

## CURRICULUM VITAE

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### Education:

1995 B.S. University of Alabama at Birmingham (with Honors)  
Major: Molecular Biology  
Minor: Chemistry

1995-2001 Ph.D. Vanderbilt University, Nashville, TN  
Dissertation Title: Biochemistry of the Mouse Hepatitis Virus Replication Complex  
Advisor: Mark R. Denison, M.D.

### Academic Honors:

1991-1995 UAB Goodfellow Scholar  
1991 Temple-Inland Foundation Scholar  
1992-1995 Omicron Delta Kappa- leadership and academic honor society  
1995 School of Natural Sciences and Mathematics Dean's Award (Undergraduate)

### Professional Honors:

1993 American Society of Microbiology Undergraduate Research Award, University of Alabama at Birmingham  
1994 Albert Einstein College of Medicine Summer Student Award, University of Alabama at Birmingham  
1999 Dissertation Enhancement Award, Vanderbilt University  
2002-2004 Infectious Disease Pathogenesis Training Grant Fellow (NIH/NIAID 5T32AI07151-27)

### Professional Activities:

1996- Microbes and Defense Society Member, Vanderbilt University  
1996-1997 Steering Committee Member  
1997-1998 Secretary  
1998-1999 President  
2001-2002 Social Committee, Duke University Postdoctoral Association  
2003-2009 Teacher Link Program Fellow, The North Carolina Science, Mathematics, and Technology (SMT) Education Center and Burroughs Wellcome Fund  
2006- Member of the UNC Institutional Biosafety Committee  
2007- North Carolina State Science Fair Judge

2010- Member State Science Fair Scientific Review Committee

Professional Organizations:

1993- American Society for Microbiology, full member  
2007- American Society for Virology, member

Teaching Experience:

1998 Teaching assistant for the microbiology and immunology laboratory section of the first year medical school course, Vanderbilt University

1996-1998 Taught HIV/AIDS awareness to junior high and high school students in the Nashville community, Vanderbilt University

Research Programs:

1992–1995 “Characterization of oral salmonella vaccines against *Mycoplasma pneumoniae*“ undergraduate research in the laboratory of Dr. Gail Cassell (under the tutelage of Dr. John Glass) University of Alabama at Birmingham

1993-1994 American Society for Microbiology Undergraduate Research Award “Characterization of oral salmonella vaccines against *Mycoplasma pneumoniae*“ with Dr. John Glass in laboratory of Dr. Gail Cassell; received funding for summer work and supplies and to present at the General Meeting Las Vegas, Nevada

1994 Albert Einstein College of Medicine Summer Student “Identification of genes required for fusion of *Sacromyces cerivesiae*” in the laboratory of Dr. Lorane Marsh

1995-2000 “Biochemistry of the mouse hepatitis virus replication complex” graduate research in the laboratory of Dr. Mark Denison

1999 Dissertation Enhancement Award- traveled to Stanford University to work in the laboratory of Dr. Karla Kirkegaard; continued work in gradient fractionation and prepared samples for electron microscopy by high pressure freezing with a collaborator of the Kirkegaard laboratory in Boulder, CO

2001-2002 Postdoctoral fellow with Dr. Jack Keene at Duke University, Durham, NC to study RNA binding proteins that regulate protein expression at the level of translation

2002-2005 Postdoctoral fellow with Dr. Ralph Baric at University of North Carolina at Chapel Hill using infectious clone of the SARS human coronavirus to characterize viral replication and pathogenesis in the human airway epithelial cell model

2005- Research Assistant Professor in laboratory of Ralph Baric at University of North Carolina at Chapel Hill using infectious clone of the SARS human coronavirus to characterize viral replication and pathogenesis in the human airway epithelial cell model. Will use human airway epithelial cell model to characterize replication and pathogenesis of two recently identified human coronaviruses, NL63 and HKU1, to contrast pathogens with less severe disease outcome with SARS-CoV and MERS-CoV.

Publications:

1. Lu, X.T., **Sims, A.C.**, Denison, M.R. Mouse hepatitis virus 3C-like protease cleaves a 22-kilodalton protein from the open reading frame 1a polyprotein in virus-infected cells and *in vitro*. J. Virol. 72:2265-2271, 1998.
2. Denison, M.R., **Sims, A.C.**, Gibson, C.A., Lu, X.T. Processing of the MHV-A59 gene 1 polyprotein by the 3C-like proteinase. Adv. Exp. Med. Bio. 440:121-127, 1998.
3. **Sims, A.C.**, Lu, X.T., Denison, M.R. Expression, purification, and activity of recombinant MHV-A59 3CLpro. Adv. Exp. Med. Bio. 440:129-134, 1998.
4. Denison, M.R., Spaan, W.J.M., van der Meer, Y., Gibson, C.A., **Sims, A.C.**, Prentice, E., Lu, X.T. The putative helicase of the coronavirus, Mouse hepatitis virus is processed from the replicase gene polyprotein and localizes in complexes that are active in viral RNA synthesis. J. Virol. 73:6862-6871, 1999.
5. **Sims, A.C.**, Ostermann, J., Denison, M.R. Mouse hepatitis virus gene 1 proteins associate with distinct intracellular membranes. J. Virol. 74: 5647-5654, 2000.
6. Denison, M.R., **Sims, A.C.** MHV-A59 gene 1 proteins are associated with two distinct membrane populations. Adv. Exp. Med. Bio. 494:655-661, 2001.
7. Curtis, K.M., Yount, B., **Sims, A.C.**, Baric, R.S. Reverse genetics analysis of the transcription regulatory sequence of the coronavirus transmissible gastro enteritis virus. J Virol. 78(11):6061-6, 2004.
8. Denison, M.R., Yount, B., Brockway, S.M., Graham, R.L., **Sims, A.C.**, Lu, X.T., Baric, R.S. Cleavage between replicase proteins p28 and p65 of mouse hepatitis virus is not required for virus replication. J Virol. 78(11):5957-65, 2004.
9. Baric, R.S. and **Sims, A.C.** Development of mouse hepatitis virus and SARS-CoV infectious cDNA constructs. Curr Top Microbiol Immunol 287:229-52, 2005.
10. Baric, R.S. and **Sims, A.C.** Humanized mice develop coronavirus respiratory disease. Proc Natl Acad Sci U S A 102:8073-4, 2005.
11. Graham, R.L., **Sims, A.C.**, Brockway, S.M., Baric, R.S., and Denison, M.R. The nsp2 replicase proteins of the coronaviruses murine hepatitis virus and severe acute respiratory syndrome coronavirus are dispensable for viral replication. J.Virol. 79(21):13399-13411, 2005.
12. **Sims, A.C.**, Baric, R.S., Yount, B., Burkett, S.E., Jeffers, L., Pickles, R.J. SARS-CoV infection of human ciliated airway epithelium: the role of the ciliated cell in viral spread in the conducting airways of the lung. J Virol. 79(24):15511-15524, 2005.
13. Yount, B., Roberts, R.S., **Sims, A.C.**, Deming, D., Frieman, M., Sparks, J., Denison, M.R. Davis, N.J., Baric, R.S. SARS-CoV accessory ORFs encode luxury functions for in vitro and in vivo replication. J Virol. 79(23):14909-14922, 2005.
14. **Sims, Amy C.**, Ralph S. Baric, Boyd Yount, Susan E. Burkett, and Raymond J. Pickles. SARS CoV Replication and Pathogenesis in Human Airway Epithelial Cultures. Adv Exp Med Biol. 2006;581:535-8.

15. Baric Ralph S., Sheahan Timothy, Deming Damon, Donaldson Eric, Yount Boyd, **Sims Amy C.**, Roberts Rhonda S., Frieman Matthew, Rockx Barry. SARS coronavirus vaccine development. *Adv Exp Med Biol.* 2006;581:553-60.
16. Frieman Matthew B., Yount Boyd, **Sims Amy C.**, Deming Damon J., Morrison Tim E., Sparks Jennifer, Denison Mark, Heise Mark, Baric Ralph S. SARS coronavirus accessory ORFs encode luxury functions. *Adv Exp Med Biol.* 2006;581:149-52.
17. Graham Rachel L., **Sims Amy C.**, Baric Ralph S., Denison Mark R. The nsp2 proteins of mouse hepatitis virus and SARS coronavirus are dispensable for viral replication. *Adv Exp Med Biol.* 2006;581:67-72.
18. Roberts Rhonda S., Yount Boyd L., **Sims Amy C.**, Baker Susan, Baric Ralph S. Renilla luciferase as a reporter to assess SARS-CoV mRNA transcription regulation and efficacy of anti-SARS-CoV agents. *Adv Exp Med Biol.* 2006;581:597-600.
19. Pekosz Andrew, Schaecher SR, Diamond MS, Fremont DH, **Sims Amy C.**, Baric Ralph S. Structure, expression, and intracellular localization of the SARS-CoV accessory proteins 7a and 7b. *Adv Exp Med Biol.* 2006;581:115-20.
20. Donaldson, EF, **Sims, Amy C.**, Deming, DJ, Baric, RS. Mutational analysis of MHV-A59 replicase protein-nsp10. *Adv Exp Med Biol.* 2006; 581:61-66.
21. Deming, D.J., Sheahan, T., Yount, B.L., Davis, N.J., **Sims, A.C.**, West, A., Heise, M., Whitmore, A., Donaldson, E.F., Curtis, K., Johnston, R., Baric, R.S. Vaccine efficacy in senescent mice challenged with synthetically resurrected SARS-CoV strain GD03. *PLoS Med.* 2006 Dec;3(12):e525.
22. **Sims, Amy C.**, Baric, R.S., Yount, B., Burkett, S.E., Pickles, R.J. Human Airway Epithelial Cultures: An In Vitro model of SARS-CoV Replication and Pathogenesis. *Virus Res.* 2008 Apr;133(1):33-44.
23. Graham, R.L., Sparks, J.S., Eckerle, L.D., **Sims, Amy C.**, Denison, M.R. SARS coronavirus replicase proteins in pathogenesis. *Virus Res.* 2008 Apr;133(1):88-100.
24. Baric, R.S. and **Sims, Amy C.** A Reverse Genetics System for dsRNA Viruses. *Previews: Cell Host and Microbe* 2007 19 April, Vol 1, 90-91.
25. Donaldson, E.F., Graham, R.L., **Sims, Amy C.**, Denison, M.R., and Baric, R.S. Analysis of MHV-A59 temperature sensitive mutant TS-LA6 suggests that nsp10 plays a critical role in polyprotein processing. *J Virology* 2007 Jul; 81(13):7086-98.
26. Rockx, B., Sheahan, T.P., Donaldson, E.F., Harkema, J., **Sims, Amy C.**, Heise, M., Pickles, R. J. and Baric, R.S. Synthetic reconstruction of zoonotic and early human SARS-CoV isolates that produce fatal disease in senescent mice. *J Virology* 2007 Jul; 81(14):7410-23.
27. Sheahan, T.P., Rockx, B., Donaldson, E.F., **Sims, Amy C.**, Pickles, R.J., Baric, R.S. Mechanisms of zoonotic severe acute respiratory syndrome coronavirus host range expansion in human airway epithelium. *J Virology* 2008 Mar;82(5):2274-85.
28. Pacciarini F, Ghezzi S, Canducci F, **Sims, Amy C.**, Sampaolo M, Ferioli E, Clementi M, Poli G, Conaldi PG, Baric R, Vicenzi E. Persistent Replication of Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV) in Human Tubular Kidney Cells Selects for Adaptive Mutations in the Membrane Protein. *J Virol.* 2008 Jun;82(11):5137-44.

29. Michelle M. Becker, Rachel L. Graham, Eric F. Donaldson, Barry Rockx, **Amy C. Sims**, Timothy Sheahan, Raymond Pickles, Davide Corti, Robert E. Johnston, Ralph S. Baric, Mark R. Denison. Platforms for the Synthetic Reconstitution of Noncultivable Zoonotic Viruses. Proc Natl Acad Sci U S A. 2008 Nov 26. [Epub ahead of print].
30. Donaldson EF, Yount B, **Sims Amy C.**, Burkett S, Pickles RJ, Baric RS. Systematic assembly of a full-length infectious clone of human coronavirus NL63. J Virol. 2008 Dec;82(23):11948-57. PMC2583659
31. Donaldson EF, **Sims Amy C.**, Baric, RS. Systematic assembly and genetic manipulation of the mouse hepatitis virus A59 genome. Methods Mol Biol. 2008; 454:293-315. PMID: 19057869
32. Velthuis AJ, van den Worm SH, **Sims Amy C.**, Baric RS, Snijder EJ, van Hemert MJ. Zn(2+) inhibits coronavirus and arterivirus RNA polymerase activity in vitro and zinc ionophores block the replication of these viruses in cell culture. PLoS Pathog. 2010 Nov 4;6(11):e1001176.
33. **Sims Amy C.**, Pyrc K, Dijkman R, Jebbink M, Long C, Deming D, Donaldson E, Vabret A, Baric R, van der Hoek L, Pickles R. Culturing the unculturable: human coronavirus HKU1 infects, replicates, and produces progeny virions in human ciliated airway epithelial cell cultures. J.Virol. 2010 Nov;84(21):11255-63. PMC2953148
34. Armand Bankhead III, Emiliano Mancini, **Amy C. Sims**, Ralph S. Baric, Shannon McWeeney, Peter M.A. Sloot. A Simulation Framework to Investigate *in vitro* Viral Infection Dynamics. Accepted to International Conference on Computational Science published through Elsevier June 1-3, 2011 (all presentations are published as peer reviewed manuscripts).
35. Matzke MM, Waters KM, Metz TO, Jacobs JM, **Sims Amy C.**, Baric RS, Pounds JG, Webb-Robertson BJ. Improved quality control processing of peptide-centric LC-MS proteomics data. Bioinformatics. 2011 Oct 15; 27(20):2866-2872.
36. Daniella Ishimaru, Ewan P. Plant, **Amy C. Sims**, Braden M. Roth, Nadukkudy V. Eldho, Gabriela C. Pérez-Alvarado, David W. Armbruster, Ralph S. Baric, Jonathan D. Dinman, Deborah R. Taylor and Mirko Hennig. The SARS Coronavirus RNA dimerizes via its three-stemmed pseudoknot. Nucleic Acids Res. 2013 Feb 1;41(4):2594-608. PMID: 23275571 PMC3575852
37. Ewan P. Plant, **Amy C. Sims**, Ralph S. Baric, Jonathan D. Dinman, and Deborah R. Taylor. Altering SARS Coronavirus Frameshift Efficiency Affects Genomic and Subgenomic RNA Production. Viruses. 2013 Jan 18;5(1):279-94. PMID: 23334702 PMC3564121
38. **Amy C. Sims**, Susan C. Tilton, Vineet D. Menachery, Lisa E. Gralinski, Alexandra Schäfer, Melissa M. Matzke, Bobbie-Jo M. Webb-Robertson, Jean Chang, Maria L. Luna, Casey E. Long, Anil K. Shukla, Armand R. Bankhead III, Susan E. Burkett, Gregory Zornetzer, Chien-Te Kent Tseng, Thomas O. Metz, Raymond Pickles, Shannon McWeeney, Richard D. Smith, Michael G. Katze, Katrina M. Waters, and Ralph S. Baric. Release of SARS-CoV Nuclear Import Block Enhances Host Transcription in Human Lung Cells. J Virol. 2013 Apr;87(7):3885-902. PMID: 23365422 PMC3624188
39. Bankhead A 3rd, Mancini E, **Sims AC**, Baric RS, McWeeney S, Sloot PM. A Simulation Framework to Investigate *in vitro* Viral Infection Dynamics. J Comput Sci. 2013 May 1;4(3):127-134. PMID: 23682300 PMC3652481
40. Hugh D. Mitchell, Amie J. Eisfeld, **Amy C. Sims**, Jason E. McDermott, Melissa M. Matzke, Bobbi-Jo M. ~~Webb-Robertson, Susan C. Tilton, Nicolas Tehitchek, Laurence Josset, Arndt G. Benneeke, Jean H. Chang,~~

Thomas O. Metz, Gabriele Neumann, Ralph S. Baric, Yoshihiro Kawaoka, Michael G. Katze, and Katrina M. Waters. A Network Integration Approach to Identify Highly Conserved Regulatory Targets Related to Pathogenicity for Influenza and SARS-CoV Respiratory Viruses. *PLoS ONE* 8(7): e69374. doi:10.1371/journal.pone.0069374. PMID: 23935999 PMC3723910

41. Scobey T, Yount BL, **Sims AC**, Donaldson EF, Agnihothram SS, Menachery VD, Graham RL, Swanstrom J, Bove PF, Kim JD, Grego S, Randell SH, Baric RS. Reverse genetics with a full-length infectious cDNA of the Middle East respiratory syndrome coronavirus. *Proc Natl Acad Sci U S A.* 2013 Oct 1;110(40):16157-62. PMID: 24043791. PMC3791741

42. Vineet D. Menachery, Amie J. Einfeld, Laurence Josset, **Amy C. Sims**, Alexandra Schaefer, Sean Proll, Shufang Fan, Chengjun Li, Gabriele Neumann, Susan C. Tilton, Jean Chang, Lisa E. Gralinski, Casey Long, Richard Green, Melissa M. Matzke, Bobbie-Jo Webb-Robertson, Anil K. Shukula, Susan Burkett, Thomas O. Metz, Raymond Pickles, Richard D. Smith, Katrina M. Waters, Michael G. Katze, Yoshihiro Kawaoka, Ralph S. Baric. Pathogenic influenza and coronaviruses utilize similar and contrasting approaches to control global interferon stimulated gene responses. *MBio.* 2014 May 20;5(3). PMID: 24846384. PMCID: PMC4030454

43. Brian D. Aebermann, Brett E. Pickett, Sanjeev Kumar, Edward B. Klem, Sudhakar Agnihothram, Peter S. Askovich, Armand Bankhead III, Meagen Bolles, Victoria Carter, Jean Chang, Therese R W Clauss, Pradyot Dash, Alan H. Diercks, Amie J Einfeld, Amy Ellis, Shufang Fan, Martin T Ferris, Lisa E Gralinski, Richard R Green, Marina A Gritsenko, Masato Hatta, Robert A Heegel, Jon M Jacobs, Sophia Jeng, Laurence Josset, Shari M. Kaiser, Sara Kelly, G Lynn Law, Chengjun Li, Jianing Li, Casey Long, Maria L. Luna, Melissa Matzke, Jason McDermott, Vineet Menachery, Thomas O Metz, Hugh Mitchell, Matthew E Monroe, Garnet Navarro, Gabriele Neumann, Rebecca L. Podyminogin, Samuel O Purvine, Carrie M. Rosenberger, Catherine J, Sanders, Athena A Schepmoes, Anil K Shukla, **Amy C. Sims**, Pavel Sova, Vincent C. Tam, Nicolas Tchitchek, Paul G. Thomas, Susan C Tilton, Allison Totura, Jing Wang, Bobbie-Jo Webb-Robertson, Ji Wen, Jeffrey M Weiss, Feng Yang, Boyd Yount, Qibin Zhang, Shannon McWeeney, Richard D Smith, Katrina M Waters, Yoshihiro Kawaoka, Ralph Baric, Alan Aderem, Michael G Katze, and Richard H. Scheuermann. A Comprehensive Collection of Systems Biology Data Characterizing the Host Response to Viral Infection. *Nature's Scientific Data* 2014 Oct Volume 1 10.1038/sdata.2014.33. PMCID: PMC4410982

44. Xingchuan Huang, Wenjuan Dong, Aleksandra Milewska, Anna Golda, Yonghe Qi, Quan Zhu, Wayne Marasco, Ralph Baric, **Amy C. Sims\***, Krzysztof Pyrc\*, Wenhui Li, and Jianhua Sui\*. HCoV-HKU1 Spike protein uses O-acetylated sialic acid as an attachment receptor determinant and employs HE protein as a receptor-destroying enzyme. *J Virol.* 2015 Jul;89(14):7202-13. PMID: 25926653. PMCID: PMC4473545  
\*indicates co-senior authorship

45. Vineet D. Menachery, Boyd L. Yount, **Amy C. Sims**, Sudhakar Agnihothram, Lisa E. Gralinski, Jessica A. Plante, Rachel L. Graham, Trevor Scobey, Scott Royal, Raymond J. Pickles, Scott H. Randell, Antonio Lanzavecchia, Wayne A. Marasco, Zhengli-Li Shi, Ralph S. Baric. SARS-like WIV1-CoV poised for human emergence, but may lack epidemic potential. *Proc Natl Acad Sci U S A.* 2016 Mar 14 PMID: 26976607 PMC4801244

46. Joshua M. Thornbrough, Babal K. Jha, Boyd Yount, Stephen A. Goldstein, Ruth Elliott, Yize Li, **Amy C. Sims**, Ralph S. Baric, Robert H. Silverman and Susan R. Weiss. MERS-CoV accessory protein NS4b enzymatically inhibits a cell intrinsic innate response. *MBio.* 2016 Mar 29;7(2). PMID: 27025250 PMC4817253

47. Mingxun Wang, Jeremy Carver, Vanessa V. Phelan, Laura M. Sanchez, Neha Garg, Yao Peng, Jeramie Watrous, Clifford A. Kapon, Don Duy Nguyen, Tal Luzzatto-Knaan, Carla Porto, Amina Bouslimani, Alexey V. Melnik, Michael J. Meehan, Wei-Ting Liu, Max Crüsemann, Paul D. Boudreau, Eduardo Esquenazi, Mario Sandoval Calderón, Roland D. Kersten, Robert A. Quinn, Katherine Duncan, Cheng-Chih Hsu, Dimitrios J.

Floros, Ronnie G. Gavilan, Karin Kleigrew, Trent Northen, Rachel J. Dutton, Delphine Parrot, Erin E. Carlson, Bertrand Aigle, Lars Jelsbak, Christian Sohlenkamp, Charlotte F. Michelsen, Pavel Pevzner, Anna Edlund, Jeffrey McLean, Joern Piel, Brian T. Murphy, Lena Gerwick, Chih-Chuang Liaw, Yu-Liang Yang, Hans-Ulrich Humpf, Maria Maansson, Robert Keyzers, **Amy C. Sims**, Andrew R. Johnson, Ashley M. Sidebottom, Brian E. Sedio, Andreas Klitgaard<sup>29</sup>, Charles B. Larson, Cristopher A. Boya P., Daniel Torres-Mendoza, David J. Gonzalez, Denise Brentan Silva, Egle Pociute, Ellis C. O'Neill, Enora Briand, Eric J. N. Helfrich, Eve A. Granatosky, Evgenia Glukhov, Florian Ryffel, Hailey Houson, Hosein Mohimani, Jenan Kharbush, Yi Zeng, Julia A. Vorholt, Kenji L. Kurita, Pep Charusanti, Kerry L. McPhail, Kristian Fog Nielsen, Lisa Vuong, Maryam Elfeki, Matthew F. Traxler, Niclas Engene, Nobuhiro Koyama, Oliver B. Vining, Ralph Baric, Ricardo Roberto Silva, Samantha J Mascuch, Sophie Tomasi<sup>1</sup>, Stefan Jenkins, Venkat Macherla, Thomas Hoffmann, Vinayak Agarwal, Philip G. Williams, Jingqui Dai, Ram Neupane, Joshua Gurr, Andrés Mauricio Caraballo Rodriguez, Anne Lamsa, Wenyuan Shi, Rob Knight, Paul R. Jensen, Bernhard O. Palsson, Kit Pogliano, Roger G. Linington, Marcelino Gutiérrez, Norberto Peoporine Lopes, William H. Gerwick, Bradley S. Moore, Pieter C. Dorrestein, Nuno Bandeira. GNPS - Global Natural Products Social Molecular Networking. Accepted for Nature Biotechnology 2016 Aug 9:34(8) 828-37. PMID:27504778

48. Ernesto S. Nakayasu, Carrie D. Nicora, **Amy C. Sims**, Kristin E. Burnum-Johnson, Young-Mo Kim, Jennifer E. Kyle, Melissa M. Matzke, Anil K. Shukla, Rosalie K. Chu, Athena A. Schepmoes, Jon M. Jacobs, Ralph S. Baric, Bobbie-Jo Webb-Robertson, Richard D. Smith, Thomas O. Metz. A robust and universal protocol for single sample integrative proteomic, metabolomic and lipidomic analyses. mSystems 2016 May 1(3):e00043-16. Doi:10.1128/mSystems.00043-16.

Funding:

**ACTIVE:**

**U19AI107810** (PI: Baric) 06/21/13-05/31/18 NIH/NIAID

**Characterization of novel genes encoded by RNA and DNA viruses**

Using highly pathogenic human respiratory and systemic viruses, which cause acute and chronic life-threatening disease outcomes, we test the hypothesis that RNA and DNA viruses encode common and unique mechanisms to manipulate virus replication efficiency and host responses to determine severe disease outcomes.

Role: Investigator

**U19-AI100625** (PI: Baric) 8/05/12-07/31/17 NIH/NIAID

**Systems Immunogenetics of Biodefense Pathogens in the Collaborative Cross**

Specific Aims: In this proposal, we are utilizing the Collaborative Cross (CC), a novel panel of reproducible, recombinant inbred (RI) mouse lines to identify genes and gene interactions, which regulate the induction, kinetics, and magnitude of the innate, inflammatory and adaptive arms of the immune response following virus infection. Specifically, we will develop novel modeling algorithms to predict and validate the causal relationships between natural genetic variation and host signaling networks, immune cell recruitment, and immune function.

Role: Investigator and Education Coordinator

**490K582** (PI: Kawaoka) 06/01/13-05/31/18 Univ. of Wisconsin/NIH

**MERS-CoV Supplement for OMICs Proposal**

The proposed studies will provide a more detailed look at the intracellular environment by taking “snapshots” of the lipids, metabolites, and proteins present during viral infection time courses. These assays will allow us to determine the innate immune response occurring immediately following virus infection and to determine how the virus and cell interact over a 72 hour window.

Role: Project PI

**U19 AI 109680 CETR**(PI: Whitley) 03/01/14-02/28/19 UAB/NIH/NIAID

**Antiviral Drug Discovery and Development Center**

Principal Investigator/Program Director:  
(Last, first, middle)

The specific aims of the proposal will identify small molecule inhibitors of CoV fidelity and RNA capping, define their mechanism of action, and determine their efficacy against SARS-CoV and across CoV families using in vivo mouse models of acute and persistent CoV disease.

Role: Investigator

**U19 AI109761 CETR (PI: Lipkin)**

03/01/14-02/28/19

Columbia/NIH/NIAID

**Diagnostic and Prognostic Biomarkers for Viral Severe Lung Disease**

The overall goal of this program is to develop new platform technologies that use functional genomics as diagnostic and prognostic indicators of severe end stage lung disease following virus infection of the lung.

Role: Investigator

**Supplement to OMIC (PI: Kawaoka)**

6/1/16-5/31/17

Univ. of Wisconsin/NIH/NIAID

**Systems Virology for MERS-CoV in vivo**

The goal is to develop systems biology datasets and unbiased modeling algorithms to deconvolute the complex pathogen-host interactions that regulate severe disease outcomes following infection and identify common host pathways/genes that can be exploited for therapeutic control. These studies will build on our current data set by collecting data sets for MERS-CoV in vivo.

Role: Project PI

**1R01AI110700 - 01A1**

(PI: Baric)

04/01/15-03/31/20

NIH/NIAID

**Mechanisms of MERS-CoV Entry, Cross-species Transmission and Pathogenesis**

The overall goal is to build a comprehensive understanding of the molecular mechanisms guiding group 2c CoV receptor recognition, entry and pathogenesis.

Role: Investigator