



AMY MATHERS

CANDIDATE STATEMENT

With an enduring passion for microbiology, as a physician-researcher, I would like to apply my training and skills to a key field which is going to be critically important to some of the bigger challenges facing the planet in the coming years. With a longstanding commitment to combating antimicrobial resistance I believe that microbiology should be central to driving the science to address the antimicrobial resistance crisis. By listening to the membership, I will use my knowledge and training across several related fields to raise awareness and push for policies, programs and education to support microbial sciences. I am seeking solutions to improve the microbial workforce as well as address gaps in diversity and equity in microbiology training and access. I am committed to ensuring that the direction of scientific advancement are led and informed by experts and that voices of microbial science are heard.

ASM-RELATED ACTIVITIES

- Council on Microbial Sciences (COMS), At-large Member, 2020-2023
- Antimicrobials and Antimicrobial Resistance (AAR) Committee, Member, 2019

CURRICULUM VITAE

NAME: Amy Jean Mathers

I. PERSONAL DATA

ADDRESS: 2020 North Pantops Drive
Charlottesville, Virginia 22911

EMAIL: ajm5b@virginia.edu

PERSONAL: Born: March 19th 1974, Omaha, Nebraska
Raised: 1979-1992, Butte, Montana

II. EDUCATION

1998-2002 Loyola Stritch School of Medicine, Maywood, Illinois
Degree: Doctor of Medicine

1992-1997 Humboldt State University, Arcata, California
Degree: Bachelor of Science in Cellular/Molecular Biology

III. POST-GRADUATE EDUCATION AND TRAINING:

2012-2017 Supervised On the Job Training for American Board of Medical
Microbiology Diplomat Program (Melinda Poulter, PhD)

2006 -2009 Fellow in Infectious Diseases, University of Virginia, Charlottesville,
Virginia (Michael Rein, MD and Brian Wispelwey, MD)

2005 - 2006 Chief Medical Resident, Maine Medical Center, Portland, Maine
(David Gannon, MD)

2003 - 2005 Resident in Medicine, Maine Medical Center, Portland, Maine
(David Gannon, MD)

2002 - 2003 Intern in Medicine, Maine Medical Center, Portland, Maine
(David Gannon, MD)

IV. ACADEMIC APPOINTMENTS

07/16- Associate Professor of Medicine (Infectious Diseases)
Tenured (2020) Clinical Educator
University of Virginia, Charlottesville, Virginia

07/16- Associate Professor of Pathology
Tenured (2020) Clinical Educator
University of Virginia, Charlottesville, Virginia

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- 09/15-08/17 Intergovernmental Sponsored Research Coordinator Scientist
Centers for Diseases Control and Prevention
- 05/15-06/16 Assistant Professor of Medicine (Infectious Diseases)
Tenure Eligible Clinical Educator
University of Virginia, Charlottesville, Virginia
- 05/15- 06/16 Assistant Professor of Pathology
Tenure Eligible Clinical Educator
University of Virginia, Charlottesville, Virginia
- 07/13-09/13 Sabbatical as Visiting Professor, Modernizing Medical Microbiology
Consortium, Nuffield Department of Clinical Medicine, Oxford
University, Oxford England
- 07/12-05/15 Assistant Professor of Pathology
Non-tenure eligible Clinical Faculty
University of Virginia, Charlottesville, Virginia
- 09/09-05/15 Assistant Professor of Internal Medicine (Infectious Diseases)
Non-tenure eligible Clinical Faculty
University of Virginia, Charlottesville, Virginia

V. OTHER EMPLOYMENT PERTAINING TO CURRENT PROFESSIONAL APPOINTMENTS

PRESENT POSITION:

- 07/12- Associate Director of Clinical Microbiology, University of
Virginia Health System, Charlottesville, Virginia
- 09/09- Medical Director Antimicrobial Stewardship, University of
Virginia Health System, Charlottesville, Virginia

OTHER ACADEMIC, CLINICAL and CONSULTATIVE APPOINTMENTS:

- 9/13/21-9/15/21 International Committee of Infection Prevention and Control Think
Tank Member for how to apply whole genome sequencing
applications to prevent disease transmission. World Health
Organization and US Centers for Disease Control Joint Meeting.
Geneva, Switzerland.
- 02/21- Member of Virginia State Wastewater Community of Practice

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- 01/21- Co-chair of the Breakpoint Working Group, Clinical and Laboratory Standards Institute (CLSI), Antimicrobial Susceptibility Testing (AST) Subcommittee
- 05/20- Infectious Diseases Society of America Antimicrobial Resistance Treatment Guidance Panel
- 04/20-7/22 Virginia State COVID-19 Governors Testing Advisory Council
- 04/20- University of Virginia COVID-19 Epidemiology Advisory Committee
- 12/19- Antimicrobials and Antimicrobial Resistance (AAR) Committee of American Society of Microbiology
- 12/19- Nationally Elected Member on Council on Microbial Sciences, American Society of Microbiology
- 06/19- VentanoRx Scientific Advisory Board. Clinical Advisor.
- 01/19-06/20 Antimicrobials Resistance (AMR) Services. Consultant. Supervising next generation sequencing for outbreak detection and product testing for interventions to prevent the transmission of antimicrobial resistant pathogens in hospitals. University of Virginia Licensing and Venture Group.
- 05/18- National Institutes of Health Antibacterial Resistance Leadership Group (ARLG) Diagnostics and Devices Committee Member
- 01/18- Co-Chair of the Fosfomycin Ad Hoc Working Group, Clinical and Laboratory Standards Institute (CLSI), Antimicrobial Susceptibility Testing (AST) Subcommittee
- 05/17-07/18 Chair of the *Shigella sp*/Fluoroquinolone Breakpoint Ad Hoc Working Group Clinical and Laboratory Standards Institute (CLSI), Antimicrobial Susceptibility Testing (AST) Subcommittee
- 12/16-08/18 Member of Daptomycin and Enterococcus Breakpoint Working Group, Clinical and Laboratory Standards Institute (CLSI), Antimicrobial Susceptibility Testing (AST) Subcommittee
- 06/16- Clinical Laboratory and Standards Institute Liaison to the Infectious Diseases Society of America
- 01/16- Voting Member, for Clinical and Laboratory Standards Institute (CLSI), Antimicrobial Susceptibility Testing (AST) Subcommittee

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09/15-5/18 Co-Chair of the *Salmonella*/Fluoroquinolone Breakpoint Ad Hoc Working Group Clinical and Laboratory Standards Institute (CLSI), Antimicrobial Susceptibility Testing (AST) Subcommittee

10/15- Consultant Accelerate Diagnostics Clinical Advisor

01/15- 1/16 Advisor on Breakpoint Workgroup for Clinical and Laboratory Standards Institute (CLSI), Antimicrobial Susceptibility Testing (AST) Subcommittee

10/13-10/14 Consultant. Rempex Pharmaceutical Advisory Committee

10/13-12/14 Reviewer for Clinical and Laboratory Standards Institute (CLSI), Antimicrobial Susceptibility Testing (AST) Subcommittee

02/10-07/13 Attending Physician, University of Virginia Specialty Care Clinic, Culpeper, Virginia

02/10-07/13 Medical Director Antimicrobial Stewardship, Culpeper Regional Hospital, Culpeper, Virginia

02/10-07/13 Hospital Epidemiologist, Culpeper Regional Hospital, Culpeper, Virginia

07/05-06/06 Clinical Instructor in Medicine
University of Vermont at Maine Medical Center

02-08/06 Attending Physician, Togus Hospital of Veterans Affairs, Augusta, Maine

11/04 Visiting Instructor in Medicine,
Kabul Medical University, Kabul, Afghanistan

VI. CERTIFICATION AND LICENSURE

A. CERTIFICATION

06/2017, 1/2022 American Board of Medical Microbiology
10/2009, 11/2019 American Board of Internal Medicine- Infectious Diseases
08/2005, 10/2015 American Board of Internal Medicine-Internal Medicine

B. LICENSURE

July 2009- Virginia Medical License Registration
July 2009- DEA license
August 2005-07 Maine Medical License Registration

VII. HONORS AND AWARDS

- 2021 Innovator of the Year, University of Virginia Licensing and Venture Group
- 2020 Research Award, University of Virginia Recognition of Campus wide Contributions
- 2020 Dean's Award for Clinical Excellence, School of Medicine, University of Virginia
- 2020 Diane Snustad Women in Medicine Excellence Award, Department of Medicine, University of Virginia
- 2019 First author of a top 10% of most read articles of 2018 Clinical Infectious Diseases Journal Impact Factor-9.2
- 2019 First author of the fifth most cited articles for 2018. Clinical Microbiology Reviews. Journal Impact Factor-20.6
- 2017 "Department Award for Outstanding Research" Department of Internal Medicine, University of Virginia
- 2015 Manuscript Selected for Top 10 Manuscripts of the Year in Infection Control and Clinical Microbiology, American Society for Microbiology
- 2014 Induction into the Academy of Distinguished Educators
- 2014 Cavalier Award for Innovation in Research, University of Virginia
- 2014 Deans Excellence in Teaching Award, School of Medicine, University of Virginia
- 2013 "Department Award for Outstanding Clinical Care", Department of Internal Medicine, University of Virginia
- 2013 Leap Frog Rating "A" Culpeper Regional Hospital. Rating based heavily on Infection Control Program
- 2012 Leap Frog Rating "A" Culpeper Regional Hospital. Rating based heavily on Infection Control Program
- 2009 "Outstanding Clinical Fellow Award", Department of Internal Medicine, University of Virginia
- 2009 Best Poster for Infectious Diseases Research Day at University of Virginia
- 1995-1997 National Institute of Health Fellowship Grant and Howard Hughes Medical Institute Grant, Humboldt State University
- 2007 Special Citation for High Caliber Abstracts by Fellow-in-Training at Infectious Diseases Society of America 45th Annual Meeting. Both first author oral and poster presentations recognized.
- 2006 NIH Extramural Loan Repayment Award-Renewed
- 2005 "Above and Beyond" Resident Award, Maine Medical Center
- 2005 NIH Extramural Loan Repayment Award
- 2003 Maine Medical Center Mentored Research Grant Award

VIII. PROFESSIONAL AFFILIATIONS MEMBERSHIPS:

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- 2016- Voting Member, Clinical and Laboratory Standards Institute (CLSI),
Antimicrobial Susceptibility Testing (AST) Subcommittee
- 2015-16 Advisor, Clinical and Laboratory Standards Institute (CLSI),
Antimicrobial Susceptibility Testing (AST) Subcommittee
- 2014- Member, Academy of Distinguished Educators
- 2010- Member of American Society for Microbiology
- 2010-11 Member, Society of Healthcare Epidemiology of America
- 2006- Member, Infectious Diseases Society of America

IX. RESEARCH ACTIVITIES

A. AREAS OF RESEARCH INTEREST

Focusing on the urgent clinical problem of increasing antimicrobial resistance in bacteria, I have devoted my research efforts to understanding evolution and detection of antimicrobial resistance. Through this effort I have focused on the mechanisms by which to slow the development of multidrug resistant bacteria in a hospital setting. I have been approaching antimicrobial resistance research from several research aspects:

- +Clinical Microbiology optimization for detection and reporting of bacterial resistance
- +Molecular epidemiology and evolution of drug resistance with a focus on horizontal gene transfer between bacteria
- +Applications of transmission modeling paired with next generation sequencing
- +In hospital transmission and environmental reservoirs of drug resistant pathogens <http://uvasinklab.org/>
- +Microbial transmission of waste water organisms to patient environment
- +Clinical outcomes and clinical trials in patients affected by drug resistant pathogens
- +Rapid diagnostics to minimize unnecessary antimicrobial exposure in hospitalized patients
- +Antimicrobial stewardship as a means of decreasing drug resistant pathogens

During the COVID-19 pandemic my lab has been applying some of the wastewater surveillance and sequencing to SARS CoV-2 monitoring and transmission.

- +Wastewater monitoring for antimicrobial resistance and SARS CoV-2 RNA for congregate settings.
- +SARS CoV-2 whole genome sequencing for Virginia State Public Health response

X. TEACHING ACTIVITIES

A. Clinical Teaching (in ward, clinic, OR)

- 2016- Associate Professor, Department of Pathology, Supervising and teaching students and post-graduate trainees in the Clinical Microbiology Laboratory on methods and interpretation of clinical results, University of Virginia

- 2016- Associate Professor, Department of Medicine, Supervising and teaching students and residents on the clinical wards on both the general medicine and the Infectious Diseases Consult Services and in Infectious Diseases Clinic, University of Virginia.
- 2012-16 Assistant Professor, Department of Pathology, Supervising and teaching students and trainees in the Clinical Microbiology Laboratory on methods and interpretation of clinical results, University of Virginia
- 2009-16 Assistant Professor, Department of Medicine, Supervising and teaching students and residents on the clinical wards on both the general medicine and the Infectious Diseases Consult Services and in Infectious Diseases Clinic, University of Virginia.
- 2005-06 Clinical Instructor, Created and gave lectures on basic clinical topics in Internal Medicine to Fourth Year Students for University of Vermont, Maine Medical Center, Portland, Maine

XI. TEACHING ACTIVITIES OTHER THAN CLASSROOM OR CLINICAL, INCLUDING TEACHING OF UNDERGRADUATE (PRE-BACCALAUREATE), GRADUATE, POSTDOCTORAL STUDENTS AND CONTINUING EDUCATION MEDICAL STUDENTS.

A. Invited Mentorship Activities

- 9/21 IDweek Mentorship Program. Meeting and talking with trainees over Zoom about various aspects of Infectious Diseases. Infectious Diseases Society of America, Virtual Meeting
- 10/19 IDweek Mentorship Program. Meeting and talking with trainees about various aspects of Infectious Diseases. Infectious Diseases Society of America, Washington DC
- 10/18 IDweek Mentorship Program. Meeting and talking with trainees interested in various aspects of Infectious Diseases. Infectious Diseases Society of America, San Fransisco, CA
- 10/5-8/17 IDweek Mentorship Program. Meeting and talking with trainees interested in various aspects of Infectious Diseases. Infectious Diseases Society of America, San Diego, CA

B. Conferences, Grand Rounds and Lectures

- 10/22 What the Clinical Lab is Telling You About Infections. First year Medical School Lecture. University of Virginia School of Medicine

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- 4/21- B2B Antibiotic Stewardship and Pharmacology. Quarterly lecture given to fourth year medical students jointly taught with Heather Cox, PharmD. University of Virginia School of Medicine
- 9/21- Medical School lecture series quarterly. Understanding the pandemic: Testing, epidemiology and treatment
- 7/29/21 Problem Solving in a Pandemic. Hoos Hacks for Humanity. University of Virginia Summer Session
- 4/13/21 Whole genome sequencing microbiology applications. University of Virginia Student Health Educational Series.
- 9/6/20 Pathology Grand Rounds. COVID-19 Testing considerations.
- 6/29/20 Medical Grand Rounds. When failure is not an option: Development and deployment of accurate testing for a novel virus during a pandemic
- 5/20- Department of Medicine Town Hall COVID-19 Updates (given roughly quarterly throughout the pandemic)
- 3/1/19 Medical Grand Rounds. Confronting antimicrobial resistance in the present to preserve the past and protect the future. Department of Medicine. University of Virginia
- 5/1/18 Infectious Diseases Fellowship Lecture Series. Drug Resistance Cases: Beta-lactamases, carbapenemases and other tough issues. University of Virginia
- 12/20/17 Critical Care Grand Rounds. Diagnosis and Management of Ventilator Associated Pneumonia in Adults. University of Virginia
- 3/8/17 Medical Grand Rounds. Evolution, transmission, and treatment of antibiotic resistant bacteria; What a decade of tracking a carbapenemase gene has taught us. Department of Medicine. University of Virginia
- 1/3/17 Infectious Diseases Fellowship Lecture Series. Mechanisms of Antimicrobial Resistance, University of Virginia
- 1/5/16 Infectious Diseases Fellowship Lecture Series. Mechanisms of Antimicrobial Resistance, University of Virginia
- 8/11/15 Infectious Diseases Fellowship Lecture Series, *Pseudomonas aeruginosa*: The King of Bacteria and Resistance, University of Virginia
- 4/24/15 Tracking a selfish carbapenemase gene through a multi-species outbreak, Department of Pathology Research Day, University of Virginia

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- 2/15- Medicine House Staff Hook Firm Lecture Series, Antibiotic discussion for general medicine foundational learning, occurs every 2-3 months, Department of Medicine, University of Virginia
- 2/11/15 Medical Grand Rounds Best Practice Series, Can we talk about antibiotics and resistance? University of Virginia
- 8/12/14 Infectious Diseases Didactic Lecture Series, Cases in Drug Resistance, University of Virginia
- 8/14- Pathology Resident Core Lecture Series, Basic Bugs and Drugs, University of Virginia-Annual lecture
- 7/09- General Medicine Core Topics Workshop -So you have a positive Culture. Basic education and updates given to medicine house staff about clinical microbiology, Department of Medicine, University of Virginia Annual lecture
- 6/2/14 Pulmonary/Critical Care Fellow Core Curriculum Didactic Series, Update on Epidemiology, Detection and Treatment of Carbapenem Resistant Enterobacteriaceae, University of Virginia
- 1/14- Infectious Diseases Fellowship Lecture Series, Antimicrobial Stewardship Fellows Workshop, University of Virginia, Annual lecture
- 1/14- Pathology Resident Core Lecture Series. Infections of the Genitourinary Tract, University of Virginia. Annual lecture
- 12/5/13 Infectious Diseases Fellowship Lecture Series, Update on Epidemiology and understanding of KPC Dissemination, University of Virginia
- 4/3/13 Medical Grand Rounds Best Practice Series, Handling Increasing Bacterial Drug Resistance through Best Practice, University of Virginia
- 2/19/13 Anesthesia Critical Care lecture Series, Management of Multi-drug resistant Infections, University of Virginia
- 1/7/13 Pulmonary/Critical Care Fellow Core Curriculum Didactic Series, Empiric Antibiotics in the Intensive Care Unit, University of Virginia
- 11/6/12 Culpeper Regional Hospital Grand Rounds, Bacterial Drug Resistance in the Community, Culpeper Regional Hospital, Culpeper, Virginia
- 10/23/12 Infectious Diseases Didactic Lecture Series: Mechanisms of Drug Resistance in the Community, University of Virginia

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- 5/15/12 Infectious Diseases Didactic Lecture Series: Carbapenemases at University of Virginia and abroad, University of Virginia
- 2/8/12 University of Virginia Medical Grand Rounds Best Practice Series Antibiotic Stewardship: Why do we call you?
- 12/5/11 Invited Discussant for Internal Medicine Clinical Pathology Conference
- 6/22/2011 Culpeper Regional Hospital Grand Rounds, Antimicrobial Stewardship at Culpeper Regional Hospital, Culpeper Regional Hospital, Culpeper, Virginia
- 3/25/11 Housestaff Educational Conference, Antibiotic Stewardship Department of Medicine, University of Virginia
- 3/23/11 Anesthesia Grand Rounds. Gram Negative Resistance: Origins, Epidemiology and Impact, University of Virginia
- 3/22/11 Infectious Diseases Didactic Lecture Series: Non-lactose Fermenters Resistance and Management II/II, ID Fellowship Program University of Virginia
- 3/15/11 Infectious Diseases Didactic Lecture Series: Non-lactose Fermenters Resistance and Management I/II, ID Fellowship Program University of Virginia
- 11/12/10 Housestaff Educational Conference, Antimicrobial Use, Department of Medicine University of Virginia
- 11/2/10 Infectious Diseases Didactic Lecture Series ID Fellow Didactic: β -lactamases: Focus on Enterobacteriaceae, ID Fellowship Program University of Virginia
- 4/23/10 Approach to Culture Results and Common Mis-steps, Department of Family Medicine, University of Virginia
- 8/13/09 Guest Lecture for Epidemiology II Course Case study of molecular and genetic epidemiology. School of Public Health, University of Virginia
- 7/21/09 Medical Grand Rounds: Multidrug Resistant Gram Negative Bacteria: Local Impact of a Global Crisis, University of Virginia

C. Undergraduate and Resident Research Supervisor
Undergraduates

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- 08/22- **Tayloe Friedrich**, Second Year Biology Major, Examining the in vitro plasmid evolutionary dynamics over time in different strains.
- 08/19-05/21 **Claire Haynes**, Started as a Second Year Biology Major and did two year longitudinal project examining tap water flushing impact on drain biofilm
- 04/18-05/19 **Elen Mussie**, Third Year Biology Major, Examination and collection of samples for point prevalence of carbapenemase producing Enterobacteriaceae in wastewater
- 01/18-05/19 **Gabrielle Limardo**, Third Year Biology Major, Examination of plasmids transfer between species as well as point prevalence of carbapenemase producing Enterobacteriaceae in wastewater
- 01/17-12/19 **Sarah Phillips**, Second Year Biology Major, Examination of transfer dynamics of multiple plasmids between *Serratia marcescens* and other Enterobacteriaceae
- 08/15-05/16 **Ian Clark**, Third Year Systems Engineering and Statistics Major, Co-supervising student with Don Brown and Laura Barnes on data collection and analysis to develop algorithms to better understand clinical consequences of acquisition.
- 08/15-05/16 **Antione Rigaut**, Third Year Systems Engineering and Statistics Major, Co-supervising student with Don Brown and Laura Barnes on data collection and analysis to develop algorithms to better understand clinical consequences of acquisition
- 05/15-08/17 **Brian Pettygrove**, Fourth Year Biomedical Engineering Major, Co-mentoring with Dr. William Guilford, Summer Research Designing and executing several devices to examine biofilm splatter and natural history in the environmental laboratory.
- 01/15-06/16 **Sarah Dudley**, Fourth Year Biology Major, Supervising project to evaluate geospatial hospital room design and environmental reservoirs on nosocomial acquisition of organisms, University of Virginia
- 01/15-07/15 **Chetan Mishra**, Third Year Systems Engineering and Statistics Major, Co-supervising student with Don Brown and Laura Barnes on data collection and analysis to develop algorithms to better understand role of environmental reservoir of pathogens in hospital
- 09/14-05/17 **Ryan Orr**, Second Year Public Health Science Major, Supervising project for accuracy and reproducibility of environmental culturing and data collection. Supervised bacterial surface survival study and supported abstract which was accepted to American Society of Microbiology. Co-

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supervised an ethics project on impact of end-of-life care on drug resistant pathogens

- 11/14-05/16 **Morgan Denecke**, Second Year Biology Major, Supervising project to evaluate environmental reservoirs and rates of genetic transfer of genes of drug resistance within environmental reservoirs, University of Virginia
- 05/14-07/15 **Anthony Sung**, First Year Biomedical Engineering Major, Supervising student in biological splatter from sink drains, University of Virginia
- 08/14-05/15 **Katie (KanYi) Tong**, Third Year Biomedical Engineering Major, Supervising student in determining limit of detection for environmental surface carbapenem resistant bacterial culture techniques, University of Virginia
- 12/13-01/14 **Alisha Geldhart**, Fourth Year Biomedical Engineering Major, Supervised Winter Project for collection and evaluation of microbiologic samples from drains as well as evaluation of splatter dynamics, University of Virginia
- 05/11-05/12 **Anthony Yeh**, Fourth Year Biology Major, Supervised project to evaluate porin channels in drug resistant clinical isolates, University of Virginia
- 08/11-05/12 **Paul Pickmans**, Third Year Biology Major, Supervised project to evaluate β -lactamases from clinical isolates, University of Virginia
- 09/09-05/10 **Kate Barowski**, Fourth Year Biology Major, Supervised a project comparing impact of plasmid types and strains on rates of antibiotic resistance plasmid transfer. University of Virginia

Medical Students

- 06/22-08/22** **Ezra Bass**, First Year University of Virginia Medical Student. Validating digital drop PCR for wastewater testing for antimicrobial resistance monitoring through the Summer Medical Research Program.
- 04/19-9/19** **Michael Salomon**, First Year University of Virginia Medical Student. Validating sink lab testing system and biofilm monitoring through the Summer Medical Research Program. Also performing a chart review with paired genomics analysis of unusual resistance mechanism.
- 06-08/18** **Karlene Vega Figueroa**, Second Year Medical student from Ponce Health Sciences University Spent the Summer through the Summer Medical Research Program determining the limit of detection of q-PCR, quantitative culture, and enrichment culture for *the Klebsiella pneumoniae* carbapenemase gene (*bla_{KPC}*) in *Klebsiella pneumoniae* and *Enterobacter cloacae*

- 04/18-05/19 Grace Gillis-Crouch**, Fourth Year University of Virginia Medical Student, Data gather and analyze change in antimicrobial ordering and usage for the treatment of intra-abdominal infections during consecutive antimicrobial shortages.
- 07/16- Sarah Dudley**, First Year Medical Student, Supervising her as clinical research coordinator for investigational trial with chart reviews, University of Virginia. She then spent the entire Summer full time in the lab validating environmental hospital culture techniques for multidrug resistant pathogens through the Summer Medical Research Program.
- 09/15-06/16 Laura Kolbe**, Fourth Year University of Virginia Medical Student, Data gather and analyze change in antimicrobial exposure before and after implementation of a more rapid system to identify coagulase staphylococci contamination in blood culture. Supported writing and reviewing an abstract to a National Infectious Diseases Meeting

Masters Students

- 08/15-08/16 Ketki Vilankar BS, Masters Student, Department of Systems and Information Engineering.** Co-supervised with Laura Barnes, Don Brown and Hyojung Kang. On thesis committee for predictive modeling on hospital environmental microbiology positivity and visualization systems
- 08/15-06/16 Chao Dai, PhD, Masters Student, Department of Systems and Information Engineering,** Co-supervised with Jen Lobo, Laura Barnes, Don Brown Getting environmental tracking software built and implemented in the clinical microbiology laboratory
- 08/15-12/15 Xinyu Chen, Masters Student, Department of Systems and Information Engineering,** Co-supervised with Jen Lobo, Laura Barnes, Don Brown Getting environmental tracking software built and implemented in the clinical microbiology laboratory
- 08/15-04/18 Marika Grabowski, BS Masters Student, Department of Public Health Sciences** Co-supervised with Jen Lobo, Laura Barnes, Don Brown and Hyojung Kang project of paired video monitoring for hospital room sink activity analysis with paired observations. Worked with her to get two publications completed from her work. Helped her present in multiple forums including presentation of data to hospital staff
- 01/15-05/16 Julia Lensing BS, Masters Student Department of Systems and Information Engineering,** Co-supervised with Laura Barnes, Don Brown and Jennifer Lobo. On thesis committee for predictive modeling on hospital environmental microbiology positivity

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- 01/15-05/15 **Sam Hewitt BS, Masters Student Department of Systems and Information Engineering**, Co-supervised with Laura Barnes, Don Brown and Jennifer Lobo. Capstone Project. Modeling nosocomial transmission of carbapenem resistant bacteria using data environment, geospatial and microbiology, University of Virginia
- 01/15-05/15 **Jeremy Stern BS, Masters Student Department of Systems and Information Engineering**, Co-supervised with Laura Barnes, Don Brown and Jennifer Lobo. Capstone Project. Modeling nosocomial transmission of carbapenem resistant bacteria using data environment, geospatial and microbiology, University of Virginia
- 01-05/2015 **Michael Guilfoyle BS, Masters Student Department of Systems and Information Engineering**, Co-supervised with Laura Barnes, Don Brown and Jennifer Lobo. Capstone Project. Modeling nosocomial transmission of carbapenem resistant bacteria using data environment, geospatial and microbiology, University of Virginia

PhD Candidates

- 07/18-8/22 **Erica Loudermilk**, School of Engineering. Co-mentoring with Lisa Colosi Peterson to detect the dissemination and remediation of antimicrobial resistance genes from hospitals through the wastewater treatment process including ex situ experiments in my research lab mimicking wastewater treatment. Successfully defended thesis 8/31/2022

Post-graduate Resident Trainees

- 07/21-06/22 **Adam Archer, PharmD**, Infectious Diseases Pharmacy Resident. Supervised Adam on both a clinical project looking and the impact of naming of Streptococcal species in clinical microbiology reporting as well as the detection of the *blaZ* beta-lactamases in Staphylococcal species. Examined the performance and need for PCR primer sets to detect the entire *blaZ* cassette compared to the phenotypic in vitro tests. Presented at a national meeting and drafted full manuscript for submission.
- 07/19-06/21 **Marten Hawkins, MD** Internal Medicine Resident. Supervised both research and clinical training inf stewardship rotation as well as research electives. Project focused on risk factors for highly resistant Gram negative Enterobacterales as ceftriaxone resistance continue to emerge. Presented work as local research day and submitted abstract to national meeting.
- 07/19-06/20 **Ashni Patel, PharmD** Infectious Diseases Pharmacy Resident. Supervised Ashni on a project examining a metallo-carbapenemase with various aspects of dynamic in vivo and in vitro resistance development.

Presented at a national meeting and drafted full manuscript for submission.

- 07/18-06/19 **Ally Stillwell, PharmD** Infectious Diseases Pharmacy Resident. Co-supervised Ally on a project with Heather Cox for a laboratory focused investigation deployment and performance of rapid diagnostic for bacteremia to improve time to identification and susceptibility for Gram negative bacteria. Supervised approach to stewardship interventions which were paired with this deployment and outcomes evaluations. A Poster presented at a National Meeting and publication in high profile infectious disease journal.
- 07/17-06/18 **Sean McCollough, PharmD** Infectious Diseases Pharmacy Resident. Co-supervised Sean on a project with Heather Cox for a laboratory focused investigation deployment and performance of clinical laboratory technology to improve time to susceptibility. Supervised approach to stewardship interventions which were paired with this deployment and outcomes evaluations. Poster presented at a National Meeting.
- 07/16-06/17 **Zach Elliott, PharmD**, Infectious Diseases Pharmacy Resident. Co-supervised Zach on a project with Heather Cox for a laboratory focused investigation on susceptibility testing of whole genome sequenced carbapenemase producing Enterobacteriaceae against Fosfomycin. Poster presented at a National Meeting and publication in a peer-reviewed journal.
- 07/15-06/16 **Lindsay Donohue PharmD**, Infectious Diseases Pharmacy Resident. Co-supervised Lindsay on a project with Heather Cox for a laboratory focused investigation on susceptibility of highly resistant gram negative bacteria against a new antimicrobial (ceftazidime-avibactam). Also co-supervised her with Heather Cox on performance of a chart review of the examining the impact of a stewardship intervention for *Streptococcus* sp after the implementation of a rapid diagnostic. Poster presented at a National Meeting.
- 02/15-7/18 **Megan Gray MD**, Internal Medicine Resident/ID fellow, Supervising current antimicrobial stewardship project on evaluating change in antibiotic exposure and selection with and rapid clinical microarray test for positive blood cultures, University of Virginia
- 02/10-6/11 **Heather Hughes MD**, Internal Medicine Resident, Supervised writing of Institutional Review Board Protocol and laboratory work to evaluate Linezolid resistance in *Enterococcus* spp. University of Virginia
- 11/10-06/11 **Bennett Bain Pharm D**, Clinical Pharmacy Resident, Co-supervised a project with Heather Cox for a laboratory focused investigation on the

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effect of β -lactamases on accuracy of susceptibility testing. University of Virginia

09/09-06/10 **Heather Sumner MD**, Pathology Resident, Co-supervised with Kevin Hazen development of real-time PCR diagnostic for a carbapenemase gene on peri-rectal samples for surveillance

09/09-03/11 **Heidi Zapata MD, PhD**, Internal Medicine Resident, Co-supervised a project with Costi Sifri to evaluate increased *Klebsiella pneumoniae* virulence from highly resistant clinical strains, University of Virginia

09/09-06/10 **Gavin Slitt MD**, Internal Medicine Resident, Co-supervised a project on evaluating clinical and microbiologic impact of unknown species of Enterobacteriaceae, which acquired a carbapenemase gene, University of Virginia

XII. OTHER PROFESSIONAL ACTIVITIES

ADDITIONAL MENTORSHIP ROLES

10/17 Infectious Diseases Society of America IDweek Mentorship Program

10/18 Infectious Diseases Society of America IDweek Mentorship Program

AD HOC REVIEWER:

2019- Water Research

2018- New England Journal of Medicine

2018- Lancet Infectious Diseases

2016- Journal of Antimicrobial Chemotherapeutics

2015- Infection Control and Hospital Epidemiology

2014- Emerging Infectious Diseases

2012- Journal of Clinical Microbiology

2013- Antimicrobial Agents and Chemotherapy

2013- American Journal of Transplantation

2014- PLoSOne

2014- Clinical Infectious Diseases

EDITORIAL BOARD:

2016-19 Frontiers in Environmental Science and Public Health

ABSTRACT REVIEWER FOR ANNUAL SCIENTIFIC MEETINGS:

2018- Infectious Diseases Society of America (IDweek Annual Meeting)

2018 International Plasmid Biology Meeting Judge for outstanding abstracts

2017- American Society of Microbiology Annual Meeting (ASM Microbe)

2017- European Congress of Clinical Microbiology and Infectious Diseases (ECCMID) Annual Meeting

GRANT REVIEWER

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- 04/21- US National Institutes for Health (NIH). Study Section (CSR) review panel ZRG1 AIDC-V
- 11/17- European Society of Clinical Microbiology and Infectious Diseases. (ESCMID). Reviewed proposals around antimicrobial resistance surveillance and diagnostics
- 06/19 Israeli Ministry of Health. Proposal Review for: Resistance Pathogens Program 2019

PhD THESIS COMMITTEE

- 2020-22 **Erica Loudermilk**, PhD Candidate. Working in my lab on understanding antimicrobial resistance dissemination from hospitals through wastewater treatment. Primary Mentor Lisa Colosi-Peterson School of Engineering University of Virginia
- 2016 **Ketki Vilankar**, Masters Student Thesis completion evaluation. Department of Systems and Information Engineering. University of Virginia
- 2016 **Julia Lensing**, Masters Student Thesis completion evaluation. Department of Systems and Information Engineering University of Virginia
- 2015 **Hosam Mamoon A. Zowawi** Acted as an independent international reviewer for PhD Thesis. His thesis was submitted for the degree of Doctor of Philosophy entitled, “Innovative Diagnosis and Prevention of Antibiotic Resistance in Key Gram-Negative Bacterial Isolates from the Gulf Cooperation Council States” at The University of Queensland School of Medicine UQ, Centre for Clinical Research Epidemiology, Brisbane, Australia.

XIII. MASTER’S AND PH.D. THESES DIRECTED AND POSTDOCTORAL FELLOWS SUPERVISED

- 2022- **David Lehman, MD**, Primary Mentor for three year Infectious Diseases Clinical and Research Fellowship. Supported by T32 training grant. Developing skills for translational and clinical research in antimicrobial stewardship interventions as well as understanding the molecular epidemiology of carbapenemase producing Gram negative pathogens.
- 2019-2022 **Evan Robinson, MD** Primary Mentor for three year Infectious Diseases Clinical and Research Fellowship. Supported by T32 training grant. Developing skills for translational and clinical research in antimicrobial stewardship interventions with a focus on Gram negative resistant pathogens. Successfully published as well as got academic infectious disease position at University of Indiana.

- 2019- **Erica Loudermilk**, PhD candidate. Working in my lab to develop ex situ model of antimicrobials resistance dynamics in wastewater treatment and understanding antimicrobial resistance dissemination from hospitals through wastewater treatment.
- 2018-2021 **Stacy Park, MD** Primary Mentor for three year Infectious Diseases Clinical and Research Fellowship. Supported by T32 training grant. Developing skills for translational and clinical research in carbapenemase producing pathogens under my supervision. One accepted abstracts at a National Meeting. A first author peer reviewed publication on management of a patient with *bla_{OXA-48}* infection. Currently working on hospital epidemiology focused projects related to the hospital environment and carbapenemase producing organisms. Working in academic infectious disease position at University of Virginia.
- 2014-2017 **Anita Cheruvanky MD**, Primary Mentor for three year Infectious Diseases Clinical and Research Fellowship. Supported by T32 training grant. Developing skills for translational and clinical research in antimicrobial resistant pathogens under my supervision. Three accepted abstracts at National Meetings and a first author peer reviewed publication on expression regulation of a carbapenemase gene.

XIV. CLINICAL ACTIVITIES

A. Inpatient

- 2020- Covid-19 Hospital Epidemiology pager coverage. Worked with partners in surgery and hospital epidemiology to develop pre-operative testing, inpatient transfer and isolation protocols
- 2020-22 Clinical Infectious Disease Covid-19 consult pager. Assisted in reviewing treatment protocols as well as staffing the consult service
- 2009- Medical Director Antimicrobial Stewardship Activities. Category A pager coverage and review of alerts, and establishment of guidelines. Discuss and review cases with house staff, nurse practitioners and attendings. I will also review positive microbiology and work with clinical pharmacist to review and revise antimicrobial selection. University of Virginia Medical Center, Charlottesville, Virginia
- 2009- General Medicine Inpatient Ward Attending (4-6 weeks per year), University of Virginia, Medical Center, Charlottesville, Virginia
- 2009- Infectious Diseases General Consult Attending (2-4 weeks per year) University of Virginia, Medical Center, Charlottesville, Virginia

Amy Mathers

2009-2014 Infectious Diseases Immunocompromised Consult Service Attending (2-6 weeks per year), University of Virginia, Medical Center, Charlottesville, Virginia

B. Outpatient

2020-22 Associate Director of Covid-19 Clinic. Worked in a supervisory role for COVID-19 clinic for protocols, procedures, results and logistics. Also worked to expand clinical viral testing for patients here and across the state and assist the community testing efforts to reach underserved populations and public health priorities

2009-2010 Establishment of an Infectious Diseases Outpatient Clinic in Culpeper. One half day per week. University of Virginia Specialty Care Clinic, Culpeper, Virginia

2009- Coverage for Infectious Diseases non-HIV Clinic when primary clinic physicians are unavailable, University of Virginia, Medical Center, Charlottesville, Virginia

D. Clinical Microbiology

2012- Clinical Microbiology Director On-call, roughly 4-5 months per year of coverage and daily rounds. Oversees antibiotic susceptibility testing bacterial identification, sequencing efforts, select budgetary matters and protocol implementation and design. University of Virginia Health System, Charlottesville, Virginia

2020-22 SARS-CoV-2 testing and deployment. Worked to get ordering, testing supplies, specimen management, staffing and resulting all done within clinical microbiology to support UVA as well as Virginia Department of Health Covid-19 diagnostic testing done. Including working with Will Guilford in BME to develop and then ran an FDA trial for producing and distributing nylon flocked swabs for distribution around the state of Virginia (producing 75,000/week) and bringing in contract for SARS CoV-2 sequencing on behalf of Virginia Department of Health. Also developed and deployed wastewater SARS CoV-2 surveillance for congregate dormitory living for University of Virginia campus

XV. SCHOOL, UNIVERSITY, UVA HOSPITALS, DEPARTMENTS, NATIONAL, AND STATE COMMITTEES & COUNCILS COMMITTEES:

A. UVA Hospitals

University of Virginia Medical Center

2020- Community Health and Health Equity in the setting of COVID-19 Steering Committee Meeting

Amy Mathers

- 2018- Co-chair, Antimicrobial Usage Committee, Sub-committee of Pharmacy and Therapeutics
- 2016- *Clostridium difficile* Coalition Leader
- 2013- Project Leader. University of Virginia Health System Infection Control Sink Project
- 2013-15 Project Leader. University of Virginia Health System Quality Initiative Q17 team: Exceeding Influenza and Pneumococcal Vaccination Benchmarks.
- 2014- Member, Emerging Infectious Diseases Committee
- 2011-13 Member, Patient Safety Advisory Council
- 2010-15 Member, Sepsis Steering Committee
- 2007 - Clinical Director, Antibiotic Stewardship Team
- 2007-18 Member, Antimicrobial Usage Committee, Sub-committee of Pharmacy and Therapeutics, University of Virginia
- 2009- Member, Infection Control Committee, University of Virginia Health System

Culpeper Regional Hospital

- 2011-2013 Medical Safety and Quality Committee, Culpeper Regional Hospital
- 2011-2013 Chair of Infection Control and Prevention, Culpeper Regional Hospital
- 2010-2013 Pharmacy and Therapeutics, Culpeper Regional Hospital
- 2010- 2013 Infection Control and Prevention, Culpeper Regional Hospital

B. Department of Medicine

- 2012-2019 Recent Advances in Clinical Medicine Annual Course. Planning Committee
- 2009-2014 Intern Selection Committee, Department of Medicine, University of Virginia

C. Regional

- 2020- Co-lead Commonwealth Antigen Testing Team (CATT)
- 2020- Virginia State COVID-19 Governor's Testing Advisory Council
- 2020- University reopening committee

D. National

- 2020- Infectious Diseases Society of America Antimicrobial Resistance Treatment Guidance Panel
- 2016- Voting Member, Clinical and Laboratory Standards Institute (CLSI), Antimicrobial Susceptibility Testing (AST) Subcommittee
- 2018- Co-chair of the Fosfomycin Susceptibility Testing Ad Hoc Working Group, Clinical and Laboratory Standards Institute (CLSI), Antimicrobial Susceptibility Testing (AST) Subcommittee

Amy Mathers

- 2017-18 Chair of the *Shigella* sp. /Fluoroquinolone Breakpoint Ad Hoc Working Group, Clinical and Laboratory Standards Institute (CLSI), Antimicrobial Susceptibility Testing (AST) Subcommittee
- 2015- 17 Co-Chair of the Salmonella/Fluoroquinolone Breakpoint Ad Hoc Working Group, Clinical and Laboratory Standards Institute (CLSI), Antimicrobial Susceptibility Testing (AST) Subcommittee
- 2015- 2016 Advisor, Clinical and Laboratory Standards Institute (CLSI), Antimicrobial Susceptibility Testing (AST) Subcommittee

XVI. FINANCIAL RESOURCES (GRANTS AND CONTRACTS)

A. Federal

- 2022- Principal Investigator for University of Virginia Subcontract. Pathogen Genomic Centers of Excellence in collaboration with Virginia State Laboratory Division of Consolidated Laboratory Services and Virginia Department of Health. Working in collaboration with the University of Virginia Biocomplexity Institute will act as Academic partner for the State Laboratory to do research and development of applications in genomic surveillance in public health. Centers for Disease Control and Prevention.
- 2021- Principal Investigator. Virginia Department of Health. SARS CoV-2 Sequencing effort for public health response. Sequencing and analyzing 400 samples/week from around the state. Price per sample and set at 400 samples/week
- 2021- Sub-investigator. National Institutes of Health (R01). Eric Houpt Principal Investigator. "Mycobacterial Lung Diseases in Virginia: sequencing and clinical determinants of relapse and outcome" 5R01HL155547-02
- 2021- Sub-investigator. National Institutes of Health (R21). Prantita Tamma Principal Investigator from Johns Hopkins University "Modifiable Risk Factors for the Emergence of Resistance to *Pseudomonas aeruginosa*." 1R21AI153580-01A1
- 2018-19 Principal Investigator. Centers for Disease Control and Prevention. Novel Interventions and Approaches to Mitigating Carbapenemase Producing Gammaproteobacteria in Healthcare Premise Plumbing. BAA 200-2018-02917 \$682,490.00
- 2017-18 Principal Investigator. Centers for Disease Control and Prevention. Understanding the Microbiologic Dynamics of Carbapenemase-Producing Organisms in Hospital Wastewater Premise Plumbing BAA 200-2017-96194. \$550,000

Amy Mathers

- 2016-17 Principal Investigator. Assessing the Risk of Acquisition of Carbapenemase Producing Enterobacteriaceae (CPE) from Exposure to Contaminated Waste Water Premise Plumbing Centers for Disease Control and Prevention BAA 20106-N-1781. \$550,000
- 2015-17 Collaborative Lead Investigator. Project Title: Effect of hand-washing station usage and sink basin disinfection on dispersal of microorganisms from sink basins. Hired for 20% effort using intergovernmental personnel agreement with Centers for Disease Control and Prevention. \$74,124 /year plus laboratory supplies.
- 2007-2009 Recipient. National Institutes of Health Loan Repayment Grant \$35,000 annually for student loan repayment

B. Other

- 2019-2021 Co-Co-Principal Investigator. Engineering in Medicine. Mitigating the Spread of Antibiotic Resistance and Its Associated Health Impacts in Clinical and Environmental Contexts. \$75,000
- 2017-2020 Co-Co-Principal Investigator. Wallace H. Coulter Endowment. Verification and validation of a device for reducing the transmission of pathogens from hospital sink wastewater to patients \$165,000
- 2016-17 Principal Investigator. Investigator Initiated Sponsored Research. Zavante Therapeutics. *In Vitro* Fosfomycin Susceptibility Assessment of Whole Genome Sequenced *Klebsiella pneumoniae* Carbapenemase (KPC) Producing Clinical Isolates. \$8810
- 2015-17 Co-Co-Principal Investigator. Coulter Award. Project Title. Superbug Tracker – Design of Context-Aware Surveillance System for Nosocomial Outbreaks involving Non-Patient Reservoirs. \$200,000
- 2015- University of Virginia Health System Quality Initiative. Exploration of a Nosocomial Reservoir for Antimicrobial Resistance \$1,600,000
- 2014-17 Rempex Pharmaceuticals. A Phase 3, multicenter, randomized, open label study of carbavance (meropenem/RPX 7009) versus best available therapy in subjects with selected serious infections due to carbapenem resistant Enterobacteriaceae \$ 82,315
- 2014 Rempex Pharmaceuticals. A Multi-Center, Retrospective Study of Cases of Serious Infections Dues to Carbapenem-resistant Enterobacteriaceae \$5100

2003-2006 Mentored Investigator, Maine Medical Center Research Grant.
Investigation of molecular epidemiology of *Borrelia burgdorferi* in Maine
\$31,000

XVII. PHYSICAL FACILITIES

The “sink lab” is two rooms each is a 1,200 square foot BSL-2 lab designed and built collaborative with Will Guilford in Biomedical Engineering as well as another a 550 square foot laboratory designed BSL-1 lab for surrogate testing of devices and outfitted by medical center to replicate some of the environmental conditions which may replicate transmission of drug resistant pathogens in the hospital environment both located in MR4. <http://uvasinklab.org/>

The basic laboratory is a 2,000 square foot laboratory in the MR4 research building. Some of the space is now designated as College of American Pathologist accredited. My office is within a room in the laboratory. The lab is well equipped for microbiology and molecular biology research.

XVIII. PERSONNEL CURRENTLY SUPERVISED

- 2022- She acts as a research coordinator for multiple projects across all research endeavors for various projects. She is overseeing the documentation of the Kelly Denhard, BS Clinical Research Coordinator. She acts as a research coordinator for multiple projects across all research endeavors for various projects. She is overseeing the documentation of the IRB documents and data security as well as performs chart review.
- 2022- Rishi Aryal, PhD, Research Scientist. Working on running and refining bioinformatic infrastructure to apply rigorous, reproducible methods of bioinformatics to isolate strain typing for nosocomial investigation, SARS CoV-2 public health response sequencing as well as plasmid transmission from long read sequencing.
- 2019- Hardik Parikh, PhD, Research Scientist. Working closely with Hardik on establishing bioinformatic infrastructure to apply rigorous, reproducible methods of bioinformatics to isolate strain typing for nosocomial investigation, understanding plasmid transmission from long read sequencing and metagenomic analysis of complex environmental drain biofilms.
- 2016- Shireen Kotay, PhD, Research Scientist. His current focus is investigation of natural history, propagation, potential interventions and transmission of highly resistant Gram negative bacteria in a laboratory setting. Intent will be to translate findings to the patient care environment.
- 2016- Katie Barry MS, Research Laboratory Technologist for antimicrobial resistance evolution and transmission in the environment to patients

RELEVANT PERSONNEL PREVIOUSLY SUPERVISED

- 2018-2021 Limor Steinberg, BS Clinical Research Coordinator. She acts as a research coordinator for multiple projects across all research endeavors for various projects. She is overseeing the documentation of the development of a University of Virginia funded company Antimicrobial Resistance Services LLC.
- 2018-19 Alex Wailan, PhD Research Scientist/ Bioinformaticist. His focus was developing a computing pipeline for bacterial isolate comparison and developing a computing pipeline for Nanopore long read sequence data
- 2015-16 Weidong Chai PhD, Research Scientist- He focused on developing a reproducible splatter model of bacteria from sinks.
- 2015-16 Colleen Harman, RN Clinical research coordinator- For the phase III sponsored clinical trial she is overseeing regulatory documents and IRB approvals.
- 2015-17 Sarah Dudley BS, Clinical Trial Research Assistant- She is helping to make sure data entry and regulatory documents are complete

XIX. MASTER'S AND PH.D. THESES DIRECTED AND POSTDOCTORAL FELLOWS SUPERVISED

- 2019- **Evan Robinson, MD** Primary Mentor for three year Infectious Diseases Clinical and Research Fellowship. Supported by T32 training grant. Developing skills for translational and clinical research in antimicrobial stewardship interventions with a focus on Gram negative resistant pathogens.
- 2018-2021 **Stacy Park, MD** Primary Mentor for three year Infectious Diseases Clinical and Research Fellowship. Supported by T32 training grant. Developing skills for translational and clinical research in carbapenemase producing pathogens under my supervision. One accepted abstracts at a National Meeting. A first author peer reviewed publication on management of a patient with *bla_{OXA-48}* infection. Currently working on hospital epidemiology focused projects related to the hospital environment and carbapenemase producing organisms.
- 2014-2017 **Anita Cheruvanky MD**, Primary Mentor for three year Infectious Diseases Clinical and Research Fellowship. Supported by T32 training grant. Developing skills for translational and clinical research in antimicrobial resistant pathogens under my supervision. Three accepted abstracts at National Meetings and a first author peer reviewed publication on expression regulation of a carbapenemase gene.

XX. PATENTS

- 2/27/18 Provisional patent application No. 62/635,652, "System and Method to Prevent the Spread of Bacteria from Wastewater to Persons in Clinical Settings". 25% inventor. Filed 2/27/2018.
- 9/19/17 Invention Disclosure to University of Virginia Licensing and Venture Group. Sanitracker Software. A software and data analysis methods for tracking environmental biological data. 35% inventor. Filed disclosure

XXI. PAPERS PUBLISHED OR IN PRESS

Former trainees and students underlined

A. Peer Reviewed

- 1) Sasson J, Donlan AN, Ma JZ, Haughey HM, Coleman R, Nayak U, **Mathers AJ**, Laverdure S, Dewar R, Jackson PEH, Heysell SK, Sturek JM, Petri WA Jr. Safety and Efficacy of Dupilumab for the Treatment of Hospitalized Patients With Moderate to Severe Coronavirus Disease 2019: A Phase 2a Trial. *Open Forum Infect Dis*. 2022 Jul 27;9(8):ofac343. PMID: 35959207 PMCID: PMC936117. Amy Mathers led and completed all the whole genome sequencing of SARS CoV-2 from patient samples. She reviewed, edited and revised the manuscript.
- 2) Mojica MF, Humphries R, Lipuma JJ, **Mathers AJ**, Rao GG, Shelburne SA, Fouts DE, Van Duin D, Bonomo RA. Clinical challenges treating *Stenotrophomonas maltophilia* infections: an update. *JAC Antimicrob Resist*. 2022 May 5;4(3):dlac040. doi: 10.1093/jacamr/dlac040. eCollection 2022 PMID: 35529051. Amy Mathers led much of the writing in the clinical microbiology section with the challenges around testing as they relate to treatment. Working with group to submit NIH grant for study of this difficult to treat organism.
- 3) Tamma PD, Harris PNA, **Mathers AJ**, Wenzler E, Humphries RM. Breaking Down the Breakpoints: Rationale for the 2022 Clinical and Laboratory Standards Institute Revised Piperacillin-Tazobactam Breakpoints Against Enterobacterales. *Clin Infect Dis*. 2022 Aug 24;ciac688. doi: 10.1093/cid/ciac688. PMID: 36001445. Amy Mathers helped establish the approach and guide discussion and decisions regarding the breakpoint change at Clinical Laboratory Standards Institute as well as writing and revising the manuscript.
- 4) Pierce VM, **Mathers AJ**. Setting Antimicrobial Susceptibility Testing Breakpoints: A Primer for Pediatric Infectious Diseases Specialists on the Clinical and Laboratory Standards Institute Approach. *J Pediatric Infect Dis Soc*. 2022 Feb 23;11(2):73-80. PMID: 34888640
- 5) Sturek JM, Thomas TA, Gorham JD, Sheppard CA, Raymond AH, Petros De Guex K, Harrington WB, Barros AJ, Madden GR, Alkabab YM, Lu DY, Liu Q, Poulter MD, **Mathers AJ**, Thakur A, Schalk DL, Kubicka EM, Lum LG, Heysell

- SK. Convalescent Plasma for Preventing Critical Illness in COVID-19: a Phase 2 Trial and Immune Profile. *Microbiol Spectr.* 2022;10(1):e0256021. PMID: 35196802. Amy Mathers helped to coordinate trial and enrollment reviewed and edited manuscript.
- 6) Kamruzzaman M, **Mathers AJ**, Iredell JR. A Novel Plasmid Entry Exclusion System in pKPC_UVA01, a Promiscuous Conjugative Plasmid Carrying the blaKPC Carbapenemase Gene. *Antimicrob Agents Chemother.* 2022;66(3):e0232221. PMID: 35007138. Amy Mathers discovered the plasmid involved and worked to confirm findings from collaborators lab. Writing and editing manuscript.
 - 7) Marino AC, Robinson ED, Durden JA, Cox HL, **Mathers AJ**, Shaffrey ME.J The effects of avoiding extended antimicrobial drain prophylaxis on *Clostridioides difficile* and postprocedural infection rates: a 5-year retrospective. *Neurosurg.* 2022;1-7. PMID: 35171828. Amy Mathers gathered original cases and described initial findings. Mentored Fellow Evan Robinson in co-writing with neurosurgery resident.
 - 8) Loudermilk EM, Kotay SM, Barry KE, Parikh HI, Colosi LM, **Mathers AJ**. Tracking *Klebsiella pneumoniae* carbapenemase gene as an indicator of antimicrobial resistance dissemination from a hospital to surface water via a municipal wastewater treatment plant. *Water Res.* 2022;213:118151. PMID: 35167966
 - 9) Humphries R, Tamma PD, **Mathers AJ**. Disk Correlates for Revised Clinical and Laboratory Standards Institute *Enterobacterales* Piperacillin-Tazobactam MIC Breakpoints. *J Clin Microbiol.* 2022 Apr 21:e0024322. PMID: 35443782
 - 10) Tamma PD, Aitken SL, Bonomo RA, **Mathers AJ**, van Duin D, Clancy C. J. Clin Infectious Diseases Society of America 2022 Guidance on the Treatment of Extended-Spectrum β -lactamase Producing Enterobacterales (ESBL-E), Carbapenem-Resistant Enterobacterales (CRE), and *Pseudomonas aeruginosa* with Difficult-to-Treat Resistance (DTR-P. *aeruginosa*). *Clinical Infect Dis.* 2022 PMID: 35439291. Amy Mathers contributed to primary writing of the ESBL treatment section as well as review and editing for all other sections.
 - 11) Tamma PD, Aitken SL, Bonomo RA, **Mathers AJ**, van Duin D, Clancy CJ. Infectious Diseases Society of America Guidance on the Treatment of AmpC β -lactamase-Producing Enterobacterales, Carbapenem-Resistant *Acinetobacter baumannii*, and *Stenotrophomonas maltophilia* Infections. *Clin Infect Dis.* 2022 Jul 6;74(12):2089-2114. PMID: 34864936. Amy Mathers contributed to primary writing of the *S. maltophilia* treatment section as well as review and editing for all other sections.

- 12) Colosi LM, Barry KE, Kotay SM, Porter MD, Poulter MD, Ratliff C, Simmons W, Steinberg LI, Wilson DD, Morse R, Zmick P, **Mathers AJ**. Development of Wastewater Pooled Surveillance of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) from Congregate Living Settings. *Appl Environ Microbiol*. 2021;87(13):e0043321. PMID: 33858836
- 13) **Mathers AJ**. The Practical Challenges of Making Clinical Use of the Quantitative Value for Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Viral Load Across Several Dynamics. *Clin Infect Dis*. 2021 Dec 6;73(11):e4206-e4207. PMID: 32645717. **Impact factor-9.117**, Rank 11 of 155 in IMMUNOLOGY journals, Rank 3 of 88 in INFECTIOUS DISEASES journals, Rank 11 of 125 in MICROBIOLOGY journals. Not yet cited.
- 14) Laura J Dunphy LJ, Kolling GL, Jenior ML, Carroll J, Attai AE, Farnoud F, **Mathers AJ**, Hughes MA, Papin JA. Multidimensional Clinical Surveillance of *Pseudomonas aeruginosa* Reveals Complex Relationships between Isolate Source, Morphology, and Antimicrobial Resistance mSphere. 2021;e0039321. PMID: 34259555. Amy Mathers helped with the study analysis as well as the drafting and revision of the manuscript.
- 15) Burgos-Garay M, Ganim C, de Man TJB, Davy T, **Mathers AJ**, Kotay S, Daniels J, Perry KA, Breaker E, Donlan RM. Colonization of carbapenem-resistant *Klebsiella pneumoniae* in a sink-drain model biofilm system. *Infect Control Hosp Epidemiol*. 2021; 42(6):722-730. PMID: 33234179. Amy Mathers helped establish the methods and model used as well as writing and revising the manuscript.
- 16) Robinson ED, Stilwell A, Attai AE, Donohue LE, Shah MD, Hill BK, Elliott ZS, Poulter M, Brewster F, Cox HL, **Mathers AJ**. Implementation of a Rapid Phenotypic Susceptibility Platform for Gram-Negative Bloodstream Infections with Paired Antimicrobial Stewardship Intervention: Is the Juice Worth the Squeeze? *Clin Infect Dis*. 2021 PMID: 33580233 **Impact factor-9.117**, Rank 11 of 155 in IMMUNOLOGY journals, Rank 3 of 88 in INFECTIOUS DISEASES journals, Rank 11 of 125 in MICROBIOLOGY journals.
- 17) Donlan AN, Sutherland TE, Marie C, Preissner S, Bradley BT, Carpenter RM, Sturek JM, Ma JZ, Moreau GB, Donowitz JR, Buck GA, Serrano MG, Burgess SL, Abhyankar MM, Mura C, Bourne PE, Preissner R, Young MK, Lyons GR, Loomba JJ, Ratcliffe SJ, Poulter MD, **Mathers AJ**, Day AJ, Mann BJ, Allen JE, Petri WA Jr. IL-13 is a driver of COVID-19 severity. *JCI Insight*. 2021:150107. doi: 10.1172/jci.insight.150107. PMID: 34185704 Amy Mathers provided insight and data gathering got SARS CoV-2 PCR diagnostic testing as well as editing and revising of the manuscript.
- 18) Tamma PD, Aitken SL, Bonomo RA, **Mathers AJ**, van Duin D, Clancy CJ. Infectious Diseases Society of America Guidance on the Treatment of Extended-

- Spectrum β -lactamase Producing Enterobacterales (ESBL-E), Carbapenem-Resistant Enterobacterales (CRE), and *Pseudomonas aeruginosa* with Difficult-to-Treat Resistance (DTR-P. *aeruginosa*). *Clin Infect Dis*. 2021;72(7):e169-e183. PMID: 33106864 **Impact factor-9.117**, Rank 11 of 155 in IMMUNOLOGY journals, Rank 3 of 88 in INFECTIOUS DISEASES journals, Rank 11 of 125 in MICROBIOLOGY journals. Amy Mathers contributed to primary writing of the ESBL treatment section as well as review and editing for all other sections.
- 19) **Mathers AJ**, Lewis JS. CON: Testing for ESBL production is unnecessary for ceftriaxone-resistant Enterobacterales. *JAC Antimicrob Resist*. 2021;3(2):dlab020. PMID: 34223109
 - 20) Tamma PD, **Mathers AJ**. Navigating treatment approaches for presumed ESBL-producing infections. *JAC Antimicrob Resist*. 2021;3(1):dlaa111. PMID: 33659895. No Impact Factor Established Currently
 - 21) Colosi LM, Barry KE, Kotay SM, Porter MD, Poulter MD, Ratliff C, Simmons W, Steinberg LI, Wilson DD, Morse R, Zmick P, **Mathers AJ**. Development of wastewater pooled surveillance of SARS-CoV-2 from congregate living settings. *Appl Environ Microbiol*. 2021 Apr 15:AEM.00433-21. doi: 10.1128/AEM.00433-21. PMID: 33858836
 - 22) Park SC, Gillis-Crouch GR, Cox HL, Donohue L, Morse R, Vegesana K, **Mathers AJ**. Consecutive antibiotic shortages highlight discrepancies between microbiology and prescribing practices for intra-abdominal infections. *Antimicrob Agents Chemother*. 2021 65 (5) e01980-20; . doi: 10.1128/AAC.01980-20. PMID: 33593836
 - 23) Constantinides B, Chau KK, Quan TP, Rodger G, Andersson MI, Jeffery K, Lipworth S, Gweon HS, Peniket A, Pike G, Millo J, Byukusenge M, Holdaway M, Gibbons C, **Mathers AJ**, Crook DW, Peto TEA, Walker AS, Stoesser N. Genomic Surveillance of *Escherichia coli* and *Klebsiella* Spp. In Hospital Sink Drains and Patients. *Microbial Genomics*. 2020; 6(7)mgen.0.000391. PMID: 32553019. **Impact factor-5.52**. Amy Mathers contributed to study design and methods as well as assisted with some sample gathering as well as writing and review of the manuscript.
 - 24) Kotay SM, Parikh HI, Barry K, Gweon HS, Guilford W, Carroll J, **Mathers AJ**. Nutrients influence the dynamics of *Klebsiella pneumoniae* carbapenemase producing Enterobacterales in transplanted hospital sinks. *Water Research*. 2020 Jun 1;176:115707. doi: 10.1016/j.watres.2020.115707. PMID: 32224328 **Impact factor-7.913**
 - 25) Burgos-Garay M, Ganim C, de Man TJB, Davy T, **Mathers AJ**, Kotay S, Daniels J, Perry KA, Breaker E, Donlan RM. Colonization of carbapenem-

- resistant *Klebsiella pneumoniae* in a sink-drain model biofilm system. *Infect Control Hosp Epidemiol.* 2020; 25:1-9. PMID: 33234179
- 26) Park SC, Parikh H, Vegesana K, Stoesser N, Barry KE, Kotay SM, Dudley S, Peto TEA, Crook DW, Walker AS, **Mathers AJ**. Risk Factors Associated with Carbapenemase-Producing *Enterobacteriales* (CPE) Positivity in the Hospital Wastewater Environment. *Appl Environ Microbiol.* 2020;86(24):e01715-20. PMID: 32917755
- 27) Stoesser N, Phan HTT, Seale AC, Aiken Z, Thomas S, Smith M, Wyllie D, George R, Sebra R, **Mathers AJ**, Vaughan A, Peto TEA, Ellington MJ, Hopkins KL, Crook DW, Orlek A, Welfare W, Cawthorne J, Lenney C, Dodgson A, Woodford N, Walker AS; TRACE Investigators' Group. Genomic Epidemiology of Complex, Multispecies, Plasmid-Borne bla KPC Carbapenemase in Enterobacteriales in the United Kingdom from 2009 to 2014. *Antimicrob Agents Chemother.* 2020 Apr 21;64(5). pii: e02244-19. doi: 10.1128/AAC.02244-19. PMID: 32094139 **Impact factor-4.255**, Rank 25 of 125 in MICROBIOLOGY journals, Rank 33 of 261 in PHARMACOLOGY & PHARMACY journals. Amy Mathers is a member of the Transmission of Carbapenemase producing Enterobacteriaceae (TRACE) Investigators' group with several researchers working to understand the dynamics of carbapenemase producing organisms. For this manuscript she assisted in the analysis approach and writing and revising of the manuscript.
- 28) Kizny Gordon A, Phan HTT, Lipworth SI, Cheong E, Gottlieb T, George S, Peto TEA, **Mathers AJ**, Walker AS, Crook DW, Stoesser N. Genomic dynamics of species and mobile genetic elements in a prolonged bla_{IMP-4}-associated carbapenemase outbreak in an Australian hospital. *J Antimicrob Chemother.* 2020 Apr 1;75(4):873-882. doi: 10.1093/jac/dkz526. PMID: 31960024. **Impact factor-5.217** Amy Mathers assisted early on in the investigation advising for study design and microbiologic methods. Reviewed and edited manuscript.
- 29) **Mathers AJ**, Vegesana K, German-Mesner I, Ainsworth J, Pannone A, Crook DW, Sifri CD, Sheppard A, Stoesser N, Peto T, Walker AS, Eyre DW. Risk factors for *Klebsiella pneumoniae* carbapenemase (KPC) gene acquisition and clinical outcomes across multiple bacterial species. *J Hosp Infect.* 2020 Apr;104(4):456-468. doi: 10.1016/j.jhin.2020.01.005. Epub 2020 Jan 10. PMID: 31931046. **Impact factor-3.354**, Rank 28 of 88 in INFECTIOUS DISEASES journals, Rank 33 of 180 in PUBLIC, ENVIRONMENTAL & OCCUPATIONAL HEALTH journals.
- 30) Robinson ED, Volles DF, Kramme K, **Mathers AJ**, Sawyer RG. Collaborative Antimicrobial Stewardship for Surgeons. *Infect Dis Clin North Am.* 2020 Mar;34(1):97-108. Review. PMID: 32008698 Mentored Evan Robinson in review of manuscript, writing and editing and then working with other authors on submission of manuscript. **Impact factor-4.757**

- 31) Davies TJ, Stoesser N, Sheppard AE, Abuoun M, Fowler P, Swann J, Quan TP, Griffiths D, Vaughan A, Morgan M, Phan HTT, Jeffery KJ, Andersson M, Ellington MJ, Ekelund O, Woodford N, **Mathers AJ**, Bonomo RA, Crook DW, Peto TEA, Anjum MF, Walker AS. Reconciling the potentially irreconcilable? Genotypic and phenotypic amoxicillin-clavulanate resistance in *Escherichia coli*. *Antimicrob Agents Chemother*. 2020 Mar 23. pii: AAC.02026-19. doi: 10.1128/AAC.02026-19. PMID: 32205351 **Impact factor-4.255**, Rank 25 of 125 in MICROBIOLOGY journals, Rank 33 of 261 in PHARMACOLOGY & PHARMACY journals. Amy Mathers contributed scientifically to the analysis, writing and revision of the manuscript.
- 32) Park SC, Wailan AM, Barry KE, Vegesana K, Carroll J, **Mathers AJ**, Miller WR, Munita JM. Managing All the Genotypic Knowledge: Approach to a Septic Patient Colonized by Different *Enterobacteriales* with Unique Carbapenemases. *Antimicrob Agents Chemother*. 2019 Jul 25;63(8). pii: e00029-19. doi: 10.1128/AAC.00029-19. Print 2019 Aug. PMID:31345843 **Impact factor-4.255**, Rank 25 of 125 in MICROBIOLOGY journals, Rank 33 of 261 in PHARMACOLOGY & PHARMACY journals. Mentored Stacy Park in execution of science, write-up and submission of manuscript. Original senior author but case discussants added as last authors.
- 33) Elliott ZS, Barry KE, Cox HL, Stoesser N, Carroll J, Vegesana K, Kotay S, Sheppard AE, Wailan A, Crook DW, Parikh H, **Mathers AJ**. The Role of *fosA* in Challenges with Fosfomycin Susceptibility Testing of Multispecies *Klebsiella pneumoniae* Carbapenemase-Producing Clinical Isolates. *J Clin Microbiol*. 2019 Jul 24. pii: JCM.00634-19. doi: 10.1128/JCM.00634-19. PMID: 31340992. **Impact factor-4.054**, Rank 30 of 125 in MICROBIOLOGY journals.
- 34) Operario DJ, Pholwat S, Koeppel AF, Prorock A, Bao Y, Sol-Church K, Scheurenbrand M, Poulter M, Turner S, Parikh HI, **Mathers A**, Houpt ER. *Mycobacterium Avium* Complex Diversity within Lung Disease as Revealed by Whole Genome Sequencing. *Am J Respir Crit Care Med*. 2019 Apr 9. doi: 10.1164/rccm.201903-0669LE. PMID: 30965019. **Impact factor-15.239**, Rank 2 of 33 in CRITICAL CARE MEDICINE journals, Rank 2 of 59 in RESPIRATORY SYSTEM journals. Amy Mathers helped interpret results of genomics in the context of transmission between and within patients. Assisted with the revision of the manuscript.
- 35) Reeme AE, Bowler SL, Buchan BW, Graham MB, Behrens E, Singh S, Hong JC, Arvan J, Hyke JW, Palen L, Savage S, Seliger H, Huerta S, Ledebouer NA, Kotay S, **Mathers AJ**, Cooper VS, Mustapha MM, Mettus RT, Doi Y, Munoz-Price LS. Use of a cohorting-unit and systematic surveillance cultures to control a *Klebsiella pneumoniae* carbapenemase (KPC)-producing Enterobacteriaceae outbreak. *Infect Control Hosp Epidemiol*. 2019 May 14:1-7.

- doi: 10.1017/ice.2019.99. PMID: 31084655 **Impact factor-3.084**, Rank 33 of 88 in INFECTIOUS DISEASES journal, Rank 36 of 181 in PUBLIC, ENVIRONMENTAL & OCCUPATIONAL HEALTH journals. Amy Mathers provided advice about outbreak management and provided microbiologic processing of environmental samples.
- 36) Clark SD, Sidlak M, **Mathers AJ**, Poulter M, Platts-Mills JA. Clinical Yield of a Molecular Diagnostic Panel for Enteric Pathogens in Adult Outpatients With Diarrhea and Validation of Guidelines-Based Criteria for Testing. *Open Forum Infect Dis*. 2019 Apr 16;6(4):ofz162. doi: 10.1093/ofid/ofz162. 2019. PMID:31041357 **Impact factor-3.24**, Rank 31 of 88 in INFECTIOUS DISEASES journals. Amy Mathers helped acquire data. She provided context for the findings and assisted in drafting of the manuscript with a focus on the discussion.
- 37) Barry K, Wailan AM, Sheppard AE, Crook D, Vegesana K, Stoesser N, Parikh HI, Sebra R, **Mathers AJ**. Don't overlook the little guy: An evaluation of the frequency of small plasmids co-conjugating with larger carbapenemase gene containing plasmids. *Plasmid*. 2019 Mar 27. pii: S0147-619X(18)30155-0. doi: 10.1016/j.plasmid.2019.03.005. PMID:30928702 **Impact factor-2.228**, Rank 102 of 171 in GENETICS & HEREDITY journals, Rank 78 of 125 in MICROBIOLOGY journals.
- 38) **Mathers AJ**, Crook D, Vaughan A, Barry K, Vegesana K, Stoesser N, Parikh HI, Sebra R, Kotay S, Walker AS, Sheppard AE. *Klebsiella quasipneumoniae* provides a window into carbapenemase gene transfer, plasmid rearrangements and patient interactions with the hospital environment. *Antimicrob Agents Chemother*. 2019 Mar 25. pii: AAC.02513-18. doi: 10.1128/AAC.02513-18. PMID:30910889 **Impact factor-4.255**, Rank 25 of 125 in MICROBIOLOGY journals, Rank 33 of 261 in PHARMACOLOGY & PHARMACY journals
- 39) Athans V, Neuner EA, Hassouna H, Richter SS, Keller G, Castanheira M5, Brizendine KD, **Mathers AJ**. Meropenem-Vaborbactam as Salvage Therapy for Ceftazidime-Avibactam-Resistant *Klebsiella pneumoniae* Bacteremia and Abscess in a Liver Transplant Recipient. *Antimicrob Agents Chemother*. 2018 Dec 21;63(1). pii: e01551-18. doi: 10.1128/AAC.01551-18. PMID: 30578403. **Impact factor-4.255**, Rank 25 of 125 in MICROBIOLOGY journals, Rank 33 of 261 in PHARMACOLOGY & PHARMACY journals. Amy Mathers was invited as an expert discussant of the manuscript and wrote a commentary to place the case in context of management of patients with emerging resistance.
- 40) Aranega-Bou P, George RP, Verlander NQ, Paton S, Bennett A, Moore G; **TRACE Investigators' Group**. Carbapenem-resistant Enterobacteriaceae dispersal from sinks is linked to drain position and drainage rates in a laboratory model system *Hosp Infect*. 2018 Dec 18. pii: S0195-6701(18)30711-4. doi: 10.1016/j.jhin.2018.12.007. PMID: 30571992. **Impact factor-3.354**,

Rank 28 of 88 in INFECTIOUS DISEASES journals, Rank 33 of 180 in PUBLIC, ENVIRONMENTAL & OCCUPATIONAL HEALTH journal. Amy Mathers is a member of the TRANSMISSION OF Carbapenemase producing Enterobacteriaceae (TRACE) Investigators' group with several researchers working to understand the dynamics between drug resistant pathogens in the hospital wastewater environment. Amy often acts as an advisor to this research collaborative which is largely based in England. For this work Amy Mathers had traveled several times to help design experiments in Public Health England's testing laboratory at Porton Down. She reviewed data and advised on experimental parameters as well as assisting in manuscript drafting and revising.

- 41) Sheppard AE, Stoesser N, German-Mesner I, Vegesana K, Sarah Walker A, Crook DW, **Mathers AJ**. TETyper: a bioinformatic pipeline for classifying variation and genetic contexts of transposable elements from short-read whole-genome sequencing data. *Microb Genom*. 2018 Nov 22. doi: 10.1099/mgen.0.000232. PMID: 30465646
- 42) Julia L, Vilankar K, Kang H, Brown DE, **Mathers AJ**, Barnes LE. Environmental Reservoirs of Nosocomial Infection: Imputation Methods for Linking Clinical and Environmental Microbiological Data to Understand Infection Transmission. *AMIA Annu Symp Proc*. 2018 Apr 16;2017:1120-1129. eCollection 2017. PMID: 29854180. Amy Mathers provided context and input for the analysis. The data used was from infrastructure and organized by a team led by Dr. Mathers. She also provided grant funding for the data infrastructure. Spent time reviewing data with students and training them on patient movement and diagnostic codes as well as participating in evaluation of the students' performance.
- 43) Kotay S, Donlan RM, Ganim C, Barry K, Christensen BE, **Mathers AJ**. Droplet rather than Aerosol Mediated Dispersion is the Primary Mechanism of Bacterial transmission from Contaminated Hand Washing Sink Traps. *Appl Environ Microbiol*. 2018 Oct 26. pii: AEM.01997-18. doi: 10.1128/AEM.01997-18. PMID:30367005. **Impact factor-3.633**, Rank 39 of 160 in BIOTECHNOLOGY & APPLIED MICROBIOLOGY journals, Rank 36 of 125 in MICROBIOLOGY journals. Not yet cited.
- 44) Wunderink RG, Giamarellos-Bourboulis EJ, Rahav G, **Mathers AJ**, Bassetti M, Vazquez J, Cornely OA, Solomkin J, Bhowmick T, Bishara J, Daikos GL, Felton T, Furst MJL, Kwak EJ, Menichetti F, Oren I, Alexander EL, Griffith D, Lomovskaya O, Loutit J, Zhang S, Dudley MN, Kaye KS. Effect and Safety of Meropenem-Vaborbactam versus Best-Available Therapy in Patients with Carbapenem-Resistant Enterobacteriaceae Infections: The TANGO II Randomized Clinical Trial. *Infect Dis Ther*. 2018 Oct 1. doi: 10.1007/s40121-018-0214-1. PMID: 30270406. **Impact factor - 3.89**, Rank 33/161 in Biotechnology and Applied Microbiology journals, Rank 31/123 in Microbiology journals. Not yet cited. Amy Mathers participated in the clinical trial design,

- enrolled patients, and edited and contributed to the writing and revising of the manuscript.
- 45) Humphries RM, Hindler J, Jane Ferraro M, **Mathers AJ**. Twenty-first Century Cures Act and Antimicrobial Susceptibility Testing: Clinical Implications in the Era of Multidrug Resistance. *Clin Infect Dis*. 2018 Sep 14;67(7):1132-1138. PMID: 29796616 **Impact factor-9.117**, Rank 11 of 155 in IMMUNOLOGY journals, Rank 3 of 88 in INFECTIOUS DISEASES journals, Rank 11 of 125 in MICROBIOLOGY journals. Not yet cited.
- 46) Decraene V, Phan HTT, George R, Wyllie DH, Akinremi O, Aiken Z, Cleary P, Dodgson A, Pankhurst L, Crook DW, Lenney C, Walker AS, Woodford N, Sebra R, Fath-Ordoubadi F, **Mathers AJ**, Seale AC, Guiver M, McEwan A, Watts V, Welfare W, Stoesser N, Cawthorne J; TRACE Investigators' Group. A large, refractory nosocomial outbreak of *Klebsiella pneumoniae* carbapenemase (KPC)-producing *Escherichia coli* demonstrates carbapenemase gene outbreaks involving sink sites require novel approaches to infection control. *Antimicrob Agents Chemother*. 2018 Sep 24. pii: AAC.01689-18. **Impact factor-4.255**, Rank 25 of 125 in MICROBIOLOGY journals, Rank 33 of 261 in PHARMACOLOGY & PHARMACY journals. Dr. Mathers traveled to site of transmission multiple times to advise on study design and sampling techniques. Provided feedback on manuscript concept, writing and revising.
- 47) Gray ME, Cox HL, Donohue LE, Poulter MD, Eby JC, **Mathers AJ**. The effect of rapid diagnostic testing with Infectious Diseases fellow consultative intervention on the management of enterococcal bloodstream infection. *Diagn Microbiol Infect Dis*. 2018. pii: S0732-8893(18)30227-X. doi: 10.1016/j.diagmicrobio.2018.07.004. PMID:30145036. **Impact factor-2.341**, Rank 52 of 88 in INFECTIOUS DISEASES journals, Rank 70 of 125 in MICROBIOLOGY journals. Not yet cited.
- 48) Grabowski M, Lobo JM, Gunnell B, Enfield K, Carpenter R, Barnes L, **Mathers AJ**. Characterizations of handwashing sink activities in a single hospital medical intensive care unit. *J Hosp Infect*. 2018 May 5. pii: S0195-6701(18)30263-9. doi: 10.1016/j.jhin.2018.04.025. PMID:29738784 **Impact factor-3.354**, Rank 28 of 88 in INFECTIOUS DISEASES journals, Rank 33 of 180 in PUBLIC, ENVIRONMENTAL & OCCUPATIONAL HEALTH journals. Not yet cited.
- 49) Madden GR, German Mesner I, Cox HL, **Mathers AJ**, Lyman JA, Sifri CD, Enfield KB. Reduced *Clostridium difficile* Tests and Laboratory-Identified Events With a Computerized Clinical Decision Support Tool and Financial Incentive. *Infect Control Hosp Epidemiol*. 2018 Jun;39(6):737-740. doi: 10.1017/ice.2018.53. PMID: 29644943. **Impact factor-3.084**, Rank 33 of 88 in INFECTIOUS DISEASES journals, Rank 36 of 180 in PUBLIC, ENVIRONMENTAL & OCCUPATIONAL HEALTH journals. Not yet cited.

- Mathers was central to establishing the database to collect data, performing chart reviews and involved in the content of the clinical decision support tool for test ordering. She was also involved in reviewing and revising the manuscript.
- 50) Fleece ME, Pholwat S, **Mathers AJ**, Houpt ER. Molecular diagnosis of antimicrobial resistance in Escherichia coli. *Expert Rev Mol Diagn*. 2018 Feb 19:1-11. doi: 10.1080/14737159.2018.1439381.PMID: 29431523. **Impact Factor-3.326**, Rank 17 of 79 in PATHOLOGY journals. One citation. Mathers assisted with concept, writing, editing, content gathering and scope of manuscript.
- 51) **Mathers AJ**, Vegesana K, German Mesner I, Barry KE, Pannone A, Baumann J, Crook DW, Stoesser N, Kotay S, Carroll J, Sifri CD. Intensive Care Unit Wastewater Interventions to Prevent Transmission of Multi-species Klebsiella pneumoniae Carbapenemase (KPC) Producing Organisms. *Clin Infect Dis*. 2018 Feb 2. doi: 10.1093/cid/ciy052. PMID: 29409044. **Impact factor-9.117**, Rank 11 of 155 in IMMUNOLOGY journals, Rank 3 of 88 in INFECTIOUS DISEASES journals, Rank 11 of 125 in MICROBIOLOGY journals. Cited one time.
- 52) George S, Pankhurst L, Hubbard, Votintseva A, Stoesser N, Sheppard AE, **Mathers AJ**, Norris R, Navickaite I, Eaton C, Iqbal Z, Crook DW, Phan HTT. Resolving plasmid structures in Enterobacteriaceae using the MinION nanopore sequencer: assessment of MinION and MinION/Illumina hybrid data assembly approaches. *Microb Genomics*. 2017 Aug; 3(8): e000118. PMID: 29026658. Cited twice. Open access peer reviewed new journal which does not yet have an established impact factor. Amy Mathers assisted with microbiologic isolation, characterization of strains and plasmids used in study to validate methods. She also performed some writing as well as review and revision of manuscript.
- 53) Eby JC, **Mathers AJ**, Cox HL, Richey MM, Platts-Mills JA, Novicoff WM. Reply to Weinbren and Collins. *Clin Infect Dis*. 2017 Nov 17. doi: 10.1093/cid/cix1017. PMID: 29161355. **Impact factor-9.117**, Rank 11 of 155 in IMMUNOLOGY journals, Rank 3 of 88 in INFECTIOUS DISEASES journals, Rank 11 of 125 in MICROBIOLOGY journals. Not cited. Mathers helped to craft the response in the context of clinical microbiology turnaround time issues and gathered and compiled laboratory data to generate informed response.
- 54) Grabowski ME, Kang H, Wells KM, Sifri CD, **Mathers AJ**, Lobo JM. Provider Role in Transmission of Carbapenem-Resistant Enterobacteriaceae. *Infect Control Hosp Epidemiol*. 2017 Nov;38(11):1329-1334. doi: 10.1017/ice.2017.216. Epub 2017 Oct 24. PMID: 29061201. **Impact factor-3.084**, Rank 33 of 88 in INFECTIOUS DISEASES journals, Rank 36 of 180 in

- PUBLIC, ENVIRONMENTAL & OCCUPATIONAL HEALTH journals.
Cited one time. Mathers provided context and input for the analysis. The data used was from infrastructure and organized by a team led by Dr. Mathers. She also provided grant funding for the data infrastructure.
- 55) Eby JC, Richey MM, Platts-Mills JA, **Mathers AJ**, Novicoff WM, Cox HL. A Healthcare Improvement Intervention Combining Nucleic Acid Microarray Testing With Direct Physician Response for Management of *Staphylococcus aureus* Bacteremia. *Clin Infect Dis*. 2018 Jan 6;66(1):64-71. PMID: 29020181. **Impact factor-9.117**, Rank 11 of 155 in IMMUNOLOGY journals, Rank 3 of 88 in INFECTIOUS DISEASES journals, Rank 11 of 125 in MICROBIOLOGY journals. Cited seven times. Dr. Mathers helped to organize and lead the implementation of the paired laboratory and quality intervention. She assisted in writing and reviewing of the manuscript.
- 56) Stoesser N, Sheppard AE, Peirano G, Anson LW, Pankhurst L, Sebra R, Phan HTT, Kasarskis A, **Mathers AJ**, Peto TEA, Bradford P, Motyl MR, Walker AS, Crook DW, Pitout JD. Genomic epidemiology of global *Klebsiella pneumoniae* carbapenemase (KPC)-producing *Escherichia coli*. *Scientific Reports*. 2017 Jul 19;7(1):5917. doi: 10.1038/s41598-017-06256-2. PMID: 28725045. **Impact factor-4.122**, Rank 12 of 64 in MULTIDISCIPLINARY SCIENCES journals. Cited seven times. Dr. Mathers assisted with microbiologic isolation, characterization of *E. coli* and review and revision of manuscript.
- 57) Cheruvanky A, Stoesser N, Sheppard AE, Crook DW, Hoffman PS, Weddle E, Carroll J, Sifri CD, Chai W, Barry K, Ramakrishnan G, **Mathers AJ**. Enhanced *Klebsiella pneumoniae* carbapenemase (KPC) expression from a novel *Tn4401* deletion. *Antimicrob Agents Chemother*. 2017 Apr 3. pii: AAC.00025-17. doi: 10.1128/AAC.00025-17. PMID: 28373185. **Impact factor-4.255**, Rank 25 of 125 in MICROBIOLOGY journals, Rank 33 of 261 in PHARMACOLOGY & PHARMACY journals. Cited seven times.
- 58) Kotay S, Chai W, Guilford W, Barry K, **Mathers AJ**. Spread from the Sink to the Patient: in situ Study Using Green Fluorescent Protein (GFP) Expressing-*Escherichia coli* to Model Bacterial Dispersion from Hand Washing Sink Trap Reservoirs. *Appl Environ Microbiol*. 2017 Feb 24. pii: AEM.03327-16. doi: 10.1128/AEM.03327-16. PMID: 28235877 **Impact factor-3.633**, Rank 39 of 160 in BIOTECHNOLOGY & APPLIED MICROBIOLOGY journals, Rank 36 of 125 in MICROBIOLOGY journals. Cited 11 times. Paper featured with cover image and American Society of Microbiology Press Release with follow-up stories in multiple lay and scientific news organizations.
- 59) Kizny Gordon AE, **Mathers AJ**, Cheong EY, Gottlieb T, Kotay S, Walker AS, Peto TE, Crook DW, Stoesser N. Is the hospital water environment a reservoir for carbapenem-resistant organisms causing hospital-acquired infections? A

- systematic review of the literature. Clin Infect Dis. 2017 Feb 13. doi: 10.1093/cid/cix132. PMID: 28200000. **Impact factor-9.117**, Rank 11 of 155 in IMMUNOLOGY journals, Rank 3 of 88 in INFECTIOUS DISEASES journals, Rank 11 of 125 in MICROBIOLOGY journals. Cited 12 times. Dr. Mathers's Role on manuscript was to help solidify the paper concept and approach, assist with review of data and edit and revise drafts.
- 60) **Mathers AJ**, Stoesser N, Chai W, Carroll J, Barry K, Cherunvanky A, Sebra R, Kasarskis A, Peto TE, Walker AS, Sifri CD, Crook DW, Sheppard AE. Chromosomal Integration of the *Klebsiella pneumoniae* Carbapenemase Gene, blaKPC, in Klebsiella Species Is Elusive but Not Rare. Antimicrob Agents Chemother. 2017 Feb 23;61(3). pii: e01823-16. doi: 10.1128/AAC.01823-16. PMID: 28031204 . **Impact factor-4.255**, Rank 25 of 125 in MICROBIOLOGY journals, Rank 33 of 261 in PHARMACOLOGY & PHARMACY journals. Cited five times.
- 61) Hardiman CA, Weingarten RA, Conlan S, Khil P, Dekker JP, **Mathers AJ**, Sheppard AE, Segre JA, Frank KM. Horizontal Transfer of Carbapenemase-Encoding Plasmids and Comparison with Hospital Epidemiology Data. Antimicrob Agents Chemother. 2016 Jul 22;60(8):4910-9. PMID: 27270289. **Impact factor-4.255**, Rank 25 of 125 in MICROBIOLOGY journals, Rank 33 of 261 in PHARMACOLOGY & PHARMACY journals. Cited six times. Role was to guide and advise planned experiments, provide sequence and data as well as reference strains and characterization of strains with preliminary data. Helped revise manuscript.
- 62) Sheppard AE, Stoesser N, Wilson DJ, Sebra R, Kasarskis A, Anson LW, Giess A, Pankhurst LJ, Vaughan A, Grim CJ, Cox HL, Yeh AJ; Modernizing Medical Microbiology (MMM) Informatics Group, Sifri CD, Walker AS, Peto TE, Crook DW, **Mathers AJ**. Nested Russian Doll-like Genetic Mobility Drives Rapid Dissemination of the Carbapenem Resistance Gene bla_{KPC}. Antimicrob Agents Chemother. (2016); 60(6):3767-78. PMID: 27067320. **Impact factor-4.255**, Rank 25 of 125 in MICROBIOLOGY journals, Rank 33 of 261 in PHARMACOLOGY & PHARMACY journals. Cited 46 times.
- 63) Lewis JD, Enfield KB, Cox HL, **Mathers AJ**, Sifri CD. A single-center experience with infections due to daptomycin-nonsusceptible *Enterococcus faecium* in liver transplant recipients. Transpl Infect Dis. (2016) PMID: 26953719. **Impact factor-1.869**, Rank 130 of 155 in IMMUNOLOGY journals, Rank 67 of 88 in INFECTIOUS DISEASES journals, Rank 15 of 25 in TRANSPLANTATION journals. Cited five times. Dr. Mathers assisted with microbiologic isolation and review and revision of manuscript.
- 64) Sheppard AE, Stoesser N, Sebra R, Kasarskis A, Deikus G, Anson L, Walker AS, Peto TE, Crook DW, **Mathers AJ**. Complete Genome Sequence of KPC-Producing *Klebsiella pneumoniae* Strain CAV1193. Genome Announc. (2016) Jan

- 28;4(1). pii: e01649-15. doi: 10.1128/genomeA.01649-15.PMID: 26823590. Not indexed in the Web of Science.
- 65) Stoesser N, **Mathers AJ**, Moore CE, Day NP, Crook DW. Colistin resistance gene *mcr-1* and pHNSHP45 plasmid in human isolates of *Escherichia coli* and *Klebsiella pneumoniae*. *Lancet Infect Dis.* (2016) Mar;16(3):285-6. doi: 10.1016/S1473-3099(16)00010-4. PMID: 26774239. **Impact factor-25.148**, Rank 1 of 88 in INFECTIOUS DISEASES JOURNALS. Cited 58 times. Dr. Mathers curated isolates, assisted in analysis, reviewed and edited manuscript.
- 66) Schutte KM, Fisher DJ, Burdick MD, Mehrad B, **Mathers AJ**, Mann BJ, Nakamoto RK, Hughes MA. *Escherichia coli* Pyruvate Dehydrogenase Complex Is an Important Component of CXCL10-Mediated Antimicrobial Activity. *Infect Immun.* (2015) 84(1):320-8. doi: 10.1128/IAI.00552-15. PMID: 26553462. **Impact factor-3.256**, Rank 75 of 155 in IMMUNOLOGY journals, Rank 30 of 88 in INFECTIOUS DISEASES journals. Cited eight times. Dr. Mathers collected and characterized the molecular aspects of the *E. coli* strain used in the study.
- 67) Day SR, Smith D, Harris K, Cox HL, **Mathers AJ**. An Infectious Diseases Physician Led Antimicrobial Stewardship Program (ASP) at a Small Community Hospital Associated with Improved Susceptibility Patterns and Cost-Savings after the First Year. *Open Forum Infectious Diseases* (2015); 12;2(2):ofv064. PMID: 26110166 . **Impact factor-3.24**, Rank 31 of 88 in INFECTIOUS DISEASES journals. Not cited. Cited eight times.
- 68) **Mathers AJ**, Peirano G, Pitout JD. The Role of Epidemic Resistance Plasmids and International High-Risk Clones in the Spread of Multidrug-Resistant Enterobacteriaceae. *Clin Microbiol Rev.* (2015); 28(3):565-591. PMID:25926236. Twenty-two citations. **Impact factor-20.642**, Rank 2 of 125 in MICROBIOLOGY journals. Cited 159 times.
- 69) Lewis JD, Enfield KB, **Mathers AJ**, Giannetta ET, Sifri CD. The Limits of Serial Surveillance Cultures in Predicting Clearance of Colonization with Carbapenemase-Producing Enterobacteriaceae. *Infect Control Hosp Epidemiol.* (2015) Mar 17:1-13. PMID:25777261. **Impact factor-3.084**, Rank 33 of 88 in INFECTIOUS DISEASES journals, Rank 36 of 180 in PUBLIC, ENVIRONMENTAL & OCCUPATIONAL HEALTH journals. Cited six times. Dr. Mathers led the establishment and approach for the Carbapenemase-Producing Enterobacteriaceae surveillance program, assisted in experimental design and writing of the manuscript.
- 70) **Mathers AJ**, Stoesser N, Sheppard AE, Pankhurst L, Giess A, Yeh AJ, Didelot X, Turner SD, Sebra R, Kasarskis A, Peto T, Crook D, Sifri CD. *Klebsiella pneumoniae* carbapenemase (KPC) producing *K. pneumoniae* at a Single Institution: Insights into Endemicity from Whole Genome Sequencing.

- Antimicrob Agents Chemother. (2015); 59(3):1656-63. PMID:25561339
Impact factor-4.255, Rank 25 of 125 in MICROBIOLOGY journals, Rank 33 of 261 in PHARMACOLOGY & PHARMACY journal. Cited 54 times.
- 71) **Mathers AJ**, Peirano G, Pitout JD. Escherichia coli ST131: The Quintessential Example of an International Multiresistant High-Risk Clone. Adv Appl Microbiol. (2015); 90C:109-154. PMID: 25596031. Cited 35 times. **Impact factor-4.677**, Rank of 23 of 126 in MICROBIOLOGY journals, Rank 23 of 161 in BIOTECHNOLOGY & APPLIED MICROBIOLOGY journals.
- 72) Enfield KB, Huq NN, Gosseling MF, Low DJ, Hazen KC, Toney DM, Slitt G, Zapata HJ, Cox HL, Lewis JD, Kundzins JR, **Mathers AJ**, Sifri CD. Control of simultaneous outbreaks of carbapenemase-producing Enterobacteriaceae and extensively drug-resistant *Acinetobacter baumannii* infection in an intensive care unit using interventions promoted in the Centers for Disease Control and Prevention 2012 carbapenemase-resistant Enterobacteriaceae Toolkit. Infect Control Hosp Epidemiol. (2014); 35(7):810-7. PMID: 24915208 **Impact factor-3.084**, Rank 33 of 88 in INFECTIOUS DISEASES journals, Rank 36 of 180 in PUBLIC, ENVIRONMENTAL & OCCUPATIONAL HEALTH journals. Cited 25 times. Dr. Mathers led the establishment and approach for the Carbapenemase-Producing Enterobacteriaceae surveillance program, oversaw the laboratory work of the trainees involved in the project, assisted in experimental design and writing of the manuscript.
- 73) **Mathers AJ**, Poulter M, Dirks D, Carroll J, Sifri CD, Hazen KC. Clinical Microbiology Costs for Methods of Active Surveillance for *Klebsiella pneumoniae* Carbapenemase-Producing Enterobacteriaceae. Infect Control Hosp Epidemiol (2014); 35(4):350-355. PMID: 24602938. **Impact factor-3.084**, Rank 33 of 88 in INFECTIOUS DISEASES journals, Rank 36 of 180 in PUBLIC, ENVIRONMENTAL & OCCUPATIONAL HEALTH journals. Cited 19 times. This manuscript was chosen as one of the 10 most significant reports during the past year that integrate Infection Control practice with Diagnostic Microbiology testing by the American Society for Microbiology
- 74) **Mathers AJ**, Guarrant RL. Dissecting the evolutionary stealth of our flora against antibiotics. Trans R Soc Trop Med Hyg (2014); 108(3): 121–122. PMID: 24535149. **Impact factor-2.820**, Rank 43 of 181 in PUBLIC, ENVIRONMENTAL & OCCUPATIONAL HEALTH journals, Rank 5 of 20 in TROPICAL MEDICINE journals. Three citations.
- 75) Adler A, Khabra E, Chmelnitsky I, Giakkoupi P, Vatopoulos A, **Mathers AJ**, Yeh AJ, Sifri CD, De Angelis G, Tacconelli E, Villegas MV, Quinn J, Carmeli Y. Development and validation of a multiplex PCR assay for identification of the epidemic ST-258/512 KPC-producing *Klebsiella pneumoniae* clone. Diagn Microbiol Infect Dis. (2014);78(1):12-5.PMID: 24231383. **Impact factor-2.341**, Rank 52 of 88 in INFECTIOUS DISEASES journals, Rank 70 of 125 in

- MICROBIOLOGY journals. Cited 20 times. Dr. Mathers personally performed and oversaw the performance of roughly a third of the experiments.
- 76) Lewis JD, Bishop M, Heon B, **Mathers AJ**, Enfield KB, Sifri CD. Admission surveillance for carbapenemase-producing Enterobacteriaceae at a long-term acute care hospital. *Infect Control Hosp Epidemiol.* (2013); 34(8):832-4. PMID: 23838224. Four citations. **Impact factor-3.084**, Rank 33 of 88 in INFECTIOUS DISEASES journals, Rank 36 of 180 in PUBLIC, ENVIRONMENTAL & OCCUPATIONAL HEALTH journals. Cited seven times. Dr. Mathers led the establishment and approach for the Carbapenemase-Producing Enterobacteriaceae surveillance program, she confirmed a carbapenemase gene by PCR for clinical isolates and assisted in writing of the manuscript.
- 77) **Mathers A**, Carroll J, Sifri CD, Hazen K. Modified Hodge Test versus the Indirect Carbapenemase Test: A Prospective Evaluation of a Phenotypic Assay for Detection of *Klebsiella pneumoniae* carbapenemase (KPC) in Enterobacteriaceae. *J Clin Micro* (2013) 51(4):1291-3 PMID:23390272. **Impact factor-4.054**, Rank 30 of 125 in MICROBIOLOGY journals. Cited 27 times.
- 78) **Mathers A**, Hazen K, Carroll J, Yeh A, Cox H, Bonomo R, Sifri CD. First Clinical Cases of OXA-48-Producing Carbapenem-Resistant *Klebsiella pneumoniae* in the United States: the "Menace" Arrives in the New World. *J Clin Micro* (2013) 51(2):680-683. PMID: 23175248. **Impact factor-4.054**, Rank 30 of 125 in MICROBIOLOGY journals. Cited 62 times.
- 79) Macqueen DD, Lubelczyk C, Elias SP, Cahill BK, **Mathers AJ**, Lacombe EH, Rand PW, Smith RP. Genotypic Diversity of an Emergent Population of *Borrelia burgdorferi* at a Coastal Maine Island Recently Colonized by *Ixodes scapularis*. *Vector Borne Zoonotic Dis.* (2012) 12(6):456-61. PMID: 22217172. Three citations. **Impact factor-2.171**, Rank 55 of 88 in INFECTIOUS DISEASES journals, Rank 71 of 180 in PUBLIC, ENVIRONMENTAL & OCCUPATIONAL HEALTH journals. Dr. Mathers provided funding from a grant she had obtained and performed more than half of the bench work of required for this manuscript.
- 80) **Mathers AJ**, Cox HL, Kitchel B, Bonatti H, Brassinga AK, Carroll J, Scheld WM, Hazen KC, Sifri CD. Molecular Dissection of an Outbreak of Carbapenem-Resistant Enterobacteriaceae Reveals Intergenous KPC Carbapenemase Transmission through a Promiscuous Plasmid. *MBio.* (2011) 1;2(6). pii: e00204-11. PMID: 22045989. Cited 68 times. **Impact factor-6.689**, Rank 13 of 125 in MICROBIOLOGY journals.
- 81) **Mathers A**, Smith RP, Cahill B, Lubelczyk C, Elias SP, Lacombe E, Morris SR, Vary CP, Parent CE, Rand PW. Strain diversity of *Borrelia burgdorferi* in ticks dispersed in North America by migratory birds. *J Vector Ecol.* (2011) 36

- (1):24-9. PMID: 21635638. Six citations. **Impact factor-1.390**, Rank 37 of 96 in ENTOMOLOGY journals.
- 82) **Mathers A**, Cox H, Bonatti H, Kitchel B, Brassinga AC, Wispelwey B, Sawyer RG, Pruett TL, Hazen KC, Patel JB, Sifri CD. Fatal cross infection by carbapenem resistant *Klebsiella* in two liver transplant recipients. *Transpl Infect Dis.* (2009) 11(3):257-65. PMID: 19254325. **Impact factor-1.869**, Rank 130 of 155 in IMMUNOLOGY journals, Rank 67 of 88 in INFECTIOUS DISEASES journals, Rank 15 of 25 in TRANSPLANTATION journals. Cited 54 times.
- 83) Smith R, Muzaffar SB, Lavers J, Lacombe E, Cahill B, Lubelczyk C, Kinsler A, **Mathers A**, Rand P. *Borrelia garinii* in Seabird Ticks (*Ixodes uriae*), Atlantic Coast, North America. *Emerging Infectious Diseases.* (2006) 12(12):1909-1912. PMID: 17326943. **Impact factor-7.422**, Rank 17 of 155 in IMMUNOLOGY journals, Rank 4 of 88 in INFECTIOUS DISEASES journals. Cited 34 times. Dr. Mathers provided grant funding and performed over half of the laboratory experiments for this work.

B. Peer Reviewed Abstracts

- 1) Robinson E, Cox HL, Attai A, Donohue L, Shah M, Elliott Z, Hill B, Mathers AJ. Impact of Discrepant Rapid Diagnostic Test (RDT) Results on Antimicrobial Stewardship Program (ASP) Interventions in Patients with Bloodstream Infections (BSI) due to Gram-Negative Bacilli (GNB). *Infectious Diseases Society of America Annual Meeting (IDWeek) Virtual 2020 poster #90*
- 2) Park S, Attai A, Enfield K, Bell T, Hill B, Carpenter R, Cox HL, Mathers AJ. Pseudo-outbreak of Coagulase-negative Staphylococcus Species from Blood Cultures Highlights Unique Challenges in Care of Critically Ill Patients With COVID-19. *Infectious Diseases Society of America Annual Meeting (IDWeek) Virtual 2020 Poster #394*
- 3) Smith B, Mathers AJ, Kotay S, Parikh H, Barry K, Seidelman J, Addison R, Huslage K, Hnat A, Sova C, Lewis S. What's Lurking in the Drain? Serial Transmission of NDM-1 *Klebsiella pneumoniae* to Patients Admitted 9 Months Apart to the Same ICU Room. *IDweek2019, October 2019 Washington DC Poster 2466.*
- 4) Mathers AJ, Sheppard A, Nicole Stoesser N, Crook D, Barry KE, Eyre D, Parikh H. Making of a "Super-Duper Bug": Plasmid Mediated Resistance Accumulation in a Carbapenemase-Producing *Klebsiella quasipneumoniae* from Patients and the Environment *IDweek2019, October 2019 Washington DC Poster 505.*
- 5) Cox HL, Attai AE, Stillwell AM, Vegesana KB, Brewster F, Poulter M, **Mathers AJ**. Attempting to Add Clarity to "Indeterminates" on a Deployed Rapid

- Diagnostic with Antimicrobial Stewardship Program (ASP) Intervention
IDweek2019, October 2019 Washington DC Poster 2143.
- 6) Stilwell A, Cox HL, Vegesana K, Elliott Z, **Mathers AJ**. A Rapid Diagnostic Paired with Antimicrobial Stewardship Program (ASP) Intervention Helps Narrow Early but Not Completely in Patients with Gram-Negative Bacilli (GNB) Bloodstream Infections (BSIs) American Society of Microbiology Annual Meeting (ASM Microbe) San Francisco, CA (2019) Poster AAR-649
 - 7) Park S, Kotay SM, Barry KE, Vegesana K, Dudley S, **Mathers AJ**. Clinical and environmental factors associated with carbapenemase-producing Enterobacteriales (CPE) positivity in the hospital wastewater environment. Society for Healthcare Epidemiology of America (SHEA). Boston, MA (2019) Oral presentation. 373
 - 8) Lewis S, Seidelman J, Huslage K, Carriker C, Hnat A, Lobaugh-Jin E, Sova C, Taylor B, Stritholt N, Vereen S, Willis R, Campbell C, Addison R, Hazen K, **Mathers AJ**, Vegesana K, Carroll J, Kotay S, Baker A, Sexton D, Anderson D, Smith B. Contaminated Sinks May be an Environmental Source for Serial Transmission of Carbapenem-Resistant Enterobacteriaceae (CRE) to ICU Patients ID Week. Joint Meeting of Infectious Diseases Society of America (IDSA) and Society for Healthcare Epidemiology of America (SHEA). San Francisco, CA (2018) Poster 1251.
 - 9) Barry K, Vegesana K, Sheppard AE, Crook D, Kotay S, **Mathers AJ**. Carbapenemase Plasmids Travel with Help: An Evaluation of the Transfer Rate of Small Non-Carbapenemase Plasmids Accompanying KPC plasmids. Plasmid Biology 2018. International Society of Plasmid Biology Bi-Annual Meeting. Seattle, WA. Poster 108.
 - 10) Burgos-Garay M, Ganim C, Davy T, **Mathers AJ**, Kotay S, Donlan R. Supplemental carbon and energy sources stimulate the amplification of carbapenem-resistant *Klebsiella pneumoniae* (CRKP) in a defined sink drain biofilm reactor model. American Society of Microbiology Annual Meeting (ASM Microbe) Atlanta, GA (2018) Poster AES-LB3
 - 11) McCullough S, Cox Hall HL, Elliott Z, Carroll J, **Mathers AJ**. Evaluation of the Accelerate Pheno™ System for clinical decision-making in Gram-negative bacillary bloodstream infections. American Society of Microbiology Annual Meeting (ASM Microbe) Atlanta, GA (2018) Poster SU-237
 - 12) **Mathers AJ**, Eyre D, Wilson D, Vegesana K, German-Mesner I, Ainsworth J, Walker AS, Sheppard A, Crook D, Stoesser N. Differing Rates of Evolutionary Change for Species of Nosocomial *Klebsiella pneumoniae* Carbapenemase-Producing Enterobacteriaceae (KPCE) Symposium: Water, Bugs and Hospital Pipes. Selected for Oral Abstract Presentation. American Society of

- Microbiology Annual Meeting (ASM Microbe) New Orleans, LA (2017)
Selected for oral abstract presentation.
- 13) **Elliott ZS**, Stoesser N, Cox HL, Carroll J, Barry K, Sheppard AE, Crook D, **Mathers AJ**. Fosfomycin *In Vitro* Susceptibility Assessment of Whole Genome Sequenced Multispecies KPC-producing Clinical Isolates. American Society of Microbiology Annual Meeting (ASM Microbe) New Orleans, LA (2017) Poster SA-1044
 - 14) Kotay SM, Barry KE, Guilford W, **Mathers AJ**. Dynamics and Stability of *Klebsiella pneumoniae* carbapenemase producing Enterobacteriaceae (KPCE) from Hospital Hand Washing Sinks American Society of Microbiology Annual Meeting (ASM Microbe) Atlanta, GA (2018). Selected for oral abstract presentation.
 - 15) **Mathers AJ**, Hope W, Kaye KS, Loutit J, Alexander E, Dudley M, Vazquez J. Meropenem-Vaborbactam: Outcomes in Subjects with Renal Impairment in Phase 3 Studies TANGO I and II. ID Week. Joint Meeting of Infectious Diseases Society of America (IDSA) and Society for Healthcare Epidemiology of America (SHEA). San Diego (2017) Poster 1879
 - 16) Sheppard A, Stoesser N, Eyre D, Sebra R, Vegesana K, German Mesner I, Ainsworth J, Peto T, Walker SA, Crook DW, **Mathers AJ**. Rapid reshuffling of Tn4401 transposon variants and plasmids carrying bla_{KPC} in *Klebsiella pneumoniae* ST196 within a single hospital outbreak. 27th European Congress of Clinical Microbiology and Infectious Diseases (ECCMID). Vienna, Austria. (2017) Session: The complex epidemiology of carbapenemases. Oral Presentation. #2295
 - 17) Sheppard A, Stoesser N, Peto T, Walker SA, Crook DW, **Mathers AJ**. Molecular Epidemiological Investigation of Mobile Resistance Genes using Illumina Data. Applied Bioinformatics and Public Health Microbiology. Wellcome Genome Campus, Hinxton, Cambridge, UK. (2107) Poster Presentation.
 - 18) **Mathers AJ**, , Stoesser N, , Crook DW, Sheppard A. Tracking a selfish gene through patients, pathogens, plasmids and plumbing Applied Bioinformatics and Public Health Microbiology. Wellcome Genome Campus, Hinxton, Cambridge, UK. (2017) Oral Presentation.
 - 19) **Gray M**, Cox, HL, Poulter, MP, Eby, J, **Mathers, AJ**. Impact of Infectious Disease Fellow Consultative Intervention combined with Rapid Microarray Assay Technology on Outcomes for Patients with Enterococcal Blood Stream Infection. ID Week. Joint Meeting of Infectious Diseases Society of America (IDSA) and Society for Healthcare Epidemiology of America (SHEA). New Orleans, LA (2016) Poster

- 20) Cheruvanky A, Carroll J, Barry K, Hoffman P, Cox HL, **Mathers AJ**. Accuracy of Cefepime (FEP) Susceptibility Testing of Ceftriaxone Non-Susceptible Enterobacteriaceae (CNSE) by Three Methods. ID Week. Joint Meeting of Infectious Diseases Society of America (IDSA) and Society for Healthcare Epidemiology of America (SHEA). New Orleans, LA (2016) Poster 2012.
- 21) Orr RP, Chai W, Cheruvanky A, Denecke M, Carroll J, **Mathers AJ**. Analysis of Surface Longevity of *Klebsiella pneumoniae* carbapenemase (KPC)-Producing Enterobacteriaceae on an Environmental Surface. American Society of Microbiology Annual Meeting (ASM Microbe) Boston, MA (2016) Poster SA-212
- 22) Subramanian P, Hasan NA, Grim C, **Mathers AJ**, White JR, Isom R, Colwell R. Metagenomic Evaluation of Sink Trap Biofilms as a Nosocomial Reservoir for Carbapenemase Producing Gammaproteobacteria. American Society of Microbiology Annual Meeting (ASM Microbe) Boston, MA (2016) Poster LB-082
- 23) Donohue L, Cox HL, Carroll J, Cheruvanky A, **Mathers AJ**. Performance of ceftazidime-avibactam susceptibility testing methods using real-world multi-drug resistant clinical isolates American Society of Microbiology Annual Meeting (ASM Microbe) Boston, MA (2016) Poster
- 24) **Mathers AJ**, Stoesser N, Carroll J, Ainsworth J, Sifri C, Crook D, Sheppard A. Genomic Evaluation of Nosocomial *Klebsiella pneumoniae* Carbapenemase-Producing *Serratia marcescens* (KPC-Sm). American Society of Microbiology Annual Meeting (ASM Microbe) Boston, MA (2016) Poster SU-275
- 25) Sheppard A, Stoesser N, Walker S, Peto TE, Sebra R, Kasarskis A, Crook D, **Mathers AJ**. Promises and Pitfalls of Illumina Sequencing for Resistance Plasmid Tracking. American Society of Microbiology Annual Meeting (ASM Microbe) Boston, MA (2016) Poster SU-273
- 26) Stoesser N, Peirano G, Sheppard A, Anson L, Pankhurst L, Sebra R, Kasarskis A, **Mathers AJ**, Walker S, Peto T, Crook D, Hoban D, Bradford P, Pitout J. Characterization of Global *Escherichia coli* bla_{KPC} Plasmids Reveals Substantial Diversity. Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC). San Diego (2015) Poster C-1080 (Selected for Poster Walk for Exceptional Posters)
- 27) M. Sidlak M, Platts-Mills J, Hutter S, Giannetta E, Sifri C, Ensinger S, Carroll J, Poulter M, **Mathers AJ**. Early Experience with a Multiplex PCR Gastrointestinal (GI) Pathogen Panel: Implications for Infection Control. Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC). San Diego (2015) Poster D-208

- 28) Cheruvanky A, Carroll J, Hoffman P, Cox H, **Mathers AJ**. Effect of Molecular Class of β -lactamase on the Accuracy of Cefepime (FEP) Susceptibility in Ceftriaxone Non-susceptible Enterobacteriaceae (CNSE). Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC). San Diego (2015) Poster D-1160
- 29) Cheruvanky A, Stoesser N, Sheppard A, Crook D, Ramakrishnan G, **Mathers AJ**. Enhanced *Klebsiella pneumoniae* Carbapenemase (KPC) Expression from a Novel Tn4401 Deletion. Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC). San Diego (2015) Poster C-625 (Selected for Poster Walk for Exceptional Posters)
- 30) Carroll J, Cox H, **Mathers AJ**. Fosfomycin (FOS) Susceptibility Testing of *Klebsiella pneumoniae* Carbapenemase-producing Enterobacteriaceae (KPC-E) Comparison of 2 Methods Using *Escherichia coli* Breakpoints Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC). San Diego (2015) Poster D-190
- 31) **Mathers AJ**, Stoesser N, Sifri C, Sebra R, Kasarskis A, Crook D, Sheppard A. Multiple Occurrences of Chromosomal Integration of the *Klebsiella pneumoniae* carbapenemase gene (*bla_{KPC}*) within High Risk Clones of *K. pneumoniae*. Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC). San Diego (2015) Oral Presentation
- 32) Hardiman CA, Weingarten RA, **Mathers A**, Dekker JP, Conlan S, Palmore TN, Segre JA, Frank KM. Evaluation of Interspecies Plasmid Transfer and Comparison with Hospital Epidemiology Data. 115th General Meeting of American Society for Microbiology, New Orleans, LA (2015) Poster 1880
- 33) **Mathers A**, Stoesser N, Cox HL, Sifri CD, Giess A, Crook D, Sheppard A. Species-dependent *bla_{KPC}*-plasmid Diversity in a Single Hospital: *Citrobacter freundii* versus *Klebsiella pneumoniae*. Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC). Washington DC (2014) Poster C-076
- 34) Stoesser N, Sheppard A, Giess A, Yeh A, Cox HL, Sifri CD, Crook D, **Mathers A**. Dynamics of the KPC Transposon: Tn4401 in a Single US Hospital, 2007---2012 Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC). Washington DC (2014) Poster 1395
- 35) Lewis J, Enfield K, **Mathers A**, Giannetta E, Sifri CD. Utility of Carbapenem-Resistant Enterobacteriaceae Surveillance Cultures in Predicting Clearance of Colonization ID Week. Joint Meeting of Infectious Diseases Society of America (IDSA) and Society for Healthcare Epidemiology of America (SHEA). Philadelphia, PA (2014). Poster 364

- 36) Sheppard A, Geiss A, Stoesser N, Bashir A, Sebra R, Kasarkis A, Sifri CD, Crook DW, **Mathers AJ**. Emergence and spread of a novel carbapenem resistance plasmid in a hospital cohort involving multiple species of Enterobacteriaceae (ECCMID). 24th European Congress of Clinical Microbiology and Infectious Diseases. Barcelona, Spain. (2014) PosterP1031
- 37) **Mathers AJ**, Stoesser N, Sheppard A, Geiss A, Didelot X, Sifri CD, Crook, DW. The host bacterial-plasmid network: observations of *Klebsiella pneumoniae*-carbapenemase (KPC) gene mobility in a *K. pneumoniae* cohort using whole genome sequencing. 24th European Congress of Clinical Microbiology and Infectious Diseases (ECCMID). Barcelona, Spain (2014). Poster eP014
- 38) Lewis, J, **Mathers A**, Cox HL, Enfield K, Sifri C. Not Daptomycin's Fault? Potential Nosocomial Transmission of Daptomycin Non-Susceptible Enterococci. ID Week. Joint Meeting of Infectious Diseases Society of America (IDSA) and Society for Healthcare Epidemiology of America (SHEA). San Francisco, CA (2013). Poster 397
- 39) **Mathers A**, Harris K, Day S, MD Smith D, Crigler P, Cox HL Antimicrobial Stewardship Program (ASP) at a Small Community Hospital Improves Susceptibility Patterns and is Cost-Saving after the First Year. ID Week. Joint Meeting of Infectious Diseases Society of America (IDSA) and Society for Healthcare Epidemiology of America (SHEA). San Francisco, CA (2013). Poster 996 (Selected for Poster Walk for Exceptional Posters)
- 40) **Mathers A**, Carroll J, Poulter M, Dirks D, Sifri C; Clinical Microbiology Costs for Methods of Active Surveillance for Carbapenem-Resistant Enterobacteriaceae (CRE). 53rd Interscience Conference on Antimicrobial Agents and Chemotherapy Annual Meeting. Denver, CO (2013). Poster D-1145 Page 114
- 41) **Mathers A**, Harris K, Day S, MD Smith D, Crigler P, Cox HL Antimicrobial Stewardship Program (ASP) at a Small Community Hospital Improves Susceptibility Patterns and is Cost-Saving after the First Year. ID Week. Joint Meeting of Infectious Diseases Society of America (IDSA) and Society for Healthcare Epidemiology of America (SHEA). San Francisco, CA (2013). Poster 996
- 42) **Mathers A**, Yeh A, Cox HL, Carroll J, Hoffman PS, Poulter M, Sifri C; Nosocomially-Acquired *Klebsiella pneumoniae* Carbapenemase (KPC)-Producing *Aeromonas hydrophilia* Associated with KPC Transmission to Multiple Species of Enterobacteriaceae. 53rd Interscience Conference on Antimicrobial Agents and Chemotherapy Annual Meeting. Denver, CO (2013). Poster C2-1095 Page 111
- 43) Cox H, Sifri CD, Sawyer R, Scheld WM, **Mathers A**. Institutional Outbreak of Linezolid-nonsusceptible *Enterococcus faecium* (LNEF) Emerges During Linezolid Cycling in a Surgical Intensive Care Unit (SICU) Abstract Poster

- Presentation at the 50th Annual Meeting of Infectious Diseases Society of America; IDWeek. (2012) Poster 728 Page:93
- 44) Huq N, Enfield K, Gosseling M, Low D, Toney D, Kundzins J, **Mathers A**, Sifri CD. Simultaneous Outbreaks of Extensively Drug Resistant *Acinetobacter baumannii* and Carbapenemase Producing Enterobacteriaceae in an Intensive Care Unit: Interruption of Epidemic but not Endemic Transmission. Abstract Poster Presentation at the 50th Annual Meeting of Infectious Diseases Society of America; IDWeek. (2012) Poster 257 Page:88
- 45) Sifri CD, Enfield K, Gosseling M, Kundzins J, **Mathers A**. A Propagated Plasmid-Mediated Outbreak of KPC Carbapenemase-Producing Enterobacteriaceae (CPE) in Virginia, 2007-2011 Abstract Oral Presentation at the 50th Annual Meeting of Infectious Diseases Society of America; IDWeek. (2012) Delivered on October 18th Abstract 91 Page:19
- 46) **Mathers AJ**, Carroll J, Cox HL, Sifri CD, Hoffman P, Hazen KC. Improved Phenotypic Detection of *Klebsiella pneumoniae* Carbapenemase (KPC) in Non-*K. pneumoniae* Enterobacteriaceae by an Indirect Assay: A Prospective Study. Abstract Poster Presentation at the 50th Annual Meeting of Infectious Diseases Society of America; IDWeek. (2012) Poster 158 Page:87
- 47) **Mathers AJ**, Hazen KC, Yeh AJ, Carroll J, Cox HL, Sifri CD. First Identification of OXA-48 Carbapenemase-producing Enterobacteriaceae (CPE) in the United States. 52th Interscience Conference on Antimicrobial Agents and Chemotherapy Annual Meeting. Late Breaker Poster. San Francisco, CA (2012). Abstract # C2-097b
- 48) **Mathers, AJ**, Donowitz, GR Bactericidal Effect of Antimicrobial-Treated Textiles on Multi-drug Resistant Gram Negatives. 51th Interscience Conference on Antimicrobial Agents and Chemotherapy Annual Meeting. (2011) Poster K-1460
- 49) Sifri CD, **Mathers AJ**, Cox HL, Bonatti H, Kitchel BJ, Brassinga AKC, Wispelwey B, Pruett TL, Hazen KC. Molecular anatomy of a plasmid-mediated outbreak of KPC-producing CRE. The Society for Healthcare Epidemiology of America (SHEA): Fifth Decennial International Conference on Healthcare-Associated Infections, Dallas, TX, April (2011). Abstract #5068.
- 50) **Mathers A**, Cox, HL, Carroll J, Hazen K, Sifri CD. Does the Mechanism of Ertapenem Resistance Impact Outcome of Enteric Gram-Negative Infection? Abstract Poster Presentation. 50th Interscience Conference on Antimicrobial Agents and Chemotherapy Annual Meeting Poster 4025 (2010)
- 51) **Mathers A**, Cox H, Carroll J, Gosseling M, Hall K, Hazen K, Sifri C. Surveillance for *Klebsiella pneumoniae* Carbapenemase (KPC)-Producing

- Enterobacteriaceae with Reduced Lactose Fermentation. Abstract Poster Presentation at the 47th Annual Meeting of Infectious Diseases Society of America, Poster 852, Page: 74 (2009).
- 52) **Mathers A**, Cox H, Carroll J, Brassinga AK, Bonatti H, Scheld WM, Hazen K, Sifri C. Multi-species Outbreak of *Klebsiella pneumoniae* carbapenemase (KPC) - Producing Bacteria: Detection and Genetic Description. Oral Abstract Presentation. Annual Meeting of Infectious Diseases Society of America, Abstract Number 3369 (2008)
- 53) **Mathers A**, Martin E, Lee G, Kane D, Scheld WM. TNF- α Neutralization Improves Liver Function in the Anthrax Rapid Death Model. Oral Abstract Presentation. 45th Annual Meeting of Infectious Diseases Society of America, 1214, Page 76 (2007)
- 54) **Mathers A**, Martin E, Lee G, Scheld WM. Innate Stimulation through Toll-like – receptor-4 (TLR-4) Improves Survival in a Mouse Model of Anthrax. Abstract Poster Presentation at the 45th Annual Meeting of Infectious Diseases Society of America, Poster 456, Page: 144 (2007).
- 55) **Mathers A**, Smith R, Lubelczyk C, Holman M, Lacombe E, Rand P, Morris S, Vary C. Strain Diversity of *Borrelia burgdorferi* in *Ixodes scapularis* Removed from Migratory Birds. Abstract Poster Presentation at the 10th International Conference on Lyme Borreliosis and Other Tick-Borne Diseases. Poster 12, Page: 24 (2005)
- 56) **Mathers A**, Smith R, Lubelczyk C, Holman M, Lacombe E, Rand P, Morris S, Vary C. Limited Strain Diversity of *Borrelia burgdorferi* on Maine Coastal Islands. Abstract Poster Presentation at the 43rd Annual Meeting of Infectious Diseases Society of America, Poster 220, Page: 68 (2005)

C. Books and/or Chapters

- 1) Paterson DL and **Mathers AJ**. Chapter 289. Infections due to Other Members of the Enterobacteriaceae, Including Management of Multidrug-Resistant Strains. Goldman-Cecil Medicine Textbook. 26th Edition Philadelphia: Elsevier/Saunders (2019).
- 2) **Mathers A**, Rein M. Gonococcus: *Neisseria gonorrhoeae*. Clinical Infectious Disease, Schlossberg D. Second Edition. 915-20. Cambridge, United Kingdom, Cambridge University Press (2015).
- 3) **Mathers A**, Scheld WM Meningitis. A College Student with Altered Mental Status. Caplivsky D, Scheld WM. Consultations in Infectious Disease: A Case Based Approach to Diagnosis and Management. First Edition. 1-3. New York, NY Oxford University Press (2011).

- 4) **Mathers A**, Scheld WM Noninfectious Syndromes that Mimic Infections: A 45-Year-Old Man with Bullae and Vesicles. Caplivsky D, Scheld WM. Consultations in Infectious Disease: A Case Based Approach to Diagnosis and Management. First Edition. 352-56. New York, NY Oxford University Press (2011).

D. Invited Articles

- 1) **Mathers AJ**. Antibiotics in laboratory medicine, 6th edition. Clin Infect Dis. (2015); 1;60(9):1446-7. PMID:25648239 Not cited. **Impact factor-8.73**. Ranked 2/82 for Infectious Diseases. This was an invited book review of a clinical microbiology text book.

XX. INVITED LECTURES AND SYMPOSIUMS

PRESENTATIONS:

- 10/1/2021 Building the plane while flying: Dorm wastewater testing during a pandemic. University of Virginia School of Engineering Graduate Student Council Lecture Series. Charlottesville, VA
- 9/15/2021 Epidemiology and genomic applications to track plasmid transmission within a hospital outbreak. 3rd Annual International Conference on Prevention and Infection Control (ICPIC) Geneva, Switzerland.
- 7/29/21 Problem Solving in a Pandemic. Hoos Hacks for Humanity. University of Virginia Summer Session. Charlottesville, VA
- 6/25/2021 Update on COVID-19 Variants in Virginia. Virginia Hospital & Healthcare Association. Chief Medical Officers Monthly Meeting. Virginia Zoom Meeting
- 2/15/2021 Wastewater monitoring for SARS CoV-2 RNA. Virginia Hospital & Healthcare Association. COVID-19 Testing Capacity & Technology Committee Virginia Zoom Meeting
- 1/6/21 Learning how to do new things: How to try to creatively meet the testing demands of the pandemic. Virginia Pathology Society Annual Meeting. Virtual
- 11/6/20 COVID-19 Update – Pandemic Status, Infection Prevention, and Rapid Point of Care Testing. Medical Society of Virginia and Virginia Department of Health Joint Meeting. Virtual
- 5/1/20- Virginia Governor’s Testing Advisory Council. Invited to present monthly with updates as to testing protocols and emergence of testing protocols and approaches
- 11/8/19 The Hospital Physical Environment and Patient Risk. Duke University Annual DICON-DASON Educational Symposium, a one-day meeting hosted each November. Raleigh, NC

- 10/22/19 Source versus “Sink”: Examination of Carbapenemase Producing Enterobacteriales in Hospital Plumbing. 12th Annual British Columbia Center for Disease Control (BCCDC) Research Symposium, Vancouver, Canada
- 9/20/19 Hospital Pathogens. Translation into practice – genome based pathogen surveillance: hype or real benefit? in collaboration with European Society of Clinical Microbiology and Infectious Diseases (ESCMID). 12th International Meeting on Microbial Epidemiological Markers (IMMEM XII) Dubrovnik, Croatia
- 9/12/19 Pursuing a carbapenemase gene from patients to plumbing and back. 4th Annual Infection Prevention Conference. Virginia Commonwealth University. Richmond, VA
- 8/21/19 Next Generation Dx Summit. Managing current and future hurdles in implementing novel microbiology diagnostics for improved antimicrobial stewardship. Washington DC
- 6/15/19 Clinical Laboratory and Standards Institute (CLSI) Educational Workshop. To MIC or not to MIC, that is the question. Molecular Characterization of Antimicrobial Resistance (AR) for Healthcare in 2019. Semi-Annual Meeting of CLSI. Dallas, TX
- 3/29/19 Advanced Topics in Infectious Diseases Invited Lecture. Tracking a selfish carbapenemase gene through patients, plasmids and plumbing. Weill-Cornell School of Medicine joint with Sloan Kettering Memorial Hospital. New York, NY
- 2/5/19 Invited Speaker. Tracking antimicrobial resistance from sink drain biofilms. Center for Biofilm Technologies Biannual Meeting. Biofilm Technologies: Pathways to Product Development 2019. Crystal City, VA
- 11/30/18 Invited Seminar Speaker. Down the Drain: The Exploration of Multidrug Resistant Bacteria in Hospital Plumbing. Center for Biofilm Engineering. Montana State University. Bozeman, MT
- 11/4/18 International Keynote Speaker. Control of Carbapenemase Producing Enterobacteriales. Federation of Infection Societies Meeting. New Castle, England
- 10/4/18 Invited Speaker. Navigating the Phenotype vs. Genotype Conundrum in Resistance: A Case-Based Symposium. ID Week. Joint Meeting of Infectious Diseases Society of America (IDSA) and Society for Healthcare Epidemiology of America (SHEA). San Francisco, CA (2018) (3 hours)

Amy Mathers

- 9/25/18 Invited Speaker. Hospital Wastewater Environment and Antimicrobial Resistance. Webinar on Wastewater Treatment and Antibiotic Resistance. *National Academies of Science*. Washington D.C.
- 9/12/2018 Invited Speaker. The Role of the Hospital Environment in Propagation and Dissemination of Antimicrobial Resistance Plasmids. 27TH Annual Symposium on Molecular Pathology. Clinical Applications of Genomic Medicine. Beaumont Laboratory. Troy, MI
- 8/27/18 Invited Speaker. Current and Future Applications of Next Generation Sequencing for Understanding Antimicrobial Resistance. International Conference on Emerging Infectious Diseases (ICEID) Pre-Conference Symposium. The Future of Pathogen Genomics in Public Health. Atlanta, GA (3 hours)
- 8/6/18 Invited Speaker. Leveraging epidemiology to define the host range of a novel plasmid. Plasmid Biology 2018. International Society of Plasmid Biology Bi-Annual Meeting. Seattle, WA
- 6/20/18 Invited International Keynote Speaker. Chasing carbapenemase carrying plasmids through patients and plumbing. Canadian Society of Microbiology Annual Meeting. Winnipeg, Canada
- 4/20/18 Invited Speaker. The Central Role of Clinical Microbiology in Effective Antimicrobial Stewardship. Southeastern Association for Clinical Microbiology. Richmond, Virginia
- 4/11/18 Invited International Speaker. Scratching the surface: What WGS reveals about how much more there is to learn about mobile resistance genes. Australian Society of Microbiology Molecular Microbiology Meeting 2018. Sydney, Australia
- 3/19/18 Invited Speaker. The role of the environment in sustained KPC transmission at the University of Virginia Medical Center. Public Health England CRE transmission Summit Meeting. Manchester, UK
- 3/12/18 Invited Speaker. The role of the environment in sustained KPC transmission at the University of Virginia Medical Center. Modernizing Medical Microbiology 5th Annual Conference. 2018 University of Oxford. Oxford, England
- 1/19/2018 Invited Seminar Speaker. What happens in the sink does not necessarily stay in the sink: Mobile genetic exchange in the hospital environment. Seminar cosponsored by Institute for Bioinformatics and Evolutionary Studies and Randall Seminar Series. University of Idaho. Moscow, ID

- 11/30/2017 Drug-resistant Superbugs, a Major Emerging Threat. Virginia Academy of Science, Engineering and Medicine 2017 Summit: Emerging Infections and Preparedness. National Academy of Science. Washington DC
- 10/20/2017 Invited Symposium Speaker. In pursuit of a selfish carbapenemase gene through patients, plasmids and plumbing. Center for Molecular and Clinical Epidemiology of Infectious Diseases (MAC-EPID) Symposium. Genomics & Antibiotic Resistance: a new paradigm. University of Michigan Ann Arbor, MI
- 10/6/17 Invited Symposium Speaker. Symposium: Infection Prevention Down the Drain: Water Fixtures in Healthcare Settings. Waterborne Gram Negatives: Eradication and Control Challenges. ID Week. Joint Meeting of Infectious Diseases Society of America (IDSA) and Society for Healthcare Epidemiology of America (SHEA). San Diego, CA (2017)
- 5/19/17 Invited Panelist. Panel Discussion: Frontiers in public health genomics: establishing standards and dealing with complexity. Applied Bioinformatics and Public Health Microbiology. (2017) Wellcome Genome Campus, Hinxton, Cambridge, UK.
- 5/2/17 Invited panelist. University of Virginia Global Health Symposium. Global Impact of Antimicrobial Resistance.
- 3/14/17 Hope versus Hype: Transmission Genomics Debate. I was asked to debate the limitations of genomics with Jennifer Gardy, University of British Columbia. Modernizing Medical Microbiology 4th Annual Conference. University of Oxford. Oxford, England
- 3/11/17 Leveraging Clinical Microbiology Results in the Management of Resistant Gram Negative Infections. Greater Washington Infectious Diseases Society (GWIDS). Spring Symposium. Bethesda, Maryland
- 2/1/17 Expert Panelist for Open Discussion. Pre-Summit: Virginia Antibiotics Stewardship. Virginia Hospital and Healthcare Association. Richmond, Virginia
- 9/29/16 FDA Invited Speaker and Panelist. Coordinated Development of Antimicrobial Drugs and Antimicrobial Susceptibility Test Devices Workshop. What do you mean you can't give me a result? AST challenges from the clinicians perspective. Silver Spring, Maryland
- 6/19/16 American Society of Microbiology. Balancing the Budget and Convincing the Money Handlers: Performing CRO/CPO Surveillance in a World of Finite Resources Session. Invited Symposium. The Calm before the

- Storm: A Practical Guide for Surveillance of Carbapenem-resistant and Carbapenemase-producing Organisms (CRO/CPO). ASM Microbe Annual Meeting. Boston, Massachusetts
- 1/9/16 Clinical Laboratory and Standards Institute Educational Workshop. Future Molecular and Novel Methods on the Horizon for the Detection of Antimicrobial Resistance and the Role of Next Generation Sequencing (NGS). Semi-annual Meeting. Tempe, Arizona
- 10/9/15 Multifarious Mobilization of Carbapenem Resistance in Enterobacteriaceae. Session Successful Lineages and Plasmids— Emergence of Dissemination of Multidrug-Resistant Bacteria. Infectious Disease Society of America National Meeting San Diego, California. IDWeek Invited Speaker
- 06/01/2015 Clinical Microbiology Costs for Methods of Active Surveillance for *Klebsiella pneumoniae* Carbapenemase-Producing Enterobacteriaceae. Diagnostic Microbiology and Epidemiology: Evolution and Revolution. 115th General Meeting of American Society for Microbiology, New Orleans, Louisiana
- 3/20/2015 Carbapenemase-Producing Enterobacteriaceae: Keeping Pace with Evolving Epidemiology and Detection Methods. Southeastern Association for Clinical Microbiology. Richmond, Virginia
- 12/8/2014 Tracking a selfish carbapenemase gene through a multi-species outbreak. Modernizing Medical Microbiology 3rd Annual Conference. University of Oxford. Oxford, England
- 10/31/2014 Scary Super Bugs-Are They Really Worse than Zombies? 41st Annual Edward W. Hook Jr. Recent Advances in Clinical Medicine, Charlottesville, Virginia
- 10/9/2014 All multidrug-resistant gram negative bacteria are not created equal: Comparing epidemiology and optimizing control. Moderator, IDWeek 2014. Philadelphia, Pennsylvania
- 4/18/14 Carbapenemase Producing Enterobacteriaceae: Insights from a Plasmid Mediated Outbreak. National Institute of Health National Institute of Allergy and Infectious Diseases (NIAID). Grand Rounds. Bethesda, Maryland
- 9/12/13 Meet-the-Experts: Approach to Antimicrobial Stewardship in Transplantation. 53rd Interscience Conference on Antimicrobial Agents and Chemotherapy Annual Meeting. Denver, Colorado

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- 7/23/13 Gram Negative Resistant Bacteria: Is it a Threat Worse than Terrorism? Division of Infectious Diseases and Microbiology Seminar Series. John Radcliff Hospital. Oxford University. Oxford, England
- 5/31/13 "Who Decides?" When meeting basic needs becomes a matter of life or death, and the treatment teams opinions diverge, who decides the best course of action? Swartz Center Rounds. University of Virginia Charlottesville, Virginia
- 3/22/13 *C. difficile*: clinical dilemma, probiotics, and antibiotics. American Medical Directors Association (AMDA) Long Term Care. Annual Meeting 2013 Washington DC
- 11/19/12 Carbapenemase Producing Enterobacteriaceae: Keeping Pace with Evolving Epidemiology, Detection and Management. Duke University Infectious Diseases Grand Rounds, Durham, North Carolina
- 10/25/12 End of the Road? Multi-drug Resistant Infections in the Community 39th Annual Edward W. Hook Jr. Recent Advances in Clinical Medicine, Charlottesville, Virginia
- 4/27/11 Invited Discussant for Department of Surgery Resident Research Day. University of Virginia. Charlottesville, Virginia
- 3/27/10 Emerging Resistant Infections. American College of Physicians Virginia Chapter Meeting. Arlington, Virginia
- 10/29/09 Drug resistance in Gram Negative Bacteria in the Community. 36th Annual Edward W. Hook Jr. Recent Advances in Clinical Medicine, Charlottesville, Virginia

INVITED CHAIR:

- 8/21/19 Next Generation Dx Summit. Antimicrobial Susceptibility Testing. Washington DC
- 4/25/17 Co-chair. Session Title: Metagenomics in the diagnostic laboratory. 27th European Congress of Clinical Microbiology and Infectious Diseases (ECCMID). Vienna, Austria
- 6/19/16 Co-organizer/session chair. Symposia Title: The Calm before the Storm: A Practical Guide for Surveillance of Carbapenem-resistant and Carbapenemase-producing Organisms (CRO/CPO). American Society of Microbiology. ASM Microbe Annual Meeting. Boston, Massachusetts
- 10/9/14 Co-moderator. All Multidrug-resistant Gram-negative Bacteria are Not Created Equal: Comparing Epidemiology and Optimizing Control.

Infectious Disease Society of America Annual Meeting (IDWeek)
Philadelphia, Pennsylvania

XXII. COMMUNITY

- 2020- Frequent local interviews with local paper, radio and television for issues related to testing and transmission of COVID-19.
- 11/2020 Podcast with Sanja Gupta CNN about COVID wastewater surveillance. [Flushing Out the Virus - Coronavirus: Fact vs Fiction | Podcast on Spotify](#)
- 05/02/19 Interview with Axios on Impact of the UN report on Antimicrobial Resistance <https://www.axios.com/drug-resistance-kill-10million-people-year-2050-4f048f02-8664-4000-8315-e4ca51c29ff7.html>
- 10/17/18 Infectious Diseases Hub Interview regarding Antimicrobial Resistance around the World
- 2/27/17 International, National and Local News Interviews about antibiotic resistance relation to hospital sinks (A partial list of worldwide press on this seminal piece of research
- Featured in **Science**: http://www.sciencemag.org/news/2017/03/pipe-climbing-bacteria-might-spread-infection-hospital-sinks?utm_campaign=news_daily_2017-03-01&et rid=17519415&et cid=1192679?
 - <http://www.msn.com/en-us/health/healthtrending/superbugs-grow-in-hospital-plumbing-study/ar-AAankyfZ>
 - <http://www.nbcnews.com/health/health-news/study-tracks-how-superbugs-splash-out-hospital-sink-drains-n725426>
 - <http://www.livescience.com/58014-drug-resistant-bacteria-hospital-sink.html>
 - <http://www.beckershospitalreview.com/quality/how-do-superbugs-travel-from-sinks-to-patients.html>
 - <http://www.mailonsunday.co.uk/health/article-4257334/Dangers-washing-hands-hospital.html>
 - <http://www.dailymail.co.uk/health/article-4257334/Dangers-washing-hands-hospital.html>
 - <http://www.news-medical.net/news/20170224/Researchers-chart-pathway-of-multidrug-resistant-bacteria-living-in-hospital-sink-drainpipes.aspx>
 - <http://newsdog.today/a/article/58b0643e129071627e4463e0/>
 - <https://www.sciencedaily.com/releases/2017/02/170224133916.htm>
 - <http://www.iran-daily.com/News/188372.html>
 - <https://arstechnica.com/science/2017/03/superbugs-fester-in-sink-p-traps-and-can-crawl-back-up-to-cause-infection/>
 - http://www.huffingtonpost.com/entry/superbugs-can-lurk-in-hospital-sinks-and-reach-patients_us_58b5b15fe4b060480e0c3a4e
 - <http://www.infectiousdiseasadvisor.com/antibiotics-antimicrobial-resistance/hospital-sinks-spread-multidrug-resistant-bacteria/article/640652/>

- <http://www.nephrologynews.com/study-multidrug-resistant-bacteria-found-hospital-sinks/>
- http://tucson.com/lifestyles/health-med-fit/hospital-sinks-may-be-awash-in-superbugs/article_b09ddd55-413c-5c5a-8ac5-1fe6731bdb2b.html
- Featured in **Plumbing Engineer**: <http://www.plumbingengineer.com/content/study-shows-how-antibiotic-resistant-bacteria-spread-hospital-sink-drain-pipe%E2%80%8B>
- <http://tuotrodinario.hola.com/noticias/2017022866450/bacterias-resistentes-farmacos/>
- <http://www.debate.com.mx/salud/CUIDADO-hay-super-germenes-en-lavamanos-de-hospitales-20170301-0087.html>
- <http://ecodiario.economista.es/salud/noticias/8180709/02/17/Las-superbacterias-resistentes-a-multiples-farmacos-se-encuentran-en-los-lavabos-de-los-hospitales.html>
- <http://www.o2.pl/artykul/grozne-bakterie-w-szpitalach-trudno-je-zwalczyc-6094894582121601a>
- <http://www.tiede.fi/artikkeli/uutiset/lavuaari-voi-raiskyttaa-superbakteereja>
- <http://www.medigatenews.com/news/1807587043>
- http://tucson.com/lifestyles/new-research-shows-battle-against-superbugs-should-start-in-hospital/article_e655cccc-ab66-5a82-9eaf-47990a72fae2.html
- <http://www.healio.com/infectious-disease/nosocomial-infections/news/in-the-journals/%7B96d2d917-c4aa-49e8-9b50-bcd980e941b0%7D/researchers-track-spread-of-multidrug-resistant-bacteria-in-hospital-sinks>
- <http://www.europeancleaningjournal.com/magazine/articles/latest-news/people-may-be-becoming-ill-in-hospital-from-the-sinks>
- <http://genk.vn/nguyen-cuu-cho-thay-chau-rua-tay-co-the-phong-ra-cac-mam-benh-chet-nguoi-xung-quanh-ban-kinh-gan-1-met-20170308173451177.chn>

- 5/14/16 Skyline Girl Scout Jamboree Troop Co-Leader
- 2/12/15 Panel Member for Discussion of Movie “Resistance”, Hosted by University of Virginia Food Collaborative
- 10/17/14 Third grade microbiology demonstration, Agnor-Hurt Elementary School
- 2/25/2014 University of Virginia Hackathon. Presented and judged a problem solving/design competition to develop interventions for prevention of bacterial dispersion from healthcare sink drains
- 5/8/2013 Culpeper Rotary Club. Discussion about Antimicrobial Resistance in the Community
- 2011-2012 Media Interviews: newspaper (*USA Today*, *Charlottesville Daily Progress*) and radio station interviews regarding multidrug resistant Gram negative pathogens

Amy Mathers

Spring 2010 Mentored High School Project to send *E. coli* into space. Selected as finalist for NASA science competition. Charlottesville High School

ⁱLast Updated January 25th, 2022