**Catharine Grace Clark**

*Curriculum Vitae*

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Place of Birth: Johannesburg, South Africa

Citizenship: USA

**Education:**

2011 – Present **Postdoctoral Associate** Cornell University, Ithaca, NY

 Department: Biomedical Engineering

2005 -2011 **PhD Candidate** University of Missouri, Columbia, MO

 Department: Biomedical Sciences

 Concentration: Physiology

1. **Bachelor of Science** University of North Carolina – Charlotte, Charlotte, NC

Kingston University, London, England (Semester Abroad)

Major: Biology, University Honors and Cum Laude Honors

**Professional Experience:**

2011 – Present **Postdoctoral Research Associate** (*Under the direction of Dr. C. Schaffer*)

 Department of Biomedical Engineering, Cornell University, Ithaca, NY

2005 - 2011 **Graduate Research Assistant** *(Under the direction of Drs E. Hasser and D. Kline)*

Department of Biomedical Sciences. University of Missouri, Columbia, MO

2003-05 **Research Specialist** *(Under the direction of Dr. R. Terjung)*

Department of Biomedical Sciences, University of Missouri, Columbia, MO

2002-03 **Research Assistant** *(Under the direction of Dr. B. Kallakury)*

Lombardi Cancer Center, Georgetown University, Washington, DC

2001-02 **Postbaccalaurate Research Fellow** *(Under the direction of Dr. D. Goldman)*

National Institute of Health, NIAAA, Neurogenetics, Bethesda, MD

2000-01 **Research Assistant** *(Under the direction of Dr. J. Oliver)*

Interdisciplinary Biotechnology Program, University of North Carolina –Charlotte, Charlotte, NC

**Awards and Recognition:**

2011 *Doctoral Student Marshal* University of Missouri

2010 *Research Recognition Award*  FASEB - NCAR, Saxtons River, VT

2010 *John Carlock Award* Association of College and University Biology Educators

2010 *Graduate Student Association Travel Award* GSA, University of Missouri

2010 *First Place Oral Presentation Research Award*  Phi Zeta Research Day, University of Missouri

2010 *Early Career Professional Service Award* American Physiological Society

2010 *Research Recognition Award*  Cardiovascular Research Day, University of Missouri

2009 *Caroline Tum Suden Award* American Physiological Society

2008 *Research Recognition Award* Local Neuroscience Chapter, University of Missouri

2008 *Research Recognition Award*  Cardiovascular Research Day, University of Missouri

2008 *Research Recognition Award* Mid-Missouri Society for Neuroscience Symposium

2007 *First Place Poster Research Award* Phi Zeta Research Day, University of Missouri

2006 *Biomedical Sciences* *Travel Award* Biomedical Sciences Dept., University of Missouri’

2001 *Who’s Who Amongst College Students* University of North Carolina, Charlotte, NC

2001 *Cum Laude and University Honors* University of North Carolina, Charlotte, NC

**Research Activities:**

***Research Training Support:***

**American Heart Association Predoctoral Fellowship Award, University of Missouri**  7/01/09-6/30/11

“The Role and Mechanism of Brain Derived Neurotrophic Factor in Autonomic and Cardiovascular Control”

 Amount: $52,000

**NIH, Predoctoral Fellowship Award, T32, University of Missouri** 8/01/07-7/31/08

“Modulatory role of Substance P and GABAergic inhibition in the nucleus tractus solitarii on cardiovascular homeostasis”

 Amount: $23,000

**Interdisciplinary Neuroscience Graduate Fellowship, University of Missouri** 8/01/05-01/15/06

“Electrophysiological characterization of neurokinin-1 receptor expressing nucleus tractus solitarii neurons”

 Amount: $10,500

**NIH, Intramural Research Fellowship Award, NIAA, Bethesda, MD**  8/01/01-7/31/02

 “Identification of Single Nucleotide Polymorphisms in the Human Choline Acetyltransferase Gene”

 Amount: $19,000

***Research Funding Support:***

**Sigma Xi Grant-in-Aid, National Sigma Xi Scientific Research Society** 3/15/2010-9/15/10

“The Role of Brain Derived Neurotrophic Factor in Chronic Hypertension”

Amount: $841

**Phi Zeta Grant Award, University of Missouri** 8/01/08-07/31/09

“The Role and Mechanism of Brain Derived Neurotrophic Factor in Autonomic and Cardiovascular Control”

 Amount: $750

**Phi Zeta Grant Award, University of Missouri** 8/01/06-7/31/07

“Electrophysiological characterization of neurokinin-1 receptor expressing nucleus tractus solitarii neurons”

 Amount: $750

**Educational Activities:**

***Teaching Experience:***

2009 - 2010 **Teaching Assistant**

Veterinary Medical School, University of Missouri, Columbia, MO

 *First Year* *Neurophysiology and Muscle labs*

 Duties included aiding students during the lab with software and general understanding of material

2008 - 2009 **Adjunct Faculty**

 Biology Department, Westminster College, Fulton, MO

*Undergraduate Biology Non-Majors lab* (Fall 2008, Spring 2009, Fall 2009)

 Responsible for developing and instructing course content for undergraduate courses, evaluating course performance, choosing appropriate texts and teaching aides and holding regular office hours

2009 **Teaching Assistant**

 Department of Medical Pharmacology and Physiology, University of Missouri, Columbia, MO

 *Undergraduate Elements of Physiology lab* (Fall 2009)

Duties included prepping weekly experiments, grading papers, preparing pre/post lab lectures

2006 **Teaching Assistant**

Department of Biology, University of Missouri, Columbia, MO

*Undergraduate Physiology lab* (Spring 2006)

Duties included preparing lab lectures, organizing weekly experiments, developing quizzes and examinations, grading papers

***Education Funding Support:***

Society for Neuroscience, Chapter Grant Award, University of Missouri 6/31/07-4/01/08

 “Brain Awareness Week: *Addicted to the brain*. Neuroscience outreach designed for secondary school students and the general public”

Amount: $2,000

**Publications:**

***Manuscripts:***

**1. C. G. Clark**, E.M. Hasser, D.L. Kunze, D.M. Katz and D.D. Kline. Brain Derived Neurotrophic Factor Tonically Modulates Autonomic, Cardiovascular and Synaptic Function in the Nucleus Tractus Solitarii

– *Journal of Neuroscience* Volume 31, Number 34; pages 2318-29 (2011)

1. T.L.King, C.M. Heesch**, C. G. Clark**, D.D. Kline and E.M. Hasser Chemoreflex activation of nucleus tractus solitarius neurons that project to the paraventricular nucleus of the hypothalamus

 – *In press:* [*AJP - Regulatory, Integrative and Comparative Physiology*](http://www.the-aps.org/publications/twice_monthly.htm)

1. **C. G. Clark**, S. Luke, G. Meininger and J.T. Potts. “Nicontine-Induced Desensitization of α7-Containing Neuronal Acetylcholine Receptors on NK1 Receptor Expressing Medullary Respiratory Neurons”

– *Under Review: Journal of Applied Physiology*

**4. C. G. Clark**, D.D. Kline, D.L. Kunze, D.M. Katz and E.M. Hasser. Brain derived neurotrophic factor in the nucleus tractus solitarii contributes to sympathoexcitation in spontaneously hypertensive rats

 – *In preparation*

**5. C.G.** **Clark**, Halverson, K.H., Freyermuth, S.K & Siegel, M.A. “What undergraduates misunderstand about stem-cell research” **-** *International Journal of* *Science Education* Volume 32, Issue 19, page 2253 (2009)

1. **C.G. Clark.** Invited Opinion:“To Serve or Not to Serve – Is That a Question?” **-** *The Physiologist* Volume 53, Number 6; pages 211-212 (2010)
2. M. Siegel, K. Haverston, Freyermuth & **C. G. Clark**. “Beyond Grading: A series of rubrics for science learning:” – *Journal of Science Teacher Education*, Volume 22, Issue 4, pages 371-391 (2011)
3. A. Bunker and **C.G. Clark. “**Teaching about teaching: Why graduate programs should train beyond research” – *In preparation*

***Research abstracts:***

**1. C. G. Clark**, A. Fong, D. McGovern and J.Potts. Electrophysiological characterization of neurokinin -1

receptor expressing nucleus tractus solitarii neurons (FASEB, Washington, DC, 2007)

**2. C. G. Clark** and J.Potts. Nucleus tractus solitarii (nTS) expression of GAD67 and neurokinin receptors (NK1-R) in transgenic GAD67- eGFP mice, (FASEB, Washington, DC, 2007)

**3.** J. Potts, S. Luke, J. Pamidimukka, **C. G. Clark** and G. Meininger. Atomic force microscopy to characterize nicotinic receptor function on medullary respiratory neurons (FASEB, San Diego, CA, 2008)

**4. C. G. Clark**, D. D. Kline, D. L. Kunze, D. M. Katz and E. M. Hasser. The Role of Brain Derived Neurotrophic Factor on Autonomic and Cardiovascular Function, 2008 (SFN, Washington, DC, 2008)

**5.** D. D. Kline, E. M. Hasser, **C. G. Clark**, D. L. Kunze and D. M. Katz. Mecp2 null mice exhibit enhanced excitatory postsynaptic currents (EPSCs) in the brainstem nucleus tractus solitarius (nTS) (FASEB, New Orleans, LA, 2009)

**6. C. G. Clark,** E.M. Hasser, D. L. Kunze, D.M. Katz, and D. D. Kline**.** Brain Derived Neurotrophic Factor (BDNF) blunts neural activity in the nucleus tractus solitarius (nTS) (FASEB, New Orleans, LA, 2009)

**7. C. G. Clark,** E.M. Hasser, D. L. Kunze, D.M. Katz, and D. D. Kline. Brain Derived Neurotrophic Factor (BDNF) is Localized and Modulates Neurotransmission in the Nucleus Tractus Solitarius (nTS) (SFN, Chicago, IL, 2009)

1. **C. G. Clark,** D. D. Kline, D. L. Kunze, D. M. Katz and E. M. Hasser. Functional Effects of Endogenous BDNF in the Nucleus Tractus Solitarius (nTS) (FASEB, Anaheim, CA, 2010)
2. **C.G. Clark,** D. D. Kline, D. L. Kunze, D. M. Katz and E. M. Hasser. Brain derived neurotrophic factor (BDNF) in the nucleus tractus solitarii (nTS) contributes to sympthoexcitatioin in spontaneously hypertensive rats (FASEB, Washington, DC, 2011)
3. P. Chen, C. J. Shen, J. Kuo1, **C. G. Clark**, B. Nijjar, C. Schaffer, R. Gilmour, and A. Lal. Ultrasonic Neural Probe for Real Time Electromechanical Histology of Neural Interfaces (A Solid-State Sensors, Actuators and Microsystems Workshop, Hilton Head, NC, 2012)

***Educational abstracts:***

**1.**  **C.G. Clark**, T. Zidon and K. Hutchins. Addicted to the Brain: Activities and Outreach (NABT, Memphis, TN, 2008)

1. C. G. Clark, K. Halverston, and M. Siegele. Misconceptions about Stem Cell Research: Categories and Trends in Undergraduates’ Ideas (NABT, Memphis, TN, 2008)
2. A. Bunker and **C.G. Clark**. Teaching socialization and graduate student preparation for the Biomedical professoriate: divergent graduate student paths and perspectives of teaching during PhD training (FASEB, Anaheim, CA, 2010)

**Presentations:**

***Invited Oral Presentations:***

2011 Experimental Biology, Washington, DC

“Brain derived neurotrophic factor in the nucleus tractus solitarii contributes to sympathoexcitation in spontaneously hypertensive rats”

2010 MU Conversations about College Science Teaching

 “Obstacles and Opportunities in Preparing Future Faculty for Teaching”

2008 National Association of Biology Teachers, Memphis, TN

 “Addicted to the Brain: Activities and outreach for students of all ages”

2008 Annual meeting of Science Teachers of Missouri, Jefferson City, MO

 “What undergraduates misunderstand about stem-cell research”

***Poster Presentations:***

2011 Experimental Biology Conference, Washington, DC

2010 FASEB Neural Mechanisms in Cardiovascular Regulation, Saxtons River, VT

2010 Experimental Biology Conference, Anaheim, CA

2010 University of Missouri, Cardiovascular Research Day

2009 Society for Neuroscience Conference, Chicago, IL

2009 Experimental Biology Conference, New Orleans, LA

2009 University of Missouri, Phi Zeta Research Day

2009 University of Missouri, Cardiovascular Research Day

2008 Society for Neuroscience Conference, Washington DC

2008 University of Missouri, Life Sciences Week

2008 University of Missouri, Cardiovascular Research Day

2008 University of Missouri, Society for Neuroscience Research Symposium

2007 University of Missouri, Phi Zeta Research Day

2007 University of Missouri, Society for Neuroscience Research Symposium

2007 Experimental Biology Conference, Washington, DC

2002 NIH Research Festival, Bethesda, MD

2001 University of North Carolina, Tri Beta Research Conference

**Service:**

2011 *Consultant* American Physiological Society Strategic Planning Task Force

2011 *Member* American Physiological Society Education Committee

2010 *Facilitator* MU Conversations about College Science Teaching

2008-09 *Participant* “Science and Me” - Scientific outreach presentations to the general public

2008 *Member*  Heath Sciences Graduate Student Association

2008 -09 *Co-Organizer*  Brain Awareness Week

2007-08 *Ambassador* Biomedical Sciences Department

2007 *Representative* Graduate Professional Council

2006 *Member* Griffin Women’s Leadership Society

2005 *Representative* Graduate Student Association

**Societal Memberships:**

2011- Present National Postdoctoral Association

2010- Present Society for Experimental Biology and Medicine

2009- Present Sigma Xi Research Society

2007- Present American Physiological Society

2007- Present National Science Teachers Association

2005- Present Society for Neuroscience

**Certifications:**

In progress Postdoctoral Leadership Program, Cornell University, Ithaca, NY

2011 Graduate Certificate for Science Outreach, University of Missouri, Columbia, MO