

abbreviated curriculum vitae – May 2018

Sarah M. Boomer, Ph.D.

EDUCATION

1996 - Ph.D., Microbiology, University of Washington, Seattle, WA

1989 - B.S. in Biology (with Honors), University of Puget Sound, Tacoma WA

1989 - B.S. in English (with Honors), University of Puget Sound, Tacoma WA

1989 - Minors: Chemistry, Women Studies, Honors/Classics

SCIENTIFIC RESEARCH EXPERIENCE

I. FORMAL RESEARCH AND SCIENTIFIC TRAINING

1996-7 - Post-Doctoral: Retrovirus receptor recognition, HIV Phylogenetics (Drs. Overbaugh, Eiden)

1989-96 - Graduate: Evolution of Feline Leukemia Virus (Dr. Overbaugh)

1988-9 - Undergraduate: Novel photosynthetic hot-spring bacteria from Yellowstone (Dr. Pierson)

II. MENTORING UNDERGRADUATE RESEARCH

Research-Independent Study Projects - Undergraduate Mentees

I did not include field research experiences (1998-2007), which served an additional 90 research students.

2017-2018 – Savannah Kumar: Assessing MacConkey-Selected Bacteria in Regular vs. Organic Ground Beef

2015-2017 – Parker Smith: Fluorescence in situ Hybridization Methods (with Dr. Baltzley)⁴

2013-4 – Han Nguyen: Metagenomic Analysis of Bacterial Biofilms on Tooth-Plaque⁴

2012-2014 – Kindra Smith: Culture-Based Assessment of Different Forest Soils⁴

2012-2013 – Nicole Herrera: Culture Based Assessment of Different Local Streams⁴

2009-2012 – Biology 211 Team: Teaching/Research and Active Learning Project⁴

2009-10 - Terry Manning: Metagenome Project – Fairy/Chocolate Pots

2007-8 – Katie Noll: Population Analysis and Long-term Geochemical Data – Fairy/Hillside^{3, 4}

2006-7 – Nana Hanson: Population Analysis Over Time at Fairy Spring³

2004-6 - Jennifer Esparza: Mat Formation and Bacterial Population Studies²

2004-5 - Will Drury: Development of the Web-Based RLMO Database (Version 2.0)^{1, 4}

2003 - Jared Brouger: Education Outreach Modules in Microbial Diversity¹

2002-6 - Terry Manning: Geochemistry-Directed Media Design Using Two RLMO Sites²

2002 - Melissa Boschee: Development of the Web-Based RLMO Database (Version 1.0)^{1, 4}

2001-3 - Peter Williams: Molecular Analysis of RLMO Geothermal Sourcewater¹

2001 - Jessica Cameron: Education Outreach Modules in Microbial Diversity¹

2001 - James Erdman: Molecular Cloning from New RLMO Communities

2001 - Jeanine Earnest: Characterization of New RLMO Communities

2000 - Sean Vigil: DNA Sequence Analysis Troubleshooting

1999 - Kody Phillis: Characterization of New RLMO Communities

1998 - Alex Dumanovsky: Molecular Cloning from Soil Samples

¹received NSF stipends; ²received NSF and ASM stipends; ³received NSF support as part-time student workers;

⁴presented or authored papers about work

Post-Doctoral Mentees

2007-8 – Niki Parenteau: Molecular Analysis of Chocolate Pots, an Unexpected RLMO Site*

*also received TBI/RCN Training Grant and stipend/supplement from NSF July-December 2006

Research-Driven Undergraduate Course Curriculum

2017-Present – Microbiology “Beefy Goodness” (BI 331); Impact = 40/year

2000-2006 - Molecular Biology (Biology 475); Impact = 36

2000-5 - Computational Biology (Biology 301); Impact = 15

2000-2012 – Molecular Microbial Ecology (Biology 331); Impact = 188

PROFESSIONAL TEACHING EXPERIENCE

I. ACADEMIC POSITIONS

2008 – Present – Professor, WOU Biology

2001 - 7 - Associate Professor, WOU Biology

1997 – 01 - Assistant Professor, WOU Biology

1996-7 - Teaching Associate Professor, UW Biology

II. REGULAR UNDERGRADUATE COURSES (SINCE 2012)

Annually - Principles of Biology (Biology 211); Typical Impact = 50/year

Biannually - Non-Majors Microbiology (Biology 318); Typical Impact = 80/year

Biannually - General/Majors Microbiology (Biology 331); Typical Impact = 40/year

Every Other Year – Immunology (Biology 432); Typical Impact = 20/year

I used to teach Molecular Biology, Emerging Diseases, Medical Microbiology, Virology but Non-Majors Microbiology demands have become too great.

PROFESSIONAL LEADERSHIP AND SERVICE

2018 – WOU Academic Requirements Committee

2016 & 2018 – NSF-Supported NW Biosciences Conference Participant

2012-2015 – WOU International Education Committee

2012-2015 – WOU Natural Science Division Curriculum Committee

2010-2012 – Department of Biology Head

2010-2012 – WOU Textbook Rental Committee

2009-10 – WOU Academic Infrastructure Committee

2006 - One of two campus representatives (with Jeff Templeton), CUR Workshop

2006 - Database Discussion Leader/Report Author, 1st Annual Yellowstone RCN Workshop

2004 - Co-Organizer (with Mark Young, Montana State University), NSF MO PI Workshop

2003 - Education/Outreach Discussion Leader, NSF MO PI Workshop

2002 - Novel Culture Approaches Discussion Co-Leader, NSF MO PI Workshop

1998-01; 2005-7 - WOU Faculty Senate (with service as Secretary and on Executive Committee)

2003-2007 - Division Promotion and Tenure Review Committee (with service as Chair)

2000-2004 - WOU Natural Science Division Curriculum Committee

1999-2001 - WOU Faculty Senate Executive Committee, Secretary

1998-2001 - WOU Scholarships and Financial Aid

1994-6 - UW Bioethics Steering Committee

**Since 1997 - served on hiring committees for 20 faculty/staff positions in Biology.*

III. PROFESSIONAL ORGANIZATIONS

2009-Present – National Association of Biology Teachers

2000-Present - Yellowstone Association

1990-Present - American Society for Microbiology

1999-Present - Council for Undergraduate Research

1998-2003 - Oregon Academy of Science

IV. ADVISING/NOTABLE RECOMMENDEES

2018 – Erikson Karacheban, OHSU Dentistry

2017 – Parker Smith, Ph.D. Program OSU Micro

2017 – Ben Sheridan, OHSU Dentistry

2015 – Han Nguyen, U. Texas/Houston Dentistry

2015 – John Lopez, Dental Hygiene, OIT

2015 – Courtney Gallaway, Dental Hygiene, Pacific

2015 – Jill Jingwirth, Dental Hygiene, OIT

2014 – Emilie Keimig, Dental Hygiene, OIT

2014 – Taelynn Tangonan, Dental Hygiene

2013 – Amy Nicholson, OIT Clinical Lab Science

2013 – Spicie Davis, OIT Clinical Lab Science

2012 – Emily Irby, OHSU Dentistry

2012 – Jenn Esparza, OHSU Dentistry

2012 – Kelly Bocciolatt, Dental Hygiene, Pacific

2012 – Liz Martin, Lewis & Clark College, ID

2011 – Hannah Moreno, Dental Hygiene, ID

2011 – Shandy Avila-Garcia, Dental Hygiene, OIT

2010 – Trudy Hogg, Dental Hygiene, OIT

2010 – Marley Winkleman, Dental Hygiene, OIT

2009 – Nelson Morales, Graduate Program, NY

2009 – Samantha Colton, Dental Hygiene, Pacific

2008 – Katie Noll, QSI Chengdu, China

2007 – Catherine Dahl, Tufts Dentistry, MA

2007 – Alex Vo, OHSU Dentistry, OR

2007 – Nana Hanson, Graduate Program, Rice U

2006 - Kelly Shipley, McMinnville High School

2005 - Theresa Fenton, OHSU Dentistry

2005 - Mathilde Reznick, Dental School, AZ

2004 - Monica Smith, WSU Botany

2004 - Tyler Treharne, OSU Pharmacy

2004 - Holli Love, MHCC Dental Hygiene

2004 - Misty Sommerfelt, MHCC Dental Hygiene

2004 - Danny Lodge, OSU Engineering

2003 - Viral Patel, OSU Pharmacy

2003 - Sean Vigil, Medical School, NJ

2003 - Luke Gambia, Dental School, AZ

2003 - Sara Crosky, Medical College of WI

2003 - Rogan Rattray, OSU Microbiology

2003 - Melissa Austin, OSU Microbiology

2003 - Melissa Boschee, OR Dept. of Agriculture

2003 - Kelly Shipley, WOU MAT/Education

2002 - Mandy Ziglinski, WOU MAT/Education

2002 - James Erdman, OSU Biochemistry

2001 - Michelle Hase, AVI Pharmaceuticals Inc.

2001 - Jeannine Earnest, Genetools Inc.
2000 - Andrew Timm, OHSU Dentistry
2000 - Kevin Larson, OHSU Dentistry
1999 - Susan Reese, OHSU Medicine

1999 - Ramon Larios, Medical College of WI
1999 - Alex Dumanovsky, OHSU Medicine
1998 - Brad Aebi, OHSU School of Dentistry
1998 - Kody Phillis, North Creek Labs/Technician

V. FUNDING

2014 – WOU Faculty Development Grant/Release: High Thru-Put DNA/Metagenomic Methods
2007-10 – JGI/DOE Yellowstone Metagenomics: Site Manager for 2/20 selected sites
2004-10 - NSF Research Coordination Network: Yellowstone Core Group Member
2003 - Mario and Alma Pastega Outstanding Faculty Scholarship Award, WOU
2002-9 - NSF RLMO/RUI Grant: RLMO Longitudinal Study (\$550K)
2002 - WOU Faculty Development Grant: Travel to NSF Workshop
2001 - WOU Faculty Development Grant: DNA Sequencing Software
2001 - Li-Cor Educational/Marketing Poster Consulting
2000 - Waksman Foundation for Microbiology: Molecular Microbiology Course
2000-2 - NSF MO/RUI Grant: RLMO Project Survey (\$350K)
1998-9 - WOU Foundation Grant: support field studies in Yellowstone NP
1998 - NSF-ILI Grant: automated DNA sequencing apparatus (\$50K)

PUBLICATIONS AND PRESENTATIONS

PEER-REVIEWED SCHOLARLY/RESEARCH ARTICLES

1. **S.M. Boomer**, M.J. Baltzley, A.Z. Poole, K.L. Latham, J.P. Poole, 2017. An In-House Biology Placement Test Improves Success in Majors Introductory Biology. *American Biology Teacher/NABT Journal*.
2. L. Norman-McKay and the ASM MINAH Undergraduate Curriculum Guidelines Committee (including **S.M. Boomer**), 2018. Microbiology in Nursing and Allied Health (MINAH) Undergraduate Curriculum Guidelines: A Call to Retain Microbiology Lecture and Laboratory Courses in Nursing and Allied Health Programs. Published on-line at *Journal of Microbiology and Biology Education*, American Society for Microbiology.
3. C.G. Klatt, W.P. Inskeep, M. Herrgard, Z.J. Jay, D.B. Rusch, S.G. Tringe, M.N. Parenteau, D.M. Ward, **S.M. Boomer**, D.A. Bryant and S.R. Miller, 2013. Community Structure and Function of High-Temperature Chlorophototrophic Microbial Mats Inhabiting Diverse Geothermal Environments. *Published on-line at Frontiers in Microbial Physiology and Metabolism*.
4. **S.M. Boomer** and K.L. Latham, 2012. Manipulatives-based laboratory for majors biology – a hands-on approach to understanding respiration and photosynthesis. Published on-line at *Journal of Microbiology and Biology Education*, American Society for Microbiology.
5. **S.M. Boomer**, 2012. Biotechnology Extension Activities for “Starch Agar Protocol”. (ASM MicrobeLibrary Curriculum Resources On-Line Education).
6. **Boomer, S.M.**, K.L. Noll, G.G. Geesey, B.E. Dutton, 2009. Formation of multilayered photosynthetic biofilms in an alkaline thermal spring in Yellowstone National Park, WY, USA. *Applied and Environmental Microbiology* (ASM Press), 75:2464-2475.
7. **Boomer, S.M.**, 2006. Enumeration and Identification of Enteric and Pseudomonad Proteobacteria from Agriculture-Impacted Rivers, and an Exploration of Fecal Viruses and Protozoa. (ASM MicrobeLibrary Curriculum Resources On-Line Education).
8. **Boomer, S.M.**, 2006. Exploring Nitrogen Cycling Microbes: Nitrogen Fixation, Anaerobic Lithotrophy, and Anaerobic Nitrogen Reduction. (ASM MicrobeLibrary Curriculum Resources On-Line Education).
9. K.L. Shipley, **Boomer, S.M.**, 2005. Computational Biology Exercise. *The Oregon Science Teacher*. Fall.
10. **Boomer, S.M.**, K.L. Shipley, 2005. A Laboratory Class Exploring Anoxygenic Phototrophic Bacteria Using Culture-Based Approaches, Microscopy, and Pigment Analysis. *MicrobeLibrary Curriculum Resources*. (ASM MicrobeLibrary Curriculum Resources On-Line Education).
11. **Boomer, S.M.**, K.L. Shipley, B.E. Dutton, D.P. Lodge. 2005. A Laboratory Class Exploring Microbial Diversity and Evolution Using On-Line Databases and Phylogenetics Software. *MicrobeLibrary Curriculum Resources*. (ASM MicrobeLibrary Curriculum Resources On-Line Education).
12. **Boomer, S.M.**, W.M. Drury, B.E. Dutton, D.P. Lodge, M.S. Boschee, W.M. Kernan, 2005. The Red Layer Microbial Observatory Database: A Model for the Integration and Dissemination of Biological and Geochemical Data via the World Wide Web. Chapter Proceedings, First Biannual Workshop on Geothermal Biology and Geochemistry in Yellowstone (Montana State University Press).

13. **Boomer, S.M.**, D. P. Lodge, B.E. Dutton, 2002. Molecular characterization of novel red green nonsulfur bacteria from five distinct hot spring communities in Yellowstone National Park. *Applied and Environmental Microbiology* (ASM Press), 68:346-55.
14. **Boomer, S.M.**, D. P. Lodge, B.E. Dutton, 2002. Bacterial diversity studies using the 16S rRNA gene provide a powerful research-based curriculum for molecular biology laboratory. *Microbiology Education* (ASM Press), 3:18-25.
15. **Boomer, S.M.**, B.K. Pierson, R. Austinhirst, R.W. Castenholz, Characterization of novel bacteriochlorophyll a-containing red filaments from alkaline hot springs in Yellowstone. *Archives of Microbiology*, July 2000.

II. RELEVANT MEETINGS ABSTRACTS

I have only included the 7 most recent, which are also the most relevant; the complete list has 42 since 2001.

1. S. Kumar and **S.M. Boomer**, 2018. Bacterial abundance and resistance in ground beef varieties. Oregon Academy of Sciences, George Fox University.
2. S. Kumar with **S.M. Boomer**, 2018. Antibiotic resistance and modern agricultural practices. WOU Academic Excellence Showcase Talk/Presentation.
3. P.N. Smith, M.J. Baltzley, **S.M. Boomer**. Gut Microbiota of Helix Aspersa. Accepted by the Society for Integrative and Comparative Biology (SICB) Conference – January 2017, New Orleans, LA.
4. P.N. Smith, M.J. Baltzley, **S.M. Boomer**. Troubleshooting FISH Probes In Gastropod Gut Microbiomes. ASM-NW Branch Conference – November 2016, Seattle, WA.
5. **S.M. Boomer**, M.J. Baltzley, K.L. Latham, A.Z. Poole, J.P. Poole, 2016. A Biology Placement Test for Introductory Majors Biology. National Association for Biology Teachers (NABT) Conference – November 2016, Denver, CO.
6. **S.M. Boomer**, M.J. Baltzley, K.L. Latham, A.Z. Poole, J.P. Poole, 2016. Strategies to Improve Retention in Introductory Majors Biology. National Association for Biology Teachers (NABT) Conference – November 2016, Denver, CO.
7. **S.M. Boomer**, M.J. Baltzley, K.L. Latham, 2013. Active Learning and Advising Strategies in Introductory Biology II - If You Click It, a Few More Will Come. ASM-CUE, Denver, CO (proceedings published in *J. of Microbiology & Biology Education*).

BEYOND MY CAREER

2017 – Sailed Falklands, South Georgia/Antarctica/Drake Passage – Lindblad/National Geographic*

2016 – Survived a whole summer without hiking thanks to an overtraining-caused metatarsal stress fracture*

2015 – Self-guided Swiss Via Alpina (100 miles/30,000 feet) with Ellen Boomer (American School, Hague)

2012 – Dragged my Mother to Bergen (our homeland) and Arctic Norway (Lofoten Islands)*

2011 – Grand Canyon Field Institute Participant: Bright Angel Trail Geology and Backpacking

2009 – Paid off my mortgage (WOO-HOO)

2008 – Team whitewater paddling: 225 miles of the Colorado/Grand Canyon, AZRA

2005 - Tour du Mont Blanc (120 miles/27,000 feet), Compagnie du Mont Blanc

2004 - John Muir Trail/Mt. Whitney (150 miles/30,000 feet), MTS

1997 - Self-guided 5-week trek through Patagonia with Dr. Sara Machlin

1995 - Basic Rock/Ice and Mountain Safety Training, Washington Alpine Club

1994 - 100-mile/30,000 feet Wonderland Trail around Mt. Rainier, with Dr. John Gosink

1992-Present - Domain-Owner, Web-Mistress, Author of Thermophile.org (outdoor/travel writing)

**the most challenging feats on this list!*

Sarah's March of the Penguins Closing Montage



Left to Right: in order of our sightings – rockhoppers (Falklands), Magellanic (Falklands), macaroni (South Georgia), King (South Georgia), chinstrap (South Georgia, South Orkney, South Shetland), adelie (Antarctica), gentoo (those dirty stinkers were everywhere!)