

# Amelia A Mutso

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## CONTACT INFORMATION

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## RESEARCH INTERESTS

- Role of the hippocampus and limbic structures in chronic pain
- Underlying mechanisms for the transition from acute to chronic pain
- Animal models of chronic pain; neuroimaging of chronic pain conditions
- Cortical involvement in pain processing; interactions between stress, anxiety, and pain
- Hippocampal neurogenesis

## EDUCATION

**Northwestern University**, Chicago, IL

PhD, Neuroscience, expected Spring 2013

*Thesis Advisor:* A Vania Apkarian

*Thesis Topic:* Hippocampus and Chronic Pain

Certificate, Management for Scientists and Engineers, Summer 2012

*Kellogg School of Management*

**Haverford College**, Haverford, PA

BA, Psychology (with honors), May 2008

Concentration: Neural and Behavioral Science; Minor: German and German Studies

*Thesis Advisor:* Wendy F Sternberg

*Thesis Title:* Affiliative Behavior and Empathetic Response: Sex Differences and Neuroendocrine Factors

*GPA:* 3.7

## RESEARCH EXPERIENCE

**Northwestern University**, Chicago, IL

*Graduate Student*, thesis advisor: A Vania Apkarian

2008 – present

Investigated the role of the hippocampus in chronic pain.

- Determined the impact of chronic pain on the hippocampus through animal behavioral, molecular, and cellular investigation.
- Analyzed functional connectivity changes and volumetric differences of the hippocampus in human pain patients.
- Identified the role of neurogenesis in persistent pain behavior through the use of genetic models and brain infusion studies.

Ongoing collaborating laboratories: Jelena Radulovic (Psychiatry), Marco Martina (Physiology), Richard J Miller (Molecular Pharmacology and Biological Chemistry), John A Kessler (Neurology)

*Summer Research Associate*, advisor: Joan Chiao

2007

Designed and performed an experiment investigating in-group/out-group empathy for pain.

**Haverford College**, Haverford, PA

*Senior Thesis Research*, advisor: Wendy F Sternberg

2007 – 2008

Studied the impact of vasopressin and oxytocin on empathetic response to pain in rodents.

*Research Assistant*, advisor: Rebecca Compton 2007 – 2008  
Investigated differences in neural responses to false-feedback between anxious and non-anxious subjects through EEG data collection and analysis.

*Research Assistant*, advisor: Benjamin Le 2006  
Determined predictors of relationship dissolution through meta-analytic coding and analysis.

#### HONORS AND AWARDS

Appointment to Management for Scientists and Engineers Program, Kellogg School of Management and The Graduate School, Northwestern University, 2012

*Summer business and management program for PhD students taught by Kellogg faculty*

Early Years Training Grant Fellowship, National Institute of Health and Northwestern University, 2009 – 2010

*Funding for second year of predoctoral training based on exceptional first year performance*

Clementine Cope Fellowship for Graduate Study, Haverford College, 2008

*Funding to continue studies at a graduate institution*

Amber Award Finalist, Haverford College, 2008

*Award for top graduating student-athlete*

College Squash Association Scholar Athlete, CSA, 2008

Honors, Department of Psychology, Haverford College, 2008

#### PUBLICATIONS

**Mutso, AA**, Radzicki, D, Baliki, MN, Huang, L, Banisadr, G, Centeno, MV, Radulovic, J, Martina, M, Miller, RJ, and Apkarian, AV (2012). Abnormalities in hippocampal functioning with persistent pain. *Journal of Neuroscience*, 32, 5747-5756.

\*Featured in: This Week in The Journal, The Pain Research Forum, Scientific American Mind\*

Centeno, MV, **Mutso, A**, Millecamps, M, and Apkarian, AV (2009). Prefrontal cortex and spinal cord mediated anti-neuropathy and analgesia induced by sarcosine, a glycine-T1 transporter inhibitor. *Pain*, 145, 176-183.

Langford, DJ, Tuttle, AH, Brown, K, Deschenes, S, Fischer, DB, **Mutso, A**, Root, KC, Sotocinal, SG, Stern, MA, Mogil, JS, and Sternberg, WF (2010). Social approach to pain in mice. *Social Neuroscience*, 5, 163-170.

Compton, RJ, Dainer-Best, J, Fineman, SL, Freedman, G, **Mutso, A**, and Rohwer, J (2010). Anxiety and expectation violations: Neural response to false-feedback is exaggerated in worriers. *Cognition and Emotion*, 24, 465-479.

Le, B, Smoak, ND, Agnew, CR, Korn, MS, and **Mutso, AA** (2010). Predicting non-marital romantic relationship dissolution: A meta-analytic synthesis. *Personal Relationships*, 17, 377-390.

#### PAPERS IN PREPARATION

**Mutso, AA**, Petre, B, Huang, L, Baliki, MN, Torbey, S, Herrmann, K, Schnitzer, TJ, and Apkarian AV. Hippocampal functional connectivity in sub-acute and chronic back pain. *Submitted*, 2012.

**Mutso, AA**, Kan, L, Centeno, MV, Kessler, JA, and Apkarian AV. Persistent pain behavior modulated by hippocampal neurogenesis. *In Preparation*, 2012.

#### PODIUM PRESENTATIONS

*Abnormalities in hippocampal functioning in chronic neuropathic pain*. 2012 Northwestern University Physiology Department Student Seminar, Chicago, IL.

*Neuropathic pain modulates hippocampal properties and hippocampus-mediated behavior*. 2010 biennial Spring Pain Research Conference, Grand Cayman, British West Indies.

*Chronic neuropathic pain modulates hippocampus-mediated behavior.* 2010 Northwestern University Physiology Department Student Seminar, Chicago, IL.

POSTER  
PRESENTATIONS

*Hippocampal connectivity in subacute and chronic back pain patients.* **Mutso, AA**, Petre, B, Huang, L, Baliki, MN, Torbey, S, Herrmann, K, Schnitzer, TJ, and Apkarian AV. 2012 annual meeting of the Society for Neuroscience, New Orleans, LA.

*Impact of hippocampal neurogenesis on neuropathic pain behavior.* **Mutso, AA**, Kan, L, Centeno, MV, Kessler, JA, and Apkarian, AV. 2012 annual meeting of the Northwestern University Interdepartmental Neuroscience Program - St. Charles, IL.

*Persistent pain behavior modulated by hippocampal neurogenesis.* **Mutso, AA**, Kan, L, Kessler, JA, and Apkarian, AV. 2012 annual meeting of the Society for Neuroscience - Chicago Chapter, Chicago, IL.

*Persistent pain behavior modulated by hippocampal neurogenesis.* **Mutso, AA**, Kan, L, Kessler, JA, and Apkarian, AV. 2011 annual meeting of the Society for Neuroscience, Washington, DC.

\*Hot Topic Poster\*

*Adult hippocampal neurogenesis is reduced by chronic neuropathic pain.* **Mutso, AA**, Banisadr, G, Miller, RJ, and Apkarian, AV. 2010 annual meeting of the Society for Neuroscience, San Diego, CA.

*Hippocampal involvement in neuropathic pain.* Radzicki, D, **Mutso, AA**, Centeno, MV, Yau, H-J, Radulovic, J, Apkarian, AV, and Martina, M. 2010 annual meeting of the Society for Neuroscience, San Diego, CA.

*Neuropathic pain modulates hippocampally-mediated emotional behavior.* **Mutso, AA**, Radulovic, J, and Apkarian, AV. 2009 annual meeting of the Society for Neuroscience, Chicago, IL.

*Predicting persistence in dating relationships: A meta-analytic examination.* Korn, MS, **Mutso, AA**, Le, B, Smoak, ND, and Agnew, CR. 2007 annual meeting of the Eastern Psychological Association, Philadelphia, PA.

RESEARCH SKILLS Lab Techniques

- Animal surgery and handling, expert in neuropathic pain induction (SNI model)
- Animal behavioral testing and analysis (including numerous behavioral pain assessment techniques, fear conditioning, anxiety and stress testing, mazes)
- Non-surgical pain induction injections and procedures
- Perfusion, fixation, and tissue processing
- Immunohistochemical processing and analysis
- Western blot processing and analysis, familiar with PCR and gel electrophoresis
- Human behavioral data collection and analysis
- Familiar with electrophysiological recording, some experience with patch-clamping
- Familiar with EEG and fMRI data collection and analysis

Computer and Software

- Proficient in Statistica, SigmaPlot, SPSS, Photoshop, Image J, Microsoft Office
- Familiar with FSL, Matlab, Spot, E-Prime

Languages

- English – native
- German – excellent
- French – fair

TEACHING  
EXPERIENCE

**Northwestern University, Chicago, IL**

*Science Club Mentor*, The Boys and Girls Club and Northwestern University 2012-Present  
*Brain Awareness Week Group Leader*, Nettelhorst Elementary School and NU 2011 and 2012  
*Teaching Assistant*, Neuroanatomy, Department of Neuroscience (Graduate Level) 2010  
*Teaching Assistant*, Animal Physiology, Department of Biology 2009

**Haverford College, Haverford, PA**

*Teaching Assistant and Tutor*, Experimental Methods and Stats, Department of Psychology 2008  
*Teaching Assistant and Tutor*, Beg and Int German, Department of German 2005-2007  
*Tutor*, Probability and Statistics, Department of Mathematics 2006