April 26, 2023

CURRICULUM VITAE

Andrew Stanley Pekosz

PERSONAL DATA

Business Address	*Home Address*
W. Harry Feinstone Department of Molecular Microbiology and Immunology Johns Hopkins University Bloomberg School of Public Health 615 North Wolfe Street, Suite- E5132 Baltimore, MD 21205 Tel: (410) 502-9306 Fax: (410) 955-0105 Email: apekosz1@jhu.edu	7802 Ruxway Rd. Towson, MD 21204 Tel: (443) 275-1835

EDUCATION AND TRAINING

Degrees

B.S. in Biochemistry, 1990, Rutgers University, New Brunswick NJ.

Ph. D. in Molecular and Cell Biology (subspecialty Virology), 1997, University of Pennsylvania, Philadelphia, PA.

Postdoctoral Training

Molecular Virology, Howard Hughes Medical Institute, Northwestern University, Evanston, IL.

PROFESSIONAL EXPERIENCE

Joint appointment, Department of Emergency Medicine, Johns Hopkins University School of Medicine, 2020-present

Joint appointment, Department of Molecular and Comparative Pathobiology, Johns Hopkins University School of Medicine, 2020-present

Joint appointment, Department of Medicine, Division of Infectious Diseases, Johns Hopkins University School of Medicine, 2020-present

Vice Chair of Scientific Resources, W. Harry Feinstone Department of Molecular Microbiology & Immunology, The Johns Hopkins University Bloomberg School of Public Health, Baltimore, MD, 2019-present

Professor, W. Harry Feinstone Department of Molecular Microbiology & Immunology, The Johns Hopkins University Bloomberg School of Public Health, Baltimore, MD, 2015-present

Executive Council Member, Group on the Integration of the Relationship of Animals, Public Health and Ethics (GIRAPHE), 2015-present

Director, Genomic Analysis and Sequencing Core Facility, The Johns Hopkins University Bloomberg School of Public Health, Baltimore, MD, 2015-present

Director, Center for Emerging Viral Infectious Diseases (CEVID) 2015- present

Co-Director, Johns Hopkins Center for Excellence in Influenza Research and Surveillance (JH-CEIRS) 2014, The Johns Hopkins University Bloomberg School of Public Health, Baltimore, MD, 2007-present

Joint appointment, Department of Environmental Health Sciences, The Johns Hopkins University Bloomberg School of Public Health, Baltimore, MD, 2013-present

Associate Professor, W. Harry Feinstone Department of Molecular Microbiology and Immunology, The Johns Hopkins University Bloomberg School of Public Health, Baltimore, MD, 2007-2014

Assistant Professor, Departments of Molecular Microbiology and Pathology & Immunology, Washington University in St. Louis, 2000-07

PROFESSIONAL ACTIVITIES

Society Membership and Leadership

1995-present American Society of Microbiology
2010-Facilitator at ASM Scientific Writing and Publishing Institute
1997-present American Society of Cell Biology
1995-present American Society of Virology
2019 Chair of Election Committee
2018 President
2017 President Elect
2014-16 Program Committee
2006-13 Education & Career Development Committee
2007-10 Program Committee
2007-present International Society for Influenza and other Respiratory Virus Diseases

Participation on Advisory Panels

John R. LaMontagne Memorial Symposium of Pandemic Influenza Research, Institute of Medicine, National Academy of Sciences, April, 2005

National Institutes of Health, Recombinant DNA Advisory Committee, Influenza Biosafety Working Group, June, 2008 to June, 2009

Safety Symposium on Public Health and Safety Practices for Research with 1918 H1N1 Influenza virus. Co-sponsored by the NIH Recombinant DNA Advisory Committee (RAC) and Intragovernmental Select Agent and Toxin Technical Advisory Committee (ISATTAC), December, 2008.

Intragovernmental Select Agents and Toxins Technical Advisory Committee (ISATTAC), ad hoc member, Scientific Advisory Panel on changes to the Select Agent Status of the 1918 Influenza A virus. September, 2009.

New York Center for Excellence in Influenza Research (NYCE), Rochester University, External Advisory Board, 2009-2013

Bio-Containment Oversight Workgroup. Maryland State Department of Health and Mental Hygiene. Permanent member involved in developing legislature and guidelines for regulating BSL3 and BSL4 level laboratories in the state of Maryland. November, 2012 to November, 2013.

Biosafety Considerations for Research with Highly Pathogenic Avian Influenza Virus H5N1 that is Transmissible between Mammals by Respiratory Droplets. Symposium on Public Health and Safety Practices for Research with 1918 H1N1 Influenza virus. NIH Recombinant DNA Advisory Committee (RAC), January, 2013.

National Institutes of Allergy and Infectious Diseases Systems Biology Program, Steering Committee member, 2015-2017

Stakeholder Engagement Workshop to Examine Institutional Implementation of the United States Government Oversight of Life Sciences Dual Use Research of Concern, National Science Advisory Board for Biosecurity (NSABB), Panelist, September 25-26, 2017

National Institutes of Allergy and Infectious Diseases, Systems Biology for Infectious Diseases Program, Steering Committee member, 2018-current

National Institutes of Allergy and Infectious Diseases, Impact of Initial Influenza Exposure on Immunity in Infants, Scientific Advisory Committee member, 2019-current

New York State COVID-19 Advisory Task Force, New York State Dept. of Health, 2020 - 2021

Program or Project Development

U.S. Patent No. 7,279,275– Methods and Compositions for Detection of Segmented Negative Strand RNA Viruses (issued October 9, 2007)

U.S. Patent No. 7,807,345– Kits for Detection of Segmented Negative Strand RNA Viruses (issued October 5, 2010)

U.S. Patent No. 9,056,898 – Attenuated RNA Virus and Applications Thereof (issued June 16, 2015)

U.S. Provisional Patent Application No. 62/108,676 – Synthetic Antiserum for Rapid-Turnaround Therapies (Filed January 28, 2015)

U.S. Patent No. 9,579,374 – Methods for Rapidly Designing Pharmaceutical Preparations for Preventing Viral Infections (issued February 28, 2017)

U.S. Patent No. 9,696,295 – Methods for Rapidly Designing Pharmaceutical Preparations for Preventing Viral Infections (issued July 4, 2017)

Consultations

2003- 2010 Diagnostic Hybrids, Inc.

2008-2010 Influmedix, Inc. Scientific Advisory Board

2009-2011 VaxInnate Corp

2010-2011 Midwest Research Institute

EDITORIAL ACTIVITIES

Peer Review Activities

Ad Hoc reviewer: Antimicrobial Agents and Chemotherapy, Apoptosis, Blood, Cellular Microbiology, Clinical and Vaccine Immunology, European Journal of Immunology, Journal of Clinical Investigations, Journal of Clinical Virology, Journal of General Virology, Journal of Infectious Diseases, Microbiology and Immunology, mBio, Nucleic Acids Research, PLoS Pathogens, PLoS ONE, PNAS, Science, Vaccine.

Editorial Board Membership

2006-present Editorial Board, Virology

2007-present Editorial Board, Journal of Virology
- top 25 reviewer in 2010, 2011, 2012, 2019

2008-12 Faculty of 1000 evaluator: Medicine, Viral Infections (not HIV)
2010-2016 Academic Editor, PLoS One
2010-2014 Associate Editor, PLoS Pathogens
2014-present Section Editor – RNA viruses PLoS Pathogens
2017-2019 Editorial Board, Clinical and Vaccine Immunology
2018-present Editorial Advisor Board, PLoS Pathogens
2019-present Editorial Board/Editor in Chief for Influenza Vaccines Section, Vaccines

Ad Hoc Review of Proposals

Research Awards Committee, Infectious Diseases Society of America, 2002-05
National Institutes of Health Special Emphasis Panel ZRG1-IDM-G, March, 2004
National Institutes of Health Special Emphasis Panel ZAI1-BLG-1-C1, May 2004
National Institutes of Health Special Emphasis Panel ZRG1 IDM-B, July, 2005
National Institutes of Health Special Emphasis Panel ZRG1-IDM-K12B, November, 2005
National Institutes of Health Special Emphasis Panel ZAI1-LRM-M1, Jan., 2006
National Institutes of Health Special Emphasis Panel ZRG1 F13-P, ad hoc member: March 2006; July 2006; November 2007
National Institutes of Health, Coop. Research Partnerships for Influenza Product Development, Panel ZAI1 CCH-M M1, January, 2007
National Institutes of Health, Drug Discovery and Mechanisms of Antimicrobial Resistance Study Section, ad hoc member: June 2007; February, 2008
National Institutes of Health Virology B Study Section, ad hoc member, January, 2008
National Institutes of Health, Drug Discovery and Mechanisms of Antimicrobial Resistance Study Section, ad hoc member: February, 2008
National Institutes of Health Special Emphasis Panel ZRG1-IDM-M (12) B, March, 2008
National Institutes of Health Virology A Study Section, ad hoc member, June, 2008
National Institutes of Health Special Emphasis Panel ZRG1-IMM-K12, November, 2008
National Institutes of Health Special Emphasis Panel/Scientific Review Group ZRG1 CB-K (29) L, December, 2008
National Institutes of Health Virology A Study Section, ad hoc member, Feb., 2009
National Institutes of Health Virology A Study Section, ad hoc member, June, 2009
National Institutes of Health, Drug Discovery and Mechanisms of Antimicrobial Resistance Study Section, ad hoc member: February, 2010
National Institutes of Health, Partnerships for Biodefense (Vaccines/Immunotherapeutics): September, 2010
National Institutes of Health, ZRG1 IDM-R Small Business: Non-HIV Anti-Infective Therapeutics Special Emphasis Panel, March 2011
National Institutes of Health, Drug Discovery and Mechanisms of Antimicrobial Resistance Study Section, ad hoc member: June, 2011
National Institutes of Health Special Emphasis Panel/Scientific Review Group ZRG1 IDM-B (02) L, September, 2011

National Institutes of Health Special Emphasis Panel/Scientific Review for RFA-AI-11-010 "The Infant Immune System: Implications for Vaccines and Response to Infection", December, 2011
National Institutes of Health Special Emphasis Panel/Scientific Review Group ZRG1 EMDR-S (10), March, 2012
National Institutes of Health Topics in Virology/Scientific Review Group ZRG1 IDM-N (02), November, 2012
National Institutes of Health Dual Purpose with Dual Benefit Research in Biomedicine and Agriculture/Scientific Review Group ZRG1 IDM-R (50), March, 2013
National Institutes of Health Virology B Study Section, ad hoc member, February, 2014
National Institutes of Health Virology B Study Section member, October 2014 – 2018
Canadian Institute of Health Research, Catalyst Grant: Sex as a biological variable in translational or biomedical research, February 2016-2018
National Institutes of Health Dual Purpose with Dual Benefit Research in Biomedicine and Agriculture/Scientific Review Group ZRG1 IDM-N (55) R, February, 2016
US Army Medical Research and Material Command, Vaccine Development for Infectious Diseases Review Panel, July, 2016
US Army Medical Research and Material Command, Discovery Influenza Review Panel, August - December, 2016
National Institutes of Health Topics in Virology, 01 ZRG1 IDM-W (02), July, 2019
National Institutes of Health Virology B Study Section, ad hoc member, February, 2021
National Institutes of Health Topics in Virology, 01 ZRG1 IDIA-S (02), June, 2022
Emerging Infectious Diseases – 1 (E-1) peer review panel of the FY2024 Military Infectious Diseases Research Program (MIDRP) for the United States Army Medical Research and Development Command (USAMRDC), February, 2023
National Institute of Allergy and Infectious Diseases Special Emphasis Panel ZAI1 SJ-W (S1) Resources and Workforce Development for the Regional Biocontainment Laboratories (UC7 Clinical Trial Not Allowed), June, 2023
Ad Hoc grant reviewer: U.S. Civilian Research and Development Foundation; The Wellcome Trust, Great Britain; Medical Research Council, Great Britain; Research Grants Council, Hong Kong; Health Research Council of New Zealand; Swiss National Science Foundation; A*STAR Biomedical Research Council, Singapore

HONORS AND AWARDS

1989	Selman A. Waksman/David H. Strumeyer Award for Achievement in Biochemistry, Rutgers University
1995	Joel M. Dalrymple Memorial Award, American Society for Virology
2001	National Foundation for Infectious Diseases New Investigator Grant
2001-03	Whitaker Foundation, Young Investigator Award
2001-03	Infectious Diseases Society of America, Wyeth-Lederle Vaccines New Investigator Award
2007	Diversity Leadership Award, Washington University in St. Louis
2010-12	Journal of Virology – Top 25 reviewer
2010-16	Bloomberg School of Public Health Teaching Excellence Award

(for classes below marked with *)

2016 Shikani/El Hibri Prize for Discovery and Innovation, Johns Hopkins University

2017 Elected to the Delta Omega Honorary Society in Public Health, Alpha chapter

2020 Elected Fellow of the American Academy of Microbiology

PUBLICATIONS ([1] indicates trainees; [2] indicates corresponding author)

Journal Articles (signifies peer review)

1. Griot C, **Pekosz A**, Lukac D, Scherer SS, Stillmock K, Schmeidler D, Endres MJ, Gonzalez-Scarano F, Nathanson N. Polygenic control of neuroinvasiveness in California serogroup bunyaviruses. J Virol. 1993 Jul;67(7):3861-7. PMID: 8510208

2. Griot C, **Pekosz A**, Davidson R, Stillmock K, Hoek M, Lukac D, Schmeidler D, Cobbinah I, Gonzalez-Scarano F, Nathanson N. Replication in cultured C2C12 muscle cells correlates with the neuroinvasiveness of California serogroup bunyaviruses. Virology. 1994 Jun;201(2):399-403. PMID: 8184551

3. **Pekosz A**, Griot C, Stillmock K, Nathanson N, Gonzalez-Scarano F. Protection from La Crosse virus encephalitis with recombinant glycoproteins: role of neutralizing anti-G1 antibodies. J Virol. 1995 Jun;69(6):3475-81. PMID: 7745694

4. **Pekosz A**, Griot C, Nathanson N, Gonzalez-Scarano F. Tropism of bunyaviruses: evidence for a G1 glycoprotein-mediated entry pathway common to the California serogroup. Virology. 1995 Dec 20;214(2):339-48. PMID: 8553534

5. **Pekosz A**, Phillips J, Pleasure D, Merry D, Gonzalez-Scarano F. Induction of apoptosis by La Crosse virus infection and role of neuronal differentiation and human bcl-2 expression in its prevention. J Virol. 1996 Aug;70(8):5329-35. PMID: 8764043

6. **Pekosz A**, Gonzalez-Scarano F. The extracellular domain of La Crosse virus G1 forms oligomers and undergoes pH-dependent conformational changes. Virology. 1996 Nov 1;225(1):243-7. PMID: 8918555

7. Tatarowicz WA, Martin CE, **Pekosz AS**, Madden SL, Rauscher FJ 3rd, Chiang SY, Beerman TA, Fraser NW. Repression of the HSV-1 latency-associated transcript (LAT) promoter by the early growth response (EGR) proteins: involvement of a binding site immediately downstream of the TATA box. J Neurovirol. 1997 Jun;3(3):212-24. PMID: 9200069

8. **Pekosz A**, Lamb RA. The CM2 protein of influenza C virus is an oligomeric integral membrane glycoprotein structurally analogous to influenza A virus M2 and influenza B virus NB proteins. Virology. 1997 Oct 27;237(2):439-51. PMID: 9356355

9. **Pekosz A**, Lamb RA. Influenza C virus CM2 integral membrane glycoprotein is produced from a polypeptide precursor by cleavage of an internal signal sequence. Proc Natl Acad Sci U S A. 1998 Oct 27;95(22):13233-8. PMID: 9789071

10. **Pekosz A**, Lamb RA. Cell surface expression of biologically active influenza C virus HEF glycoprotein expressed from cDNA. J Virol. 1999 Oct;73(10):8808-12. PMID: 10482635

11. Mould JA, Li HC, Dudlak CS, Lear JD, **Pekosz A**, Lamb RA, Pinto LH. Mechanism for proton conduction of the M2 ion channel of influenza A virus. J Biol Chem. 2000 Mar 24;275(12):8592-9. PMID: 10722698

12. Zhang J, Leser GP, **Pekosz A**, Lamb RA. The cytoplasmic tails of the influenza virus spike glycoproteins are required for normal genome packaging. Virology. 2000 Apr 10;269(2):325-34. PMID: 10753711

13. Zhang J, **Pekosz A**, Lamb RA. Influenza virus assembly and lipid raft microdomains: a role for the cytoplasmic tails of the spike glycoproteins. J Virol. 2000 May;74(10):4634-44. PMID: 10775599

14. Mould JA, Drury JE, Frings SM, Kaupp UB, **Pekosz A**, Lamb RA, Pinto LH. Permeation and activation of the M2 ion channel of influenza A virus. J Biol Chem. 2000 Oct 6;275(40):31038-50. PMID: 10913133

15. **Pekosz A**, Lamb RA. Identification of a membrane targeting and degradation signal in the p42 protein of influenza C virus. J Virol. 2000 Nov;74(22):10480-8. PMID: 11044092

16. Takeda M, **Pekosz A**, Shuck K, Pinto LH, Lamb RA. Influenza a virus M2 ion channel activity is essential for efficient replication in tissue culture. J Virol. 2002 Feb;76(3):1391-9. PMID: 11773413

17. Krug A, Veeraswamy R, **Pekosz A**, Kanagawa O, Unanue ER, Colonna M, Cella M. Interferon-producing cells fail to induce proliferation of naive T cells but can promote expansion and T helper 1 differentiation of antigen-experienced unpolarized T cells. J Exp Med. 2003 Apr 7;197(7):899-906. PMID: 12668648

18. McCown M[1], Diamond MS, **Pekosz A**[2]. The utility of siRNA transcripts produced by RNA polymerase I in down regulating viral gene expression and replication of negative- and positive-strand RNA viruses. Virology. 2003 Sep 1;313(2):514-24. PMID: 12954218

19. Rowe RK[1], Brody SL and **Pekosz A**[2]. Differentiated cultures of primary hamster airway epithelial cells. In Vitro Cell Dev Biol Anim. 2004 Nov;40(10):303-311. PMID: 15780007

20. Barchet W, Krug A, Cella M, Newby C[1] , Fischer, JAA, Dzionek, A., **Pekosz A**. and Colonna, M. Differential involvement of TLR7 in the anti-viral response of natural interferon producing cells and dendritic cells. Eur J Immunol. 2005 Jan;35(1):236-42. PMID: 15593126

21. Nelson CA, **Pekosz A**, Lee CA, Diamond MS and Fremont DH. Structure and intracellular targeting of the SARS-coronavirus ORF 7a encoded accessory protein. Structure, 2005;Jan;13(1):75-85. PMID: 15642263

22. McCown MF[1], and **Pekosz A[2].** The cytoplasmic tail of the influenza A virus M_2 protein is required for viral replication and efficient genome packaging. J Virol. 2005 Mar;79(6):3595-605. PMID: 15731254

23. Lutz A[1], Dyall J., Olivo PD, and **Pekosz A[2]**. Virus-inducible reporter genes as a tool for detecting and quantifying influenza A virus replication. J Virol Methods. 2005 Jun;126(1-2):13-20. PMID: 15847914

24. Rowland, R.R.R., Chauhan, V., Fang, Y., **Pekosz, A**., Kerrigan, M. and Burton, M.D. Intracellular localization of the SARS coronavirus nucleocapsid protein: absence of nucleolar accumulation during infection and after expression as a recombinant protein in Vero cells. J. Virol. 2005 Sept;79(17):11507-12. PMID: 16103202

25. Luker, K.E., Hutchens, M., Schultz, T., **Pekosz, A**. and Luker, G.D. Bioluminescence Imaging of Vaccinia virus: Effects of interferon on viral replication and spread. Virology. 2005 Oct 25;341(2):284-300. PMID: 16095645

26. Rowe RK[1] and **Pekosz, A[2].** Bidirectional virus secretion and nonciliated cell tropism following Andes virus infection of primary airway epithelial cell cultures.. J Virol. 2006 Feb;80(3):1087-97. PMID: 16414986.

27. Ibricevic A, **Pekosz A**, Walter MJ, Newby C, [1] Battaile JT, Brown EG, Holtzman MJ, Brody SL. Influenza virus receptor specificity and cell tropism in mouse and human airway epithelial cells. J Virol. 2006 Aug;80(15):7469-80. PMID: 16840327.

28. McCown MF[1] and **Pekosz A[2]**. Distinct Domains of the Influenza A Virus M2 Protein Cytoplasmic Tail Mediate Binding to the M1 Protein and Facilitate Infectious Virus Production. J Virol. 2006 Aug;80(16):8178-89. PMID: 16873274.

29. Newby CM[1], Rowe RK[1] and **Pekosz A[2]**. Influenza A virus infection of primary differentiated airway epithelial cell cultures derived from Syrian golden hamsters. Virology. 2006 Oct 10;354(1):80-90. PMID: 16876846.

30. Schaecher SR**[1]**, Mackenzie J and **Pekosz A[2]**. The ORF7b Protein of Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV) Is Expressed in Virus-Infected Cells and Incorporated into SARS-CoV Particles. J Virol. 2007 Jan;81(2):718-31. PMID: 17079322.

31. Lenschow DJ, Lai C, Frias-Staheli N, Giannakopoulos NV, Lutz A, Wolff T, Osiak A, Levine B, Schmidt RE, Garcia-Sastre A, Leib DA, **Pekosz A**, Knobeloch K-P, Horak I, and Virgin HV IV. IFN-stimulated gene 15 functions as a critical antiviral molecule against influenza, herpes, and Sindbis viruses. Proc Natl Acad Sci U S A. 2007 Jan 23;104(4):1371-6. PMID: 17227866.

32. Newby CM[1], Sabin, L[1] and **Pekosz A**[2]. The RNA Binding Domain of Influenza A Virus NS1 Protein Affects Secretion of Tumor Necrosis Factor Alpha, Interleukin-6, and Interferon in Primary Murine Tracheal Epithelial Cells. J Virol. 2007 Sep;81(17):9469-80. PMID: 17596305.

33. Schaecher SR[1], Touchette E, Schriewer J, Buller RM and **Pekosz A**[2]., Severe acute respiratory syndrome coronavirus gene 7 products contribute to virus-induced apoptosis. J Virol. 2007 Oct;81(20):11054-68. PMID: 17686858

34. Wu W-H[1] and **Pekosz A**[2]. Extending the cytoplasmic tail of the influenza a virus M2 protein leads to reduced virus replication in vivo but not in vitro. J Virol. 2008 Jan;82(2):1059-63. PMID: 17989186

35. Schaecher SR[1], Diamond MS and **Pekosz A**[2]. The transmembrane domain of the SARS-CoV ORF7b protein is necessary and sufficient for its retention in the Golgi complex. J Virol. 2008 Oct;82(19):9477-91. PMID: 18632859

36. Schaecher SR[1], Stabenow J, Oberle C, Schriewer J, Sagartz JE, Buller RM, and **Pekosz, A**[2]**.** An Immunosuppressed Syrian Golden Hamster Model for SARS-CoV Infection. Virology. 2008 Oct 25;380(2):312-21. PMID: 18760437

37. Rowe RK[1], Suszko JW[1] and **Pekosz A**[2]. Roles for the Recycling Endosome, Rab8 and Rab11 in hantavirus release from epithelial cells. Virology. 2008 Dec 20;382(2):239-49. PMID: 18951604

38. **Pekosz A**[2], Newby CM[1], Bose PS[1] and Lutz A[1]. Sialic acid recognition is a key determinant of influenza A virus tropism in murine trachea epithelial cell cultures. Virology. 2009 Mar 30;386(1):61-7. PMID: 19195676

39. Grantham ML[1], Wu W-H[1], Lalime EN[1], Lorenzo M, Klein SL and **Pekosz A**[2]. Palmitoylation of the influenza A virus M2 protein is not required for virus replication in vitro but alters virus virulence. J Virol. 2009 Sept;83(17):8655-61. PMID: 19553312

40. Li Y, Larrimer A, Curtiss T, Kim J, Jones A, **Pekosz A** and Olivo PA. Influenza virus assays based on virus-induced reporter cell lines. Influenza and other Respiratory Viruses.2009.Sept; 3(5):241-51. DOI: 10.1111/j.1750-2659.2009.00094.x

41. Au RL, Jedlicka AE, Li W, **Pekosz A** and Klein SL. Seoul virus suppresses NF-kB mediated inflammatory responses of antigen presenting cells from Norway rats. Virology. 2010 Apr 25;400(1):115-127. PMID: 20170933

42. Klein SL, Jedlicka A and **Pekosz A**. The Xs and Y of immune responses to viral vaccines. Lancet Infect Dis. 2010 May;10(5):338-49. PMID: 20417416.

43. Grandea AG 3rd, Olsen OA, Cox TC, Renshaw M, Hammond PW, Chan-Hui PY, Mitcham JL, Cieplak W, Stewart SM[1], Grantham ML[1], **Pekosz A**, Kiso M, Shinya K, Hatta M, Kawaoka Y, Moyle M.Human Antibodies Reveal a Protective Epitope that is Highly Conserved Among Human and Non-Human Influenza A Viruses. Proc Natl Acad Sci U S A. 2010 Jul 13;107(28):12658-63. PMID: 20615945

44. Grantham ML[1], Stewart SM[1], Lalime EN[1] and **Pekosz A**[2]. Tyrosines in the influenza A virus M2 protein cytoplasmic tail are critical for the production of infectious virus particles. J Virol. 2010 Sep;84(17):8765-76. Epub 2010 Jun 23.PMID: 20573832

45. Stewart SM[1], Wu WH[1], Lalime EN[1], **Pekosz A**[2]. The Cholesterol recognition/interaction amino acid consensus motif of the influenza A virus M2 protein is not required for virus replication but contributes to virulence. Virology. 2010 Sep 30;405(2):530-538. Epub 2010 Jul 24.PMID: 20655564

46. Ameiss K, Ashraf S, Kong W, **Pekosz A**, Wu WH[1], Milich D, Billaud JN, Curtiss R 3rd. Delivery of woodchuck hepatitis virus-like particle presented influenza M2e by recombinant attenuated Salmonella displaying a delayed lysis phenotype. Vaccine. 2010 Sep 24;28(41):6704-13. PMID: 20691653

47. Klein SL, Passaretti C, Anker M, Olukoya P and **Pekosz A**. The Impact of Sex, Gender, and Pregnancy on 2009 H1N1 Disease. Biology of Sex Differences. 2010, **1**:5 doi:10.1186/2042-6410-1-5

48. Leibler JH, Silbergeld EK, **Pekosz A** and Gray GC. No evidence of infection with avian influenza virus among US poultry workers, Delmarva Penninsula. J Agromedicine. 2011 Jan;16(1):52-7.PMID: 21213164

49. Song JM, Wang BZ, Park KM, Van Rooijen N, Quan FS, Kim MC, Jin HT, **Pekosz A**, Compans RW, Kang SM. Influenza Virus-Like Particles Containing M2 Induce Broadly Cross Protective Immunity. PLoS One. 2011 Jan 18;6(1):e14538.PMID: 21267073

50. Stewart SM[1] and **Pekosz A**[2]. Mutations in the membrane proximal region of the influenza A virus M2 protein cytoplasmic tail have modest effects on virus replication. J Virol. 2011 Dec;85(23):12179-87. doi: 10.1128/JVI.05970-11. PMID:21917980

51. Lorenzo ME, Hodgson A, Robinson DP, Kaplan JB, **Pekosz A** and Klein SL. Antibody responses and cross protection against lethal influenza A viruses differ between

the sexes in C57BL/6 mice. Vaccine. 2011 Nov 15;29(49):9246-55. doi: 10.1016/j.vaccine.2011.09.110. PMID:21983155

52. Stewart SM[1], **Pekosz** A[2]. The Influenza C Virus CM2 Protein Can Alter Intracellular pH, and Its Transmembrane Domain Can Substitute for That of the Influenza A Virus M2 Protein and Support Infectious Virus Production. J Virol. 2012 Jan;86(2):1277-81. doi: 10.1128/JVI.05681-11. PMID:21917958

53. Zeng H, Goldsmith C, Maines TR, Belser JA, Gustin KM, **Pekosz** A, Zaki S, Katz JM, Tumpey TM. Tropism and Infectivity of Influenza Virus, Including Highly Pathogenic Avian H5N1 Virus in Ferret Tracheal Differentiated Primary Epithelial Cell Cultures. J Virol. 2013 Mar;87(5):2597-607. doi: 10.1128/JVI.02885-12. PMID:23255802

54. Deal C[1], **Pekosz A** and Ketner G. Prospects for Oral Replicating Adenovirus-Vectored Vaccine. Vaccine 2013 Jul 11;31(32):3236-43. doi: 10.1016/j.vaccine.2013.05.016. PMID:23707160

55. Sips GJ, **Pekosz A**, Huckriede A, Griffin DE and Wilschut JC. Interaction of influenza A/H1N1pdm virus with human neuronal and ocular cells. Virology and Mycology 2013 S2:001. doi: 10.4172/2161-0517.S2-001.

56. Keller B, Labrique A, Kriti J, **Pekosz A**, Levine O. Mind the Gap: Social media engagement by public health researchers. J Med Internet Res. 2014 Jan 14;16(1):e8. doi: 10.2196/jmir.2982.PMID:24425670

57. Klein EY, Serohijos AWR, Choi, J-M, Shakhnovich E, and **Pekosz A**. Influenza A H1N1 Pandemic Strain Evolution - Divergence and the Potential for Antigenic Drift Variants. PLoS ONE 2014 9(4): e93632. doi: 10.1371/journal.pone.0093632. PMID:24699432

58. Lalime EN[1] and **Pekosz A**[2]. The R35 residue of the influenza A virus NS1 protein has minimal effects on nuclear localization but alters virus replication through disrupting protein dimerization. Virology 2014 458-459:33-42. DOI:10.1016/j.virol.2014.04.012. PMID:24928037.

59. Klein SL and **Pekosz A**. Sex-based biology and the rational design of vaccine strategies. J Infect Dis. 2014 Jul 15;209 Suppl 3:S114-9. doi: 10.1093/infdis/jiu066. PMID:24966191.

60. Espitia CM, Saldarriaga OA, Travi BL, Osorio EY, Heernandez A, Band M, Patel MJ, Medina AA, Cappello M, **Pekosz A** and Melby PC. Transcriptional profiling of the spleen in progressive visceral leishmaniasis reveals mixed expression of type 1 and type 2 cytokine-responsive genes. BMC Immunol. 2014 Nov 26;15(1):38. PMID:25424735

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Articles and Editorials not peer reviewed

1. **Pekosz A**, He B, Lamb RA. Reverse genetics of negative-strand RNA viruses: closing the circle. Proc Natl Acad Sci U S A. 1999 Aug 3;96(16):8804-6. PMID: 10430844

2. **Pekosz, A[2]**. Bird flu: A virus of our own hatching" Book Review, Journal of Clinical Investigations, J. Clin. Invest. 117:2350 (2007). doi:10.1172/JCI33078

3. **Pekosz, A[2]** and Glass GL. Emerging Viral Diseases. Maryland Medicine, Winter 2008, 9(1):11-16.

4. Klein SL, **Pekosz A**., Passaretti C, Anker M, and Olukoya P. Sex, Gender and Influenza. WHO Department of Gender, Women and Health publication. July, 2010. **ISBN**: 978 92 4 150011
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5. Nayak S, Lei J, **Pekosz A**, Klein S, Burd I. Pathogenesis and Molecular Mechanisms of Zika Virus. Semin Reprod Med. 2016 Sep 9. [Epub ahead of print] PubMed PMID: 27612156.

Book Chapters

1. **Pekosz A[2]**, Schaecher SR[1], Diamond MS, Fremont DH, Sims AC and Baric RS. Structure, Expression and Intracellular Localization of the SARS-CoV accessory proteins 7a and 7b. *In The Nidoviruses: Towards Control of SARS and Other Nidovirus Diseases.* Series: Advances in Experimental Medicine and Biology, Vol. 581:115-20 Perlman, Stanley; Holmes, Kathryn (Eds.) 2006.

2. Fang Y, **Pekosz A**, Haynes L, Nelson EA, Rowland RR.. Production and characterization of monoclonal antibodies against the nucleocapsid protein of SARS-CoV. In *The Nidoviruses: Towards Control of SARS and Other Nidovirus Diseases*. Series: Advances in Experimental Medicine and Biology, Vol. 581:153-6, Perlman, Stanley; Holmes, Kathryn (Eds.) 2006.

3. Schaecher SR[1] and **Pekosz A[2]**. SARS-CoV accessory gene expression and function. In *Molecular Biology of the SARS coronavirus*. Ch. 10:153-66. DOI 10.1007/978-3-642-03683-5_10. Springer Life Sciences (Publ.), Sunil K. Lal, (Ed.), 2010.

CURRICULUM VITAE

Andrew Stanley Pekosz

PART II

TEACHING

Washington University

Advisees

John K. Ly, M.S., 2000-3; *Membrane microdomains and influenza A virus assembly*
Current position: Consultant, Pharosity Consulting Inc., San Francisco, CA

Christine Warnes, M.S., 2002-5; *M2-based influenza A virus vaccines*
Current position: Microbiologist, Centers for Disease Control, Atlanta, GA

Matthew McCown, Ph.D., 2000-6; *M2 and influenza A virus assembly*
Current position: Product Assessment Lead, Monsanto Company, St. Louis, MO

Regina K. Rowe, Ph.D., M.D., 2001-7; *Hantavirus infection of epithelia*
Current position: Assistant Professor Pediatric Infectious Disease, University of Rochester, Rochester, NY

Celeste Newby, Ph.D., M.D. 2000-7; *Influenza A virus cell tropism and cytokine responses in primary tracheal epithelial cell cultures*
Current position: Assistant Professor, Tulane University School of Medicine, New Orleans, LA

Scott R. Schaecher, Ph.D. program in Molecular Microbiology and Microbial Pathogenesis, 2003-8; *Gene 7 accessory gene function in SARS-CoV infection*
Current position: Data Strategy Lead, Microbial and Disease Traits, Monsanto Company, St. Louis, MO

Shaun Stewart, Ph.D. program in Molecular Microbiology and Microbial Pathogenesis, 2005-2011; *Influenza A virus M2 protein incorporation into virions*
Current position: Principal Investigator, Incyte Pharmaceutical Corp., Wilmington, DE

Danielle (Stueber) Nance, M.D., clinical research fellow, 2005-6; *Influenza B virus infection of primary respiratory epithelial cell cultures*
Current position: Medical Director, Arizona Bleeding Disorders Health and Wellness Center, Phoenix, AZ

Michael Grantham, Ph.D., postdoctoral associate, 2006-7; *Influenza A virus assembly and the role of the M2 protein*
Current position: Assistant Professor, Missouri Western State University, Saint Joseph MO

Wai-Hong (William) Wu, Ph.D., postdoctoral associate, 2006-7; *Influenza A virus M2 protein as an immunogen and an attenuation factor*
Current position: Assistant Scientist, Johns Hopkins University School of Medicine, Baltimore, MD

Preliminary Oral Participation

Nathaniel Moorman, 2000; Mindy Lo, 2001; Paul Robben, 2001; Emilia Boiadgieva, 2003; Daniel Ader, 2004; Brooke Harmon, 2004; Brandon Proctor, 2005;; Chung Lee, 2005; Luis Vega, 2005; Kerri Burson, 2005; Elizabeth Hansen, 2006; Soomin Shim, 2006; Anne Gaynor, 2006

Final Oral Participation

Sharookh Kapadia (Ph.D. 2001), Brett Summers (Ph.D. 2001), Jennie Lovett (Ph.D. 2002), Nathaniel Moorman (Ph.D. 2003), Dawn Wetzel (M.D./Ph.D. 2004), Jeffrey Morton (Ph.D. 2004, Stephanie Strand (Ph.D. 2004), Travis Jewett (Ph.D. 2004), J. Scott McClellan (Ph.D. 2004), Stephen Ward (Ph.D. 2005), Betty Lu (M.S., 2005), Matthew Lawlor (Ph.D., 2005), Vesselin Mitaksov (Ph.D. 2006), Mindy Lo (M.D./Ph.D. 2006), Emilia Boiadgieva (M.S. 2006), Scott Handley (Ph.D. 2006), Ajay K. Bhatia (M.D./Ph.D. 2007), Marisa Ponpuak (Ph.D. 2007), Aneeza Salim (M.S. 2007), Theodore Oliphant (Ph.D. 2007)

Classroom Instruction

2000-02 Biol 5418 Nucleic Acids and Prot. Synthesis Discussion group
2000-06 Biol 5217 Special Topics in Microbial Pathogenesis
2000-03 Biol 5391 Molecular Virology
2000-07 Virology Journal Club
2000-07 Microbes and Pathogenesis (Medical School)
2002-07 Microbial Pathogenesis
2002-04 Biol 5068 Molecular Cell Biology Discussion group
2003-07 MRCE Biosafety Course

Johns Hopkins University

Advisees

Erin Lalime, Ph.D. in Molecular Microbiology and Immunology, 2007-2012; postdoctoral associate 2012-201, *Influenza infection of primary respiratory epithelial cells and NS1 function* 3
Current Position: Microbiologist, NASA Goddard Space Flight Center, Greenbelt, MD

Jean-Marc Guedon, Sc.M. in Molecular Microbiology and Immunology, 2007-09; Influeza M2 cytoplasmic tail sequences as viral attenuation factors;
Current Position: Scientist, Applied Genetic Technologies Corporation, Gainesville, FL

Wai-Hong (William) Wu, Ph.D., postdoctoral associate, 2007-2010; *Influenza A virus M2 protein as an immunogen and an attenuation factor*
Current position: Assistant Scientist, Johns Hopkins University School of Medicine, Baltimore, MD

Michael Grantham, Ph.D., postdoctoral associate, 2007-2010; *Influenza A virus assembly and the role of the M2 protein*
Current position: Assistant Professor, Missouri Western State University, Saint Joseph MO

Ramya Ghopal, Sc.M in Molecular Microbiology and Immunology, 2008-2010; *Influenza A virus M1 protein and virus assembly*
Current Position: Senior Associate Research Scientist, Icahn School of Medicine at Mount Sinai, New York, NY

William Fischer, M.D., clinical research fellow, 2009-2012; *Influenza infection of primary human nasal epithelial cell cultures*
Current Position: Assistant Professor, Pulmonary Diseases and Critical Care Medicine, University of North Carolina School of Medicine, Chapel Hill, NC

Cailin Deal, Ph.D. in Molecular Microbiology and Immunology (co-mentor with Dr. Gary Ketner), 2009-2014; *Influenza A virus M2 extracellular domain and virus particle assembly*
Current Position: Senior Scientist, Moderna, Boston, MA

Emad Elassal, Sc.M. in Molecular Microbiology and Immunology, 2010-2012; *Influenza Receptor binding and infection of rhesus macaque primary respiratory epithelial cell cultures*
Current Position: Assistant Director, Fairfax County Health Department Laboratory, Clifton, VA

Melissa Hayes, Ph.D., postdoctoral associate, 2012-2014; *Live, attenuated influenza vaccine infection of primary human nasal epithelial cell cultures*
Current Position: Senior Scientist, Oncorus, Inc., Cambridge, MA

Eric Jesteadt, Sc.M. graduate student, 2012-2014; *Novel reporter gene assays for measuring influenza cap-snatching activity*
Current Position: Research Associate, Medical Science and Computing, Silver Spring, MD

Justin Price, MPH, 2014; *Influenza and Antigenic Variation: the Challenges to a Universal Vaccine*
Current Position: Unknown

Srinivas Nanduri, MPH 2014; *A review of influenza vaccination in the elderly* (awarded Howard Scholarship and the Eskridge Family Fund for International Students Award)
Current position: Epidemic Intelligence Officer, Centers for Disease Control, Atlanta, GA

Mariam Gonzalez-Hernandez, postdoctoral associate (co-advisor), 2014-2015; *Evolution of antiviral resistance in influenza A virus*
Current position: Scientist, Meso Scale Diagnostics, Baltimore, MD

Yang (Eddy) Ye, Sc.M. graduate student, 2014-2016; *Mutations in the M2 cytoplasmic tail contribute to live, attenuated influenza vaccine replication in primary nasal epithelial cells*
Current position: PhD student, University of Texas, Austin TX

Deena Blumenkrantz, PhD, postdoctoral associate 2014-2017; *Influenza A virus evolution in human populations*
Current Position: Bioinformatics Technical Writer and Data Analyst, PACT Pharmaceutical, San Francisco, CA

Nicholas Wohlgemuth, Ph.D. graduate student, 2013-2017; *M2 intracellular localization and influenza A virus assembly*
Current position: Visiting Assistant Professor, Rhodes College, Memphis, TN

Katherine Fenstermacher, PhD, postdoctoral associate, 2014-2017; *Physiological ranges of temperature and its effects on influenza virus replication and host response to infection*
Current position: Executive Director, Johns Hopkins Center of Excellence in Influenza Research and Response, Johns Hopkins University

James Stanton, Sc.M. graduate student, 2015-2017; *The role of the NS1 protein in live, attenuated influenza vaccine replication.*
Current position: Medical Student, University of East Carolina

Kathryn Shaw-Saliba, PhD, assistant scientist, 2016-2018; *Influenza evolution in response to antiviral and antibody pressure*

Current Position: Laboratory Research Scientist, National Institute of Allergy and Infectious Diseases, NIH, Bethesda, MD

Emily Thompson, Sc.M., 2016- 2018; *Influenza A viruses encoding reporter genes as tools for studying virus replication.*
Current Position: Junior Associate, Rabin Martin, New York, NY

Farrah el Najjar, PhD, postdoctoral associate, 2016-2018; *Innate immune responses of nasal epithelial cells to influenza virus infection*
Current Position: Research Associate, University of Kentucky, Lexington, KY

Jason Westerbeck, PhD, postdoctoral associate, 2017-2019; *Genetic variations in clinical isolates of influenza A virus and effects on virus fitness.*
Current Position: Scientist, Glaxo Smith-Kline, Washington DC

David Jacobs, ScM, 2017-2019; *Impact of reassortment on seasonal influenza A virus fitness and disease potential*
Current Position: Ph.D. candidate, University of Ottawa, Ottawa, Ontario, Canada

Laura Canaday, ScM, 2017-2019; *Novel mutations that control live, attenuated influenza A virus replication*
Current Position: Ph.D. candidate, University of Cincinnati, Cincinnati, OH

Hsuan Liu, postdoctoral associate/research associate, 2014-2023; *Influenza A virus assembly; Influenza A virus evolution in human populations*

Brendan Smith,,Ph.D. graduate student 2015-2020; postdoctoral associate 2020; *Enterovirus D68 infection of primary respiratory epithelial cell cultures*

Harrison Powell, Ph.D. graduate student, 2016-2020; postdoctoral associate 2020; *Receptor binding and receptor destroying activity balance and influenza A virus replication in primary respiratory epithelial cell cultures*

Alyssa McCoy, Ph.D., postdoctoral associate, 2019- 2020; *Nasal epithelial cell responses to influenza A virus infection*

Siddhant Vyas, ScM candidate, 2018-2020; *Antigenic and functional differences between HA proteins from circulating H3N2 clades*

Jo Wilson, M.D., clinical research fellow, 2019-2022; *Influenza B virus infection of primary human nasal epithelial cell cultures*
Current Position: Instructor, University of Wisconsin

Kirsten Littlefield, ScM candidate, 2019-2021; *Antigenic and functional differences between HA proteins from circulating H3N2 clades*
Current Position: Ph.D. candidate, University of Texas Medical Branch Galveston

Jessica Resnick, PhD graduate student, 2018-2023; *Temperature dependent regulation of epithelial cell gene expression*

Ruifeng Zhou, ScM graduate student, 2019-2021; *Influenza B virus lineages and replication in human nasal epithelial cell cultures*
Current Position: Ph.D. candidate, Scripps Research Institute, La Jolla CA

Paula Marinho, Postdoctoral Associate, 2019-2020; *Influenza H1 antigenic drift and virus fitness*

Zexu Ma, Postdoctoral Associate, 2019-2022: *Influenza A virus H3 clade reassortment and virus fitness*

Eduardo U. Anaya, Postdoctoral Associate, 2020-current: *Characterization of genetic variants of SARS-CoV-2 isolated from clinical samples.*

Ioannis Sitaras, PhD, Research Associate, 2021-current: *SARS-CoV-2 serology and clinical isolate characterization*

Jaiprasath Sachithanandham, Research Associate, 2021-currennt. *Sequencing and characterization of SARS-CoV-2 clinical isolates.*

Nicholas J. Swanson, PhD student, 2021-current. *Surveillance and fitness characterization of seasonal H1N1 influenza viruses*

Camille Wouters, PhD student, 2021-current. *Characterization of SARS-CoV-2 variants emerging from long-term infection of immunocompromised individuals*

Grant Butschek, PhD student, 2020-current. *Mitochondrial disfunction in influenza A virus infected human nasal epithelial cell cultures*

Alison Lu, ScM student, 2020-2022. *Targeting of the Influenza Avirus M2 protein to mitochondria and endolysosomes*

Huan Luo, ScM student, 2021-current. *The effects of N-linked glycosylation on H3N2 neuraminidase protein activity.*

Prasanthy Balasubramanian, ScM student, 2021-current. *Surveillance and fitness characterization of seasonal H1N1 influenza viruses*

William Zhong, MHS student, 2021- current. *Cell surface expression and fusogenic activity of SARS-CoV-2 Spike proteins derived from variants of concern*

Elgin Akin, PhD student, 2022-current. I*nfluenza B virus infection of human nasal epithelial cell cultures*

Kayla Kimble, ScM student, 2022-current. *Enterovirus D-68 surveillance and isolate characterization.*

Jyothsna Girish, ScM student, 2022-current. *Characterization of seasonal H1N1 influenza isolates.*

Sattya Talukdar, PhD, postdoctoral associate, 2022- current. *SARS-Co-V-2 variant replication in human nasal epithelial cell cultures.*

Preliminary Oral Participation

Travis Ruch (Ph.D., Cell Biology); Martina Siwek (Ph.D., Molecular Microbiology and Immunology); Zaza Ndhlovu (Ph.D., Molecular Microbiology and Immunology); Jessica Leibler (Ph.D., Environmental Health and Safety); John Clayton (Ph.D., Molecular Microbiology and Immunology); Emily Henkle (Ph.D. Epidemiology); Anjie Zhen (Ph.D. Molecular Microbiology and Immunology); Janet Tai (Ph.D. Molecular Microbiology and Immunology); Brian Roelofs (Ph.D. Biochemistry and Molecular Biology); Talibah Metcalf (Ph.D., Molecular Microbiology and Immunology); Erin Lalime (Ph.D., Molecular Microbiology and Immunology); Eileen Geoghegan (Ph.D., Molecular Microbiology and Immunology); Kelly Pate (Ph.D. Cellular and Molecular Medicine, School of Medicine); Kirsten Kulczar (Ph.D. Cellular and Molecular Medicine, School of Medicine); Shuzhen Sim (Ph.D., Molecular Microbiology and Immunology); Christopher Harvey (PhD, EHS); Dionne Robinson (PhD Molecular Microbiology and Immunology); Cailin Deal (PhD, Molecular Microbiology and Immunology); Laveta Smith (PhD, International Health); Zunera Gilani (PhD, International Health), Peter Dumoulin (PhD, Molecular Microbiology and Immunology); Andrea Hodgson, (PhD, Molecular Microbiology and Immunology), Olivia Hall (PhD, Molecular Microbiology and Immunology), Landon vom Steeg (PhD, Molecular Microbiology and Immunology), Talia Quandelacy (PhD, Epidemiology), Rebecca Ursin (PhD Biochemistry and Molecular Biology), Anastasia Lambrou (PhD, International Health), Rebecca Ursin (PhD, Biochemistry and Molecular Biology), Gideon Loevinsohn (PhD Epidemiology); Monica Lee (PhD, Environmental Health and Engineering), Benjamin Nguyen (PhD, Molecular Microbiology and Immunology), Georgia Stavrakis (PhD, Molecular Microbiology and Immunology), Patrick Creisher (PhD, Molecular Microbiology and Immunology), Yifan Li (PhD, Biochemistry and Molecular Biology), Braxton Greer (PhD, Immunology), Carolyn Gigot (PhD, Environmental Health and Engineering), Tanner Grudda (Ph.D Molecular Microbiology and Immunology), Kumba Seddu (Ph.D Molecular Microbiology and Immunology), Kate Cotten (Ph.D Molecular Microbiology and Immunology), Anne Gao (Ph.D. Molecular Microbiology and Immunology), Soumia Bekka-Kenenske (Ph.D. Molecular Microbiology and Immunology), Kai Wilmsen (PhD, Environmental Health and Engineering), Kathleen Kurowski (PhD, Environmental Health and Engineering). Jerome Edwards (Ph.D. Molecular Microbiology and Immunology).

Final Oral Participation

Nitya Nair (Ph.D. Molecular Microbiology and Immunology); Martina Siwek (Ph.D. Molecular Microbiology and Immunology); Zaza Ndhlovu (Ph.D. Molecular Microbiology and Immunology); Emily Henkle (Ph.D. Epidemiology); Jessica Leibler (Ph.D. Environmental Health and Safety); Amy Greer (PhD, Molecular Microbiology and Immunology) Talibah Metcalf (Ph.D., Molecular Microbiology and Immunology); Christopher Harvey (PhD, EHS); Travis Ruch (Ph.D., Cell Biology); Erin Lalime (Ph.D., Molecular Microbiology and Immunology); Laveeta Stewart (Ph.D., International Health); Dionne Robinson (Ph.D. Molecular Microbiology and Immunology); Cailin Deal (Ph.D. Molecular Microbiology and Immunology); Sean Evans (PhD Molecular Microbiology and Immunology); Kirsten Kulczar (Ph.D. Cellular and Molecular Medicine, School of Medicine); Andrea Dugas (Ph.D. in Graduate Training Program in Clinical Investigation); Andrea Hodgson (Ph.D. Molecular Microbiology and Immunology), Michael Estrella (Ph.D. Biochemistry and Molecular Biology), Sabrina Nolan (Ph.D. Molecular Microbiology and Immunology), Olivia Hall (Ph.D. Molecular Microbiology and Immunology), Ashley Nelson (Ph.D. Molecular Microbiology and Immunology), Nina Martin (Ph.D. Molecular Microbiology and Immunology), Talia Quandelacy (PhD, Epidemiology), James Harmon, (Ph.D. Environmental Health and Engineering), Christine Lee (Ph.D. Biochemistry and Molecular Biology), Meghan Vermillion (Ph.D. Cellular and Molecular Medicine, School of Medicine), Landon vom Steeg (PhD, Molecular Microbiology and Immunology), Kevin Casin (PhD, Environmental Health and Engineering), Elizabeth Troisi (Ph.D. Molecular Microbiology and Immunology); Zachary Stolp (Ph.D. Molecular Microbiology and Immunology); Qifang Bi (Ph.D. Epidemiology), Rebecca Ursin (PhD, Biochemistry and Molecular Biology); Natalia Majewska (PhD, Chemical Engineering), Melissa Edmondson (PhD Environmental Health and Engineering), Braxton Greer (PhD Immunology), Audrey Heffner (PhD, JHU/NIH joint program in Cell, Molecular, Developmental Biology and Biophysics).

Final Oral Participation (other universities)

Justin Taylor (Ph.D. University of Maryland School of Medicine, 2014); Paul Leon (Ph.D. Icahn School of Medicine at Mt. Sinai, 2017); Abbey Corona (PhD candidate, University of Maryland School of Medicine); Monty E. Goldstein (PhD candidate, University of Maryland)

Classroom Instruction (lecturer or discussion leader)

2007-09	260.623 Fundamental Virology
2008-22	260.636 Evolution of Infectious Diseases
2008-09	223.685 Vector Borne Diseases in the Tropics
2009-12	330.711 BCMB Elective in Virology
2009-13	800.209 Cellular and Molecular Basis of Disease
2009-15	260.852 Molecular Biology Literature
2013-19	340.654 Human Viral Infections (online)
2013	340.668 Epidemiology of Infectious Diseases
2012-19	GPILS 704 Principles of Virology (University of Maryland SOM)

2018-22 300.716.0.17027. SP17 Pathobiology Infectious Disease and Immunology

*Classroom Instruction (co- or principal instructor; * indicates Excellence in Teaching Award for a given year)*

2010-22 260.623 Fundamental Virology (30-60 students)
2010-21 260.855 Pandemics of the 20th Century (16-20 students) *****
2010-17 260.841 Survival Skills for Academia (8-12 students) ***
2011-22 260.624 Advanced Virology (9-12 students) ******

RESEARCH GRANT PARTICIPATION

The influenza A virus M2 protein as a universal vaccine candidate (2001-3).
Sponsoring Agency: The Infectious Diseases Society of America Young Investigator in Vaccine Development.
Role: Principal Investigator
Total direct costs: approx. $75,000
Grant objective: Determine the mechanism of action responsible for the efficacy of antibodies that target the extracellular domain of the influenza A virus M2 protein at reducing disease burden
Principal responsibilities: Plan and implement experiments in addition to supervising personnel conducting independent research.

The role of the influenza A virus M2 protein in virus assembly (2001-3).
Sponsoring Agency: The Whitaker Foundation Young Investigator Award.
Role: Principal Investigator
Total direct costs: approx. $150,000
Grant objective: Determine the in vitro effects of anti-M2 antibodies on virus assembly.
Principal responsibilities: Plan and implement experiments in addition to supervising personnel conducting independent research.

Hantavirus genetics and respiratory cell interactions (2002-4).
Sponsoring Agency: R21 AI53381 from the National Institutes of Health, Division of Allergy and Infectious Diseases.
Role: Principal Investigator
Total direct costs: approx. $150,000
Grant objective: Establish a reverse genetics system for the South American hantavirus Andes virus and investigate virus interactions with the respiratory epithelium.
Principal responsibilities: Plan and implement experiments in addition to supervising personnel conducting independent research.

Influenza virus assembly and virulence (2003-2008)
Sponsoring Agency: R01 AI053629 from the National Institutes of Health, Division of Allergy and Infectious Diseases.

Role: Principal Investigator
Total direct costs: approx. $875,000
Grant objective: Investigate the role of the influenza A virus M2 protein in virus assembly.
Principal responsibilities: Plan and implement experiments in addition to supervising personnel conducting independent research.

Cell culture and animal models for SARS-CoV (2004-7)
Sponsoring Agency: R21 AI059328 from the National Institutes of Health, Division of Allergy and Infectious Diseases.
Role: Principal Investigator
Total direct costs: approx. $400,000
Grant objective: Investigate the ability of SARS-CoV to infect and cause disease in the laboratory mouse and Syrian golden hamsters and to assess the ability of the virus to replicate in primary respiratory epithelial cell cultures derived from these animals.
Principal responsibilities: Plan and implement experiments in addition to supervising personnel conducting independent research.

Molecular tools for bunyavirus antiviral screening (2004-7)
Sponsoring Agency: R41 AI058353 from the National Institutes of Health, Division of Allergy and Infectious Diseases.
Role: co-Principal Investigator
Total direct costs: approx. $300,000
Grant objective: Establish a high throughput screening assay and use it to identify small molecular weight compounds that can inhibit the replication of a number of bunyaviruses including LaCrosse virus and hantaviruses.
Principal responsibilities: Plan and implement experiments in addition to supervising personnel conducting independent research. Coordinate research efforts with collaborators in various biotechnology and pharmaceutical companies.

M2-peptide based vaccines against influenza (2004-10)
Sponsoring Agency: U01 AI061252 from the National Institutes of Health, Division of Allergy and Infectious Diseases.
Role: Principal Investigator
Total direct costs: approx. $500,000
Grant objective: Investigate the efficacy of M2 peptides delivered via the woodchuck hepatitis core protein at inducing a protective immune response that targets a number of influenza A virus strains.
Principal responsibilities: Plan and implement experiments in addition to supervising personnel conducting independent research. Coordinate research efforts with collaborators in various biotechnology and pharmaceutical companies.

Salmonella anti-influenza DNA and antigen delivery vaccines (2005-10)

Sponsoring Agency: R01 AI065779 from the National Institutes of Health, Division of Allergy and Infectious Diseases.
Role: co-Principal Investigator (PI Roy Curtiss, Arizona State University)
Total direct costs: approx. $425,000
Grant objective: Investigate the efficacy of various DNA and peptide moieties delivered via recombinant, attenuated Salmonella strains at inducing a protective immune response that targets a number of influenza A virus strains.
Principal responsibilities: Plan and implement experiments in addition to supervising personnel conducting independent research. Coordinate research efforts with collaborators in other academic institutes, as well as biotechnology and pharmaceutical companies.

Sex Differences in Protective Immunity Against Influenza A Viruses (2010-12)
Sponsoring Agency: R21 AI090344-01 from the National Institutes of Health, Division of Allergy and Infectious Diseases.
Role: co-Principal Investigator (PI, Sabra L. Klein, BSPH, MMI)
Total direct costs: $250,000
Grant Objective: This proposal evaluates whether higher adaptive immune responses induced by a sublethal infection confers greater protection from influenza A virus infection in females compared with males. We also will examine the effects of sex steroid hormones on the adaptive immune responses induced by virus infection. There is no overlap with the current proposal.
Principal Responsibilities: Plan and implement experiments involving the use of animal models in studying immunity to influenza virus infection.

Establishment of a Replication System for WU Polyomavirus (2011-13)
Sponsoring Agency: R21 AI 110959-01 from the National Institutes of Health, Division of Allergy and Infectious Diseases.
Role: co-Principal Investigator (PI, David Wang, Washington University in St. Louis)
Total direct costs: $250,000
Grant Objective: This proposal utilizes primary, differentiated human respiratory epithelial cell cultures as a means for propagating WU polyomavirus isolated from clinical samples or recombinant virus from cDNA transfected cells. The replication kinetics in and effects of infection on respiratory epithelial cell cultures will be assessed.
Principal Responsibilities: Plan and implement experiments involving the use of primary human respiratory cell cultures.

Influenza A Virus Infection of Human Nasal Epithelial Cells (2012-16)
Sponsoring Agency: R01 AI 097417-01 from the National Institutes of Health, Division of Allergy and Infectious Diseases.
Role: Principal Investigator
Total direct costs: $ 1,000,000

Grant Objective: The goal of this proposal is to gain an understanding of how influenza virus and influenza vaccine strains differ in their ability to replicate in human nasal epithelial cells. Understanding the differences and similarities in how these two virus strains infect human nasal cells will provide insights into how to treat influenza and improve our understanding of beneficial and detrimental host responses to virus infection.

Principal Responsibilities: Plan and implement experiments involving the use of Primary, differntiated human respiratory cell cultures.

Influenza A Virus Infection of Human Nasal Epithelial Cells (2013)

Sponsoring Agency: Office of the Director, NIH Administrative Supplement to R01 AI 097417-01.

Role: Principal Investigator

Total direct costs: $ 61,000

Grant Objective: The goal of this proposal is to gain investigate whether the sex of the donor influences the host response to infection with influenza virus or live attenuated influenza vaccine strains in differentiated human nasal epithelial cell cultures. Understanding the contribution of sex chromosomes to the host response to infection provides insights into our understanding of the beneficial and detrimental host responses to virus infection.

Principal Responsibilities: Plan and implement experiments involving the use of Primary, differntiated human respiratory cell cultures.

Human Respiratory Epithelial Cell Cultures as a Surrogate System for Assessing the Effects of Estrogenic Compounds on Pulmonary Disease Pathogenesis (2013-15)

Sponsoring Agency: Center for Alternatives to Animal Testing (CAAT 2012-09).

Role: co-Principal Investigator (PI: Sabra L. Klein, BSPH, MMI)

Total direct costs: $ 62,000

Grant Objective: This proposal assess the ability of primary, differentiated respiratory epithelial cell cultures to serve as a surrogate system to assess the role of estrogen and estrogenic compounds in modulating the innate immune response to influenza A virus infection. The effects of estrogen and estrogenic compounds have been studied in other organ systems but this proposal will assess their role in modulating virus-induced, inflammatory lung disease in a model system directly relevant to humans that should minimize if not replace current animal models.

Principal Responsibilities: Plan and implement experiments involving the infection of primary, differentiated human respiratory cell cultures.

Universal Influenza Therapeutic and Prophylactic Stategy (2013)

Sponsoring Agency: Johns Hopkins Applied Physics Laboratory (APL 111624)

Role: Principal Investigator

Total Direct costs: $60,000

Objectives: Design and test the antiviral activity of a novel set of siRNAs that target both viral as well as cellular mRNAs in both transformed and primary cell cultures.

Principal Responsibilities: Plan and implement experiments assessing a unique mechanism for activating siRNAs utilizing the influenza A virus polymerase activity.

Prophecy (2013-2016)

Sponsoring Agency: Defense Advanced Research Projects Agency (DARPA) HR0011-11-C-0093

Role: Co-Principal Investigator (PI: David A. Weitz, Harvard University)

Total Direct costs: $225,000

Objectives: Investigate methods for predicting the evolution of avian influenza A viruses and their adaption to replication in human respiratory epithelial cells with the end goal of designing novel influenza HA based vaccines targeting human-adapted avian influenza viruses.

Principal Responsibilities: Plan and implement experiments involving influenza A virus infection of human and avian cell lines. Assess immunogenicity of recombinant HA proteins and pathogenicity of recombinant influenza A viruses adapted to replication in human respiratory epithelial cell cultures.

Johns Hopkins Center of Excellence for Influenza Research and Surveillance (2014-21)

Sponsoring Agency: NIH/NIAID HHSN2722014007C

Role: Co-Director (with Richard Rothman, MD, Johns Hopkins School of Medicine) and Lead Investigator on Surveillance Laboratory B and Pathogenesis/Host Response project 2A

Total costs: $20,716,605

Total Direct costs for research projects: $14,087,291

Objectives: The overarching objective of the Johns Hopkins University Center for Excellence in Influenza Research and Surveillance (JH-CEIRS) is to improve the ability of the medical and public health infrastructure to respond to influenza pandemics. We propose to contribute to this by advancing innovative tools and algorithms for rapid molecular surveillance and viral fitness characterization, building new knowledge regarding host immune response, and applying robust global modeling methods to evaluate the effectiveness of various public health intervention strategies for pandemic planning response.

Principal Responsibilities: Organize the surveillance and research efforts of the Center and establish mechanisms for initiating new surveillance and research projects. Lead efforts on assessing the pandemic potential of novel influenza virus strains and monitor seasonal influenza virus strains for antiviral resistance and escape from vaccine induced immunity. Organize basic research efforts centering on influenza virus infection of primary, differentiated human respiratory epithelial cell cultures.

Johns Hopkins Center of Excellence for Influenza Research and Surveillance (2015-21)

Sponsoring Agency: NIH/NIAID HHSN2722014007C
Role: Principal Investigator, Option 19a: Respiratory Cell Culture Repository, Ferret Reagent Core and Assessment of Influenza Virus Pandemic Potential.
Total costs: $1,413,153
Total Direct costs for research projects: $960,945
Objectives: Establish a centralized research core specializing in respiratory epithelial cell responses to infection with influenza A virus
Principal Responsibilities:. Develop differentiated respiratory epithelial cell cultures from various animal species and investigate the epithelial cell responses to virus infection. Investigate the viral determinants that mediate cross-species spread of influenza A virus.

Johns Hopkins Center of Excellence for Influenza Research and Surveillance (2017-20)
Sponsoring Agency: NIH/NIAID HHSN2722014007C
Role: Principal Investigator, Option 15: Understanding Influenza Immunization and Vaccine Failure.
Total costs: $601,278
Total Direct costs for research projects: $396,843
Objectives: Coordinate studies of human cohorts undergoing influenza vaccination to assess serum antibody responses; Investigate the role of pre-existing immunity to influenza on vaccination efficacy using a mouse model
Principal Responsibilities: Develop recombinant influenza viruses for serological analysis and as candidate vaccines/challenge viruses in murine experiments.

Johns Hopkins Center of Excellence for Influenza Research and Surveillance (2018-20)
Sponsoring Agency: NIH/NIAID HHSN2722014007C
Role: Co-Principal Investigator, Option 18: Sex-Specific Evaluation of Diverse Universal Flu Vaccine Platforms
Total costs: $396,540
Total Direct costs for research projects: $261,716
Objectives: The goal is to assess sex differences in response to immunization strategies designed to generate broadly protective humoral and cellular immune responses
Principal Responsibilities: Design recombinant influenza viruses to serve as candidate vaccines/challenge viruses in murine experiments.

Johns Hopkins Center of Excellence for Influenza Research and Surveillance (2017-21)
Sponsoring Agency: NIH/NIAID HHSN2722014007C
Role: Co-Principal Investigator, Option 16E: Antibody and B cell responses to influenza vaccination in a healthcare worker cohort
Total costs: $1,179,072
Total Direct costs for research projects: $778,186

Objectives: The goal is to collect serum and PBMCs from influenza vaccinated individuals to assess antibody changes, characterize B cell receptor mutations and analyze the overall transcriptomics patterns in influenza-specific B cells.
Principal Responsibilities: Analyze serum and B cell responses

Sex Differences in Immune Responses to Vaccine and Circulating Strains of Influenza in Healthcare Workers (2018-23)
Sponsoring Agency: 1U54AG062333-01 from the National Institutes of Aging.
Role: Research Project 2 Lead (PI, Sabra L. Klein, BSPH, MMI)
Total direct costs: $1,099,285
Grant Objective: The goal of SADII SCORE Research Project 2 is to investigate the sex differences in antibody and B cell responses to influenza vaccination in an age- aIL1-nd sex-matched cohort of individuals ages 18-45 that have a documented history of influenza vaccination.
Principal Responsibilities: Plan and implement experiments involving the use of Serology and B cell RNAseq.

IL1-β Regulation of Zika-Mediated Adverse Perinatal Outcomes (2018-23)
Sponsoring Agency: 1R01HD097608-01 from the National Institutes of Child Health and Human Development
Role: co-Principal Investigator (MPIs, Sabra L. Klein, BSPH, MM; Irina Burd JHSOM)
Total direct costs: $1,640,000
Grant Objective: The goal of this study is to test the hypothesis that the extent of perinatal neurologic injury following intrauterine ZIKV infection is determined by the state of placental inflammation, which can then be reversed by targeting maternal IL-1β signaling.
Principal Responsibilities: Plan and implement experiments involving the use of animal models in studying Zika virus placental infection.

Johns Hopkins Center of Excellence for Influenza Research and Surveillance (2020-22)
Sponsoring Agency: NIH/NIAID HHSN2722014007C
Role: Principal Investigator and co-Investigator, Option 20a: COVID-19 surveillance in the JH CEIRS network
Total costs: $1,686,989
Total Direct costs for research projects: $1,258,947
Objectives: Establish a surveillance network to enroll COVID-19 patients to study virus load, virus sequences, immune responses and clinical/demographic data
Principal Responsibilities: Perform virus isolation, derive clinical isolates of SARS-CoV-2 and characterize the antiviral antibody responses in patients enrolled in an 18 month followup study.

Johns Hopkins Center of Excellence for Influenza Research and Surveillance (2015-21)
Sponsoring Agency: NIH/NIAID HHSN2722014007C

Role: co-Investigator, Option 20b: COVID-19 and Influenza Surveillance in the Southern Hemisphere
Total costs: $688,166
Total Direct costs for research projects: $513,557
Objectives: Establish a coordinated surveillance effort to study viral load, virus sequences and longterm immune responses in patients infected with COVID-19 or influenza across multiple surveillance sites in the Southern Hemisphere
Principal Responsibilities:. Perform virus isolation, derive clinical isolates of SARS-CoV-2 and Influenza A virus and perform neutralizing antibody assays on patients enrolled in a 12 month followup.

Convalescent plasma randomized clinical trials for early COVID-19 treatment (2020-21)
Sponsoring Agency: W911QY-20-9-0012 (Sullivan)US Army Medical Research and Material Command
Total direct costs: $1,500,000
Project Objective: This project involves conducting two randomized, placebo-controlled clinical trials (RCT's), informally called The Infection Prevention and Early Treatment Studies (Study #'s 001/004), that evaluate the feasibility, safety and efficacy of convalescent plasma in the control of COVID-19. These parallel studies will include site setup, enrollment, data collection, analysis & reporting activities.
Principal Responsibilities: Perform quantify infectious virus and viral RNA load in patients diagnosed with COVID-19. Screen donor and patient plasma for SARS-CoV-2 neutralizing antibodies.

The role of ACE2 in Influenza viral infection mediated immune compromise and subsequent bacterial lung infection
Sponsoring Agency: NIH/NIAID 1 R01 AI148446-01A1 (PI: Hongpeng Jia)
Performance Period: 05/15/2020 – 04/30/2025
Level of Funding: $485,266
Project Goal: The overall goal of this study is to advance our understanding of ACE2 biology in the lung, to explore a novel link between ACE2 activity and the interferon-γ-mediated compromised innate immunity in IAV and subsequent bacterial lung infection, and to lay the groundwork for a new strategy to prevent and treat lethal IAV-bacterial coinfection by manipulating ACE2 activity.
Principal Responsibilities: Provide influenza virus strains for in vivo experiments and perform in vitro infections to monitor epithelial changes that promote bacterial colonization.

COVID-19 screening of Takeda compounds
Supporting Agency: Millennium Pharmaceuticals, Inc. 90088715 (Pekosz)

Performance Period: 05/21/2020 – 05/20/2021
Level of Funding: $248,749
Project Goal: Pekosz lab will screen nine Takeda materials, including performing cytotoxicity baseline experiments to assess cytotoxicity of Takeda materials and dose ranging experiments to define concentration of doses and experimental criteria/metrics of success.

Measles virus infection of the respiratory tract

Supporting Agency: NIH/NIAID 1 R01 AI153140-01 (PI: Diane Griffin)
Performance Period: 05/04/2020 – 04/30/2025
Level of Funding: $250,000
Project Goal: The goal of this study is to identify the mechanisms by which both wild type and vaccine strains of MeV infect primary differentiated respiratory tract epithelial cells.
Principal Responsibilities: Provide influenza virus strains for in vitro experiments and perform differentiation of macaque nasal and tracheal respiratory epithelial cell cultures.

Nonhuman Primate Model Development for Enterovirus D68 (EV-D68)

Supporting Agency: NIH/NIAID, Subcontract from Lovelace Biomedical Research Institute (HHSN272201700024I, Task Order 75N93020F00001)
Performance Period: 07/01/2020 – 12/31/2020
Level of Funding: $50,000
Project Goal: The Pekosz Lab will grow, produce, and verify EV-D68 virus strains and titrate infectious virus from tissue samples and determine neutralizing antibody levels in serum.

Enhanced infectivity of SARS-CoV-2 in Particulate Matter exposed Sinonasal Epithelial Cells (2020)

Supporting Agency: NIH/NIAID 3 R01 AI143731-02S1 (Ramanathan)

Level of Funding: $120,000
Project Goal: The proposed studies will improve our understanding of how air pollution may increase our susceptibility to SARS-CoV2 infection in the sinonasal epithelia and help develop a novel therapy for prevention and treatment.
Principal Responsibilities: Provide SARS-CoV-2 virus strains and perform in vitro infections on treated sinonasal epithelial cell cultures.

Johns Hopkins Excellence in Pathogenesis and Immunity Center for SARS-CoV-2 (JH-EPICS) (2020-25)

Sponsoring Agency: 1U54CA260492 FROM the National Cancer Institute
Role: Research Project 3 co-I; Virology Resource Core PI (PI, Sabra L. Klein and Andrea Cox)
Total direct costs: $1,000,000
Grant Objective: The goal of SADII SCORE Research Project 2 is to investigate the sex differences in antibody and B cell responses to influenza vaccination in an age- aIL1-nd sex-matched cohort of individuals ages 18-45 that have a documented history of influenza vaccination.
Principal Responsibilities: Perform virus neutralization studies and assess SARS-CoV-2 escape from antibody pressure. Study the transcytosis of antibody using primary respiratory epithelial cell cultures. Provide BSL3 facilites to perform SARS-CoV-2 experiments as well as other SARS-CoV-2 reagents for use in other JH-EPICS projects.

SARS-CoV-2 Genome: Viral Evolution as a Factor of Sustained Community Transmission and Prolonged Infection (05/2021 – 05/2023)

Sponsoring Agency: 75D30121C11061 Centers for Disease Control
Role: Co-I; (PI, Heba Mostafa)
Total direct costs: $1,358,321
Grant Objective: Johns Hopkins University will provide data in real-time describing the evolution of the SARS-CoV-2 virus in both the community

and individuals. This study will provide real-time viral evolution data to identify whether specific changes in the SARS-CoV-2 genome mean a variant can spread more easily between people. It will also detect if a variant is better adapted to replicate within a host,or can make people more sick. Researchers will use novel methods to study how the virus evolves, not only in the community, but within a patient over a period of time. Through this study they will better understand the effects of SARS-CoV-2.

Principal Responsibilities: SARS-CoV-2 virus isolation, fitness and antigenic characterization

*NIAID Centers of Excellence for Influenza Research and Response (CEIRR) (*04/01/2021 - 03/31/2028)

Sponsoring Agency: 75N93019R00028 NIH/NIAID
Role: PI and co-I
Total direct costs: $15,400,000 (561,128 directly for laboratory research)
Grant Objective: The overarching objective of the JH-CEIRR is to improve the ability of the medical and public health infrastructure to respond to influenza pandemics. We propose to contribute to this by advancing innovative tools and algorithms for rapid molecular surveillance and viral fitness characterization, building new knowledge regarding host immune response, and applying robust global modeling methods to evaluate the effectiveness of various public health intervention strategies for pandemic planning response.
Principal Responsibilities: Direct all JH CEIRR administrative responsibilities and serve as PI on projects designed to study influenza A and B virus fitness and antigenic diversity

COVID Protection After Transplant (CPAT) Pilot Study (8/2021-7/2024)

Sponsoring Agency: 5 U01 AI 134591 NIH/NIAID
Role: Co-Director and Project PI
Total direct costs: $3,367,091
Grant Objective: To study immunogenicity and safety of a 3rd dose of SARS-CoV-2 mRNA vaccine in kidney transplant (KT) recipients with suboptimal antibody response to the two-dose mRNA vaccine series. To determine the optimal strategy to maximize vaccine immunogenicity in SOTRs recipients using an adaptive, multicenter clinical trial platform.
Principal Responsibilities: Perform serological assays against SARS-CoV-2 and newly identified viral variants.

RADx Clinical Studies Core (07/2020 – 06/2022)

Sponsoring Agency: U 54 HL 143541, OSP/WPM33765-JHU 9 NIH/NIHL

Role: Co-I (PIs McManus / Manabe)
Total direct costs: $4,899,417

Grant Objective: The goal of this initiative is to fast-track the implementation of carefully selected CAPCaT-supported projects that can help address the urgent healthcare issues created by the COVID-19 pandemic.
Principal Responsibilities: Perform SARS-CoV-2 virus isolation and quantitation of viral RNA and infectious virus in clinical samples.

Defining SARS-CoV-2 vaccine-induced immunity in pregnant and lactating people (3/2022-2/2024)
Sponsoring Agency: Center of Excellence in Regulatory Science and Innovation (CERSI) and the Food and Drug Administration (FDA)
Role: Co-I
Total direct costs: $253, 592
Grant Objective: To study the humoral and cellular immune responses to SARS-CoV-2 mRNA vaccination in pregnant and lactating individual. In addition, virological and immunological factors will be compared between infected pregnant people and age-matched controls to compare disease severity and responses to infection with SARS-CoV-2.
Principal Responsibilities: Perform serological assays against SARS-CoV-2 and measure infectious virus loads in nasal swab specimen.

ACADEMIC SERVICE

Washington University

Division and/or Department

2002-06	Department Seminar Committee
2004	Molecular Microbiology Department Faculty Search Committee
2005	Molecular Microbiology Department Faculty Search Committee

University

2000-02	Graduate Admissions Committee, Division of Biology and Biomedical Sciences
2003-06	Chair of Graduate Admissions Committee, Division of Biology and Biomedical Sciences
2005-07	Graduate Program in Molecular Microbiology and Microbial Pathogenesis Steering Committee
2004-07	Diversity Steering Committee

Johns Hopkins University

Division and/or Department

2007- 2016	Molecular Microbiology and Immunology Graduate Admissions Committee (Committee chair 2011-16)
2007- current	Molecular Microbiology and Immunology Committee on Appointments and Promotions
2017-current	JHBSPH MMI Graduate Program Committee
2017-2019	JHBSPH MMI Equipment Committee
2019-current	JHBSPH MMI Vice Chair of Scientific Resources

School

2007- 09	JHBSPH Pandemic Influenza Preparedness Plan coordinator
2008-12	JHBSPH Committee on Equity, Diversity and Civility
2009-11	JHBSPH Faculty Senate, representative from the Dept. of Molecular Microbiology and Immunology
2013-15	JHBSPH Faculty Senate, representative from the Dept. of Molecular Microbiology and Immunology
2016-current	JHBSPH Appointments and Promotions Committee

University

2007-08	Faculty Search Committee, Division of Infectious Diseases, Department of Medicine, Johns Hopkins University School of Medicine
2008-12	Johns Hopkins Institutions Diversity Leadership Council
2014-present	Johns Hopkins University Dual Use Research of Concern (DURC) Institutional Review Entity (IRE)
2019-present	JHU Core Facility Coordinating Committee

PRESENTATIONS

2002 (February) University of Pennsylvania, Philadelphia, PA
2002 (April) Merck Inc., West Point, PA
2003 (March) University of Illinois at Chicago, Chicago, IL
2003 (September) NIAID Rocky Mountain Laboratories, Hamilton, MT
2004 (December) Charoen Pokphand Indonesia Corporation, Jakarta, Indonesia
2004 (December) Department of Agriculture, Committee on Livestock and Animal Welfare, Jakarta, Indonesia
2004 (December) Atma Jaya Catholic University, Jakarta Indonesia
2005 (February) Dept. of Microbiology, St. Louis University School of Medicine, St. Louis, MO
2005 (February) Dept. of Cell Biology, Washington University, St. Louis, MO
2005 (March) Diagnostic Hybrids, Inc., Athens, Ohio
2005 (April) Medimmune, Sunnyvale, California
2005 (May) 21st annual Clinical Virology Symposia, Pan American Society for Clinical Virology, Clearwater, FL
2005 (July) Xth International Nidovirus Symposium, Colorado Springs, CO (invited speaker)
2005 (August) Columbus Children's Research Institute, Columbus, OH
2006 (February) Avian Influenza Virus Taskforce, Jakarta, Indonesia
2006 (February) University of Indonesia, Jakarta, Indonesia
2006 (March) Loyola University, Chicago, IL
2006 (March) Keystone Symposia, Advances in Influenza Research: From Birds to Bedsides, Steamboat Springs, CO (invited speaker)
2006 (April) University of Illinois, College of Veterinary Medicine, Champaign-Urbana, IL
2006 (May) University of Rochester School of Medicine, Rochester, NY
2006 (May) Virology Group, Roche LLC, Palo Alto, CA
2006 (June) Department of Biology, UTEP, El Paso, TX
2006 (June) Department of Microbiology and Immunology, Johns Hopkins University Bloomberg School of Public Health, Baltimore, MD
2006 (September) Ohio State University School of Medicine, Dept. of Pediatrics, Columbus, OH
2006 (October) Florida Memorial University, Miami, FL
2006 (November) Kansas State University, School of Veterinary Medicine, Manhattan, KS
2007 (January) University of Michigan, Dept. of Microbiology and Immunology, Ann Arbor, MI
2007 (January) Midwest Research Institute, Kansas City, MO
2007 (February) Diagnostic Hybrids, Inc., Athens, OH
2007 (March) Emory University, Atlanta, GA
2007 (September) Workshop on Negative Strand RNA Virus Replication, Evanston, IL (invited speaker)

2007 (November) National Institutes of Health, Bethesda, MD
2008 (March) Dickinson College, Carlisle, PA
2008 (June) Immunobiology and Pathogenesis of Influenza Infection, Atlanta, GA
2009 (March) Dept. of Microbiology, University of Virginia, Charlottesville, VA
2009 (April) Meyerhoff Scholarship Program, University of Maryland, Baltimore County, Baltimore, MD
2009 (August) 2009 H1N1 Symposia, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD
2009 (September) University of North Carolina, Dept. of Microbiology and Immunology, Chapel Hill, NC
2009 (October) Aspen Institute, Washington DC (invited speaker)
2009 (October) University of Maryland, Dept. of Microbiology and Immunology, Baltimore, MD
2010 (May) Saint Louis University, Dept. of Microbiology and Immunology, Saint Louis, MO
2010 (July) American Society for Virology Annual Meeting, The Maurice Hilleman Merck Research Laboratories Lecture, Bozeman, MT (invited speaker)
2010 (November) Workshop on Downstream Consequences of Glycan Binding by Viruses, Annual Meeting of the Society for Glycobiology, St. Petersburg, FL (invited speaker)
2011 (January) Novartis Vaccines and Diagnostics, Inc., Cambridge, MA
2011 (March) Pennsylvania State University, State College, PA
2011 (May) Keystone Symposia, Pathogenesis of Influenza: Virus –Host Interactions, Hong Kong, SAR (invited speaker)
2011 (June) Dartmouth College, Hanover, NH
2012 (February) Dickinson College, Carlisle, PA
2012 (March) St. Jude Children's Hospital, Memphis, TN
2013 (May) Experimental Biology 2013, Symposia on Microbial Regulation of Membrane Transport, Boston MA (invited speaker)
2013 (May) University of California, Irvine, Center for Virus Research, Irvine, CA
2013 (August) University of Kentucky, Dept. of Microbiology, Immunology and Molecular Genetics, Lexington, KY
2013 (September) University of Maryland, Dept. of Microbiology & Immunology, Baltimore, MD
2013 (October) University of New Mexico, Dept. of Molecular Genetics and Microbiology, Albuquerque, NM
2013 (December) J. Craig Venter Institute, Rockville, MD
2014 (May) Icahn School of Medicine at Mt. Sinai, New York, NY
2015 (March) University of Chicago, Chicago, IL
2015 (April) Organization for the Study of Sex Differences Annual Meeting, Stanford University, Palo Alto, CA
2015 (July) 4th Annual Influenza Research and Development Conference, Boston, MA
2016 (January) Department of Microbiology and Immunology, Northwestern University School of Medicine, Chicago, IL
2016 (April) IN-Q-TEL, Arlington, VA

2016 (June) Center for Biologics Research and Review, Food and Drug Administration, Silver Spring, MD
2016 (June) American Society for Microbiology Annual Meeting, Boston, MA
2016 (September) University of Vermont, Burlington, VT
2016 (September) University of Illinois, Champaign, IL
2016 (December) University of Florida, Gainesville, FL
2017 (March) National Institutes of Health, Bethesda, MD
2017 (July) Center of Excellence in Influenza Research and Surveillance Annual Meeting, Atlanta, GA
2017 (September) R. Mark Buller Memorial Symposia, St. Louis University, St. Louis, MO
2017 (September) Cornell University, Ithaca, NY
2017 (October) Mount St. Joseph High School, Baltimore, MD
2017 (November) University of Maryland, College Park, MD
2017 (November) Kansas State University, Manhattan, Kansas
2017 (November) Center of Excellence in Influenza Research and Surveillance Annual Surveillance Meeting, Bergen, the Netherlands
2018 (January) Pennsylvania State University, Huck Institute of Live Sciences, University Park, PA
2018 (February) University of Florida Emerging Pathogens Institute Research Day, Gainesville, FL, Keynote Speaker
2018 (March) Biology of Healthy Aging Group, Division of Geriatric Medicine and Gerontology, Johns Hopkins Asthma and Allergy Center, Baltimore, MD
2018 (September) University of Georgia, Athens, GA
2018 (November) Virology Retreat Keynote Speaker, University of Maryland, College Park, MD
2018 (December) Featured Speaker, Conference of Research Workers in Animal Disease, Chicago, IL
2018 (December) American Society for Microbiology Maryland Branch Meeting, Baltimore, MD
2019 (January) Department of Immunology and Microbial Disease, Albany Medical College, Albany, NY
2019 (February) Viral Immunology Section, National Institutes of Allergy and Infectious Diseases, Bethesda, MD
2019 (March) National Biodefense Analysis and Countermeasures Center at Fort Detrick, Frederick, MD
2019 (April) Duke Center for Virology Minisymposium on Pathogenic Human Viruses, Duke University, Durham, NC
2019 (May) Keynote Speaker, Taiwan Society for Virology Annual Meeting, Taipei, Taiwan
2019 (May) Taiwan Centers for Disease Control, Taipei, Taiwan
2019 (May) Chang Gung Memorial Hospital, Taipei, Taiwan
2019 (May) Keynote Speaker, Institute for Molecular Virology Annual Symposia, University of Minnesota, Minneapolis, MN
2019 (June) Department of Microbiology and Immunology, Indiana University, Indianapolis, IN

2021 (January) Department of Microbiology and Immunology, University of Michigan Medical School
2021 (February) Department of Infectious Diseases, UGA College of Veterinary Medicine, Athens, GA
2021 (March) Department of Medical Microbiology and Immunology, University of Wisconsin School of Medicine and Public Health, Madison, WI
2021 (July) American Society for Virology, Plenary Speaker (virtual)
2021 (July) Learning Health Systems Workshop on SARS-CoV-2 and COVID-19. National Health Research Institutes, Taipei, Taiwan (virtual)
2021 (September) NAPPSA Conference, Baltimore, MD
2021 (September) NIIMBL Member Forum, University of Delaware, Newark Delaware
2021 (October) Department of Biochemistry and Molecular Biology, Johns Hopkins University Bloomberg School of Public Health, Baltimore, MD
2022 (January) Department of Molecular Genetics and Microbiology, University of Florida, Gainesville, FL
2022 (January) Department of Microbiology and Cell Biology, Montana State University, Bozeman, MT
2022 (February) Viroholics Seminar Series, Arizona State University, Tempe, AZ
2022 (March) National Institutes of Health SARS-CoV-2 Working Group, Bethesda, MD
2022 (March) Vaccines and Global Health Symposia, Columbia University, NY, NY
2022 (April) Infectious Diseases Institute Trainee Day, The Ohio State University, Columbus, OH
2022 (June) Negative Strand RNA Virus Meeting 2022, Porto, Portugal
2022 (June) Foreign Policy, Global Health Forum, Washington, DC
2022 (July) Chang Gung University, Taipei, Taiwan
2022 (August) Michigan Upper Peninsula Medical Conference, Michigan Technological University, Houghton, MI
2022 (September) New York University Langone Medical Center, NY, NY
2022 (November) Department of Infectious Diseases, University of Georgia, Athens, GA
2023 (January) Department of Immunobiology, University of Arizona School of Medicine
2023 (February) Department of Microbiology, Immunology and Cell Biology, West Virginia University
2023 (April) Spring Research Festival (NCI, NIAID, Ft. Detrick Combined Research Presentation), Ft. Detrick, Frederick, MD

MEDIA INTERACTIONS

In addition to my basic science research, I have been interviewed both live and in print on the topics of influenza and threats associated with influenza pandemics by a number of news agencies including British Broadcasting Company (BBC), France24, Voice of America, the Discovery Channel, The Associated Press (AP), Huffington Post, The Baltimore Sun and numerous local radio and television stations, as well as the following:

National Public Radio
http://thedianerehmshow.org/shows/2009-04-27/swine-flu
https://www.npr.org/sections/goatsandsoda/2018/04/27/606086442/are-we-prepared-for-a-killer-flu-epidemic
https://www.npr.org/sections/goatsandsoda/2020/12/22/948961575/what-we-know-about-the-new-u-k-variant-of-coronavirus-and-what-we-need-to-find-o
https://www.npr.org/2021/08/25/1031030149/boosters-breakthroughs-and-the-fdas-blessing

The New York Times
http://www.nytimes.com/2009/05/19/science/19vacc.html?pagewanted=2&fta=y

The Washington Post
http://www.washingtonpost.com/wp-dyn/content/article/2009/10/20/AR2009102004113.html
https://www.washingtonpost.com/politics/2022/05/24/biden-says-everyone-should-be-concerned-about-monkeypox-naw/

Cable News Network (CNN,
http://www.cnn.com/2009/HEALTH/11/27/hand.sanitizer.basics/index.html?iref=allsearch
http://www.cnn.com/2009/HEALTH/05/07/swine.flu.future/index.html?iref=allsearch)
https://www.cnn.com/2022/04/19/health/ba-2-12-1-takes-on-ba-2/index.html

CSPAN
http://www.c-spanvideo.org/andrewpekosz

USA Today
http://www.usatoday.com/story/news/nation/2013/09/10/flu-shot-choices/2777141/

Science Magazine
http://www.sciencemag.org/content/335/6064/21.summary?sid=b34b704b-c6f9-434c-b875-e99d1f871330
http://news.sciencemag.org/2012/01/live-chat-should-science-be-censored

Marketwatch

https://www.marketwatch.com/story/coronavirus-update-vaccine-expected-in-phase-1-trial-within-months-who-to-reconvene-on-thursday-2020-01-29

The Lancet
http://www.thelancet.com/journals/lancet/article/PIIS0140-6736%2805%2975524-0/fulltext ; http://www.thelancet.com/journals/lancet/article/PIIS0140-6736%2813%2960868-5/fulltext

Johns Hopkins University Podcasts:
https://johnshopkinssph.libsyn.com/bonus-omicron-updatethe-good-the-bad-and-the-unknown
https://johnshopkinssph.libsyn.com/bonus-the-latest-on-omicron
https://johnshopkinssph.libsyn.com/386-what-to-expect-from-this-years-flu-season
https://johnshopkinssph.libsyn.com/232-the-covid-19-variants-explained
https://podcasts.hopkinsmedicine.org/2018/01/18/january-23-2018-flu-vaccine/
https://podcasts.hopkinsmedicine.org/2018/01/18/january-24-2018-protecting-yourself/
http://podcasts.hopkinsmedicine.org/2015/06/18/june-26-2015-blood-drop-analysis/
http://podcasts.hopkinsmedicine.org/2015/06/18/june-25-2015-mers/
http://podcasts.hopkinsmedicine.org/2014/07/23/july-28-2014-laboratory-safety/
http://podcasts.hopkinsmedicine.org/2014/07/23/july-30-2014-bioterrorism-potential/
http://podcasts.hopkinsmedicine.org/2014/07/23/july-29-2014-why-store/
https://www.youtube.com/watch?v=3_eh1llgLCw

Baltimore Local News:
http://foxbaltimore.com/morning/health-watch-flu-vaccine ;
http://foxbaltimore.com/news/local/new-flu-vaccine-targets-the-young-and-elderly
http://www.baltimoresun.com/health/bal-te.md.fall06may06-story.html
http://www.baltimoresun.com/health/maryland-health/bs-hs-fda-blood-20160826-story.html
http://www.wbaltv.com/health/jhu-panel-to-talk-ebola-response-future-in-us/29115064
http://www.baltimoresun.com/health/bs-hs-flumist-flu-vaccine-20171129-story.html
https://www.wbaltv.com/article/johns-hopkins-medical-researcher-calls-strain-of-coronavirus-serious-threat/30660189
https://www.wbaltv.com/article/hopkins-possible-covid-19-surge-fall-winter/41124305#
https://www.cbsnews.com/baltimore/news/johns-hopkins-virologist-new-covid-restrictions-on-people-traveling-from-china-wont-stop-virus/?intcid=CNM-00-10abd1h
https://www.wbaltv.com/article/covid-19-new-years-celebrations-new-variants-bq-xbb/42368652
https://www.wbaltv.com/article/healthy-holiday-season-covid-19-rsv-flu-maryland/42327696
https://www.wbaltv.com/article/cdc-recommends-adding-covid-19-shot-to-routine-vaccines-for-kids/41728317

Smithsonian Institute:

https://www.smithsonianmag.com/science-nature/watch-livestream-next-pandemic-are-we-prepared-180967069/
https://www.smithsonianmag.com/science-nature/whats-in-your-flu-shot-180965267/

Men's Health:
https://www.menshealth.com/health/flu-shot-side-effects

Bloomberg TV and Radio
https://www.bloomberg.com/news/videos/2019-12-09/early-flu-season-cases-much-higher-than-average-johns-hopkins-video
https://www.bloomberg.com/news/videos/2020-02-21/milder-coronavirus-cases-raise-new-concerns-johns-hopkins-video
https://www.bloomberg.com/news/audio/2022-05-19/tesla-s-removal-from-s-p-index-sparks-debate-podcast
https://www.bloomberg.com/search?query=pekosz

Chinese Global Television Network
https://newsus.cgtn.com/news/2020-01-30/Andrew-Pekosz-explains-the-current-state-of-the-coronavirus-NFiGCXMdxu/index.html

Beijing News
https://m.bjnews.com.cn/detail/167349973714258.html

ADDITIONAL INFORMATION

Personal statement of research and research objectives

My research interests lie in understanding the interaction of viruses with the respiratory epithelium. Our efforts are focused on influenza A virus, rhinoviruses, enterovirus D68, the severe, acute respiratory syndrome coronavirus (SARS-CoV) and hantaviruses. We are particularly interested in virus strains that i) are currently circulating in humans in order to understand how viruses are maintained in the human population during annual seasonal outbreaks and ii) on viruses present in animal populations to assess the potential of these viruses to be a human disease threat.

There are two main focuses to our research program. The first is focused on how viral proteins target to sites of assembly and on the identification of viral and cellular factors that are important for the production of infectious virus particles. The second research focus is in understanding how viruses interact with respiratory epithelial cells to complete the virus life cycle and inhibit the initiation of host immune activation. For these studies, we utilize primary differentiated cultures of respiratory epithelial cells which can be generated from different animals and from different tissues in the respiratory tract. The identification of virus mutations and epithelial cell factors that are important for efficient replication of viruses provides us with information that is relevant to combating respiratory virus infections that occur annually but also aids in our understanding of the potential threat to humans posed by zoonotic viruses.

Keywords: virus, virus assembly, virus-host interactions, innate immunity, respiratory infections, receptors, cell tropism, flu, influenza, SARS-CoV, hantavirus