

**AMY L. BAUERNFEIND  
CURRICULUM VITAE**

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**ACADEMIC APPOINTMENTS**

- 2015-present Assistant Professor, Department of Anatomy & Neurobiology, Washington University School of Medicine  
2015-present Assistant Professor, Department of Anthropology, Washington University in St. Louis  
2014-2015 Postdoctoral Scientist, Department of Anthropology, Washington University in St. Louis  
2014-2015 Research Associate, Department of Anthropology, Washington University in St. Louis

**RESEARCH INTERESTS**

Comparative neurobiology, gene and protein expression, glucose metabolism, neurodevelopment, insular cortex

**EDUCATION**

- Ph.D., 2014, Biological Anthropology, The George Washington University  
Dissertation Title: "Comparative protein expression in human and chimpanzee brains"  
Advisor: Dr. Chet C. Sherwood  
M.Phil., 2011, Biological Anthropology, The George Washington University  
B.S., *cum laude*, 2004, Neuroscience, Vanderbilt University

**RESEARCH ARTICLES (PEER-REVIEWED PUBLICATIONS)**

**2015**

- Bauernfeind AL, Soderblom EJ, Turner ME, Moseley MA, Ely JJ, Hof PR, Sherwood CC, Wray GA, Babbitt CC. Evolutionary divergence of gene and protein expression in the brains of humans and chimpanzees. *Genome Biology and Evolution*. doi: 10.1093/gbe/evv132

Bauernfeind AL, Reyzer ML, Caprioli RM, Ely JJ, Babbitt CC, Wray GA, Hof PR, Sherwood CC. High spatial resolution proteomic comparison of the brain in humans and chimpanzees. *Journal of Comparative Neurology*. doi: 10.1002/cne.23777

## 2014

Bauernfeind AL, Babbitt CC. The appropriation of glucose through primate neurodevelopment. *Journal of Human Evolution* 77: 132-140. **Invited contribution.**

Bauernfeind AL, Barks SK, Duka T, Grossman LI, Hof PR, Sherwood CC. Aerobic glycolysis in the primate brain: reconsidering the implications for growth and maintenance. *Brain Structure & Function* 219: 1149-1167.

## 2013

Barks SK, Bauernfeind AL, Bonar CJ, Cranfield MR, de Sousa AA, Erwin JM, Hopkins WD, Lewandowski AH, Mudakikwa A, Phillips KA, Raghanti MA, Stimpson CD, Hof PR, Sherwood CC. Variable temporal-insular cortex neuroanatomy in primates suggests bottleneck effect in eastern gorillas. *Journal of Comparative Neurology* 522: 844-860.

Bianchi S, Stimpson CD, Duka T, Larsen MD, Janssen WG, Collins Z, Bauernfeind AL, Schapiro SJ, Baze WB, McArthur MJ, Hopkins WD, Wildman DE, Lipovich L, Kuzawa CW, Jacobs B, Hof PR, Sherwood CC. Synaptogenesis and development of pyramidal neuron dendritic morphology in the chimpanzee neocortex. *Proceedings of the National Academy of Sciences USA* 110: 10395-10401.

Bauernfeind AL, de Sousa AA, Avasthi T, Dobson SD, Raghanti MA, Lewandowski AH, Zilles K, Semendeferi K, Allman JM, Craig AD, Hof PR, Sherwood CC. A volumetric comparison of the insular cortex and its subregions in primates. *Journal of Human Evolution* 64: 263-279.

## 2012

Bianchi S, Stimpson CD, Bauernfeind AL, Schapiro SJ, Baze WB, McArthur MJ, Bronson E, Hopkins WD, Semendeferi K, Jacobs B, Hof PR, Sherwood CC. Dendritic morphology of pyramidal neurons in the chimpanzee neocortex: regional specializations and comparison to humans. *Cerebral Cortex* 23: 2429-2436.

## 2011

Bauernfeind AL, Dietrich MS, Blackford JU, Charboneau EJ, Lillevig JG, Cannistraci CJ, Woodward ND, Cao A, Watkins T, Di Iorio CR, Cascio C, Salomon RM, Cowan RL. Human ecstasy use is associated with increased cortical excitability: an fMRI study. *Neuropsychopharmacology* 36: 1127-1141.

Bianchi S, Bauernfeind AL, Stimpson CD, Bonar CJ, Manger PR, Hof PR, Jacobs B, Sherwood CC. Neocortical neuron morphology in Afrotheria: comparing the rock hyrax with the African elephant. *Annals of the New York Academy of Sciences* 1225: 37-46.

Salomon RM, Cowan RL, Rogers BP, Dietrich MS, Bauernfeind AL, Kessler RM, Gore JC. Time series fMRI measures detect changes in pontine raphé following acute tryptophan depletion. *Psychiatry Research* 191: 112-121.

## **2010**

Spocter MA, Hopkins WD, Garrison AR, Bauernfeind AL, Stimpson CD, Hof PR, Sherwood CC. Wernicke's area homologue in chimpanzees (*Pan troglodytes*) and its relation to the appearance of modern human language. *Proceedings of the Royal Society B-Biological Sciences* 277: 2165-2174.

Raj V, Liang HC, Woodward ND, Bauernfeind AL, Lee J, Deitrich MS, Park S, Cowan RL. MDMA (ecstasy) use is associated with reduced BOLD signal change during semantic recognition in abstinent human polydrug users: a preliminary fMRI study. *Journal of Psychopharmacology* 24: 187-201.

## **2008**

Riccardi P, Baldwin R, Salomon R, Anderson S, Ansari MS, Li R, Dawant B, Bauernfeind A, Schmidt D, Kessler R. Estimation of baseline dopamine D(2) receptor occupancy in striatum and extrastriatal regions in humans with positron emission tomography with [<sup>18</sup>F] fallypride. *Biological Psychiatry* 63: 241-244.

## **2007**

Rymer J, Bauernfeind AL, Brown S, Page TL. Circadian rhythms in the mating behavior of the cockroach, *Leucophaea maderae*. *Journal of Biological Rhythms* 22: 43-57.

## **RESEARCH ARTICLES IN PREPARATION**

Bauernfeind AL, Barks SK, Sherwood CC, Karlsson T, Craig AD. (In preparation) The volume of left insular cortex and its correlates to verbal fluency and intelligence.

## **BOOK CHAPTERS**

### **2012**

Sherwood CC, Bauernfeind AL, Bianchi S, Raghanti MA, Hof PR. Human brain evolution writ large and small. In: *Evolution of the Primate Brain: From Neuron to Behavior. Progress in Brain Research*, M.A. Hofman and D. Falk (Eds.). Oxford: Elsevier Press. pp. 237-254.

Wood BA, Bauernfeind AL. The fossil record: evidence for speech in early hominins. In: *Oxford Handbook of Language Evolution*, M. Tallerman and K. Gibson (Eds.). Oxford: University Press. pp. 258-272.

## **AWARDS**

2014 Aleš Hrdlička Prize for Outstanding Student Paper. “Differential gene and protein expression in the human and chimpanzee brain: a comparison using high-throughput techniques”. Meeting for the American Association of Physical Anthropologists.

## **FUNDING**

Wenner-Gren Foundation: “Metabolic Supply and Demand: A Study of Energetic Strategy in the Brain,” (PI: A.L. Bauernfeind). Period of Support: January 2012 to May 2014. Amount: \$20,000.

Journal of Experimental Biology Traveling Fellowship: “Metabolic Supply and Demand: A Study of the Distribution of Metabolic Resources in the Brain,” (PI: A.L. Bauernfeind). Period of Support: September 2011 to March 2012. Amount: \$3,800.

Cosmos Club, Young Scholars Award: “Energetics and Maturation of the Brain in Humans and Macaque Monkeys,” (PI: A.L. Bauernfeind). Period of Support: 2011. Amount: \$2,000.

## **TEACHING EXPERIENCE**

### **Postdoctoral Teaching Fellow**

Fall 2014-2015 The Human Body: Anatomy, Embryology, and Imaging,  
Department of Anatomy & Neurobiology, Washington University School of  
Medicine

### **Teaching Assistant and Lab Instructor**

Fall 2013 Medical Neuroanatomy, Department of Anatomy,  
The George Washington University School of Medicine

Fall 2012 Medical Gross Anatomy, Department of Anatomy,  
The George Washington University School of Medicine

Spring 2012 Human Brain Evolution, Department of Anthropology,  
The George Washington University

Spring, Fall 2009 Introduction to Biological Anthropology, Department of Anthropology,  
The George Washington University

## PRESS

“Brain Region Tied to Empathy in Humans Equally Present in Other Primates”. Untrodden Ground: The Official Research Blog of the George Washington University. March 28, 2013. <http://www.gwresearchblog.com/2013/03/28/study-brain-region-tied-to-empathy-in-humans-equally-present-in-other-primates/>

## PROFESSIONAL MEETING POSTERS, PAPERS, AND PRESENTATIONS

### 2015

Bauernfeind AL, Reyzer ML, Caprioli RM, Ely JJ, Babbitt CC, Wray GA, Hof PR, Sherwood CC. Differences in energy metabolism in the brains of humans and chimpanzees: a study of protein expression. American Association of Physical Anthropology, St. Louis, MO.  
**Invited podium presentation.**

### 2014

Bauernfeind AL, Reyzer ML, Caprioli RM, Ely JJ, Babbitt CC, Wray GA, Hof PR, Sherwood CC. High spatial resolution proteomic comparison of the brain in humans and chimpanzees. Society for Neuroscience, Washington, DC.

Muntané G, Santpere G, Verendeev A, Bauernfeind AL, Navarro A, Hopkins WD, Sherwood CC. Uncovering the genetic differences of hemispheric lateralization in humans. Society for Neuroscience, Washington, DC.

Barks SK, Erwin JM, Stoinski TS, Calhoun MC, Hopkins WD, Cranfield MR, Mudakikwa A, Patterson FG, Hecht EE, Bauernfeind AL, de Sousa AA, Stimpson CD, Zilles K, Hof PR, Sherwood CC. Variable neuroanatomy in gorillas reflects ecological specialization and population size effects. International Gorilla Workshop, Atlanta, GA.

Bauernfeind AL, Soderblom EJ, Turner ME, Moseley MA, Ely JJ, Hof PR, Sherwood CC, Wray GA, Babbitt CC. Differential gene and protein expression in the human and chimpanzee brain: a comparison using high-throughput techniques. American Association of Physical Anthropologists, Calgary, AB.

### 2013

Barks SK, Bauernfeind AL, Hof PR, Hopkins WD, Raghanti MA, Cranfield MR, Mudakikwa A, de Sousa AA, Zilles K, Sherwood CC. Variable temporal-insular neuroanatomy in primates with attention to Eastern gorillas (*Gorilla beringei*). American Association of Physical Anthropologists, Knoxville, TN.

## 2012

Bianchi S, Stimpson CD, Bauernfeind AL, Schapiro SJ, Baze WB, McArthur MJ, Hopkins WD, Wildman DE, Jacobs B, Hof PR, Sherwood CC. Delayed development of pyramidal neuron morphology in the prefrontal cortex of the chimpanzee: a Golgi study. Federation of European Neuroscience Societies, Barcelona, Spain.

Bianchi S, Stimpson CD, Bauernfeind A, Hopkins WD, Semendeferi K, Jacobs B, Hof PR, Sherwood CC. Regional specializations in the chimpanzee neocortex: pyramidal neurons are more branched and spiny in the prefrontal cortex. American Association of Physical Anthropologists, Portland, OR.

## 2011

Bianchi S, Stimpson CD, Bauernfeind AL, Schapiro SJ, Baze WB, McArthur MJ, Hopkins WD, Wildman DE, Jacobs B, Hof PR, Sherwood CC. The delayed development of pyramidal neuron morphology in the prefrontal cortex of chimpanzees is similar to humans, but differs from macaque monkeys. Society for Neuroscience, Washington, DC.

## 2010

Bauernfeind AL, de Sousa AA, Avasthi T, Zilles K, Semendeferi K, Allman JM, Hof PR, Sherwood CC. A volumetric comparison of insular regions in anthropoid primates based on cytoarchitectonics. Society for Neuroscience, San Diego, CA.

Butti C, Raghanti MA, Bonar CJ, Rodriguez CE, Reidenberg JS, Wicinski BA, Stimpson CD, Brake AG, Bauernfeind A, Sherwood CC, Hof PR. The insular cortex: A comparative perspective. Society for Neuroscience, San Diego, CA.

Riccardi P, Park S, Carroll X, Anderson S, Dawant B, Bauernfeind A, Li R, Schmidt D. Sex differences in dopamine D2 receptor occupancy in the amygdala using PET and [<sup>18</sup>F]fallypride. Collegium Internationale Neuro-Psychopharmacologicum, Hong Kong, China.

Bauernfeind AL, de Sousa AA, Hof PR, Sherwood CC. Interspecies volumetric comparison of insular regions based on cytoarchitectonics. American Association of Physical Anthropologists, Albuquerque, NM.

## 2009

Butti C, Bauernfeind AL, Spocter MA, Marino L, Manger PR, Wicinski BA, Hoistad M, Bonar CJ, Raghanti MA, Sherwood CC, Hof PR. The glia-neuron index in the neocortex of cetartiodactyla and afrotheria: Implications for mammalian brain evolution. Society for Neuroscience, Chicago, IL.

Spocter MA, Hopkins WD, Garrison AR, Bauernfeind AL, Stimpson CD, Erwin JM, Hof PR, Sherwood CC. Wernicke's area homolog in chimpanzees (*Pan troglodytes*): Probabilistic mapping, asymmetry and comparison with humans. Society for Neuroscience, Chicago, IL.

## **2008**

Cabaniss B, Woodward ND, Bauernfeind AL, Dietrich MS, Cowan RL. Cerebral morphological changes in human MDMA (ecstasy) polydrug users: a voxel-based morphometry study. College on Problems of Drug Dependence, San Juan, Puerto Rico.

Cabaniss B, Woodward ND, Bauernfeind AL, Dietrich MS, Cowan RL. Cerebral morphological changes in human MDMA (ecstasy) polydrug users: a voxel-based morphometry study. Society of Biological Psychiatry, Washington, DC.

Charboneau E, Bauernfeind A, Castellanos E, Dietrich MS, Plemmons G, Park S, Martin PR, Cowan RL. Neuroimaging of brain activation in response to food cues in obese children. Society of Biological Psychiatry, Washington, DC.

Raj V, Bauernfeind AL, Dietrich M, Cowan RL. MDMA (ecstasy) use is associated with altered brain activation to word encoding and recall: an fMRI study. College on Problems of Drug Dependence, San Juan, Puerto Rico.

Raj V, Bauernfeind AL, Dietrich MS, Park S, Cowan RL. Word encoding and recall in human MDMA (ecstasy) polydrug users: an fMRI BOLD study. Society of Biological Psychiatry, Washington, DC.

## **2007**

Raj V, Genca E, Bauernfeind A, Charboneau E, Heinecke A, Cannistraci C, Dietrich M, Park S, Cowan R. Semantic Memory processing in MDMA Users: an fMRI Study. College on Problems of Drug Dependence, Quebec City, Quebec.

## **2006**

Cowan RL, Bauernfeind AL, Shafa E. Ecstasy exposure is associated with increased spatial activation in visual cortical subregions in human Ecstasy users: a 3T fMRI BOLD study. College on Problems of Drug Dependence, Scottsdale, AZ.

## **MENTORING**

2009-2010     Mentor to undergraduate student, Tanvi Avasthi, microscopy, cytoarchitecture of the primate brain, and comparison of brain volumes

## **OTHER SCIENTIFIC EXPERIENCE**

- 2012 Intern, Communicating science news to a public audience, Ms. Susanne Bard (producer), Science Update podcast, American Association for the Advancement of Science (AAAS)
- 2010 Intern, Imaging mass spectrometry using matrix assisted laser desorption ionization (MALDI), Drs. Michelle L. Reyzer and Richard M. Caprioli, Mass Spectrometry Research Center, Vanderbilt University Medical Center
- 2009 Crew member, Olorgesailie Prehistoric Site, Kenya, Dr. Rick Potts
- 2006-2008 Research assistant, Dr. Ronald L. Cowan, Department of Psychiatry, Vanderbilt University Medical Center
- 2005-2008 Research assistant, Dr. Ronald M. Salomon, Department of Psychiatry, Vanderbilt University Medical Center
- 2002-2004 Research assistant, Dr. Terry L. Page, Department of Biology,

## **PROFESSIONAL ACTIVITIES**

- Presenter, CampNeuro (2015), outreach activity for St. Louis area high school students
- Ad-hoc reviewer, *Frontiers Neuroscience* (2014-present)
- Contributing author to the *Wiley-Blackwell Encyclopedia of Human Evolution* (B.A. Wood, Ed.) Wiley-Blackwell Publishers (2011)
- Poster presentation at The George Washington University Research Day (2010, 2011)
- Represented the GWU Hominid Paleobiology program at the National Science Foundation Integrative Graduate Education Research Traineeship (IGERT) online trainee poster competition (2011)

## **PROFESSIONAL MEMBERSHIPS**

American Association of Physical Anthropologists  
Society for Neuroscience