Jamie L. Brooks, Ph.D.
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Education

2012 **Ph.D.**, Microbiology and Immunology
Virginia Commonwealth University, School of Medicine, Richmond, Virginia
Dissertation: Characterization of the expression of the intercellular adhesin locus in *Staphylococcus aureus*

2008 **B.S.**, Biomedical Science
Lynchburg College, Lynchburg, Virginia

Teaching & Mentorship Experience

July 2018-present **Assistant Professor**
Department of Biology, University of Lynchburg, Lynchburg, Virginia
Courses: BIOL 101 Biological Inquiry; BIOL 113 Evolution, Ecology & Organisms; BIOL 114 Cells: Genetics and Molecular Perspectives; BIOL 250 Bioinformatics; BIOL 323 Genetics; BIOL 399 Internship in Biology; BIOL 424 Microbiology; BIOM 238 & 428 Student Independent Research

Sept. 2016-Aug. 2018 **Visiting Assistant Professor**
Department of Biology, Randolph-Macon College, Ashland, Virginia
Courses: BIOL 121-122 Integrative Biology; BIOL 127 Cell Biology for the Citizen; BIOL 200 Genetics Lab; BIOL 311 Microbiology Lab & Lecture; BIOL 381 Special Topics - The Human Microbiome

- Responsible for multiple 20-seat sections of the introductory biology course sequence BIOL 121 (evolution, ecology) and BIOL-122 (cell biology, genetics, and development) that uses student-centered learning approaches, with special emphasis on hands-on application of scientific inquiry in the biological sciences and science writing.
- Design an accelerated four-week Cell Biology (BIOL 127) course for non-majors to cover theories of organic and cellular evolution; structure, functioning, and metabolism of cells; the molecular genetics of prokaryote and eukaryote cells; as well as the social and ethical problems resulting from current and future application of this knowledge.
- Responsible for the creation of a major eight-week inquiry-based exercise in a co-taught Genetics Lab (BIOL 200) course while teaching two 16-seat sections.
- Create a new upper-level special topics course taught in the style of a journal club that focuses on using primary scientific literature to explore the human microbiome and its role in health and development (BIOL 381).
- Direct research experiences of one-two undergraduate students per semester in my laboratory, exploring the molecular genetics and virulence of *Fusobacterium nucleatum* subsp. *animalis.* **Awarded a Randolph-Macon College Chenery Research Grant** ($9,300)

Aug. 2014 - May 2017 **Adjunct Faculty Instructor**
Department of Biology, Virginia Commonwealth University, Richmond, Virginia
Courses: BIOZ 209 Medical Microbiology Lab, BIOZ 303 Microbiology Lab & BIOL 303 Microbiology Lecture

- Prepared instructional materials and independently taught two-three microbiology laboratory/lecture course sections for biology majors (BIOL/BIOZ 303) or healthcare professionals (BIOL 209) per semester. Courses consisted of 24-30 students each, and covered the application of techniques and concepts in microbiology, with laboratory emphasis placed on techniques to isolate, culture, and identify bacteria; genetics and molecular biology of bacteria; safety and aseptic protocols; assays for antibiotic and disinfectant susceptibility.
- Supervised and instructed student Preceptors responsible for assisting with microbiology lab for BIOL 496 Biology Preceptorship
- **College of Humanities and Science Distinguished Adjunct Award – 2016 Recipient**

Jan, 2010 - Sept, 2016 **Mentor**, Jefferson and Christie Laboratories
Department of Microbiology & Immunology, VCU School of Medicine

- Designed, supervised, and provided written evaluations of undergraduate internship research experiences.

Aug, 2012 - Dec, 2012 **Teaching Assistant**
Department of Dentistry, VCU School of Dentistry
Course: MICR 513 Infection and Immunity in Dentistry
- Led a study section of 30-40 graduate dental students that focused on group discussion of lecture assignments, and then grading of those assignments and participation in the discussion.

Jan, 2009 - May 2010 **Teaching Assistant**
Department of Biochemistry, VCU School of Medicine
Course: BIOC 503 Biochemistry, Cell, and Molecular Biology
- Assisted in proctoring exams and provided study guidance for a class of 200 students.

1999-2002 **At-Risk Youth Mentor**
Department of Social Services, City of Poquoson, Virginia
- One-on-one personal mentoring of pre-teen children with the goal of early intervention through providing a positive role model, improving emotional well-being, socialization, and behavior.

Professional & Research Experience

Jan, 2014 - Sept, 2016 **Post-doctoral Fellow** Laboratories of Dr. Gregory Buck & Dr. Kimberly Jefferson
Department of Microbiology and Immunology, Virginia Commonwealth University, Richmond, Virginia
- Patient Sample-processing Team Lead, Multi-'omic Microbiome Study – Pregnancy Initiative
  - Leadership of BSL-2 laboratory responsible for time-sensitive intake and processing of high-volume obstetric/neonatal patient specimens and performing high-throughput DNA extraction, staff management and training, identifying problems and implementing resolutions, quality assurance and quality control to ensure efficiency, accuracy and safety.
- Microbiologist, Vaginal Microbiome Consortium
  - Developed, optimized SOPs and performed high-throughput PCR for total 16s rDNA 454 and MiSeq sequencing of patient samples.
- Independent Researcher
  - Investigated the role of *Fusobacterium nucleatum* subsp. *animalis* in preterm birth and the vaginal microbiome. Independently utilized molecular cloning techniques to develop a system for generating mutant strains, analysis of large data sets to identify genes of interest in pathogenesis of amniotic infection to investigate; designed experimental protocols and research goals, data analysis, written and oral report preparation/presentation and grant-writing.

Jan, 2013 - Dec, 2013 **Post-doctoral Fellow**, Laboratory of Dr. Gail Christie
Molecular Biology and Genetics, Department of Microbiology and Immunology
Virginia Commonwealth University, Richmond, Virginia
- Initiated development of an *in vitro* bacteriophage-based molecular cloning system for genetic manipulation of Staphylococci.

Mar, 2007 - Dec, 2012 **Ph.D. Student Researcher**, Laboratory of Dr. Kimberly Jefferson
Department of Microbiology and Immunology, Virginia Commonwealth University, Richmond, Virginia
- Designed and performed research into gene expression and the genetic regulation of *S. aureus* biofilms' formation and antibiotic resistance.

Manuscript Publications

Fettweis, J. M., et al. (including **Brooks, J. L.**) (2019). The vaginal microbiome and preterm birth. **Nature Medicine** 25(6):1012-1021.

Serrano, M.G. and Parikh, H. I. et al. (including **Brooks, J. L.**) (2019) Racioethnic diversity in the dynamics of the vaginal microbiome during pregnancy. **Nature Medicine** 25(6):1001-1011.

Brooks J. L. & K. K. Jefferson (2014) Phase Variation of Poly-N-Acetylglucosamine Expression in *Staphylococcus aureus*. PLoS Pathog 10(7): e1004292. doi:10.1371/journal.ppat.1004292 **(Recommended by F1000)**

Brooks, J. L. & K. K. Jefferson (2012). Chapter Two – Staphylococcal Biofilms: Quest for the Magic Bullet. In: Advances in Applied Microbiology. M. G. Geoffrey & S. Sima (eds). Academic Press, pp. 63-87.

Cerca, N. K., **Brooks, J. L.** & K. K. Jefferson, (2008). Regulation of the intercellular adhesion locus regulator (icaR) by SarA, σ^B, and IcarA in *Staphylococcus aureus.* J Bacteriol 190: 6530-6533.

Manuscripts In Preparation

Christie, G. E., **Brooks,J. L**., Parker, L. K., Gimm, J. and J. J. Gill. A novel suppression mechanism in *Staphylococcus aureus* involving recognition of an altered ribosome binding site.

Lane, K. D., **Brooks, J. L.**, Harwich, M. D., Tallent, S. M., Poliakov, A. and Christie, G. E. 80α Sri binds host DnaI to interfere with replication and moonlights as the SaPI1 anti-repressor.

Publication Reviewer

Textbook chapters and activities for *Genetics Essentials* (5th Ed.) by Benjamin Pierce, Macmillan Learning

External Presentations

Mar, 2019 Invited Guest Seminar Presentation, Roanoke College Biology Department, Roanoke, VA
"Exploring the relationship between the microbiome and preterm birth"

May, 2015 Poster Presentation, 115th General Meeting of the American Society for Microbiology New Orleans, LA.
Brooks, J. L., Sheth, N. U., Abdel Maksoud, A., Serrano, M. G., Vaginal Microbiome Consortium, Jefferson, K. K. and Buck, G. A. "Colonization of the oral cavity and vagina by the five *Fusobacterium nucleatum* subspecies, and implications for their role in preterm birth."

April, 2015 Poster Presentation, Virginia Commonwealth University Women's Health Research Day
Brooks, J. L., Sheth, N. U., Abdel Maksoud, A., Serrano, M. G., Vaginal Microbiome Consortium, Jefferson, K. K. and Buck, G. A. "Colonization of the oral cavity and vagina by the five *Fusobacterium nucleatum* subspecies, and implications for their role in preterm birth."

Oct, 2012 Oral Presentation, International Conference on Gram Positive Pathogens, Omaha, NE. **Brooks, J. L.** & K. K. Jefferson. "Staphylococcal polysaccharide production: selection against PNAG overproduction." - **Received Travel Award**

May, 2011 Poster Presentation, 111th General Meeting American Society of Microbiology, New Orleans, LA. **Brooks, J. L.** & K. K. Jefferson. "Effect of poly-N-acetylglucosamine expression on *Staphylococcus aureus* surface charge. "

Nov, 2010 Oral Presentation, American Society of Microbiology – Virginia Branch, Lynchburg College, Lynchburg, VA.
Brooks, J. L. & K. K. Jefferson. "Characterization of the effect of poly-N-acetyl- glucosamine on *Staphylococcus aureus* resistance."

Oct, 2010 Poster Presentation, Daniel T. Watts Symposium, VCU, Richmond, VA.
Brooks, J. L. & K. K. Jefferson. "Characterization of the effect of poly-N-acetyl- glucosamine (PNAG) on *Staphylococcus aureus* antibiotic resistance."

Grants Awarded

2021 – University of Lynchburg Faculty Development Grant ($1,236) - Tick Pathogen Surveillance of Central VA project

2017-2018 – Randolph-Macon College Chenery Research Grant ($9,300)

Student Research

2020-2021 Ivypel Amankwa-Asare, "Characterization of cytotoxin of *Sneathia amnii* and the identification of biomarkers for preterm birth in minority women" - Project in collaboration with Dr. Kimberly Jefferson at Virginia Commonwealth University - Westover Honors thesis project
- Awarded a Winter 2020-21 **Schewel Grant**
- **Westover Director's Award for Excellence thesis award**

2020-2021 Max Rivers, "Optimizing enzymatic production of ethene" - Project in collaboration with Dr. Samrat Thapa in the Department of Chemistry
- Awarded a Winter 2020-21 **Schewel Grant**

2020-2021 John (Nick) Foley, "Developing novel bacteriophage treatment for multidrug-resistant *Staphylococcus aureus* infections" - Project in collaboration with Dr. Kristin Lane at the National Institutes of Health NIAID Westover Honors thesis project

2020-2021 Shannon Greene "Investigating alternative promoter initiation inducing host cell lysis in Staphylococcus aureus bacteriophages" - Project in collaboration with Dr. Kristin Lane at the National Institutes of Health NIAID - Thesis awarded High Honors in Biomedical Sciences

2019-2021 Ellen Druebbisch, "Beginning to characterize the role of *Veillonella atypic*a in the human microbiome and its role present in health." - Westover Honors thesis project & Highest Honors in Biomedical Science
- Awarded a Fall 2019 **Schewel Grant**
- Poster presentation at 2019-20 Student Scholar Showcase

Fall 2019 Janaya Mott, "Constructing plasmids for inducible expression and purification of colorful recombinant chromoproteins in *Escherichia coli".*
- Poster presentation at **Virginia chapter of American Society for Microbiology 2019 annual meeting**
- Poster presentation at 2019-20 Student Scholar Showcase

Fall 2019 Max Rivers, "Developing a method for forward genetic screening of pigment biosynthesis and regulation in present *Serratia marcescens* for use in the undergraduate teaching laboratory."
- Poster presentation at **Virginia chapter of American Society for Microbiology 2019 annual meeting**

Spring 2020 Gracie Talbert, "Fungal filtration of College Lake Gram-negative and fecal bacteria."
- Oral presentation at 2019-20 Student Scholar Showcase

Service Activities

- Virginia Medical Reserve Corps volunteer - currently assisting with health screening at the VA Department of Health and COVID-19 vaccination points of dispensing (2020-present)
- Scholarship application reviewer for National Center for Women in Technology Award for Aspirations in Computing (2020-present)
- Judge for Virginia State Science and Engineering Fair (2020-present)
- Jude for Central Virginia Science and Engineering Fair (2021)
- Jude for Regeneron International Science and Engineering Fair (2021)
- Judge for Virginia branch of American Society for Microbiology conferences (2019-present)
- Member of institutional committees - IACUC (2019-present), IRB (2020-present)
- Women's basketball team faculty mentor (2019-present)
- Pre-health club faculty advisor (2019-present)
- Scholarship interviewer for institutional scholarships (2018-present)

Media Attention

2021 - Student research mention (Ellen Druebbisch) <link>
2021 - Student research mention (Nick Foley) <link>