

# Alexandra L. Bryson, Ph.D., D(ABMM)

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Assistant Professor of Pathology  
Associate Director of Clinical Microbiology  
Department of Pathology  
Virginia Commonwealth University Health System  
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## Board Certifications

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2018 – Present    American Board of Medical Microbiology

## Education

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- 2016 – 2018    **Mayo Clinic**, Rochester, Minnesota Clinical Microbiology  
CPEP Fellowship, American Board of Medical Microbiology  
Certified
- 2011 – 2016    **University of Pennsylvania**, Philadelphia, Pennsylvania  
Ph.D. in Microbiology, Virology, and Parasitology Howard  
Hughes Medicine into Graduate School Scholar
- 2010            **Oxford University**, St. Hugh's College, Oxford, United  
Kingdom, Competitive Study Abroad Research Fellowship
- 2006 – 2010    **Texas A&M University**, College Station, Texas, Bachelor of  
Science in Genetics and Biochemistry, Honors: *Cum laude*

## Awards

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- 2019      **Infectious Disease Teacher of the Year:** Chosen by VCU Infectious Disease Fellows, Virginia Commonwealth University Health System
- 2013      **National Science Foundation Graduate Research Fellowship Honorable Mention**
- 2013      **New England Journal of Medicine Infectious Diseases Editors' Choice: Top Stories of 2013** for "Rapid evolution of the human gut virome"
- 2009      **Texas A&M Committee of the Year:** Campus Outreach Program
- 2008      **All-around Leadership Award:** Presented by Texas A&M University to an individual that demonstrates leadership in all aspects of their life

## Teaching Experience

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- 2018 – Present      **Diagnostic Clinical Microbiology Lectures,** Virginia Commonwealth University Health System, Richmond, VA
- Interactive lectures for medical students, pathology residents, and infectious disease fellows
  - 104 hours of teaching per year
- 2018      **Teaching Assistant for the inaugural Microbiology Medical School Course at Mayo Clinic Arizona,** Phoenix, AZ
- Four weeks hosting discussion sections three times a week and four 1hour labs
- 2016 – 2018      **Educational Microbiology Diagnostic Presentations at Mayo Clinic, Over 20 Hours**
- Infectious disease rounds, in-lab presentations, journal clubs, and global health
  - Audience includes: clinical microbiology fellows, laboratory/medical directors, infectious disease fellows and attendings, pathology residents, medical students, and laboratory staff
- 2016      **Assistant for Parasitology Microscopy Training in the Global Health Course,** University of Minnesota, Minneapolis, MN

- One full day of hands-on laboratory training in identifying blood and stool pathogens
- 2016      **Assistant for Mayo Clinic Medical School Microbiology Didactic Laboratory Course**, Rochester, MN
- Three 1hour hands-on labs
- 2008      **Texas A&M University, Biology Supplemental Instructor**, College Station, TX
- Four months: lead 1hour review sessions and though study skills three times a week

## Global Health Service

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- 2017 – 2018      **Capacity Building for Vector Borne Disease Diagnostics in Belize**
- Assisted in the development of public health awareness resources and diagnostic training
  - Traveled to Belize in April 2018 to give a presentation on diagnostics and help run a RT-PCR diagnostic workshop
- 2014 – 2017      **Founded the Botswana Research Experience for Ph.D. students**
- Founded and secured funding for an annual research opportunity allowing Ph.D. students interested in global health research to spend a summer working in a Botswana lab and shadowing physicians in the local hospitals
- 2012      **Botswana/UPenn Partnership Research Fellowship, Gaborone, Botswana**
- Spent six weeks in Botswana helping to teach/establish laboratory techniques in a local lab and shadowed physicians across the country to understand the research challenges and needs in diverse global settings

## Professional Organizations

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- 2020 – Present **Virginia COVID-19 Testing Capacity and Technology Committee**, which is a statewide committee designed to evaluate the quality of COVID-19 diagnostic assays and establish testing recommendations and guidance for the state of Virginia.
- 2020 – Present **Health Workplace/return to Campus Committee**, which provides advice and guidance on COVID-19 testing strategies for students and athletes at VCU, William and Mary, and other Virginia Universities.
- 2019 – Present **Clinical and Laboratory Standards Institute (CLSI international organization), Quality Control Working Group**, Committee member
- 2019 – 2021 **American Board of Medical Microbiology Board Exam Committee (national organization)**, Question reviewer
- 2019 – 2022 **Virginia Commonwealth University Health System Executive Faculty Committee**, Secretary
- 2018 – Present **Virginia Commonwealth University Health System Antimicrobial Stewardship Program**, Committee member
- 2018 – Present **Virginia Commonwealth University Health System Infection Prevention and Control**, Committee member
- 2018 – Present **Virginia Commonwealth University Health System Lab Test Utilization Committee**, Committee member

## Leadership and Community Service

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- 2016 – 2017      **Mayo Clinic Laboratory Medicine Leadership and Finance:**  
1 year course
- 2013 – 2015      **Vice Chair of the Biomedical Graduate Student Association**
- Elected position: responsible for a \$35,000 budget to plan academic and social events planned by grad students
- 2012 – 2013      **Officer (Treasurer) for the American Society for Microbiology-Eastern PA Student Chapter**
- 2012 – 2015      **Science Education Academy, Inc. Mentor**
- Review math skills and teach science experiments to second and fifth grade students from disadvantaged backgrounds on Saturdays
  - Set-up one day science fair activities during the summer
- 2011 – 2013      **Biomedical Graduate Student Association Student Representative**
- Elected representative in the graduate student government
  - Responsible for a \$3,000 budget available to graduate students to plan academic and social events
- 2007 – 2009      **Memorial Student Center (MSC) LEAD:** Member and Director of a Sophomore Community Service and Leadership Organization
- Designed two leadership conferences that brought over 160 high school juniors and seniors to Texas A&M for two days to promote higher education and leadership development
- 2008 – 2010      **Planning Board Member and Editor for Explorations:**  
Texas A&M undergraduate cross-disciplinary research journal

## Funding

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2020	<b>NSF Grant:</b> RAPID: Modeling host-microbiome-virome interactions and their impact on COVID-19 severity
2020	<b>Accelerate Pheno rapid susceptibility testing</b> directly from blood cultures (Industry funded study)
2018	<b>Mayo Clinic, Department of Laboratory Medicine and Pathology Research Grant Recipient for "Central Nervous System Infection Diagnostic Assay Using Metagenomic Sequencing"</b>
2014 – 2016	<b>NIH Bacterial Pathogenesis T32 Training Grant Recipient</b>
2011 – 2016	<b>Howard Hughes Medical Institute Med-into-Grad Scholar</b>
2007 – 2010	<b>Texas A&amp;M College of Agriculture and Life Sciences Scholarship</b>
2009 – 2010	<b>Academic Excellence Award:</b> Patricia A. Ward College of Medicine Scholarship

## Invited Oral Presentations

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2021	<b>Infectious Diseases Grand Rounds</b> , VCU, Richmond VA <ul style="list-style-type: none"><li>• Microbiology State of the Union 1hr.</li></ul>
2021	<b>American Society of Microbiology International Virtual Journal Club.</b> Organizer and Moderator for The Latest Fun in Fungal Diagnostics 1hr.
2020	<b>American Society of Microbiology International Virtual Journal Club.</b> Organizer and Moderator for Lyme Diagnostics 1hr.

- 2020            **Infectious Diseases Grand Rounds**, VCU, Richmond VA
- Microbiology State of the Union 1hr.
- 2020            **American Society of Microbiology International Virtual Journal Club**. Organizer and Moderator for Blood Cultures 1hr.
- 2020            **COVID Bolus podcast: Recent Developments in Testing**. I was interviewed on the status of COVID-19 testing.
- 2020            **COVID Bolus podcast: Testing Update**. I was interviewed on the status of COVID-19 testing.
- 2019            **American Society of Microbiology Microbe**, San Francisco, CA
- Clinical Microbiology Quiz Busters Team Captain for the Mayo Clinic Team
- 2018            **American Society of Microbiology Microbe**, Atlanta, GA
- Colistin Susceptibility Testing for *Enterobacteriaceae* by Agar Dilution, Broth Microdilution, and Polymyxin NP
- 2016            **Albert Einstein College of Medicine**, Bronx, NY
- Invited by William Jacobs, Ph.D., HHMI investigator
  - 1 hour talk: Understanding Bacterial and Phage Dynamics in the Human Microbiome though CRISPR and Metagenomics
- 2014            **Molecular Genetics of Bacteria and Phage Meeting**, Madison, WI
- The Human Gut Virome: Metagenomic Analysis and Covalent DNA Modifications
- 2014            **Howard Hughes Medical Institute Med into Grad Symposium**, Philadelphia, PA
- Longitudinal Changes in the Human Gut Virome

## Poster Presentations and Leadership in Conference Planning

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1. **A. L. Bryson**, J. Pechacek, N. Taylor, A. Rauschenbach, C. Doern. 2021. Prospective Comparison of Three H. pylori Stool Antigen Diagnostic Assays. World Microbe Forum. Virtual. 2021
2. **A. L. Bryson**, J. Kushinka, M. Godwin, N. Patel, A. Moss, J. Tweedy, C. Palmer, C. Duke, S. Turner, A. Ferreira-Gonzalez, C. Doern. Prospective, Performance Comparison of a COVID-19 Rapid Antigen Assay to PCR. World Microbe Forum. Virtual. 2021
3. Taylor N, Welderegay G, Hill E, Bender C, Doern CD, **Bryson AL**. 2019. Differentiating non-lactose fermenting Escherichia coli and *Shigella* spp. by XLD agar, motility and lysine decarboxylase broth.
4. Ribbon M, Randolph J, Hedrick S, Matthews L, Taylor N, **Bryson AL**, Doern CD. 2019. Direct-from-urine Antimicrobial Susceptibility Testing: A comparison of Mueller-Hinton and MacConkey Agars for Cefazolin, Nitrofurantoin, Trimethoprim-Sulfamethoxazole, and Ciprofloxacin. American Society for Microbiology Microbe, San Francisco, California.
5. **Bryson AL**, Elkan E, Hodinka RL, Cárdenas AM. 2015. Pediatric Human Coronavirus Prevalence in Philadelphia. The Clinical Virology Symposium. American Society for Microbiology. Daytona Beach, Florida.
6. **Bryson AL**, Cheoud C, Dryga A, Lauder A, Young J, Zost S, Loy E, Chen E, Hongzhe Li, Minot S, Clark T, Korlach J, Sherrill-Mix S, Bushman FD. 2016. The Clinical Virology Symposium. American Society for Microbiology.
7. **Bryson AL**, Hwang Y, Sherrill-Mix S, Clark T, Black L, Bushman FD. 2015. Covalent modification of bacteriophage T4 DNA inhibits CRISPR/Cas9. The International Human Microbiome Conference. Luxembourg, Luxembourg.



8. **Bryson AL**, Hwang Y, Minot S, Clark T, Black L, Bushman FD. 2014. The Human Gut Virome: DNA Sequence and Covalent Modifications. *Advances in Genome Biology and Technology*: Marco Island, Florida.

2014

**HHMI Med-into-Grad Symposium, University of Pennsylvania**

- Helping plan and run a translational research symposium for students in the HHMI Med-into-Grad program from Harvard, Yale, MIT, and UPenn

2014

**Biomedical, Health, & Natural Science Research Symposium, University of Pennsylvania**

- Helped plan and run a one day symposium attended by over 200 Ph.D. students

## Recent Publications

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1. T Pierce J, Dalton J, Stevens MP, Godwin M, Hill A, Doern CD, **Bryson AL**. 28-Year-Old Man With an Organism Extracted From the Eyelid. *Clin Infect Dis*. 2021 Jun 1;72(11):2049-2051. doi: 10.1093/cid/ciaa1841. PMID: 34059887.
2. Khine Z, Sann, Nicole C, Vissichelli, **Alexandra L. Bryson**, Christopher Doern, Mark C. Mochel, Gonzalo Bearman, Sangeeta Sastry. Diffuse Skin Nodules in an Oyster Farmer: Disseminated Mycobacterium marinum. *The American Journal of Medicine*, Volume 134, Issue 1, 2021, Pages e57-e59, ISSN 0002-9343, <https://doi.org/10.1016/j.amjmed.2020.06.024>. (<http://www.sciencedirect.com/science/article/pii/S0002934320306070>)
3. Doll ME, Pryor R, Mackey D, Doern CD, **Bryson A**, Bailey P, Cooper K, Godbout E, Stevens MP, Bearman G. Utility of retesting for diagnosis of SARS-CoV-2/COVID-19 in hospitalized patients: Impact of the interval between tests. *Infect Control Hosp Epidemiol*. 2020 Jul;41(7):859-861. doi: 10.1017/ice.2020.224. Epub 2020 May 11. PMID: 32389155; PMCID: PMC7239773.
4. Christensen J, Kumar D, Moinuddin I, **Bryson A**, Kashi Z, Kimball P, Levy M, Kamal L, King A, Gupta G. Coronavirus Disease 2019 Viremia, Serologies, and Clinical Course in a Case Series of Transplant Recipients. *Transplant Proc*. 2020 Nov;52(9):2637-2641. doi: 10.1016/j.transproceed.2020.08.042. Epub 2020 Sep 3. PMID: 33012543; PMCID: PMC7470894.

5. Filkins LM, **Bryson AL**, Miller SA, Mitchell SL. Navigating Clinical Utilization of Direct-from-Specimen Metagenomic Pathogen Detection: Clinical Applications, Limitations, and Testing Recommendations. *Clin Chem*. 2020 Nov 1;66(11):1381-1395. doi: 10.1093/clinchem/hvaa183. PMID: 33141913.
6. Lau AF, Walchak RC, Miller HB, Slechta ES, Kamboj K, Riebe K, Robertson AE, Gilbreath JJ, Mitchell KF, Wallace MA, **Bryson AL**, Balada-Llasat JM, Bulman A, Buchan BW, Burnham CD, Butler-Wu S, Desai U, Doern CD, Hanson KE, Henderson CM, Kostrzewa M, Ledebor NA, Maier T, Pancholi P, Schuetz AN, Shi G, Wengenack NL, Zhang SX, Zelazny AM, Frank KM. Multicenter Study Demonstrates Standardization Requirements for Mold Identification by MALDI-TOF MS. *Front Microbiol*. 2019 Sep 20;10:2098. doi: 10.3389/fmicb.2019.02098. eCollection 2019.
7. Shah AS, O'Horo JC, Tang S, **Bryson AL**, Wengenack NL, Sampathkumar P. Fungal Diagnostic Stewardship in Bronchoscopy Specimens for Immunocompetent Patients in the Intensive Care Unit. *Mayo Clin Proc*. 2019 Aug 7. pii: S0025-6196(19)30268-X. doi: 10.1016/j.mayocp.2019.02.020.
8. **Bryson AL**, Hill EM, Doern CD. Matrix-Assisted Laser Desorption/Ionization Time-of-Flight: The Revolution in Progress. *Clin Lab Med*. 2019 Sep;39(3):391-404. doi: 10.1016/j.cll.2019.05.010. Epub 2019 Jul 2. Review.
9. Fida M, Hamdi AM, **Bryson A**, Razonable RR, Abu Saleh O. 2019. Long-term Outcomes of Patients with Human Herpesvirus 6 Encephalitis. *Open Forum Infect Dis*, Jun 5;6(7):ofz269. doi: 10.1093/ofid/ofz269. eCollection 2019 Jul.
10. Ramanan P\*, **Bryson AL\***, Binnicker MJ, Pritt BS, and Patel R. 2018. Syndromic Panel-Based Testing in Clinical Microbiology. *Clin Microbiol Rev* 31. (\* Co-first authors)
11. Mahmood M, Ajmal S, Abu Saleh OM, **Bryson AL**, Marcelin JR, Wilson JW. 2017. *Mycobacterium genavense* infections in non-HIV immunocompromised hosts: a systematic review. *Infect Dis (Lond)* doi:10.1080/23744235.2017.1404630:1-11.
12. **Bryson AL**, Hwang Y, Sherrill-Mix S, Wu GD, Lewis JD, Black L, Clark TA, Bushman FD. 2015. Covalent Modification of Bacteriophage T4 DNA Inhibits CRISPR-Cas9. *MBio* 6:e00648.

13. Minot S, **Bryson A**, Chehoud C, Wu GD, Lewis JD, Bushman FD. 2013. Rapid evolution of the human gut virome. Proc Natl Acad Sci U S A 110:12450-5.
14. Kathirithamby J, Lechner GK, McMahon DP, **Bryson AL**, Johnston JS. 2012. A Free Ride and Lunch: Stylopization in the Solitary Hunting Wasp, *Ammophila Fernaldi* Murray and *A. Pictipennis* (Walsh) (Hymenoptera: Sphecidae) By *Paraxenos Lugubris* Pierce (Strepsiptera). Proceedings of the Entomological Society of Washington 114:464-475.
15. Scarisbrick IA, Epstein B, Cloud BA, Yoon H, Wu J, Renner DN, Blaber SI, Blaber M, Vandell AG, **Bryson AL**. 2011. Functional role of kallikrein 6 in regulating immune cell survival. PLoS One 6:e18376.

### **Other Publications**

16. **Bryson A**, Theel ES. Case of the Month: Powassan. November 2017. Pan American Society for Clinical Virology.

## Ad Hoc Reviewer for:

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Journal of Clinical Microbiology

Clinical Biochemistry

American Society for Clinical Pathology

Archives of Pathology & Laboratory Medicine

Frontiers Cellular and Infection Microbiology