

## **Anita A Disney, PhD**

Assistant Professor  
Department of Psychology  
324 Wilson Hall  
Vanderbilt University  
Nashville, TN 37203

Email: [anita.disney@vanderbilt.edu](mailto:anita.disney@vanderbilt.edu)

### **Research Interests**

Neuromodulation of cortical circuits; interneuron populations; mechanisms of attention, arousal and plasticity.

### **Research Methods**

Electrochemistry, electrophysiology and pharmacology in the behaving non-human primate.  
Comparative and quantitative neuroanatomy (tract-tracing; immunocytochemistry; light, confocal and electron microscopy).

### **Academic Employment**

2014 - **Assistant Professor**, Vanderbilt University, Nashville, TN, USA.  
2009 – 2014 **Research Associate**, Salk Institute, La Jolla, CA, USA.  
2005 – 2009 **Research Fellow**, New York University, New York, NY, USA.

### **Education**

1999-2005 **New York University, Center for Neural Science**  
**New York, NY, USA**  
Ph.D., Neural Science.  
Doctoral dissertation: *Thalamocortical synapses and intrinsic inhibition: the primary cholinergic effectors in macaque V1.*  
Graduate Advisors: Chiye Aoki and Michael J Hawken

1998 **Australian National University**  
**Canberra, ACT, Australia**  
B.A.(Hons), Psychology (University Medal).  
Honors project: *Modulation by neurosteroids of sensory processing in rat auditory midbrain.*  
Undergraduate Research Advisor: Michael B Calford

1996 – 1997 **Deakin University**  
**Distance Education Unit, Warrnambool, VIC, Australia**  
B.A., Psychology.

### **Awards and Honors**

**2005:** Margaret and Herman Sokol Postdoctoral Fellowship.  
**2004:** Dean's Dissertation Award, New York University.  
**2002:** New York University, Teaching Award.  
**2000 & 2001:** Goldsmith Fellowship in Neural Science, New York University.

- 1999:** Aust. Psychological Society National Award for Excellence in Honours Research.  
**1999:** University Medalist, Australian National University.

## Patent

Patent No. 61/727,599. *Electrode and method of use*. Filed November 17, 2013.

## Teaching experience

- 2005:** **Lecturer and Lab Instructor**, Introduction to Neural Science (Brain and Behavior) – Morse Academic Program, Undergraduate, non-major. New York University.
- 2002 - 2004:** **Mentor**, Summer Undergraduate Research Program. New York University.
- 2001:** **Lab Instructor**, Behavioral and Integrative Neural Science – Undergraduate, neural science majors. New York University.
- 2001:** **Lab Instructor**, Sensory and Motor Systems – Graduate level. New York University.
- 2000:** **Lab Instructor**, Cell and Molecular Neural Science – Graduate level. New York University.

## Publications

- Disney, A.A.**, Alasady, H., and Reynolds, J.R. (2014). Muscarinic acetylcholine receptors are expressed by most parvalbumin-immunoreactive neurons in area MT of the macaque. *Brain and Behavior*, 4: 431-445.
- Disney, A.A.**, and Reynolds, J.R. (2014). Expression of m1-type muscarinic acetylcholine receptors by parvalbumin-immunoreactive neurons in the primary visual cortex: A comparative study of rat, guinea pig, ferret, macaque, and human. *Journal of Comparative Neurology*. 522: 986-1003.
- Nauhaus, I., Nielsen, K.J., **Disney, A.A.**, and Callaway, E.M. (2012). Orthogonal micro-organization of orientation and spatial frequency in primate primary visual cortex. *Nature Neuroscience*. 15: 1683-1690.
- Disney, A.A.**, Aoki, C., and Hawken, M.J. (2012). Cholinergic suppression of visual responses in primate V1 is mediated by GABAergic inhibition. *Journal of Neurophysiology*. 108:1907-1923.
- Constantinople, C., **Disney, A.A.**, Maffie, J., Rudy, B., and Hawken, M. (2009). A quantitative analysis of neurons with Kv3 potassium channel subunits – Kv3.1b and Kv3.2 – in macaque primary visual cortex. *Journal of Comparative Neurology*. 516:291-311. **Co-first authored**.
- Disney, A.A.** and Aoki, C. (2008). Muscarinic acetylcholine receptors in macaque V1 are most frequently expressed by parvalbumin-immunoreactive neurons. *Journal of Comparative Neurology*, 507: 1748-1762.
- Disney, A.A.**, Aoki, C., and Hawken, M. (2007). Gain modulation by nicotine in macaque V1. *Neuron*, 56: 701-713.
- Disney, A.A.**, Domakonda, K., and Aoki, C. (2006). Differential expression of muscarinic acetylcholine receptors across excitatory and inhibitory cells in visual cortical areas V1 and V2 of the macaque monkey. *Journal of Comparative Neurology*, 499: 49-63.
- Disney, A.A.** and Calford M.B. (2001). Neurosteroids mediate habituation and tonic-inhibition in the auditory midbrain. *Journal of Neurophysiology*, 86: 1052-1056.

## Commentaries

- Disney, A.A.** and Schultz S (2004). Hallucinations and acetylcholine: Signal or noise? *Behavioural and Brain Sciences*. 27: 790-791.

## Invited talks

- May 2014: **California Institute of Technology**, Pasadena, CA, USA.  
April 2014: **The Salk Institute**, San Diego, CA, USA.  
March 2013: **University of Texas**, Austin, TX, USA.  
Feb 2013: **Vanderbilt University**, Nashville, TN, USA.  
Jan 2013: **University of Rochester**, Rochester, NY, USA.  
May 2012: **Columbia University**, New York, NY, USA.  
March 2012: **Bernstein Center for Computational Neuroscience**, Berlin, Germany.  
March 2012: **Ecole Polytechnique Federale de Lausanne**, Lausanne, Switzerland.  
March 2012: **Institut d'investigacions Biomediques August Pi i Sunyer**, Barcelona, Spain.  
April 2009: **Columbia University**, New York, NY, USA.

## Workshops and Symposia

- November 2013: Mini-symposium talk, **Society for Neuroscience** Annual meeting, San Diego, CA, USA.  
May 2012: Symposium talk, **Vision Sciences Society**, Naples, FL, USA.  
November 2011: Symposium talk, **Barrels XXIV**, Baltimore, MD, USA.  
November 2010: Mini-symposium talk, **Society for Neuroscience** Annual Meeting, San Diego, CA, USA.

## Conference Presentations

- Disney, A.A.** and Reynolds, J.H. (2012). Differing prevalence of Gq-coupled muscarinic acetylcholine receptor expression in parvalbumin neurons across species: a comparative study of the primary visual cortex. Poster presentation at the 42<sup>nd</sup> annual meeting of the Society for Neuroscience.
- Alasady, H.A., Reynolds, J.H. and **Disney, A.A.** (2012). M1-type muscarinic receptor expression by parvalbumin immunoreactive neurons on macaque area MT. Poster presentation at the 42<sup>nd</sup> annual meeting of the Society for Neuroscience.
- Disney, A.A.**, Aoki, C., Hawken, M., and Reynolds, J. (2010) Selective expression of nicotinic and muscarinic receptors in macaque V1: effects on visual processing. Poster presentation at Bottom-up and Top-down Approaches to Understanding Cortical Circuit Processing: Meeting in the Middle Conference, Janelia Farm.
- Disney, A.A.** and Hawken, M. (2009). Acetylcholine strengthens both thalamic synaptic transmission and intrinsic inhibition in V1 of the macaque monkey. Poster presentation at the 39<sup>th</sup> annual meeting of the Society for Neuroscience
- Disney, A.A.** and Hawken, M. (2007). A pharmacological dissection of cholinergic effects in V1 of the macaque monkey. Poster presentation at the 30<sup>th</sup> European Conference on Visual Perception.
- Disney, A.A.** and Hawken, M. (2005). Nicotine improves contrast sensitivity of neurons in layer 4c of macaque V1. Poster presentation at the 35<sup>th</sup> annual meeting of the Society for Neuroscience.
- Disney, A.A.** and Aoki, C. (2003). Nicotinic, but not muscarinic, acetylcholine receptors are expressed by thalamic afferents and their terminals in layer 4c of macaque V1. Poster presentation at the 33<sup>rd</sup> annual meeting of the Society for Neuroscience.

**Disney, A.A.** and Aoki, C. (2003). Cholinergic modulation of inhibitory network sub-elements in V1 of the macaque. Poster presentation at the 23<sup>rd</sup> annual meeting of the Australian Neuroscience Society.

**Disney, A.A.** and Aoki, C. (2002). m1/m2 muscarinic and alpha7/beta2 containing nicotinic receptors mark the V1/V2 border in macaque. Poster presentation at the 32nd annual meeting of the Society for Neuroscience.

**Disney, A.A.** and Calford, M.B.. (1999). Role for neuromodulatory steroids in simple learning. Poster presentation at the 29<sup>th</sup> annual meeting of the Society for Neuroscience.

### **Funding Sources**

2014 - : R00 MH093567. National Institute of Mental Health: Cholinergic mechanisms in Spatial Attention.

2014 - : Start-Up Grant, College of Arts and Sciences, Vanderbilt University

2011 – 2014: K99 MH093567. National Institute of Mental Health: Cholinergic mechanisms in Spatial Attention.

2010 – 2011: NRSA EY021122. National Eye Institute: Cholinergic Mechanisms in Visual Spatial Attention.

2005 -2006: Margaret and Herman Sokol Postdoctoral Fellowship.

2004: Dean's Dissertation Award, New York University.

2000: Goldsmith Fellowship in Neural Science, New York University.

2000: Goldsmith Fellowship in Neural Science, New York University.

### **Editorial experience**

2011 - : Frontiers in Behavioral Neuroscience.

### **Ad Hoc Reviewing**

Journals: Nature Scientific Reports, The Journal of Comparative Neurology, Journal of Neuroscience, Journal of Neurophysiology, Cerebral Cortex, PLoS One, Synapse, Eye and Brain, Frontiers in Behavioral Neuroscience.

Meeting abstracts: COSYNE.

Funding agencies: Wellcome Trust.