

## Curriculum Vitae

**JONATHAN OLIVER**  
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### Education

PhD, Iowa State University. Entomology 2011  
BS, University of Oregon. Physical Anthropology 1998

### Academic Appointments

University of Minnesota  
Veterinary and Biomedical Sciences: Adjunct Professor: Jonathan Oliver 2020 - Present  
University of Minnesota  
School of Public Health, Division of Environmental Health Sciences,: Assistant Professor 2016 - Present  
University of Minnesota  
Department of Entomology: Research Associate / Senior Scientist 6 2011 - 2016

### HONORS AND RECOGNITION

#### University of Minnesota

Office of Academic Clinical Affairs Academy for Excellence in Team Science, Academic Health Sciences 2022  
Distinguished Academic Staff (Science) Award, College of Food, Agriculture, and Natural Resource Sciences 2016

#### External Sources

Delta Omega Honor Society 2018

### RESEARCH, SCHOLARSHIP, AND CREATIVE WORK

#### Grants, Contract, Awards: External Sources

##### **Award: New tools for tick-borne pathogen surveillance**

Principal Investigator: Oliver, Jonathan  
Status: Accepted  
Sponsoring Organization: NIH Nat'l Inst of Allergy & Infect Dis  
Sponsoring Organization Reference ID: 1R01AI155472-01A1  
Award Dates: December 8, 2022 - November 30, 2027

##### **Project: New tools for tick-borne pathogen surveillance**

Project Team: Oliver, Jonathan (Principal Funded: 20%), Munderloh, Ulrike, G. (Co-Investigator), Larsen, Peter (Co-PI)  
Status: Approved  
Project Dates: December 8, 2022 - November 30, 2027

**Funded Percent Effort: 20%**

Purpose: Nanopore adaptive sampling (NAS) is a cost-effective technique for broad-spectrum tick-borne pathogen detection in ticks and rodents in both the laboratory and field. The primary goals of this proposal are to better define the potential applications and limitations of NAS for tick-borne disease surveillance, to produce protocols and best practices for NAS-based mobile laboratories, and to field test the NAS platform in regions predicted to produce emerging tick-borne pathogens.

Aim 1: Ground truthing (Minnesota, USA). Demonstrate utility of NAS for a variety of tick-borne disease-associated sequencing applications within a well-defined natural study system. 1A: Determine the minimum threshold of detection, sensitivity, and specificity of NAS for tick-borne bacteria, viruses, and protozoa. 1B: Identification of *Borrelia* species and *Anaplasma phagocytophilum* strains. 1C. NAS-based surveillance of ticks, pathogens, and associated *Peromyscus* rodent reservoirs.

Aim 2. Field collection and discovery within a predicted hotspot of emerging tick-borne disease (Kansas, USA). 2A: Real-time RT-PCR-based targeted pathogen surveillance of wild caught ticks and rodent reservoirs using the mobile lab. 2B: Real-time NAS-based metagenomic and metatranscriptomic analyses of wild-caught ticks and rodent reservoirs for pathogen surveillance and discovery.

**Award: Development of Paratransgenic Ticks for Disease Control**

Principal Investigator: Munderloh, Ulrike G.

Status: Accepted

Sponsoring Organization: NIH Nat'l Inst of Allergy & Infect Dis

Sponsoring Organization Reference ID: 5R01AI049424-16

Award Dates: December 22, 2017 - November 30, 2023

**Project: Development of Paratransgenic Ticks for Disease Control**

Project Team: Oliver, Jonathan (Co-Investigator Funded: 15%), Munderloh, Ulrike, G. (Principal), Kurtti, Timothy, J. (Co-Investigator)

Status: Approved

Project Dates: December 22, 2017 - November 30, 2023

Funded Percent Effort: 15%

Purpose: Identify the contributions of the symbiont to normal tick development and reproduction, as well as its role in the vectorial capacity of *Ixodes scapularis*.

Additionally, we will investigate the tick immune system to learn how it is shaped by *R. buchneri*, and how it interacts with experimentally introduced wild-type and mutant *R. buchneri*.

**Award: Tick Immune Signaling, Microbiota, and Acquisition of *Borrelia burgdorferi* and *Anaplasma phagocytophilum***

Principal Investigator: Munderloh, Ulrike G.

Status: Accepted

Sponsoring Organization: UNIVERSITY OF MARYLAND

Sponsoring Organization Reference ID: 64883-Z0158202 Am D

Award Dates: July 13, 2018 - June 30, 2023

**Project: Tick Core**

Project Team: Oliver, Jonathan (Principal Funded: 15%)

Status: Approved

Project Dates: July 13, 2018 - June 30, 2023

Funded Percent Effort: 15%

Purpose: Build Tick Vector Resources Core:

1) Provide existing and currently available tick-vector-based tools to support the research for a) in vitro analysis using our large collection of *I. scapularis* cell lines, and for b) in vivo analysis by generating specific pathogen free larval, nymphal and adult *I. scapularis* ticks using our membrane-feeder; and develop specific gene knockdown ticks through

micro-injection or feeding.

2) Develop tick cell lines suitable for analyses of specific tick immune genes and pathways that are activated in response to tick-borne pathogens.

**Award: Tick Mammal Interface of Human Granulocytic Anaplasmosis**

Principal Investigator: Munderloh, Ulrike G.

Status: Accepted

Sponsoring Organization: NIH Nat'l Inst of Allergy & Infect Dis

Sponsoring Organization Reference ID: 5R01AI042792-20

Award Dates: December 16, 2015 - November 30, 2022

**Project: Tick Mammal Interface of Human Granulocytic Anaplasmosis**

Project Team: Oliver, Jonathan (Co-Investigator), Munderloh, Ulrike, G. (Principal), Kurtti, Timothy, J. (Co-Investigator)

Status: Approved

Project Dates: December 16, 2015 - November 30, 2022

Purpose: The broad, long-term goals of this proposal are to apply the principles of functional genomics to an obligate intracellular arthropod-borne pathogen (i.e., *A. phagocytophilum*) in order to understand how these bacteria use their genomes and specific genes to thrive in two biologically vastly different hosts, mammals and ticks. Our central hypothesis is that many mutations that are tolerated in an in vitro mammalian cell culture system will produce an unfavorable phenotype in mice and in tick cell culture and ticks. To test this, we will develop our existing *A. phagocytophilum* mutant library so that each mutant strain can be identified and its phenotype tested. We have used bioinformatics analyses to predict function of selected gene products of interest for which mutants are available (secreted proteins/ T4SS effectors/vir genes), and will screen pooled and individual mutants in mice, tick cell culture and ticks. Lastly, we will test the hypothesis that genes that were non-mutable in mammalian cell culture can be mutated in tick cell culture using both random (transposon-mediated) and site-directed (CAS/CRISPR) mutagenesis approaches. This proposed project will generate a characterized *A. phagocytophilum* mutant library for the scientific community, begin a new era of high throughput and specific functional genomics of the Anaplasmataceae, and identify the molecular mechanisms that enable an obligate intracellular survival strategy of cycling between arthropod and mammalian hosts.

**Award: Platform to develop live attenuated multivalent vaccines against tick borne pathogens**

Principal Investigator: Munderloh, Ulrike G.

Status: Accepted

Sponsoring Organization: U.S. DEPARTMENT OF DEFENSE

Sponsoring Organization Reference ID: W81XWH1810319

Award Dates: September 1, 2018 - August 31, 2022

**Project: Platform to develop live attenuated multivalent vaccines against tick borne pathogens**

Project Team: Oliver, Jonathan (Principal Funded: 5%)

Status: Approved

Project Dates: September 1, 2018 - August 31, 2021

Funded Percent Effort: 5%

Purpose: The overall objectives are to a) produce and identify up to 6 *Rickettsia parkeri* mutants with the desired attributes of lack of pathogenicity coupled with the ability to infect the mammal for a limited time yet long enough to induce solid immune memory; b) replace the mutating transposon with a cassette encoding antigenic epitopes from *Anaplasma phagocytophilum*; c) test the safety and efficacy of the selected *R. parkeri* vaccine strains in immune-compromised and immune-competent mice.

**Awarded Contract: Borrelia burgdorferi infection of ticks**

Project Investigators: Oliver, Jonathan D.

Status: Funded

Sponsoring Organization: Elanco

Date Proposal Submitted: 2021

Funded Amount for Entire Grant Period or Proposed Grant Period: \$12,000.00

Purpose: A contract to infect adult Ixodes scapularis ticks with Borrelia burgdorferi by capillary feeding.

**Award: Ehrlichia genes required for tick colonization and virulence**

Principal Investigator: Munderloh, Ulrike G.

Status: Closed

Sponsoring Organization: NIH Nat'l Inst of Allergy & Infect Dis

Sponsoring Organization Reference ID: 5R21AI127961-02

Award Dates: January 15, 2017 - December 31, 2019

**Project: Ehrlichia genes required for virulence and tick colonization**

Project Team: Oliver, Jonathan (Co-Investigator Funded: 5%), Munderloh, Ulrike, G. (Principal), Kurtti, Timothy, J. (Co-Investigator)

Status: Approved

Project Dates: January 15, 2017 - December 31, 2019

Funded Percent Effort: 5%

Purpose: Production of a mutant library for the emerging pathogen Ehrlichia muris cauclarensis.

**Award: Dynamics of Anaplasma phagocytophilum infection through tick development**

Principal Investigator: Oliver, Jonathan

Status: Closed

Sponsoring Organization: NIH Nat'l Inst of Allergy & Infect Dis

Sponsoring Organization Reference ID: 5R21AI117173-02

Award Dates: July 1, 2015 - June 30, 2018

**Project: Dynamics of Anaplasma phagocytophilum infection through tick development**

Project Team: Oliver, Jonathan (Principal Funded: 20%), Kurtti, Timothy, J. (Co-Investigator)

Status: Closed - Pending Final Close

Project Dates: July 1, 2015 - June 30, 2018

Funded Percent Effort: 20%

Purpose: Analyze the spread of Ap through tick tissues, using confocal microscopy to visualize and quantify Ap in I. scapularis nymphs and adults infected as larvae as these are the life stages involved in transmission.

Aim 1: Measurable characteristics of Ap infection such as mean morula (an intracellular inclusion containing bacteria) diameter and proportion of occupied cellular cytoplasm will be quantified for each infected organ type at the various life stages of the tick. Quantitative PCR will be used to estimate Ap load.

Aim 2: Investigate the mechanisms of bacterial trafficking between cells within the body of the tick. Dissemination via hemolymph plasma, transport by viably infected hemocytes, and direct cell-to-cell contact will be examined. Ap transformed to express green-fluorescent protein will be imaged live to determine if it localizes to the destructive lysosomal compartments of phagocytic hemocytes or replicates to generate morulae in the cytoplasm. Further viability tests will be performed in vitro with hemocytes and hemolymph plasma to determine if either component, separately, is capable of infecting cultured cells.

**Pending/Submitted:**

### **Other Grants, Awards, Gifts, or Endowment Earnings (Internal Sources)**

**Award: Uncovering environmental drivers of tick-borne diseases in Minnesota**

Project Investigators: Oliver, Jonathan (Co-Investigator), Loberg, Shelby (Principal)

Status: Funded

Sponsoring Organization: Institute on the Environment

Award Dates: 2020 - 2022

Funded Amount for Entire Grant Period or Proposed Grant Period: \$3,000.00

Purpose: Provide a research conference and forum for discussion of ticks and tick-borne disease interests for researchers in Minnesota.

**Award: Effect of the microbiome upon deer tick range expansion in the Upper Midwest**

Project Investigators: Oliver, Jonathan (Principal)

Status: Funded

Sponsoring Organization: MN Futures

Award Dates: 2018 - 2020

Funded Amount for Entire Grant Period or Proposed Grant Period: \$249,367.00

Purpose: Determine how environmental and community factors affect tick microbiome formation. Discover the impact of pathogen and symbiont microbiome colonization on deer tick range expansion in the Upper Midwest.

### **Pending/Submitted:**

**Proposal: Wireless Microfluidic Biosensor Architecture for Detection of Pathogens and Biomarkers**

Project Investigators: Oliver, Jonathan (Co-Investigator, 0%), Larsen, Peter (Co-Investigator), Oh, Sang-Hyun (Principal)

Status: Currently Under Review

Sponsoring Organization: OVPR

Date Proposal Submitted: December 12, 2022

Percent Effort: 0%

Funded Amount for Entire Grant Period or Proposed Grant Period: \$225,000.00

Development of new microfluidic sensing device for the rapid identification of various pathogens including those transmitted by ticks.

Aim 1: Develop silicon V-groove open-channel architecture for smartphone-driven wireless fluidics.

Aim 2: Wireless, in vitro biosensing of pathogens within open-channel fluidics.

### **Not Funded Proposals**

**Proposal: Optimization and evaluation of a user-friendly, customized mobile molecular lab for global RAPid Species and Pathogen (RASP) surveillance and identification**

Project Investigators: Oliver, Jonathan (Co-Principal Funded: 20%), Larsen, Peter (Co-Principal), Wanja, Elizabeth (Co-Principal)

Status: Not Funded

Sponsoring Organization: Department of Defense

Date Submitted: December 6, 2022

Percent Effort: 20%

Purpose: RAPid Species and Pathogen (RASP) is a surveillance and identification tool leveraging a user-friendly software frontend for nanopore adaptive sampling in the field.

Aim 1: expand RASP to accommodate global pathogen discovery and surveillance applications by

compiling comprehensive pathogen sequence databases (based on the infectious disease threat priority list of the DoD's six geographic combatant commands) and packaging them within the RASP pipeline. Discovery of novel pathogen sequences is facilitated by our built-in phylogenetic capture method.

Aim 2: show proof-of-concept for RASP functionality by i) analyzing blinded human blood/serum and tick samples for independently confirmed viral or bacterial targets, ii) identifying the species of ticks submitted using RASP's molecular barcoding functionality, and iii) comparing NAS protocols with conventional nanopore sequencing methodologies.

Aim 3: document semi-field and field functionality by deploying the RASP lab to two select U.S. military bases and to at least two vector surveillance sites in Kisumu, Kenya. This will demonstrate the unique mobile lab's effectiveness as a dual real-time host identifier and disease surveillance package by performing on-site analyses of field collected mosquitoes and ticks.

**Proposal: Coordinated adaptation of *Anaplasma phagocytophilum* through the tick lifecycle**

Role: Principal

Status: Not Funded

Sponsoring Organization: NIH Nat'l Inst of Allergy & Infect Dis

Date Submitted: June 1, 2022

Percent Effort: 20%

Purpose: Research

Purpose: To support research with the obligate intracellular tick-borne pathogen, *Anaplasma phagocytophilum* (Ap), an important human pathogen, we have established a library of 1,195 Ap mutants. Also, tick genetics and genomics have rapidly advanced, stimulating seminal work to dissect the immune pathways of ticks. These efforts have also revealed gaps where crucial linkages remain unknown. Importantly, work with ticks and tick-borne pathogens has focused on the active stages, and events during the molts when dramatic changes take place during tissue reorganization, remain unexplored. We hypothesize that successful colonization of a tick by an obligate intracellular pathogen requires an orchestration of the responses of the two to each other in a timely manner, and in response to specific cues. We further hypothesize that Ap employs sensors and effectors to control the tick, and that these mechanisms direct the pathogen to the salivary glands to be ready and infectious at the time of the tick's blood meal.

Aim 1: Investigate how *A. phagocytophilum* progresses through ticks from acquisition to transmission, including the molting periods. We will characterize the fate of *A. phagocytophilum* mutants unable to complete their lifecycle within ticks to identify proteins that are crucial for acquisition, maintenance and transmission.

Aim 2: Establish a timeline of subcellular interactions mediated by *A. phagocytophilum* in tick cells using microscopy, and molecular analyses to identify critical genes.

Aim 3: Investigate *A. phagocytophilum* gene regulation across different tick tissues and cell types using tick organ specific transcriptional analysis with a focus on gene regulation.

Aim 4: Identify the proteins encoded by hypothetical genes that are expressed in tick cells, with the assumption that investigating such genes will uncover specific mechanisms that *A. phagocytophilum* uses to colonize ticks.

**Proposal: Field-based nanopore adaptive sampling (NAS) mobile lab as a novel approach for rapid surveillance of mosquito-borne viruses and malaria drug resistance genes in mosquitoes at Camp Simba and Manda Base, Lamu County, Kenya.**

Role: Principal

Status: Not Funded

Sponsoring Organization: US DEPT OF DEFENSE ARMY

Date Submitted: May 26, 2022

Percent Effort: 5%

Purpose: Research

Purpose: The objective of this study is to use mobile lab using NAS technology to conduct field-based rapid molecular identification of mosquito species, determine virus infections, *Plasmodium* species, and antimalarial drug resistance in mosquitoes collected at the Simba Camp and Lamu, Kenya. Secondary objectives: a). Characterize mosquito species diversity and abundance. Use NAS technology in the field to: b). Conduct molecular identification of mosquito species, including

novel species or species not previously reported in the study areas; c). Determine Plasmodium species in mosquitoes d). Determine antimalarial drug resistance genes in mosquitoes e). Determine blood meal hosts f). Develop mosquito spp., Plasmodium spp. malaria drug resistance risk maps for study area

**Proposal: Early detection of Lyme disease using a wearable diagnostic device**

Project Investigators: Oliver, Jonathan D (Co-Investigator, 5%), Cui, Tianhong (Principal), Bedros, Saad (Co-Investigator), Pearson, David (Co-Investigator)

Status: Not Funded

Sponsoring Organization: Global Lyme Alliance

Date Proposal Submitted: September 15, 2022

Percent Effort: 5%

Funded Amount for Entire Grant Period or Proposed Grant Period: \$250,000.00

Purpose: Development of a wearable lab-on-a-chip (W-LOC) device capable of in-situ quantitative nucleic acid detection of *B. burgdorferi* directly from the dermal interstitial fluid at the site of transmission from a tick, where the spirochetes are localized in early Lyme disease. The W-LOC integrates all functions from interstitial fluid extraction, sample preparation, isothermal amplification, and detection, and is automated once applied to the skin. Nucleic-acid analysis and detection of *B. burgdorferi* extracted from interstitial fluid will proceed via isothermal recombinase polymerase amplification (RPA) using skin surface body heat in the ambient environment. Embedded RPA reagents respond in fluorescent fashion to *B. burgdorferi* nucleic acids. The results will be analyzed quantitatively by a cellular telephone-based fluorescence detection system.

**Proposal: Wearable Lab-on-a-Chip for Early Detection of Lyme Disease**

Project Investigators: Oliver, Jonathan D (Co-Investigator, 5%), Cui, Tianhong (Principal), Bedros, Saad (Co-Investigator), Pearson, David (Co-Investigator)

Status: Not Funded

Sponsoring Organization: Lyme X Prize

Date Proposal Submitted: August 8, 2022

Percent Effort: 5%

Funded Amount for Entire Grant Period or Proposed Grant Period: \$200,000.00

Purpose: Development of a wearable lab-on-a-chip (W-LOC) device capable of in-situ quantitative nucleic acid detection of *B. burgdorferi* directly from the dermal interstitial fluid at the site of transmission from an *Ixodes scapularis* tick, where the spirochetes are localized in early Lyme disease. The W-LOC integrates all functions from interstitial fluid extraction, sample preparation, isothermal amplification, and detection, and is automated once applied to the skin. Nucleic-acid analysis and detection of *B. burgdorferi* extracted from interstitial fluid will proceed via isothermal recombinase polymerase amplification (RPA) using skin surface body heat in the ambient environment. Embedded RPA reagents will respond in fluorescent fashion to *B. burgdorferi* nucleic acids. The results will be analyzed quantitatively by a cellular telephone-based fluorescence detection system.

Specific Aim 1: Development of the W-LOC device. 1A) Fabrication of the W-LOC and microneedle array. 1B) Validation of W-LOC performance, primer design to maximize sensitivity and specificity, and calibration to varying concentrations of *B. burgdorferi*.

Specific Aim 2: Validate presence and concentration of *B. burgdorferi* in guinea pig interstitial tissue and compare timing and dissemination distance from the bite site using W-LOC detection and established molecular detection methods.

Specific Aim 3: Clinical validation of the W-LOC and comparison with commercially available serologic and nucleic acid testing.

**Proposal: Rapid field-based surveillance of tick vectors and discovery of tick-borne pathogens in real time using Nanopore adaptive sampling –Therapeutic /Diagnostic Research Award**

Project Investigators: Oliver, Jonathan D (Co-Principal, 20%), Larsen, Peter (Co-Principal), Wanja, Elizabeth (Co-Principal)

Status: Not Funded

Sponsoring Organization: Department of Defense

Date Proposal Submitted: May 23, 2022

Percent Effort: 20%

Funded Amount for Entire Grant Period or Proposed Grant Period: \$450,000.00

Purpose: Development of a nanopore adaptive sampling (NAS)-equipped mobile lab to simultaneously determine tick species and detect their DNA-based pathogens rapidly in real-time in the field.

Aim 1: 1A) On-site surveillance and testing of ticks; 1B) follow-up testing and determination of pathogen strains; 1C) refinement of protocols and best practices for mobile lab testing of ticks for tick-borne pathogens by military personnel.

Aim 2: 2A) NAS training for on-site military Preventive Medicine Detachment and/or DoD personnel tailored for tick and tick-borne pathogen surveillance; 2B) Development of software for packaging tick-borne pathogen phylogenetics data for rapid delivery to expert analysts.

**Proposal: Developing a Rapid Response Malaria Control Network: real-time characterization of anti-malarial drug resistance and mosquito vector species using nanopore adaptive sequencing**

Project Investigators: Oliver, Jonathan D (Co-Principal, 15% Funded: 15%), Larsen, Peter A (Co-Principal, 15% Funded: 15%), Khoo, Benedict S (Student RA, 25% Funded: 25%), Evan, Kipp (Student RA)

Status: Not Funded

Sponsoring Organization: Gates Foundation/Grand Challenges

Date Proposal Submitted: January 13, 2022

Percent Effort: 15%

Funded Percent Effort: 15%

Funded Amount for Entire Grant Period or Proposed Grant Period: \$200,000.00

Purpose: Establish a cutting-edge real-time malaria surveillance network that leverages portable nanopore sequencing technology. To accomplish this, we will partner with colleagues in Vietnam and Malaysian Borneo to deploy our mobile sequencing laboratory for the development of best practices and protocols that will directly inform next-generation malaria control efforts across the globe. In particular, we will leverage highly advanced bioinformatic techniques that, for the first time, allow for the simultaneous DNA-based identification of malaria causing parasites, drug-resistant strains of those parasites, and mosquito host species. We will dually evaluate laboratory-maintained malaria and mosquito strains and perform rugged field-based testing of our portable sequencing lab.

**Proposal: Impact of Pathogen-Host Interactions in Ixodes scapularis and Its Role in Inducing Alpha-Gal Syndrome**

Role: Principal

Status: Not Funded

Sponsoring Organization: U.S. DEPARTMENT OF DEFENSE

Date Submitted: August 25, 2021

Percent Effort: 20%

Purpose: Research

Purpose: The primary objective of this study is to determine what role *I. scapularis* and its pathogens play in alpha gal syndrome development using novel in vitro, tick, and rodent experiments. We hypothesize that infection with tick-borne pathogens in *I. scapularis* is an important factor in the induction of  $\alpha$ -gal sensitization and development of AGS in a model host. To address this hypothesis, we will use a two-pronged approach. We will examine the biology of pathogen infection in the tick salivary glands in uninfected and pathogen-infected ticks at three time points relevant to the transmission dynamics of the bacteria involved. Transcriptomic and glycan profiling by mass spectrometry in paired salivary gland samples will be performed. Susceptible mice will be exposed multiple times to pathogen-infected *I. scapularis*, challenged with meals of red meat, and evaluated for immune and allergic responses characteristic of AGS. Bridging between these objectives, we will use mass spectrometry to determine the glycan profile of excreted saliva from uninfected and pathogen-infected *I. scapularis*.



**Proposal: Host adaptations of Anaplasma phagocytophilum strains in U.S.**

Role: Principal

Status: Not Funded

Sponsoring Organization: NIH Nat'l Inst of Allergy & Infect Dis

Date Submitted: June 25, 2021

Purpose: Research

Purpose: The overall hypothesis is that persistent infection of different mammalian reservoirs allows evolutionary divergence of *Anaplasma phagocytophilum* (Ap) and the resulting variations in host tropism and tick transmissibility. Specifically, we hypothesize that the type IV secretion system (T4SS), with its effectors, is a critical determinant of host specificity in Ap. Our hypothesis will be tested by pursuing the following three aims:

1. Determine the genomic population diversity of Ap strains circulating in different animal reservoir species at Camp Ripley, MN, and compare traits with available Ap genome sequences from the Northeast.
2. Determine mouse infectivity/tick transmissibility of genotypically diverse Ap strains.
3. Determine whether inter-strain interference occurs between co-circulating Ap genotypes

**Proposal: Malaria Vector Bionomics and Environmental Risk in Sussundenga, Mozambique**

Role: Co-Investigator

Status: Not Funded

Sponsoring Organization: NATIONAL INSTITUTES OF HEALTH (NIH)

Date Submitted: June 8, 2021

Percent Effort: 10%

Purpose: Research

Purpose: Mosquito surveillance and mapping to determine disease risk in Sussundenga, Mozambique. My responsibility would be sequencing portions of the cytochrome oxidase I gene to determine mosquito species.

**Proposal: Host adaptations of Anaplasma phagocytophilum strains in U.S.**

Role: Principal

Status: Not Funded

Sponsoring Organization: NIH Nat'l Inst of Allergy & Infect Dis

Date Submitted: September 30, 2020

Percent Effort: 39%

Purpose: Research

Purpose: See above.

**Proposal: Malaria Vector Bionomics and Environmental Risk in Sussundenga, Mozambique**

Role: Co-Investigator

Status: Not Funded

Sponsoring Organization: NATIONAL INSTITUTES OF HEALTH (NIH)

Date Submitted: June 5, 2020

Percent Effort: 5%

Purpose: Research

Purpose: Mosquito surveillance and mapping to determine disease risk in Sussundenga, Mozambique. My responsibility would be sequencing portions of the cytochrome oxidase I gene to determine mosquito species.

**Proposal: Ticks in Minnesota! Informing Control and Response**

Role: Co-Investigator

Status: Not Funded

Sponsoring Organization: LEGISLATIVE-CITIZEN COMMISSION ON MN RES

Date Submitted: April 28, 2020

Percent Effort: 15%

Purpose: Research

Purpose: We will jumpstart broad-scale tick-control strategies at the MMCD and improve tick-related public communication from the MDH, by identifying exact timing when weather and land-use conditions result in peak tick numbers during any year across Minnesota. This project fulfills an informational gap, which can be used to inform planning and implementation of tick control treatments. Our primary steps are to:

- Characterize historical weather conditions (1991-2016) in Minnesota, including drought, heat, cold, humidity, and precipitation.
- Use statistical modeling to identify weather conditions and land-use changes that lead to expanding tick populations by leveraging a unique and pre-existing data set of black-legged larval ticks collected by MMCD 100+ sites for the past 30 years.
- Use our data to identify “periods” of greatest larval tick-related risk.

**Proposal: New tools for tick-borne pathogen surveillance**

Role: Principal

Status: Discontinued

Sponsoring Organization: NIH Nat'l Inst of Allergy & Infect Dis

Date Submitted: January 31, 2020

Percent Effort: 25%

Purpose: Research

Purpose: There is an urgent need for 1) a testing system capable of detecting and identifying a wide range of tick species and pathogens, and 2) rapid, portable, and inexpensive diagnostic field tests. Early detection of tick species and associated pathogens allows for local intervention strategies reducing exposures and the overall number of human cases.

**Proposal: New tools for detecting and identifying arthropod vectors and pathogens**

Role: Principal

Status: Not Funded

Sponsoring Organization: THE PEW CHARITABLE TRUSTS

Date Submitted: October 14, 2019

Percent Effort: 8%

Purpose: Research

Purpose: Using the Nanostring NCounter platform, develop a testing system capable of detecting and identifying a wide range of tick species pathogens, that is rapid, portable, inexpensive, and field ready.

**Proposal: Malaria Vector Bionomics and Environmental Risk in Sussundenga, Mozambique**

Role: Co-Investigator

Status: Not Funded

Sponsoring Organization: NATIONAL INSTITUTES OF HEALTH (NIH)

Date Submitted: June 6, 2019

Percent Effort: 10%

Purpose: Research

Purpose: Mosquito surveillance and mapping to determine disease risk in Sussundenga, Mozambique. My responsibility would be sequencing portions of the cytochrome oxidase I gene to determine mosquito species.

**Proposal: New Tools for Rapid Identification and Detection of Vectors and Pathogens**

Role: Principal

Status: Not Funded

Sponsoring Organization: U.S. DEPARTMENT OF DEFENSE

Date Submitted: October 16, 2017

Percent Effort: 50%

Purpose: Research

Purpose: Develop and validate molecular tools for high-throughput detection of vector-borne pathogens and vector arthropod species.

Note: Proposal was recommended for funding by the civilian review board but was halted by the military reviewer.

**Proposal: Ticks! A Rising Threat in Minnesota**

Role: Principal

Status: Not Funded

Sponsoring Organization: LEGISLATIVE-CITIZEN COMMISSION ON MN RES

Date Submitted: April 11, 2019

Requested Amount: \$300,000.00

Percent Effort: 10%

Purpose: Research

Purpose: We propose a surveillance network in Minnesota to prepare for the Asian longhorned tick. At the same time, this will result in a census and risk map of other human-biting ticks. Our project objectives are:

- 1) Establish a collaborative network between the University of Minnesota, state and city government agencies, and wildlife rehabilitation clinics.
- 2) Develop a delivery and identification system for tick samples.
- 3) Communicate surveillance results and risks to the Minnesotan public.

**Proposal: Understanding and reducing Minnesota's growing risk from ticks**

Role: Co-Investigator

Status: Not Funded

Sponsoring Organization: LEGISLATIVE-CITIZEN COMMISSION ON MN RES

Date Submitted: April 11, 2019

Percent Effort: 9%

Purpose: Research

Purpose: Our long-term goal is to reduce tick-borne disease and inform tick and Lyme disease control strategies for the state of Minnesota. Our overall project objectives are to:

1. Characterize historical weather conditions in Minnesota, including drought, heat, cold, and precipitation
2. Identify the weather conditions that lead to changing tick populations
3. Provide data to inform public awareness campaigns and disease reduction strategies when ideal tick conditions are forecasted

**Proposal: Development of Laboratory Capacity in Fiji for Early Detection of Dengue Virus**

Role: Principal

Status: Not Funded

Sponsoring Organization: U.S. DEPARTMENT OF STATE (USDS)

Date Submitted: July 14, 2017

Percent Effort: 2%

Purpose: Other Sponsored Activity

Purpose: Environmental changes resulting in warmer, wetter weather and changes in tropical storm patterns increase the prevalence of infectious diseases transmitted by mosquito vectors. In Fiji and the South Pacific, outbreaks of dengue virus are of particular concern. Early identification of the presence of dengue virus in mosquitoes, prior to the infection of human populations, provides an opportunity for early intervention preceding an outbreak. We propose to enhance the laboratory capacity in the Fiji Ministry of Health and Medical Services by providing the necessary equipment and training to rapidly detect the virus in mosquitoes.

Note: The Fijian Ministry of Health & Medical services undertook this project after funding was denied. They did not involve me.

**Proposal: Ectoparasite Borne Pathogens in the Peri-Domestic Environment**

Role: Co-Investigator

Status: Not Funded

Sponsoring Organization: AUTONOMOUS UNIVERSITY OF YUCATAN

Date Submitted: May 4, 2017

Percent Effort: 15%

Purpose: Research

Purpose: Tick surveillance and pathogen testing comparing urban, suburban, and rural household environments in Merida, Mexico.

**Proposal: In vivo and in vitro screens for acaricidal G-protein coupled receptor (GPCR) antagonists**

Role: Co-Investigator

Status: Not Funded

Sponsoring Organization: NATIONAL INSTITUTES OF HEALTH (NIH)

Date Submitted: April 13, 2017

Percent Effort: 25%

Purpose: Research

Purpose: Develop two systems for testing and identification of novel acaricide candidates:  
1. Screening of G-Protein Coupled Receptor (GPCR) antagonists for activity against ticks  
2. Develop reporter tick cell lines to screen for additional GPCR antagonists.

**Proposal: Next Generation Attenuated Rickettsial Vaccines**

Role: Co-Investigator

Status: Not Funded

Sponsoring Organization: NATIONAL INSTITUTES OF HEALTH (NIH)

Date Submitted: December 12, 2016

Percent Effort: 20%

Purpose: Research

Purpose: Pan-rickettsial vaccine development and testing.  
1: Produce attenuated mutants of Rickettsia parkeri with a consistent safety profile.  
2: Transform Rickettsia parkeri to express antigen epitopes to maximize coverage across typhus group (TG) and spotted fever group (SFG) rickettsiae, generate stable vaccine candidates of safe mutants.  
3: Test the immunogenicity and efficacy of recombinant attenuated Rickettsia parkeri vaccine strains, and identify mechanisms of protective immunity.

**Proposal: Impact of Lyme Disease Co-infection on Pathogen Acquisition by Ticks**

Role: Principal

Status: Not Funded

Sponsoring Organization: U.S. DEPARTMENT OF DEFENSE

Date Submitted: November 10, 2016

Percent Effort: 25%

Purpose: Research

Purpose: Examine co-infection of ticks by multiple pathogens.  
1. Explore the effect of Ap and Bb co-infection on the transmission of either to the vertebrate host in simultaneous tick exposure experiments.  
2. Determine if previous salivary gland infection by the human non-pathogenic strain Ap-Variant 1 will reduce transmission of pathogenic Ap.

**Proposal: North Central Region Vectorborne Disease Center of Excellence**

Role: Co-Investigator

Status: Not Funded

Sponsoring Organization: CENTERS FOR DISEASE CONTROL & PREVENTION  
Date Submitted: October 11, 2016  
Purpose: Research  
Purpose: Establish a CDC Center of Excellence for vector-borne disease.

**Proposal: Associations Between Extreme Weather and Harmful Vector Populations**

Role: Co-Investigator  
Status: Not Funded  
Sponsoring Organization: LEGISLATIVE-CITIZEN COMMISSION ON MN RES  
Date Submitted: April 5, 2018  
Percent Effort: 15%  
Purpose: Research  
Purpose: Characterize how extreme weather events impact harmful vector populations, known to transmit disease (e.g. ticks and mosquitoes).

**Proposal: Development of Paratransgenic Ticks for Disease Control**

Role: Co-Investigator  
Status: Discontinued  
Sponsoring Organization: NATIONAL INSTITUTES OF HEALTH (NIH)  
Date Submitted: March 3, 2016  
Percent Effort: 20%  
Purpose: Research  
Purpose: Identify the contributions of the symbiont to normal tick development and reproduction, as well as its role in the vectorial capacity of *I. scapularis*. Additionally, we will investigate the tick immune system to learn how it is shaped by *R. buchneri*, and how it interacts with experimentally introduced wild-type and mutant *R. buchneri*.

**Proposal: Ehrlichia genes required for virulence and tick colonization**

Role: Co-Investigator  
Status: Discontinued  
Sponsoring Organization: NATIONAL INSTITUTES OF HEALTH (NIH)  
Date Submitted: February 9, 2016  
Percent Effort: 5%  
Purpose: Research  
Purpose: See funded grants

**Proposal: Next Generation Attenuated Rickettsial Vaccines**

Role: Co-Investigator  
Status: Discontinued  
Sponsoring Organization: NATIONAL INSTITUTES OF HEALTH (NIH)  
Date Submitted: September 26, 2014  
Percent Effort: 20%  
Purpose: Research  
Purpose: Pan-rickettsial vaccine development and testing.  
1: Produce attenuated mutants of *Rickettsia parkeri* with a consistent safety profile.  
2: Transform *Rickettsia parkeri* to express antigen epitopes to maximize coverage across typhus group (TG) and spotted fever group (SFG) rickettsiae, generate stable vaccine candidates of safe mutants.  
3: Test the immunogenicity and efficacy of recombinant attenuated *Rickettsia parkeri* vaccine strains, and identify mechanisms of protective immunity.

**Proposal: Next generation sequencing for detection and characterization of pathogens carried by *Triatoma rubrofasciata***

Project Investigators: Oliver, Jonathan (Co-Investigator), Kumar, Sunil (Principal)

Status: Not Funded

Sponsoring Organization: AHC Global Health Seed Grants

Funded Amount for Entire Grant Period or Proposed Grant Period: \$25,000.00

Purpose: Use next gen sequencing to determine if kissing bugs in Guangxi, China are carrying trypanosomes or other human transmissible pathogens.

**Proposal: Surveillance and vector range evaluation for SFTSV virus in Guangxi Province, China**

Project Investigators: Oliver, Jonathan (Principal)

Status: Not Funded

Sponsoring Organization: AHC Global Health Seed Grants

Funded Amount for Entire Grant Period or Proposed Grant Period: \$25,000.00

Purpose: Surveillance for SFTSV virus among ticks in Guangxi, China.

Note: The Guangxi CDC undertook this project after proposal funding was denied. They did not involve me.

**Proposal: Effect of the microbiome upon deer tick range expansion in the Upper Midwest**

Project Investigators: Oliver, Jonathan (Principal)

Status: Not Funded

Sponsoring Organization: Academic Health Center

Funded Amount for Entire Grant Period or Proposed Grant Period: \$200,000.00

Purpose: Determine how environmental and community factors affect tick microbiome formation.

Discover the impact of pathogen and symbiont microbiome colonization on deer tick range expansion in the Upper Midwest.

**Proposal: New tools for rapid identification of pathogens and vectors**

Project Investigators: Oliver, Jonathan (Co-Investigator), Munderloh, Ulrike (Multiple PI), Hedberg, Craig (Multiple PI)

Status: Not Funded

Sponsoring Organization: MN Futures

Funded Amount for Entire Grant Period or Proposed Grant Period: \$250,000.00

Purpose: Use Nanostring nCounter technology to detect pathogen-associated RNA in ticks.

**Publications**

*Asterisk(\*) - indicates co-first author*

*Underline - indicates student author*

**Peer-Reviewed Journal Article**

Rana, V., Kitsou, C., Dutta, S., Ronzetti, M., Zhang, M., Bernard, Q., Smith, A., Tomaz Cortazar, J., Yang, X., Wu, M., Kepple, O., Li, W., Dwyer, J., Matias, J., Baljinnyam, B., **Oliver, J. D.**, Rajeevam, N., Pedra, J., Narasimhan, S., Wang, Y., Munderloh, U., Fikrig, E., Simeonov, A., Anguita, J., Pal, U. Dome1–JAK–STAT Signaling Shared Between Parasite and Host Integrates Vector Immunity and Development. *Science*. doi: DOI: [10.1126/science.abl3837](https://doi.org/10.1126/science.abl3837)

Co-author. Performed experiments and provided 1000s of ticks and other reagents/materials.

Kipp, E. J., Lindsey\*, L. L., Blanco, C. M., Baker, J., Milstein, M. S., Faulk, C., **Oliver, J. D.**, Larsen, P. A. Nanopore adaptive sampling for mitogenome sequencing and bloodmeal identification in hematophagous insects. *Parasites & Vectors*. [Accepted:2023]

<https://www.biorxiv.org/content/10.1101/2021.11.11.468279v1>

Co-author. Morphological identification of insect specimens. Wrote portions of the methods, results, and discussion.

**Khoo, B. S., Cull, B., & Oliver, J. D.** Tick artificial membrane feeding for *Ixodes scapularis*. *Journal of Video Experimentation*, 189. [doi: 10.3791/64553](https://doi.org/10.3791/64553)

Senior author. Invited submission. Designed study and developed methods. Wrote manuscript discussion. Edited manuscript.

Lynn, G. E., Breuner, N. E., Hojgaard, A., **Oliver, J. D.**, Eisen, L., & Eisen, R. (2022). A comparison of horizontal and transovarial transmission efficiency of *Borrelia miyamotoi* by *Ixodes scapularis*. *Ticks and Tick-borne Diseases*, 13(5). [doi: 10.1016/j.ttbdis.2022.102003](https://doi.org/10.1016/j.ttbdis.2022.102003)

Co-author. Performed microscopy and tick tissue identification. Edited manuscript.

Bulgarella, M., Lincango, M. P., Lahuatte, P. L., **Oliver, J. D.**, Cahuana, A., Ramirez, I. E., Sage, R., Colwitz, A. J., Freund, D. A., Miksanek, J. R., Moon, R. D., Causton, G. E., Heimpel, G. E. (2022). Persistence of the invasive Darwin's finch parasite *Philornis downsi* in the Galapagos Islands: an age-grading approach. *Scientific Reports*, 12, 2325. [doi: 10.1038/s41598-022-06208-5](https://doi.org/10.1038/s41598-022-06208-5)

Co-author. Developed plate reader methodology for evaluating fly age using head capsule contents autofluorescence to measure accumulating pterins. Statistical analysis. Wrote methods.

Cull, B., Burkhardt, N. Y., Wang, X., Thorpe, C. J., **Oliver, J. D.**, Kurtti, T. J., & Munderloh, U. G. (2022). The *Ixodes scapularis* symbiont *Rickettsia buchneri* inhibits growth of pathogenic Rickettsiaceae in tick cells: implications for vector competence. *Frontiers in Veterinary Science*. [doi: 10.3389/fvets.2021.748427](https://doi.org/10.3389/fvets.2021.748427)

Co-author. Contributed to planning of experimental design, data analysis, editing.

Khan, S. S., Ahmed, H., Afzal, M. S., Khan, M. R., Birtles, R. J., & **Oliver, J. D.** (2022). Epidemiology, Distribution, and Identification of Ticks on Livestock in Pakistan. *International Journal of Environmental Research and Public Health*, 19(5). [doi: 10.3390/ijerph19053024](https://doi.org/10.3390/ijerph19053024)

Senior author. Identification of tick specimens and writing/editing of manuscript.

Leonard, M. P., & **Oliver, J. D.** (2021). Mosquito Guttersnipe: A New Sampling Tool for Roof Gutters, Tree Holes, and Other Elevated Mosquito Habitats. *Journal of the American Mosquito Control Association*, 37(2), 109-112. [doi: 10.2987/20-6988.1](https://doi.org/10.2987/20-6988.1)

Senior author. Helped plan and design experiments, statistical analysis, wrote parts of manuscript, edited manuscript, project funding

**Oliver, J. D.**, & Fountain-Jones, N. M. (2021). Interspecies bacterial communication produces a delicate balance between *Vibrio cholerae* and the chironomid egg mass microbiome. *Molecular Ecology*, 30(7), 1571-1573. [doi: 10.1111/mec.15839](https://doi.org/10.1111/mec.15839)

Lead Author. Invited commentary. Researched and wrote manuscript.

Wang, X. R., Burkhardt, N. Y., Kurtti, T. J., **Oliver, J. D.**, Price, L. D., Cull, B., Thorpe, C. J., Thiel, M.S., Munderloh, U. G. (2021). Mitochondrion-Dependent Apoptosis Is Essential for *Rickettsia parkeri* Infection and Replication in Vector Cells. *mSystems*, 6(2). PubMed Central ID Number: PMC8546998 [doi: 10.1128/mSystems.01209-20](https://doi.org/10.1128/mSystems.01209-20)

Co-author. Helped design experiments, image and data analysis, edited manuscript

**Oliver, J. D.**, Price, L. D., Burkhardt, N. Y., Heu, C. C., Khoo, B. S., Thorpe, C. J., Kurtti, T. J., Munderloh, U. G. (2021). Growth Dynamics and Antibiotic Elimination of Symbiotic *Rickettsia buchneri* in the Tick *Ixodes scapularis* (Acari: Ixodidae). *Applied and Environmental Microbiology*, 87(3). PubMed Central ID Number: PMC7848900 [doi: 10.1128/AEM.01672-20](https://doi.org/10.1128/AEM.01672-20)

Lead author. Designed study, performed experimental procedures, developed technical methods, analyzed and curated data, and wrote manuscript

Quadros, D. G., Johnson, T. L., Whitney, T. R., **Oliver, J. D.**, & Oliva Chávez, A. S. (2020). Plant-Derived Natural Compounds for Tick Pest Control in Livestock and Wildlife: Pragmatism or Utopia? *Insects*, 11(8). PubMed Central ID Number: PMC7469192 [doi: 10.3390/insects11080490](https://doi.org/10.3390/insects11080490)

Wrote parts of manuscript, edited manuscript

- Rau, A., Munoz-Zanzi, C., Schotthoefer, A. M., **Oliver, J. D.**, & Berman, J. D. (2020). Spatio-Temporal Dynamics of Tick-Borne Diseases in North-Central Wisconsin from 2000-2016. *International Journal of Environmental Research and Public Health*, 17(14). PubMed Central ID Number: PMC7400118 [doi: 10.3390/ijerph17145105](https://doi.org/10.3390/ijerph17145105)  
Co-author. Contributed to writing introduction and discussion. Edited manuscript. Secured support for study.
- Wang, X. R., Kurtti, T. J., **Oliver, J. D.**, & Munderloh, U. G. (2020). The identification of tick autophagy-related genes in *Ixodes scapularis* responding to amino acid starvation. *Ticks and Tick-borne Diseases*, 11(3). [doi: 10.1016/j.ttbdis.2020.101402](https://doi.org/10.1016/j.ttbdis.2020.101402)  
Co-author. Helped design experiments, assisted in experimental procedures, edited manuscript.
- Nelson, C. M., Herron, M. J., Wang, X. R., Baldrige, G. D., **Oliver, J. D.**, & Munderloh, U. G. (2020). Global Transcription Profiles of *Anaplasma phagocytophilum* at Key Stages of Infection in Tick and Human Cell Lines and Granulocytes. *Frontiers in Veterinary Science*, 7. [doi: 10.3389/fvets.2020.00111](https://doi.org/10.3389/fvets.2020.00111)  
Co-author. Data analysis, data curation, edited manuscript
- Oliva Chávez, A. S., Herron, M. J., Nelson, C. M., Felsheim, R. F., **Oliver, J. D.**, Burkhardt, N. Y., . . . Munderloh, U. G. (2019). Mutational analysis of gene function in the Anaplasmataceae: Challenges and perspectives. *Ticks and Tick-Borne Diseases*, 10(2), 482-494. PubMed Central ID Number: PMC6342664 [doi: 10.1016/j.ttbdis.2018.11.006](https://doi.org/10.1016/j.ttbdis.2018.11.006)  
Co-author. Performed microscopy and aided in other experimental procedures, wrote related methodology, and edited manuscript
- Lynn, G. E., Burkhardt, N. Y., Felsheim, R. F., Nelson, C. M., **Oliver, J. D.**, Kurtti, T. J., & Munderloh, U. G. (2018). Characterization and transformation of Ehrlichia isolated from a Minnesota tick. *Applied and Environmental Microbiology*(00866-19). doi: 10.1128/AEM.00866-19  
Co-author. Performed microscopy and aided in other experimental procedures, wrote related methodology, and edited manuscript. Provided partial funding.
- Oliver, J. D.**, Bennett, S. W., Beati, L., & Bartholomay, L. C. (2017). Range Expansion and Increasing *Borrelia burgdorferi* Infection of the Tick *Ixodes scapularis* (Acari: Ixodidae) in Iowa, 1990-2013. *Journal of Medical Entomology*, 54(6), 1727-1734. [doi: 10.1093/jme/tjx121](https://doi.org/10.1093/jme/tjx121)  
Lead Author. Designed study, performed tick identification, collection and some testing, compiled and analyzed data, and wrote manuscript.
- Lynn, G. E., **Oliver, J. D.**, Cornax, I., O'Sullivan, M. G., & Munderloh, U. G. (2017). Experimental evaluation of *Peromyscus leucopus* as a reservoir host of the Ehrlichia muris-like agent. *Parasites & Vectors*, 10(1), 48. PubMed Central ID Number: PMC5273795\_ [doi: 10.1186/s13071-017-1980-4](https://doi.org/10.1186/s13071-017-1980-4)  
Co-author. Performed microscopy and aided in other experimental procedures, wrote related methodology, and edited manuscript.
- Oliver, J. D.**, Lynn, G. E., Burkhardt, N. Y., Price, L. D., Nelson, C. M., Kurtti, T. J., & Munderloh, U. G. (2016). Infection of Immature *Ixodes scapularis* (Acari: Ixodidae) by Membrane Feeding. *Journal of Medical Entomology*, 53(2), 409-15. PubMed Central ID Number: PMC5853672 [doi: 10.1093/jme/tjv241](https://doi.org/10.1093/jme/tjv241)  
Lead author. Designed study, performed experimental procedures, developed technical methods, analyzed data, and wrote manuscript. Provided partial funding.
- Chávez, A. S., Fairman, J. W., Felsheim, R. F., Nelson, C. M., Herron, M. J., Higgins, L., **Oliver, J. D.**, Markowski, T. W., Kurtti, T. J., Edwards, T. E., Munderloh, U. G. (2015). Methylation of an *Anaplasma phagocytophilum* outer membrane protein is required for infection of tick cells. *PLOS Pathogens*, 11(e1005248). [URL:](https://doi.org/10.1371/journal.ppat.1005248)



<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4636158/>

Co-author. Performed microscopy and aided in other experimental procedures, wrote related methodology, and edited manuscript

**Oliver, J. D., Chávez, A. S.,** Felsheim, R. F., Kurtti, T. J., & Munderloh, U. G. (2015). An Ixodes scapularis cell line with a predominantly neuron-like phenotype. *Experimental & Applied Acarology*, 66(3), 427-42. PubMed Central ID Number: PMC4449809 [doi: 10.1007/s10493-015-9908-1](https://doi.org/10.1007/s10493-015-9908-1)

Lead author. Designed study, performed experimental procedures and bioinformatics, analyzed data, and wrote manuscript.

**Lynn, G. E., Oliver, J. D.,** Nelson, C. M., Felsheim, R. F., Kurtti, T. J., & Munderloh, U. G. (2015). Tissue distribution of the Ehrlichia muris-like agent in a tick vector. *PLOS One*, 10(3), e0122007. PubMed Central ID Number: PMC4363788 [doi: 10.1371/journal.pone.0122007](https://doi.org/10.1371/journal.pone.0122007)

Co-author. Performed microscopy and aided in other experimental procedures, wrote related methodology, and edited manuscript

Kurtti, T. J., Felsheim, R. F., Burkhardt, N. Y., **Oliver, J. D., Heu, C. C.,** & Munderloh, U. G. (2015). Rickettsia buchneri sp. nov., a rickettsial endosymbiont of the blacklegged tick Ixodes scapularis. *International Journal of Systematic and Evolutionary Microbiology*, 65(Pt 3), 965-970. PubMed Central ID Number: PMC4365292 [doi: 10.1099/ijs.0.000047](https://doi.org/10.1099/ijs.0.000047)

Co-author. Performed microscopy and aided in other experimental procedures, wrote related methodology, helped design figures, and edited manuscript

**Oliver, J. D.,** Burkhardt, N. Y., Felsheim, R. F., Kurtti, T. J., & Munderloh, U. G. (2014). Motility characteristics are altered for Rickettsia bellii transformed to overexpress a heterologous rickA gene. *Applied and Environmental Microbiology*, 80(3), 1170-6. PubMed Central ID Number: PMC3911190 [doi: 10.1128/AEM.03352-13](https://doi.org/10.1128/AEM.03352-13)

Lead author. Designed study, performed experimental procedures, developed technical methods, analyzed data, and wrote manuscript.

**Oliver, J. D.,** Dusty Loy, J., Parikh, G., & Bartholomay, L. (2011). Comparative analysis of hemocyte phagocytosis between six species of arthropods as measured by flow cytometry. *Journal of Invertebrate Pathology*, 108(2), 126-30. [doi: 10.1016/j.jip.2011.07.004](https://doi.org/10.1016/j.jip.2011.07.004)

Lead author. Designed study, performed experimental procedures, developed technical methods, analyzed data, and wrote manuscript.

Parikh, G. R., **Oliver, J. D.,** & Bartholomay, L. C. (2009). A haemocyte tropism for an arbovirus. *The Journal of General Virology*, 90(Pt 2), 292-296. [doi: 10.1099/vir.0.005116-0](https://doi.org/10.1099/vir.0.005116-0)

Co-author. Aided in the performance of experiments, and edited manuscript

### **Extension Bulletin**

**Oliver, J.,** Holscher, K., Hutcheson, H., & Bartholomay, L. (2010). *Ticks and tick-borne diseases in Iowa* 2nd Edition ed.. Iowa State University Extension Publications. [doi: PM2036](https://doi.org/10.1016/j.jip.2011.07.004)  
[Non-Refereed]

**Oliver, J.,** Holscher, K., Hutcheson, H., & Bartholomay, L. (2007). *Ticks and tick-borne diseases in Iowa*. 1st Edition ed.. Iowa State University Extension Publications. [doi: PM2036](https://doi.org/10.1016/j.jip.2011.07.004)  
[Non-Refereed]

### **Publications Submitted or in Progress**

*Asterisk(\*) - indicates co-first author or co-senior author*

*Underline - indicates student author*

### **Peer-Reviewed Journal Article**

Park, J., Genera, B., Fahy, D., Swallow, K., Nelson, C., **Oliver, J. D.,** Shaw, D., Munderloh, U., Brayton, K. An Anaplasma phagocytophilum T4SS effector, AteA, is essential for tick

infection. *mBio*. [Submitted:2023]

Cassens, J., Jarnefeld, J., Berman, J., & **Oliver, J. D.** Environmental drivers of immature *Ixodes scapularis* in Minnesota's metro area. *Ecohealth*. [Submitted:2022]

Khan, S. S., Ahmed, H., Sasser, D., Khan, S. S., Afzal, M. S., Haider, W., Khan, M. R., **Oliver, J. D.** Knowledge and risk factors regarding ticks and tick-borne diseases in Pakistan. *Ecohealth*. [Submitted:2022]

Schwabenlander, M. D., Bartz, J. C., Carstensen, M., Fameli, A., Glaser, L., Larsen, R. J., Lindsey, L., **Oliver, J. D.**, Shoemaker, R. L., Rowden, G., Stone, S., Walter, D., Wolf, T. M., Larsen, P. A. Prion forensics: Implementing veterinary forensics to investigate chronic wasting disease at a deer carcass disposal site. *Nature Communications*. [Submitted:2022]

Wang, X., **Oliver, J. D.**, Kurtti, T., & Munderloh, U. G. Symbiont control by arthropod vector autophagy: insights from the blacklegged tick, *Ixodes scapularis*. [In Preparation; Not Yet Submitted:2022]

Fountain-Jones, N., Khoo, B., Rau, A., Burton, E., Berman, J., & **Oliver, J. D.** Positive associations matter: Space, humidity and biotic associations drive tick microbiome composition. *Molecular Ecology*. [Submitted]

**Oliver, J. D.**, Nelson, C., Burkhardt, N., & Price, L. Infection dynamics of *Anaplasma phagocytophilum* in the tick *Ixodes scapularis*. [In Preparation; Not Yet Submitted:2022]

Khoo, B. S., Rau, A., Fountain-Jones, N., Berman, J., & **Oliver, J. D.** Distribution of the tick *Ixodes scapularis* and associated pathogenic bacteria in the Upper Midwest. [In Preparation; Not Yet Submitted]

Khan, S., Ahmed, H., & **Oliver, J. D.** Detection of *Anaplasma*, *Ehrlichia*, and *Rickettsia* pathogens from livestock in Pakistan. [In Preparation; Not Yet Submitted:2022]

Kipp, E. J., Lindsey, L. L., Khoo, B. S., Faulk, C., **Oliver\*, J. D.**, & Larsen, P. A. Enabling metagenomic surveillance for bacterial tick-borne pathogens using nanopore sequencing with adaptive sampling. *Nature Communications*. [Revising to Resubmit:2022]

### **Invited Presentations, Posters, and Exhibits**

*Underline* - indicates student presenter

#### **Presentation/Talk**

**Oliver, J. D.**, Munderloh, U. G., "Tick Core: Resources and Tools Supporting Tick Science," American Society for Tropical Medicine and Hygiene, Seattle, Washington. (November 2022). *Invited. Peer-reviewed/refereed.*

**Oliver, J. D.**, "Pathogen surveillance and microbiome analysis of Minnesota blacklegged ticks," Department of Entomology Seminar Series Texas A&M University, College Station. (November 2022). *Invited. Peer-reviewed/refereed.*

**Oliver, J.**, Wang, X. "Symbiont growth and localization in *Ixodes scapularis*," Entomological Society of America 2021. Denver, Colorado. (November 2021). *Invited. Peer-reviewed/refereed.*

**Oliver, J.**, "Adventures in *Anaplasma*: Does Pathogen Infection Enhance Deer Tick Range Expansion in Minnesota?," UMN Veterinary and Biological Science S4 Seminar Series. St. Paul, Minnesota (August 13, 2021). *Invited. Peer-reviewed/refereed.*

**Oliver, J.**, "What Every Minnesotan Should Know about Tick- and Mosquito-Borne Illnesses," UMN Wellness Group Teaching Program. Minneapolis, Minnesota (July 8, 2021). *Invited.*

*Peer-reviewed/refereed.*

- Oliver, J.,** "Emergence and resurgence of tick-borne disease," Minnetonka High School VANTAGE Program. Minnetonka, Minnesota. (February 16, 2021). *Invited.*  
*Peer-reviewed/refereed.*
- Oliver, J.,** "What outdoor workers should know about ticks and tick-borne diseases in MN," Upper Midwest Agricultural Safety and Health Center Expo. Minneapolis, Minnesota (August 12, 2020). *Invited.*
- Oliver, J.,** "An overview of my ongoing research projects," Midwest Center of Excellence for Vector-Borne Disease All-Hands Conference. Madison, Wisconsin. (November 22, 2019). *Invited.*
- Oliver, J.,** "Tick rearing and membrane feeding," Tick Immune Signaling, Microbiota, and Acquisition of *Borrelia burgdorferi* and *Anaplasma phagocytophilum* P01 symposium. College Park, Maryland. (October 15, 2019). *Invited.*
- Oliver, J.,** "Emerging tick-borne diseases of the Northern US," University of Pittsburgh SPH Research Day University of Pittsburgh. Pittsburgh, Pennsylvania. (September 26, 2019). *Invited.*
- Oliver, J.,** "Effects of climate change on vector-borne disease," Global Health Certificate Program. Minneapolis, Minnesota. (May 15, 2019). *Invited.*
- Oliver, J.,** "Emergence and resurgence of tick-borne disease," Minnetonka High School VANTAGE Program Minnetonka High School. Minnetonka, Minnesota. (January 25, 2019). *Invited.*
- Oliver, J.,** "Just along for the ride: ticks, mosquitoes, and pathogens.," Minnetonka High School VANTAGE Program Minnetonka High School. Minnetonka, Minnesota. (May 18, 2018). *Invited.*
- Oliver, J.,** "Tick-borne diseases of the Upper Midwest.," National Forest Service. Glidden, Wisconsin. (April 2018). *Invited.*
- Oliver, J.,** "Dynamics of *Anaplasma phagocytophilum* infection in the host tick," U of MN College of Veterinary Medicine Seminar Series. St. Paul, Minnesota. (March 21, 2018). *Invited.*
- Oliver, J.,** "Ticked Off!: Public Health Entomology in the Upper Midwest," School of Public Health Research Day University of Minnesota. St. Paul, Minnesota. (April 5, 2017). *Invited.*
- Oliver, J.,** "In vitro feeding and pathogen infection in a tick host," West Virginia University Department of Biology. Morgantown, West Virginia. (January 30, 2017). *Invited.*
- Oliver, J.,** "Why ticks matter," University of Minnesota Veterinary Public Health and Preventive Medicine (VPHPM) residency program. St. Paul, Minnesota. (October 14, 2016). *Invited.*
- Oliver, J.,** Kurtti, T., Burkhardt, N., Felsheim, R., Herron, M., Heu, C., Munderloh, U., "Phenotypic differences of a *RickA* transgenic *Rickettsia bellii*," American Society for Rickettsiology. Snowbird, Utah. (June 2013). *Invited.*
- Oliver, J.,** "Distribution, range expansion, and infection status of 3 species of ticks in Iowa," Kansas Entomological Society. Ames, Iowa. (2008). *Invited.*

### **Presentations, Posters, and Exhibits**

*Underline - indicates student presenter*

#### ***Poster***

**An insight into the Epigenetics of Ixodes scapularis populations**

**Stephanie Guzman-Valencia, Abigail Leal, Elizabeth Lohstroh, Cristina Harvey, Saelao Perot, Brenda Galvan, Cross Chambers, Crys Wright, Tietjen Mackenzie, Tammi Johnson, Jonathan Oliver, Nicole Mehta, Michael Golding, Raul Medina, and Adela Oliva Chavez**  
Texas6 Vector Conference. College Station, Texas

**An insight into the Epigenetics of Ixodes scapularis populations**

**Stephanie Guzman-Valencia, Abigail Leal, Elizabeth Lohstroh, Cristina Harvey, Saelao Perot, Brenda Galvan, Cross Chambers, Crys Wright, Tietjen Mackenzie, Tammi Johnson, Jonathan Oliver, Nicole Mehta, Michael Golding, Raul Medina, and Adela Oliva Chavez**  
Subtropical Agriculture and Environments. South Padre Island, Texas

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Khoo, B., **Oliver, J.**, Gould, T. "How does the microbiome of Ixodes scapularis facilitate its habitat range expansion?," Minnesota Tick and Tick-Borne Pathogen Research Symposium. St. Paul, Minnesota. (March 5, 2020). *Peer-reviewed/refereed.*

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Burkhardt, N., Felsheim, R., Price, L., Lynn, G., **Oliver, J.**, Kurtti, T., Munderloh, U., "Investigation of a novel uncharacterized Rickettsiales in R. amblyommatis isolate Ac37," American Society for Rickettsiology. Santa Fe, New Mexico. (2019).

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### **Presentation/Talk**

Prion Forensics: a multidisciplinary approach to investigate chronic wasting disease at a deer carcass disposal site

Marc D. Schwabenlander 1 , Jason C. Bartz 2 , Michelle Carstensen 3 , Alberto Fameli 4 , Linda Glaser 5 , Roxanne J. Larsen 1 , Manc Li 1 , Laramie L. Lindsey 1 , Jonathan D. Oliver 6 , Rachel L., Shoemaker 1 , Gage Rowden 1 , Suzanne Stone 1 , W. David Walter 7 , Tiffany M. Wolf 8 , and Peter A. Larsen 1 , \* 4th International CWD Symposium

Schwabenlander, M., Rowden, G., Stone, S., Shoemaker, R., Lindsey, L., **Oliver, J. D.**, Glaser, L., Carstensen, M., Bartz, J., Walter, W., Larsen, R., Wolf, T., Larsen, P. "Implementing a veterinary forensics approach to investigate chronic wasting disease at a deer carcass disposal site," Wildlife Disease Association Conference. Madison, Wisconsin. (July 2022). *Peer-reviewed/refereed*.

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### **Media Contributions**

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"Expert warns that the prevalence of ticks in America is growing and that MILLIONS are bitten by the critters every year - but contraction of Lyme disease and other infections are rare," UK Daily Mail <a href="https://www.dailymail.co.uk/health/article-10829961/Expert-warns-prevalence-ticks-America-growing.html">https://www.dailymail.co.uk/health/article-10829961/Expert-warns-prevalence-ticks-America-growing.html</a>	May 19, 2022
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- "Why Are Some People More Prone to Mosquito Bites?," WCCO June 29, 2021
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- "University of Minnesota says 2021 could be a bad year for ticks," KROC Rochester June 3, 2021
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- "U of M scientist investigates ticks and bacteria," Park Rapids Enterprise July 17, 2020
- "Talking 2020 tick season with the U of M," Pine and Lakes Echo Journal July 15, 2020
- "Talking tick season with U of M," International Falls Journal July 14, 2020
- "Targeting Ticks," UMN Medical School - Medical Bulletin 2019
- "Climate Cast," Minnesota Public Radio July 19, 2019  
<https://www.npr.org/podcasts/414685982/climate-cast>
- "Accessing new biological information by bringing the lab into the field," College of Veterinary Medicine New & Events July 12, 2019  
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"Anaplasmosis," Farmers Independent May 13, 2019

"What you should know about tick season in Minnesota," Channel 4 WCCO CBS May 4, 2019  
<https://minnesota.cbslocal.com/2019/05/04/what-you-should-know-about-tick-season-in-minnesota/>

"Talking Tick Season," School of Public Health May 2, 2019  
<https://twin-cities.umn.edu/newsevents/talking-tick-season-umn>

"Why is Lyme disease getting worse," MinuteEarth April 22, 2019  
<https://www.youtube.com/watch?v=cvKyxrOvgZk>  
focus on research and assisted text editing

"Video interview for the New Faculty Program," University of Minnesota 2018  
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"Watch for deer ticks this summer," WTIP North Shore Community Radio May 18, 2018

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**Other Research/Research in Progress**

Oliver, J. D., Larsen, P., Kipp, E., Khoo, B. S. On-Going, "Chronic wasting disease prion transmission by

ticks".

Examining chronic wasting disease infection/exposure of ticks to determine if they can become infected with the prion and transmit it in their saliva. Alternatively, if ticks can be used for xenodiagnosis of CWD.

Oliver, J. D., Chavez, A., Saelao, P. On-Going, "Epigenetic comparison of MN and TX ticks".

Examining epigenetic differencing between populations of blacklegged ticks collected in MN and TX. These ticks commonly bite people in MN but, while abundant in the southern US, rarely bite humans or transmit disease. Together with collaborators at TX A&M and the USDA, we are examining patterns of DNA methylation in these populations to determine if epigenetic changes to host-seeking behaviors is the cause of this difference.

Oliver, J. D., Wolf, T. M., Woerheide, K. On-Going, "Detection of moose brain worm (*P. tenuis*) in ticks".

Examining engorged winter ticks that have fed on moose in Cook Co., MN to determine if the nematode parasite that causes ghost moose disease can be detected with the goal that ticks collected from moose could act as a xenodiagnostic method for the infection. This project is in collaboration with wildlife biology staff from the Grand Portage Band of Lake Superior Chippewa and multiple MPH students.

Oliver, J. D., Chavez, A., Larsen, P., Faulk, C. On-Going, "Nanopore genome sequencing of 5 populations of *Ixodes* ticks".

Genome sequencing of 4 geographically separated ticks to determine the genetic variability between populations and examine this as an explanation of different host-seeking behaviors and associated pathogen transmission risk. *Ixodes pacificus* from California will also be whole genome sequenced as a comparison group.

Oliver, J. D., Arnold, S., Berman, J. On-Going, "Effect of pathogen infection on tick behavior"

Development of a specialized environmental chamber for the examination of tick behavior under varying environmental conditions, host stimuli, and infection statuses.

## TEACHING

### Scheduled Teaching

Medical Entomology: ENT 5275: Fall 2017

Topics: Environmental Health: PUBH 6100: Pub Hlth Entomology: Field and Laboratory Methods  
Fall 2018

Directed Study: Envrn Health: PUBH 7193: Spring 2019

Topics in Infectious Disease: PUBH 7230: Emerging & Eco Determinants of Vectorborne Disease  
Summer 2017

### Instructional Activity

#### *University of Minnesota*

Guest interview and discussion PubH 6102, Climate change and tick-borne disease research 2021

Guest interview and discussion PubH 6194, Climate change and vector-borne diseases 2020

Guest Lecture PubH 6140, Sausage making in Science 2020

Guest Lecture PubH 6140, The rise and fall of a human Lyme disease vaccine 2020

PUBH 3107: Guest lecturer PubH 3107, Emergence and resurgence of tick-borne disease 2019

PUBH 6100: Guest lecturer PubH 6100, The rise and fall of a 2019

human Lyme disease vaccine

PUBH 6140: Guest lecturer PubH 6140, Sausage making in science/Lyme vaccine rise and fall 2019

VMED 5180: Guest lecturer VMED 5180, “Vector-borne disease in a changing climate”, 2019

PUBH 6102: Recorded online lecture PubH 6102, “Vector-borne disease in a changing climate” 2019

PubH 6100: Guest lecturer PubH 6100, The rise and fall of a human Lyme disease vaccine 2018

PubH 6131: Guest lecturer PubH 6131, “Working in Global Health” 2018

VMED 5180: Guest lecturer VMED 5180, Climate Change influence on Infectious Disease 2018

Teaching Assistant and lab instructor, Introduction to insect biology, Iowa State University – Dept. of Entomology 2018

Teaching, Early Career Teaching Program 2017 - 2018

ENT 5275: Co-instructor ENT 5275, “Medical Entomology”, Contributions: 2 lectures, student presentations, final 2017

Co-instructor, “Ecological Determinants of Vector-borne Disease”, Public Health Institute, June 5, 2017 - June 9, 2017

ENT 5275: Co-instructor ENT 5275, “Medical Entomology”, Contributions: 2 lectures, student presentations, final 2016

Guest lecturer, “The certificate in emerging infectious disease epidemiology”, Iowa State University – Dept. of Entomology 2009

Guest lecturer, “The certificate in emerging infectious disease epidemiology”, Iowa State University – Dept. of Entomology 2008

Guest lecturer, “The certificate in emerging infectious disease epidemiology”, Iowa State University – Dept. of Entomology 2007

**CURRICULUM DEVELOPMENT ACTIVITIES**

**Curriculum Development Activities**

*University of Minnesota*

PUBH 6155 Emerging Issues in Climate Change and Health 2020 - Present

PUBH 6184 Field and Laboratory Methods in Public Health Entomology 2019 - Present

**PROFESSIONAL DEVELOPMENT ACTIVITIES**

Conference/Professional Meeting Attendance, "American Society for Tropical Medicine and Hygiene," Seattle, Washington	October 30 – November 3, 2022
Aims Workshop with Jude Mikal	October 2022 – Present
Training, "Neuroscience-based strategies for creating inclusive classrooms," Global Programs and Strategy Alliance	June 17, 2022
Training, "Give one, Get one: An ISAI teaching activity," Global Programs and Strategy Alliance	June 16, 2022
Training, "Scenarios for Global Learning," Global Programs and Strategy Alliance	June 16, 2022
Training, "Leveraging Interactions for intercultural learning," Global Programs and Strategy Alliance	June 15, 2022
Formative course review, "Formative review for PubH 6184,"	2022
Conference/Professional Meeting Attendance, "Entomological Society of America Conference 2021," Entomological Society of America	October 31, 2021 - November 3, 2021
Training, "ASPPH Presents Electronic Hallway Conversation: Facilitating Productive Classroom Conversations on Racism, Race, and Public Health," ASPPH	April 22, 2021
Webinar, "Scenarios in Global Learning, an Internationalizing Teaching and Learning Teaching Activities webinar," Internationalizing the Curriculum and Campus	April 6, 2021
Webinar, "Global Village, an Internationalizing Teaching and Learning Teaching Activities webinar," Internationalizing the Curriculum and Campus	April 1, 2021
Training, "Virtual Field Experiences in Science Disciplines Discussion," Center for Educational Innovation	April 29, 2020
Training, "Online Science Labs Discussion," Center for Educational Innovation	April 24, 2020
Training, "Strategies to Enhance Student Interaction in Globally Diverse Classrooms," Center for Educational Innovation	April 24, 2020
Training, "Supervisory Excellence Course," SPH Human Resources 2 classes	2019
Workshop, "Early Career Teaching Program,"	2017 - May 2018
University Teaching/Learning Program, "New Faculty Program," University of Minnesota Provost's Office 8 units completed	May 10, 2018
Webinar, "“Every Summer Needs a Plan”," National Center for Faculty Development and Diversity	May 10, 2018
Workshop, "Culture In-Depth: Korean Students at the U of M," International Student and Scholar Services courses	November 30, 2017
Workshop, "Culture In-Depth: Chinese Students at the U of M," International Student and Scholar Services courses	October 19, 2017
Workshop, "How to Talk to International Students: Developing Cross-Cultural Competency," International Student and Scholar Services courses	October 4, 2017
University Teaching/Learning Program, "Classroom Assessment Techniques: But Wait...There's More!," Center for Educational	January 12, 2017

Innovation Winter Teaching Enrichment Series University Teaching/Learning Program, "Listening as Mentors & Allies: Supporting Graduate Students after the Election," Center for Educational Innovation Winter Teaching Enrichment Series	January 12, 2017
University Teaching/Learning Program, "Teaching Critical Thinking," Center for Educational Innovation Winter Teaching Enrichment Series	January 12, 2017
University Teaching/Learning Program, "Actively Engaging All Students," Center for Educational Innovation Winter Teaching Enrichment Series	January 11, 2017
University Teaching/Learning Program, "Today's First-Year Students at the U," Center for Educational Innovation Winter Teaching Enrichment Series	January 11, 2017
University Teaching/Learning Program, "When Tolerance Is Not Enough: Supporting Undergraduate Learners in Discussions, Dialogues, and Dissent," Center for Educational Innovation Winter Teaching Enrichment Series	January 11, 2017
Workshop, "Promotion and Tenure Workshop for Probationary Faculty,"	December 19, 2016
Workshop, "New Faculty Development Program Workshop: Developing Relationships with your Mentors,"	November 16, 2016

## ADVISING AND MENTORING

### Undergraduate Students Activities

#### *Other Advising Activities*

#### **University of Minnesota**

Undergraduate Research Projects. (2018). Jianan "Ray" Fang	2018
Undergraduate Research Projects Mentored.	
Kenwyn Shriner	2015 – 2016
Elizabeth Schroer	2014 – 2016
Andrea Ringle	2014 – 2015
Kendra Rehnblom	2013 – 2015
Bridgett Welter	2013 – 2014
Bryten Reuter	2012 – 2014
Sarah Douglas	2011 – 2012

#### **Iowa State University – Department of Entomology**

Undergraduate Research Projects. Joe Ballenger	2009 – 2010
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### Graduate Student Activities

#### *Advisees*

Jacob Cassens, Environmental Health Ph D	2022 – Present
Bethany Young-Walters, Environmental Health M P H	2022 – Present
Salma Issa, Environmental Health M P H	2021 – Present
Kathryn Powell, Environmental Health M P H	2021 – Present
Alexandra Kurutz, Environmental Health M P H	2020 – 2022

Benedict Khoo, Environmental Health Ph D	2018 – Present
Maya Rivera, MS	2017 – 2021
Husnain Haider, Environmental Health M P H	2022
Colleen Harriss, Environmental Health M P H	2020 – 2021
Kelsey Seiler, Environmental Health M P H	2019 – 2021
Mark Leonard, Environmental Health M P H	2019 – 2020
Linzi Zhu, Environmental Health M P H	2017 – 2019
Dan Ziemann, MPH	2017 - 2019
Anna McAllister, Environmental Health M P H	2017 - 2019
Kelley Vilen, Environmental Health M P H	2018 - 2019
Jessica Hellmer, MPH	2017 - 2018

***Other Advising Activities***

**University of Minnesota**

Supervised Research and Training.	July 2021 - January 2022
Sadia Salim Khan	
Visiting scholar from COMSATS University, Islamabad, Pakistan	
Graduate Students Mentored (informally)	
Chan Heu	2011 – 2016
Geoffrey Lynn	2011 – 2016
Steve Bennett	2013 – 2015
Adela Oliva Chávez	2011 - 2014
Postdocs Mentored (informally)	
Benjamin Cull	2019 – 2021
Xinru Wang	2018 – 2022

***Committee Advising***

***Doctoral Final Committee: Committee Chair***

Evan Kipp, Veterinary Medicine Ph D	2022 - Present
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***Doctoral Final Committee: Committee Member***

Steve Bennett, Environmental Health Ph D	2017
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***Doctoral Preliminary Committee: Committee Chair***

Benedict Khoo, Environmental Health Ph D	2022 - Present
Evan Kipp, Veterinary Medicine Ph D	2021 - Present

***Master's Thesis/Research Committee: Committee Chair***

Maya Rivera, Environmental Health M S	2017 - 2021
Jessica Hellmer, Environmental Health M S	2018

***Master's Thesis/Research Committee: Committee Member***

Alexandra Garvin, Environmental Health M S	2022
Tiana Molitor, Entomology M S	2020
Cody Thorpe, Entomology M S	2018 - 2020

**POST DOC, RESIDENT, AND TRAINEE SUPERVISION/MENTORSHIP**

Benjamin Cull, Entomology	December 2022 - Present
Nicholas Fountain-Jones, Veterinary and Population Medicine	2018 - 2020

**VISITING SCHOLARS HOSTED**



**Visiting Scholar Host**

Higher Education Committee of Pakistan

Hosted visiting research scholar Sadia Salim Khan, a PhD student from COMSATS University, Islamabad, Pakistan.

July 2021 - January 2022

**SERVICE**

**Service to the Discipline/Profession/Interdisciplinary Area(s)**

**Ad-Hoc Grant Reviewer**

NSF America's Seed Fund SBIR/STTR program	October 2018
DIM1health, a funding body focused on the Île-de-France Region of France.	March 2018
Biotechnology and Biological Sciences Research Council, a funding agency of the United Kingdom.	February 2017

**Area Editor**

Zoonoses and Public Health	2020 - Present
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**Board of Advisors**

Longhorned Tick Planning and Preparations Committee	2018 - Present
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**Coordinator**

Tick Academy 2022, Integrated Pest Management Workshop	2022
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**Grant Reviewer**

NIH Center for Scientific Review Early Career Reviewer program	2021 - 2022
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**Member**

USDA NIFA NE-1443 – Biology, Ecology, and Management of Emerging Disease Vectors	2015
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**Reviewer**

Frontiers in Cellular and Infection Microbiology	2022
Journal of Video Experimentation	2022
Microorganisms	2022
Scientific Reports	2019 - 2022
Journal of Medical Entomology	2015 - 2022
The Lancet Infectious Diseases	2021
Zoonoses and Public Health	2020 - 2021
Insect	2020
The International Symposium on Microbial Ecology Journal	2020
Ticks and Tickborne Diseases	2020
Journal of Medical Entomology	2015 - 2020
PLoS One	2013 - 2020
PLoS Neglected Tropical Diseases	2019
BMC Public Health	2018 - 2019
BMC Infectious Diseases	2018
Journal of Economic Entomology	2016 - 2018
Parasites & Vectors	2015

**Service to the University/College/Department**

**University of Minnesota**

**College**

Member, Salary Equity Review Committee	2022 - Present
SPH booth, MN State Fair	2019 - 2022
Exhibitor, SPH 75th Anniversary Gala	December 5, 2019
Announcer, SPH Public Safety Announcement on Ticks in Minnesota	May 17, 2017

***University***

Interview for the outreach video One Health: A World Changing Approach	2021
Search Committee Member (3rd attempt), Food Safety, Department of Veterinary and Biomedical Sciences Chair: Yinduo Ji	2020 - 2021
Search Committee Member (2nd attempt), MNDrive, Department of Veterinary and Biomedical Sciences Chair: Yinduo Ji	2019
Search Committee Member (1st attempt), Food Safety, Department of Veterinary and Biomedical Sciences Chair: David Brown	2018
Ad-Hoc Grant Review, CFANS Seed Grant Program Project Feasibility Review	May 2018

***Department***

Chair, Admissions Committee	2021 - Present
Division Laboratory Safety Officer	2021 - Present
Member, Departmental Research & Laboratory Committees	2018 - 2021
Search Committee Member, Global Food Ventures Food Safety Microbiologist and Food Systems Data Chair: Craig Hedberg (2 positions)	2018
Judge, Mary Lauren Olson Memorial Minnesota Environmental Health Association (MEHA) Scholarship for full time students	2018
Judge, Mary Lauren Olson Memorial Minnesota Environmental Health Association (MEHA) Scholarship for full time students	2017