CURRICULUM VITAE *date revised: 12/23/24*

Anna Palmer Durbin, M.D.

PERSONAL DATA

Business Address
855 Wolfe St, Suite 600
Baltimore, MD 21205
Tel. 667-306-9772
Email: adurbin1@jhu.edu

EDUCATION AND TRAINING

B.S./1983 University of Michigan, Ann Arbor, MI; Pharmacy
M.D./1987 School of Medicine, Wayne State University, Detroit, MI; Medicine

Postdoctoral Training

1987-1990 Resident, Department of Internal Medicine, Detroit Medical Center, Wayne State University, Detroit, Michigan.

1990-1991 Chief Medical Resident, Detroit Receiving Hospital, Detroit Medical Center, Wayne State University, Detroit, Michigan.

1991-1994 Fellow, Division of Infectious Diseases, Detroit Medical Center, Wayne State University, Detroit, Michigan.

Medical Licensure

1987 – present	Michigan Medical License # 051916
1994 – present	State of Maryland Medical License #D46654
2006 – 2012	District of Columbia Medical License #MD036383

Medical Board Certification

1990 Diplomat in Specialty of Internal Medicine, American Board of Internal Medicine.
1994 Diplomat in Subspecialty of Infectious Diseases, American Board of Internal Medicine
2000 Recertification, Specialty of Internal Medicine
2004 Recertification, Subspecialty of Infectious Diseases
2010 Recertification, Specialty of Internal Medicine
2022 Enrollment in Long-term Knowledge Assessment Program for Internal Medicine
2014 Recertification, Subspecialty of Infectious Diseases
2024 Enrollment in Long-term Knowledge Assessment Program for Infectious Diseases

PROFESSIONAL EXPERIENCE

Johns Hopkins University

Professor, Department of International Health, Johns Hopkins Bloomberg School of Public Health, 2016 – present

Director, Center for Immunization Research, 2021 – present

Associate Professor, Department of International Health, Johns Hopkins Bloomberg School of Public Health, 2007 – 2016

Assistant Professor, Department of International Health, Johns Hopkins Bloomberg School of Public Health, 1999 – present

Joint appointment, Department of Medicine, Division of Infectious Diseases, Johns Hopkins School of Medicine 1999 - present

Non-Johns Hopkins University

Clinical Fellow, Respiratory Virus Section, Laboratory of Infectious Diseases, National Institute of Allergy and Infectious Diseases, National Institutes of Health 1994 - 1999

PROFESSIONAL ACTIVITIES

Society Membership and Leadership

American Society of Virology
Infectious Diseases Society of America
American Society of Tropical Medicine and Hygiene
American College of Physicians

2005: Chair, Dengue vaccine session, American Society of Tropical Medicine and Hygiene annual meeting
2006: Chair, Flavivirus V- Dengue III. American Society of Tropical Medicine and Hygiene annual meeting
2010: Chair, Flavivirus Vaccines. American Society of Tropical Medicine and Hygiene annual meeting
2024: Chair, Flavivirus Vaccines Session, American Society of Tropical Medicine and Hygiene annual meeting

Participation on Advisory Panels

2002 – 2006	Temporary Advisor, WHO Task Force on Clinical Trials of Dengue Vaccines.
2002 – 2008	CDC Yellow Fever Vaccine Working Group
2006 - 2007	Chair, Data Safety and Monitoring Board, WRAIR, Phase I Evaluation AMA1 malaria vaccine (FMP2.1) in 1-6 year old children Bandiagara, Mali.

2008 – 2011	Chair, Safety monitoring committee, Sanaria sponsored Phase 1/2a trial of the PfSPZ vaccine administered subcutaneously or intradermally to malaria-naïve adult volunteers
2008 – *2012*	Advisor, WHO Task Force on Clinical trials of Dengue Vaccines
Oct. 2011	Advisor, Technical consultation on long term safety assessment of live attenuated dengue vaccines
2010 – 2013	Member, Vaccines and Related Biological Products Advisory Committee (VRBPAC), Center for Biologics Evaluation and Research, FDA
2011 – present	Chair, Safety monitoring committee, Phase 1 Study of the Safety and Immunogenicity of *Na*-GST-1/ Alhydrogel® with or without GLA-AF in Brazilian Adults
2011 – *2013*	Chair, Safety monitoring committee, Sanaria sponsored Phase 1, Open-Label, Dose-Escalation Clinical Trial with Experimental Challenge to Evaluate Intravenous Administration of the PfSPZ Vaccine in Malaria-Naive Adults
2008 – 2011	Brighton Collaboration Yellow Fever Group
2008 – 2011	Brighton Collaboration V3SWG Cross-Cutting Issues Subgroup
2007- 2012	Chair, Data Safety and Monitoring Board, WRAIR, Randomized, Controlled Phase 2 Clinical Trial to Evaluate the Safety, Immunogenicity and Efficacy of the AMA-1 Malaria Vaccine FMP2.1/ASO2A vs Rabies Vaccine in 1-6 Year Old Children in Bandiagara, Mali.
2013 - 2020	Chair, Safety Monitoring Committee for Sanaria sponsored clinical trial entitled "A phase I, open-label, clinical trial with experimental controlled human malaria infections (CHMI) to evaluate safety and durability of protection following intravenous and intramuscular administration of PfSPZ vaccine in malaria-naive adults".
2015	Ad hoc member of Vaccines and Related Biological Products Advisory Committee (VRBPAC), Center for Biologics Evaluation and Research, FDA for review of Ebola vaccines
2015	Ad hoc member of the SAGE Working Group on Dengue Vaccines
2015	Member, Technical Advisory Group for PATH-MVI sponsored meeting on *P. berghei* whole parasite vaccine

2016- present	Member, DSMB for the efficacy trial of the live attenuated tetravalent dengue vaccine produced by the Instituto Butantan. The title of the clinical trial is: Phase III Trial to Evaluate Efficacy and Safety of a Dengue 1,2,3,4 (Attenuated) Vaccine
2018-present	ACIP dengue vaccines working group
2019- present	Member, Lancet Commission on Aedes-borne transmitted diseases
2019-2021	Member, IDMC for the AWED trial evaluating the efficacy of Wolbachia introduction against dengue infection in Indonesia
2019-present	Member scientific advisory committee, Advanced Vaccinology Course (ADVAC), Annecy France
2019	Scientific advisory committee for the IABS 3rd Human Challenge Trials in Vaccine Development meeting, Pembroke College, Oxford, February 6-7, 2020
2019 – present	Scientific advisory committee for the 20th International Congress for Tropical Medicine and Malaria, Bangkok, Thailand, Sept. 20 – 24, 2020
2020	Co-Chair, Scientific advisory committee for the IABS 4th Human Challenge Trials in Vaccine Development meeting
2020	Member, WHO Advisory Group on Human Challenge Studies
2021 - 2023	Scientific advisory committee for the IABS 4th Human Challenge Trials in Endemic countries meeting, Mombasa Kenya, 2021 (rescheduled for 2023)
2021- present	DSMB member for COVID-19 human challenge studies conducted at Imperial College, London
2022 – present	DSMB chair, Phase 2 clinical trial of COVID-19 vaccine produced by Vaxxinity
2024	Ad-hoc Committee Member, Vaccines and Related Biological Products Advisory Committee (VRBPAC), Center for Biologics Evaluation and Research, FDA

Consultations

2009 – 2010	DSMB Chair, Juvaris sponsored Phase II clinical trial of Fluzone administered with and without a novel adjuvant.
2014 – present:	Emergent Biosolutions, Inc
2016 – 2018:	Merck & Co.
2018 – 2022:	Valneva, Inc member, scientific advisory committee.

EDITORIAL ACTIVITIES

Peer Reviewer Activities

Clinical Infectious Diseases
Experimental Biology and Medicine
Infection and Immunity
Journal of Infectious Diseases
Journal of Medical Virology
Journal of the American Society of Tropical Medicine and Hygiene
Lancet Neurology
PLoS Neglected Tropical Diseases
PloS One
Trials
Vaccine
Virology
Virus Research

Hemorrhagic fever virus chapters for the 27th edition of the *Red Book*.

Ad Hoc Review of Proposals

2001	Review panel for NIH contract "Evaluation of control measures for diseases other than AIDS, RFP NIH-NIAID-DMID-02-01.
2003	Member, review panel for USAID Research Support Program, National Academy of Sciences "Animal Science & Agricultural/Livestock Economics"
2004 - 2006	Center for AIDS Research Grants
2006	Reviewer of Dengue Vaccine research grant proposals sent to the US Army Medical Research and Material Command for funding
2007	Reviewer for the NIH RFA on the Global Network for Women's and Children's Health
2007	Member of the NIH Special Emphasis Panel ZA/a-MPM-M-M1 for the PO1 application "Prevention and Management of Dengue Virus"
2007	Member of the National Institutes of Health Center for scientific Review Infectious Diseases and Microbiology Integrated Review Group Clinical Research and Field Studies of Infectious Diseases Study Section
2008	NIH NICHD Loan Repayment Project (LRP)
2009	Member of the NIH Special Emphasis Panel Review of PO1-AI86132-01 "CD8 Immune Responses Against Viral Pathogens"
2009	NIH NICHD Loan Repayment Project (LRP)
2010	Reviewer for the Wellcome Trust Research Career Development Fellowship

2012 Member, NIH Special Emphasis Panel ZAI1-JKB-M-M2 for the PO1 application "Immune Networks in Dengue Pathogenesis"

2012 Chair, NIH Special Emphasis Panel ZAI1-TM-KP-M-J3 for the PO1 application "Flavivirus infections: Pathogenesis and Prevention"

2015 Member of the NIH Special Emphasis Panel ZAl1-JKB-M-M1 for review of r34 Clinical Trial Planning Grant applications

2017 Chair, review panel of NIAID SBIR Phase II clinical trial implementation cooperative agreement (U44) grant

2019 Chair, review panel of NIAID RFP "Support Services for the National Institute of Allergy and Infectious Diseases Mali International Centers for Excellence in Research"

HONORS AND AWARDS

Honors

1980 Rho Chi Honor Society, College of Pharmacy
1983 Julia Emmanuel Award for Academic Excellence

Awards

2000 Faculty Development Award
2005 National Institutes of Health Merit Award for outstanding basic and translational research in developing vaccines for the prevention of respiratory virus and flavivirus diseases
2010 Clinical Infectious Diseases Award for Outstanding Review
2011 National Institutes of Health Director's Award
2013 Instituto Butantan Medal from the government of Sao Paulo Brazil for Dengue vaccine development
2014 Awarded the "Best Academic Research Team" at the 2014 World Vaccine Congress

U. S. PATENTS ALLOWED

Title: Recombinant parainfluenza virus vaccines attenuated by deletion or ablation of a non-essential gene
Inventors: **Durbin A.P.**, Collins P.L., and Murphy B.R.
Patent No: 6410023
Date: June 25, 2002

Title: Use of recombinant live-attenuated parainfluenza viruses (PIVs) as a vector to protect against infection and disease caused by PIV and other human pathogens
Inventors: Murphy B.R., Collins P.L., Schmidt, A.C., **Durbin A.P.**, Skiadopoulos M.H., and Tao Tao
Patent No: 7192593
Date: March 20, 2007

Title:	Attenuated human-bovine chimeric parainfluenza virus (PIV) vaccines
Inventors:	Schmidt, A.C., Skiadopoulos M.H., Collins P.L., Murphy B.R., Bailly, J.E., **Durbin A.P.**
Patent No:	7201907
Date:	April 10, 2007

Title:	Production of attenuated parainfluenza virus vaccines from cloned nucleotide sequences
Inventors:	Murphy B.R., Collins P.L., **Durbin A.P.**, Skiadopoulos M.H., and Tao Tao
Patent No:	7208161
Date:	April 10, 2007

Title:	Use of recombinant live-attenuated parainfluenza virus (PIV) as a vector to protect against disease caused by PIV and respiratory syncytial virus (RSV)
Inventors:	Murphy B.R., Collins P.L., **Durbin A.P.**, Skiadopoulos M.H., and Tao Tao
Patent No:	7314631
Date:	January 1, 2008

U. S. PATENTS SUBMITTED

Title:	Attenuated parainfluenza (PIV) vaccines
Inventors:	Murphy B.R., Collins P.L., **Durbin A.P.**, Skiadopoulos M.H., Tao, Tao, Bailly, J.E., and Schmidt, A.C.
Patent No:	20080096264
Date Filed:	April 17, 2007

PUBLICATIONS IN PEER-REVIEWED JOURNALS

Journal Articles

1. Walsh MR, Alam MS, Pierce KK, et al. Safety and durable immunogenicity of the TV005 tetravalent dengue vaccine, across serotypes and age groups, in dengue-endemic Bangladesh: a randomised, controlled trial. Lancet Infect Dis **2024**; 24:150-60. PMID: 37776876.

2. Pierce KK, **Durbin AP**, Walsh MR, et al. TV005 dengue vaccine protects against dengue serotypes 2 and 3 in two controlled human infection studies. J Clin Invest **2024**; 134. PMID: 37971871. PMC10836801.

3. Cavaleri M, Kaslow D, Boateng E, et al. Fourth Controlled Human Infection Model (CHIM) meeting, CHIM regulatory issues, May 24, 2023. Biologicals **2024**; 85:101745. PMID: 38341355. PMC7616643.

4. Kapulu M, Manda-Taylor L, Balasingam S, et al. Fourth Controlled Human Infection Model (CHIM) meeting - CHIMs in endemic countries, May 22-23, 2023. Biologicals **2024**; 85:101747. PMID: 38350825. PMC7616644.

5. Odio CD, Lowman KE, Law M, et al. Phase 1 trial to model primary, secondary, and tertiary dengue using a monovalent vaccine. BMC Infect Dis **2023**; 23:345. PMID: 37221466. PMC10204028.

6. Wilder-Smith A, **Durbin A**. Promising efforts to develop an mRNA vaccine against Zika. Lancet Infect Dis **2023**; 23:520-2. PMID: 36682366.

7. Hou R, Tomalin LE, Silva JP, et al. The innate immune response following multivalent dengue vaccination and implications for protection against dengue challenge. JCI Insight **2022**. PMID: 35511431.

8. Aisenberg LK, Rousseau KE, Cascino K, et al. Cross-reactive antibodies facilitate innate sensing of dengue and Zika viruses. JCI Insight **2022**. PMID: 35588060.

9. Wong JM, Adams LE, **Durbin AP**, et al. Dengue: A Growing Problem With New Interventions. Pediatrics **2022**; 149. PMID: 35543085.

10. Santiago HC, Pereira-Neto TA, Goncalves-Pereira MH, Terzian ACB, **Durbin AP**. Peculiarities of Zika Immunity and Vaccine Development: Lessons from Dengue and the Contribution from Controlled Human Infection Model. Pathogens **2022**; 11. PMID: 35335618. PMC8951202.

11. Nivarthi UK, Swanstrom J, Delacruz MJ, et al. A tetravalent live attenuated dengue virus vaccine stimulates balanced immunity to multiple serotypes in humans. Nat Commun **2021**; 12:1102. PMID: 33597521. PMC7889627.

12. Hanley JP, Tu HA, Dragon JA, et al. Immunotranscriptomic profiling the acute and clearance phases of a human challenge dengue virus serotype 2 infection model. Nat Commun **2021**; 12:3054. PMID: 34031380. PMC8144425.

13. Falsey AR, Sobieszczyk ME, Hirsch I, et al. Phase 3 Safety and Efficacy of AZD1222 (ChAdOx1 nCoV-19) Covid-19 Vaccine. N Engl J Med **2021**; 385:2348-60. PMID: 34587382. PMC8522798.

14. VanBlargan LA, Milutinovic PS, Goo L, et al. Dengue Virus Serotype 1 Conformational Dynamics Confers Virus Strain-Dependent Patterns of Neutralization by Polyclonal Sera. J Virol **2021**; 95:e0095621. PMID: 34549976. PMC8577358.

15. Fongwen N, Delrieu I, Ham LH, et al. Implementation strategies for the first licensed dengue vaccine: A meeting report. Vaccine **2021**; 39:4759-65. PMID: 34253416.

16. Levine MM, Abdullah S, Arabi YM, et al. Viewpoint of a WHO Advisory Group Tasked to Consider Establishing a Closely-monitored Challenge Model of Coronavirus

Disease 2019 (COVID-19) in Healthy Volunteers. Clin Infect Dis **2021**; 72:2035-41. PMID: 32857836. PMC7499532.

17. Krubiner CB, Faden RR, Karron RA, et al. Pregnant women & vaccines against emerging epidemic threats: Ethics guidance for preparedness, research, and response. Vaccine **2021**; 39:85-120. PMID: 31060949. PMC7735377.

18. See I, Su JR, Lale A, et al. US Case Reports of Cerebral Venous Sinus Thrombosis With Thrombocytopenia After Ad26.COV2.S Vaccination, March 2 to April 21, 2021. JAMA **2021**; 325:2448-56. PMID: 33929487. PMC8087975.

19. Kallas EG, Precioso AR, Palacios R, et al. Safety and immunogenicity of the tetravalent, live-attenuated dengue vaccine Butantan-DV in adults in Brazil: a two-step, double-blind, randomised placebo-controlled phase 2 trial. Lancet Infect Dis **2020**; 20:839-50. PMID: 32220283.

20. **Durbin AP**, Pierce KK, Kirkpatrick BD, et al. Immunogenicity and Safety of a Tetravalent Recombinant Subunit Dengue Vaccine in Adults Previously Vaccinated with a Live Attenuated Tetravalent Dengue Vaccine: Results of a Phase-I Randomized Clinical Trial. Am J Trop Med Hyg **2020**. PMID: 32394880.

21. Grifoni A, Voic H, Dhanda SK, et al. T Cell Responses Induced by Attenuated Flavivirus Vaccination Are Specific and Show Limited Cross-Reactivity with Other Flavivirus Species. J Virol **2020**; 94. PMID: 32132233.

22. Levine MM, Abdullah S, Arabi YM, et al. Viewpoint of a WHO Advisory Group Tasked to Consider Establishing a Closely-Monitored Challenge Model of COVID-19 in Healthy Volunteers. Clin Infect Dis **2020**. PMID: 32857836. PMC7499532.

23. Martinez DR, Yount B, Nivarthi U, et al. Antigenic Variation of the Dengue Virus 2 Genotypes Impacts the Neutralization Activity of Human Antibodies in Vaccinees. Cell Rep **2020**; 33:108226. PMID: 33027653. PMC7583086.

24. **Durbin AP**. Historical discourse on the development of the live attenuated tetravalent dengue vaccine candidate TV003/TV005. Curr Opin Virol **2020**; 43:79-87. PMID: 33164790. PMC7685199.

25. Tu HA, Nivarthi UK, Graham NR, et al. Stimulation of B Cell Immunity in Flavivirus-Naive Individuals by the Tetravalent Live Attenuated Dengue Vaccine TV003. Cell Rep Med **2020**; 1:100155. PMID: 33377126. PMC7762770.

26. Graham N, Eisenhauer P, Diehl SA, et al. Rapid Induction and Maintenance of Virus-Specific CD8(+) TEMRA and CD4(+) TEM Cells Following Protective Vaccination Against Dengue Virus Challenge in Humans. Front Immunol **2020**; 11:479. PMID: 32265929. PMC7105617.

27. Swanstrom JA, Nivarthi UK, Patel B, et al. Beyond Neutralizing Antibody Levels: The Epitope Specificity of Antibodies Induced by NIH Monovalent Dengue Virus Vaccines. J Infect Dis **2019**. PMID: 30895307.

28. Nivarthi UK, Tu HA, Delacruz MJ, et al. Longitudinal analysis of acute and convalescent B cell responses in a human primary dengue serotype 2 infection model. EBioMedicine **2019**. PMID: 30857944.

29. Krubiner CB, Faden RR, Karron RA, et al. Pregnant women & vaccines against emerging epidemic threats: Ethics guidance for preparedness, research, and response. Vaccine **2019**. PMID: 31060949.

30. **Durbin AP**, Gubler DJ. What is the prospect of a safe and effective dengue vaccine for travelers? J Travel Med **2019**. PMID: 30657935.

31. Wilder-Smith A, Smith PG, Luo R, et al. Pre-vaccination screening strategies for the use of the CYD-TDV dengue vaccine: A meeting report. Vaccine **2019**; 37:5137-46. PMID: 31377079.

32. **Durbin AP**. Dengue vascular leak syndrome: insights into potentially new treatment modalities. J Clin Invest **2019**. PMID: 31449055.

33. Vannice KS, Wilder-Smith A, Barrett ADT, et al. Clinical development and regulatory points for consideration for second-generation live attenuated dengue vaccines. Vaccine **2018**. PMID: 29525283.

34. Gallichotte EN, Baric TJ, Yount BL, Jr., et al. Human dengue virus serotype 2 neutralizing antibodies target two distinct quaternary epitopes. PLoS Pathog **2018**; 14:e1006934. PMID: 29481552.

35. Talaat KR, Halsey NA, Cox AB, et al. Rapid changes in serum cytokines and chemokines in response to inactivated influenza vaccination. Influenza Other Respir Viruses **2018**; 12:202-10. PMID: 28991404. PMC5820426.

36. Wilder-Smith A, Vannice K, **Durbin A**, et al. Zika vaccines and therapeutics: landscape analysis and challenges ahead. BMC Med **2018**; 16:84. PMID: 29871628.

37. Gallichotte EN, Baric TJ, Nivarthi U, et al. Genetic Variation between Dengue Virus Type 4 Strains Impacts Human Antibody Binding and Neutralization. Cell Rep **2018**; 25:1214-24. PMID: 30380413.

38. Katzelnick LC, Coello Escoto A, McElvany BD, et al. Viridot: An automated virus plaque (immunofocus) counter for the measurement of serological neutralizing responses with application to dengue virus. PLoS Negl Trop Dis **2018**; 12:e0006862. PMID: 30356267.

39. Tomashek KM, Wills B, See Lum LC, et al. Development of standard clinical endpoints for use in dengue interventional trials. PLoS Negl Trop Dis **2018**; 12:e0006497. PMID: 30286085. PMC6171842

40. Popper SJ, Strouts FR, Lindow JC, et al. Early transcriptional responses after dengue vaccination mirror the response to natural infection and predict neutralizing antibody titers. J Infect Dis **2018**. PMID: 30010906.

41. Grifoni A, Costa-Ramos P, Pham J, et al. Cutting Edge: Transcriptional Profiling Reveals Multifunctional and Cytotoxic Antiviral Responses of Zika Virus-Specific CD8(+) T Cells. J Immunol **2018**; 201:3487-91. PMID: 30413672. PMC6287102.

42. Pierce KK, Whitehead SS, Kirkpatrick BD, et al. A Live Attenuated Chimeric West Nile Virus Vaccine, rWN/DEN4Delta30, Is Well Tolerated and Immunogenic in Flavivirus-Naive Older Adult Volunteers. J Infect Dis **2017**; 215:52-5. PMID: 28077583. PMC5225253.

43. Grifoni A, Angelo M, Sidney J, et al. Patterns of cellular immunity associated with experimental infection with rDEN2Delta30 (Tonga/74) supports its suitability as a human DENV challenge strain. J Virol **2017**. PMID: 28148797.

44. Nivarthi UK, Kose N, Sapparapu G, et al. Mapping the Human Memory B Cell and Serum Neutralizing Antibody Responses to Dengue Virus Serotype 4 Infection and Vaccination. J Virol **2017**; 91. PMID: 28031369. PMC5309932.

45. Angelo MA, Grifoni A, O'Rourke PH, et al. Human CD4+ T Cell Responses to an Attenuated Tetravalent Dengue Vaccine Parallel Those Induced by Natural Infection in Magnitude, HLA Restriction, and Antigen Specificity. J Virol **2017**; 91. PMID: 27974563. PMC5309943.

46. Whitehead SS, **Durbin AP**, Pierce KK, et al. In a randomized trial, the live attenuated tetravalent dengue vaccine TV003 is well-tolerated and highly immunogenic in subjects with flavivirus exposure prior to vaccination. PLoS Negl Trop Dis **2017**; 11:e0005584. PMID: 28481883. PMC5436874.

47. Bosch I, de Puig H, Hiley M, et al. Rapid antigen tests for dengue virus serotypes and Zika virus in patient serum. Sci Transl Med **2017**; 9. PMID: 28954927.

48. **Durbin AP**, Whitehead SS. Zika Vaccines: Role for Controlled Human Infection. J Infect Dis **2017**; 216:S971-S5. PMID: 29267920.

49. **Durbin A**, Wilder-Smith A. An update on Zika vaccine developments. Expert Rev Vaccines **2017**; 16:781-7. PMID: 28633549.

50. Keasey SL, Pugh CL, Jensen SM, et al. Antibody Responses to Zika Virus Infections in Environments of Flavivirus Endemicity. Clin Vaccine Immunol **2017**; 24. PMID: 28228395. PMC5382833.

51. Widman DG, Young E, Nivarthi U, et al. Transplantation of a quaternary structure neutralizing antibody epitope from dengue virus serotype 3 into serotype 4. Sci Rep **2017**; 7:17169. PMID: 29215033. PMC5719398.

52. Grifoni A, Angelo MA, Lopez B, et al. Global Assessment of Dengue Virus-Specific CD4(+) T Cell Responses in Dengue-Endemic Areas. Front Immunol **2017**; 8:1309. PMID: 29081779. PMC5646259.

53. **Durbin A**, Fang X, Luo W, Whitehead S. Use of a neutralization capacity assayto better understand vaccine induced protection in a CHIM. Annual Meeting of the American Society of Tropical Medicine and Hygiene. Balitmore, MD, **2017**.

54. Grifoni A, Angelo M, Sidney J, et al. Patterns of Cellular Immunity Associated with Experimental Infection with rDEN2Delta30 (Tonga/74) Support Its Suitability as a Human Dengue Virus Challenge Strain. J Virol **2017**; 91. PMID: 28148797. PMC5375662.

55. Vannice KS, **Durbin A**, Hombach J. Status of vaccine research and development of vaccines for dengue. Vaccine **2016**. PMID: 26973072.

56. **Durbin AP**, Kirkpatrick BD, Pierce KK, et al. A 12-Month-Interval Dosing Study in Adults Indicates That a Single Dose of the National Institute of Allergy and Infectious Diseases Tetravalent Dengue Vaccine Induces a Robust Neutralizing Antibody Response. J Infect Dis **2016**; 214:832-5. PMID: 26908742. PMC4996143.

57. Kirkpatrick BD, Whitehead SS, Pierce KK, et al. The live attenuated dengue vaccine TV003 elicits complete protection against dengue in a human challenge model. Science Translational Medicine **2016**; 8:330ra36-ra36. PMID: 27089205.

58. **Durbin AP**. Vaccine Development for Zika Virus-Timelines and Strategies. Semin Reprod Med **2016**. PMID: 27607566.

59. **Durbin AP**. Dengue Antibody and Zika: Friend or Foe? Trends Immunol **2016**. PMID: 27599407.

60. Vannice KS, Giersing BK, Kaslow DC, et al. Meeting Report: WHO consultation on considerations for regulatory expectations of Zika virus vaccines for use during an emergency. Vaccine **2016**. PMID: 27916410.

61. Weiskopf D, Angelo MA, Bangs DJ, et al. The human CD8+ T cell responses induced by a live attenuated tetravalent dengue vaccine are directed against highly conserved epitopes. J Virol **2015**; 89:120-8. PMID: 25320311. 4301095.

62. Schwartz LM, Halloran ME, **Durbin AP**, Longini IM, Jr. The dengue vaccine pipeline: Implications for the future of dengue control. Vaccine **2015**; 33:3293-8. PMID: 25989449. 4470297.

63. Larsen CP, Whitehead SS, **Durbin AP**. Dengue human infection models to advance dengue vaccine development. Vaccine **2015**. PMID: 26424605.

64. Katzelnick LC, Fonville JM, Gromowski GD, et al. Dengue viruses cluster antigenically but not as discrete serotypes. Science **2015**; 349:1338-43. PMID: 26383952.

65. Gallichotte EN, Widman DG, Yount BL, et al. A New Quaternary Structure Epitope on Dengue Virus Serotype 2 Is the Target of Durable Type-Specific Neutralizing Antibodies. MBio **2015**; 6. PMID: 26463165.

66. Kirkpatrick BD, **Durbin AP**, Pierce KK, et al. Robust and Balanced Immune Responses to All 4 Dengue Virus Serotypes Following Administration of a Single Dose of a Live Attenuated Tetravalent Dengue Vaccine to Healthy, Flavivirus-Naive Adults. J Infect Dis **2015**; 212:702-10. PMID: 25801652.

67. Tsai WY, **Durbin A**, Tsai JJ, Hsieh SC, Whitehead S, Wang WK. Complexity of Neutralizing Antibodies against Multiple Dengue Virus Serotypes after Heterotypic Immunization and Secondary Infection Revealed by In-Depth Analysis of Cross-Reactive Antibodies. J Virol **2015**; 89:7348-62. PMID: 25972550. PMC4473561.

68. Vannice KS, Keita M, Sow SO, et al. Active Surveillance for Adverse Events After a Mass Vaccination Campaign With a Group A Meningococcal Conjugate Vaccine (PsA-TT) in Mali. Clin Infect Dis **2015**; 61 Suppl 5:S493-500. PMID: 26553680. PMC4639483.

69. Althouse BM, **Durbin AP**, Hanley KA, Halstead SB, Weaver SC, Cummings DAT. Viral kinetics of primary dengue virus infection in non-human primates: A systematic review and individual pooled analysis. Virology **2014**; 452:237-46. PMID: WOS:000333000400026.

70. Mukherjee S, Dowd KA, Manhart CJ, et al. The mechanism and significance of cell type-dependent neutralization of flaviviruses. J Virol **2014**. PMID: 24741083.

71. Thiry G, Hombach J, Constenla D, Carvalho A, **Durbin A**. New chapter unfolding in the fight against dengue with an unwritten ending. Trans R Soc Trop Med Hyg **2014**; 108:597-8. PMID: 25217182.

72. **Durbin AP**, Kirkpatrick BD, Pierce KK, et al. A Single Dose of Any of Four Different Live Attenuated Tetravalent Dengue Vaccines Is Safe and Immunogenic in Flavivirus-naive Adults: A Randomized, Double-blind Clinical Trial. J Infect Dis **2013**; 207:957-65. PMID: 23329850. 3571448.

73. **Durbin AP**, Mayer SV, Rossi SL, et al. Emergence potential of sylvatic dengue virus type 4 in the urban transmission cycle is restrained by vaccination and homotypic immunity. Virology **2013**. PMID: 23485373.

74. Live Dengue Vaccines Technical Consultation Reporting G, Bentsi-Enchill AD, Schmitz J, et al. Long-term safety assessment of live attenuated tetravalent dengue

vaccines: Deliberations from a WHO technical consultation. Vaccine **2013**. PMID: 23570986.

75. Smith SA, de Alwis R, Kose N, et al. Human Monoclonal Antibodies Derived From Memory B Cells Following Live Attenuated Dengue Virus Vaccination or Natural Infection Exhibit Similar Characteristics. Journal of Infectious Diseases **2013**; 207:1898-908. PMID:

76. Lindow JC, **Durbin AP**, Whitehead SS, Pierce KK, Carmolli MP, Kirkpatrick BD. Vaccination of volunteers with low-dose, live-attenuated, dengue viruses leads to serotype-specific immunologic and virologic profiles. Vaccine **2013**; 31:3347-52. PMID: 23735680. 3777849.

77. Bentsi-Enchill AD, Schmitz J, Edelman R, et al. Long-term safety assessment of live attenuated tetravalent dengue vaccines: deliberations from a WHO technical consultation. Vaccine **2013**; 31:2603-9. PMID: 23570986.

78. **Durbin AP**, Wright PF, Cox A, et al. The live attenuated chimeric vaccine rWN/DEN4Delta30 is well-tolerated and immunogenic in healthy flavivirus-naive adult volunteers. Vaccine **2013**. PMID: 23968769.

79. VanBlargan LA, Mukherjee S, Dowd KA, **Durbin AP**, Whitehead SS, Pierson TC. The type-specific neutralizing antibody response elicited by a dengue vaccine candidate is focused on two amino acids of the envelope protein. PLoS Pathog **2013**; 9:e1003761. PMID: 24348242. 3857832.

80. Gershman MD, Staples JE, Bentsi-Enchill AD, et al. Viscerotropic disease: Case definition and guidelines for collection, analysis, and presentation of immunization safety data. Vaccine **2012**. PMID: 22561144.

81. Ellis RD, Wu Y, Martin LB, et al. Phase 1 Study in Malaria Naive Adults of BSAM2/Alhydrogel(R)+CPG 7909, a Blood Stage Vaccine against P. falciparum Malaria. PLoS One **2012**; 7:e46094. PMID: 23056238. 3464250.

82. Lindow JC, Borochoff-Porte N, **Durbin AP**, et al. Primary vaccination with low dose live dengue 1 virus generates a proinflammatory, multifunctional T cell response in humans. PLoS Negl Trop Dis **2012**; 6:e1742. PMID: 22816004. 3398956.

83. **Durbin AP**, Schmidt A, Elwood D, et al. Heterotypic dengue infection with live attenuated monotypic dengue virus vaccines: implications for vaccination of populations in areas where dengue is endemic. J Infect Dis **2011**; 203:327-34. PMID: 21208923.

84. **Durbin AP**, Whitehead SS, Shaffer D, et al. A single dose of the DENV-1 candidate vaccine rDEN1Δ30 is strongly immunogenic and induces resistance to a second dose in a randomized trial. PLoS neglected tropical diseases **2011**; 5:e1267. PMID: 21829748. 3149013.

85. **Durbin AP**, Kirkpatrick BD, Pierce KK, Schmidt AC, Whitehead SS. Development and clinical evaluation of multiple investigational monovalent DENV vaccines to identify components for inclusion in a live attenuated tetravalent DENV vaccine. Vaccine **2011**; 29:7242-50. PMID: 21781997.

86. van Panhuis WG, Luxemburger C, Pengsaa K, et al. Decay and Persistence of Maternal Dengue Antibodies among Infants in Bangkok. Am J Trop Med Hyg **2011**; 85:355-62. PMID: 21813859. 3144837.

87. Dowd KA, Jost CA, **Durbin AP**, Whitehead SS, Pierson TC. A dynamic landscape for antibody binding modulates antibody-mediated neutralization of West Nile virus. PLoS Pathog **2011**; 7:e1002111. PMID: 21738473. 3128118.

88. Blaney JE, Jr., **Durbin AP**, Murphy BR, Whitehead SS. Targeted mutagenesis as a rational approach to dengue virus vaccine development. Curr Top Microbiol Immunol **2010**; 338:145-58. PMID: 19802584.

89. **Durbin AP**, Whitehead SS. Dengue vaccine candidates in development. Curr Top Microbiol Immunol **2010**; 338:129-43. PMID: 19802583.

90. Ellis RD, Martin LB, Shaffer D, et al. Phase 1 trial of the Plasmodium falciparum blood stage vaccine MSP1(42)-C1/Alhydrogel with and without CPG 7909 in malaria naive adults. PLoS One **2010**; 5:e8787. PMID: 20107498. 2809736.

91. Cassetti MC, **Durbin A**, Harris E, et al. Report of an NIAID workshop on dengue animal models. Vaccine **2010**; 28:4229-34. PMID: 20434551. 2919823.

92. **Durbin AP**, Kirkpatrick BD, Pierce KK, et al. Evaluation of the safety and immunogenicity of Tetravax-DV, a live attenuated tetravalent dengue vaccine. American Society of Tropical Medicine and Hygiene 59th Annual Meeting. Atlanta, GA: American Society of Tropical Medicine and Hygiene, **2010**:248.

93. Ellis RD, Sagara I, **Durbin A**, et al. Comparing the understanding of subjects receiving a candidate malaria vaccine in the United States and Mali. Am J Trop Med Hyg **2010**; 83:868-72. PMID: 20889881. 2946758.

94. Vaughn DW, Whitehead SS, **Durbin AP**, Barret A, Stanberry LR. Dengue. Vaccines for Biodefense and Emerging and Neglected Diseases. London: Academic Press, **2009**:285-324.

95. Ellis RD, Mullen GE, Pierce M, et al. A Phase 1 study of the blood-stage malaria vaccine candidate AMA1-C1/Alhydrogel((R)) with CPG 7909, using two different formulations and dosing intervals. Vaccine **2009**; 27:4104-9. PMID: 19410624.

96. Crompton PD, Mircetic M, Weiss G, et al. The TLR9 ligand CpG promotes the acquisition of Plasmodium falciparum-specific memory B cells in malaria-naive individuals. J Immunol **2009**; 182:3318-26. PMID: 19234231.

97. Wright PF, **Durbin AP**, Whitehead SS, et al. Phase 1 trial of the dengue virus type 4 vaccine candidate rDEN4Δ30-4995 in healthy adult volunteers. Am J Trop Med Hyg **2009**; 81:834-41. PMID: 19861619. 2829759.

98. O'Connell KA, Xu J, **Durbin AP**, et al. HIV-1 evolution following transmission to an HLA-B*5801-positive patient. J Infect Dis **2009**; 200:1820-4. PMID: 19909081. 2779566.

99. Vaughn DW, Whitehead SS, **Durbin AP**, Alan DTB, Lawrence RS. Dengue. Vaccines for Biodefense and Emerging and Neglected Diseases. London: Academic Press, **2009**:285-324.

100. **Durbin AP**, Setse R, Omer SB, et al. Monitoring adverse events following yellow fever vaccination using an integrated telephone and Internet-based system. Vaccine **2009**; 27:6143-7. PMID: 19712766.

101. Wright PF, Ankrah S, Henderson SE, et al. Evaluation of the Langat/dengue 4 chimeric virus as a live attenuated tick-borne encephalitis vaccine for safety and immunogenicity in healthy adult volunteers. Vaccine **2008**; 26:882-90. PMID: 18207289.

102. Taylor DN, McKenzie R, **Durbin A**, Carpenter C, Haake R, Bourgeois AL. Systemic pharmacokinetics of rifaximin in volunteers with shigellosis. Antimicrob Agents Chemother **2008**; 52:1179-81. PMID: 18086855.

103. Wu Y, Ellis RD, Shaffer D, et al. Phase 1 trial of malaria transmission blocking vaccine candidates Pfs25 and Pvs25 formulated with montanide ISA 51. PLoS ONE **2008**; 3:e2636. PMID: 18612426.

104. Vasilakis N, **Durbin AP**, da Rosa AP, Munoz-Jordan JL, Tesh RB, Weaver SC. Antigenic relationships between sylvatic and endemic dengue viruses. Am J Trop Med Hyg **2008**; 79:128-32. PMID: 18606776.

105. Nelson S, Jost CA, Xu Q, et al. Maturation of West Nile virus modulates sensitivity to antibody-mediated neutralization. PLoS Pathog **2008**; 4:e1000060. PMID: 18464894.

106. **Durbin AP**, Vargas MJ, Wanionek K, et al. Phenotyping of peripheral blood mononuclear cells during acute dengue illness demonstrates infection and increased activation of monocytes in severe cases compared to classic dengue fever. Virology **2008**; 376:429-35. PMID: 18452966.

107. McArthur JH, **Durbin AP**, Marron JA, et al. Phase I clinical evaluation of rDEN4Delta30-200,201: a live attenuated dengue 4 vaccine candidate designed for decreased hepatotoxicity. Am J Trop Med Hyg **2008**; 79:678-84. PMID: 18981503.

108. Whitehead SS, Blaney JE, **Durbin AP**, Murphy BR. Prospects for a dengue virus vaccine. Nat Rev Microbiol **2007**; 5:518-28. PMID: 17558424.

109. **Durbin AP**, McArthur JH, Marron JA, et al. rDEN2/4Delta30(ME), A Live Attenuated Chimeric Dengue Serotype 2 Vaccine Is Safe and Highly Immunogenic in Healthy Dengue-Naive Adults. Hum Vaccin **2006**; 2:255-60. PMID: 17106267.

110. **Durbin AP**, McArthur J, Marron JA, et al. The live attenuated dengue serotype 1 vaccine rDEN1Delta30 is safe and highly immunogenic in healthy adult volunteers. Hum Vaccin **2006**; 2:167-73. PMID: 17012875.

111. Taylor DN, McKenzie R, **Durbin A**, et al. Rifaximin, a nonabsorbed oral antibiotic, prevents shigellosis after experimental challenge. Clin Infect Dis **2006**; 42:1283-8. PMID: 16586388.

112. Blaney JE, Jr., **Durbin AP**, Murphy BR, Whitehead SS. Development of a live attenuated dengue virus vaccine using reverse genetics. Viral Immunol **2006**; 19:10-32. PMID: 16553547.

113. **Durbin AP**, Whitehead SS, McArthur J, et al. rDEN4 Delta 30, a Live Attenuated Dengue Virus Type 4 Vaccine Candidate, Is Safe, Immunogenic, and Highly Infectious in Healthy Adult Volunteers. J Infect Dis **2005**; 191:710-8. PMID: 15688284.

114. Malkin EM, Diemert DJ, McArthur JH, et al. Phase 1 clinical trial of apical membrane antigen 1: an asexual blood-stage vaccine for Plasmodium falciparum malaria. Infect Immun **2005**; 73:3677-85. PMID: 15908397.

115. **Durbin AP**, Marovich MA, Murphy BR. Detection of dengue virus antigen in epidermal dendritic cells expressing DC-SIGN in volunteers infected with a live attenuated dengue 4 virus. The American Society of Tropical Medicine and Hygiene Annual Meeting. Philadelphia Pennsylvania, **2004**.

116. Gao JX, Liu X, Wen J, et al. Differentiation of monocytic cell clones into CD8 alpha+ dendritic cells (DC) suggests that monocytes can be direct precursors for both CD8 alpha+ and CD8 alpha- DC in the mouse. J Immunol **2003**; 170:5927-35. PMID: 12794119.

117. Troyer JM, Hanley KA, Whitehead SS, et al. A live attenuated recombinant dengue-4 virus vaccine candidate with restricted capacity for dissemination in mosquitoes and lack of transmission from vaccinees to mosquitoes. Am J Trop Med Hyg **2001**; 65:414-9. PMID: 11716092.

118. **Durbin AP**, Karron RA, Sun W, et al. Attenuation and immunogenicity in humans of a live dengue virus type-4 vaccine candidate with a 30 nucleotide deletion in its 3'-untranslated region. Am J Trop Med Hyg **2001**; 65:405-13. PMID: 11716091.

119. Skiadopoulos MH, Surman SR, **Durbin AP**, Collins PL, Murphy BR. Long nucleotide insertions between the HN and L protein coding regions of human parainfluenza virus type 3 yield viruses with temperature-sensitive and attenuation phenotypes. Virology **2000**; 272:225-34. PMID: 10873765.

120. Bailly JE, McAuliffe JM, **Durbin AP**, Elkins WR, Collins PL, Murphy BR. A recombinant human parainfluenza virus type 3 (PIV3) in which the nucleocapsid N protein has been replaced by that of bovine PIV3 is attenuated in primates. J Virol **2000**; 74:3188-95. PMID: 10708435.

121. Tao T, Davoodi F, Cho CJ, et al. A live attenuated recombinant chimeric parainfluenza virus (PIV) candidate vaccine containing the hemagglutinin-neuraminidase and fusion glycoproteins of PIV1 and the remaining proteins from PIV3 induces resistance to PIV1 even in animals immune to PIV3. Vaccine **2000**; 18:1359-66. PMID: 10618533.

122. Nguyen KB, Cousens LP, Doughty LA, Pien GC, Durbin JE, Biron CA. Interferon alpha/beta-mediated inhibition and promotion of interferon gamma: STAT1 resolves a paradox. Nat Immunol **2000**; 1:70-6. PMID: 10881178.

123. **Durbin AP**, Skiadopoulos MH, McAuliffe JM, et al. Human parainfluenza virus type 3 (PIV3) expressing the hemagglutinin protein of measles virus provides a potential method for immunization against measles virus and PIV3 in early infancy. J Virol **2000**; 74:6821-31. PMID: 10888621.

124. **Durbin AP**, Elkins WR, Murphy BR. African green monkeys provide a useful nonhuman primate model for the study of human parainfluenza virus types-1, -2, and -3 infection. Vaccine **2000**; 18:2462-9. PMID: 10738104.

125. Tao T, Skiadopoulos MH, **Durbin AP**, Davoodi F, Collins PL, Murphy BR. A live attenuated chimeric recombinant parainfluenza virus (PIV) encoding the internal proteins of PIV type 3 and the surface glycoproteins of PIV type 1 induces complete resistance to PIV1 challenge and partial resistance to PIV3 challenge. Vaccine **1999**; 17:1100-8. PMID: 10195620.

126. Skiadopoulos MH, Surman S, Tatem JM, et al. Identification of mutations contributing to the temperature-sensitive, cold-adapted, and attenuation phenotypes of the live-attenuated cold-passage 45 (cp45) human parainfluenza virus 3 candidate vaccine. J Virol **1999**; 73:1374-81. PMID: 9882342.

127. **Durbin AP**, McAuliffe JM, Collins PL, Murphy BR. Mutations in the C, D, and V open reading frames of human parainfluenza virus type 3 attenuate replication in rodents and primates. Virology **1999**; 261:319-30. PMID: 10497117.

128. **Durbin AP**, Cho CJ, Elkins WR, Wyatt LS, Moss B, Murphy BR. Comparison of the immunogenicity and efficacy of a replication-defective vaccinia virus expressing antigens of human parainfluenza virus type 3 (HPIV3) with those of a live attenuated HPIV3 vaccine candidate in rhesus monkeys passively immunized with PIV3 antibodies. J Infect Dis **1999**; 179:1345-51. PMID: 10228053.

129. **Durbin AP**, Wyatt LS, Siew J, Moss B, Murphy BR. The immunogenicity and efficacy of intranasally or parenterally administered replication-deficient vaccinia-

parainfluenza virus type 3 recombinants in rhesus monkeys. Vaccine **1998**; 16:1324-30. PMID: 9682397.

130. Tao T, **Durbin AP**, Whitehead SS, Davoodi F, Collins PL, Murphy BR. Recovery of a fully viable chimeric human parainfluenza virus (PIV) type 3 in which the hemagglutinin-neuraminidase and fusion glycoproteins have been replaced by those of PIV type 1. J Virol **1998**; 72:2955-61. PMID: 9525616.

131. Skiadopoulos MH, **Durbin AP**, Tatem JM, et al. Three amino acid substitutions in the L protein of the human parainfluenza virus type 3 cp45 live attenuated vaccine candidate contribute to its temperature-sensitive and attenuation phenotypes. J Virol **1998**; 72:1762-8. PMID: 9499025.

132. **Durbin AP**, Siew JW, Murphy BR, Collins PL. Minimum protein requirements for transcription and RNA replication of a minigenome of human parainfluenza virus type 3 and evaluation of the rule of six. Virology **1997**; 234:74-83. PMID: 9234948.

133. **Durbin AP**, Hall SL, Siew JW, Whitehead SS, Collins PL, Murphy BR. Recovery of infectious human parainfluenza virus type 3 from cDNA. Virology **1997**; 235:323-32. PMID: 9281512.

Editorials & Other writings

1. **Durbin AP**, Whitehead SS. The dengue human challenge model: Has the time come to accept this challenge? *J Infect Dis* **2013** Mar;207(5):697-9.

2. **Durbin AP**, Whitehead SS. Response to Ruiz-Alejo et al. J Infect Dis **2013**

3. Durbin AP. Dengue Antibody and Zika: Friend or Foe? Trends in immunology **2016**.

4. Durbin AP. A Dengue Vaccine. Cell **2016**; 166:1

Book chapters

1. Vaughn DW, Whitehead SS, **Durbin AP**, Alan DTB, Lawrence RS. Dengue. Vaccines for Biodefense and Emerging and Neglected Diseases. London: Academic Press, 2009: 285-324.
2. Whitehead SS and **Durbin AP.** 2010. Prospects and challenges for dengue virus vaccine development. *In* K. A. Hanley and S. C. Weaver (ed.), Frontiers in Dengue Virus Research. Caister Academic Press, Portland.

Deposited in a Pre-Print Server

1. Pierce KK, Whitehead SS, Diehl SA, Naro G, Carmolli MC, He H, Tibery CM, Sabundayo BP, Kirkpatrick BD, and **Durbin AP**. Evaluation of a new dengue 3 controlled human infection model for use in the evaluation of candidate dengue vaccines. medRxiv **2024**. PMID: 37790382. PMC10543052.

Classroom Instruction:

Director,	Vaccine Science and Policy Certificate Program: 2006 – present
223.867	Special Topics in Vaccine Science, 2006 – present; enrollment ~ 30 students
223.689	The Biological Basis of Vaccine Development, 2002 – present; enrollment ~ 50 students

Guest Lecturer

224.686	Vaccine Development and Application (2001 – present)
223.682	Clinical Aspects of Tropical Diseases (2000 – present)
223.705	Clinical Vaccine Trials: Planning and Implementation (2002 – present)
223.663	Infectious Diseases and Child Survival (2009 – present)
223.867	Vaccine Science and Policy Seminar (2001 – 2008)
223.867	Special Topics in Vaccine Sciences (2009 – present)
	Winter Institute in Tropical Medicine (2003 – present)
	Summer Institute in Tropical Medicine (2003 - present
020.151	General Biology Workshop, Homewood Campus (2003 – present)
260.626	Fundamental Virology (2005)
260.624	Advanced Virology (2011)
306.655	Research Ethics and Integrity: U.S. and International Issues (2007 – 2012)
180.628	Animals in Research: Law, Policy, and Humane Sciences (2008 - 2012)
550.862.81	Current Issues in Public Health (2010)
	Microbiology 210 course, George Washington University (2008 - present)
260.612.01	Principles of Immunology II (2015)

Seminar

2004 – 2008 *Co-director:* Microbial Immunity and Vaccine Development Research Seminar

RESEARCH GRANT PARTICIPATION

1. Operation of a facility for the study of infectious agents, vaccines and antimicrobials in adults and pediatric human subjects**.** 10/01/19-9/30/26. NIH/NIAID. HHSN272200900010C $30,000,000.
   ***Prinicipal Investigators*: Anna P. Durbin,** Ruth Karron
   Funding level: 40 – 80%
   Individual Role: Principal investigator of this contract.

I am the Principal Investigator for phase I adult vaccine trials conducted under this contract, and direct the flavivirus laboratory at the Center for Immunization Research.
Objective: To evaluate the safety and immunogenicity of novel live attenuated vaccines for the prevention of arbovirus infections and to use these studies as a model for arobovirus infection to better understand the immunopathogenesis of arbovirus-related disease.

Studies conducted under this contract
Task Order 002: **A Phase 2a, randomized, double-blind, placebo-controlled trial to evaluate the antiviral activity, safety, and pharmacokinetics of repeated oral doses of JNJ-64281802 against dengue serotype 3 infection in a dengue human challenge model in health adult participants**.
Role: Principal Investigator
Funding Level: 20 – 40%

A Phase III Randomized, Double-blind, Placebo-controlled Multicenter Study in Adults to Determine the Safety, Efficacy, and Immunogenicity of AZD1222, a Non-replicating ChAdOx1 Vector. 9/1/20 – 2/28/23
Funding level: 20 – 60%
Role: Site Principal Investigator
Status: Completed

Live Attenuated ZIKA Vaccine Development. 07/01/2022-8/30/2025
Role: Principal Investigator
Funding level: 20 – 40%

Evaluation of the safety and efficacy of a novel dengue antiviral against dengue challenge. August 2023 – **June 30, 2025**
Role: Principal Investigator
Funding level: 20 – 30%

2. **Evaluation of safety and efficacy of a dengue monoclonal antibody against dengue serotype 2 challenge.** August 2024 – December 2025
   Role: Principal Investigator
   Funding level: 20 – 30%

3. **Viral Immunity and Vaccination HIPC.** 03/22/2022 – 02/28/2027
   Role: Investigator
   Funding level: 7%

4. **The Johns Hopkins Center for AIDS Research.**
   Role: Investigator
   Funding level: 5%

5. **Evaluating exposure to ticks by measuring antibody in humans targeting tick saliva in a prospective cohort**.
Role: Site Principal Investigator
Funding level: 10%

ACADEMIC SERVICE

Department of International Health

2020 – present:	MSPH application reviewer
2016 - present:	Faculty development committee
2006 - 2009:	Faculty Budget Advisory Committee
2006 – present:	Coordinator of the Vaccine Policy Certificate Program
2001 – 2002:	Vaccines for Bioterrorism Working Group

Johns Hopkins Bloomberg School of Public Health

2013 – present:	Member of the Institutional Review Board-FC
2013:	Member, Ad-Hoc Promotions committee member for promotion of a faculty member from assistant to associate professor
2015:	Member, Ad-Hoc Promotions committee member for promotion of a faculty member from associate to full professor
2020 – 2023:	Member, Human subjects research restart committee

Johns Hopkins University

2009 – 2011:	Member of the search committee for the Associate Provost for Animal Research and Resources at Johns Hopkins University
2013 – present	Alternate Member, Animal Care and Use Committee
2002 - 2013:	Member - Animal Care and Use Committee,
1999 – present:	Active Staff, Department of Medicine, Division of Infectious Diseases, The Johns Hopkins Hospital
2020 – present	Ad Hoc committee member for Johns Hopkins University COVID vaccine committee
2020 – present	Member, Johns Hopkins University Health Advisory Committee

Johns Hopkins School of Medicine

2021 – present	Leader, Scientific Working Group for vaccine response and immunotherapeutic, CFAR
2022 – 2023:	Member, Search Committee for the Chairman of the Department of Pediatrics

PRESENTATIONS

Scientific Meetings

Infectious Diseases Society of America, Presenter

2002: Intranasal Immunization with Proteosome-*Shigella flexneri* 2A LPS Vaccine: Factors Associated with Protection in a Volunteer Challenge Model

American Society for Tropical Medicine, Oral Presentations

2003: A novel dengue 4 vaccine: 2AΔ30
2004: Immunogenicity of a multi-allele, recombinant AMA-based blood stage malaria vaccine in humans.
2005: Phase 1 trial of rDEN1Δ30 – a live attenuated DEN1 vaccine.
2005: Progress on live-attenuated dengue virus vaccines containing a tetravalent formulation of recombinant viruses.
2006: The live attenuated dengue serotype 2 vaccine rDEN2/4delta30 is safe and immunogenic in healthy volunteers.
2006: Phenotyping of peripheral blood mononuclear cells infected by dengue virus in pediatric cases.
2007: Phase 1 study of the safety and immunogenicity of rDEN4Δ30-200,201, a live attenuated virus vaccine candidate for dengue serotype 4.
2007: Phase 1 safety and immunogenicity trail of blood-stage malaria vaccines MSP142-C1/Alhydrogel with and without the addition of CPG 7909 in US adults.
2008: NIAID chimeric vaccine candidates.
2008: A phase 1 trial of the malaria transmission blocking vaccine candidates Pfs25 and Pvs25 formulated with Montanide ISA-51.
2009: Safety and immunogenicity of a 2-dose regimen of rDEN1Δ30 dengue serotype 1 vaccine with boosting at 4 versus months.
2009: Clinical evaluation of live attenuated DEN3 vaccine candidates
2010: Evaluation of the safety and immunogenicity of TETRAVAX-DV, a live attenuated tetravalent dengue vaccine.
2011: TetraVax-DV: a live attenuated tetravalent dengue vaccine
2012: TV003, a LATV dengue vaccine, is safe, highly immunogenic, and induces protection against a challenge dose of vaccine
2013: The safety and immunogenicity of the live attenuated tetravalent dengue vaccine TV003 in flavivirus-experienced adults
2015: Efficacy of TV003 against challenge with rDEN2Δ30
2023: Efficacy of a novel dengue antiviral drug in a DENV3 controlled human infection model
2024: Development of a Zika controlled human infection model

International Congress of Virology, Presenter

2008: Immunization with a heterologous live attenuated dengue vaccine months to years after primary DENV immunization

Pediatric Dengue Vaccine Initiative Annual Meeting, Presenter

2006: The rhesus macaque model of DF/DHF/DSS
2007: The rhesus macaque model of DF/DHF/DSS

2008: Immunization with a live attenuated heterologous DENV vaccine months to years after primary DENV immunization – preliminary data.
2009: Immunization with a live attenuated heterologous DENV vaccine months to years after primary DENV immunization – Final data.
2009: The rhesus macaque model of DF/DHF/DSS – further studies

Miscellaneous Meetings
2008: Organizer and participant for The National Institute of Allergy and Infectious Diseases, NIH workshop on dengue animal models.
2014: The JHU/LID dengue human infection model (NIH sponsored meeting on dengue human infection?

Invited speakerships:
Update on live attenuated dengue virus vaccines, Infectious Disease Society of America annual meeting, Boston MA, November 1, 2009

Live attenuated dengue virus vaccines, American Society of Microbiology, San Diego CA, May 24, 2010

Development of a dengue virus live attenuated vaccine: Where We've Come and Where We Have To Go. Mt. Sinai School of Medicine, New York, NY March 23, 2010.

Evaluation of the safety and immunogenicity of three admixtures of TetraVax-DV, a live attenuated tetravalent dengue vaccine. A Re-Emerging Challenge in the Americas: Opportunities for Dengue Research Collaboration. A conference sponsored by NIAID, NIH; the CDC, and PAHO, San Juan Puerto Rico, Feb. 16-18, 2011

The dengue vaccine pipeline: opportunities and challenges. The Global Vaccine Research Forum sponsored by the WHO. Geneva Switzerland June 26 – 29, 2011.

Dengue human challenge model supporting dengue vaccine development. Dengue Human Challenge Model Workshop, Philadelphia, PA December 3, 2011.

Development of a live attenuated tetravalent dengue vaccine. University of Vermont, Burlington VT February 2, 2012

Status of dengue vaccine development. International Conference on Tropical Medicine: Intelligent solutions for Emerging Diseases. Florida International University, Miami FL February 22-23, 2012.

Challenges to the development of a live attenuated tetravalent dengue vaccine. South Florida University, Tampa FL March 20, 2012.

Panelist for the National Institutes of Health Fellows' Retreat, Bethesda MD March 30, 2012.

A single dose of TetraVax-DV is highly immunogenic in flavivirus-naïve adults. ImVACs, Boston MA, August 13, 2012

Dengue vaccines: opportunities and challenges, The Regional Meeting on Dengue Prevention and Control. New Delhi India, September 18, 2012

Update on the NIH LATV dengue vaccine TV003. The 4th Forum for Science and Technology in Dengue, Salvador-Bahia, Brazil, November 27, 2012

rWN/DEN4Δ30, a recominnat live attenuated chimeric vaccine for the prevention of WNV in humans. Endemic and Emergin Infecitous Diseases of Priority in the middle East and North Africa, Instanbul Turkey. June 21, 2012.

Evaluation of the live attenuated tetravalent dengue vaccine. The Gordon Research conference on Tropical Infectious Diseases, February 13, 2013.

A dengue human infection model for the determination of immune correlates and evaluation of vaccine efficacy. IABS meeting Strausborg Fr, September 29, 2014

Dengue human challenge model: from failed vaccine candidate to challenge virus. Grand challenges Annual Meeting, BMGF, October 6 – 9, 2014

A dengue human infection model to determine the efficacy of the LATV dengue vaccine TV003. IVth Pan American Dengue Research Network Meeting, Belem Brazil, October 21, 2014

Human Dengue Vaccine Challenge Model. Consortium for AIDS vaccine development annual meeting, the Bill & Melinda Gates Foundation, December 3, 2014

Dengue and Dengue Vaccines. WHO Product Development for Vaccines Advisory Committee, Geneva Switzerland, September 9, 2015.

Debates in Tropical Vaccines: Malaria and Dengue. ID Week Annual Meeting, San Diego CA, October 10, 2015

ADDITIONAL INFORMATION

Research and Research Objectives

My research interest involves the human responses to live attenuated vaccines and subunit protein vaccines, with a primary focus on the flavivirus vaccines, particularly those for dengue and Zika virus. My group has developed two dengue controlled human infection models (D-CHIM) and two Zika virus CHIMs to down-select candidate vaccines and therapeutics and to better characterize the clinical and immune responses to

these viruses. We have utilized our clinical vaccine studies and the D-CHIM to characterize the human clinical and immune responses to natural dengue infection and to live attenuated dengue vaccines. By fully characterizing the cellular and humoral immune response to the vaccines we administered to healthy volunteers, we hope to identify correlates of immunity to the target pathogens as well optimize the formulation of different vaccines. I have acted as the Principal Investigator for more than 35 clinical trials of live attenuated candidate flavivirus vaccines. Through these trials, we have identified the candidate live attenuated tetravalent dengue vaccine with the most favorable safety, infectivity, and immunogenicity profiles and have initiated trials of this candidate in dengue endemic areas. The lead candidate we identified, TV003, recently completed a 5-year efficacy trial in Brazil.

Keywords: dengue, vaccine, clinical trials, dengue hemorrhagic fever/shock syndrome, immunopathology