

SHELDON G.B. WAUGH, MSC, PHD

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BASIC INFORMATION

Citizenship

Yes - United States

Federal Experience

United States Army Medical Command, Army Public Health Center

June 2018 - Present

Military Experience

United States Army Reserve, Signal Corps, Captain

December 2011 - Present

OBJECTIVE

To obtain a full time position in service with a Federal or Private Organization as a Epidemiologist, Computational Epidemiologist, Director of Data Science, or Principal Investigator.

EDUCATION

University of Florida, Gainesville, Florida

Department of Epidemiology, College of Public Health and Health Professions

August 2007 - May 2018

PhD in Epidemiology

August 2014 - May 2018

Department of Geography, College of Liberal Arts and Sciences

August 2007 - May 2014

Masters of Science in Geography

Bachelors of Science in Geography

WORK EXPERIENCE

One Health Division, Veterinary Service and Public Health Sanitation Directorate, Army Public Health Center, Aberdeen Proving Ground

June 2018 - Present

Epidemiologist GS-0601-11/12

Supervisor: LTC Sara Mullaney DVM, PhD, DACVPM

- Serves as technical expert and advisor in the Veterinary One Health Division within the Veterinary Services and Public Health Sanitation Directorate, U.S. Army Public Health Center, in the epidemiology and surveillance of both the military and beneficiary animal populations as they relate to specific population assessments and health related outcome analysis, zoonotic diseases, infectious illnesses, injuries and occupational illness and injury (military working animals), and as related to human biosurveillance through a One Health paradigm. Work involves assessment of available Department of Defense (DoD veterinary medical data, disease and non-battle injury data and other health outcomes data looking to assess trends and potential associations.
- Plans and executes epidemiological projects and outbreak investigations aimed at identifying population based risk factors for zoonotic disease, infections and/or acute or chronic illnesses, injuries, and occupational hazards.
- Planned, utilized, designed and maintained a Tableau Dashboard depicting the zoonotic burden of disease within the Department of Defense's Companion Animal Population across the Public Health Enterprise spanning 3 Continents.
- Developed multiple strategies to potentially identify and reduce injuries, illnesses and recommend preventive measures in Military Working Dogs by analyzing and organizing data part of a collaboration with the Veterans Administration.
- Served as advisor and special assistant to the Division Chief for Veterinary One Health.
- Served as the One Health lead for veterinary medical biosurveillance of both military working animal and beneficiary animal populations, with responsibility for independently planning, reporting, coordinating necessary teamwork, and managing survey data for related outcome analysis, zoonotic diseases, infectious illnesses, injuries and occupational illness and injury of military working animals.
- Published and presented presentations for six separate public health and veterinary science conferences and events over the span of two years.
- Led, developed and sustained three major public health projects, reviewed and approved by a accredited organizational public health review board.

Spatial Epidemiology & Ecology Research Laboratory (SEER), Department of Geography, University of Florida

Bioinformatician

March 2017 - June 2018

PI: Jason K Blackburn, PhD

- Chief Bioinformatics analyst and developer in genomic and spatial analysis
- Utilized advanced statistical and phylogenetic techniques to update genomic laboratory procedures in order to standardize lab results
- Primarily tasked with database management and control of passive surveillance data collection of genomic and spatial data with collaboration with international health organizations
- Responsible for creation of data algorithms and specialized software pipelines to identify and classify
- Updated Multiple-Locus Variable number tandem repeat Analysis (MLVA) data and fragments for phylogenetic analysis.

Department of Epidemiology, College of Public Health and Health Professions, University of Florida

Research/Study Coordinator

August 2014 - June 2018

PI: Volker Mai, PhD

- Bioinformatics analyst and developer in metagenomics
- Responsible for creation of data algorithms and specialized software pipelines to identify and classify components of 16S sequencing fragments.
- Study Coordinator for four clinical studies investigating changes in human metagenomics via high-throughput sequencing
- Assisted in the development of research protocols, design and execution of clinical/observational studies investigating potential health effects

Department of Geography, College of Liberal Arts and Sciences, University of Florida January 2013 - July 2013

Research/Data Analyst

PI: Andrew Tatem, PhD

- Data used in mapping projects for the University of Southampton.
- Tasked with data entry and processing of country population data to GIS databases
- Data used in AfriPOP and AsiaPOP projects with an aim of producing population distribution maps

CURRENT PROJECTS

Government and Privately-owned Animal Worldwide Surveillance System (GPAWSS)

Chief scientist and co-project manager for GPAWSS. GPAWSS is a surveillance platform designed to provide surveillance data to inform commanders and VCOs of the distribution, frequency, and incidence of various companion animal diseases. The platform uses multiple heterogeneous data streams including: Remote Online Veterinary Record (ROVR) EHR data, laboratory data, and data from a civilian corporate companion animal practice.

- Developed the public health surveillance data infrastructure, establishing the framework for data integration from multiple sources within and outside of the Army Public Health Center.
- Created, sustained and improved data-driven visualizations and dashboards in order to display critical GPAWSS measures and statistics.

Modernizing the Data infrastructure of the Veterinary Services and Public Health Sanitation Directorate (VSPHS)

The VSPHS is currently at a crossroads in terms of the organization of data in a manner that allows for increased collaboration with outside organizations and encourages creativity and the discovery of novel data sources and research methods. i) The project intends to: Establish a data etiquette protocol within the VSPHS in order to establish a data standardization protocol, simplifying future data integration with outside organizations ii) Restructure the data storage structure of the directorate, establishing standardized databases, per division and housing them within the Army Engineer Research and Development Center (AERDC) DoD Supercomputing Resource Center's data infrastructure (DSRC).

- Facilitated the development, progress, sustainment and improvement of a directorate internal data policy aimed to improve the data infrastructure.
- Established collaborative efforts with external high performance computing centers to provide storage, training and 100,000 workhours of computer processing time for the VSPHS Directorate.

- Collaborated with Visual communication organizations to develop a visual intervention to encourage VSPHS personnel to execute good data "etiquette".

TECHNICAL STRENGTHS

Advanced Statistical Methods	Machine Learning and Bayesian modeling
Machine Learning Methods	NLP and Advanced Regression techniques
Geo-spatial Modeling and Analysis	ESRI ArcGIS Enterprise
Data Management and Cleaning Methods	SQL, R and, NoSQL coding techniques
Business Intelligence Solutions	Tableau, Power BI, R, Python
Software & Tools	Python, R, VB, linux, bash and C++ (12+ years of proficiency)

TEACHING AND MENTORING EXPERIENCE

Science and Mathematics Academy, Aberdeen High School, Aberdeen, MD June 2019- Present
Mentor: Thomas Carey *Program Supervisor: Sarah Ashley*

- Assists in project development, assessing the burden of antibiotic prescriptions among our companion animal population
- Provides research, logistical and overall support to the mentee developing a fully fledged and validated project
- Provides a synergistic relationship between mentor and mentee to allow for a collaborative and cooperative experience.

Department of Epidemiology, College of Public Health and Health Professions, University of Florida January May 2015
Teaching Assistant (PHC6003: Epidemiology of Chronic Diseases) *Instructor: David Sheps MD, MSPH*

- Assisting Instructor with developing, grading assignments quizzes and exams
- Provided presentations and online lectures to students

Department of Epidemiology, College of Public Health and Health Professions, University of Florida January May 2015
Teaching Assistant (PHC4101: Public Health Concepts) *Instructor: Sarah McKune MPH, PhD*

- Assisting Instructor with developing, grading assignments quizzes and exams
- Provided presentations and online lectures to students

HONORS, ACHIEVEMENTS AND AWARDS

Army Commendation Medal, U.S. Army Reserve, Milton, Florida	October 2019
Honorable Mention, Student Research Abstract Award, SHES/APHA Annual Meeting	November 2016
SMART Scholarship, Department of Defense, Washington D.C.	August 2016 - May 2018
McKnight Fellowship, Florida Education Fund, Orlando, Florida	August 2014 - May 2018
Ryan Poehling Fellowship Award, University of Florida	December 2013 - May 2014
Army Achievement Medal, U.S Army Reserve, Milton, Florida	June 2014
Army Achievement Medal, U.S Army Reserve, Milton, Florida	December 2013
LTC Samuel W Anderson Scholarship, University of Florida	December 2009 - May 2011
1LT Mark T Barrett Memorial Award, University of Florida	May 2009 - May 2010
Gold Scholarship, University of Florida	August 2007

MILITARY EXPERIENCE

Headquarters Company, 302nd Maneuver Enhancement Brigade, Chicopee, Massachusetts, United States Army Reserve
Captain, Signal Corps

- Network Operations Officer *September 2018 - Present*

842nd Signal Company, Milton, Florida, United States Army Reserve
Captain, Signal Corps

- Company Commander *September 2015 - 2018*

- Family Readiness Group Liaison
- Company Executive Officer
- Platoon Leader

January 2015 - 2018
September 2013 - 2015
December 2011 - 2013

PUBLISHED WORKS

Wijayabahu, A.T., **Waugh, S.**, Ukhanova, M. and Mai, V., 2019. Dietary raisin intake has limited effect on gut microbiota composition in adult volunteers. *Nutrition journal*, 18(1), p.14.

Tagliamonte, M. S., **Waugh, S.**, Prosperi, M., Mai, V. (2019, September). An Integrated Approach for Efficient Multi-Omics Joint Analysis. In *Proceedings of the 10th ACM International Conference on Bioinformatics, Computational Biology and Health Informatics* (pp. 619-625). ACM.

Waugh, S., and Mullaney, S. "Progress towards Companion Animal Zoonotic Disease Surveillance in the US Army." *Online Journal of Public Health Informatics* 11.1 (2019).

Ball, J. D., Fe Agana, D., **Waugh, S.**, Wang, K., James, T. G., Nicolette, G. (2019). Systematically collected information at encounters with HIV-positive students: A review of 10 years of electronic medical records. *Journal of American College Health*, 1-5. PMID: 30681932

Spatial-Genomic Association of Co-Circulating Brucella Strains in Southern Kazakhstan: Phylogenetic Inferences Using MLVA Data, **Waugh, S.** (Submitted)

Brucellosis Transmission Between Humans and Domesticated Livestock in Southern Kazakhstan: Inferences through MLVA Typing, **Waugh, S.** (Submitted)

Visualizing the Occurrence of Zoonotic Diseases among Military Associated Canines, **Waugh, S.** (Submitted)

Jennifer C. Dennis, Tyler Culpepper, Carmelo Nieves, Jr., Cassie C. Rowe, Alyssa M. Burns, Carley T. Rusch, Ashton Federico, Maria Ukhanova, **Waugh, S.**, Volker Mai, Mary C. Christman, Bobbi Langkamp-Henken, Probiotics (Lactobacillus gasseri KS-13, Bifidobacterium bifidum G9-1, and Bifidobacterium longum MM-2) improve rhinoconjunctivitis-specific quality of life in individuals with seasonal allergies: a double-blind, placebo-controlled, randomized trial. *Am J Clin Nutr* 105, 758767 (2017). PMID: 28228426

Waugh, S. App.: Gut Microbiota Differences in Children From Distinct Socioeconomic Levels Living in the Same Urban Area in Brazil. *Journal of Pediatric Gastroenterology and Nutrition* (2016). PMID: 28644365

Oliveira, F.P. de, Mendes, R.H., Dobbler, P.T., Mai, V., Pylro, V.S., **Waugh, S.**, Vairo, F., Refosco, L.F., Roesch, L.F.W., and Schwartz, I.V.D. (2016). Phenylketonuria and Gut Microbiota: A Controlled Study Based on Next-Generation Sequencing. *PLOS ONE* 11, e0157513. PMID: 27336782

Dahl, W. J., Ford, A.L., Ukhanova, M., Radford, A., Christman, M.C., **Waugh, S.**, Mai, V. Resistant potato starches (type 4 RS) exhibit varying effects on laxation with and without phylum level changes in microbiota: A randomised trial in young adults. *Journal of Functional Foods* 23, 111 (2016).

Waugh, S. Apropos: Plasmodium knowlesi malaria an emerging public health problem in Hulu Selangor, Selangor, Malaysia (20092013): epidemiologic and entomologic analysis. *Parasites Vectors* 8, 79 (2015). PMID: 25651916

Mai, V., **Waugh, S.**, Byrd, D., Simpson, D. Ukhanova, M. Novel encapsulation improves recovery of probiotic strains in fecal samples of human volunteers. *Appl Microbiol Biotechnol* 17 (2016). PMID: 27796434

Waugh, S., Varma, D., Striley, C., Cottler, L. Comparing Spatial Techniques to Visualize Hypertension Spread and Risk Factors for Hypertension Using Self-report from Community Participants. *Applied Geography* (2015). (Submitted)

PRESENTED WORKS

Bayko, H, **Waugh, S.**, Watkins, S, Mullaney, S , Zoonotic Disease Prioritization for Government and Privately Owned Companion Animal Zoonotic Disease Surveillance System: Adaptation of the One Health Zoonotic Disease Prioritization Tool, American Public Health Association Annual Meeting, 2019

Waugh, S., Progress towards an Integrated Companion Animal Zoonotic Disease Surveillance System within the DoD, International Society of Disease Surveillance Annual Meeting, 2019

Waugh, S., Progress towards an Integrated Companion Animal Zoonotic Disease Surveillance System within the DoD, APHC Science Exchange, 2019

Waugh, S., Progress towards an Integrated Companion Animal Zoonotic Disease Surveillance System within the DoD, APHC One-Health Day Seminar, 2018

Waugh, S., Sytnik, I, Karibayev, T, Alimbayev, A, Ornybayev, M, Rametov, M, Nikolich, M, Hagijs, S, Elzer, P, Blackburn, J. Brucellosis Transmission Between Humans and Domesticated Livestock In Southern Kazakhstan: Inferences Through MLVA Typing, UF Emerging Pathogens Institute Research Day, 2018

Waugh, S., Sytnik, I, Karibayev, T, Alimbayev, A, Ornybayev, M, Rametov, M, Nikolich, M, Hagijs, S, Elzer, P, Blackburn, J. Brucellosis Transmission Between Humans and Domesticated Livestock In Southern Kazakhstan: Inferences Through MLVA Typing, UF Public Health and Health Professions Research Day, 2018

Waugh, S., Sytnik, I, Karibayev, T, Alimbayev, A, Ornybayev, M, Rametov, M, Nikolich, M, Hagijs, S, Elzer, P, Blackburn, J. Brucellosis Transmission Between Humans and Domesticated Livestock In Southern Kazakhstan: Inferences Through MLVA Typing, AAG Annual Meeting, 2018

Waugh, S., Ball, J. Using statistical approaches to quantify the effects of ridesharing accessibility on Driving under the Influence (DUI) arrests in a university city, American Public Health Association Annual Meeting, 2016

Waugh, S., Varma, D., Striley, C., Cottler, L. Utilizing GIS to Visualize Hypertension Spread: A Comparative Study using HealthStreet Data, American Public Health Association Annual Meeting, 2015

Waugh, S., Varma, D., Striley, C., Cottler, L. Utilizing GIS to Visualize Hypertension Spread: A Comparative Study using HealthStreet Data, UF Public Health and Health Professions Research Day, 2015

Waugh, S. Geo-Spatial Risk Modeling for West Nile Virus in Tarrant County, TX Using Environmental and Demographic Data, AAG Annual Meeting, 2014

RESEARCH GRANTS

Accelerating Innovation in Military Medicine Research - DM190430 - Integrating High-Performance Computing and Machine Learning Within the Army Veterinary Service to Improve Surveillance of Companion Animal Disease Within the Department of Defense *March 2020 - Present: 280,000*

The project will use ML and Natural Language Processing (NLP) models and algorithms to annotate, code and categorize unstructured text in the form of veterinary encounter notes (eNotes) with SNOMED (ID-10-like codes for Animals) codes and categorizations. Our approach will include structured categorization that will improve the current state of veterinary surveillance by harnessing the ability to access the robust data source of eNotes and the diagnoses and observations within. From this output, for the companion animal population that includes Military Working Dogs and Service Members pets seen globally at veterinary treatment facilities (VTFs), we aim to accurately and timely evaluate the current burden of disease and identify risk factors for disease.

MEMBERSHIPS

The National Association of County Health Officials	<i>March 2019 - Present</i>
International Society of Disease Surveillance	<i>August 2018 - Present</i>
Association for Veterinary Informatics	<i>July 2018 - Present</i>
AMSUS - The Society of Federal Health Professionals	<i>May 2018 - Present</i>
Association of American Geographers	<i>September 2013 - Present</i>
American Public Health Association	<i>October 2014 - Present</i>