

RETRO-ACTIVE NEWS

Newsletter of the Center for Retrovirus Research
at The Ohio State University

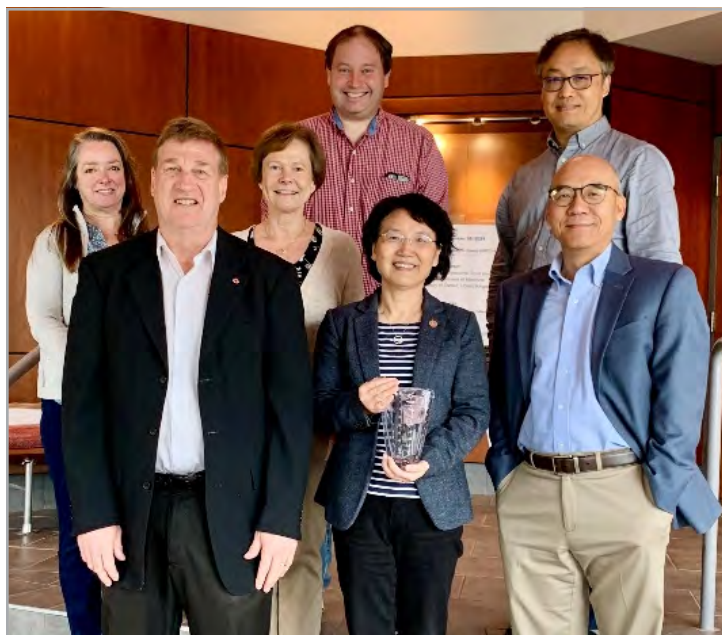
2024 Highlights

The Center for Retrovirus Research 2024 Distinguished Research Career Award

Dr. Peijun Zhang was selected by the Center for Retrovirus Research of The Ohio State University to receive the 2024 Distinguished Research Career Award in recognition of her seminal contributions to the field of retroviruses, including our understanding of structure/function of the HIV capsid and the advancement of in-situ structural biology techniques.

Dr. Peijun Zhang is a Professor of Structural Biology in the Nuffield Department of Medicine at the University of Oxford and the founding director of eBIC (the UK National Electron Bio-imaging Centre) at the Diamond Light Source. She completed her undergraduate studies in Electrical Engineering and her Master's in Condensed Matter Physics at Nanjing University, China. Dr. Zhang earned her Ph.D. in Molecular Physiology and Biophysics from the University of Virginia. Before joining the University of Oxford and Diamond Light Source in 2016, Dr. Zhang was a post-doctoral fellow and staff scientist at the National Cancer Institute, National Institutes of Health. She began her faculty career in the Department of Structural Biology at the University of Pittsburgh in 2006.

Dr. Zhang has made outstanding contributions in two key areas: the advancement of in-situ structural biology techniques and the understanding of human virus infections, particularly HIV-1. Her pioneering work on the HIV-1 capsid structure began with her high-resolution characterization of HIV-1 capsid assemblies using a hybrid cryoEM and NMR approach (2009). This research unveiled a novel inter-molecular interface critical for capsid function and a key docking site for host factors. Using an innovative combination of cryoEM, cryoET, and all-atom MD simulation, Dr. Zhang



Dr. Peijun Zhang holds the 2024 Distinguished Career Award crystal.

developed the complete atomic model of the native HIV-1 capsid (2013). This ground-breaking 4-million-atom structure has provided a vital platform for studying HIV-1 capsid function, host cell interactions, and developing therapeutic strategies to treat and prevent HIV-1 infection. Her subsequent studies elucidated how the host factor cyclophilin A and the small molecule PF74 (a Lenacapavir precursor) interact with the HIV-1 capsid lattice, affecting HIV-1 infectivity (2016, 2020). Most recently, her work has highlighted the interplay between the capsid and host restriction factors, such as MxB and Trim 5 α , and the role of the small molecule IP6 (2017, 2021).

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2024 Distinguished Research Career Award - continued

Dr. Zhang has been a trailblazer in developing novel methods for in-situ structural biology, including correlative microscopy to study rare and dynamic processes such as HIV-1 infection. Her development of in-cell techniques has enabled the capture of authentic cellular processes and virus assembly intermediates, with notable applications to SARS-CoV-2 infection, cytopathy, and COVID-19 vaccines (2021). Her innovative approaches are leading a new era in in-situ structural biology, exemplified by her recent work on resolving in-situ chromatin fiber and nucleosome structures in intact native T-lymphocytes.

A prolific author, Dr. Zhang has published extensively in leading scientific journals and has received numerous accolades, including the Senior Vice Chancellor's

Award from the University of Pittsburgh (2007), the Carnegie Science Emerging Female Scientist Award (2014), and the Wellcome Trust Investigator Award (2017). In 2024, she was elected as a member of European Molecular Biology Organization. As a dedicated mentor, Dr. Zhang has trained over 30 graduate students and postdoctoral fellows, many of whom now hold independent positions in academia and industry.

Dr. Zhang's distinguished award lecture was entitled "In situ structural biology of virus infection and vaccine". Her visit was sponsored by the Center for Retrovirus Research, Department of Veterinary Biosciences, Infectious Diseases Institute, and the Comprehensive Cancer Center.

Selected Publications by Dr. Zhang

- Byeon IL, Meng X, Jung J, Zhao G, Yang R, Shi J, Ahn J, Concel J, Aiken C, **Zhang P**, Gronenborn AM (2009). Structural Convergence between CryoEM and NMR Reveals Novel Intersubunit Interactions Critical for HIV-1 Capsid Assembly and Function. **Cell**. 139: 780–790.
- Zhao G, Perilla JR, Yufenyuy EL, Meng X, Chen B, Ning J, Ahn J, Gronenborn AM, Schulten K, Aiken C, **Zhang P** (2013). Mature HIV-1 Capsid Structure by Cryo-electron Microscopy and All-atom Molecular Dynamics. **Nature**. 497(7451):643-6.
- Liu C, Perilla JR, Ning J, Lu M, Hou G, Ramalho R, Bedwell G, Byeon I, Ahn J, Gronenborn AM, Prevelige P, Rousso I, Aiken, C, Polenova T, Schulten K, **Zhang P** (2016). Cyclophilin A Stabilizes the HIV-1 Capsid through a Novel Non-canonical Binding Site. **Nat Commun**. 7: 10714.
- Ning J, Erdemci-Tandogan G, Yufenyuy EL, Wagner J, Himes BA, Zhao G, Aiken C, Zandi R, **Zhang P** (2016). In vitro Protease Cleavage and Computer Simulations Reveal the HIV-1 Capsid Maturation Pathway. **Nat Commun**. 7:13689.
- Alvarez FJD, He S, Perilla JR, Jang S, Schulten K, Engelman AN, Scheres SHW, **Zhang P** (2017). CryoEM structure of MxB reveals a novel oligomerization interface critical for HIV restriction. **Sci Adv**. 3(9):e1701264.
- Himes BA and **Zhang P** (2018). emClarity: Software for High Resolution Cryo-electron Tomography and Sub-tomogram Averaging. **Nat Methods**. 15(11):955-961.
- Ni T, Gerard S, Zhao G, Dent K, Ning J, Zhou J, Shi J, Anderson-Daniels J, Li W, Jang S, Engelman AN, Aiken C, **Zhang P** (2020). Intrinsic curvature of HIV-1 CA hexamer underlies capsid topology and interaction with cyclophilin A. **Nat Struct Mol Biol**. 27(9):855-862.
- Mendonça L, Howe A, Gilchrist JB, Sheng Y, Sun D, Knight ML, Zanetti-Domingues LC, Bateman B, Krebs AS, Chen L, Radecke J, Li VD, Ni T, Kounatidis I, Koronfel MA, Szykiewicz M, Harkiolaki M, Martin-Fernandez ML, James W, **Zhang P** (2021). Correlative multi-scale cryo-imaging unveils SARS-CoV-2 assembly and egress. **Nat Commun**. 12(1):4629.
- Ni T, Zhu Y, Yang Z, Xu C, Chaban Y, Nesterova T, Ning J, Böcking T, Parker MW, Monnie C, Ahn J, Perilla JR, **Zhang P** (2021). Structure of native HIV-1 cores and their interactions with IP6 and CypA. **Sci Adv**. 7(47):eabj5715.
- Krebs AS, Liu HF, Zhou Y, Rey JS, Levintov L, Shen J, Howe A, Perilla JR, Bartesaghi A, **Zhang P** (2023). Molecular architecture and conservation of an immature human endogenous retrovirus. **Nat Commun**. 14(1):5149.
- Hou Z, Nightingale F, Zhu Y, MacGregor-Chatwin C, **Zhang P** (2023). Structure of native chromatin fibres revealed by Cryo-ET in situ. **Nat Commun**. 10.1038/s41467-023-42072-1.

Shan-Lu Liu Elected President of American Society for Virology



Shan-Lu Liu, MD, PhD, Center Associate Director and Co-director of the Infectious Diseases Institute Viruses and Emerging Pathogens Thematic Program of Ohio State, has been elected president of the American Society for Virology (ASV).

ASV is the largest virology-focused scientific organization and is committed to developing and expanding a diverse virology community to

promote research and education on viruses. In the role of president, Dr. Liu will serve as the chief executive officer and chair of the ASV council and will preside at ASV society and council meetings. Dr. Liu will serve as president-elect July 1, 2024 - June 30, 2025, and will serve as president July 1, 2025 - June 30, 2026.

In addition to this prestigious appointment, Dr. Liu was the chair and host director for the 2024 ASV Annual Meeting which was successfully held June 24-28, 2024, at the Greater Columbus Convention Center.

Jian Zhu is awarded a \$840,000 NIH R56 award to study antagonizing host immune escape mechanism to eliminate HIV-1 reservoirs



Jian Zhu, PhD, Professor of Pathology in the College of Medicine has been awarded a NIH R56 titled “Antagonize Host Survival and Immune Escape Mechanisms for Elimination of HIV Viral Reservoirs”.

The Zhu lab studies epigenetic and epi-transcriptional aspects

in viral infections and antiviral immune responses, particularly for HIV-1. Their recent studies have shown that HIV Nef plays a role in enhancing SUMOylation of polo-like kinase 1 (PLK1) and leading to its nuclear accumulation. Furthermore, depletion or inhibition of PLK1 promotes cell death of HIV-infected CD4+ T cells and facilitates elimination of HIV reservoirs.

In this new project, they aim to investigate the Nef-PLK1 axis, testing the hypothesis that PLK1 is Nef’s

host effector to execute its key function by promoting cell survival and immune escape, thus supporting HIV persistent infection. They will investigate the molecular mechanism by which HIV Nef activates PLK1 protein SUMOylation and its nuclear accumulation.

They will also dissect the signaling transduction pathway of PLK1 that promotes survival and immune escape of HIV reservoir cells. In addition, they will test the potential of small-molecule inhibitors targeting PLK1 as the reagents to eliminate HIV reservoirs. Given that simian immunodeficiency virus (SIV) infection of macaques closely resembles HIV infection of humans, serving as the best available animal model for studying progression and pathogenesis of AIDS, the Zhu lab will determine whether the function of Nef-PLK1 axis is conserved in SIV infection and evaluate whether PLK1 inhibition is potent to eliminate SIV reservoirs.

Namal Liyanage is awarded an R21 grant from FIC/NIH to study “HIV-Associated Non-Communicable Diseases in Low- and Middle-Income Countries (LMICs)”



Namal Liyanage, PhD, Assistant Professor in Microbial Infection and Immunity and Veterinary Biosciences, was recently awarded an R21 grant from FIC/NIH for the project entitled, “Understanding the Mechanism of HIV Associated with Diabetic Complications in Low- and Middle-Income Countries (LMICs)”.

This project aims to investigate the immunopathological basis of NK cell-mediated pancreatic insufficiency, which may lead to future occurrences of diabetes mellitus (DM) among people living with HIV (PLWH) in LMICs. Additionally, it will explore HIV/antiretroviral

therapy-induced endoplasmic reticulum (ER) stress as a contributory pathophysiological phenomenon, rendering pancreatic tissue more susceptible to immune-mediated destruction in this population. The study will also evaluate the potential of low-cost, ER stress-inhibiting medications to mitigate this process.

This project will foster international research collaborations, strengthen HIV-related research infrastructure in LMICs, and lay the groundwork for future partnerships between diverse research settings. By building a robust foundation for scientific exchange, Dr. Liyanage’s work seeks to create a lasting impact in understanding and mitigating the comorbidities associated with HIV in LMICs.

Selected Grants and Recognitions

NIH 1R56AI181631-01A1 (**Jian Zhu**) Antagonize Host Survival and Immune Escape Mechanisms for Elimination of HIV Viral Reservoirs (2024-2026)

NIH 1R21TW012876 (**Namal Liyanage**) Understanding the Mechanism of HIV Associated with Diabetic Complications in Low- and Middle-Income Country (2024-2026)

NIH 3R35GM141880-04S1 (**Karin Musier-Forsyth**) Equipment Supplement for Analytical Ultracentrifuge (2024-2025)

NIH R35 GM141880 (**Karin Musier-Forsyth**) Diversity Supplement for Parent MIRA (2024-2027)

Ohio State-Comprehensive Cancer Center Pelotonia Idea Award (**Amanda Panfil**, Co-I: **Stefan Niewiesk**) Development of an HTLV-1 mRNA vaccine (2025-2027).

Ohio State President's Research Excellence (PRE)-Catalyst Award (**Karin Musier-Forsyth**, MPI, W. Miles, J. Fuchs, R. Pollock (PI:Peixuan Guo), cancer science and engineering, immunology and therapeutics (2024-2025)

Ohio State College of Veterinary Medicine Canine Fund (**Sanggu Kim**) Developing an Advanced, Safety-Enhanced Immunotoxin Targeting Canine T Cells (2024-2026)

Ohio State CRB Seed Grant (**Amanda Panfil**, **Sanggu Kim**) Post-transcriptional reprogramming in human T-cell leukemia virus type 1 (HTLV-1) pathogenesis (2024-2025)

Ohio State Enterprise for Research, Innovation and Knowledge President's Research Excellence Award (**Cody Warren** / Andy Bowman / Mark Peeples) Integrating field and laboratory studies for influenza virus zoonotic risk assessment (2024)

St. Jude Children's Research Hospital (Andy Bowman, **Cody Warren**, Scott Kenney, Justin Kieffer, Greg Habing) H5N1 Challenge of Lactating Dairy Cows (2024-2025)

Karin Musier-Forsyth, The 2024 Carlos F. Barbas III '85 Alumni Award, Eckerd College, St. Petersburg, Florida

Karin Musier-Forsyth, organizing committee, 13th International Retroviral Symposium

Karin Musier-Forsyth, keynote speaker, 2025 Cold Spring Harbor Retrovirus Meeting (together with Michael Emerman and David Baltimore)

Kristine Yoder, Treasurer-Elect, World Society for Virology

Amanda Panfil, International Retrovirology Association Young Investigator Award

Shan-Lu Liu, Elected to Subcommittee of Election, American Academy of Microbiology (AAM)

Patrick Green, Invited keynote for the 34th Retroviral Pathogenesis Workshop. October 6-9, 2025. Tübingen, Germany

Shan-Lu Liu, Co-chair, 2024 International Conference on Life Sciences

Upcoming Meetings

Cold Spring Harbor Retrovirus Meeting. May 19-24, 2025. Cold Spring Harbor, New York.
meetings.cshl.edu/meetings.aspx?meet=RETRO

44th American Society for Virology Annual Meeting. July 14 - 17, 2025 Palais des congrès de Montréal Montréal, Québec, Canada. asv.org/asv2025/

HTLV European Retrovirus Network Conference. July 4-6, 2025. Erlangen, Germany.
virologie.uk-erlangen.de/en/htlv-european-research-network-hern-conference-2025/

34th Retroviral Pathogenesis Workshop. October 6-9, 2025. Tübingen, Germany.
evis.events/event/469/

XVII International Symposium on HTLV in Brazil. October 27-29, 2025. São Luís, Maranhão, Brazil

13th International Retroviral Symposium: Assembly, Maturation and Uncoating. Sept 16-19, 2025, Prague, Czech Republic. ramm2025prague.cz/

3rd international conference, The World Society for Virology. May 6-8, 2025, Kuala Lumpur, Malaysia.
wsv-conferences.com/

Graduate Student & Post-doc Awards, Career Moves & Positions

Christina Sanders (Cody Warren lab) awarded the 2024 Greater Ohio Valley Women in Defense (WID) Science, Technology, Engineering, and Mathematics (STEM) Scholarship

Grace Crowe (Karin Musier-Forsyth lab), NIH Cellular and Molecular Biochemical Sciences T32 Fellowship

Kyle Ernzen (Amanda Panfil lab), Ohio State Comprehensive Cancer Center Pelotonia 2 year Graduate Fellowship, ASV Travel Award

Emily King (Amanda Panfil lab), ASV Travel Award, 2024 ACVP Young Investigator Award

Rocio Zaldivar (Amanda Panfil lab): 2024 College of Veterinary Medicine Research Day Poster Award, ASV Travel Award

Karsyn McClain (Amanda Panfil lab) 2024 College of Veterinary Medicine Research Day Poster Award

Julia Faraone (Shan-Lu Liu lab) received the C. Glenn Barber Fellowship from the College of Veterinary Medicine, ASV Travel Award

Pei Li (Shan-Lu Liu lab) received ASV Travel Award

Panke Qu (Shan-Lu Liu lab) moved to Columbia University as postdoctoral fellow with Dr. Ryan Gaudet.

Mario Alles (Namal Liyanage lab) has accepted an Assistant Professor position in the Department of Microbiology and Immunology at the Faculty of Medicine, University of Colombo, Sri Lanka.

Manuja Gunasena (Namal Liyanage lab) joined the NIH as a postdoctoral fellow with Pamela A. Guerrerio at NIAID

Mario Alles (Namal Liyanage lab) received new investigator scholarship award for Conference on Retroviruses and Opportunistic Infections (CROI), HIV Vaccine Trial Network (HVTN): Translational HIV Vaccine Early-Stage Investigator award

Varshini Chennupati (Namal Liyanage lab) received third Place in Denman Undergraduate Research Forum Infectious Disease Institute Award

Christina Isckarus (Namal Liyanage lab) received first Place in Denman Undergraduate Research Forum

Jacqueline Stewart (Namal Liyanage lab) received Donald C. Cox Award for research excellence - The Ohio Branch of the American Society for Microbiology

Jordan Parrish (Namal Liyanage lab) received Ohio State Infectious Disease Institute Trainee Transformative Research Grant

2024 PhD Graduates

Panke Qu (Shan-Lu Liu lab) received their PhD

Zhenyu Wu (Jian Zhu lab) received their PhD

Sarah Golconda (Sanggu Kim lab) received their PhD

Gabby Lee (Sanggu Kim lab) received their PhD

Manuja Gunasena (Namal Liyanage lab) received their PhD.

Jacqueline Stewart (Namal Liyanage lab) received their MSc in Immunology

2024 Passage of Candidacy Exam

Tasnin Nila (Musier-Forsyth lab) successfully passed PhD candidacy

Cecilia Long (Musier-Forsyth lab) successfully passed PhD candidacy

Rocio Zaldivar (Amanda Panfil lab) successfully passed PhD candidacy

PhD Graduate Student Highlight – Panke Qu (Shan-Lu Liu's lab)



Panke Qu's thesis work was focused on host factors that modulate virus infection, as well as the impact of SARS-CoV-2 evolution and variants of concern on neutralizing antibody responses induced by COVID-19 mRNA vaccine and/or natural infection. His work has provided critical insights into virus-host interaction and the mechanisms of SARS-CoV-2 immune evasion and immune imprinting

with regards to COVID-19 vaccine development.

During his PhD training (2019-2024), Qu has published **20 papers**, including **11 first or co-first author papers**. He was also a recipient of the C. Glenn Barber Fund Fellowship from the College of Veterinary Medicine. After graduation, Qu took a postdoc position with Ryan Gaudet at Columbia University in New York City. Congratulations!

Selected Publications - 1st Author

- Qu P**, Xu K, Faraone JN, Goodarzi N, Zheng YM, Carlin C, Bednash JS, Horowitz JC, Mallampalli RK, Saif LJ, Oltz EM, Jones D, Gumina RJ, Liu SL. Immune evasion, infectivity, and fusogenicity of SARS-CoV-2 BA.2.86 and FLiP variants. **Cell**. 2024 Feb 1;187(3):585-595.e6. doi: 10.1016/j.cell.2023.12.026.
- Qu P**, Faraone JN, Evans JP, Zheng YM, Carlin C, Anghelina M, Stevens P, Fernandez S, Jones D, Panchal AR, Saif LJ, Oltz EM, Zhang B, Zhou T, Xu K, Gumina RJ, Liu SL. Enhanced evasion of neutralizing antibody response by Omicron XBB.1.5, CH.1.1, and CA.3.1 variants. **Cell Rep**. 2023 42, 112443. 10.1016/j.celrep.2023.112443.
- Qu P**, Evans JP, Kurhade C, Zeng C, Zheng YM, Xu K, Shi PY, Xie X, Liu SL. Determinants and Mechanisms of the Low Fusogenicity and High Dependence on Endosomal Entry of Omicron Subvariants. **mBio**. 2023 14, e0317622. 10.1128/mbio.03176-22.
- Qu P**, Evans JP, Faraone, JN, Zheng YM, Carlin C, Anghelina M, Stevens P, Fernandez S, Jones D, Lozanski G, Panchal A, Saif LJ, Oltz EM, Xu K, Gumina RJ, Liu SL. Enhanced neutralization resistance of SARS-CoV-2 Omicron subvariants BQ.1, BQ.1.1, BA.4.6, BF.7, and BA.2.75.2. **Cell Host Microbe**. 2023 Jan 11;31(1):9-17.e3. doi: 10.1016/j.chom. 2022.11.012.
- Qu P**, Evans JP, Zheng YM, Carlin C, Saif LJ, Oltz EM, Xu K, Gumina RJ, Liu SL. Evasion of neutralizing antibody responses by the SARS-CoV-2 BA.2.75 variant. **Cell Host Microbe**. 2022 30, 1518-1526 e1514. 10.1016/j.chom.2022.09.015.
- Qu P**, Faraone J, Evans JP, Zou X, Zheng YM, Carlin C, Bednash JS, Lozanski G, Mallampalli RK, Saif LJ, Oltz EM, Mohler PJ, Gumina RJ, Liu SL. Neutralization of the SARS-CoV-2 Omicron BA.4/5 and BA.2.12.1 Subvariants. **N Engl J Med**. 2022 386, 2526-2528. 10.1056/NEJMc2206725.
- Qu P**, Faraone JN, Evans JP, Zheng YM, Yu L, Ma Q, Carlin C, Lozanski G, Saif LJ, Oltz EM, Gumina RJ, Liu SL. Durability of Booster mRNA Vaccine against SARS-CoV-2 BA.2.12.1, BA.4, and BA.5 Subvariants. **N Engl J Med**. 2022 387, 1329-1331. 10.1056/NEJMc2210546.
- Evans JP, Zeng C, **Qu P**, Faraone J, Zheng YM, Carlin C, Bednash JS, Zhou T, Lozanski G, Mallampalli R, Saif LJ, Oltz EM, Mohler P, Xu K, Gumina RJ, Liu SL. Neutralization of SARS-CoV-2 Omicron Sub-lineages BA.1, BA.1.1 and BA.2. **Cell Host & Microbe**. 2022. S1931-3128(22)00220-7.
- Faraone JN, **Qu P**, Goodarzi N, Zheng YM, Carlin C, Saif LJ, Oltz EM, Xu K, Jones D, Gumina RJ, Liu SL. Immune evasion and membrane fusion of SARS-CoV-2 XBB subvariants EG.5.1 and XBB.2.3. **Emerg Microbes Infect**. 2023 12, 2270069. 10.1080/22221751.2023.2270069.
- Faraone JN, **Qu P**, Zheng YM, Carlin C, Jones D, Panchal AR, Saif LJ, Oltz EM, Gumina RJ, Liu SL. Continued evasion of neutralizing antibody response by Omicron XBB.1.16. **Cell Rep**. 2023 42, 113193. 10.1016/j.celrep.2023.113193.
- Faraone JN, **Qu P**, Evans JP, Zheng YM, Carlin C, Anghelina M, Stevens P, Fernandez S, Jones D, Lozanski G, G, Panchal A, Saif LJ, Oltz EM, Gumina RJ, Liu SL Neutralization escape of Omicron XBB, BR.2, and BA.2.3.20 subvariants. **Cell Rep Med**. 2023 4, 101049. 10.1016/j.xcrm.2023.101049.

Selected Publications

- Alles M, Gunasena M, Zia T, D'Mello A, Bhattarai S, Mulhern W, Terry L, Scherger T, Wijeratne S, Singh S, Wijeratne A, Kasturiratna D, Tettelin H, Weyand N, **Liyanage NPM**. Unveiling the Immune Dynamics of *Neisseria* Persistent Oral Colonization. **Infect Immun**. 2024 May 30; e0004824. doi: 10.1128/iai.00048-24. PMID: 38814083.
- Alwine J, Goodrum F, Banfield B, Bloom D, Britt WJ, Broadbent AJ, Campos SK, Casadevall A, Chan GC, Cliffe AR, Dermody T, Duprex P, Enquist LW, Frueh K, Geballe AP, Gaglia M, Goldstein S, Greninger AL, Gronvall GK, Jung JU, Kamil JP, Lakdawala S, **Liu SL**, Luftig M, Moore JP, Moscona A, Neuman BW, Nikolich JŽ, O'Connor C, Pekosz A, Permar S, Pfeiffer J, Purdy J, Rasmussen A, Semler B, Smith GA, Stein DA, Van Doorslaer K, Weller SK, Whelan SPJ, Yurochko A. The Harms of Promoting the Lab Leak Hypothesis for SARS-CoV-2 Origins without Evidence. **J Virol**. 2024 Sep 17;98(9):e0124024. doi: 10.1128/jvi.01240-24.
- Baek A, Lee GE, Golconda S, Rayhan A, Manganaris A, Chen S, Tirumuru N, Yu H, Kim S, Kimmel C, Zablocki O, Sullivan M, Addepalli B, Wu L, **Kim K**. Single-molecule analysis of full-length HIV-1 RNAs reveals functional redundancy of m6As. **Nature Microbiology**, 2024 May;9(5):1340-1355. PMID: PMC11087264.
- Baek A, Rayhan A, Lee GE, Golconda S, Yu H, **Kim S**, Limbach PA, Addepalli B, Kim S. Mapping m6A Sites on HIV-1 RNA Using Oligonucleotide LC-MS/MS. **Methods Protoc**. 2024 Jan 10;7(1). PubMed PMID: 38251200; PubMed Central PMCID: PMC10801558. doi: 10.3390/mps7010007.
- Cheng Z, Islam S, Kanlong JG, Sheppard M, Seo H, Nikolaitchik OA, Kears MG, Pathak VK, **Musier-Forsyth K**, Hu W-S. Translation of HIV-1 Unspliced RNA Is Regulated by 5' Untranslated Region Structure. **J Virol**. 2024 Oct 22;98(10):e0116024. doi: 10.1128/jvi.01160-24.
- Faraone JN, Wang X, Qu P, Zheng YM, Vincent E, Xu H, **Liu SL**. Neutralizing Antibody Response to Bivalent mRNA Vaccine Against SARS-CoV-2 XBB Variants in SIV-Infected Rhesus Macaques. **J Med Virol**. 2024 Mar;96(3):e29520. doi: 10.1002/jmv.29520.
- Gunasena M, Alles M, Wijewantha Y, Mulhern W, Bowman E, Gabriel J, Kettelhut A, Kumar A, Weragalaarachchi K, Kasturiratna D, Horowitz JC, Scrape S, Pannu SR, **Liu SL**, Vilgelm A, Wijeratne S, Bednash JS, Demberg T, Funderburg NT, **Liyanage NPM**. Synergistic Role of NK Cells and Monocytes in Promoting Atherogenesis in Severe COVID-19 Patients. **Arterioscler Thromb Vasc Biol**. 2024 Oct;44(10): e243-e261. doi: 10.1161/ATVBAHA.124.321085.
- Gunasena M, Alles M, Demberg T, Mulhern W, **Liyanage NPM**. BCG immunization induced KLRG1+ NK cells show memory-like responses to mycobacterial and HIV antigens. **Cell Immunol**. 2024 Sep 2;403-404:104865. doi: 10.1016/j.cellimm.2024.104865.
- Haynes J, Joshi A, **Larue RC**, Eisenmann ED, Govindarajan R. Nucleoside Reverse Transcriptase Inhibitor (NRTI)-Induced Neuropathy and Mitochondrial Toxicity: Limitations of the Poly- γ Hypothesis and the Potential Roles of Autophagy and Drug Transport. **Pharmaceutics**. 2024 Dec 13;16(12):1592.
- Kasler DR, Ali MM, Ramji N, Malone-Povolny M, O'Neil J, Sastry SK, **Kwiek J**, Yousef AE. A pilot-scale aerobiology chamber to investigate bioaerosol control agents: Factors affecting longevity of aerosolized pathogenic and nonpathogenic bacteria. **Aerosol Science and Technology**. Dec 2024. DOI:10.1080/02786826.2024.2432962.
- Ma MT, Jiang Q, Chen C-H, Badeti S, Wang X, Zeng C, Evans D, Bodnar B, Marras SAE, Tyagi S, Bharaj P, Yehia G, Romanienko P, Hu W, **Liu SL**, Shi L, Liu D. S309-CAR-NK Cells Bind the Omicron Variants in vitro and Reduce SARS-CoV-2 Viral Loads in Humanized ACE2-NSG Mice. **J Virol**. 2024 Jun 13;98(6):e0003824. doi: 10.1128/jvi.00038-24. Epub 2024 May 20.

Selected Publications - continued

- Musier-Forsyth K, Rein A, Hu WS. Transcription Start Site Choice Regulates HIV-1 RNA Conformation and Function. **Current Opinion in Structural Biology**. 2024 Aug 14;88:102896
- Li P, Faraone JN, Hsu CC, Chamblee M, Zheng YM, Carlin C, Bednash JS, Horowitz JC, Mallampalli RK, Saif LJ, Oltz EM, Jones D, Li J, Gumina RJ, Xu K, **Liu SL**. Characteristics of JN.1-derived SARS-CoV-2 Subvariants SLip, FLiRT, and KP.2 in Neutralization Escape, Infectivity and Membrane Fusion. **Cell Reps**. 2024 Aug 27;43(8):114520. doi: 10.1016/j.celrep.2024.114520.
- Li P, Liu Y, Faraone JN, Hsu CC, Chamblee M, Zheng Y-M, Carlin C, Bednash JS, Horowitz JC, Mallampalli RK, Saif LJ, Oltz EM, Jones D, Li J, Gumina RJ, **Liu SL**. Distinct Patterns of SARS-CoV-2 BA.2.87.1 and JN.1 Variants in Immune Evasion, Antigenicity and Cell-Cell Fusion. **mBio**. 2024 May 8;15(5):e0075124. doi: 10.1128/mbio.00751-24.
- Li TW, Park Y, Watters EG, Wang X, Zhou D, Fiches GN, Wu Z, Badley AD, Sacha JB, Ho WZ, Santoso NG, Qi J, **Zhu J**. KDM5A/B contribute to HIV-1 latent infection and survival of HIV-1 infected cells. **Antiviral Res**. 2024. 228:105947.
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