BIOGRAPHICAL SKETCH

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NAME: Kathryn R. Dalton

eRA COMMONS USER NAME (credential, e.g., agency login): kdalton4

POSITION TITLE: Postdoctoral Fellow

EDUCATION/TRAINING:

INSTITUTION AND LOCATION	DEGREE	Start Date MM/YYYY	Completion Date MM/YYYY	FIELD OF STUDY
SUNY Stony Brook University	BS	08/2004	05/2008	Ecology and Evolution
University of Pennsylvania School of Veterinary Medicine	VMD	08/2009	05/2013	Public Health, Mixed Animal Medicine
Johns Hopkins Bloomberg School of Public Health	MPH	06/2015	05/2016	Infectious Disease, Food Systems
Johns Hopkins Bloomberg School of Public Health	Clinical Research Fellow	05/2016	08/2017	Environmental and One Health
Johns Hopkins Bloomberg School of Public Health	PhD	09/2017	10/2020	Environmental Epidemiology
Johns Hopkins Bloomberg School of Public Health	Postdoctoral Fellow	10/2020	Current	Microbiome Bioinformatics and Exposures

A. PERSONAL STATEMENT

My research interests involve exploring the microbial dynamics that occur as a result of human and animal interactions, with a focus on how microbial communities are transmitted among humans, animals, and the environment, and how microbial community profiles relate to human health and animal health outcomes. My work uses the tools of environmental microbiology and molecular epidemiology to evaluate the role of the environment in diseases of both humans and animals. My long-term goal is to establish an independent research laboratory at an academic institution to conduct high quality scientific studies focused on One Health, which is the intersection of human and animal health, and the health of their shared environment.

B. POSITION AND HONORS

Positions and Employment

2013 - 2015 Small-Animal Veterinarian, Banfield Pet Hospital, Mount Laurel NJ
2015 - Current Relief Veterinarian, Banfield Pet Hospital, Maryland region
2016 - Current President and Co-Founder, Johns Hopkins University One Health Student Group
2017 - Current Treasurer, JHU Department of Environmental Health and Engineering Student Group
2018 - Current Student Representative, JHU EHE Department Faculty Practice Committee

Professional Memberships and Licensing

2015 - Current Member, American Public Health Association, student member
2015 - Current Maryland Veterinary Medical Association
2017 - Current Infectious Disease Society of America, student member

Honors

2012 University of Pennsylvania School of Vet Medicine, Student Inspiration Award
2015 FDA Center for Excellence in Regulatory Science and Innovation (CERSI) Award
2016 Department of Environmental Health Sciences MPH Capstone Award
2017 Department of Environmental Health Research Retreat Poster Award Runner Up
2017 Delta Omega Honors Society Poster Competition Runner Up Laboratory Science

2018 IDweek 2018 Kass Award
2018 IDweek 2018 Oral Abstract Media Release and Press Conference Recognition

C. CONTRIBUTIONS TO SCIENCE

One Health Methods to Evaluate Hospital-Associated Pathogen Transmission

One Health, the interdisciplinary framework that assesses the close relationship between human, animal, and environmental health, can provide a novel approach to assessing microbial dynamics in a hospital setting. My work centers on understanding the role of the environment as a reservoir and vector of microorganisms, both pathogenic and potential beneficial commensal organisms. Particularly, I research hospital animal-assisted intervention therapy (more commonly known as pet therapy) using a holistic One Health approach to provide evidence to address concerns and risk raised by clinicians and patient, in order to promote the safety and sustainability of these therapy programs.

Kathryn R Dalton, Clare Rock, Karen C Carroll, Meghan F Davis. (2020) "One Health in Hospitals: How Understanding the Dynamics of People, Animals, and the Hospital Built Environment can be Used to Better Inform Interventions for Antimicrobial-Resistant Gram-Positive Infections" Antimicrobial Resistance & Infection Control. Vol 9 (1).

Kathryn R Dalton, Kaitlin B Waite, Kathy Ruble, Karen C Carroll, Alexandra DeLone, Pam Frankenfield, James A Serpell, Roland J Thorpe Jr, Daniel O Morris, Jacqueline Agnew, Ronald C Rubenstein, Meghan F Davis. (2020) "Risk Associated with Animal-Assisted Intervention Programs: A Literature Review" Comp Ther Clin Prac. Vol 39. P.101-145

Kathryn R Dalton, Kathy Ruble, Karen C Carroll, Elizabeth Grice, Meghan F Davis. (2019) "On Places-II: Emerging Exposures and Health Effects in the Hospital Environment." Environmental Epidemiology 3, 87
- Presented at International Society for Environmental Epidemiology Conference 2019

Kathryn R Dalton, Kathy Ruble, Alexandra DeLone, Pam Frankenfield, Destiny Walker, Shanna Ludwig, Tracy L Ross, Janice Jaskulski, Karen C Carroll, Shelley Rankin, Daniel O Morris, Allen Chen, Meghan F. Davis. (2018) "160. Reduction in the Spread of Hospital-Associated Infections Among Pediatric Oncology Patients in an Animal-Assisted Intervention Program from a Canine Decolonization Procedure". Open Forum Infectious Diseases 5 (Suppl 1), S14
- Presented at IDweek Conference 2018

Environmental Exposure Assessment of Microbial Carriage

The environment can be a reservoir for bacteria and other microbes that can transmit to humans and animals. This can subsequently result in negative health outcomes. My work centers on improving current practices for the description of bacterial diversity in our environment, and understanding how that diversity affects disease development. I seek to improve the methodologies used in both sample collection and laboratory processing, to increase analytic accuracy and inform future study designs.

Davis, M.F., **K. Dalton**, Z. Johnson, S. Ludwig, K. Sabella, M. Newman, S. Balcer-Whaley, C. Keet, M.C. McCormack, K.C. Carroll, and E.C. Matsui. Household pets and recovery of Moraxella catarrhalis and other respiratory pathogens from children with asthma. ID Week (Abstract #71914). October 6, 2018. *[Poster presentation]*

Davis, M.F., S. Ludwig, J. Joesphs-Spaulding, **K**. **Dalton,** M. Newman, S.L. Balcer-Whaley, R. Peng, C. Keet, M.C. McCormack, and E.C. Matsui. Environmental exposure to *Staphylococcus aureus* and SEB are associated with asthma symptoms and worse lung function amoung low-income, urban children with asthma. J Aller Clin Imm. 2018. 141, 2, AB193.

Dalton, K., K. Spicer, S. Ludwig, M. McCormack, and M.F. Davis. Comparative Analysis of Techniques for Quantitative Assessment of *Staphylococcus aureus* Burden in High Prevalence Environments." Johns Hopkins Department of Environmental Health & Engineering retreat, January 21, 2017; Delta Omega Poster Competition, March 8, 2017. *[Poster presentation]*

Sabella K, **K. Dalton**, and M.F. Davis. The City Dog Study: Examining Dermatologic and Respiratory Disease in a Cohort of Pets in Urban Baltimore. Johns Hopkins Department of Environmental Health & Engineering retreat, January 21, 2017. *[Poster presentation]*

Beasley E, S. Ludwig, A. Christ, **K. Dalton**, E. Matsui, and M.F. Davis. Pet carriage of *Staphylococcus aureus* and *S. pseudintermedius* in the households of children with asthma. Merial Veterinary Student Scholars Program, August 2016. *[Poster presentation]*

Food Animal Management Interventions to Improve Public Health

Many practices involved in our current food animal production system are not safe or sustainable to public and environmental health. These inadequate practices can lead to outbreaks of viral and bacterial diseases that can spread to the human population. My work focuses on addressing these problem areas in multiple settings, both large and small scale production facilities, with the aim to advocate for further research, evaluate novel technologies to increase food production sustainability, and to direct science-based policy changes.

Leibler, J., **K. Dalton**, A. Pekosz, G. Gray, E. Silbergeld. Epizootics in Industrial Livestock Production; Preventable Gaps in Biosecurity and Biocontainment. Zoonoses and Public Health. 2017. 64(2), 137-145. DOI:10.1111/zph.12292.

Dalton, K., J. Leibler, C. Alexander, E. Silbergeld. Biosecurity Challenges in the Poultry Industry against Highly Pathogenic Avian Influenza. Journal Agricultural and Environmental Ethics. *In Revision*.

Gabriel K Innes; Agnes Markos; **Kathryn R. Dalton**; Caitlin K Gould; Keeve Nachman; Jess Fanzo; Anne Barnhill; Shannon Frattaroli; Meghan Davis Animal Agriculture Perspectives Challenge Reframing Resistance Principles: A Qualitative Study. Agriculture and Human Values Journal. *In Revision.*

Baron, P., M.F. Davis, D.C. Love, S. Ludwig, **K. Dalton**, J. Larsen, C. Heaney. Microbial Food Safety in the Maryland Direct-to-Consumer Supply Chain. Applied and Environmental Microbiology. *In Revision*. Available at bioRxiv 643106.

D. RESEARCH SUPPORT

Current Support

No number (Dalton) 2019-2020
Johns Hopkins ERC
Identifying Occupational Health Benefits and Concerns of Key Stakeholders Regarding Hospital-Based Animal-Assisted Intervention Programs: A Pilot Study to Inform Program Implementation.
$10,000
Role: Principal Investigator
Main Grant Objective: Conduct qualitative interviews on key stakeholders in hospital animal-assisted intervention programs in order to understand barriers and facilitators to program implementation as a stress-reduction mechanism in healthcare workers.
Principal Responsibilities: As student PI, I designed the project, wrote for initial funding, submitted for IRB approval, hired and trained research assistants, conducted or supervised interviews, preformed or supervised coded qualitative data analysis, and transcript finding into a manuscript for publication.

R01HD097692 (Davis) 2018-2022
R01, Eunice Kennedy Shriver National Institute of Child Health & Development
Clinical trial of a disinfectant intervention in therapy dogs to combat hospital-associated pathogens and promote sustainability of Animal-Assisted visitation programs
$1,857,348
Role: Postdoctoral Fellow Co-Investigator
Main Grant Objective: Leadership of one independent aim, to assess holistic microbial community alterations during a hospital animal-assisted intervention program, and the effect of a chlorhexidine-based intervention on acquisition of hospital-associated pathogens and microbial communities by patients during AAI sessions via a multicenter randomized controlled trial
Principal Responsibilities: Assist with overall study management for multicenter clinical trial, aid in study design, supervise and train sample collection and laboratory assessment, supervise or perform data management and data analysis on microbial community analysis, give presentations, prepare manuscripts.

Previous Support

T42OH008428 (Agnew) 2018-2020
NIOSH Johns Hopkins Education and Research Center Training Award (T42)
Role: PhD Candidate
Main Grant Objectives: To conduct research in occupational health and safety.
Principal Responsibilities: Training grant for academic and research support.

No number (Dalton) 2018-2019
American Kennel Club Canine Health Foundation
Clinician-Scientist Fellowship
$12,000
Role: Principal Investigator
Main Grant Objective: Provide support for protected time to conduct research to advance the human-animal bond, and human and canine health.
Principal Responsibilities: Attend advance trainings in metagenomics, conduct One Health research, present findings at professional conferences and in peer-reviewed journals.

No number (Dalton) 2017-2018
JHSPH Center for a Livable Future Lerner Fellowship
$28,750
Role: PhD Student
Main Grant Objectives: To conduct research in environmental safety and sustainability in our current food systems.
Principal Responsibilities: Training grant for academic and research support.

No number (Davis/Fanzo) 2017-2018
Johns Hopkins Practical Ethics Award
The law of unintended consequences: Will the implementation of California SB27 impact animal health and well-being?
$67,500
Role: Student Investigator
Main Grant Objectives: To characterize the immediate impact of SB27 on animal health and welfare and examine ethical trade-offs associated with the California law.
Principal Responsibilities: conducted farmer interviews, assist with preparation of manuscripts.

D15CA-802 (Chen) 2014-2015
Morris Animal Foundation
Animal Assistance Therapy: Ensuring animal health and program sustainability in the context of hospital-associated infections
$10,000
Role: Study Coordinator
Main Grant Objectives: To demonstrate whether a dog intervention to decontaminate fur during AAT visits can reduce transmission of HAIs between patients and animals.
Principal Responsibilities: Study design, sample collection, laboratory and data analysis, manuscripts.

No number
FDA CERSI Grant (Dalton) 2015-2016
The Science and the Prevention of Highly Pathogenic Avian Influenza
$10,000
Role: Student Principal Investigator
Main Grant Objectives: To conduct literature review to assess current gaps in the biosecurity regulations in the industrial poultry production systems that could potentially lead to an outbreak of Highly Pathogenic Avian Influenza and make recommendations for improvement to the current system.
Principal Responsibilities: Develop systemic review model to preform literature evaluation, meet with industry representatives and stakeholders to collect qualitative data, create a comprehensive overview of the current production system and make recommendations based on current model.

CHF 02241 (Davis) 2016-2018
American Kennel Club Canine Health Foundation

The City Dog Study: Microbial determinants of dermatologic and respiratory disease among inner-city dogs living in homes of children with asthma
$158,367
Role: Postdoctoral Fellow (2016-17); PhD Student (2017-present)
Main Grant Objectives: (1) To evaluate whether a dog's personal bacterial exposures contribute to disease among an underserved community dog population, and (2) To examine whether dog bacteria determine colonizing bacteria in children with asthma, which may improve asthma status.
Principal Responsibilities: Design and manage study, supervise and perform laboratory assessment, perform bioinformatics, analyze data, prepare manuscripts.