

CURRICULUM VITAE

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Education

Post-Doctoral Fellowship

University of North Carolina
Chapel Hill, North Carolina
Advisor: Dr. Robert E. Johnston, Ph.D.
January 1997 – August 2000
Molecular Virology and Viral Pathogenesis

Ph.D.

Washington University
St. Louis, Missouri
Advisor: Dr. Herbert "Skip" Virgin, M.D., Ph.D.
August 1991 - December 1996
Immunology

B.A.

St. Olaf College
Northfield, Minnesota
1987-1991
Biology, Magna Cum Laude

Undergraduate Summer Research Student Southwestern University School of Medicine

Dallas, TX
Advisor: Dwain Theile, M.D.
June 1990 - August 1990

Undergraduate Summer Research Student
The Mayo Clinic
Rochester, MN
Advisor: Gerald Gleich, M.D.
June 1989 - August 1989

Professional Experience -- Employment History

Director: UNC Virology Training Grant
The University of North Carolina
2017-Present

Professor of Genetics
Professor of Microbiology and Immunology (Joint Appointment)
The University of North Carolina
July 2014-Present

Associate Professor of Genetics
Associate Professor of Microbiology and Immunology (Joint Appointment)
The University of North Carolina
March 2009 – June 2014

Member, Curriculum in Genetics and Molecular Biology
The University of North Carolina
May 2005 – Present

Associate Director, The Carolina Vaccine Institute
The University of North Carolina
July 2010 – 2012

Member, The Carolina Vaccine Institute
The University of North Carolina
April 2003 - 2012

Assistant Professor (Joint Appointment)
Department of Microbiology and Immunology
The University of North Carolina
November 2003 – March 2009

Assistant Professor
Department of Genetics
The University of North Carolina
April 2003 – March 2009

Research Assistant Professor
Department of Microbiology and Immunology
The University of North Carolina
August 2000 – April 2003

Honors and Awards:

Jefferson Pilot Award, UNC School of Medicine
10/9/2008

Bibliography

Book Chapters

1. Ferris, M.T. and M. T. Heise. 2014. Chapter 4: Quantitative Genetics in the Study of Virus-Induced Disease, in *Advances in Virus Research*, Elsevier, Oxford, United Kingdom. Volume 188. pp 193-227
2. Long, K.M. and M.T. Heise. 2013. Safe and effective mouse footpad inoculation, in Volume 1031, *Mouse Models of Innate Immunity*. *Methods in Molecular Biology*, Erving C. Allan, editor. Springer, New York, NY. pp 97-100
3. Heise, M.T. and H.W. Virgin IV, 2013. Chapter 10: Pathogenesis of Viral Infection, in *Fields Virology*, 6th Edition. Lippincott, Williams, and Wilkins. Philadelphia, Pennsylvania, United States. pp 254-285
4. Lidbury B.A., Musso C.M., Rulli N.E., Johal J., Mahalingam S. and Heise M.T. (2008). RNA Viruses and RNA-Based Drugs: A Perfect Match for RNA Delivery and the Identification of Candidate Therapeutic Target Inflammatory Molecules. *Gene Profiling in Drug Design*. Editors, Brett A. Lidbury and Suresh Mahalingam, CRC Press, Florida, United States. pp 115 - 130.

Refereed Original Research:

Asterisk Indicates Corresponding Author.

1. Gunn BM, Jones JE, Shabman RS, Whitmore AC, Sarkar S, Blevins LK, Morrison TE, Heise MT*. 2018. Ross River virus envelope glycans contribute to disease through activation of the host complement system. **Virology**. 2018 Jan 8;515:250-260. doi: 10.1016/j.virol.2017.12.022. PMID in Progress.
2. Gall B, Pryke K, Abraham J, Mizuno N, Botto S, Sali TM, Broeckel R, Haese N, Nilson A, Placzek A, Morrison T, Heise M, Streblow D, DeFilippis V*. 2018. Emerging Alphaviruses are Sensitive to Cellular States Induced by a Novel Small Molecule Agonist of the STING Pathway. **J Virol**. 2017 Dec 20. pii: JVI.01913-17. doi: 10.1128/JVI.01913-17. PMID: Pending
3. Maurizio PL, Ferris MT, Keele GR, Miller DR, Shaw GD, Whitmore AC, West A, Morrison CR, Noll KE, Plante KS, Cockrell AS, Threadgill DW, Pardo-Manuel de Villena F, Baric RS, Heise MT, Valdar W*. 2018.

Bayesian Diallel Analysis Reveals *Mx1*-Dependent and *Mx1*-Independent Effects on Response to Influenza A Virus in Mice. **G3** (Bethesda). 2017 Nov 29. pii: g3.300438.2017. doi: 10.1534/g3.117.300438 PMID Pending.

4. Jones, J.E., Long, K.L., Whitmore, A.C. Sanders, W., Thurlow, L.R., Brown, J.A., Morrison, C.R., Vincent, H., Peck, K.M., Browning, C., Moorman, N., Lim, J.K., M.T. Heise*. 2017. Disruption of the opal stop codon attenuates chikungunya virus-induced arthritis and pathology. *mBio* 8:e01456-17. <https://doi.org/10.1128/mBio.01456-17>. In Press.
5. Peck KM, Scobey T, Swanstrom J, Jensen KL, Burch CL, Baric RS*, Heise MT*. 2017. Permissivity of Dipeptidyl Peptidase 4 Orthologs to Middle East Respiratory Syndrome Coronavirus Is Governed by Glycosylation and Other Complex Determinants. *J Virol*. 2017 Sep 12;91(19). pii: e00534-17. doi: 10.1128/JVI.00534-17. PMID: PMC5599747
6. Widman, D.G., Young, E., Yount, B.L., Plante, K.S., Gallichotte, E.N., Carbaugh, D.L., Peck, K.M., Plante, J., Swanstrom, J., Heise, M.T., Lazear, M., Baric, R.S.*, 2017 A Reverse Genetics Platform That Spans the Zika Virus Family Tree. **MBio**. 2017 Mar 7;8(2). pii: e02014-16. doi: 10.1128/mBio.02014-16 PMID: PMC5340872
7. Cockrell, A.S.*, B.L. Yount, T. Scobey, K. Jensen, M. Douglas, A. Beall, X-C. Tang, W. A. Marasco, M. T. Heise*[^], Ralph S. Baric*[^]. 2016. A Mouse Model of MERS Coronavirus Induced Acute Respiratory Distress Syndrome. **Nature Microbiology**. Nov 28;2:16226. doi: 10.1038/nmicrobiol.2016.226 [^] joint senior authors, * Corresponding Authors PMID: PMC5578707
8. Moser, L.A., Ramirez-Carvajal, L., Puri, V., Pauszek, S.J., Matthews, K., Dilley, K.A., Mullan, C., McGraw, J., Khayat, M., Beerli, K., Yee, A., Dugan, V., Heise, M.T., Frieman, M.B., Rodriguez, L.L., Bernard, K.A., Wentworth, D.E., Stockwell, T.B., Shabman, R.S. 2016. A Universal Next-Generation Sequencing Protocol To Generate Noninfectious Barcoded cDNA Libraries from High-Containment RNA Viruses. **mSystems**. 2016 Jun 7;1(3). pii: e00039-15. eCollection 2016 May-Jun. PMID: PMC5069770
9. Swanstrom, J.A., Plante, J.A., Plante, K.S., Young, E.F., McGowan, E., Gallichotte, E.N., Widman, D.G., Heise, M.T., de Silva, A.M., Baric, R.S. 2016. Dengue Virus Envelope Dimer Epitope Monoclonal Antibodies Isolated from Dengue Patients Are Protective against Zika Virus. **MBio**. 2016 Jul 19;7(4). pii: e01123-16. doi: 10.1128/mBio.01123-16. PMID: PMC4958264
10. Jiang, C., Zhou, Z., Quan, Y., Zhang, S., Wang, T., Zhao, X., Morrison, C., Heise, M.T., He, W., Miller, M.S., Lin, X. 2016. CARMA3 Is a Host Factor Regulating the Balance of Inflammatory and Antiviral Responses against

Viral Infection. **Cell Rep.** 2016 Mar 15;14(10):2389-401. doi: 10.1016/j.celrep.2016.02.031. DOI:[10.1016/j.celrep.2016.02.031](https://doi.org/10.1016/j.celrep.2016.02.031)

11. Long, K.M., Ferris, M.T., Whitmore, A.C., Montgomery, S.A., Thurlow, L.R., McGee, C.E., Rodriguez, C.A., Lim, J.K., Heise, M.T., 2015. $\gamma\delta$ T Cells Play a Protective Role in Chikungunya Virus-Induced Disease. **Journal of Virology**. 21;90(1):433-43 PMID:PMC4702549

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13. Totura, A.L., Whitmore, A., Agnihothram, S., Schäfer, A., Katze, M.G., Heise, M.T., Baric, R.S. 2015. Toll-Like Receptor 3 Signaling via TRIF Contributes to a Protective Innate Immune Response to Severe Acute Respiratory Syndrome Coronavirus Infection. **MBio**. 2015 May 26;6(3):e00638-15. doi: 10.1128/mBio.00638-15 PMID:[PMC4447251](https://pubmed.ncbi.nlm.nih.gov/25447251/)

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26. Cockrell, A.S.*, Peck, K.M., Yount, B.L., Agnihothram, S.S., Scobey, T., Curnes, N.R., Baric, R.S., Heise, M.T. 2014. Mouse dipeptidyl peptidase 4 (DPP4) is not a functional receptor for Middle East respiratory syndrome coronavirus (MERS-CoV) infection. **Journal of Virology** [Epub ahead of print] PMID:24574399
27. Silva LA, Khomandiak S, Ashbrook AW, Weller R, Heise MT, Morrison TE, Dermody TS.* 2014. A Single Amino-Acid Polymorphism in Chikungunya Virus E2 Glycoprotein Influences Glycosaminoglycan Utilization. **Journal of Virology** 88(5):2385-97 PMID:[PMC3958064](#)
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29. Long, K.M*, A. C. Whitmore, M. T. Ferris, C. McGee, B. Trollinger, B. Gunn, and M. Heise. 2013. Dendritic cell immune receptor (DCIR) regulates Chikungunya virus pathogenesis in mice. **Journal of Virology**, 87(10):5697-706 PMID:[PMC3648201](#)
30. Ferris, M.T*, D. L. Aylor, D. Bottomly, A. C. Whitmore, L. D. Aicher, T. A. Bell, B. Bradel-Tretheway, J. T. Bryan, R. J. Buus, L. E. Gralinski, B. L. Haagmans, L. McMillan, D. R. Miller, E. Rosenzweig, W. Valdar, J. Wang, G. A. Churchill, D. W. Threadgill, S. K. McWeeney, M. G. Katze, F. Pardo-Manuel de Villena, R. S. Baric, M. T. Heise, 2013. Modeling Host Genetic Regulation of Influenza Pathogenesis in the Collaborative Cross. **PLoS Pathogens**, 9(2):e1003196 PMID:[PMC3585141](#)
31. Horikawa M, Weimer ET, Dilillo DJ, Venturi GM, Spolski R, Leonard WJ, Heise MT, Tedder TF*. 2013. Regulatory B Cell (B10 Cell) Expansion during Listeria Infection Governs Innate and Cellular Immune Responses in Mice. **Journal of Immunology**, 190(3):1158-68
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33. Wollish, A.C., M. Ferris, L. Blevins, Y-M. Loo, M. Gale Jr, M. T. Heise*, 2013. An attenuating mutation in a neurovirulent Sindbis virus strain interacts with IPS-1 signaling pathway in vivo. **Virology**, 435(2):269-80
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- Arthritis/myositis. **PLoS Pathogens** 8(3): e1002586.
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- complex traits in the emerging collaborative cross. **Genome Research**,28: 1213-22
44. Jupille, H.P., Oko, L., Stoermer, K.L., Heise, M.T., Mahalingam, S., Gunn, B.M., Morrison, T.E.* , 2010. Mutations in nsP1 and PE2 are critical determinants of Ross River virus-induced musculoskeletal inflammatory disease in a mouse model. **Virology**, 399(1):1-10
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 46. Morrison, T.E.* , L. Oko, S.A. Montgomery, A.C. Whitmore, A.R. Lotstein, B.M. Gunn, S.A. Elmore, and M.T. Heise. 2010 A mouse model of Chikungunya virus-induced musculoskeletal inflammatory disease: evidence of arthritis, tenosynovitis, myositis, and persistence. **American Journal of Pathology**, 178(1):32-40 PMID:[PMC3069999](#)
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 53. Sheahan, T., T.E. Morrison, W. Funkhouser, S. Uematsu, S. Akira, R.S. Baric*, and M.T. Heise*. 2008. MyD88 is required for protection from lethal

- infection with a mouse adapted SARS-CoV. **PLoS Pathogen** 4(12):e1000240. Epub 2008 Dec 12.
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59. Morrison, T.E., R.J.Fraser, P.N. Smith, S. Mahalingam, and M. T. Heise*. 2007. Complement contributes to inflammatory tissue destruction in a mouse model of Ross River virus-induced disease. **Journal of Virology**. 81: 5132-5143 (**Article selected for Journal of Virology Spotlight**)
60. Shabman, R.S., T.E. Morrison, C. Moore, L. White, M.S. Suthar, L. Hueston, N. Rulli, B. Lidbury, J. P-Y. Ting, S. Mahalingam, and M.T. Heise*. 2007. Differential Induction of Type I IFN Responses in Myeloid Dendritic Cells by Mosquito and Mammalian cell-derived Alphaviruses, **Journal of Virology**. 81:237-247
61. Roberts A., D. Deming, C. D. Paddock, A. Cheng, B.Yount, L. Vogel, B. D. Herman, T. Sheahan, M. Heise, G. L. Genrich, S. R. Zaki, R. Baric, and K. Subbarao*. 2006. A mouse-adapted SARS-coronavirus causes disease and mortality in BALB/c mice. **PLOS Pathogens**, 3:23-37
62. Deming,D., T. Sheahan, M. Heise, B. Yount, N. Davis, A. Sims, M. Suthar, J. Harkema, A. Whitmore,R. Pickles, A. West, E. Donaldson, K. Curtis, R. Johnston, and R. Baric*. 2006. Vaccine Efficacy in Senescent Mice Challenged with Recombinant SARS-CoV Bearing Epidemic and Zoonotic Spike Variants. **PLOS Medicine**, 3:2359-2375
63. Filone, C. M., M. Heise, R. W. Doms, and A. Bertolotti-Ciarlet*. 2006. Development and characterization of a Rift Valley fever virus cell-cell fusion assay using alphavirus replicon vectors. **Virology**. 356:155-164
64. Morrison, T.E., Whitmore, A.C., Shabman, R.S., Lidbury, B.A., Mahalingam, S., and M.T. Heise*. 2006. Characterization of Ross River virus tropism and

virus-induced inflammation in a mouse model of viral arthritis and myositis. **Journal of Virology**. Volume 80: 737-749

65. Suthar, M.S., Shabman, R., Madric, K., Lambeth, C., and Heise, M.T.*, 2005. Identification of adult mouse neurovirulence determinants of the Sindbis virus strain AR86. **Journal of Virology** 79: 4219-4228
66. Heise, M.T.*, White, L.J., Simspon, D.A., Leonard, C., Bernard, K.A., Meeker, R.B., and Johnston, R.E., 2003. An attenuating mutation in nsP1 of the Sindbis-group virus S.A.AR86 accelerates nonstructural protein processing and up-regulates viral 26S RNA synthesis. **Journal of Virology** 77:1149-1156
67. Heise, M.T.*, Simpson, D.A., and Johnston, R.E., 2000. Sindbis-group alphavirus replication in periosteum and endosteum of long bones in adult mice. **Journal of Virology** 74:9294-9299
68. Heise, M.T.*, Simpson, D.A., and Johnston, R.E., 2000. A single amino acid change in nsP1 attenuates neurovirulence of the Sindbis-group alphavirus, S.A.AR86. **Journal of Virology** 74:4207-4213
69. Heise, M.T., Connick, M., and Virgin H.W. IV*. 1998. Murine cytomegalovirus inhibits interferon gamma-induced antigen presentation to CD4 T cells by macrophages via regulation of expression of major histocompatibility complex class II-associated genes. **Journal of Experimental Medicine** 187:1037-1046
70. Heise, M.T., Pollock, J.L., O'Guin, A., Barkon, M.L., Bromley, S., and Virgin, H.W. IV*. 1998. Murine cytomegalovirus inhibits IFN-gamma-induced MHC class II expression on macrophages: The role of type I interferon. **Virology** 241:331-344
71. Heise, M.T., and Herbert W. Virgin IV*. 1995. The T-cell independent role of gamma interferon and tumor necrosis factor alpha in macrophage activation during murine cytomegalovirus and herpes simplex infections. **Journal of Virology**. 69:904
72. Heise, M., Chow, K., and Kanagawa, O*. 1993. Interaction between T cells and murine acquired immunodeficiency virus superantigen: effect of second signal on T cell reactivity to the MAIDS virus superantigen. **International Immunology**. 5:583
73. Hamann, K.J., Ten, R.M., Loegering, D.M., Jenkins, R.B., Heise, M.T., Schad, C.R., Pease, L.R., Gleich, G.J., and Barker, R.L*. 1990. Structure and chromosomal localization of the human eosinophil derived neurotoxin and eosinophil derived cationic protein genes: evidence for intronless coding sequences in the ribonuclease gene superfamily. **Genomics**. 7:535

Other Peer Reviewed Articles:

Asterisk Indicates Corresponding Author

Reviews:

1. Haese, N.N., Broeckel, R.M., Hawman, D.W., Heise, M.T., Morrison, T.E., Streblow, D.N. 2016. Animal Models of Chikungunya Virus Infection and Disease. **J Infect Dis.** 2016 Dec 15;214(suppl 5):S482-S487
2. Morrison, C.R., Plante, K.S., Heise, M.T.* 2016. Chikungunya Virus: Current Perspectives on a Reemerging Virus. **Microbiol Spectr.** 2016 Jun;4(3). doi: 10.1128/microbiolspec.EI10-0017-2016.
3. Peck, K.M., Burch, C.L., Heise, M.T., Baric, R.S. 2106. Coronavirus Host Range Expansion and Middle East Respiratory Syndrome Coronavirus Emergence: Biochemical Mechanisms and Evolutionary Perspectives. **Annual Reviews of Virology.** 2015 Nov;2(1):95-117
4. Long, K.M.*, and Heise, M.T. 2015. Protective and Pathogenic Responses to Chikungunya Virus Infection. **Curr Trop Med Rep.** 2015 Mar;2(1):13-21.
5. Burt, F., Mahalingham, S., and M.T. Heise. 2012. Chikungunya: a re-emerging virus. **The Lancet.** 379:662-71
6. Morrison, T.E. and Heise, M.T.* 2008. The host complement system and arbovirus pathogenesis. **Current Drug Targets** 9(2):165-72
7. Frieman M, Heise M, Baric R.* , 2007. SARS coronavirus and innate immunity. **Virus Research.** 133:101-112
8. Rulli, N.E., Suhrbier, A., Hueston, L., Heise, M.T., Tupanceska, D., Zaid, A., Wilmes, A., Gilmore, K., Lidbury, B.A., Mahalingam, S.* 2005. Ross River virus: molecular and cellular aspects of disease pathogenesis. **Pharmacol Ther.** 107(3):329-42.
9. Surendran Mahalingam, Jon S. Friedland, Mark T. Heise, Nestor E. Rulli, Jayesh Meanger and Brett A. Lidbury.* 2003. Chemokines and viruses: friends or foes? **Trends in Microbiology.** 11(8):383-91.
10. Rogers, K.R.* and M.T. Heise. 2009. Modulation of Cellular Tropism and Innate Antiviral Response by Viral Glycans. **Journal of Innate Immunity.** 1(5):405-12

Editorials:

1. Long, K.M. and M.T. Heise 2012. Chikungunya Virus Transmission: More Than Meets the Eye. Invited Commentary. **Journal of Infectious Diseases** 206 (6):806-7
2. Heise, M.T., 2014. Editorial overview: viral pathogenesis: dealing with complexity in virus-induced disease. **Current Opinion in Virology.** 6:v-vii. doi: 10.1016/j.coviro.2014.05.002

Invited Seminars (Since 2010)

FASEB Scientific Research Conference on Molecular Pathogenesis: Mechanisms of Infectious Disease. The Bernard Fields Keynote Lecture.

Genetic Reference Populations as Tools for Modeling Host/Pathogen Interactions. Snomass, CO. July 9-14, 2017

The University of Colorado Department of Microbiology and Immunology Graduate Student Invited Speaker. Using Quantitative Genetics to Study the Host Response to Viral Infection. Aurora, CO. June 2, 2016.

The University of Chicago Department of Microbiology Department Seminar Series. Bugs in the System: Using Genetic Reference Populations to Study Virus/Host Interactions. Chicago, IL. May 25, 2016.

The Veterinary Sciences Seminar Series. Bent Out of SHAPE: The Role of Coding and Non-Coding Determinants in Alphavirus Pathogenesis. The University of Kentucky, April 7th, 2016

NIH-Fiocruz Arbovirus Seminar: Global Health Challenges and Collaborative Opportunities in Arbovirus Research. Novel Mouse Models for Studying Chikungunya Virus Pathogenesis. Manaus, Amazona, Brazil. November 30-December 2, 2015.

The University of Pennsylvania Department of Microbiology Seminar Series. Embracing Complexity: Using Complex Trait Genetics to Study Pathogen-Host Interactions. November 4th, 2015

Wake Forest University School of Medicine Department of Microbiology and Immunology: Viral and Host Determinants of Chikungunya Virus Pathogenesis. April 30th, 2015

Meeting on Alphaviruses as Mucosal Adjuvants When Delivered by Parenteral Administration. Interactions with the Innate Immune System, The Bill and Melinda Gates Foundation, July 6th, 2015

Gaps and Opportunities in Chikungunya Virus Research: Expert Consultation on Chikungunya Disease in the Americas. Novel Mouse Models of Chikungunya Virus Pathogenesis. NIAID. June 30-July 2, 2015

ASM Biodefense Conference, Chikungunya Virus: Viral and Host Determinants of Pathogenesis. Washington D.C. Feb. 10-13, 2014

Pasteur Institute Center for Immunology. Complex Trait Genetics of the Host Response to Emerging Pathogens. Paris, France. July 11, 2014

Complex Trait Meeting. Systems Genetics of Influenza Infectious Disease. Berlin, Germany. May 19-22. 2014

GlaxoSmithKline (GSK) Research Talk. Embracing Complexity: Using the Collaborative Cross to Model Virus/Host Interactions. May 9, 2014

University of Pittsburgh Molecular Virology and Microbiology Retreat. Using Quantitative Genetics to Study Viral Pathogenesis, April 28, 2014

Gordon Research Conference on Acute Respiratory Infections. Systems Genetics and Influenza Pathogenesis, Renaissance Tuscany, Il Ciocco Resort, Lucca, Italy. February 23-28, 2014

American Society for Virology Annual Meeting Plenary Talk. Systems Genetics Approaches for Studying Viral Pathogenesis, Penn State University, State College, PA. July 24, 2013

Gordon Research Conference on Infections of the Nervous System. Alphavirus Determinants of Neurovirulence. The Chinese University of Hong Kong. July 9, 2013

Laboratory of Viral Diseases: National Institutes of Health/National Institute of Allergy and Infectious Diseases (NIH/NIAID). Using Systems Genetics to Gain Insights into Respiratory Virus Pathogenesis, March 20, 2013

Gordon Research Conference on Tropical Infectious Diseases: The Pathogenesis of Chikungunya virus, Galveston, TX. February 10-15, 2013

ICACC Meeting. American Society for Microbiology. Therapeutics for Chikungunya Virus, San Francisco, CA. September 10, 2012

Duke University Department of Immunology. Using Systems Genetics to Study Virus-Induced Inflammatory Disease within the Lung. April 10, 2012

Keystone Symposium. Viral Immunity and Host Gene Influence. Systems Genetics and Regulation of Virus-Induced Inflammatory Responses. Keystone CO. March 21-26, 2012.

Washington University in St. Louis. Systems Genetics Approaches for Studying Virus-Host Interactions. December 12, 2011

Boston University Department of Microbiology and Immunology. Boston, MA. March 21, 2011. Bugs in the System: Using Systems Genetics to Study Viral pathogenesis.

The Positive Strand RNA Virus Meeting, Atlanta, GA. May, 17-21, 2010. Host Inflammatory Responses Play a Key Role in the Pathogenesis Of Alphavirus-Induced Arthritis/Myositis

American Society for Microbiology Meeting on Biodefense, Baltimore, Maryland, Feb. 21-24, 2010. The Role of Innate Immunity in the Pathogenesis of Alphavirus-Induced Arthritis: New Interactions with Old Pathways

Other Presentations and Scientific Outreach (Since 2015)

NAIAD Functional Genomics Programmatic Meeting. Isle of Palms, South Carolina. April 24-25, 2017. Platform technologies for analyzing novel viral ORFs and non-coding RNAs.

Systems Biology U19 Annual Meeting. NIAID. Rockville, MD. December 14-15, 2016. Project 2 Summary

This Week in Virology Podcast (Focus on UNC Virology Community). September, 2016.

Systems Biology U19 Annual Meeting. NIAID. Rockville, MD. March 2-3, 2016. UNC U19 Overview and Project 2 Summary

Virology in Progress: Special Session on Zika Virus and Chikungunya Virus in the Americas. Chikungunya virus in the Americas. February, 2016. UNC Chapel Hill

Pediatric Grand Rounds. Experimental Systems for Studying Influenza Disease. UNC Chapel Hill. October 27, 2015

Systems Biology U19 Annual Meeting. NIAID. Rockville, MD. April 1-2, 2015. Influenza Project Summary

UNC Infectious Disease Fellows Lecture. Chikungunya Virus. UNC Chapel Hill. January, 2015

Patents

Patent No: US 6,982,087 B2 Vectors Derived from South African Arbovirus No. 86. Inventors: Robert E. Johnston, Mark T. Heise, and Dennis Simpson. Issued Jan. 3, 2006.

Teaching record

Course Director

Micro 640: Viral Pathogenesis, Course Director (Spring, 2008-14)
10 student contact lectures (1 hr 20 min each)
Coordinated 19 additional lectures by participating faculty

Lectures

Medical School Courses

1st Year Genetics Discussion Leader (1-3 hrs) Fall 2005-2014

1st Year Medical Student Intro to Viral Pathogenesis (1 hr) Spring 2006-2007

Graduate School Courses

Micro 640: Viral Pathogenesis, 3 student contact lectures (1 hr 20 min each)
(Spring 2015-Present)

Micro 630: Virology, 1 student contact lecture (1 hr) Fall 2015-Present

EPID 751: Emerging & Re-Emerging Infectious Dis. (1 hr) Fall, 2009-present

BBSP 901 Seminar in Biological and Biomedical Sciences (2011-2014)
1st Year Graduate Student Group Leader. 1.5 hours/week

BBSP 901: Seminar in Biological and Biomedical Sciences (2008-2010
Academic Year) 1st Year Graduate Student Assistant Group
Leader. 1.5 hours/ week.

Micro 140: Microbial Pathogenesis, Virology Section Head
(Spring Semester, 2005-2006)
8 lectures (1 hr each)

Micro 140: Microbial Pathogenesis (Spring 2001-2004)
2 lectures (1 hr each)

Mentoring/Graduate Training:

Postdoctoral Fellows/M.D. Fellows

Sanjay Sarkar, Ph.D. March, 2017 – Present

Ken Plante, Ph.D. October, 2013-Jan. 2017
Current Position: Manager, The World Reference Center for
Emerging Viruses and Arboviruses

Clayton Morrison, Ph.D. January, 2013-July 2016
Current Position: Assistant Professor of Biology. Mount Olive College.

Adam Cockrell, Ph.D. October, 2011- Nov. 2016
Co-mentored with Dr. Ralph Baric
Current Position: Research Associate, The Department of Epidemiology,
The Gillings School of Public Health

Charles McGee, Ph.D. August 2010-June 2013.
Current Position: Virology Core Director, Duke University

Martin Ferris, Ph.D. Jan. 2008-March 2013
Current Position: Research Assistant Professor in the Department of
Genetics. The University of North Carolina at Chapel Hill

Kristin M. Long, Ph.D. Jan. 2007-August 2009.

Current Position: Biosafety Director North Carolina State Surveillance Labs

Thomas Morrison, Ph.D. May, 2003-March 2009.
Current Position: Associate Prof. of Microbiology, University of Colorado
Health and Sciences Center, Aurora, CO

Cornelius “Kees” Van Dam, M.D. July, 2005-June 2008
Current Position: Staff Physician in Infectious Diseases and Internal
Medicine, Moses Cone Health System, Greensboro, NC.

Graduate Students

Brea Hampton	2017-Present (Curriculum in Genetics and Molecular Biology [GMB] Student Co-Mentored with Dr. Marty Ferris)
Emily Madden	2016-Present (Microbiology and Immunology)
Kelsey Noll	2015-Present (Microbiology and Immunology Student Co-Mentored with Dr. Marty Ferris)
Paul Maurizio, Ph.D.	2013-2017 Postdoctoral Fellow Mark Heise (Temporary) UNC Chapel Hill
Jennifer McGraw	2013-2017 Postdoctoral Fellow Seema Lakdawala The University of Pittsburgh
Kayla Peck, Ph.D.	2013-2016 Postdoctoral Fellow Dr. Adam Luring The University of Michigan
Allison Totura, Ph.D.	2008-2015 Research Biologist Oak Ridge Institute for Science and Education. USAMRIID
Lauren Neighbours, Ph.D.	2009-2013 Postdoctoral Fellow Rho Incorporated
Bronwyn Gunn, Ph.D.	2008-2013 Postdoctoral Fellow Dr. Galit Alter Harvard University
Amy Wollish, Ph.D.	2007-2012 Associate Medical Writer (Biostatistics) PPD Inc.

Alina Lotstein, M.S.	2008-2011	Masters Degree Scientist Kiyatec Corp.
Jason Simmons, M.D./Ph.D.	2006-2010	Infectious Disease Fellow University of Washington in Seattle
Catherine Cruz, Ph.D.	2005-2010	Technical Development Scientist Genentech Corp.
Reed Shabman, Ph.D.	2003-2008	Lead Scientist, Virology American Type Culture Collection (ATCC)
Mehul Suthar, Ph.D.	2002-2007	Assistant Professor Emory Vaccine Center Emory University

Undergraduate Trainees

Quique Toloza	Spring 2014-2017
Nikki Curnes	Fall 2012-Spring 2014
Clancy Mullan	Summer 2012-December, 2013
Jim Ruble	SURE Program: Summer 2009
Ivette Tapia	SURE Program: Summer 2008
Ejiofor Ezekwe	SURE Program: Summer 2007
Grace Wheeler	SURE Program: Summer 2006

Dissertation Committees (Since 2010)

Derek Carbaugh	Microbiology and Immunology	2017-Present
Adelaide Tovar	Genetics/Mol Biol (GMB)	2017-Present
Vicki Madigan	Genetics/Mol Biol (GMB)	2016-Present
Emily Gallichotte	Microbiology and Immunology	2014-Present
Luke Lauder milk	Genetics/Mol Biol (GMB)	2014-Present
Michele Engle	Genetics/Mol Biol (GMB)	2014-Present
Anne Beale	Microbiology and Immunology	2014-Present
Heather Vincent	Microbiology and Immunology	2014-Present
Kyle Arend	Microbiology and Immunology	2013-2017
Katrina Kutchko	Bioinfo. & Comp. Bio. (BCB)	2015-2017
Giridhar Murlidharan	Genetics/Mol Biol (GMB)	2013-2016
Daniel Anacker	Microbiology and Immunology	2013-2016
Thatsanee Saladyanant	Oral Biology Graduate Program	2013-2015
Ben Ziehr	Microbiology and Immunology	2013-2015
Megan Meyer	Microbiology and Immunology	2013-2015
Farah Aliya	Department of Microbiology, North Carolina State University.	2012-2015
Kizzmekia Corbett	Outside Committee Member Microbiology and Immunology	2012-2014

Kari Debbink	Microbiology and Immunology	2012-2014
Justin Calloway	Microbiology and Immunology	2011-2014
Syad Muaz Khalil	Microbiology and Immunology	2010-2014
Christa Sturdevant	Microbiology and Immunology	2011-2013
Angela Mitchell	Microbiology and Immunology	2010-2013

Faculty Mentoring

Lisa Gralinski, Ph.D.,	Mentoring Committee (Dept. of Epidemiology), Gillings School of Public Health, 2017-Present
Tim Sheahan, Ph.D.,	Mentoring Committee (Dept. of Epidemiology), Gillings School of Public Health, 2016-Present
Martin Ferris, Ph.D.,	Mentoring Committee (Dept. of Genetics) 2013-Present
Samir Kelada, Ph.D.,	Mentoring Committee (Dept. of Genetics) 2014-Present
Amy Sims, Ph.D.,	Mentoring Committee (Dept. of Epidemiology, Gillings School of Public Health, 2011-Present
Jason Whitmire, Ph.D.,	Mentoring Committee (Dept. of Genetics) 2010-2014

Grants

Current:

National Institutes of Health Research Grant: U19 AI100625 (MPI:Heise/Baric)

Funding Agency: National Institute of Allergy and Infectious Diseases
 Project Title: Systems Immunogenetics of Biodefense Pathogens in the Collaborative Cross
 Role on Project: Program Director (MPI with Ralph Baric) (7.5% effort)
 Project 2 Principal Investigator (20% effort)
 Project Period: 09/01/12-8/31/22

National Institutes of Health Research Grant: U19 AI 107810-01 (PI: Baric)

Funding Agency: National Institutes of Allergy and Infectious Diseases
 Project Title: Characterization of Novel Genes Encodes by RNA and DNA Viruses
 Role on Project: Core Leader, Core B. Expression, Biochemistry, and Immune Reagent Core (10% Effort)
 Project Period: 06/21/13-05/31/18

National Institutes of Health Research Grant: U19 AI 109680 (PI: Whitley)

Funding Agency: National Institutes of Allergy and Infectious Diseases
 Project Title: Antiviral Drug Discovery and Development Center

Role on Project: Co-Investigator (Project 2) 10% effort
Project Period: 03/01/14-02/28/19

National Institutes of Health Research Grant: U19 AI 109761 (PI: Lipkin)

Funding Agency: National Institutes of Allergy and Infectious Diseases
Project Title: Center for Research in Diagnostics and Discovery
Role on Project: Co-Investigator (Project 1) 10% effort
Project Period: 03/01/14-02/28/19

National Institutes of Health Research Grant: R21 AI119933

Funding Agency: National Institute of Allergy and Infectious Diseases
Project Title: Host Genetic Control of Chikungunya Virus-Induced Arthritis
Role on Project: Principal Investigator 10% effort
Project Period: 02/15/16-02/14/18

National Institutes of Health Training Grant: T32AI007419-25

Funding Agency: National Institute of Allergy and Infectious Diseases
Project Title: Molecular Biology of Viral Diseases Predoctoral Training Grant
Role on Project: Principal Investigator (Since 2016)
Project Period: 09/01/13-08/31/18

Completed: Since 2015

National Institutes of Health Research Grant: R01 AI095500-02 (PI: Cherry)

Funding Agency: National Institutes of Allergy and Infectious Diseases
Project Title: Dissecting the alphavirus entry receptor NRAMP
Role on Project: Consortium PI (10% effort)
Project Period: 07/01/12-06/30/16

**NIAID Animal Models of Infectious Diseases-Task Order A57-Contract
HHSN272201000019I (Palese, P. PI; Consortium PI-Baric)**

Funding Agency: National Institute of Allergy and Infectious Diseases
Project Title: MERS-CoV Mouse Model for Vaccine and Therapeutic Testing
Role on Project: Co-Investigator, 5% effort base period and options
Project Period: 10/01/13-03/31/15

Department of Homeland Security: JCVI-12-010 (PI: Wentworth)

Funding Agency: Department of Homeland Security
Project Title: Development of a procedure to support the transfer of viral cDNA generated in a BSL-3/4 laboratory to BSL-2 laboratory for genomic analysis.
Role on Project: Consortium Principal Investigator (5% effort)
Project Period: 09/09/13-09/09/15 (No Cost extension until 03/31/16)

Professional Service

To Discipline

Editorial Board

Virology (2013-Present)
PLoS Pathogens (2011-Present)
Journal of Virology (2006-Present)

Reviewer (*Ad Hoc*):

Journal of Virology
PLoS Pathogens
PLoS One
Virology
Journal of Infectious Diseases
Scandinavian Journal of Rheumatology
Vaccine
Virus Research
Archives of Virology
Microbes and Infection
PNAS
Journal of Clinical Investigation
PLoS Neglected Tropical Diseases
Arthritis and Rheumatism
Cell
Nature
Nature Microbiology
Journal of Experimental Medicine

Professional Memberships

Consortium for Functional Glycomics (2007-Present)
American Society for Virology (2002-Present)
American Society for Microbiology (2000-Present)

Conference Organization (Since 2010)

Discussion Leader, Infections of the Nervous System Gordon Conference,
Chinese University of Hong Kong, Hong Kong, July 9, 2013

Discussion Leader, Viruses and Cells Gordon Conference, Il Ciocco Resort,
Tuscany, Italy. May 9, 2013

Member: American Society for Virology, Program Committee, 2012-2015

Arbovirus Workshop Planning Committee (Sept. 15-16, 2011) NIAID

Member: American Society for Virology, Education and Career
Development committee (8-1-2008 to 7-31-2011)

Extramural Reviewer (Since 2010)

Member: Virology B Study Section (VirB) Oct. 2017-Present

NIH Ad Hoc Reviewer: ZAI1 LG-M (M3)

May, 3-4, 2017

NIH Ad Hoc Reviewer: 2015/10 ZAI1 BLG-M (S3) 1

June, 2015

January, 2016

NIH *Ad Hoc* Reviewer: Virology B Study Section (VirB).

October, 2016

June, 2013

Feb. 2010

NIH *Ad Hoc* Reviewer: Vaccines Against Microbial Diseases (VMD)
study section

Nov. 2014

Oct. 2012

Feb. 2-3, 2012

NIH *Ad Hoc* Reviewer: ZRG1 IDM-L (55) Study Section, May 2010

Other Service

Mouse International Phenotyping Committee (IMPC) Outside Evaluating
Panel. May, 2017

Within UNC-Chapel Hill (Since 2010)

UNC Office of Postdoctoral Affairs Faculty Advisor 2013-Present

**UNC School of Medicine Associate Professor Tenure and Promotion
Committee** 2013-2017

Committee Chair: 2016-2017

UNC High Containment Laboratory Advisory Board 2012-Present
Committee Chair: 2017-Present

UNC Animal Histology Core Advisory Committee 2015-Present

UNC Virology Training Grant Executive Committee 2011-Present

**Initiative for Maximizing Student Diversity (IMSD) Program Advisory
Panel. UNC-CH.** 2009 – Present

**UNC Center for Aids Research (CFAR) Immunology Core Advisory
Committee** 2005-Present

UNC Department of Genetics Faculty Advisory Committee. 2009-2016

**UNC Department of Microbiology and Immunology Graduate Program
Advisory Committee.** 2009-2013

Heise, May 15, 2017

**UNC Curriculum in Genetics and Molecular Biology Graduate Program
Executive Committee. 2009-2013**

BBSP Graduate Admission Committee. UNC-CH. 2008-2010