CURRICULUM VITAE

Berlin L. Londono-Renteria

ORCID: https://orcid.org/0000-0001-5956-5274

PERSONAL INFORMATION

Address: 1440 Canal Street, Suite 2311
Citizenship: US and Colombia
Languages: English and Spanish

EDUCATION

1993 – 1997 Universidad de Antioquia – Clinical Microbiology.
2001 – 2003 Universidad de Antioquia – MSc. Parasitology.
2005 – 2009 Tulane University – PhD. in Tropical Medicine.

Other important training

1998 Molecular Biology of DNA oxidative damage. Universidad de Antioquia – Medellín
1999 Methods and Research in Health. Universidad de Antioquia – Medellín
2007 Update Course in Clinical Tropical Medicine and Travelers' Health. San Diego – US
2008 Practical Proteomics and Theoretical Bases of Mass Spectrometry. Caracas – Venezuela
2016 Insect Molecular Biology. IBBR. Rockville - US
2018 ACUE Fellow – Effective Teaching Practices Program. Manhattan, Kansas
2020 MalariaX – Defeating Malaria from the Genes to the Globe. Harvard University – Online

PROFESSIONAL EXPERIENCE

2004 – 2012 Associate Professor, Universidad de Pamplona, Pamplona, Colombia
2011 – 2012 Chair Microbiology Department, Universidad de Pamplona, Colombia
2012 – 2014 Postdoctoral Researcher, LSU, Baton Rouge, LA
2014 – 2015 Postdoctoral Researcher, Tulane University, New Orleans, LA
2015 – 2017 Research Associate, University of South Carolina, Columbia, SC
2017 – 2021 Assistant Professor, Department of Entomology, Kansas State University, KS
2021 – Current Adjunct Professor, Kansas State University, Manhattan, KS
2021 – Current Assistant Professor, Department of Tropical Medicine, Tulane University, LA
2023 – 2027 Unit Head, Vaccine Development, US Naval Medical Research Unit – South, Peru

HONORS AND AWARDS

2006 CDC VBD Training Grant Fellow, Tulane University.
2007 AAS/Science Program for Excellence in Science.
2008 Jack Aron Scholar, Tulane University.
2015 ASV Travel Award, American Society for Virology.
2016 Carl Storm Underrepresented Minority (CSURM) Fellowship.
2018 Excellence in Undergraduate Research – Department of Entomology, KSU.
2018 Distinguished Alumnae – Universidad de Antioquia.
2019 Outstanding Faculty Award - Mortar Board Honor Society, KSU.
2021 Voted Treasurer American Council of Medical Entomology (ACME-ASTMH)
2023 Graduate Teaching Excellence Award, SPHTM - Tulane University
2023 Scholarly Retreat Resident – Bywater Institute – Tulane University

CONSULTANCIES

DoD

07/16/2018	Scientist Reviewer – Peer Reviewed Medical Research Program, Congressionally Directed Medical Research Programs, PRE-VDID-1section.
11/02/2018	Scientist Reviewer – Peer Reviewed Medical Research Program, Congressionally Directed Medical Research Programs, VDID section.
02/05/2019	Scientist Reviewer – Military Infectious Diseases Research Program, United States Army Medical Research and Development Command, S section.
07/16/2020	Scientist Reviewer – Peer Reviewed Medical Research Program, Congressionally Directed Medical Research Programs, COVID-T-1 section.
02/25/2020	Scientist Reviewer – Military Infectious Diseases Research Program, United States Army Medical Research and Development Command, U section.
03/05/2021	Scientist Reviewer – Military Infectious Diseases Research Program, United States Army Medical Research and Development Command, VD section.
03/16/2022	Scientist Reviewer – Military Infectious Diseases Research Program, United States Army Medical Research and Development Command, VD section.
08/06/2022	Scientist Reviewer – Military Infectious Diseases Research Program, United States Army Medical Research and Development Command, VA-2 section.
10/31/2023	Scientist Reviewer – Military Infectious Diseases Research Program, United States Army Medical Research and Development Command, VD-2 section.

NIH

06/04/2020 – 06/05/2020	Center for Scientific Review, Cellular and Molecular Immunology – B Study Section.
07/20/2023 – 07/21/2023	Center for Scientific Review, Special Emphasis Panel - ZRG1 F07CS Fellowships: Immunology and Infectious Diseases C Study Section.
11/06/2023	Center for Scientific Review, ZRG1 DCAI-B (02), Member Conflict: Topics in Vaccines Against Infectious Diseases and Vector-Borne and Zoonotic Diseases Study Section.

Graduate Women in Science

06/06/2023	(GWIS) National Fellowship Program.

A. ACADEMIC SERVICE

Currently, I am a part of the Institutional Review Board (IRB) at Tulane University but throughout my time at K-State, I have held various roles, such as serving on multiple search committees for positions like Interim Dean, Interim Head, and Veterinary Entomology. Additionally, I have chaired the Entomology Department Seminar Committee and been a member of the Department Facilities and Safety Committee, as well as the K-STATE biosafety committee. In Colombia, I had the privilege of serving as the chair of the Microbiology department. Overall, I focus activities towards advancing as an educator and researcher and collaborating with my team to establish ourselves as one of the leading groups in arbovirology and immunology.

Professional Memberships

2017 – 2019	American Society for Virology.
2017 – 2021	Entomological Society of America.
2008 – Current	American Society of Tropical Medicine and Hygiene.
2014 – Current	World Society for Virology.

Editorial boards

2021 – 2022	PloS One Journal.
2016 – Current	Frontiers Journals (Virology and Immunology).

University committees/Advisory boards

- Tulane University Institutional Review Board (2022 – 2025).

Department committees

- Seminar Committee, Kansas State University (2018 – 2020).
- Facilities and Safety Committee, Kansas State University (2019 – 2021).
- Planning, Kansas State University (2020 – 2022).
- DEI working group, Kansas State University (2020 – 2021).

National Committees

- American Committee of Medical Entomology (ACME) – Voted Secretary of Treasure (2021 – 2024).

International Committees

- World Society for Virology (WSV) Training and Career Development Committee (2019 – 2024).

Search committees

- College of Agriculture Dean, Kansas State University (2019).
- Veterinary Entomology Faculty Search, Kansas State University (2019).
- Entomology Department Head Search, Kansas State University (2020).

Conference committees

- Moderator and Judge in scientific meetings:
    - Gordon Research Conference on Tropical Infectious Diseases in the section of Emerging Arboviruses (2017).
    - Pan American Dengue Research Network (Pan-Dengue Net) (2018).
    - Spring Bug-a-palooza – Poster session judge (2019).
    - Vector-Human Interactions to the ESA meeting to be held in November 2019.
    - The Influence of Arboviruses on the Mosquito's Journey from Host-Seeking to Blood-Feeding – ASTMH Symposium 131 (2023).

COMMUNITY SERVICE

- Marlatt Elementary School Science Fair – Mosquito identification (2018 – 2019).
- B.I.G Event – Girls Scouts – Mosquito identification (2023).

B. TEACHING

I believe that three essential elements are advantageous to the teaching/learning process: (1) The active role of the teacher as a guide, (2) Offering students a safe environment to learn, and, (3) the inclusion of hands-on activities that increase student engagement in their learning. I have a strong commitment to the quality of teaching, which is why I have actively participated in various teacher development programs. For instance, I took part in the ACUE program (2017-2018) and the K-STATE New Faculty Institute, thanks to the support from the College of Agriculture and the Department of Entomology at K-STATE. Additionally, I attended the SPHTM Faculty Workshop: Alignment in Course Design at Tulane University. This workshop focused on designing effective syllabi with clear goals and objectives to provide the best possible learning experience for students. My ultimate aim is to continuously improve my teaching skills and encourage greater student engagement.

Teaching Evaluations. I have designed several courses during my academic career. At Tulane, I restructured the immunopharmacology course for master's and PhD students at the School of Public Health. The class was rated with a positive review in 2022 and 2023 – the overall rate in all questions was 4.7 (or higher) out of 5 points. My undergraduate class, Introductory Microbiology, was also positively rated with a 4.6 out of 5 points. At K-STATE a new structure for the Biology of Disease Vectors that included a laboratory component was introduced in 2017. The students have evaluated me with a positive overall rate of 4.5 out of 5 points (TEVAL). Also, my peers have given me an overall rating of 4.5 out of 5 points (Annual evaluations).

Courses

- Epidemiology – Undergraduate **(3 credits)**: Microbiology Department, University of Pamplona, Colombia (2004 – 2005; 2010 – 2012).
- Parasitology Laboratory – Undergraduate **(3 credits)**: Microbiology Department, University of Pamplona, Colombia (2004 – 2005; 2010 – 2012).
- Immunology – Graduate **(3 credits)**: Medical School, University of Pamplona, Colombia (2004 – 2005; 2010 – 2012).
- TA – Medical Entomology (TRMD6060) – Graduate **(3 credits)**: School of Public Health, Tulane University, New Orleans, USA (2006 – 2009)
- Biology of Vectors (ENTOM849) – Graduate **(3 credits)**: Department of Entomology, KSTATE, USA (2017 – 2019).
- Biology of Vectors (ENTOM649) – Undergraduate **(3 credits)**: Department of Entomology, KSTATE, USA (2017 – 2019).
- Advanced Medical Entomology (ENTOM930) – Graduate **(3 credits)**: Department of Entomology, KSTATE, USA (2020).
- Immuno-parasitology (TRMD7180) – Graduate **(2 credits)**: School of Public Health, Tulane University, New Orleans, USA (2022 – Current).
- Introductory Microbiology (SPHU 3570-01) – Undergraduate **(3 credits)**: School of Public Health, Tulane University, New Orleans, USA (2023 – Current).

Guest Speaker

- Animal Health Entomology (ENTOM305) – Graduate (**3 credits):** Department of Entomology, KSTATE, USA (2018 – 2020).

- Insect Physiology (ENTOM875) – Graduate (**3 credits):** Department of Entomology, KSTATE, USA (2018 – 2020).
- Economic Entomology (ENTOM300) – Graduate (**3 credits):** Department of Entomology, KSTATE, USA (2018 – 2020).
- Tropical Virology (TRMD6420) Guest speaker – Graduate **(3 credits),** School of Public Health, Tulane University, New Orleans, USA (2022).
- Cell, individual and community (SPHU1020) Guest speaker – Undergraduate **(3 Credits)**, School of Public Health, Tulane University, New Orleans, USA (2022 – 2023).
- Medical Entomology (TRMD6060) – Graduate **(3 credits)**: School of Public Health, Tulane University, New Orleans, USA (2022 – 2023).
- Arthropods and Public Health (SPHU2050) – Undergraduate (**3 credits**): School of Public Health, Tulane University, New Orleans, USA (2022).

Undergraduate committees

- Karina Luque Burgos, **Medical Student** (Universidad de Pamplona, Class 2012)

Masters' committees

- Brittany Blattner, **MPH,** KSTATE Class 2020(Major advisor)
- Megan Eppler, **MPH,** KSTATE Class 2021 (Major advisor)
- Lindsay Mason, **MPH,** KSTATE Class 2021 (Major advisor)
- Rupinder Singh, **Master in Entomology,** KSTATE Class 2021 (Member)
- Olajiga Olayinka, **Master in Entomology,** KSTATE Class 2022 (Major advisor)
- Andres Holgin-Rocha, **Master in Entomology,** KSTATE Class 2022 (Major advisor)
- Evan T. Teal, **MS**, Tulane SPHTM Class 2022 (Member).
- Zoe Jacobs, **MS**, Tulane SPHTM Class 2024 (Major advisor).
- McKenna Howell, **MS**, Tulane SPHTM Class 2024 (Major advisor).

PhD committees

- Paula Rozo-Lopez, **PhD,** Class 2021 (Major advisor)
- Jehydis Montiel, **Visiting Scientist** – PhD, Universidad de Antioquia, Class 2020 (Member).
- Arley Calle, **Visiting Scientist** – PhD, Universidad de Antioquia, Class 2021 (Member)
- Deivis Villanueva, **Visiting Scientist** – PhD Universidad de Cartagena Class 2022 (Member).
- Jessica Thompson, **PhD** KSTATE/Entomology Class 2019 (Member)
- Paulina Maldonado, **PhD,** KSTATE/Entomology Class 2019 (Member)
- Alexis Carpenter, **PhD,** KSTATE/Biology Class 2021 (Member)
- Cameron Osborne, **PhD,** KSTATE/Entomology Class 2023 (Member)
- Peter Hamoeda, **PhD,** KSTATE/Biology Class 2024 (Member)
- Brendan Carter, **PhD** Tulane SPHTM Class 2027 (Member)
- Olajiga Olayinka, **PhD**, Tulane SPHTM Class 2027 (Major advisor)
- Alyssa Schwinn, **PhD**, Tulane SPHTM Class 2027 (Major advisor)

- Jacob Ford, **PhD,** Tulane SPHTM Class 2027 (Member)
- Michaela Allen, **PhD,** Tulane School of Medicine, Class 2025 (Member)
- James Prusak, **PhD,** Tulane School of Medicine, Class 2025 (Member)
- Sallie Fell, **PhD,** Tulane School of Medicine, Class 2025 (Member)
- Sydney Nemphos, **PhD**, Tulane School of Medicine, Class 2025 (Member)

Undergraduate Research Program Trainees

- Meagan Luckert, KSTATE/Entomology (2017)
- Danielle Morton, KSTATE/Entomology (2017)
- Roger Abernathy, KSTATE/Entomology (2018)
- Kristina Powels, KSTATE/Entomology (2018)
- Kenyanna Jones, KSTATE/Entomology (2018)
- Ricky Wagner, KSTATE/Entomology (2018)
- Chase Riley, KSTATE/Entomology (2019)
- Gaby Maroulis, KSTATE/Entomology (2019)
- Nora Herrera, Tulane School of Medicine (2022)
- Naana Ennin, Tulane School of Medicine (2022)
- Ariana Vera, Rice University (2022).

Postdoctoral trainees – Current positions

- Papa Drame – Associate Researcher Duke University, USA
- Lidia Montenegro – Assistant Professor, Universidad de Nariño, Colombia
- Jehidys Montiel – Associate Professor Remington University, Colombia
- Arley Calle – Postdoctoral researcher, Arbovirology lab, Tulane University, USA

Other Mentoring

- Celois Moore – Undergraduate, **K-IMBRE** Research Summer Program (2019)
- Jania Harrod – College of Agriculture, **KSRE** program (2019)
- Shanice Harris, **Research Summer Veterinary Program** (2020)
- Nicole Robben, **Research Summer Veterinary Program** (2021)

Student and trainee - Awards

- Karina Luque-Burgos (Medical Student) STMH American Committee on Arthropod-Borne Viruses (ACAV) Kelly Label Student Travel Award. 2011.
- Donghun Kim (PostDoc): American Society of Tropical Medicine and Hygiene Travel Award (ASTMH), 2018.
- Lidia Montenegro (PostDoc): KAWSE postdoctoral travel award, 2019.
- Roger Abernathy (Undergrad): Arts & Sciences Research Travel Award, 2019 and the Cancer Research Fellowship Student Award, 2019.
- Brittany Blattner (MPH): Bug-A-Palooza, Best poster presentation – Honorable mention, 2019.

- Paula Rozo (PhD): John Reese Scholarship, 2019 and K-STATE 3-minute competition – Semifinalist, 2020. Lambley Family Scholarship in Entomology (2021), Roger C. Smith for PhD (2021).
- Lindsay Mason (MPH): College of Veterinary Medicine (CVM) Graduate Student Travel Award, 2020. Midwestern Public Health Training Center Field Placement Internship Program award (2021).
- Shanice Harris (Veterinary School – RSVP): 3rd Place Poster Presentation at Phi Zeta Day, 2021.
- Olajiga Olayinka ((Masters in Entomology): Don C. Warren Genetic Fund ($10K), 2021 – Floyd Holms Scholarship ($2K), 2022.
- Nicole Robben (Veterinary School – RSVP): 3rd Place Poster Presentation at Phi Zeta Day, 2022.
- Andres Holguin-Rocha (Masters in Entomology): John C. and Mary Beth Reese Scholarship for MS or PhD (2021).
- Sally Fell – ASTMH Travel Award (2023).
- Sydney Nemphos – ASTMH student competition (2023).

C. RESEARCH

Since 2017, I have successfully obtained a total of $1,376,400 in external funding for my research program. The funding sources include the Henry M. Jackson Foundation, the CDC – USAID, the NIH-NIAID, USDA, and the DoD (NAMRU6). The main focus of my program is to study and understand the factors that contribute to the spread of arthropod-borne diseases. These funds are crucial in supporting our program and providing opportunities for mentorship to graduate and undergraduate students. Over the years, the research conducted in my facilities has resulted in the publication of 35 peer-reviewed manuscripts. These manuscripts have been featured in reputable journals such as PNAS (IF 12.78), Nature Scientific Reports (IF 4.9), PloS Pathogens (IF 7.4), and Frontiers in Immunology (IF 7.5). Overall, since completing my Master's degree, I have contributed to a total of 52 peer-reviewed publications.

Publications:

Peer-reviewed Publications

1. Londoño B, Carmona J, Blair S. Comparación de los métodos Optimal y gota gruesa para el diagnóstico de malaria en una zona endémica sin epidemia [Comparison between OptiMAL and the thick smear tests for malaria diagnosis in an endemic area during a non-epidemic period]. Biomedica. 2002 Dec;22(4):466-75. Spanish. PMID: 12596444.
2. Londoño B, Arango E, Zapata C, Herrera S, Saez J, Blair S, Carmona-Fonseca J. Effect of Solanum nudum Dunal (Solanaceae) steroids on hepatic trophozoites of Plasmodium vivax. Phytother Res. 2006 Apr;20(4):267-73. doi: 10.1002/ptr.1849. Erratum in: Phytother Res. 2006 Jun;20(6):518. PMID: 16557608.
3. Arango E, Londoño B, Segura C, Solarte Y, Herrera S, Saez J, Carmona-Fonseca J, Blair S. Prevention of sporogony of Plasmodium vivax in Anopheles albimanus by steroids of Solanum nudum Dunal (Solanaceae). Phytother Res. 2006 Jun;20(6):444-7. doi: 10.1002/ptr.1874. PMID: 16619357.
4. Eisele TP, Keating J, Bennett A, Londono B, Johnson D, Lafontant C, Krogstad DJ. Prevalence of Plasmodium falciparum infection in rainy season, Artibonite Valley, Haiti, 2006. Emerg Infect Dis. 2007 Oct;13(10):1494-6. doi: 10.3201/eid1310.070567. PMID: 18257993; PMCID: PMC2851522.
5. Londono BL, Eisele TP, Keating J, Bennett A, Chattopadhyay C, Heyliger G, Mack B, Rawson I, Vely JF, Désinor O, Krogstad DJ. Chloroquine-resistant haplotype Plasmodium

falciparum parasites, Haiti. Emerg Infect Dis. 2009 May;15(5):735-40. doi: 10.3201/eid1505.081063. PMID: 19402959; PMCID: PMC2686998.

6. Londono-Renteria BL, Eisele TP, Keating J, James MA, Wesson DM. Antibody response against Anopheles albimanus (Diptera: Culicidae) salivary protein as a measure of mosquito bite exposure in Haiti. J Med Entomol. 2010 Nov;47(6):1156-63. doi: 10.1603/me09240. PMID: 21175067.
7. Londono-Renteria BL, Eisele TP, Keating J, James MA, Wesson DM. Antibody response against Anopheles albimanus (Diptera: Culicidae) salivary protein as a measure of mosquito bite exposure in Haiti. J Med Entomol. 2010 Nov;47(6):1156-63. doi: 10.1603/me09240. PMID: 21175067.
8. Londono-Renteria B, Eisele TP, Keating J, Bennett A, Krogstad DJ. Genetic diversity in the merozoite surface protein 1 and 2 genes of Plasmodium falciparum from the Artibonite Valley of Haiti. Acta Trop. 2012 Jan;121(1):6-12. doi: 10.1016/j.actatropica.2011.09.005. Epub 2011 Sep 29. PMID: 21982798.
9. Londono-Renteria B, Cardenas JC, Cardenas LD, Christofferson RC, Chisenhall DM, Wesson DM, McCracken MK, Carvajal D, Mores CN. Use of anti-Aedes aegypti salivary extract antibody concentration to correlate risk of vector exposure and dengue transmission risk in Colombia. PLoS One. 2013 Dec 2;8(12):e81211. doi: 10.1371/journal.pone.0081211. PMID: 24312537; PMCID: PMC3846924.
10. Chisenhall DM, Londono BL, Christofferson RC, McCracken MK, Mores CN. Effect of dengue-2 virus infection on protein expression in the salivary glands of Aedes aegypti mosquitoes. Am J Trop Med Hyg. 2014 Mar;90(3):431-7. doi: 10.4269/ajtmh.13-0412. Epub 2014 Jan 20. PMID: 24445208; PMCID: PMC3945687.
11. Chisenhall DM, Christofferson RC, McCracken MK, Johnson AM, Londono-Renteria B, Mores CN. Infection with dengue-2 virus alters proteins in naturally expectorated saliva of Aedes aegypti mosquitoes. Parasit Vectors. 2014 May 30;7:252. doi: 10.1186/1756-3305-7-252. PMID: 24886023; PMCID: PMC4057903.
12. Moudy RM, Michaels S, Jameson SB, Londono B, Lopez V, Caillouet KA, Hallmark CJ, Davis JK, Foppa IM, Dorn PL, Wesson DM. Factors associated with peridomestic Triatoma sanguisuga (Hemiptera: Reduviidae) presence in southeastern Louisiana. J Med Entomol. 2014 Sep;51(5):1043-50. doi: 10.1603/me13234. PMID: 25276935.
13. Londono-Renteria B, Drame PM, Weitzel T, Rosas R, Gripping C, Cardenas JC, Alvares M, Wesson DM, Poinsignon A, Remoue F, Colpitts TM. An. gambiae gSG6-P1 evaluation as a proxy for human-vector contact in the Americas: a pilot study. Parasit Vectors. 2015 Oct 13;8:533. doi: 10.1186/s13071-015-1160-3. PMID: 26464073; PMCID: PMC4605097.
14. Londoño-Rentería B, Cárdenas JC, Giovanni JE, Cárdenas L, Villamizar P, Rolón J, Chisenhall DM, Christofferson RC, Carvajal DJ, Pérez OG, Wesson DM, Mores CN. Aedes aegypti anti-salivary gland antibody concentration and dengue virus exposure history in healthy individuals living in an endemic area in Colombia. Biomedica. 2015 Oct-Dec;35(4):572-81. doi: 10.7705/biomedica.v35i4.2530. PMID: 26844447.
15. Londono-Renteria B, Patel JC, Vaughn M, Funkhauser S, Ponnusamy L, Grippin C, Jameson SB, Apperson C, Mores CN, Wesson DM, Colpitts TM, Meshnick SR. Long-Lasting Permethrin-Impregnated Clothing Protects Against Mosquito Bites in Outdoor Workers. Am J Trop Med Hyg. 2015 Oct;93(4):869-74. doi: 10.4269/ajtmh.15-0130. Epub 2015 Jul 20. PMID: 26195460; PMCID: PMC4596613.
16. Londono-Renteria B, Troupin A, Conway MJ, Vesely D, Ledizet M, Roundy CM, Cloherty E, Jameson S, Vanlandingham D, Higgs S, Fikrig E, Colpitts TM. Dengue Virus Infection of Aedes aegypti Requires a Putative Cysteine Rich Venom Protein. PLoS Pathog. 2015 Oct 22;11(10):e1005202. doi: 10.1371/journal.ppat.1005202. PMID: 26491875; PMCID: PMC4619585.
17. Londono-Renteria B, Cardenas JC, Troupin A, Colpitts TM. Natural Mosquito-Pathogen

Hybrid IgG4 Antibodies in Vector-Borne Diseases: A Hypothesis. Front Immunol. 2016 Sep 29;7:380. doi: 10.3389/fimmu.2016.00380. PMID: 27746778; PMCID: PMC5040711.

18. Londono-Renteria B, Grippin C, Cardenas JC, Troupin A, Colpitts TM. Human C5a Protein Participates in the Mosquito Immune Response Against Dengue Virus. J Med Entomol. 2016 May;53(3):505-512. doi: 10.1093/jme/tjw003. Epub 2016 Feb 3. PMID: 26843451; PMCID: PMC4892811.
19. Troupin A, Londono-Renteria B, Conway MJ, Cloherty E, Jameson S, Higgs S, Vanlandingham DL, Fikrig E, Colpitts TM. A novel mosquito ubiquitin targets viral envelope protein for degradation and reduces virion production during dengue virus infection. Biochim Biophys Acta. 2016 Sep;1860(9):1898-909. doi: 10.1016/j.bbagen.2016.05.033. Epub 2016 May 27. PMID: 27241849; PMCID: PMC4949077.
20. Conway MJ, Londono-Renteria B, Troupin A, Watson AM, Klimstra WB, Fikrig E, Colpitts TM. Aedes aegypti D7 Saliva Protein Inhibits Dengue Virus Infection. PLoS Negl Trop Dis. 2016 Sep 15;10(9):e0004941. doi: 10.1371/journal.pntd.0004941. PMID: 27632170; PMCID: PMC5025043.
21. Londono-Renteria B, Troupin A, Colpitts TM. Arbovirosis and potential transmission blocking vaccines. Parasit Vectors. 2016 Sep 23;9(1):516. doi: 10.1186/s13071-016-1802-0. PMID: 27664127; PMCID: PMC5035468.
22. Londono-Renteria B, Marinez-Angarita JC, Troupin A, Colpitts TM. Role of Mast Cells in Dengue Virus Pathogenesis. DNA Cell Biol. 2017 Jun;36(6):423-427. doi: 10.1089/dna.2017.3765. Epub 2017 May 9. PMID: 28486041.
23. Hall A, Troupin A, Londono-Renteria B, Colpitts TM. Garlic Organosulfur Compounds Reduce Inflammation and Oxidative Stress during Dengue Virus Infection. Viruses. 2017 Jun 23;9(7):159. doi: 10.3390/v9070159. PMID: 28644404; PMCID: PMC5537651.
24. Londono-Renteria B, Troupin A, Cardenas JC, Hall A, Perez OG, Cardenas L, Hartstone-Rose A, Halstead SB, Colpitts TM. A relevant in vitro human model for the study of Zika virus antibody-dependent enhancement. J Gen Virol. 2017 Jul;98(7):1702-1712. doi: 10.1099/jgv.0.000833. Epub 2017 Jul 8. PMID: 28691657; PMCID: PMC7011765.
25. Londono-Renteria BL, Shakeri H, Rozo-Lopez P, Conway MJ, Duggan N, Jaberi-Douraki M, Colpitts TM. Serosurvey of Human Antibodies Recognizing Aedes aegypti D7 Salivary Proteins in Colombia. Front Public Health. 2018 May 18;6:111. doi: 10.3389/fpubh.2018.00111. PMID: 29868532; PMCID: PMC5968123.
26. Vora A, Zhou W, Londono-Renteria B, Woodson M, Sherman MB, Colpitts TM, Neelakanta G, Sultana H. Arthropod EVs mediate dengue virus transmission through interaction with a tetraspanin domain containing glycoprotein Tsp29Fb. Proc Natl Acad Sci U S A. 2018 Jul 10;115(28):E6604-E6613. doi: 10.1073/pnas.1720125115. Epub 2018 Jun 26. PMID: 29946031; PMCID: PMC6048473.
27. Rozo-Lopez P, Drolet BS, Londoño-Renteria B. Vesicular Stomatitis Virus Transmission: A Comparison of Incriminated Vectors. Insects. 2018 Dec 11;9(4):190. doi: 10.3390/insects9040190. PMID: 30544935; PMCID: PMC6315612.
28. Cardenas JC, Drame PM, Luque-Burgos KA, Berrio JD, Entrena-Mutis E, González MU, Carvajal DJ, Gutiérrez-Silva LY, Cardenas LD, Colpitts TM, Mores CN, Londono-Renteria B. IgG1 and IgG4 antibodies against Aedes aegypti salivary proteins and risk for dengue infections. PLoS One. 2019 Jan 2;14(1):e0208455. doi: 10.1371/journal.pone.0208455. PMID: 30601814; PMCID: PMC6314615.
29. Kang S, Shin D, Mathias DK, Londono-Renteria B, Noh MY, Colpitts TM, Dinglasan RR, Han YS, Hong YS. Homologs of Human Dengue-Resistance Genes, FKBP1B and ATCAY, Confer Antiviral Resistance in Aedes aegypti Mosquitoes. Insects. 2019 Feb 2;10(2):46. doi: 10.3390/insects10020046. PMID: 30717390; PMCID: PMC6409984.
30. Asad S, Feitosa-Suntheimer F, Gold A, Londono-Renteria B, Colpitts TM. Quantification of

Antibody-dependent Enhancement of the Zika Virus in Primary Human Cells. J Vis Exp. 2019 Jan 18;(143). doi: 10.3791/58691. PMID: 30735189.

31. Tree MO, Londono-Renteria B, Troupin A, Clark KM, Colpitts TM, Conway MJ. Dengue virus reduces expression of low-density lipoprotein receptor-related protein 1 to facilitate replication in Aedes aegypti. Sci Rep. 2019 Apr 23;9(1):6352. doi: 10.1038/s41598-019-42803-9. PMID: 31015516; PMCID: PMC6478881.
32. Maldonado-Ruiz LP, Montenegro-Cadena L, Blattner B, Menghwar S, Zurek L, Londono-Renteria B. Differential Tick Salivary Protein Profiles and Human Immune Responses to Lone Star Ticks (Amblyomma americanum) From the Wild vs. a Laboratory Colony. Front Immunol. 2019 Aug 28;10:1996. doi: 10.3389/fimmu.2019.01996. PMID: 31555263; PMCID: PMC6724717.
33. Londono-Renteria B, Drame PM, Montiel J, Vasquez AM, Tobón-Castaño A, Taylor M, Vizcaino L, Lenhart AAE. Identification and Pilot Evaluation of Salivary Peptides from Anopheles albimanus as Biomarkers for Bite Exposure and Malaria Infection in Colombia. Int J Mol Sci. 2020 Jan 21;21(3):691. doi: 10.3390/ijms21030691. PMID: 31973044; PMCID: PMC7037407.
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48. Jameson, S.B., Cloherty, E., Londono-Renteria, B. et al. Chagas Disease in the Southeastern USA. Curr Trop Med Rep 9, 140–149 (2022). https://doi.org/10.1007/s40475-022-00260-x
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50. Calderon-Ruiz P, Haist G, Mascus A, Holguin-Rocha AF, Koliopoulos P, Daniel T, Velez G, Londono-Renteria B, Gröndahl B, Tobon-Castano A, Gehring S. Multiplex Reverse Transcription Polymerase Chain Reaction Combined with a Microwell Hybridization Assay Screening for Arbovirus and Parasitic Infections in Febrile Patients Living in Endemic Regions of Colombia. Trop Med Infect Dis. 2023 Oct 6;8(10):466. doi: 10.3390/tropicalmed8100466. PMID: 37888594; PMCID: PMC10610613.
51. Berlin Londono-Renteria, Zakaria Seidu, Helena Lamptey, Michael F. Ofori, Lars Hviid, Mary Lopez-Perez. Biomarker of Anopheles exposure in Ghanaian children with haemoglobin S and C. Acta Tropica. 2023 107043, ISSN 0001-706X, https://doi.org/10.1016/j.actatropica.2023.107043. *Accepted in press*.
52. Lyndsi D Vaughan, Samuel B Jameson, Dawn M Wesson, Kristopher S Silver, Dana N Mitzel, Georgina L Dobek, and Berlin Londoño-Renteria. AC-DC Electropenetrography is a viable tool in biocontainment to quantify probing and ingestion behaviors of the yellow fever mosquito (Aedes aegypti) in a mouse model. 2023. Comparative Medicine. *Accepted in press*.

Publications in peer-review process

53. Howell, M.M.; Olajiga, O.; Cardenas, J.C.; Parada-Higuera, C.A.; Gonzales-Pabon, M.U.; Gutierrez-Silva, L.Y.; Jaimes-Villamizar, L.; Werner, B.M.; SHAFFER, J.G.; Manuzak, J.A.;

Londono-Renteria, B. Mosquito Salivary Antigens and their Relationship to Dengue and P. vivax Malaria. Preprints 2023, 2023102103. https://doi.org/10.20944/preprints202310.2103.v1.

Book Chapters

- Londono-Renteria B, Colpitts TM. A Brief Review of West Nile Virus Biology. Methods Mol Biol. 2016;1435:1-13. doi: 10.1007/978-1-4939-3670-0_1. PMID: 27188545.

Media appearances

- Educational Video: Youtube - https://www.youtube.com/watch?v=BU8TkzHMkaM
- Educational Video: Undergraduate Research Experience (URS) - https://www.youtube.com/watch?v=XKwjBUNxPDQ&feature=share
- Agriculture Today: Transmission blocking vaccine research at K-STATE
- Drug Discovery News - https://www.drugdiscoverynews.com/scientists-developed-a-vaccine- targeting-all-mosquito-transmitted-diseases-15361
- BioNexus - https://bionexuskc.org/research-that-ticks-k-state-researchers-take-on-tick-borne- diseases/
-
- The dengue detectives - http://latinamericanscience.org/detectives.html

Statistics

- *h-Index*: 22
- *i10-index*: 32
- *Citations:* 1268

Presentations

Invited presentations

- 2016 – Epidemiological Uses of a Mosquito Spit: CDC – Division of Scientific Education and Professional Development. Atlanta, GA, USA.
- 2017 – Immune responses against mosquito saliva to evaluate exposure in deployed personnel. Deployment and Travel Related Infections Research Area Annual Meeting. Henry M. Jackson Foundation Headquarters. Bethesda, MA, USA
- 2018 – Mosquito saliva : Where are we in terms of tracking vector-host interaction. Pan American Dengue Network Meeting – Vector biology section, Galveston, TX, USA
- 2018 – Antibodies Against Mosquito Saliva and Arbovirus Transmission. XII Congress of the Latin American Association of Immunology - ALAI XXIII Congress of the Mexican Society of Immunology – SMI, Cancun, Mexico.
- 2019 – Insect Salivary Biomarkers for Tracking Pathogen Transmission Dynamics. 5th Conference on Mitigation Strategies for Infectious Diseases, Cali, Colombia.
- 2020 – Human humoral responses against arthropod salivary proteins. 1st UNESP-Kansas State University Workshop on Biosecurity and Emerging Infectious Diseases, Botucatu, Brazil.
- 2020 – New Perspectives on Evaluating Vector – Host Interactions and Disease Risk University

of Kansas - Department of Immunology. ONLINE.

- 2020 - Antibodies Against Mosquito Saliva and Pathogen Transmission. Lunch and Learn: NBAF – USDA. ONLINE.

- 2020 – Cancer, virome, arthropod saliva and other unlikely connections in vector-borne diseases Expert Spotlight – Cornell University. ONLINE.

- 2020 – New Perspectives on Evaluating Vector – Host Interactions and Disease Risk. Virtual Vector Biology Series. ONLINE.

- 2020 – Potential over-wintering mechanism for a Culicoides-borne arbovirus: Vesicular stomatitis virus. American Society for Virology. ONLINE.

- 2021 – Transmission of Pathogens and Human-Mosquito Interactions through Blood-Feeding University of Richmond, Langford Seminar Series. ONLINE.

- 2021 – Studying Hector-Host Interactions and Malaria in Latin-America. BIPOC in Parasitology (BiP) seminar series. ONLINE.

- 2022 – Vector-borne diseases in Colombia: Challenges and opportunities for Afro-Latinos in science. ESA. 10th Annual Latinx American Hispanic Entomologist Symposium. Vancouver, Canada.

- 2022 – Human-Arthropod Interactions and Pathogen Transmission Baylor University – Department of Biology Seminar Series

- 2022 – Vector-Pathogen-Host Interactions: The Importance of Mosquito Salivary Proteins in Pathogen Transmission University of Nebraska at Lincoln – Department of Entomology Seminar series. ONLINE.

- 2023 – Human-Arthropod Interactions and Pathogen Transmission. Department Seminar Series. Department of Environmental and Occupational Health. Bloomington, IN, USA.

- 2024 – BioMalPar XX: Biology and Pathology of the malaria parasite. 21-23 May 2024 at EMBL Heidelberg, Germany.

- 2024 – Vaccine and Gene Therapy Institute – OHSU. Department Seminar. February at Hillsboro, Oregon.

<u>Keynote speaker presentations</u>

- 2020 - Connecting Languages between Hosts to Understand the Origin of Diseases. 47th Colombian Society for Entomology Congress. Theme “Frontiers in Entomology” – SOCOLEM. ONLINE.

<u>Three-day hands-on invited workshops</u>

- 2018 – CDC Training on Mosquito salivary gland dissection and antigen preparation, Atlanta, USA.
- 2019 – University of Pamplona – Arthropods of medical importance, Pamplona, Colombia.
- 2024 – Colombian National Institute of Health – Arthropod saliva antibody detection for epidemiology, Bogota, Colombia.

<u>Investigator-initiated presentations</u>

- 2007 – Malaria parasite prevalence in the Artibonite Valley of Haiti during the rainy season, 2006. 56th ASTMH Annual Meeting.

- 2007 – Distribution of Plasmodium falciparum msp1 allelic variants in the Artibonite Valley of Haiti, 2006. ASTMH 56th Annual meeting.

- 2008 – Molecular evidence for Chloroquine-resistant Plasmodium falciparum in Haiti. ASTMH 57th Annual meeting.

- 2008 – MSP1 and MSP2- based estimates of genetic diversity in Plasmodium falciparum from the Artibonite Valley of Haiti, 2006-2007. ASTMH 57th Annual meeting.

- 2009 – Immunogenicity of Anopheles albimanus saliva in malaria-endemic and non-endemic areas. ASTMH 58th Annual meeting.

- 2009 – Screening for Chagas Antibodies using Blood Collected and Stored on Filter Paper. ASTMH 58th Annual meeting.

- 2010 – Chagas Serosurvey Near Autochthonous Human Case in Louisiana, USA. ASTMH 58th Annual meeting.

- 2010 – Dengue 2 alters salivary gland protein expression in infected Aedes aegypti mosquitoes. ASTMH 59th Annual Meeting.

- 2011 – Antigenicity Changes of Salivary Proteins and Antibody Persistence against Anopheles albimanus and Aedes aegypti Principal Vectors of Diseases in Colombia. ASTMH 60th Annual meeting.

- 2011 – Level of Antibodies Anti- Aedes aegypti Saliva and Clinical Presentation of Dengue Fever in Norte de Santander Colombia. ASTMH 60th Annual meeting.

- 2011 – Cucuta/Pamplona area (Norte de Santander - Colombia) in 2010. ASTMH 60th Annual meeting.

- 2011 – Hyperendemic transmission of dengue in Norte de Santander, Colombia. ASTMH 60th Annual meeting.

- 2011 – Association between level of anti-Aedes saliva antibodies, presence of mosquito larva in houses and severity of dengue fever. ASTMH 60th Annual meeting. 2011.

- 2012 – A Previously Unknown Role for Erythrocytic Asexual Stages during Mosquito Infection by Sexual Stages and Transmission Success of the Human Malaria Parasite P. falciparum. Health Sciences Research Days. Tulane University.

- 2014 – IgG antibody subclasses against Vector Salivary Proteins as a Measure to Risk of Ae. aegypti bite exposure after implementation of Atractive Lethal Ovitraps. ASTMH 63rd Annual meeting.

- 2014 – Human IgG Antibody Response against Recombinant Ae. aegypti salivary proteins modified during DENV infection. ASTMH 63rd Annual meeting.

- 2015 – Effect of Human Complement on Dengue Virus Infectivity in Aedes aegypti Midgut. The Arthropod Vector: The Controller of Transmission (E2). Keystone Symposium on Arthropod Vectors.

- 2015 – Anti-salivary antibodies as a measure of protective efficacy of long-lasting permethrin- impregnated clothing against mosquito bites. ASTMH 64th Annual meeting.

- 2015 – Blocking Effect of Neutralizing Antibodies and Human Complement Proteins C3 in DENV infection of Ae. aegypti. ASTMH 64th Annual meeting.

- 2015 - Role of bispecific IgG antibodies against both salivary proteins and dengue viral proteins as markers for disease risk of arboviral infections. American Association for Virology (ASV).

- 2016 – Human C5a Interacts with a G-Protein Coupled Receptor in Ae. aegypti Cells Modulating DENV Infection in vitro. Medical and Veterinary Entomology. ICE – Orlando.

- 2016 – DENV Preexisting Immunity effect on ZIKV Infection and the Reliability of Diagnosis in an Area with Co-circulation of Several Arboviruses. ASTMH 65th Annual meeting.

- 2017 – Skin and midgut: tissue barriers, cross-species battlegrounds. Gordon Research Conference in Tropical Infectious diseases.

- 2017 – Anti-Mosquito Saliva Immunity, Mast Cells and Clinical Presentation of Dengue. American Society of Tropical Medicine and Hygiene Annual Meeting.

- 2017 – The Effect of Garlic in Reducing Inflammation in Dengue Infection. ASTMH 66th Annual meeting.

- 2018 – Human Antibody Responses against Salivary Proteins of Amblyomma americanum. ASTMH 67th Annual meeting.

- 2018 – Characterization of biomarkers for determining Aedes and Anopheles exposure during deployments. Military Health System Research Symposium.

- 2018 – Effect of blood meal temperature on physiological responses of C. sonorensis biting midges. Entomological Society of America ESA.

- 2019 – New perspectives for evaluating vector host interactions75th Annual Kansas Public Health Association Conference.

- 2020 – Human Neuron Infection with ZIKV and Hybrid IgG4 Antibody Responses to Ae. aegypti saliva. Veterinary Student Scholar Symposium.
- 2020 – Human Neuron Infection with ZIKV and Hybrid IgG4 Antibody Responses to Ae. aegypti saliva. annual Phi Zeta Research Day.
- 2020 - Temperature mediated effects on vesicular stomatitis virus infection in Culicoides sonorensis midges. ASTMH 69th Annual Meeting.
- 2020 – The in vitro activity of Aedes aegypti Sialokinin I on endothelial and neurons and mast cells: a preliminary study. Entomological Society of America ESA.
- 2021 - Effect of Mosquito Salivary Proteins in Human Endothelial Physiology. ASTMH 70th Annual Meeting.
- 2022 – Salivary biomarkers to track risk of malaria infection in South America. ICOPA – Copenhagen.
- 2022 – IgG Antibody Against Aedes aegypti Bacteria Responsive Protein 1 (AgBR1) Reduces During Dengue Infection in Patients from an Endemic. ASTMH 71st Annual Meeting.
- 2023 – Identification and Quantification of Plasmodium fragile in a laboratory setting: Giemsa stain vs. quantitative PCR. ASTMH 72nd Annual Meeting.

- 2023 - Anopheles mosquito bite exposure testing to assess vector control interventions in the Colombian Pacific Region. ASTMH 72nd Annual Meeting.
- 2023 – Histopathological Characteristics of Discrete Brain Regions during P. fragile Experimental Cerebral Malaria in a Nonhuman Primate Model. ASTMH 72nd Annual Meeting.
- 2023 – Detection of antibodies against salivary proteins of Ae. albopictus and Cx. quinquefasciatus in Northern Cardinals in Louisiana. ASTMH 72nd Annual Meeting.
- 2023 – Assessing auto-dissemination stations as a control tool for Aedes aegypti in the Rio Grande Valley, Texas, USA. ASTMH 72nd Annual Meeting.
- 2023 – P. fragile Results in Clinical Signs of Malaria, SIV, and Immune Dysfunction in SIV+ Rhesus Macaques Despite Persistent Daily ART Treatment. ASTMH 72nd Annual Meeting.
- 2023 – Using EPG to examine dengue virus transmission in vitro and in vivo. Entomological Society of America ESA.
- 2023 – The blood quest: How we used EPG to examine mosquito feeding behavior on vertebrates. Entomological Society of America ESA
- 2023 – Elevated levels of soluble CD14 in plasma but not in cerebrospinal fluid in ART treated rhesus macaques co-infected with SIV and P. fragile. 40th Annual Symposium on Nonhuman Primate Models for AIDS.
- 2023 – Altered Neutrophil Frequency and Function During P. fragile Co-infection of ART-treated SIV+ Rhesus Macaques. 40th Annual Symposium on Nonhuman Primate Models for AIDS.
- 2023 - Utilization of a 30-Color Flow Cytometry Panel for Immunophenotypic Analysis of Innate Immune Subsets at the Maternal/Fetal Interface in Pregnant Rhesus Macaques. 40th Annual Symposium on Nonhuman Primate Models for AIDS.

Organizer/Moderator in Scientific Meetings

- 2017 – Gordon Research Conference on Tropical Infectious Diseases – Emerging Arboviruses section.
- 2018 – Pan-American Dengue Network Meeting – Epidemiology Section.
- 2019 – Entomological Society of America (ESA) – Arthropod-Vertebrate Molecular Interactions and Pathogen Emergence.
- 2020 – Entomological Society of America (ESA) – Arthropod Saliva: From Basic Science to Practical Applications.
- 2023 – ASTMH 72nd Annual Meeting. The Influence of Arboviruses on the Mosquito's Journey from Host-Seeking to Blood-Feeding.

Research support

Active Research Support

CEEIRD Tulane – ($40,000) – 09/01/2023 – 08/30/2024
Role: Principal Investigator (3% Effort).
Title: Sequence-based bite exposure to diurnal and nocturnal mosquito species is a risk factor for clinical vector-borne disease presentation.
Summary: The proposed studies aim to leverage a murine model of mosquito-transmitted arbovirus infection to identify key vector and immune factors that enhance viral acquisition and replication.

Characterizing these pathways is critical for the development and pre-clinical testing of effective therapeutic strategies to reduce arbovirus transmission. The proposed research is significant given the increasing risk for arbovirus outbreaks due to climate change-induced expansion in the territories occupied by the mosquito arbovirus vectors.

USDA ($375,000) - 09/01/2022 – 08/30/2025
Role: Principal Investigator (5% Effort).
Title: Use of hydrogel technology on arbovirus biology.
Summary: In collaboration with academic and commercial partners, we have adapted a method of 3D printing sterile, biocompatible agarose to function as a vascularized skin mimic for mosquito bite studies. If successful, this *in vitro* skin system will expedite research in the areas of entomology and immunology toward the evaluation of therapeutic options (vaccines and drugs), new preventive alternatives (repellents), and control strategies (transmission-blocking vaccines).

Tulane COR Research Fellowship ($6,600) - 06/01/2022 – 05/30/2025
Role: Principal Investigator (1% Effort).
Title: Effect of anticoagulants on vectorial capacity of Aedes aegypti. Mosquitoes
Summary: Anticoagulants contained in a blood meal increase egg production hatching rate and modulate the transmission of dengue virus (DENV) in Aedes aegypti mosquitoes. Our long term goal is to Identify key molecules in mosquito midgut responsible for viral infection and dissemination as a target for transmission-blocking vaccines.

CDC – USAID ($80,000) - 02/28/2018 – 01/30/2023.
Role: Principal Investigator (5% Effort).
Title: Mosquito salivary antigen testing to assess exposure to mosquito bites.
Summary: During blood feeding, female mosquitoes inject saliva into host skin to facilitate blood uptake, which initiates a protein mediated immune response. Mosquito salivary proteins induce antibody responses closely related to the number of bites received by a person. We have designed specific peptides to determine exposure to An. darlingi and An. albimanus bites. We will use these peptides to evaluate the impact of control measurements in mosquito exposure in a malaria endemic area in Colombia.

NAMRU6 – Parasitology Department (DoD - GEIS) ($450,000) - 01/30/2018 – 09/30/2025.
Role: Principal Investigator (3% Effort).
Title: Malaria and Arboviral surveillance in endemic regions of Colombia.
Summary: The study is funded by the Global Emerging Infections Surveillance and Response Branch (GEIS) of the Armed Forces Health Surveillance Division (AFHSD) Intramural Funding and the Navy Medicine Research and Development Enterprise (NMR&D) In- house Laboratory Independent Research (ILIR) Program. The countries where the activities will be carried out are Colombia and USA.

NAMRU6 – Entomology Department (DoD - GEIS) ($50,000) - 01/30/2018 – 09/30/2024.
Role: Principal Investigator (3% Effort)
Title: Arthropod Surveillance in Colombia.
Summary: Colombia is a key country in South America, has a strategic location in the SOUTHCOM, and is an endemic region for tropical infectious diseases such as malaria, leishmaniasis, dengue, Zika and re-emerging or emerging pathogens, for which vector species remain to be identified in highly endemic areas. this project will allow the execution of tick-borne, mosquito-borne and sand fly-borne pathogen surveillance activities in Colombia to generate actionable data that can be used for the benefit of the warfighter.

<u>Completed Research Support</u>
COBRE – NIH 5P20GM103638-08 ($175,000). 02/15/2010 – 12/30/2022.
Role: Principal Investigator (20% Effort).
Title: The Biology of Hybrid IgG4 antibodies in Viral Emerging and Re-emerging Diseases.
Summary: mosquito-virus hybrid antibodies may play a role in responses against mosquito saliva

during DENV infection and the subsequent course of the disease. Since part of the pathology in ZIKV infection is associated with antibody responses, we believe that studying the role of total IgG4 anti-saliva antibodies and anti-saliva-ZIKV bispecific IgG4 antibodies will increase our understanding of the role of ADE and virus-neutralizing responses in Guillain-Barre syndrome and microcephaly while providing new possibilities for identifying drug targets and vaccines and the opportunity for developing new interventions for vector control.

01/01/2018 – 12/30/2018.
NIH 1R21AI129881-01 ($25,000).
Role: Collaborator (1%Effort).
Title: Effect of pre-existing Dengue Virus (DENV) Immunity on Zika Virus (ZIKV) Infection.
Summary: Flavivirus infections are often characterized by antibody-dependent enhancement in the presence of sub-neutralizing antibodies remanent of previous infections. We believe that the transmission of several DENV strains in a determined area may predispose to severe neurological disease during ZIKV infection. Elucidating the role of such heterologous sub-neutralizing antibodies may give us insights into preventing Guillain-Barre syndrome and microcephaly.

09/15/2017 – 01/30/2022.
ARS – USDA ($105,000).
Role: Co-Investigator (5% Effort).
Title: The Role of Vector-Virus Interactions in Emerging Vesicular Stomatitis Virus Outbreaks.
Summary: Vesicular stomatitis (VS) is a viral disease of veterinary importance, enzootic in tropical and subtropical regions of the Americas. In the U.S., VS produces devastating economic losses, particularly in the southwestern states where the outbreaks display an occurrence pattern of 10-year intervals. The mechanisms of the geographic spread and maintenance cycles during epizootics remain unclear; we aim to characterize such mechanisms, increasing our knowledge on how to prevent outbreaks.

02/15/2017 – 01/30/2018.
Uniformed Services University/Henry M Jackson Foundation (30,000). Role: Co-Investigator (2% Effort).
Title: Mosquito vector exposure in DoD beneficiaries going to high-risk regions for malaria and arboviral infections.
Summary: We used an ELISA-based detection of antibodies against mosquito salivary proteins to determine the efficacy of insecticide-treated military uniforms.

05/20/2016 – 06/30/2017.
Collaborative Research Travel Grant – Burroughs Welcome Fund ($15,000). Role: Principal Investigator (100% Effort).
Title: Immune crosstalk between human and mosquito: The complement to fight transmission.
Summary: Human complement proteins have high similarity with mosquito proteins. We believe that the activation of human proteins in the mosquito midgut modulates the infectivity of mosquitoes with human pathogens. Finding the proteins responsible for this immunomodulation may be the key to stopping transmission.

<u>Submitted Research Support</u>

09/01/2023
DoD - Peer-Reviewed Medical Research Program - Investigator-Initiated Research Award ($3,713,869).
Role: Principal Investigator.
Title: Mosquito-Virus Bispecific Antibodies to Prevent, Treat and Track Zika Virus.
Summary: There is an association between higher IgG4 antibody levels and the clinical presentation of dengue fever. Our previous studies suggest that IgG4 antibodies against salivary proteins may block the saliva-enhancing effect in vivo and in vitro. This proposal addresses the portfolio of Infectious diseases and Immunology and the topic area of neuroinflammatory responses

to emerging viral diseases with a strategic goal of prevention and epidemiology in that we will characterize the role of bispecific antibodies in the development of antibody-dependent enhancement.

06/05/2023
NIH – R01 (1'250,000)
Title: Innate and microbial mechanisms of perinatal and adult SIV/malaria co-infection pathogenesis.
Role: Co-Investigator.
Summary: The goal of this proposal is to reveal the pathogenic outcomes of Plasmodium fragile co-infection during ART-treated SIV infection of infant and adult rhesus macaques. The aims are geared toward a mechanistic understanding of how neutrophils and the intestinal microbiome drive mucosal inflammation and dysfunction, thus contributing to poor co-infection outcomes.

10/15/2023
NIH – R01 (1'250,000)
Title: Role of trained immunity in the immunopathogenesis of malaria in pregnancy.
Role: Co-Investigator.
Summary: The goal of this proposal is to reveal the impact of prior Plasmodium fragile exposure on the pathophysiology of subsequent P. fragile malaria in pregnancy (MIP) and to identify the role of neutrophil training in protection against or exacerbation of dysfunction at the maternal/fetal interface during P. fragile MIP. The aims are geared toward a mechanistic understanding of how neutrophil function may be influenced by P. fragile exposure before pregnancy, which could impact placental dysfunction and thus modulate the risk for poor outcomes during pregnancy.

11/01/2023
Burroughs Wellcome Fund - Climate and Health Interdisciplinary Awards (CHI) ($375,000)
Role: Co-Investigator
Title: Interdisciplinary research at the intersection of climate change, mosquito expansion, and immune responses against disease.
Summary: Our goal is to identify factors linking climate-change-driven mosquito expansion and behavior alterations in Louisiana with host immune responses to mosquito salivary proteins and mosquito-borne diseases, specifically West Nile Virus. Our preliminary data suggests (1) that seasonal increases in mosquito exposure are linked with increased disease transmission and (2) an impact of the environment on mosquito saliva content, induction of immune responses, and pathogen transmission. Here, in Aim 1, we will use satellite imagery, environmental data, and machine learning algorithms to predict how changes in temperature, vegetation, and other environmental variables affect mosquito expansion and human host-seeking behavior, thus increasing mosquito exposure potential. In Aim 2, we will determine how sequential exposure to mosquito saliva from different species modifies host immune responses to mosquito-borne pathogens. This interdisciplinary approach will incorporate entomological mosquito capture data, disease incidence data, host immune response to mosquito saliva and pathogen experiments, and machine learning modeling of human-vector contact hot spots and disease risk predictions.

D. EQUITY, DIVERSITY AND INCLUSION ACTIVITIES

Teaching: The courses of immunoparasitology and introductory microbiology have been created with the belief that every student has the ability to learn. We utilize the unique backgrounds of each student to present a comprehensive perspective on the impact of the environment on infectious diseases. Furthermore, we explore how these diseases are understood and treated in various cultures and how all these factors can affect immune responses. Creating an inclusive environment is crucial for effective learning, which is why our class sessions and assessments are designed to accommodate students with different personalities and learning styles. Our goal is to ensure their success not only in the classroom but also in their future careers.

Research: Our laboratory specializes in studying vector-borne diseases with the aim of developing preventive measures and treatments. We adhere to strict guidelines to ensure the safety of human subjects in our studies, and we strive to include individuals from diverse backgrounds to ensure the applicability of our findings to the general population. While there may be limitations on the geographical scope of our research, we have protocols in place to actively involve and benefit the communities that contribute to our work. In terms of training, I maintain an open-door policy for my students and trainees, allowing them to approach me whenever necessary. I also make a conscious effort to foster a diverse and inclusive team, as I believe that science thrives when everyone has a voice in a supportive environment. Our laboratory is committed to providing a space where all members can contribute and grow on a daily basis.

Service: As previously mentioned, my program places great importance on community engagement and education. We have actively participated in various community initiatives that focus on promoting STEM among women and minorities. Specifically, during my time at K-STATE, we participated in Science Fairs held at Marlatt Elementary School in both 2018 and 2019. Additionally, in 2023, we were invited to the "Believe In Girls (B.I.G)" event, a STEM-focused activity organized by the Girl Scout Council, which provides girls from all across Louisiana with the opportunity to engage in STEM-related activities. I strongly believe that participating in these types of events not only enhances the knowledge of those involved but also broadens our perspective as scientists.