

March 2025

Newsletter

Today is the day that we “Spring forward”, and what better day to release the first Micro & Immuno Newsletter of 2025! The Spring semester is in full bloom with Advanced Immunology, Advanced Molecular Virology, and Molecular Mechanisms of Microbial Pathogenesis.

Congratulations!

Hylemon lab publishes a new high-impact paper

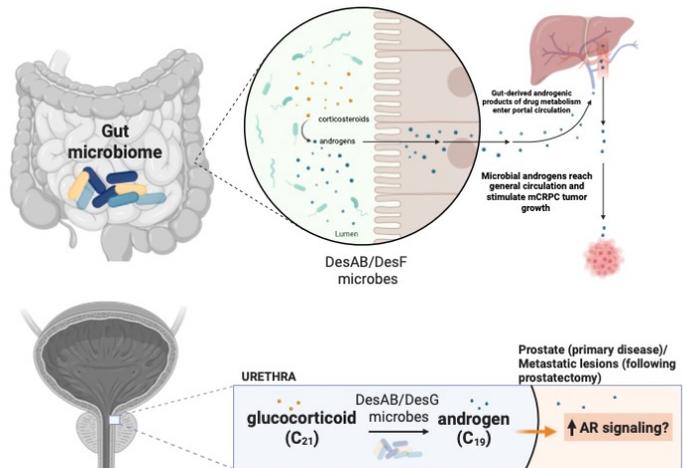
Congratulations!

Funding

Dr. Richard Marconi was awarded the **VCU Commercialization Fund**. The Marconi lab has developed two distinct Lyme disease vaccines. The crLyme (Zoetis) vaccine was designed to prevent Lyme disease in dogs and the second vaccine is for use in humans. The Commercialization grant will provide initial support for developing a trivalent vaccine formulation designed to protect against Lyme disease, anaplasmosis, and ehrlichiosis, the three most common tick-borne diseases in North America.



A manuscript from the Hylemon lab was recently accepted for publication in *Nature Microbiology*. The paper, “An expanded metabolic pathway for androgen production by host-associated bacteria” describing bile acid 7-dehydroxylating bacteria that are equipped with an operon encoding proteins that produce the androgenic compound from C-21 glucocorticoids. Three VCU alumni who trained with Dr. Phil Hylemon shared authorship on the groundbreaking paper: Dr. Jason Ridlon, Dae-Joong Kang, and Dr. Spencer Harris.



UPCOMING EVENTS

Student Defenses

- Theingi Aung; March 18
Advisor: Dr. Eddie Chae
- Kinjal Gupta; March 27
Advisor: Dr. Eddie Chae
- Matthew Zellner; April 21
Advisor: Dr. Rebecca Martin

Departmental Seminars

- Dr. Thomas Platt-Mills, MD; Mar 20
UVA, Professor, Medicine: Asthma, Allergy and Immunology
- Gilbert Glago; Mar 27
Advisor: Dr. Richard Marconi
- Araba Abaidoo-Myles; Apr 3
Advisor: Dr. Rebecca Martin
- April 10; Kinjal Gupta
Advisor: Dr. Masoud Manjili

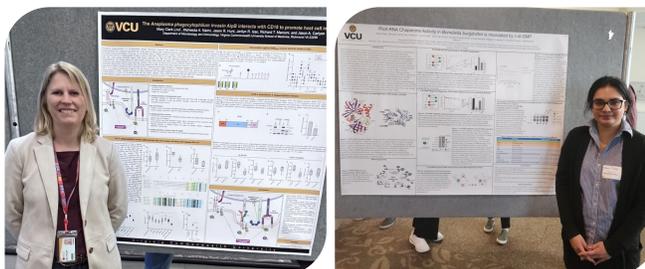
Symposia & Workshops

- [Link to faculty development workshops](#)

Congratulations!

Honors and Awards

- Kathryn Flinn, Michael Mann, Ally Motter, Eddie Schuler, Colin Short, Thomas Siff, and Grayson Way all won awards for their poster presentations at the two VCU Biomedical Sciences Doctoral Portal recruitment symposia and the Top awards went to Mary Clark Lind and Dhara Patel!



- Grayson Way, 2024 AASLD Early Career Investigator Award in Basic Science Research.
- Sareh Baytapour, SCBA 7thCALS Annual Symposium, Best Poster Presentation Award.

Publications

- P. E. Allen, H. E. Adcox, T. E. Siff, S. Gupta, J. R. Hunt, J. A. Carlyon. *Orientia tsutsugamushi* alters the intranuclear balance of cullin-1 and c-MYC to inhibit apoptosis. Infect Immun. 2025 Feb 20:e0055924. doi: 10.1128/iai.00559-24. Online ahead of print.
- M. H. Lind, W. A. Naimi, T. J. Chiarelli, T. Sparrer, M. Ghosh, L. Shapiro, J. A. Carlyon. *Anaplasma phagocytophilum* invasin AipA interacts with CD13 to elicit Src kinase signaling that promotes infection.2024. mBio. 15:e0156124 doi: 10.1128/mbio.01561-24. PMID: 39324816. PMC11481542.
- Jackson KG, Zhao D, Su L, Lipp MK, Toler C, Idowu M, Saeed A, Yan Q, Wang X, Gurley EC, Wu N, Puri P, Chen Q, Lesnefsky EJ, Dupree JL, Hylemon PB and Zhou H. Sphingosine kinase 2 (SphK2) depletion dysregulates hepatic redox metabolism and enhances inflammation in a diet-induced mouse model of MASH. Hepatology Communications. 2024, 8(12): e0570. PMCID: PMC11567706 PMID: 39773902
- Zeng J, Zhao D, Way G, Fagan A, Fuchs M, Puri P, David BC, Wang X, Gurley EC, Hylemon PB, Fan JG, Zhou H, and Bajaj J. Intestinal Mucosal Mitochondrial Oxidative Phosphorylation Worsens with Disease Progression and is Ameliorated After FMT in Patients with Cirrhosis. JCI Insight. 2025 Jan 7:e186649. doi: 10.1172/jci.insight.186649. Online ahead of print.
- Wu N, Bayatpour S, Aseem SO, Brindley PJ, Hylemon PB, and Zhou H. Gut microbiome and bile acid interactions: mechanistic implications for cholangiocarcinoma development, immune resistance and therapy. The American Journal of Pathology. 2024 Dec 19:S0002-9440(24)00445-0. doi: 10.1016/j.ajpath.2024.11.004.



Presentations

- Invited keynote, “Pathogen as cell biologist: *Orientia tsutsugamushi* modulates host immunity”, Jason A. Carlyon. Association of Medical School Microbiology and Immunology Chairs Annual Meeting, Cape Estate, St. Lucia.
- Huiping Zhou, Invited Speaker, 3rd Johns Hopkins DELTA Center Symposium on Alcohol-associated Hepatitis Title: Bile acids in Alcoholic liver injury.
- Huiping Zhou, Chair, Biliary Physiology, Transport, Cholangiocyte Biology, Experimental Cholestasis, AASLD meeting in San Diego.
- Huiping Zhou, Chair, Translational Strategies for Inflammatory-Driven Liver Disease: Immune Modulation and Tissue Remodeling, AASLD meeting in San Diego.
- Lu HJ, Way G, Zhao D, Zeng J, Yai YL, Wang X, Su L, Aseem SO, Sanyal AJ, Hylemon PB and Zhou H. The Association of Dysregulated Sphingolipid Metabolism and microRNAs with Alcohol-associated Liver Diseases. AASLD Meeting 2024, San Diego, CA (Poster Presentation).
- Bayatpour S, Zeng J, Way G, Lu HJ, Yai YL, Zhao D, Wang X, Aseem SO, Sanyal AJ, Fan J, Hylemon PB and Zhou H. Dysregulated Circular RNAs and Their Implications in the Pathogenesis of Primary Sclerosing Cholangitis. AASLD Meeting 2024, San Diego, CA (Poster Presentation).
- Aseem SO, Way G, Zhao D, Hylemon PB, Idowu M, Sanyal AJ and Zhou H. Spatial Transcriptomic Analysis of Historical Fixed Primary Sclerosing Cholangitis Livers Reveals Distinct Signaling Pathways. AASLD Meeting 2024, San Diego, CA (Poster Presentation).
- Way G, Lu HJ, Zhao D, Tai YL, Wang X, Su L, Aseem SO, Sanyal AJ, Hylemon PB and Zhou H. snRNAseq and GeoMx® spatial transcriptomics elucidate the cell-type-specific roles of lncRNA H19 in cholestatic liver injury. AASLD Meeting 2024, San Diego, CA (Oral Presentation and AASLD Early Career Investigator Award in Basic Science Research).
- Zeng J, Zhao D, Way G, Lu HJ, Tai YL, Aseem SO, Wu N, Wang X, Gurley EC, Sanyal AJ, Hylemon PH, Fan J and Zhou H. Identification of Novel Circulating Exosomal miRNAs and mRNA Networks Contributing to the Progression from MASH to HCC. AASLD Meeting 2024, San Diego, CA (Poster Presentation).



Presentations

- Zeng J, Zhao D, Zhou H and Bajaj JS. Duodenal Mitochondrial Oxidative Phosphorylation Worsens with Disease Progression and is Ameliorated After FMT in Patients with Cirrhosis. AASLD Meeting 2024, San Diego, CA (Poster Presentation).
- Hawkes CG., Miller DP. Exploration of Host-Pathogen Interactions in the Understudied Periopathogen *Selenomonas sputigena*. Mid-Atlantic Microbial Pathogenesis Meeting. Oral Presentation.
- Hinson AN, Miller DP. Role of AtcS histidine kinase in *Treponema denticola* virulence. Mid-Atlantic Microbial Pathogenesis Meeting. Poster Presentation.
- Abdallah D., Miller DP. The distinctive two-component system, AtcSR, plays a crucial role in controlling the rare glycine metabolism of *Treponema denticola*. Mid-Atlantic Microbial Pathogenesis Meeting. Poster Presentation.
- Moylan AD., Miller DP. Elucidation of cyclic-di-AMP's regulatory role in osmoregulation and glycine metabolism in the periodontal pathobiont *Treponema denticola*. Mid-Atlantic Microbial Pathogenesis Meeting. Poster Presentation.

