

Michael Allen, PhD
Graduate School of Biomedical Sciences
Microbiology, Immunology & Genetics
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Area of Expertise

Research in the Allen Laboratory focuses on the microbiology of vector-borne diseases and microbiome-host studies of human, plant, and animal systems. The former includes testing of all ticks submitted to the state of Texas for the presence of specific bacterial pathogens in cooperation with the Texas Department of State Health Services; research into factors influencing disease transmission from ticks and other arthropods; and mechanisms of immune avoidance by tick-borne pathogens. The microbiome research includes investigation of complex bacterial communities and their interactions with a wide variety of hosts; defining factors that disrupt or support microbial community assembly and structure; exploring community dynamics in polymicrobial diseases of different organ systems (e.g. gut, lung); development of genetically engineered probiotics for the treatment of disease; and applications of microbiome research to problems in forensic science.

Qualifications

PhD in Microbiology, University of Tennessee, Knoxville
BS in Biology, University of Texas at Arlington

Recent Publications

Bacterial microbiomes of Ixodes scapularis ticks collected from Massachusetts and Texas, USA
Thapa, S., Zhang, Y. & Allen, M. S., 24 Jun 2019, In : BMC Microbiology. 19, 1, 138.

Effects of temperature on bacterial microbiome composition in Ixodes scapularis ticks
Thapa, S., Zhang, Y. & Allen, M. S., May 2019, In : MicrobiologyOpen. 8, 5, e00719.

Immunological responses to the relapsing fever spirochete borrelia turicatae in infected rhesus macaques: Implications for pathogenesis and diagnosis
Embers, M. E., Krishnavajhala, A., Armstrong, B. A., Curtis, M. W., Pahar, B., Wilder, H. K., Allen, M. S., Beare, P. A., Hasenkampf, N. R. & Lopez, J. E., 1 Apr 2019, In : Infection and Immunity. 87, 4, e00900.

Variations of the lung microbiome and immune response in mechanically ventilated surgical patients
Huebinger, R. M., Smith, A. D., Zhang, Y., Monson, N. L., Ireland, S. J., Barber, R. C., Kubasiak, J. C., Minshall, C. T., Minei, J. P., Wolf, S. E. & Allen, M. S., Oct 2018, In : PLoS ONE. 13, 10, e0205788.

Alterations to the Intestinal Microbiome and Metabolome of Pimephales promelas and Mus musculus Following Exposure to Dietary Methylmercury
Bridges, K. N., Zhang, Y., Curran, T. E., Magnuson, J. T., Venables, B. J., Durrer, K. E., Allen, M. S. & Roberts, A. P., 7 Aug 2018, In : Environmental Science and Technology. 52, 15, p. 8774-8784 11 p.

Spatial Microbial Composition Along the Gastrointestinal Tract of Captive Attwater's Prairie Chicken
Zhang, Y., Simon, S. E., Johnson, J. A. & Allen, M. S., 1 May 2017, In : Microbial Ecology. 73, 4, p. 966-977 12 p.

Genetically engineered probiotic for the treatment of phenylketonuria (PKU); Assessment of a novel treatment in vitro and in the PAH^{enu2} mouse model of PKU
Durrer, K. E., Allen, M. S. & Von Herbing, I. H., May 2017, In : PLoS ONE. 12, 5, e0176286.

Validation of droplet digital PCR for the detection and absolute quantification of Borrelia DNA in Ixodes scapularis ticks
King, J. L., Smith, A. D., Mitchell, E. A. & Allen, M. S., 1 Apr 2017, In : Parasitology. 144, 4, p. 359-367 9 p.

Genome sequence of a *Providencia stuartii* strain isolated from *Lucilia sericata* salivary glands

Yuan, Y., Zhang, Y., Fu, S., Crippen, T. L., Visi, D. K., Eric Benbow, M., Allen, M. S., Tomberlin, J. K., Sze, S. H. & Tarone, A. M., 1 Jan 2017, In : *Genome Announcements*. 5, 17, e00250-17.

Common lung microbiome identified among mechanically ventilated surgical patients

Smith, A. D., Zhang, Y., Barber, R. C., Minshall, C. T., Huebinger, R. M. & Allen, M. S., Nov 2016, In : *PLoS ONE*. 11, 11, e0166313.

Sponsored Projects

Creation of a Clinically Relevant Genetically Modified Probiotic Bacteria for the Treatment of PKU (Post Doctoral Fellowship)

Allen, M.

National PKU Alliance

1/03/16 → 28/02/18

Development of a Mock Microbial Community for Microbial Forensic Technique Characterization Evaluation and Optimization

Allen, M.

Texas A&M University - College Station

1/05/18 → 31/10/18

Effect of PKU on the Gut Microbiome and its Implications for Probiotic Therapy

Allen, M.

National PKU Alliance

1/03/14 → 1/09/15

Elucidation of microbial factors promoting plant growth and stress tolerance

Allen, M.

Advanced Microbial Solutions, LLC

1/02/13 → 31/10/14

Elucidation of the microbiological composition of Agricen process stages and systems, and screen of targeted areas for organisms/genes with plant growth promotion and biocontrol potential.

Allen, M.

Agricen

1/03/14 → 31/08/14

Humanization of a Genetically Engineered Probiotic to treat Phenylketonuria (PKU)

Allen, M.

National PKU Alliance

1/03/18 → 28/02/19

Humanized GMO Probiotic for the Treatment of PKU

Allen, M.

National PKU Alliance

1/10/14 → 30/09/17

Human Microbiome Species and Genes for Human Identification

Budowle, B. & Allen, M.

NIJ: National Institute of Justice

1/01/16 → 30/09/18

Immune Avoidance during *Borrelia burgdorferi* Infection

Allen, M. & Jones, H.

Intramural Research(UNTHSC)
1/06/17 → 31/05/18

Impact of Select Environmental Contaminants on the Gut Microbial Community

Allen, M.
Intramural Research(UNTHSC)
1/04/14 → 31/12/16

PFI: Farmer-Academic-Industry Partnership for the Development of Sustainable, Energy Efficient, Multifunctional Bioproducts for the Built Environment

Allen, M.
University of North Texas - Denton
1/04/13 → 31/08/14

Planning Grant: I/UCRC for Microbial Forensics

Allen, M.
National Science Foundation
15/09/15 → 28/02/17

Principles underlying the success of the weedy invader Sorghum halepense ('johnsongrass'), toward its containment and mitigation

Allen, M. & Zhang, Y.
University of Texas, Tyler
1/05/17 → 30/04/18

Principles Underlying the Success of the Weedy Invader Sorghum Halepense ('johnsongrass'), Towards its Containment and Mitigation

Allen, M.
1/09/19 → 30/04/20

Probiotic Product Influence on the Gut Microbiome in Cattle

Allen, M.
Bio S.I.
1/10/15 → 1/06/16

Protocol Development and Testing of Tick Pathogens and Endosymbionts for NEON

Allen, M.
National Ecological Observatory Network
25/05/15 → 30/09/17

Rapid Characterization of Microbial Community Structure and Fecal Contamination of Floodwaters Generated by Hurricane Harvey

Allen, M. & Zhang, Y.
Univ of Houston - Clear Lake
15/10/17 → 31/03/18

Stress Hormones and Lung Microbiota as Mediators of Respiratory Health

Jones, H., Simecka, J. & Allen, M.
Intramural Research(UNTHSC)
1/06/17 → 31/05/18

Testing and Optimization of Microbiome Analysis Techniques in Forensically Relevant Samples

Allen, M.
Texas A&M AgriLife Research
1/01/19 → 31/12/19

Tick Metagenomic Study

Allen, M.

Texas A&M University - College Station

23/06/15 → 31/08/15