

Elizabeth Adrienne Burgess

burgess@srel.edu

University of Georgia

Savannah River Ecology Laboratory (SREL)

Drawer E (mailing), SRS Bldg. 737A (shipping)

Aiken, SC 29802 (mailing), 29808 (shipping)

Office: 803.725.2752

Fax: 803.725.3309

Cell: 706.614.5944

Research Interests

Ecology of prokaryotes, molecular analysis of prokaryote populations and communities, characterization of microecological habitats, prokaryotes in biogeochemical cycles, utility of microorganisms for remediation and natural attenuation of contaminants

Education

2003-2009 Ph.D., Microbiology; GPA, 3.83; University of Georgia, Athens, GA

2001-2003 M.S., Ecology; GPA, 3.85; University of Georgia, Athens, GA

1994-1999 B.S., Forestry; 2nd major, English; Minors, Chemistry and Biology; GPA, 3.12;
Stephen F. Austin State University, Nacogdoches, TX

Research Experience

2009-present Post-Doctoral Research Associate – University of Georgia, Aiken, SC

- Focus: Constructed wetlands for bioremediation
- Skills acquired: Staff management, budgeting, student mentoring, project management, next-generation molecular methods (qPCR, 454-sequencing)

2001-2009 Graduate Research Assistant – University of Georgia, Athens, GA and Aiken, SC

Ph.D. dissertation research

- Focus: Geomicrobiology, prokaryote community ecology, sulfur-cycling
- Skills acquired: Metabolic rate measurements, metals analysis, prokaryote isolation methods, stable isotope analysis, coordination for field expeditions, protocol development, protocol library maintenance

M.S. thesis research

- Focus: Ecological genetics of bacteria in the environment
- Skills acquired: Microbiological field sampling, molecular methods, data collection, analysis and reporting, reference library maintenance

Teaching Experience

2009-present Post-Doctoral Research Associate – University of Georgia, Aiken, SC

- Mentorship: Recent graduate responsible for environmental sequencing project
- Mentorship: Undergraduate summer assistant responsible for field sampling

2006-present Adjunct Faculty – Aiken Technical College, Aiken, SC

- Biological Science I
- Microbiology (lecture material presented using internet teaching tools)

2004-2005 Teaching Assistant/Laboratory Instructor – University of Georgia, Athens, GA

- Principles of Biology II
- Microbiology & Healthcare
- Ecological Basis of Environmental Issues (volunteer position)

Teaching Experience (con't)

- 1998-1999 Laboratory Instructor – Stephen F. Austin State University, Nacogdoches, TX
- General Physics
- 1998-1998 Chemistry Tutor – Stephen F. Austin State University, Nacogdoches, TX
- General Chemistry I and II

Additional Relevant Experience

- 1999-2000 Project Support Staff – Council for Environmental Education, Houston, TX
- Started as a volunteer to provide support with general office tasks
 - Later hired with responsibilities including website maintenance, program development, and representation at conventions and community events
- 1999-1999 Hack Site Attendant – The Peregrine Fund, Rio Hondo, TX
- Field work in the Laguna Atascosa National Wildlife Refuge
 - Fed and observed fledgling Aplomado falcons, wrote end-of-season reports
- 1993-1994 Volunteer Interpreter – Jesse H. Jones Nature Park, Humble, TX
- Nature trail guide, pioneer trail guide
 - Participant in Pioneer Day, including membership in costume committee

Current Funding

Mills, G. M. and **E.A. Burgess**, H-02 Constructed Wetland Studies – Metal dynamics & biogeochemistry. U.S. Dept. of Energy – National Nuclear Security Administration

Publications

Peer-Reviewed

- 2011 **Burgess, E. A.**, J.M. Unrine, G.L. Mills, C.S. Romanek, J. Wiegel. *Comparative geochemical and microbiological characterization of two thermal pools in the Uzon Caldera, Kamchatka, Russia*. Microbial Ecology, Online First DOI: 10.1007/s00248-011-9979-4.
- 2007 **Burgess, E.A.**, I.D. Wagner, and J. Wiegel. *Thermal Environments and Biodiversity*. Ch 2, pages 13-29 in Physiology and Biochemistry of Extremophiles, C. Gerday and N. Glansdorff eds. American Society for Microbiology Press, Washington, DC.

Other Publications

- 2009 **Burgess, E.A.** *Geomicrobiological description of two contemporary hydrothermal pools in Uzon Caldera, Kamchatka, Russia, as models for sulfur biogeochemistry*. Ph.D. Dissertation, Microbiology, University of Georgia, Athens, GA. Committee: J. Wiegel (chair), S.B. Joye, G.L. Mills, W.B. Whitman.
- 2003 **Burgess, E.A.** *An analysis of mercury resistance genes in stream sediment bacteria, using terminal restriction fragment length polymorphism (TRFLP)*. M.S. Thesis, Ecology, University of Georgia, Athens, GA. Committee: J.V. McArthur (chair), T.C. Glenn, L.J. Shimkets.

In Preparation

Burgess, E.A., J.M. Unrine, A.L. Neal, V. Samarkin, S.B. Joye, D.Crowe, G.L. Mills, J. Wiegel. *Evidence for sulfate-reduction and biogenic sulfide mineralization in core samples from two thermal pools in Uzon Caldera, Kamchatka, Russia*. To be submitted to Trends in Extreme Microbiology.

Publications In Preparation (con't)

Burgess, E.A., S.M. Harmon, G.L. Mills, et. al. *Biogeochemical development of the H-02 constructed wetlands, Savannah River Site, Aiken, SC.*

Field Work

- 2008-present Regularly scheduled water and sediment sampling in constructed wetlands for regulatory and research purposes on the Savannah River Site, Aiken, SC
- 2004-2006 Participation in expeditions as a graduate research assistant for NSF Microbial Observatory, Uzon Valley, Kamchatka, Far East Russia, Aug.-Sept.
- 1999 Hack site attendant for The Peregrine Fund, Laguna Atascosa National Wildlife Refuge, Texas, June-September

Training and Workshops

- 2011 Online Instructor Certification training from Aiken Technical College using the Blackboard Learn e-Education platform, April 2011
- Continuing Education Credits: Geology of the CSRA, March 17, 2011, Savannah River Ecology Laboratory, Savannah River Site, Aiken, SC
- 2010 Continuing Education Credits: Ecological/Biota Studies @ SRS, October 14, 2010, Savannah River Ecology Laboratory, Savannah River Site, Aiken, SC
- 2005 Workshop: Kamchatka 2005: Biodiversity, Molecular Biology, and Biogeochemistry of Thermophiles, August 20-26, Petropavlovsk-Kamchatksky, Russia
- 2003 Workshop and Training: Extremophile Research: Theory and Techniques, July 21-24 Center of Marine Biotechnology, University of Maryland, Baltimore, MD

Presentations (*presenting author)

- 2011 Mills, G.L.*, **E.A. Burgess**, T. Murphy, M. Harmon, H. McLeod, E. Nelson. Biogeochemical processes in a treatment wetland mitigating metal discharge into a Savannah River stream tributary. 2011 Georgia Water Resources Conference, April 11-13, Athens, GA.
- 2010 **Burgess, E.A.***, A. Whitley, V. Samarkin, G.L. Mills. Microbial ecology of constructed wetlands - the H-02 system. South Carolina Branch ASM Meeting. Oct. 22, Aiken, SC. Program Book, p 10.
- Mills, G.L.*, S.M. Harmon, **E.A. Burgess**, T. Ciravolo, T. Murphy, A. Whitley. *Biogeochemical changes in a constructed wetland receiving metal contaminated waters during the initial 2 years of development.* Carolinas and Southeast SETAC Joint 2010 Chapter Meeting March 25-27, Athens, GA, Program and Abstracts; pg 6.
- 2009 **Burgess, E.A.*** *Models for sulfur cycling from a geomicrobiological description of two hydrothermal pools.* University of Georgia, Ph.D. Defense Presentation, December 4, 2009.
- Burgess, E.A.*** *Models for sulfur cycling from a geomicrobiological description of two hydrothermal pools.* Savannah River Ecology Laboratory, University of Georgia, Dec. 2, 2009.

Presentations (con't)

- 2005 **Burgess, E.A.*** *In search of sulfate-reducing prokaryotes in the Uzon Caldera.* Kamchatka Workshop 2005: Biodiversity, Molecular Biology and Biogeochemistry of Thermophiles, August 20-26, 2005.
- Burgess, E.A.*** *For the love of cold – An investigation of Artic sea-ice bacteria in two seasons.* UGA Department of Microbiology, Departmental Seminar, February 8, 2005.
- 2003 **Burgess, E.A.*** *Through the looking glass, an analysis of bacterial mercury resistance genes using TRFLP, or an analysis of TRFLP using bacterial mercury resistance genes.* University of Georgia, M.S. Defense Presentation, August 2003.

Posters

- 2011 **Burgess, E.A.***, G.L. Mills, M. Harmon, V. Samarkin. *Biogeochemical processes related to metal removal and toxicity reduction in the H-02 constructed wetlands, Savannah River Site.* Abstract B13C-0581, American Geophysical Union Fall Meeting 2011.
- 2010 **Burgess, E.A.**, G.L. Mills, J. Wiegel*. *Community structure in two geochemically distinct hydrothermal pools in Uzon Caldera, Kamchatka, Far East Russia.* 8th International Congress on Extremophiles, 12-16 September, São Miguel, Azores, Portugal. Abstract P248.
- Burgess, E.A.**, G.L. Mills, J. Wiegel*. *Community structure in two geochemically distinct hydrothermal pools in Uzon Caldera, Kamchatka, Far East Russia.* Autumn 2010 Meeting: Society for General Microbiology, 6-9 September, Nottingham, England. Online Program Listing.
- Burgess, E.A.***, G.L. Mills, J. Wiegel. *Community structure in two geochemically distinct hydrothermal pools in Uzon Caldera, Kamchatka, Far East Russia.* 13th International Symposium on Microbial Ecology, 22-27 August, Seattle, WA. Poster List; pg 161.
- 2009 Mills, G.L.*, S.M. Harmon, N. Ethridge, T. Ciravolo, **E. Burgess**, J. Gladden, E. Nelson. *Biogeochemical changes in a constructed wetland receiving metal contaminated waters during the initial year of development.* SETAC North America 30th Annual Meeting, 19-23 November, New Orleans, LA. Abstracts Book; pg 250.
- 2008 **Burgess, E.A.***, J.M. Unrine, J. Wiegel, G.L. Mills. *Microbial phospholipid fatty acid (PLFA) profiles of core samples from two geochemically distinct thermal pools in Kamchatka, Far East Russia.* Abstracts of the 108th General Meeting of the American Society for Microbiology, 2008; N-153.
- 2007 **Burgess, E.A.***, W. Zhao, A.L. Neal, J. Wiegel. *Comparison of hot spring sediment communities using 16S rRNA gene sequences.* Abstracts of the 107th General Meeting of the American Society for Microbiology. 2007; N-308

Posters (con't)

- 2006 **Burgess, E.A.***, J. Unrine, A.L. Neal, V. Samarkin, S.B. Joye, J. Wiegel. Arkashin(A) to Zavarzin(Z) – Geochemical and microbiological characterization of core samples collected at two thermal pools in Uzon Caldera, Kronotsky Zapovednik, Kamchatka. EOS Transactions AGU 87(52). American Geophysical Union Fall Meeting 2006.
- 2006 Zhao, W. *, C.S. Romanek, **E.A. Burgess**, J. Wiegel, G. Mills, C.L. Zhang. Using phospholipids and stable carbon isotopes in assess microbial community structures and carbon cycle pathways in Kamchatka hot springs. EOS Transactions AGU 87(52). American Geophysical Union Fall Meeting 2006.
- Burgess, E.A.***, A.L. Neal, J.K.W. Wiegel. Distribution, diversity, and sulfidogenesis of prokaryotes in the Uzon Caldera. Poster. 1st Annual Academy of the Environment Symposium, University of Georgia, Oct. 23-24, 2006.
- Burgess, E.A.***, A.L. Neal, J.K.W. Wiegel. Distribution, diversity, and sulfidogenesis of prokaryotes in the Uzon Caldera. Poster 10, SREL Graduate Student Symposium, 30.June.2006.
- Zhao, W.* , C.S. Romanek, J. Wiegel, **E. Burgess**, A. Pearson, G. Mills, and C. Zhang. Lipids and 13C stable isotopes of Kamchatka hot springs microbial communities. Presentation 5, SREL Graduate Student Symposium, 30.June.2006.
- Burgess, E.A.***, A.L. Neal, V. Samarkin, S.B. Joye, J. Wiegel. Enrichment culture, radiotracer activity measurement, and 16S rRNA gene sequence evidence for sulfidogenic prokaryotes in Uzon Caldera, Kamchatka, Far East Russia. Abstracts of the 106th General Meeting of the American Society for Microbiology, 2006; 106: N-059
- 2005 **Burgess, E.A.***, E. Hollingsworth, A. Neal. Changes in Prokaryotic Communities across a Geochemical Gradient in a Hot Spring Sediment Core. Poster 16, SREL Graduate Student Symposium, 15.July.2005.
- Burgess, E.A.***, J. Wiegel, D. Crowe, A. Neal. Microbial TRFLP Profiles across a Geochemical Gradient, as Determined from a Hot Spring Sediment Core Collected in Kamchatka, Far East Russia. Abstracts-of-the-105th General-Meeting-of-the-American-Society-for-Microbiology. 2005; 105: N-261
- 2004 **Burgess, E.A.***, A. Neal, J. Wiegel. Isolation and Characterization of Sulfate-Reducing Bacteria from Uzon Valley Hydrothermal Pools. Presentation 16, Savannah River Ecology Laboratory Graduate Student Symposium, July 9, 2004.
- 2003 **Burgess, E.A.***, C.J. King, T.C. Glenn, J V. McArthur. Gene trees of bacterial mercury resistance genes indicate unique local selection. Poster, Evolution 2003, University of California, Chico, California.
- Burgess, E.A.***, T.C. Glenn, J V. McArthur. An analysis of the diversity of mercury resistance genes in stream sediment bacteria on the Savannah River Site using terminal restriction fragment length polymorphism (t-RFLP). Abstracts-of-the-103rd General-Meeting-of-the-American-Society-for-Microbiology. 2003; 103: N-261

Honors and Awards

- Graduate School Research Assistantship, University of Georgia (2008)
- Graduate School Travel Award, University of Georgia (2008, 2006)
- Franklin College of Arts & Sciences Research Assistantship, University of Georgia (2007)
- Department of Microbiology Travel Award, University of Georgia (2007)
- 1st Place Poster Presentation Award, Graduate Student Symposium, SREL (2006)
- Young Researcher Travel Award, National Science Foundation (2005)
- SREL Research Assistantship, University of Georgia (2001-2003)
- Undergraduate Scholarship, Stephen F. Austin Alumni Association, SFASU (1998-1999)
- Undergraduate Scholarship, Kingwood Garden Club (1998-1999)
- Undergraduate Scholarship, Houston Coating Society (1995-1999)
- Induction to Forestry Honor Society, Xi Sigma Pi (1997)

Outreach and Service

- Special Award judge, CSRA Regional Science and Engineering Fair, Aiken, SC, March 12, 2011
- Mini-course instructor, Basic Dog Obedience, Kennedy Middle School, Aiken, SC, every January 2007-present
- Member of Speakers Bureau, Savannah River Ecology Laboratory (SREL), University of Georgia, Aiken, SC, available to give short scientific talks to local civic organizations
- Module development for tours of SREL, open to all employees of the Savannah River Site
- Module development for SREL Touch An Animal Day, annual event open to the public
- Member of committee to develop white paper for SREL Director search
- Volunteer at Carolina Bay Clean-Up Days, removal of invasive exotic species and planting of native species in the Carolina Bay Nature Reserve, Aiken, SC
- Photos from Kamchatka, an exhibition of personal photographs taken in Kamchatka, Far East Russia. Exhibition included a flyer briefly describing the associated research project and contact information for questions. Open to the public at Jittery Joe's Coffee, Athens, GA, Dec. 3 – 17, 2004, and Starbucks Coffee, Athens, GA, Feb. 1-28, 2005.
- Microbe Zoo Open House: When Microbes Attack... Your Garbage! – a hands-on demonstration presenting the role of microorganisms in composting and bioremediation. Assisted Dr. Wendy Dustman with organization and presentation. Open to middle and high school students participating in the 57th Georgia Science and Engineering Fair. University of Georgia, Athens, GA, Apr. 8, 2005.
- Judge for plant identification event in Eco-Adventure race, Athens, GA, April 2003
- Session moderator, Southeastern Ecology & Evolution Meeting, Georgia Institute of Technology, Atlanta, GA
- Participant in North American Butterfly Association annual butterfly count, Bentsen State Park, TX

Professional Memberships

2009-2010 International Society for Microbial Ecology (ISME)
2007-present American Association for the Advancement of Science (AAAS)
2006-present American Geophysical Union (AGU)
2002-present American Society for Microbiology (ASM)
2002-2003 North American Benthological Society (NABS)
1997-present Xi Sigma Pi, Forestry Honor Society