

**Brandy S. Russell**  
***Curriculum vitae***

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**Education**

University of Rochester (Rochester, NY)

Ph.D. chemistry, February 2003

M.S. in chemistry, May 2000

Alfred University (Alfred, NY)

B.A. in Chemistry, *cum laude*, May 1998

**Experience**

September 2005 – present

**Assistant Professor**, Gustavus Adolphus College (St. Peter, MN)

Primary courses: Principles of Chemistry, Inorganic Chemistry II

Research: Metal site assembly and specificity in myohemerythrin and metalloprotein II

January 2003 – July 2005

**HHMI Postdoctoral Fellow**, University of Illinois at Urbana-Champaign (Urbana, IL)

Advisor: Yi Lu

Course: The Chemistry and Biology of Everyday Life

Research: Engineering an iron binding site in myoglobin; copper binding and reactivity of an engineered heme-copper site in myoglobin; strengthening the link between science majors' interests and science curricula

January 1999 – December 2002

**Graduate Research Assistant**, University of Rochester (Rochester, NY)

Advisor: Kara L. Bren

Thesis title: *NMR Investigations of Ferricytochrome c Folding and Dynamics*

Research: Heme ligation in partially and fully unfolded horse cytochrome *c*;  
Conformational dynamics of thermophilic and mesophilic bacterial cytochromes *c*

January 1997 – May 1998

**Undergraduate Research Assistant**, Alfred University (Alfred, NY)

Advisor: Johanna L. Crane

Research: Synthesis of modified  $\beta$ -diketonates

**Scholarships & Honors**

Jan 2003 – July 2005            Howard Hughes Medical Institute Postdoctoral Fellow (UI)

Sept 2002 – Dec 2002        Agnes M. & George Messersmith Fellow (UR)

Sept 2001 – Aug 2002        Elon Huntington Hooker Graduate Fellow (UR)

Sept 2000 – Aug 2001	Samuel Allen & Ellen Frances Lattimore Graduate Fellow (UR)
May 1999	W. D. Walters Teaching Award (UR)
Sept 1998 – Dec 2002	Sherman Clarke Fellow (UR)
May 1998	Honors in Chemistry (AU)
Jan 1996 – May 1997	Melvin Le Mon Creative Arts Scholarship recipient (AU)
May 1995	Alpha Lambda Delta National Honor Society (AU)
Aug 1994 – May 1998	National Merit Scholar (AU)

## Publications

- Lauren Denofrio, Brandy S. Russell and Yi Lu “Strengthening a weak link between students’ interests and current science curricula” *Science* **2007**, 318(5858), 1872-1873.
- Lea V. Michel, Tao Ye, Sarah E.J. Bowman, Benjamin D. Levin, Megan A. Hahn, Brandy S. Russell, Sean J. Elliott, Kara L. Bren “Heme attachment motif mobility tunes cytochrome *c* redox potential” *Biochemistry* **2007**, 46(42), 11753-11760.
- Xin Wen, Kirti M. Patel, Brandy S. Russell, and Kara L. Bren “Effects of heme pocket structure and mobility on cytochrome *c* stability” *Biochemistry* **2007**, 46(7), 2537-2544.
- Xuan Zhao, Natasha Yeung, Brandy S. Russell, Dewain K. Garner, and Yi Lu “Catalytic reduction of NO to N<sub>2</sub>O by a designed heme copper center in myoglobin: implications for the role of metal ions” *J. Amer. Chem. Soc.* **2006**, 128(21), 6766-6767.
- Linghao Zhong, Xin Wen, Terry M. Rabinowitz, Brandy S. Russell, Elizabeth F. Karan, and Kara L. Bren “Heme axial methionine fluxionality in *Hydrogenobacter thermophilus* cytochrome *c*<sub>552</sub>.” *Proc. Natl. Acad. Sci., USA* **2004**, 101, 8637-8642.
- Brandy S. Russell, Linghao Zhong, Maria Giulia Bigotti, Francesca Cutruzzolà, and Kara L. Bren “Backbone dynamics and hydrogen exchange of *Pseudomonas aeruginosa* ferricytochrome *c*<sub>551</sub>.” *J. Biol. Inorg. Chem.* **2003**, 8, 156-166.
- Brandy S. Russell and Kara L. Bren “Denaturant dependence of equilibrium unfolding intermediates and denatured state structure of horse ferricytochrome *c*.” *J. Biol. Inorg. Chem.* **2002**, 7, 909-916.
- Elizabeth F. Karan, Brandy S. Russell, and Kara L. Bren “Characterization of *Hydrogenobacter thermophilus* cytochromes *c*<sub>552</sub> expressed in the cytoplasm and periplasm of *Escherichia coli*.” *J. Biol. Inorg. Chem.* **2002**, 7, 260-272.
- Brandy S. Russell, Rory Melenkivitz, and Kara L. Bren. “NMR investigation of ferricytochrome *c* unfolding: Detection of an unfolding intermediate and residual structure in the denatured state.” *Proc. Natl. Acad. Sci., USA* **2000**, 97, 8312-8317.

## Invited seminars

- “Folding, metal site assembly, and metal binding specificity in metalloproteins.” Hope College, Holland, MI; January 2009.
- “Best of both worlds? The first year on the tenure track at a research-active, primarily undergraduate liberal arts college.” University of Illinois at Urbana-Champaign, Urbana-Champaign, IL; September 2006.
- “Protein dynamics and stability: conformational flexibility of a highly stable cytochrome *c* from a thermophilic bacterium.” Alfred University, Alfred, NY; October 2001.

## Conference presentations

- Biennial Conference on Chemical Education, Bloomington, IN; July 2008 (contributed talk)  
“Linking student interests to science curricula.” Brandy Russell, Lauren Denofrio, and Yi Lu.
- First Year Undergraduate Chemistry Education International Conference, Urbana-Champaign, IL; May 2005 (poster presentation) “A new integrated approach to undergraduate chemistry education.” Brandy S. Russell and Yi Lu.
- ACS Northeast Regional Meeting, Rochester, NY; November 2004 (invited talk) “Metal binding and reactivity of myoglobin variants with an engineered heme-copper site.” Brandy S. Russell, Natasha Yeung, Xuan Zhao, and Yi Lu.
- International Conference on Magnetic Resonance in Biological Systems, Toronto, Ontario (Canada); August 2002 (poster presentation) “NMR studies of non-native states of cytochrome *c*.” Brandy S. Russell, Rory Melenkivitz, and Kara L. Bren.
- Gordon Graduate Research Seminar: Bioinorganic Chemistry, Ventura, CA; January 2002 (poster presentation) “NMR studies of non-native states of paramagnetic cytochrome *c*.” Brandy S. Russell, Rory Melenkivitz, and Kara L. Bren.
- Upstate New York NMR Symposium, Rochester, NY; October 2001 (poster presentation) “NMR studies of non-native states of cytochrome *c*.” Brandy S. Russell, Rory Melenkivitz, and Kara L. Bren.
- Upstate New York NMR Symposium, Ithaca, NY; October 2000 (poster presentation)  
“Hydrogen exchange kinetics of bacterial cytochromes *c*.” Brandy S. Russell, Megan A. Hahn, Elizabeth F. Karan, Linghao Zhong, Kara L. Bren, Maria Giulia Bigotti, and Maurizio Brunori.
- 45<sup>th</sup> annual Undergraduate Research Symposium, Rochester, NY; April 2000 (invited workshop leader) “Two-dimensional NMR techniques.”
- Inorganic Biochemistry Summer Workshop, Athens, GA; July 2000 (poster presentation)  
“Elucidating heme ligation in denatured and partially denatured cytochrome *c*.” Brandy S. Russell, Rory Melenkivitz, and Kara L. Bren.

Great Lakes College Chemistry Conference, East Lansing, MI; March 1998 (poster presentation)  
“Synthesis of modified  $\beta$ -diketonates.” Brandy S. Russell, Angelic B. Hoover, and Johanna L. Crane.

### **Professional Development, Memberships, and Service**

Sept 2008 – present Kendall Center Faculty Associate for Undergraduate Research  
Sept 2008 – present HHMI Undergraduate Research Coordinator  
July 2008 CUR Proposal Writing Institute  
2007 – present American Association for the Advancement of Science  
2007 – present Society of Biological Inorganic Chemistry  
2005 – present International Center for First-Year Undergraduate Chemistry Education  
2003 – present Reviewer  
*European Journal of Biochemistry*  
*Journal of Chemical Education*  
2000 – present American Chemical Society, division of inorganic chemistry

### **Courses taught at Gustavus Adolphus College**

CHE-107 Principles of chemistry lecture: Fall 2005, 2006, 2007, 2008  
CHE-107 Principles of chemistry laboratory: Fall 2005, 2006, 2007  
CHE-141 Organic chemistry I laboratory: Spring 2006, 2007, 2008  
CHE-255 Biochemistry laboratory: Fall 2008  
CHE-344 Special topics: NMR spectroscopy: Spring 2009  
CHE-385 Inorganic chemistry II lecture: Spring 2006, 2007, 2008, 2009  
CHE-385 Inorganic chemistry II laboratory: Spring 2008, 2009  
NDL-129 Chemistry of cooking lecture and laboratory: January 2007

### **Research students at Gustavus Adolphus College**

Jessica Moertel ('10), Laura Secor ('10), Tony Yang ('10), Jordan Makela ('09), Laura Groskreutz ('11), Alysha Dicke ('10), Veronica Taylor ('09), Leigh Clanton ('09), Ross Elenkiwich ('10), Zeb Zacharias ('09), Kristin Kaplan ('07, now a pharmacy student at University of Minnesota – Twin Cities), Meghan Hogdal ('07, now a chemistry graduate student, Northwestern University), Pamela Nguyen ('07, now a dental student at AT Still University – Arizona)

## **Presentations by research students**

Laura Groskreutz and Brandy Russell, "Incorporation of Myohemerythrin Protein with Iron(II) in the Presence of Small Molecules," Gustavus Adolphus College Summer Research Symposium, St. Peter, MN; September 2008. (talk)

Jordan Makela and Brandy Russell, "Optimizing the Purification of Myohemerythrin and Metalloprotein II from *Nereis diversicolor*," Gustavus Adolphus College Summer Research Symposium, St. Peter, MN; September 2008. (talk)

Veronica Taylor, Leigh Clanton, Alysha Dicke, Laura Groskreutz and Brandy Russell, "Metal binding specificity in a pair of homologous proteins that bind iron and cadmium," Celebration of Creative Inquiry, Gustavus Adolphus College; May 2008. (poster)

Veronica Taylor, Leigh Clanton, and Brandy Russell, "Metal binding specificity in a pair of homologous proteins that bind iron and cadmium," American Chemical Society National meeting, New Orleans, LA; April 2008. (poster)

Veronica Taylor and Brandy S. Russell, "Metal binding specificity in myohemerythrin and metalloprotein II," Gustavus Adolphus College Summer Research Symposium, St. Peter, MN; September 2007. (talk)

Meghan L. Hogdal and Brandy S. Russell, "Purification and reconstitution studies in a myohemerythrin mutant," Gustavus Adolphus College Chemistry Seminar, St. Peter, MN; November 2006. (talk)

Meghan L. Hogdal and Brandy S. Russell, "Purification and reconstitution studies in a myohemerythrin mutant," Gustavus Adolphus College Summer Research Symposium, St. Peter, MN; August 2006. (talk)

## **Grant proposals, funded and pending**

Presidential Student/Faculty Collaboration Grant (Gustavus Adolphus College), February 2009. Metal-dependent protein folding. (\$7,393, pending)

- Coauthors: Alysha Dicke ('10) and Brandy Russell

Research at Undergraduate Institutions Grant (NSF), November 2008. The role of metal type and oxidation state in myohemerythrin folding and metal site assembly (\$158,383, pending)

Undergraduate Summer Research Program (Merck/AAAS), November 2007. (\$60,000 + \$27,423 match, funded)

- Lead authors: Brenda Kelly and Brandy Russell
- Co-PIs: Scott Bur, Joel Carlin, Jeffrey Dahlseid, Eric Elias, John Lammert, Amanda Nienow, Brian O'Brien

2007 Greater Gustavus Fund (Gustavus Adolphus College), April 2007. (\$4,000, funded)

Research, Scholarship, and Creativity Grant (Gustavus Adolphus College), March 2006. Myohemerythrin folding and metal site assembly. (\$2,200, funded)