 6(1), 1:14.
12. Valsecchi M., Künstler V., Saage S., **White B.J.**, Mukherjee J., Gegenfurtner K.R. (2013). Advantage of Reading Lexical Bundles is Reduced in Non-Native Speakers. *Journal of Eye Movement Research*, 6(5), 1-15.
11. **White B.J.**, Theeuwes J., Munoz D.P. (2012). Interactions between visual- and goal-related processes in the superior colliculus on the trajectories of saccadic eye movements. *Journal of Cognitive Neuroscience*, 24(3):707–717.
10. Wang C., Boehnke S.E., **White B.J.**, Munoz D.P. (2012). Microstimulation of the monkey superior colliculus induces pupil dilation without evoking saccades. *Journal of Neuroscience*, 32, 3629-3636.
9. Marino R.A., Levy R., Boehnke S.E., **White B.J.**, Itti L., Munoz D.P. (2012). Linking visual response properties in the superior colliculus to saccade behaviour. *European Journal of Neuroscience*, 35, 1738-1752.
8. Yoshida M., Itti L., Berg D.J., Ikeda T., Kato R., Takaura K., **White B.J.**, Munoz D.P., Isa T. (2012) Residual attention guidance in blindsight monkeys watching complex natural scenes. *Current Biology*, 22, 1429-1434.
7. **White, B.J.**, Munoz D.P. (2011). The Superior Colliculus. In *Oxford Handbook of Eye Movements*, 195-213. Eds. S.P. Liversedge, I.D. Gilchrist, S. Everling, Oxford University Press
6. **White B.J.**, Munoz D.P. (2011). Separate visual signals for saccade Initiation during target selection in the primate superior colliculus. *Journal of Neuroscience*, 31:1570-1578.
5. **White B.J.**, Boehnke S.E., Marino R.A., Itti L., Munoz D.P. (2009) Color-related signals in the primate superior colliculus. *Journal of Neuroscience*, 29:12159-12166.
4. **White B.J.**, Stritzke M., Gegenfurtner K.R. (2008) Saccadic facilitation in natural backgrounds. *Current Biology*, 18:124-128.

3. **White B.J.**, Kerzel D., Gegenfurtner K.R. (2006a) The spatio-temporal tuning of the mechanisms in the control of saccadic eye movements. *Vision Research*, 46:3886-3897.
2. **White B.J.**, Kerzel D., Gegenfurtner K.R. (2006b) Visually guided movements to color targets. *Experimental Brain Research*, 175:110-126.
1. **White B.J.**, Gegenfurtner K.R., Kerzel D. (2005) Effects of structured non-target stimuli on saccadic latency. *Journal of Neurophysiology*, 93:3214-3223.

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**CONFERENCE PROCEEDINGS** (\*oral presentations)

38. **White B.J.**, Womelsdorf T., Itti L., Munoz D.P. (2016). Decoding visual salience from neuronal oscillations in the superior colliculus. *16th Annual Vision Science Society, St. Petersburg, FL, USA*.
37. \***White B.J.**, Berg, D., Itti, L., Munoz, D. P. (2015). A midbrain saliency map in the primate superior colliculus (symposium organizer - "Neural mechanisms of saliency, attention and orienting"). *European conference on eye movements, Vienna, Austria*.
36. \***White B.J.** (2015). Saliency coding in the primate superior colliculus during free viewing of natural dynamic scenes. Invited talk: *Gordon Research Conference: Eye Movements, Waltham, MA*.
35. Ikeda T., **White B.J.**, Munoz D.P. (2015) Race model of saccadic target selection in a color-singleton selection task. *The 38th Annual Meeting of the Japan Neuroscience Society, Kobe, Japan*.
34. \***White, B.J.**, Berg, D., Itti, L., Munoz, D.P. (2014). Visual coding in the superior colliculus during free-viewing of natural dynamic stimuli. *44th Annual Society for Neuroscience Meeting, Washington, DC, USA*.
33. **White, B.J.**, Berg, D., Itti, L., Munoz, D.P. (2014). Saliency coding in the midbrain superior colliculus during unconstrained viewing of natural dynamic stimuli. *Gordon Research Conference: Neurobiology of Cognition. Newry, ME*.
32. \***White, B.J.** (2014) - (VSS 2014 symposium - "Vision and eye movements in natural environments"). Visual coding in the superior colliculus during freeviewing of natural dynamic stimuli. 14th Annual Vision Science Society Meeting, St. Pete Beach, FL.
31. **White B.J.**, Berg D., Ikeda T., Levy, R., Itti L., Munoz D.P. (2014). Comparison of superior colliculus and primary visual cortex in the coding of visual saliency. 14th Annual Vision Science Society Meeting, St. Pete Beach, FL.
30. **White B.J.**, Ikeda T., Berg D., Itti L., Munoz D.P. (2013). Comparison of visual processing in superior colliculus and primary visual cortex: Implications for the coding of visual saliency. 43rd Annual Society for Neuroscience Meeting, San Diego, USA.
29. Ikeda T., Boehnke, S.E., **White, B.J.**, Wang C., Marino, R.A., Levy, R., Munoz D.P. (2013). Visuomotor processing in the Superior Colliculus: Comparison between single unit activity and local field potentials. 43rd Annual Society for Neuroscience Meeting, San Diego, USA.
28. Ikeda T., Boehnke, S.E., Wang C., Marino, R.A., **White B.J.**, Munoz D.P. (2013). Comparison of single unit and local field potential visual responses in the Superior Colliculus. Gordon Research Conference on Eye Movements, Stonehill College, Easton, MA.
27. Ikeda T., Boehnke, S.E., Marino, R.A., White B.J., Munoz D.P. (2013). Spatiotemporal property of visual response in the Superior Colliculus: Comparison of single unit activity and local field potentials. 7th Annual Canadian Association for Neuroscience Meeting, Toronto, Ontario, Canada.
26. \***White B.J.**, Ikeda T., Berg D., Itti L., Munoz D.P. (2012). The representation of visual salience in the superior colliculus. 42nd Annual Society for Neuroscience Meeting, New Orleans, USA.

25. Ikeda T., **White B.J.**, Marino R.A., Munoz D.P. (2012). Comparison of visual response observed in single unit activity and local field potentials in the superior colliculus. 42nd Annual Society for Neuroscience Meeting, New Orleans, USA.
24. **\*White B.J.** (2012). The representation of visual salience in the superior colliculus. 22nd Annual Canadian Society for Brain Behavior and Cognitive Science Meeting, Queen's, Kingston, ON, Canada.
23. Boehnke S.E., Reintjes R., **White B.J.**, Van Opstal J., Munoz D.P. (2012). Probing the locus of visual adaptation effects by alternating stimulus chromaticity and ocularity. 22nd Annual Canadian Society for Brain Behavior and Cognitive Science Meeting, Queen's, Kingston, ON, Canada.
22. **White B.J.**, Ikeda T., Berg D., Itti L., Munoz D.P. (2012). The representation of visual salience in the superior colliculus. 6th Annual Canadian Association for Neuroscience Meeting, Vancouver, BC, Canada.
21. Ikeda T., **White B.J.**, Marino R.A., Munoz D.P. (2011). Simultaneous recording of local field potential and single unit activity in the primate superior colliculus during visual search. 41st Annual Society for Neuroscience Meeting, Washington, DC.
20. **\*White B.J.**, Theeuwes J., Munoz D.P. (2011). The “where” and “when” of saccade trajectories: Interactions between visual and goal-related signals on the trajectories of saccadic eye movements. 16th European Conference on Eye Movements, Marseille, France.
19. **White B.J.**, Theeuwes J., Munoz D.P. (2011). The interaction between sensory-driven and goal-driven processes in the superior colliculus on the trajectories of saccadic eye movements. 11th Annual Vision Science Society Meeting, Naples, FL.
18. Wang C., Boehnke S.E., **White B.J.**, Munoz D.P. (2010). Pupil Dynamics during Visual and Oculomotor Tasks. 11th Annual Vision Science Society Meeting, Naples, FL.
17. Wang C., Boehnke S.E., **White B.J.**, Munoz D.P. (2010). Pupil Dynamics during Visual and Oculomotor Tasks. 40th Annual Society for Neuroscience Meeting, San Diego, CA.
16. Berg D.J., **White B.J.**, Munoz D.P., Itti L. (2010). Primate visual target selection: modeling and recording the spatio-temporal dynamics of the superior colliculus. Collaborative Research in Computational Neuroscience meeting (CRCNS), Baltimore, Maryland, June, 2010.
15. **White B.J.**, Munoz D.P. (2010). Independence of luminance and color information during saccade target selection in the primate superior colliculus. 10th Annual Vision Science Society Meeting, Naples, FL.
14. **White B.J.**, Munoz D.P. (2009). Independence of luminance and color information during saccade target selection in the primate superior colliculus. 39th Annual Society for Neuroscience Meeting, Chicago, IL.
13. **\*White B.J.**, Marino R.A., Boehnke S.E., Itti L., Theeuwes J., Munoz D.P. (2009). Color signals in the primate superior colliculus. 9th Annual Vision Science Society Meeting, Naples, FL.
12. **\*White B.J.**, Munoz D.P. (2009). Color signals in the primate superior colliculus. Meeting of the Canadian Physiological Society, Mont-Sainte-Anne, Quebec, Canada.
11. **\*White B.J.** (2008). Color signals in the primate superior colliculus. 8th annual Optical Society of America Vision Meeting, Center for Visual Science, University of Rochester.
10. **\*White B.J.**, Munoz D.P. (2008). Color signals in the primate superior colliculus. 38th Annual Society for Neuroscience Meeting, Washington, DC.
9. **White B.J.**, Marino R.A., Boehnke S.E., Itti L., Theeuwes J., Munoz D.P. (2007). Interactions between endogenous and exogenous neural activity in the superior colliculus. 37th Annual Society for Neuroscience Meeting, San Diego, CA.
8. **\*White B.J.**, Boehnke S.E., Marino R.A., Talsma D., Itti L., Theeuwes J., Munoz D.P. (2007). Competition between exogenous and endogenous signals revealed by saccade latency and saccade curvature in the monkey. 7th Annual Vision Science Society Meeting, Sarasota, FL.

7. **\*White B.J.**, Kerzel D., Gegenfurtner K.R. (2006). Saccadic facilitation with natural backgrounds. 36th Annual Society for Neuroscience Meeting, Atlanta, GA.
6. **\*White B.J.**, Kerzel D., Gegenfurtner K.R. (2006). Facilitation of saccade latency with natural scene backgrounds. 6th Annual Vision Science Society Meeting, Sarasota, FL.
5. **White B.J.**, Kerzel D., Gegenfurtner K.R. (2006). Saccadic facilitation with natural scene backgrounds. 9th Tübingen Perception Conference, Tübingen, Germany.
4. **White B.J.**, Gegenfurtner K.R., Kerzel D. (2005). Effects of structured backgrounds on the latency of saccadic eye movements. 5th Annual Vision Science Society Meeting, Sarasota, FL.
3. **White B.J.**, Kerzel D., Gegenfurtner K.R. (2005). Interactions between target and background properties on the latency of saccadic eye movements. International Workshop on Bioinspired Information Processing, Lübeck, Germany.
2. **White B.J.**, Gegenfurtner K.R., Kerzel D. (2005). Effects of structured backgrounds on the latency of saccadic eye movements. 13th European Conference on Eye Movements, Bern, Switzerland.
1. **White B.J.**, Gegenfurtner K.R., Kerzel D. (2005). Structured Random Noise as a Visual Distractor for Saccadic Eye Movements. 8th Tübingen Perception Conference, Tübingen, Germany.