

David White

PhD Candidate

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Research Interests: Computational neuroscience. Depth and shape perception. Optimal inference.

Education

- 08 2015 – present **PhD**, *University of Pennsylvania*, Pennsylvania, USA.
Neuroscience Graduate Group
- 06 2008 – 12 2013 **BS**, *Brigham Young University*, Utah, USA.
Majors in neuroscience and biophysics, Minor in chemistry

Research Experience

- 10.2017–present **PhD Candidate, RA**, *Johannes Burge*, University of Pennsylvania.
Psychophysics and modelling 3D vision perception.
- 01.2017–10.2017 **PhD Student, RA**, *Johannes Burge*, University of Pennsylvania.
Psychophysics and modelling 3D vision perception.
- 09.2016–12.2016 **PhD Student, RA**, *Alan Stocker*, Univeristy of Pennsylvania.
Bounded rationality and efficient coding.
- 05.2016–09.2016 **PhD Student, RA**, *Danielle Basset*, Univeristy of Pennsylvania.
Analyzing links between brain network modularity and optimal energy requirements.
- 01.2016 – 12.2015 **PhD Student, RA**, *Minghong Ma, Vijay Balsubramanian*, Univeristy of Pennsylvania.
Olfactory epithelium tissue recording via multi-electrode-array.
- 10.2014 – 12.2015 **Tech Consultant**, *Scott Steffensen*, Brigham Young University.
Measuring methamphetamine induced peroxide formation and ionic currents in ex vivo VTA dopaminergic.
- 07.2012 – 09.2014 **Head RA**, *David Busath, Sterling Sudweeks*, Brigham Young University.
Measuring the effects of various drugs on gap-junction network currents by in vitro dual-whole-cell patch recording in neuroblastoma cells.
- 11.2012 – 09.2013 **RA**, *Scott Steffensen*, Brigham Young University.
Ex vivo analysis of cell-membrane and receptor modulation in the mesolimbic system of rodents by drug modulation and/or current induction using single-cell patching. Focus on GABAergic and dopaminergic cells.
- 10.2011 – 06.2012 **RA**, *David Busath, Scott Steffensen*, Brigham Young University.
High speed photometry of gap junction mediated wave activation in the ex-vivo perforant pathway of the hippocampus using calcium sensitive dyes.
- 09.2008 – 06.2009 **RA**, *Scott Steffensen*, Brigham Young University.
In Vivo FSCV of dopamine oxidation in rodent brains, analyzing the various effects of addictive drugs and similar agonists/antagonists in the mesolimbic system. Particular interest in alcohol and cocaine.

Teaching Experience

- 09.2018–present **Instructor**, *mindCORE*, University of Pennsylvania.
Intro to Matlab. Using Git in Science.
- 01.2018 – 05.2018 **Teaching Assistant**, University of Pennsylvania.
Intro to biological basis of behavior.

Other

- 01.2018–present **Club founder and organizer**, *Comp. Neuro. Initiative*, University of Pennsylvania.
cNI+/- research club for graduates and postdocs.
- 07.2019-present **MindCore Associate**, University of Pennsylvania.

Additional Employment

- 09 2014 – 09 2015 **Quality Assurance Engineer**, *Content Watch Inc.*, Utah, USA.

Specific Skills

- Human Psychophysics.
- Modelling Image processing. Hierarchical Bayesian. Maximum entropy. Decision theory. Dimensionality reduction. Multi-level regression.
- Coding Matlab/Octave. R. Stan. eLisp. Bash. Awk. Python. LAMP stack. Javascript. C. L^AT_EX. Git.
- Computing Mechanical turk. Kubernetes & Docker. Linux containers. Server administration. Mariadb. Mongoddb. Linux. Emacs. Vim.
- In-Vivo Animal Experimentation Mice and rats. Anesthesia. Dissection. Surgery.
- Patch Clamping Loose-cell. Whole-cell. Dual-patch. Voltage-clamp. Current-clamp. Ex-vivo. In-vitro. Multiclamp and Clampex. Pipette design. Brain slicing.
- Cell Culturing Maintenance. Plating. Cryogenics. Flow-cytometry.
- Microscopy Fluorescent. Infrared. Confocal. High-speed motion capture. Calcium sensitive dyes. DNA and peroxide assays. Brain staining. Tissue identification.
- Spectroscopy NMR. IR. Mass spectroscopy.
- Languages English (native). Russian (fluent). Spanish (moderate). German (novice).

Conference Presentations

DN White, J Burge. Natural scene statistics and depth estimation errors in half-occluded zones in natural scenes. Vision Sciences Society (2020). Abstract submitted.

David White, Johannes Burge. Depth estimates in half occlusions in natural scenes. Vision Sciences Society (2019). 26.332.

Zeynep Başgöze, David N White, Johannes Burge, Emily A Cooper. Effects of context on the visual stability of depth edges in natural scenes. Vision Sciences Society (2019). 53.333.

David White, Johannes Burge. Human binocular disparity estimation with natural stereo-images. Vision Sciences Society (2018). 53.426.

SI Shin, JK Mabey, DN White, SS Sandoval, CA Nielson, ND Schilaty, DN Taylor, SN Sudweeks, JG Edwards, JM McIntosh, J Wu, SC Steffensen. Ethanol inhibits GABA neurons in the ventral tegmental area and dopamine release in the nucleus accumbens via presynaptic $\alpha 6$ nicotinic receptors on GABA

terminals Society for Neuroscience Abstracts (2013). 38 60.08.

JK Mabey, SI Shin, DN White, CA Nielson, ND Schilaty, R Ting-a-Kee, H Vargas-Perez, D Van der Kooy, SC Steffensen. Functional switch in $GABA_A$ receptors on VTA GABA neurons by chronic ethanol. Society for Neuroscience Abstracts (2013). 38 349.12.

JK Mabey, SI Shin, DN White, C Nielson, H Vargas-Perez, R Ting-A-Kee, A Bahi, D Van der Kooy, SC Steffensen. Ventral tegmental area GABAergic activity underlies opiate motivation. INS Snowbird Symposium (2012).

J Dallin, H Hansen, JD Wilcox, RS McClellan, S Shin, DN White, SC Steffensen. Connexin-36 KO Mice Have a Higher Threshold for Kindled Seizures; A Pilot Study. Brigham Young University Research Fair (2012).

Publications

DN White, J Burge. Depth perception within half occlusions in natural scenes. Manuscript in preparation.

DN White, J Burge. Stereopsis in natural scenes. Manuscript in preparation.

Z Bağöze, DN White, J Burge, EA Cooper. Natural statistics of depth edges modulate perceptual stability. Manuscript under Review.

SI Shin, JK Mabey, DN White, CA Nielson, ND Schilaty, R Ting-A-Kee, H Vargas-Perez, D van der Kooy, SC Steffensen. Functional switch in $GABA_A$ receptors on VTA GABA neurons by chronic ethanol. Alcoholism: Clinical and Experimental Research (2013). 37(S2) 238A (908).

SI Shin, JK Mabey, DN White, CA Nielson, ND Schilaty, DH Taylor, J Wu, M McIntosh, SC Steffensen. Ethanol inhibits GABA neurons in the VTA and dopamine release in the nucleus accumbens via $\alpha 6$ nicotinic receptors on GABA terminals. Alcoholism: Clinical and Experimental Research (2013). 37(S2) 233A(909).