

NICHOLAS WOHLGEMUTH

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1747 Evelyn Ave
Memphis, TN 38114

POSITIONS

Rhodes College, Memphis, TN 2021 to Present

Visiting Assistant Professor, Biology Department

- Teaching: Histology (with Lab), General Biology Lab, Virology/Immunology
- Research: Establishing independent research laboratory focusing on virus discovery and viral genome sequence analysis

St. Jude Children's Research Hospital, Memphis, TN 2017 to 2021

Postdoctoral Research Associate, Department of Infectious Diseases

Advisor: Dr. Stacey Schultz-Cherry, PhD

- Development of serological assays for detecting prior SARS-CoV-2 infection
- Development of novel tissue culture models for studying influenza virus pathogenesis
- Assessing cardiovascular health following influenza virus infection

Johns Hopkins Bloomberg School of Public Health, Baltimore, MD 2012 to 2017

Ph.D. Candidate, Molecular Microbiology and Immunology

Advisor: Dr. Andrew Pekosz, PhD

- Used molecular and cell biology technique to:
 - Demonstrate the critical role influenza virus protein M2 localization plays in infectious virus particle assembly.
 - Evaluated live-attenuated influenza vaccine virus mutations in M2 for effects on virus replication and innate immune responses

Johns Hopkins School of Medicine, Baltimore, MD 2011 to 2012

Research Technologist, Stanley Division of Developmental Neurovirology

- Virus culturing and titering
- Development of a novel serological assay for detecting environmental exposure to algal viruses

University of Nebraska-Lincoln, Lincoln, NE 2008 to 2011

Undergraduate Research Assistant

Advisor: James L. Van Etten

- Honors Thesis: "Analysis of Chlorella NC64A and PBCV-1 genomes for secreted proteins using computer-based prediction algorithms and progress towards isolation" of secreted proteins in Chlorella NC64A Skill/Accomplishment/Project
- Undergraduate Creative Activities and Research Experience (UCARE) Award Winner 2008-2009 and 2009-2010 Academic Years

EDUCATION

- PhD** Johns Hopkins University Bloomberg School of Public Health November 2017
Molecular Microbiology and Immunology
Dissertation: “Apical M2 protein is required for efficient influenza A virus replication”
Advisor: Dr. Andrew Pekosz, PhD
- BS** University of Nebraska-Lincoln, Biochemistry May 2011
Graduated with Highest Distinction
Minored in Psychology and Chemistry

HONORS AND AWARDS

- American Society for Virology Postdoctoral Registration Award** 2021
ALT-AIR Project Grant 2020
5,000€ prize. “The role of obesity in endothelial cell protection of epithelial cells during influenza virus infection”
- Rhodes College Teaching Fellowship** 2020
American Society for Virology ASVCares Award 2019 & 2020
CEIRS Training Award 2019
\$6,000 prize from the Centers for Excellence in Influenza Research and Surveillance
- American Society for Virology Postdoctoral Scholar Travel Award** 2019
Delta Omega, Public Health Honor Society Induction 2018
Johns Hopkins School of Public Health Student Assembly Conference Fund Award 2016
American Society for Virology Student Travel Award 2016
American Society for Cell Biology Graduate Student Travel Award 2015
Eleanor Bliss Honorary Fellowship, Johns Hopkins 2014
Dr. J. Harold Drudge Scholarship, Johns Hopkins 2013
Chancellor’ Scholar, University of Nebraska-Lincoln 2011
Phi Beta Kappa, Honor Society Induction 2011

TEACHING EXPERIENCE

- Rhodes College, Memphis, TN** January 2021 to May 2021
Adjunct Assistant Professor, Department of Biology
- Topics in Biomedical Sciences, an undergraduate course averaging 20 students per semester, sequentially team taught by four postdoctoral research associates
 - Designed 3.5 week course section – “COVID-19: Lessons in Microbial Disease Severity”
 - Created lectures, at home group assignments, and in class group assignments
 - Developed and graded quizzes, exams, and homework

Christian Brothers University, Memphis, TN April 2021 to May 2021
Guest Lecturer in Cell and Molecular Biology, “Cell Junctions and Extracellular Matrix”
and “Cell/Molecular Biology in the Lab”

- Designed and delivered lectures on several topics in cellular and molecular biology.

University of Puerto Rico, San Juan, PR February 2021
Guest Lecturer, “Cell Cycle and Cell Cycle Disruptions”

- Designed lecture on the cell cycle and how cancer and viruses can disrupt it

St. Jude Graduate School of Biomedical Sciences,
Memphis, TN October 2018 to August 2020

Lecturer, “Immunohistochemistry” and “Fluorescent Microscopy”

- Designed and presented lecture on fundamental biomedical research techniques

Teaching Assistant, “Viruses” and “Endoplasmic Reticulum and Secretory Pathway”

- Tutored students and hosted exam review sessions

Johns Hopkins University, Baltimore, MD August 2013 to October 2016

Lecturer, “Introduction to the Biomedical Sciences”

- Designed and presented lecture on human immune system
- Collaborated in production of assessments and grading

Teaching Assistant, “Fundamental Virology”, “Fundamentals of Fluor. And Confocal Microscopy” and “Public Health Perspectives on Research”

- Managed discussion forums, held office hours and review sessions, assisted in development and grading of assessments and exams

University of Nebraska-Lincoln, Lincoln, NE January 2011 – May 2011

Teaching Assistant, “Biochemistry Lab”

- Presented lectures at start of lab periods
- Graded lab reports and exams
- Demonstrated proper equipment use and prepared reagents for use in lab

PUBLICATIONS

*Co-first author

Manuscript Preprints:

Wohlgemuth N, Whitt K, Cherry S, Kirkpatrick Roubidoux E, Krammer F, McGargill M, Wolf J, Thomas PG, Whitt MA, Schultz-Cherry S. The right tool for the job: correlating SARS-CoV-2 specific ELISA responses and SARS-CoV-2 pseudotyped virus neutralization with authentic virus neutralization in convalescent plasma.

Published manuscripts:

Blumenkrantz D, Mehoke T, Shaw-Saliba K, Powell H, Wohlgemuth N, Liu H, Macias E, Evans J, Lewis M, Medina R, Hardick J, Sauer LM, Dugas A, DuVal A, Lane AP, Gaydos C, Rothman R, Thielen P, Pekosz A. Identification of H3N2 NA and PB1-F2

- genetic variants and their association with disease symptoms during the 2014-15 influenza season. *Virus Evol* 2021: <http://doi.org/10.1093/ve/veab047>.
- Nishimoto A*, Wohlgemuth N*, Rosch J, Schultz-Cherry S, Cortez V, Rowe HM. Transkingdom interactions important for the pathogenesis of human viruses. *JID* 2021: <https://doi.org/10.1093/infdis/jiaa735>.
- Boyd DF, E. Allen EK, Randolph AG, Guo XJ, Weng Y, Sanders CJ, Bajracharya R, Lee NK, Guy CS, Vogel P, Guan W, Li Y, Liu X, Novak T, Newhams MM, Fabrizio RP, Wohlgemuth N, Mourani PM, PALISI Pediatric Intensive Care Influenza (PICFLU) Investigators, Wight TN, Schultz-Cherry S, Cormier SA, Shaw-Saliba K, Pekosz A, Rothman RE, Chen K, Yang Z, Webby RJ, Zhong N, Crawford JC, Thomas PG. Exuberant fibroblast activity after severe respiratory infection compromises lung function in an ADAMTS-4-dependent manner. *Nature* 2020: <https://doi.org/10.1038/s41586-020-2877-5>.
- Meliopoulos V, Cherry S, Wohlgemuth N, Honce R, Barnard K, Gauger P, Davis C, Shult P, Parrish C, and Schultz-Cherry S. Primary swine respiratory epithelial cell lines for the efficient isolation and propagation of influenza A viruses. *Journal of Virology* 2020: <http://doi.org/10.1128/JVI.01091-20>.
- Martinez-Sobrido L, Blanco-Lobo P, Rodriguez L, Fitzgerald T, Zhang H, Nguyen P, Anderson CS, Holden-Wiltse J, Bandyopadhyay S, Nogales A, DeDiego ML, Wasik BR, Miller BL, Henry C, Wilson PC, Sangster MY, Treanor JJ, Topham DJ, Byrd-Leotis L, Steinhauer DA, Cummings RD, Luczo JM, Tompkins SM, Sakamoto K, Jones CA, Steel J, Lowen AC, Danzy S, Tao H, Fink AL, Klein SL, Wohlgemuth N, Fenstermacher KJ, El Najjar F, Pekosz A, Sauer L, Lewis MK, Shaw-Saliba K, Rothman RE, Liu ZY, Chen KF, Parrish CR, Voorhees IEH, Kawaoka Y, Neumann G, Chiba S, Fan S, Hatta M, Kong H, Zhong G, Wang G, Uccellini MB, García-Sastre A, Perez DR, Ferreri LM, Herfst S, Richard M, Fouchier R, Burke D, Pattinson D, Smith DJ, Meliopoulos V, Freiden P, Livingston B, Sharp B, Cherry S, Dib JC, Yang G, Russell CJ, Barman S, Webby RJ, Krauss S, Danner A, Woodard K, Peiris M, Perera RAPM, Chan MCW, Govorkova EA, Marathe BM, Pascua PNQ, Smith G, Li YT, Thomas PG, Schultz-Cherry S. Characterizing Emerging Canine H3 Influenza Viruses. *PLoS Pathogens* 2020: <https://doi.org/10.1371/journal.ppat.1008409>.
- Honce R, Karlsson EA, Wohlgemuth N, Estrada LD, Meliopoulos VA, Yao J, Schultz-Cherry S. Obesity-Related Microenvironment Promotes Emergence of Virulent Influenza Virus Strains. *mBio* 2020: <http://doi.org/10.1101/cshperspect.a038604>.
- Honce R, Wohlgemuth N, Meliopoulos VA, Short KR, Schultz-Cherry S. Influenza in High-Risk Hosts-Lessons Learned from Animal Models. *Cold Spring Harb Perspect Med* 2020: <http://doi.org/10.1128/mBio.03341-19>.
- Wohlgemuth N, Honce R, and Schultz-Cherry S. Astrovirus Evolution and Emergence. *Infect, Genet and Evol* 2019: <https://doi.org/10.1016/j.meegid.2019.01.009>.

Wohlgemuth N, Lane AP, Pekosz A. Influenza A virus M2 protein apical targeting is required for efficient virus replication. *Journal of Virology* 2018: <https://doi.org/10.1128/JVI.01425-18>.

Vermillion MS, Ursin RL, Kuok DIT, Vom Steeg LG, Wohlgemuth N, Hall OJ, Fink AL, Sasse E, Nelson A, Ndeh R, McGrath-Morrow S, Mitzner W, Chan MCW, Pekosz A, Klein SL. Production of amphiregulin and recovery from influenza is greater in males than females. *Biology of Sex Differences* 2017: <https://doi.org/10.1186/s13293-018-0184-8>.

Wohlgemuth N*, Ye E*, Fenstermacher K, Liu H, Lane A, Pekosz A. The M2 protein of live, attenuated influenza vaccine encodes a mutation that reduced virus replication in human nasal epithelial cells. *Vaccine* 2017: <https://doi.org/10.1016/j.vaccine.2017.10.018>.

Forero A*, Fenstermacher K*, Wohlgemuth N, Nishida A, Carter V, Smith EA, Peng X, Hayes M, Francis D, Treanor J, Morrison J, Klein SL, Lane A, Katze MG, Pekosz A. Evaluation of the innate immune responses to influenza and live-attenuated influenza vaccine infection in primary differentiated human nasal epithelial cells. *Vaccine* 2017: <https://doi.org/10.1016/j.vaccine.2017.09.058>.

Hall OJ, Limjunyawong N, Vermillion MS, Robinson DP, Wohlgemuth N, Pekosz A, Mitzner W, Klein SL. Progesterone-Based Therapy Protects Against Influenza by Promoting Lung Repair and Recovery in Females. *PLoS Pathogens* 2016: <http://dx.doi.org/10.1371/journal.ppat.1005840>.

PRESENTATIONS AND INVITED LECTURES

Virtual Oral Presentation at the Annual Meeting of the American Society for Virology. Title: Cardiovascular complications of influenza virus infection in obese hosts. Wohlgemuth N, Honce R, Livingston B, Schultz-Cherry S. July 2021.

Virtual Poster Presentation at the Centers of Excellence for Influenza Research and Surveillance Annual Meeting. Title: Cardiovascular complications of influenza virus infection in obese hosts. Wohlgemuth N, Estrada L, Honce R, Livingston B, and Schultz-Cherry S. December 2020.

Virtual Oral Presentation at the Annual Meeting of the American Society for Virology. Title: The role of endothelial cells in influenza pathogenesis. Wohlgemuth N, Honce R, Estrada L, Vazquez-Pagan AG, Brandi L, David DF, Allen EK, Crawford J, Thomas PG, Schultz-Cherry, S. June 2020.

Poster Presentation at Pediatric Research Day. Title: MicroRNA modulation of human astrovirus infection and epithelial-mesenchymal transition. Wohlgemuth N, Hargest V, Meliopoulos VA, Schultz-Cherry S. September 2019, Memphis, TN.

Poster presentation at Nebraska Center for Virology Annual Symposium in Virology. Title: The role of endothelial cells in influenza A virus infection and cardiac complications in obese hosts. Wohlgemuth N, Vasquez-Pagan A, Honce R, Livingston B, Schultz-Cherry S. September 2019, Lincoln, NE.

Oral Presentation at the Annual Meeting of the American Society for Virology. Title: The role of endothelial cells in influenza A virus infection of obese hosts. Wohlgemuth N, Vasquez-Pagan A, and Schultz-Cherry S. July 2019, Minneapolis, MN.

Poster Presentation at the Centers of Excellence for Influenza Research and Surveillance Annual Meeting. Title: The role of endothelial cells in influenza A virus infection and cardiac complications in obese hosts. Wohlgemuth N, Honce R, Livingston B, Vasquez-Pagan A, and Schultz-Cherry S. June 2019, Baltimore, MD.

Poster Presentation at Positive-Strand RNA Viruses Keystone Symposium. Title: MicroRNA Modulation of Human Astrovirus Infection and Epithelial-Mesenchymal Transition. Wohlgemuth N, Hargest V, Meliopoulos VA, and Schultz-Cherry S. June 2019, Killarney, Co. Kerry, Ireland.

Poster Presentation at the Centers of Excellence for Influenza Research and Surveillance Annual Meeting. Title: Lack of $\beta 6$ integrin changes the pulmonary microenvironment and protects obese mice from influenza virus infection. Wohlgemuth N, Meliopoulos VA, Livingston B, van de Velde LA, Honce R, and Schultz-Cherry S. July 2018, New York, NY.

Oral Presentation at the Annual Meeting of the American Society for Virology. Title: MicroRNA Modulation of Human Astrovirus Infection. Wohlgemuth N, Meliopoulos VA and Schultz-Cherry S. July 2018, College Park, MD.

Poster Presentation at the Centers of Excellence for Influenza Research and Surveillance Annual Meeting. Title: The M2 protein of live, attenuated influenza vaccine encodes a mutation that reduces replication in human nasal epithelial cells. Wohlgemuth N, Ye Y, Fenstermacher KJ, Liu H, Lane AP, and Pekosz A. July 2017, Atlanta, GA.

Oral Presentation at the Annual Meeting of the American Society for Virology. Title: The M2 Protein of Live, Attenuated Influenza Vaccine Encodes a Mutation that Reduces Replication in Human Nasal Epithelial Cells. Wohlgemuth N, Ye Y, Fenstermacher KJ, Liu H, Lane AP, and Pekosz A. June 2017, Madison, WI.

Poster Presentation at the Nebraska Center for Virology Annual Symposium in Virology. Title: Influenza A virus M2 protein apical targeting is required for efficient virus assembly and replication. Wohlgemuth N and Pekosz A. October 2016, Lincoln, NE.

Poster Presentation at the Centers of Excellence for Influenza Research and Surveillance Annual Meeting. Title: Influenza A virus M2 protein apical targeting is required for efficient virus assembly and replication. Wohlgemuth N and Pekosz A. June 2016, Memphis, TN.

Oral Presentation at the Annual Meeting of the American Society for Virology. Title: Influenza A virus M2 protein apical targeting is required for efficient virus assembly and replication. Wohlgemuth N and Pekosz A. June 2016, Blacksburg, VA.

Poster Presentation at the Annual Meeting of the American Society for Cell Biology. Title: Apical targeting of the influenza A virus M2 protein is required for virus production. Wohlgemuth N and Pekosz A. December 2015, San Deigo, CA.

Virtual Oral Presentation for the Centers for Excellence for Influenza Research and Surveillance. Title: Apical targeting of M2 is required for influenza A virus replication in polarized epithelial cells. Wohlgemuth N. September 2015.

Poster Presentation at UNL Undergraduate Research Conference. Title: Chlorella NC64A and PBCV-1 predicted secreted proteins and progress towards isolation of secreted proteins in Chlorella NC64A. Wohlgemuth N, Lane L, Van Etten JL. April 2011, Lincoln, NE.

Oral Presentation at ASM Missouri Valley Branch Meeting. Title: Analysis of Chlorella NC64A and PBCV-1 genomes for secreted proteins using computer-based prediction algorithms and progress towards isolation of secreted proteins. April 2011, Wohlgemuth N, Lane L, Van Etten JL. Lincoln, NE.

Poster Presentation at UNL Undergraduate Research Conference. Title: Proteins Secreted by Chlorella NC64A. April 2010, Wohlgemuth N, Lane L, Van Etten JL. Lincoln, NE.

PROFESSIONAL TRAINING

Programming for Biomedical Researchers

NIH, July 14-17, 2020

Best Practices in Curriculum Design, Teaching, and Assessment, American Society for Microbiology, January to April 2019

PROFESSIONAL AFFILIATIONS

American Society for Virology, 2013 to Present
American Society for Microbiology, 2013 to Present
American Society for the Advancement of Science, 2013 to Present
American Society for Cell Biology, 2014 to Present
Society for Molecular Biology and Evolution, 2014 to Present
American Heart Association, 2020 to Present

PROFESSIONAL AND ACADEMIC SERVICE

Postdoctoral Leadership Council, St. Jude Children's Research Hospital

Infectious Diseases Departmental Representative, 2019 to August 2021

Vice Chair of Communications, 2020 to Present

Johns Hopkins School of Public Health School-Wide Committees

Academics Ethics Board, 2015 to 2016

Honors and Awards Committee, 2014 to 2015

Johns Hopkins School of Public Health Student Assembly

Vice-President of Communications and External Affairs, 2015 to 2016

Vice-President of Honors and Awards, 2014 to 2015

Member-at-Large, 2013 to 2014

Peer-Reviewed Articles for:

- Journal of Microbiology and Biology Education
- Journal of Virology
- Journal of General Virology
- International Journal of Environmental Research and Public Health
- PLoS One

COMMUNITY OUTREACH

Baltimore Underground Science Society

Invited Speaker (online), 2021

Hosted SARS-CoV-2 and COVID-19 Information Session

Center for Disease Control and Prevention

Lyme Corps, Baltimore, MD, 2016

Clinical and public outreach for Lyme disease and other tick-borne diseases with a focus on prevention

Public Health United

Podcast guest host and part-time producer, Baltimore, MD, 2013 to 2016

Public health outreach and information resource

LANGUAGES

English: Native Language

Spanish: Novice speaker and reader

COMPUTER SKILLS

Programming: Perl, R, and Python

Applications: Website development, podcast production