

## **Elizabeth A. Buffalo**

Assistant Professor of Neurology  
Emory University School of Medicine  
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### **Contact Information**

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### **Education**

1996-1998 Ph.D. in Neuroscience, University of California, San Diego  
1993-1995 M.A. in Philosophy, University of California, San Diego  
1990-1991 Visiting Student, St. Hilda's College, Oxford University  
1988-1992 B.A., *Magna cum Laude*, Wellesley College

### **Awards and Honors**

1998-2004 National Institutes of Health Intramural Research Training Award  
1994-1998 Fellow, McDonnell-Pew Center for Cognitive Neuroscience, San Diego  
1996-1998 NIH, Neuroplasticity of Aging Training Grant  
1995-1996 NSF, Systems and Integrative Neurobiology Training Grant  
1994 Travel Fellow, McDonnell-Pew Center for Cognitive Neuroscience, San Diego  
1993-1997 University of California, San Diego, Predoctoral Humanities Fellowship  
1992 Wellesley College Trustee Scholar (awarded to two graduates each year)  
1991-1992 Ford Foundation, Undergraduate Fellowship  
1990 American Women in Science Travel Award  
1989 Wellesley College First-Year Distinction

### **Past Positions**

1998-2004 Intramural Research Fellow, Laboratory of Neuropsychology, National Institute of Mental Health  
1993-1998 Research Assistant, University of California, San Diego  
1992 Undergraduate Research Assistant, Wellesley College  
1990-1991 Undergraduate Research Assistant, Department of Experimental Psychology, Oxford University  
1989-1992 Summer Student, National Center for Toxicological Research  
1988 Summer Student, Laboratory of Behavioral Pharmacology, University of Arkansas

### **Teaching Experience**

Teaching Assistant, Woods Hole Summer Course, "Neuroinformatics"  
Supervisor for NIMH predoctoral fellow, Tim Buschman, currently a graduate student at MIT  
Supervisor for NIMH predoctoral fellow, Kim Montgomery, currently a graduate student at Princeton University  
Wellesley College, Visiting Lecturer, Neurobiology of Behavior  
NIH Graduate Program, Visiting Lecturer, Cognitive Neuroscience  
Supervisor for NIMH predoctoral fellow, Hema Thakhar, currently at Vanderbilt University School of Medicine  
UCSD Medical School, Teaching Assistant, Clinical Neurology

UCSD, Teaching Assistant, Aristotle's Philosophy  
UCSD, Teaching Assistant, Logic  
UCSD, Teaching Assistant, Early Greek Philosophy

## Academic Service

Fellowship Review Board, American Association of University Women, 2002-2004

Ad hoc reviewer for *Neuron*, *Journal of Neuroscience*, *European Journal of Neuroscience*, *Journal of Neural Computation*, *Hippocampus*, *Learning and Memory*

## Publications

### Papers in Refereed Journals

1. **Buffalo E.A.**, Gillam M.P., Allen R.R., and Paule M.G. (1993). Acute effects of caffeine on several operant behaviors in rhesus monkeys. *Pharmacology Biochemistry and Behavior* 46:733-7.
2. **Buffalo E.A.**, Gillam M.P., Allen R.R., and Paule M.G. (1994). Acute behavioral effects of MK-801 in rhesus monkeys: Assessment using an operant test battery. *Pharmacology Biochemistry and Behavior* 48:935-40.
3. **Buffalo B.**, Gaffan D., Murray E.A. (1994). A primacy effect in monkeys when list position is relevant. *The Quarterly Journal of Experimental Psychology* 47:353-369.
4. **Buffalo E.A.**, Stefanacci L., Squire L.R., and Zola S.M. (1998). A reexamination of the concurrent discrimination learning task: The importance of inferotemporal cortical area TE. *Behavioral Neuroscience* 112:3-14.
5. **Buffalo E.A.**, Reber P.J., and Squire L.R. (1998). The human perirhinal cortex and recognition memory. *Hippocampus* 8:330-339.
6. Paule M.G., Chelonis J.J., **Buffalo E.A.**, Blake D.J., and Casey P.H. (1999). Operant test battery performance in children: Correlation with IQ. *Neurotoxicology and Teratology* 21:223-230.
7. **Buffalo E.A.**, Ramus S.J., Clark R., Teng E., Squire L.R., and Zola S.M. (1999). Dissociation between the effects of damage to the perirhinal cortex and area TE. *Learning and Memory* 6:572-599.
8. Zola S.M., Squire L.R., Teng E., Stefanacci L., **Buffalo E.A.**, and Clark R.E. (2000). Impaired recognition memory in monkeys after damage limited to the hippocampal region. *Journal of Neuroscience* 20:451-463.
9. Schmolck H., **Buffalo E.A.**, and Squire L.R. (2000). Memory distortions develop over time: Recollections of the O.J. Simpson trial verdict after 15 and 32 months. *Psychological Science* 11:39-45.
10. Stefanacci L., **Buffalo E.A.**, Schmolck H., and Squire L.R. (2000). Profound amnesia after damage to the medial temporal lobe: A neuroanatomical and neuropsychological profile of patient E.P.

*Journal of Neuroscience* 20:7024-7036.

11. **Buffalo E.A.**, Ramus S.J., Squire L.R., and Zola S.M. (2000). Perception and recognition memory following perirhinal cortex lesions in the monkey. *Learning and Memory* 7:375-382.
12. Squire L.R., Schmolck H., and **Buffalo E.A.** (2001). Memory distortions develop over time: A reply to D.B. Horn. *Psychological Science* 12:182.
13. Floel A., Peoppel D., **Buffalo E.A.**, Braun A., Wu C.W.H., Seo H.J., Stefan K., Knecht St., and Cohen L.G. (2004) Prefrontal cortex asymmetry for memory encoding of words and abstract shapes. *Cerebral Cortex* 14:404-409.
14. Bertini G., **Buffalo E.A.**, DeWeerd P., Ungerleider L.G., and Desimone R. (2004) Visual responses to targets and distracters by inferior temporal neurons after lesions of extrastriate areas V4 and TEO. *NeuroReport* 15:1611-1615.
15. **Buffalo E.A.**, Bertini G., Ungerleider L.G., and Desimone R. (2005) Impaired filtering of distracter stimuli by TE neurons following V4 and TEO lesions in macaques. *Cerebral Cortex* 15:141-151.
16. Liang H., Bressler S.L., **Buffalo E.A.**, Desimone R., and Fries P. (2005) Empirical mode decomposition of field potentials from macaque V4 in visual spatial attention. *Biological Cybernetics* 92:380-392.
17. **Buffalo E.A.**, Bellgowan P.S.F., and Martin A. (2006) Distinct roles for medial temporal lobe structures in memory for objects and their locations. *Learning and Memory* (epub ahead of print).

### Book Chapter

18. **Buffalo E.A.** and Desimone R. (2002). Multiple neuronal mechanisms for memory in the anterior inferior temporal cortex of monkeys. in *The Neurobiology of Memory, 3<sup>rd</sup> Edition*, Squire L.R. and Schacter D., eds., Guilford:New York, pp. 311-325.

### Abstracts

19. **Buffalo E.A.**, Zola-Morgan S., and Squire L.R. (1994). Inferotemporal cortex area TE as redefined by recent anatomical studies. *Society for Neuroscience Abstracts* 20:1074.
20. **Buffalo E.A.**, Ramus S.J., Zola-Morgan S., and Squire L.R. (1995). Different behavioral effects of damage to visual area TE and perirhinal cortex. *Society for Neuroscience Abstracts* 21:1493.
21. **Buffalo E.A.**, Stefanacci L., Zola S.M., and Squire L.R. (1996). Contrasting behavioral effects following lesions of perirhinal cortex and area TE: A retrospective analysis. Cold Spring Harbor Memory Colloquium.
22. Zola S.M., **Buffalo E.A.**, Ramus S.J., and Squire L.R. (1997). Different behavioral effects of damage to perirhinal cortex and visual area TE: Visual short-term vs. long-term memory. *Society for*

*Neuroscience Abstracts* 23:12.

23. **Buffalo E.A.**, Stefanacci L., Squire L.R., and Zola S.M. (1997). A reexamination of the concurrent discrimination learning task: The importance of inferotemporal cortical area TE. *Society for Neuroscience Abstracts* 23:12.
24. Zola S.M., Teng E., Clark R.E., Stefanacci L., **Buffalo E.A.**, and Squire L.R. (1998). Impaired recognition memory and simple discrimination learning in monkeys following lesions limited to the hippocampal region made by radio frequency, ischemia, or ibotenic acid. *Society for Neuroscience Abstracts* 24:17.
25. **Buffalo E.A.**, Ramus S.J., Clark R.E., Teng E., Squire L.R., and Zola S.M. (1998). Distinguishing the functions of perirhinal cortex and visual area TE. *Society for Neuroscience Abstracts* 24:17.
26. Bertini G., **Buffalo E.A.**, Thakar H., Jagadeesh B., DeWeerd P., Desimone R., and Ungerleider L.G. (1999). The effects of V4/TEO lesions on responses of macaque area TE neurons to targets embedded in distracters. *Society for Neuroscience Abstracts* 25: 916.
27. Popke E.J., Gillam M.P., **Buffalo E.A.**, Paule M.G., and Schmued L. (1999). Effects of nicotine on memory and motivation in non-human primates. *Society for Neuroscience Abstracts* 25:629.
28. **Buffalo E.A.**, Bertini G., Ungerleider L.G., and Desimone R. (2000). Behavioral and neuronal attention deficits following extrastriate cortical lesions in Macaques. *Society for Neuroscience Abstracts*.
29. **Buffalo E.A.**, Bellgowan P.S.F., Desimone R., and Martin A. (2001). The perirhinal and parahippocampal cortices make distinct contributions to recognition memory. Seventh Conference on the Neurobiology of Learning and Memory.
30. **Buffalo E.A.**, Buschman T., Fries P., and Desimone R. (2002). Modulation of neuronal synchronization in area V2 by selective attention. Program No. 418.3, *Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience.
31. **Buffalo E.A.**, Bellgowan P.S.F., and Martin A. (2003). Differential activation of medial temporal lobe structures during recognition memory. Program No. 17.3, *Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience Abstracts.
32. Fries P., **Buffalo E.A.**, Mitra P.P., and Desimone R. (2003). Selective visual attention modulates oscillatory neuronal synchronization in monkey areas V1 and V4. Program No. 385.10, *Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience Abstracts.
33. A. Floel, D. Poeppel, **E.A. Buffalo**, A. Braun, C.W.-H. Wu, H. Seo, K. Stefan, S. Knecht, L.G. Cohen (2003). Frontal Cortex Asymmetry For Memory Encoding Of Words And Pictures. Program No. 514.1. *2003 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience.
34. Bellgowan P.S.F., **Buffalo E.A.**, Bodurka J., and Martin A. (2003). High resolution imaging of the anterior medial temporal lobe during object and spatial memory. Program No. 556.1, *Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience Abstracts.

35. **Buffalo E.A.**, Bellgowan P.S.F., and Martin A. (2004). The hippocampus and the surrounding cortex play different roles in memory. Organization for Human Brain Mapping.
36. P.S.F. Bellgowan, **E.A. Buffalo**, N.G. Raymundo, K. Lindstrom, J. Bodurka, A. Martin (2004). High resolution fmri improves detection of task modulated activity in the entorhinal and perirhinal cortex during object and spatial encoding. Program No. 596.5. *2004 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience, 2004.
37. **E.A. Buffalo**, P. Fries, R. Desimone (2004). Layer-specific attentional modulation in early visual areas. Program No. 717.6. *2004 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience, 2004.
38. H. Liang, S.L. Bressler, **E.A. Buffalo**, R. Desimone, P. Fries (2004). Empirical mode decomposition of local field potentials from macaque V4 in visual spatial attention. Program No. 921.15. *2004 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience, 2004.
39. R. Landman, **E.A. Buffalo**, R. Desimone (2004). Spike-field synchronization depends on neuronal stimulus selectivity in V1 of awake monkey. Program No. 986.18. *2004 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience, 2004.
40. **E.A. Buffalo**, P. Fries, R. Landman, H. Liang, R. Desimone (2005). Latency of attentional modulation in ventral visual cortex. Program No. 411.6. *2005 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience, 2005.
41. Jutras, M.J., P. Fries, **E.A. Buffalo** (2006). Hippocampal gamma-band synchronization during encoding predicts successful recognition memory. Program No. 371.24. *2006 Abstract Viewer/Itinerary Planner*. Washington, DC: Society for Neuroscience, 2006.

## Invited Presentations

### 2002

Picower Center for Learning and Memory, Massachusetts Institute of Technology  
 Department of Psychology, Vanderbilt University  
 Center for Neuroscience, University of California, Davis  
 Yerkes Regional Primate Center, Emory University

### 2003

Department of Neurology, Georgetown Medical School  
 Department of Brain and Cognition, Johns Hopkins University  
 Workshop on Neural Spectroscopy, Marine Biological Laboratories, Woods Hole

### 2004

Workshop on the Statistical Analysis of Neuronal Data, Carnegie Mellon University  
 Communication in Brain Systems, Banbury Center, Cold Spring Harbor Laboratory

Platform presentation, Organization for Human Brain Mapping, Budapest, Hungary  
Neuromorphic Engineering Workshop, Telluride, Colorado  
Emory University Medical School, Department of Neurology

**2005**

COSYNE, Computational Systems and Neuroscience workshop, Snowbird, Utah

**2006**

Co-Organizer, SAND3 (Statistical Analysis of Neural Data), Pittsburgh, Pennsylvania  
NIMH-Sponsored Dynamical Neuroscience Satellite Symposium, Atlanta, GA