BIOGRAPHICAL SKETCH

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NAME: Kathryn Dalton

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

POSITION TITLE: PhD Candidate

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	Current	Environmental Epidemiology

A. PERSONAL STATEMENT

My long-term research interests involve exploring the microbial dynamics that occur as a result of human and animal interactions with the goal of establishing an independent research laboratory at an academic institution.

I did not have a straight-forward path to becoming a public health veterinary scientist. During my undergraduate degree I focused on wildlife ecology and evolutionary biology, and had my first taste of research while exploring the human-wildlife connection in rural Madagascar. It was in veterinary school that I became introduced to the concept of public health, where I felt I could affect change beyond an individualized patient-client relationship. I was able to experience this change first-hand by doing community-based research and outreach to decrease the risk of zoonotic diseases in rural India. After building my leadership and communication skills as a practicing clinician, I chose to pursue a Master's of Public Health at the place I felt most closely aligned to my desires for the future – Johns Hopkins University Bloomberg School of Public Health, due to their world-renowned scholastic programs and the breadth of faculty expertise. It was here that I meet my mentor, Dr. Meghan Davis, who impressed me with her hands-on, nurturing mentoring approach. Further, her research sparked my interest as it relates to my long-term goals, particularly her work in how exposure to companion animals both positively and negatively contribute to asthma in inner city Baltimore children by microbial sharing. This work cemented my passion to attain a doctoral degree so that I could conduct my own high-quality research.

As an aspiring public health veterinarian scientist, my research goal is 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. 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 dissertation, and long-term career direction, will 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.

The skills I will learn from my experience at Johns Hopkins institution and completion of the PhD training plan put forth by the Environmental Health and Engineering departmental program, along with ample mentoring opportunities from Dr. Davis and other departmental faculty, will equip me with the diverse qualities needed to pursue a career as an independent researcher in an academic 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, Johns Hopkins University One Health Student Group
2017 - Current Treasurer, JHU Department of Environmental Health and Engineering Student Group

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 3RD Place Laboratory Science
2018 IDweek 2018 Kass Award
2018 IDweek 2018 Oral Abstract Media Release and Press Conference Recognition

C. CONTRIBUTIONS TO SCIENCE

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.

Dalton, K., C. Rock, K.C. Carroll, M.F. Davis. 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. 2019 [*in review*]

Dalton, K., K. Ruble, A. Delone, P. Frankenfield, D. Walker, S. Ludwig, T. Ross, J. Jaskulski, K.C. Carroll, S. Rankin, D.O. Morris, A.C. Chen and M.F. Davis. Reduction in the Spread of Hospital-Associated Infections Among Pediatric Oncology Patients in an Animal-Assisted Intervention Program from a Canine Decolonization Procedure. ID Week Oral Presentation (Abstract # 72940). October 4, 2018. *[Oral presentation]*

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*.

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*.

D. RESEARCH SUPPORT

Current Research Support

American Kennel Club Canine Health Foundation 2018 - 2019
Clinician-Scientist Fellowship, $10,000

NIOSH Johns Hopkins Education and Research Center Training Award 2018 - Current

Past Research Support

FDA CERSI Grant (Dalton) 2015-16
Science and the Prevention of Highly Pathogenic Avian Influenza
$10,000
Role: Graduate Student Researcher
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) 2016-18
AKC Canine Health Foundation (extramural)
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.

JHSPH Center for a Livable Future Lerner Fellowship (intramural) 2017-18
$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.

E. SCHOLASTIC PERFORMANCE

YEAR	COURSE TITLE	GRADE	YEAR	COURSE TITLE	GRADE
JOHNS HOPKINS UNIVERSITY: Doctor of Philosophy (Public Health) Current GPA: 3.84					
2019	Onsite Evaluation of Workplace and Occupational Health Programs	P	2018	Grant Writing II	P
2019	Community-Driven Epidemiology and Environmental Justice	P	2018	Qualitative Research Theory and Methods	A
2018	Communication Practice for Health Science Professionals	P	2017	Methods in Microbiology Community Analysis	Audit
2018	Seafood and Public Health: From Production to Consumption	P	2017	Advanced Environmental Health	A
2018	Multilevel Statistical Models in Public Health	A	2017	Grant Writing I	P
2018	Methods in Exposure Science	B	2017	Public Health Toxicology	A
2018	Qualitative Data Analysis	A	2017	Spatial Analysis II: Spatial Data Technologies	Audit
2018	Environmental and Occupational Epidemiology	B	2017	Writing Scientific Papers II	P
2018	Analysis of Longitudinal Data	A	2017	Fundamentals of Occupational Health	A
2018	Spatial Analysis III: Spatial Statistics	A	2017	Health of Vulnerable Worker Populations	A
2018	Molecular Epidemiology and Biomarkers of Public Health	P	2017	Spatial Analysis III: ArcGIS	A
JOHNS HOPKINS UNIVERSITY: Clinical Research Fellowship Cumulative GPA: 4.0					
2017	Writing Scientific Papers I	P	2017	Power and Sample Size for Design of Epidemiological Studies	Audit
2017	Principles of Occupational and Environmental Hygiene	A	2016	Responsible Conduct of Research	P
JOHNS HOPKINS UNIVERSITY: Masters of Public Health Cumulative GPA: 3.85					
2016	Statistical Methods in Public Health IV	A	2015	Epidemiology of Infectious Diseases	A
2016	Food Systems Sustainability Practicum	A	2015	Epidemiological Methods 2 + Lab	A
2016	Case Studies in Food Production and Public Health	A	2015	Statistical Methods in Public Health I	A
2016	Emerging Infections	A	2015	Evolution of Infectious Disease	B
2016	Epidemiological Inference in Outbreak Investigations	A	2015	Epidemiology and Natural History of Human Viral Infections	A
2016	Statistical Methods in Public Health III	A	2015	Epidemiological Methods 1 + Lab	A
2016	Food and Water -Borne Diseases	A	2015	Program Planning for Health Behavior Change	A
2016	Vector Biology and Vector-Borne Diseases	A	2015	Environmental Health	B
2016	Introduction to the Risk Sciences and Public Policy	A	2015	Public Health Policy	B
2016	Concepts and Methods in Infectious Disease Epidemiology	P	2015	The Tools of Public Health Practice	A
2016	Epidemiological Methods 3 + Lab	A	2015	Introduction to Bioethics in Public Health Practice and Research	A
2015	Statistical Methods in Public Health II	A	2015	Principles of Epidemiology	A
2015	Food Production, Public Health and the Environment	A	2015	Academic & Research Ethics at JHSPH	A
2015	Occupational Safety and Health Management	A	2015	Population Dynamics and Public Health	B
UNIVERSITY OF PENNSYLVANIA: Doctor of Veterinary Medicine Cumulative GPA: 3.33					
2013	LA Neonatology ICU	B	2012	SA Pediatrics/Genetics	B
2013	Food Safety and QA	A	2012	SA Cardiology	A
2013	SA Intensive Care Med	A	2012	SA Dermatology	A
2013	Exotic Comp Animal Med & Surgery	A	2012	SA Emergency Med	A

2013	Independent Study: Maryland Zoo	A	2012	SA Anesthesia	B
2013	SA Pathology	B	2012	Shelter Animal Med	A
2012	LA Medicine Foundation	A	2012	Independent Study: CDC	A
2012	LA Surgery Foundation	B	2012	SA Medicine Foundation	B
YEAR	**COURSE TITLE**	**GRADE**	**YEAR**	**COURSE TITLE**	**GRADE**
UNIVERSITY OF PENNSYLVANIA: Doctor of Veterinary Medicine (cont)					
2012	LA ES/Critical Care	B	2011	Swine Neonatology	P
2012	Field Service	B	2011	Independent Study: Vet Med Global Health	A
2012	Large Animal Medicine	A	2011	Prin Epidemiology	A
2012	LA Reproduction	B	2011	Veterinary Public Health	C
2012	LA Diagnostic Imaging	B	2011	Poultry/Swine/Dairy Med	B
2012	SA Surgery Foundation	B	2011	Infect & Metabolic Dis	B
2012	SA Radiology	B	2011	Vet Med/Surg I	B
2012	Independent Study: Public Health in India	A	2011	Intro Clinical Vet Med IV	P
2012	LA Pathology/Toxicology	A	2011	Clinical Pathology	B
2012	FA Pathology	B	2011	Clinical Orthopedics	A
2011	Biochemical Basis of Disease	A	2011	Anesthesia	C
2011	Ecological Epidemiology	A	2010	Independent Study: Issues in Global Health	A
2011	Dis/Mang Sheep & Goats	A	2010	Surgical Principles	B
2011	Catastrophic Epid Diseases	A	2010	General & Systemic Path	B
2011	Intro Companion Avian Med	A	2010	Parasitology	B
2011	Intro Reptile & Amphib Med	A	2010	Microbiology	B
2011	Professional Foundations	A	2010	Surgical Principles	B
2011	Independent Study: Parasitic Load DA India	A	2010	Gross Anatomy	C
2011	Veterinary Medical Genetics	A	2010	Intro Neurosciences	B
2011	Clinical Reproduction	B	2010	Animal Physiology	B
2011	Independent Study: Clinical Comp Assess	A	2010	Wildlife Med II	A
2011	Vet Med/Surg II	B	2010	Independent Study: Intro Vet Glob Health	A
2011	Vet Med/Surg III	B	2010	Intro Clinical Vet Med II	B
2011	Dermatology	B	2010	Intro Clinical Vet Med III	A
2011	Clinical Animal Behavior	A	2010	Intro Radiology	B
2011	Vet Ethical Issues	P	2010	Nutrition	B
2011	Emerging/Exotic Diseases	A	2010	Immunology	C
2011	Intro Clin Vet Med V	P	2009	Comparative Histology	C
2011	Intro Lab Animal Med	A	2009	Developmental Biology	B
2011	Ecotoxicology for Vets	A	2009	Principles of Biochemistry	B
2011	Clinical Exercises	P	2009	Wildlife Med I	A
2011	Computer Aided Learning	A	2009	Intro Clinical Vet Med I	A
2011	Pharmacology/Toxicology	B			
SUNY STONY BROOK UNIVERSITY: Bachelor of Science (select classes) Cumulative GPA: 3.58 (Cum Laude)					
2008	General Genetics	A	2006	Cellular and Organ Physiology	B
2007	Ecology	A	2005	Statistics for Life Science	B-
2007	Evolution	A	2005	Organisms to Ecosystems Biology	B
2007	Biochemistry I	A-	2005	Organic Chemistry I	B
2007	Biochemistry Lab	A-	2005	Molecular and Cellular Biology	B+
2007	Human Anatomy	A	2005	General Chemistry II	B+
2007	Behavioral Ecology	A	2005	Calculus B	A-
2007	Organic Chemistry Lab	A-	2004	General Chemistry I	B
2006	Organic Chemistry II	C+	2004	Calculus A	B

Grading Rubric:
JHU & UPenn A => 90, B => 80, C => 70, P = A, B, or C
SUNY SBU A => 95, A- => 90, B+ => 87, B => 83, B- => 80, C+ => 77