Curriculum Vitae
Ralph S. Baric

I. PERSONAL INFORMATION:

A. Business Address:
Department of Epidemiology
School of Public Health
University of North Carolina at Chapel Hill
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II. EDUCATION:

- North Carolina State University, Raleigh, North Carolina, B.S., Zoology, 1977
- North Carolina State University, Raleigh, North Carolina, Ph.D., Microbiology, 1982
- University of Southern California, School of Medicine, Department of Microbiology and Neurology, Post-doctoral Fellow, 19821986

III. PROFESSIONAL EXPERIENCE:

- Assistant Professor, Department of Parasitology and Laboratory Practice, University of North Carolina at Chapel Hill, March 1986June 1990
- Assistant Professor, Department of Epidemiology, University of North Carolina at Chapel Hill, July 1990-June 1993.
- Associate Professor, Department of Epidemiology, University of North Carolina at Chapel Hill, July 1993-2001.
- Associate Professor, Department of Microbiology and Immunology, University of North Carolina at Chapel Hill, July 1993-2001
- Professor, Department of Epidemiology, Department of Microbiology and Immunology, University of North Carolina at Chapel Hill, July 2001-current

IV. HONORS:

- Full Athletic Scholarship, Swimming, North Carolina State University, 1972-1976
- Atlantic Coast Conference Champion and record holder: 500 yard Freestyle, 1000 yard Freestyle, 1650 yard Freestyle, 400 yard Individual Medley, 800 yard Freestyle Relay
- Teaching Assistantship, North Carolina State University, 1977-1978
- Agricultural Foundation Pre-Doctoral Research Assistantship, 1978-1981
- Teaching Assistantship, North Carolina State University, 1981-1982
- NIH Postdoctoral Fellowship, Neurology Training Grant, 1982-1984
- Harvey Weaver Scholar, National Multiple Sclerosis Society Fellowship, 1984-86
- Outstanding Young Man of America, 1987
- Established Investigator, American Heart Association, 1989-1994
- Delta Omega Honor Society, 1990
- WHO Working Group: SARS-CoV 2003
- Nominated World Technology Award Finalist-2004;
- World Technology Award Finalist and Member, 2004
- Permanent Member, Virology B Study Section; Oct 2005-2009.
- Editorial Board, Journal of Virology, 2004-2006, 2007-2011
- Editorial Board, Plos Pathogen, 2007-
- Senior Editor-Plos Pathogens 2008-.
- Internal Advisory Board, Pacific Northwest Regional Center for Excellence, 2009-2014.

- National Academy of Sciences: Working Group: Gene Sequence Methods for Classification of Select Agents
- Fellow, American Academy of Microbiology, 2010
- Innovation/Inspiration Award for Faculty Research, UNC Gillings School of Public Health, 2011.
- WHO Working Group: Virus-like Particle Vaccines, June 2011.
- WHO Working Group: Flu Vaccine selection, April 2013.
- National Academy of Sciences, Committee on Risks and Benefits of Gain of Function Research. Committee Member, 2014.
- John Holland Memorial Lecturer, American Society for Virology, 2014.
- MERS-CoV Stakeholders Workshop April 2015
- China-U.S. Workshop on the Challenges of Emerging Infections, Laboratory Safety, and Global Health Security" set to take place on September 28,29,30 in Beijing, China Beijing China 2015
- China US Workshop of the Challenges of Emerging Infections, Laboratory Safety and Global Health Security, Galveston, TX 2018
- NASEM Biomeeting participant, Harbin China 2019
- William Rand Kenan, Jr. Distinguished Professorship, 2019
- Clarivate Analytics Highly Cited Researchers 2017, 2018, 2019, 2021, 2022
- Norma Berryhill Distinguished Lecturer, 2020
- National Academies of Sciences Standing Committee on Emerging Infectious Diseases and 21st Century Health Threats 2020
- Member of the ACTIV COVID 19 Working Group, 2020
- Member of Operation Warp Speed COVID 19 Vaccine Group
- National Academies of Science Committee on Data Needs to Monitor Evolution of SARS CoV2, 2020
- Permanent Member of NIH Study Section, Cell-Mediated Immunity A, 2020-2024
- Member of the Red Dawn Breaking COVID 19 Collaborative Group 2020
- National Academies of Sciences group member of the US China Scientific Dialogue on COVID 19, 2020
- North Carolina Award, 2020, Highest civilian award in North Carolina
- Triangle Business Journal Lifetime Achievement Award, 2021
- Elected to the National Academy of Sciences, 2021
- O. Max Gardner Award, Highest faculty honor awarded by UNC BoG which recognizes faculty who have "made the greatest contributions to the welfare of the human race. 2021.
- Wolfgang Joklik Plenary Lecturer, American Society for Virology, 2021
- News and Observer Tarheel of the Year, 2021
- Joklik Distinguished Lecturer, Duke University, 2022
- Elected to the American Academy of Arts & Sciences, 2022
- Founder, READDI Initiative (https://www.readdi.org/)
- Richard Parker memorial Lecturer-Columbia University 2022

V. MEMBERSHIPS:

- National Academy of Sciences
- American Academy of Arts and Sciences
- American Society for Microbiology
- American Society for Virology

VI. UNIVERSITY AFFILIATIONS:

- Lineberger Cancer Center
- Biotechnology Center

- Curriculum in Genetics
- Center for Infectious Diseases
- Rapidly Emerging Antiviral Drug Discovery Initiative (READDI)

VII. BIBLIOGRAPHY AND PRODUCTS OF SCHOLARSHIP

PEER REVIEW

- **Baric, R.S**., Moore, D.B., and Johnston, R.E., 1980. In vitro selection of an attenuated variant of Sindbis virus. **Mol. Cell Biol**. 18:685-694.
- **Baric, R.S.**, Trent, D.W., and Johnston, R.E., 1981. A Sindbis virus variant with a cell determined latent period. **Virology** 110(1):237-242. PMID: 7210508
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- **Baric, R.S.**, Lineberger, D.W., and Johnston, R.W., 1983. Reduced synthesis of Sindbis virus negative strand RNA in cultures treated with inhibitors of host transcription. **J. Virol.** 47(1):46-54. PMCID: PMC255196
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- **Baric, R.S.**, Stohlman, S.A., Razavi, M.K., and Lai, M.M.C., 1985. Characterization of leader-related small RNAs in coronavirus-infected cells: further evidence for leader-primed mechanism of transcription. **Virus Research** 3(1):19-33. PMID: 2992183
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- **Baric, R.S.,** Shieh, C.K., Stohlman, S.A., and Lai, M.M.C., 1987. Studies into the mechanism of MHV transcription. **Adv Exp Med Virol** 218,137-149. PMID: 2829521
- **Baric, R.S.,** Shieh, C.K., Stohlman, S.A., and Lai, M.M.C., 1987. Analysis of intracellular small RNAs of mouse hepatitis virus: Evidence for discontinuous transcription. **Virology** 156(2):342-354. PMID: 3027983
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- Curtis, K., Yount, B. and **Baric, RS**. 2001. A simple strategy to assembly coronavirus infectious cDNA constructs. **Adv. Exp. Med. Biol.** 494:475-481.

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- **Book Chapters/Invited Comments**

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  - Sobsey, M.D., Shieh, V.S., and **Baric, R.S.,** 1990. Deletion of hepatitis A virus and other enteroviruses in environmental samples using gene probe methods. In: Biotechnology and Food Safety. (Shain-dou Kung, Bills, D.D. and Quantrano, R., Eds.)
  - Schwab, K.J., De Leon, R., **Baric, R.S**. and Sobsey, M.D. (1992). Detection of rotavirus, enteroviruses and HAV by reverse transcriptase-polymerase chain reaction. AWWA WOTC Proceedings, Orlando, FL.
  - Vine, MF, Moe, CL, Hulka, BS, **Baric, RS** and R. Millikan. 1995. On the teaching of Molecular Epidemiology. Epi.Monitor, Aug/Sept.

- **Published Abstracts/Presentations (Selected)**

1. **Baric, R.S**., and Johnston, R.E., 1979. Characterization of a Sindbis virus variant with a host determined latent period. North Carolina Society for Microbiology.
2. **Baric, R.S**., and Johnson, R.E., 1979. Sindbis virus variant with a cell determined latent period. American Society for Microbiology Annual Meeting, Los Angeles, CA.
3. **Baric, R.S**. and Johnston, R.E., 1980. In vitro selection of an attenuated variant of Sindbis virus. J. Supramol. Struc. Supplement 4, p.248.
4. **Baric, R.S.,** Carlin, L.J., Lineberger, D.W., Klinger, J.K., and Johnston, R.E., 1980. Inhibitors of host transcription block Sindbis virus replication. North Carolina Society for Microbiology.
5. **Baric, R.S.,** Carlin, L.J., Lineberger, D.W., and Johnston, R.E., 1981. Inhibitors of host transcription block Sindbis virus replication. Annual meeting of the American Society for Microbiology, p.245.
6. **Baric, R.S.,** Carlin, L.J., Lineberger, D.W., and Johnston, R.E., 1981. Inhibitors of host transcription block Sindbis virus replication. Fifth International Congress on Virology, p.383.
7. **Baric, R.S.,** Carlin, L.J., Lineberger, D.W., and Johnston, R.E., 1982. Requirement for host transcription in the replication of Sindbis virus RNA. American Society for Virology.
8. **Baric, R.S.**, Stohlman, S.A., and Lai, M.M.C., 1983. Characterization of replicative intermediate and replicative form RNA of mouse hepatitis virus: Presence of free leader RNA sequences on nascent chains. American Society for Virology.
9. **Baric, R.S.**, Stohlman, S.A., Razavi, M.K., and Lai, M.M.C., 1984. Presence of free leader RNA in MHV infected cell. American Society for Virology.
10. Keck, J.G., **Baric, R.S.,** Stohlman, S.A., and Lai, M.M.C., 1985. Isolation and characterization of MHV RNA recombinants. American Society for Virology, Albuquerque, NM.

11. Lai, M.M.C., Makino, S., **Baric, R.S.**, Soe, L., Shieh, C.K., Keck, J.g., and Stohlman, S.A., 1987. RNA positive strand viruses. ICN-UCLA Symposium, Keystone, CO.

12. **Baric R.S**., Soe, L., Shieh, C.K., Stohlman, S.A., and Lai, M.M.C., 1986. Studies into the mechanism of MHV transcription. ICNUCLA Symp. Positivestranded RNA Viruses Meetings, Keystone, CO

13. **Baric, R.S.,** Soe, L., Shieh, C.K., Stohlman, S.A., and Lai, M.M.C., 1986. Studies into the mechanism of MHV transcription. Third International Coronavirus Symposium.

14. Small, J.D., Soukup, J., Woods, R.D., Gambling, R.M., and **Baric,** R.S., 1987. Coronavirus-induced cardiomyopathy in rabbits. Seventh International Congress of Virology, Edmonton, Canada.

15. Small, J.D., Soukup, J., Woods, R.D., Gambling, T.M., and **Baric,R.S.,** 1987. Coronavirus-induced cardiomyopathy in rabbits. American Society for Virology, Chapel Hill, NC.

16. Stohlman, S.A., Deans, R., **Baric, R.S.,** Nelson, G., and Lai, M.M.C., 1988. Specific Interactions between the coronavirus nucleocapsid protein and the MHV leader RNA sequences. J. Cell Biochem. Supp. 12C.

17. Small, J.D., Woods, R.D., Soukup, J., Gambling, T.M., and **Baric, R.S.,** 1988. Coronavirus-induced cardiomyopathy in rabbits. International Symposium on Inflammatory Heart Disease. Snowmass, CO.

18. **Baric, R.S.**, Edwards, S., and Small, J.D., 1989. Rabbit Cardiomyopathy. 4th International Coronavirus Symposium, England.

19. **Baric, R.S.**, Egbert, J., Lum, K., and Stohlman, S.A., 1989. Coronavirus temperature sensitive mutants. 4th International coronavirus Symposium, England.

20. Shieh, Y.D.C., **Baric, R.S.**, and Sobsey, M.D., 1989. Development and evaluation of a Hepatitis A virus RNA probe for environmental samples. American Society of Microbiology, New Orleans, LA.

21. Peel, S.A., Merritt, S.C., Bowdre, J.H., and **R.S. Baric**. Mefloquine resistance in plasmodium falciparum. Southeastern Parasitology Meeting. April 1990.

22. De Leon, R., Shieh, Y.D.C., **Baric, R.S.** and M.D. Sobsey. Detection of enteroviruses and hepatitis A virus in environmental samples by gene probes and polymerase chain reaction. Nov. 1990, Water Quality Technology Conference, San Diego.

23. De Leon, R., **Baric, R.S**. and Sobsey, M.D. Detection of enteroviruses, hepatitis A virus and rotavirus by reverse transcriptase-polymerase chain reaction (RT-PCR) and non-radioactive oligoprobes. American Society of Microbiology, Dallas, 1991.

24. Peel, S.A., Bowdre, J.H. and **R.S. Baric**. 1992. Mutation and amplification in the pfmdr1 gene of P.falciparum is associated with mefloquine and halofantrine resistance. Molecular Parasitology Meetings, Woods Hole, Ma.

25. Fu, K. and **R.S. Baric.** Variable rates of recombination in the MHV genome. Amer. Society of Virology, Colorado 1992.

26. Alexander, L.K. and **R.S. Baric.** Myocarditis and dilated cardiomyopathy following rabbit coronavirus infection. Amer. Soc. Virol., Colorado, 1992.

27. Peel, S.A., Yount, B., and **R.S. Baric.** A strong association between mutation and amplification in pfmdr1 and mefloquine resistance in P.falciparum. Molecular/Biochemic. Parasitology Meetings, Woods Hole, MA 1993.

28. **Baric, R.S.** and Schaad, M.A. 1995. Evidence that subgenomic negative stranded RNAs function in MHV transcription. International Positive strand RNA Virus Meetings, The Netherlands.

29. **Baric, R.S.**, Yount, B., Chen, W. and Peel, S.A. 1995. Interspecies transfer of a murine coronavirus. International Positive Strand RNA Virus Meeting, The Netherlands.

30. **Baric, R.S.**, Yount, B., L. Hensley, and S.A. Peel. Interspecies transfer and remodeling the MHV glycoproteins. 1996. Keystone Symposium: Cell Biology of Virus Entry, Santa Fe, New Mexico.

31. Chen, W. and **R.S. Baric.** 1996. Mechanism of MHV Persistence: Coevolution of increasing host resistance and virus virulence. Keystone Symposium: Cell Biology of Virus Entry, Santa Fe, New Mexico.

32. Gibson, C., D.Rhodes, H.Sum, **R.Baric,** R.Guerrant, and C.Moe. Human caliciviruses and pediatric gastroenteritis: genetic diversity of small round structured viruses in an urban Brazilian slum. ASV, Montana, 1997.

33. **Baric, R.S**. and Schaad, M.C. (1996). Evidence that mouse hepatitis virus subgenomic negative strands are functional templates (Quebec, Canada, International Coronavirus Symposium).

34. **Baric, R.S.,** Chen, W., Yount, B., and Fu, K. (1996). High RNA recombination and mutation rates in MHV suggest that coronaviruses may be potentially important emerging viruses. (Quebec, Canada. International Coronavirus Symposium).

35. Alexander, L.K., Keene, B., Yount, B., and **Baric, R.S.** (1996). Echocardiographic changes following rabbit coronavirus infection. (Quebec, Canada. International Coronavirus Symposium).

36. Chen, W. and **Baric, R.S**. Evolution and persistence mechanisms in mouse hepatitis virus. (1997). (Quebec, Canada. International Coronavirus Symposium).

37. Hensley, L. and **R.S. Baric**. 1997. Human Biliary glycoprotein functions as receptors for Interspecies transfer of mouse hepatitis virus. (Madrid, Spain; International Coronavirus Symposium).

38. Hensley, L.E. and **R.S. Baric.** 1997. Virus receptor interactions and cross species transfer of mouse hepatitis virus. (Madrid, Spain; International Coronavirus Symposium).

39. Chen, W. and **R.S. Baric**. 1997. Receptor Homologue Scanning Functions in the Maintenance of Mouse Hepatitis Virus Persistence. (Madrid, Spain; International Coronavirus Symposium).

40. Shieh, C.Y.S, **R.S. Baric,** and M.D. Sobsey. 1998. Detection of low levels of enteric viruses in metropolitan and airplane sewage. American Society for Microbiology.

41. **Baric, R.S**. 1998. Molecular and Evolutionary Mechanisms of Virus Cross species Transmission. (July 1998, NIH Bethesda--Cross Species Infectivity Meeting)

42. Shieh, Y.-S. C, S.S. Monroe, R.L. Frankhauser, G.W. Langlois, W. Burkhardt, and **RS Baric**. 1999. Detection of Norwalk-like viruses in shellfish implicated in illness. International Calicivirus Symposium, Atlanta Ga.

43. Shieh, Y.-S, and **Baric, RS**. 2000. Detection of Norwalk-like viruses in shellfish. American Society for Virology, Colorado, USA.

44. **Baric, RS**, Harrington, P., Tseng, F., and Moe, C. 2000. Production of Norwalk like viruses from Venezuelan equine encephalitis virus replicon RNAs. American Society for Virology, Colorado, USA.

45. **Baric, RS,** Curtis, K. and Yount, B. 2000. Development of Coronavirus Infectious cDNAs. International Nidovirus Symposium, New York, USA.

46. **Baric, RS** and Yount, B. 2000. Subgenomic negative strand function during MHV infection. International Nidovirus Symposium, New York, USA.

47. **Baric, RS** and Yount, B. 2000. Mechanisms of MHV Persistence. International Nidovirus Symposium, New York, USA.

48. Harrington, P., Moe, C. and **Baric, RS**. 2001. Mucosal, systemic and cross immunity against Norwalk like viruses. American Society for Virology, Madison, Wis.

49. **Baric, RS** and Yount, B. 2001. Coronavirus Heterologous Expression Vectors. American Society for Virology, Madison, Wis.

50. Lindesmith, L., **Baric, RS** and Moe, CL. 2001. Evidence of a protective immune response against Norwalk like viruses. American Society for Virology, Madison, Wis.

51. Curtis, C., Yount, B. and **Baric, RS**. 2001. Heterologous gene expression from transmissible gastroenteritis virus replicon particles. International Symposium on Positive Strand RNA Viruses, Paris, Fr.

52. **Baric, RS**, Curtis, K. and Yount, B. 2001. Coronavirus heterologous gene expression vectors. International Symposium on Positive Strand RNA viruses. Paris, Fr.

53. Harrington, P., Moe, C. and **Baric, RS.** 2001. Systemic, mucosal and heterotypic protection against Norwalk like viruses using Venezuelan equine encephalitis virus replicons. International symposium on positive strand RNA viruses. Paris, Fr.

54. Harrington, P and **Baric, RS**. NLV Vaccines. Southeastern Virology Meetings, Atlanta GA, April, 2002.

55. Mcroy, W and **Baric, RS**. Mechanisms of MHV Cross species Transmission. Southeastern Virology Meeting, Atlanta GA, 2002.

56. McRoy, W and **Baric, RS**. Molecular Mechanisms of MHV Cross Species Transmission, American Society for Virology, Lexington, Ky. July, 2002.

57. Curtis, K, Yount, B and **Baric, RS**. Development of TGEV Replicon Particles. American Society for Virology, Lexington, Ky. July 2002.

58. Executive decision to stop listing abstracts, but on average we are providing abstracts at a rate of 4-15/yr.

VIII. TEACHING ACTIVITIES

- **Courses taught**
  - EPID 799 Biological Basis of Infectious Disease Epidemiology

- EPID 745 Molecular Techniques for Public Health Research, Guest lecturer
- MCRO 630 Virology. Guest Lecturer

B. Students supervised

- **Current Students-Dissertation Advisor**
  - Jesica Swantstrom (EPID) Thesis: Protective immunity associated with type specific responses that target in different DENV serotypes, and that genotype specific variation is an important mechanism of escape from human herd immunity. Fall 2018-present
  - Deanna Zhu (EPID) Fall 2018-present
  - Lily Adams (Micro) Thesis: Group 2B Coronavirus Spike Protein Mediated Cross Protection. Fall 2020-present
  - Jaclyn Higgins (Micro) Thesis: Broad Spectrum Coronavirus Vaccines Fall 2021-present

- **Former Doctoral Students**
  - Mary Schaad, PhD (Epid), Thesis: Genetics of mouse hepatitis virus transcription: Characterization of temperature-sensitive mutants. Fall 1987-Spring 1994 Senior Scientist Ambion
  - Kaisong Fu, PhD (Epid), Thesis: The mechanism of RNA recombination in the mouse hepatitis virus. 1989-Spring 1995. Founder/Executive Director, Health China Development
  - Sheila Peel, PhD (Epid), Thesis: Mefloquine resistance in multidrug resistant Plasmodium falciparum in vitro. 1986-1990 Director, Diagnostics and Countermeasures Branch at Walter Reed Army Institute of Research
  - Jia-Gang Want, PhD (Micro). Thesis: Structural and functional analysis of hepatitis delta virus antigen. 1990-1994
  - Lisa Hensley, PhD (Epid) Thesis: Molecular mechanisms of the cross-species transmission of mouse hepatitis virus. 1994-1999, Associate Director, NIH
  - Kristopher Curtis, PhD (Micro) Thesis: Reverse genetic analysis of TGEV gene function and replication. Fall 1998-Fall 2003, Business Development & Product Management.
  - Patrick Harrington, PhD (Micro) Thesis: Norovirus attachment and vaccine design. Fall 1999-Fall 2003, FDA
  - Will McRoy, PhD (Micro) Thesis: Determinants of mouse hepatitis virus host range expansion. Fall 2001-2006, Scientist, Cook Research Inc.
  - Damon Deming, PhD (Micro), Thesis: Genetic approaches to the study of coronavirus replication and pathogenesis. Fall1999- Spring 2007, FDA
  - Anna LoBue, PhD (Micro) Thesis: Norovirus immunobiology and vaccine design Fall 2002-Spring 2008, Clinical Scientist at Galderma Laboratories, L.P.
  - Eric Donaldson, PhD (Micro) Thesis: Computational and molecular biology approaches to viral replication and pathogenesis. Spring 2004-Spring 2008, FDA
  - Timothy Sheahan,PhD (Micro) Thesis: SARS coronavirus pathogenesis and therapeutic treatment design. Fall 2003- Spring 2008, Assistant Professor, UNC
  - Meagan Bolles, MD PhD (Micro) Thesis: Evaluations Of Severe Acute Respiratory Syndrome Coronavirus Therapeutics And A Viral Capacity For Plasticity And Escape. Fall 2008 – Spring 2013, Infectious Disease Fellow at University of Maryland Baltimore

- Kari Debbink, PhD (Micro) Thesis: Mechanisms of GII.4 norovirus antigenic variation and evolution Fall 2010-Spring 2014, Assistant Professor, Bowie State
- Allison Totura, PhD (Micro) SARS coronavirus antagonizes innate immune signaling initiated by RIG-I but is recognized by TLR signaling via the adaptor molecule TRIF. Fall 2007-Spring 2014, Biologist US DHHS
- Kayla Peck, PhD (Biology) Thesis: Characterizing the biochemical determinants governing MERS-coronavirus host range. 2013-Summer 2016, Senior R&D Scientist, Swift Biosciences, Inc
- Emily Gallichotte, (Micro) Thesis: The human antibody response to DENV2 infection and vaccination; Fall 2014-Spring 2018 Fellow, Colorado State U, Ft. Collins
- Anne Beall, (Micro) Thesis: Models of Coronavirus Pathogenesis and Innate Immunity; Fall 2014- Fall 2019, Postdoctoral Researcher, Sanford Burnham Prebys Medical Discovery Institute
- Kenneth Dinnon (Micro). Thesis: Viral determinants of coronavirus pathogenesis. Fall 2016-Sumer 2021, Postdoctoral Researcher, Rockefeller U.
- Ethan Fritch (Micro) Thesis: Roles of RNA Secondary Structure in Genome Replication and Expression of MERS-CoV. Fall 2017-2022

3. Dissertation Committee Member

- John Meschke (ENVR)
- Fu-Chih Hsu (ENVR)
- Jin Haw Chou, (EPID)
- Julie Smith (ENVR)
- Rebecca Cleveland (EPID)
- Nicole Gregoricus (ENVR)
- Amy Pickard (Epid), graduated Spring 2004
- Jennifer Konnapka (M&I), graduated Spring 2007
- Cindy Ma (Epid), graduated Spring 2007
- Jason Simons (M&I) graduated Spring 2010
- Catherine Cruz (M&I) graduated Spring 2010
- Amy Wollish (M&I) graduated Winter 2006
- Alina Lotstein (M&I)
- Kari Hacker (M&I) graduated 2011
- Yang Zhou (M&I) graduated 2013
- Bronwyn Gunn (M&I), graduated 2013
- Kizzmekia Corbett (M&I) graduated 2014
- Richard Watkins (M&I) graduated 2015
- Jennifer Jones (M&I) graduated 2017
- Paul Maurizio (Genetics) graduated 2018
- Cesar Lopez (M&I) graduated 2021
- Derek Carbaugh (M&I) graduated 2020
- Devina Thiono (M&I)
- Hyejuong Kim (M&I)
- Jacob Dillard (M&I)
- Andrew Hale (M&I), graduated 2021
- John Sears (M&I)

- **Current Postdoctoral/Research Associate**

- Dr. Sarah Leist, 2016-present
- Dr. David Martinez, 2018-present
- Dr. John Powers, 2021-present
- Dr. John Catanzaro, 2022-present
- Dr Heather Froggatt, 2022-present
- Dr Xiaoyu Niu, 2022-present
- Dr. Zachery Beau Reener, 2023-present

- **Former Postdoctoral Fellows/Research Associates**
  - Sheila Peel, Senior Researcher, Walter Reed Medical Institute
  - Lorraine Alexander, Res. Asst Professor, Dept. of Epidemiology, UNC-CH
  - Carol Shieh, Research Scientist, Food and Drug Administration
  - Amy Sims, 2002-2005 Biomedical Scientist, PNNL, Battelle
  - Kirk Prutzman, 2006-2008, Food and Drug Administration
  - Damon Deming, 2007-2009, Food and Drug Administration,
  - Matthew Frieman, 2004-2009 Associate Professor, Univ. of Maryland
  - Barry Rockx, 2004-2008 Workgroup Leader, Exotic Viruses, Erasmus, MC
  - Eric Donaldson, 2008-2009, Clinical Virology Reviewer, Food and Drug Administration
  - William Messer, 2008-2012, Asst Professor, Oregon Health Science University
  - Rachel Graham, 2007-2013, Research Assistant Professor, UNC-CH
  - Sudhakar Agnihothram, 2008-2014, Fellow, Food and Drug Administration
  - Schafer, Alexandra, 2010-2012, Research Associate, UNC-CH
  - Gralinski, Lisa 2008-2013, Asst Professor, UNC-CH
  - Widman, Douglas 2013-2016, R& D Project Mgr., Karyopharm Therapeutics
  - Cockrell, Adam, 2014-2018, Director of Virology Research, KNOWbio LLC.
  - Jessica Plante, 2014-2016, Research Scientist, UTMB
  - Vineet Menachery, 2010-2017, Assistant Professor. UTMB
  - Dr. Jacob Kocher, 2014-2018, Sr Principal Scientist, KNOWBio
  - Dr. Kara Jensen, 2015-2020, Science Liaison
  - Dr. Alexandra Schaefer, 2010-2021, Research Assistant Professor, UNC
  - Dr. Jacob Hou, 2019-2021, Research Scientist, Moderna, Inc
  - Dr. Ellen Young, 2016-2022, retired
  - Dr. Victor Long Ping Tse 2019-2022, Assistant Professor, St Louis U
  - Dr. Rita Maganck, 2020-2022, Post-doc, St. Louis U
  - Dr. Fernando Moreira, 2020-2022, Post doc, Loyola University

IX. CONRACTS AND GRANTS

Current Funding

- **U19 AI171292 (Baric-Contact PI, Willson MPI) 05/15/2022-04/30/2025**
  NIH/NIAID Total Direct Costs $53,749,784
  <u>Rapidly Emerging Antiviral Drug Development Initiative- AViDD Center (READDI-AC)</u>
  READDI-AC is a public-private partnership designed to identify and develop oral, broadly active drugs that control the diseases caused by contemporary and new emerging RNA viruses from the coronavirus, alphavirus, flavivirus and filovirus families, including many dangerous zoonotic viruses that threaten the health of global populations.

- **U19 AI100625 (Baric-Contact PI, Heise MPI) 08/05/2012-8/31/2022**

NIH/NIAID **Total Direct Cost $14,543071**

Systems Immunogenetics of Biodefense Pathogens in the Collaborative Cross

The Collaborative Cross, a mouse resource designed to study complex genetic interactions in diverse populations, to identify novel polymorphic genes regulating immune responses to SARS, influenza and West Nile viruses, gain new insights into genetic interactions that shape immune phenotypes in mice and humans, and generate panels of genetically defined mice to probe how sets of polymorphic genes affect immune responses against a variety of pathogens or other immune stimuli.

- **R01 AI 107731 (PI: De Silva) 08/01/13-08/31/23**
  NIH/NIAID $300,000

  Molecular Basis of Dengue Virus Neutralization by Human Antibodies

  These studies proposed here are directly relevant to developing simple assays to predict the performance of the leading dengue vaccine candidates and also for developing the next generation of safe and effective dengue vaccines.
  Role: Co-Investigator

- **R01 AI108197 (MPI: Denison/Baric) 08/01/13-07/31/23**
  Vanderbilt University/NIH/NIAID $280,000

  Determinants of Coronavirus Fidelity in Replication and Pathogenesis

  Experiments in this aim will test the hypothesis nsp1 functions in maintaining high replication fidelity and viral RNA synthesis are coupled and that targeted engineered mutations across nsp14 alter: a) RNA fidelity outcomes; b) sensitivity nucleoside mutagens, terminators and polymerase inhibitors; c) the kinetics and magnitude of positive, negative, genomic and subgenomic RNA synthesis; and d) RNA recombination frequencies.

- **R01 AI110700 (PI: Baric) 04/20/15-03/31/21**
  NIH/NIAID $3,675,513

  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.

- **R01 AI125198 (de Silva) 05/04/16 – 04/30/21**
  NIH/NIAID $1,153,997

  Preclinical Assays To Predict Tetravalent Dengue Vaccine Efficacy

  Dengue is the most significant mosquito transmitted viral infection of humans. Vaccination is a feasible solution to prevent and control dengue. Although dengue vaccines are under development, we do not know the specific properties of antibodies induced by vaccines that are likely to protect from infection. In this project investigators from the University of North Carolina and Sanofi Pasture, a leading dengue vaccine developer, will collaborate to define properties of antibodies induced by the Sanofi vaccine that correlate with protection. The main goal of the project is to develop new assays to support the current global effort to develop dengue virus vaccines. Role: Co-Investigator

- **R01AI089726 (PI: Li) 06/07/16-05/31/21**
  Univ Minn/NIH $120,384

  Receptor recognition and cell entry of coronaviruses

  To investigate how CoVs explore host receptors and host proteases for regulation of their host range, cross-species transmission, tissue tropism, and pathogenesis. Role: Consortium PI

- **Burroughs Welcome Trust (PI-Judy Breuer)** **2/1/2017-1/31/2022**
  University College London 500,000£
  Why do Norovirus pandemics occur and how can we control them?
  The program uses hospital and community cohorts of NoV infected individuals to ask fundamental questions into the molecular and evolutionary epidemiology of human NoV infections, focusing on the GII.4 strains, leading to new models of virus emergence and disease prevention. (Funded pending execution of subcontract). Role: Co-Investigator.

- **U19 AI142759 CETR (PI: Whitley)** **03/07/19-02/28/24**
  UAB/NIH/NIAID **$375,233**
  Antiviral Drug Discovery and Development Center
  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

- **K24AI141744 (Becker-Dreps)** **12/06/18-11/30/23**
  NIH/NIAID **$157,100**
  The Development of Norovirus Immunity in Early Childhood and Implications for Norovirus Vaccines To acquire new research skills and carry out a research plan that will allow guidance of the development of pediatric norovirus vaccines.
  Role: Investigator

- **U01 AI149644 (PI: Baric)** **04/19/19-03/31/24**
  NIH/NIAID $644,071
  Respiratory Virus Vaccine and Adjuvant Exploration
  This project takes advantage of expertise in adjuvant development, vaccinology, and complex trait genetics, proposes to use advanced Systems Vaccinology and Genetics approaches to define the polymorphic genes/gene networks that regulate the immune response to select respiratory virus adjuvanted immunogens.

- **R01 AI127845 (PI: Becker-Dreps)** **09/27/16-08/31/21**
  NIH/NIAID **$498,959**
  Natural history, immunity, and transmission patterns of sapovirus in a Nicaraguan birth cohort
  To characterize the natural history and risk factors for sapovirus gastroenteritis, elucidate the development of immunity to sapovirus in early childhood and the potential protective effect of maternal immunity, and apply novel genetic and analytic tools to characterize patterns of sapovirus transmission in households and communities. Role: Investigator

- **R01 AI132178 (PI: Baric/Sheahan)** **08/09/17-07/31/22**
  NIH/NIAID **$919,427**
  Broad-spectrum antiviral GS-5734 to treat MERS-CoV and related emerging CoV
  To focus on two areas: novel second generation compounds or compounds not previously provided by Gilead Sciences; and selecting and evaluating drug resistance profiles for SARS-CoV and MERS-CoV mutants in primary human lung cells.

- **D43 TW010923 (PI: Becker-Dreps/Meshnick)** **05/10/18-02/28/23**
  NIH **$230,000**

Nicaraguan Emerging and Endemic Diseases (NEED)
The goals of this program are to 1) train young Nicaraguan scientists in Infectious Disease Epidemiology at the UNC, 2) create a sustainable supply of scientists in the region by establishing an accredited PhD program in Biomedical Sciences at the Universidad Nacional Autonoma de Nicaragua Leon and 3) foster professional growth and development among trainees and local faculty to ensure academic and research success.
Role: Investigator

- **U01 AI141997** **(PI: Kirkpatrick)** **02/01/19-01/31/24**
  Univ Vermont/NIH/NIAID $64,128
  Mechanisms of Protection and Durability for a Live Attenuated Tetravalent Dengue Vaccine
  Tetravalent dengue vaccination must offer safe and durable protection against all four serotypes of dengue viruses. We leverage four vaccine trials and viral challenges evaluating the NIH dengue vaccine to explore and confirm immune mechanisms associated with protection. Role: Investigator

- **HHSN272201700036I** **(PI: Baric)** **07/15/19-07/14/22**
  NIH/NIAID $442,129
  Task Order A24 - Establishment of Chronic Bacterial Infection Models in Mouse Models of Cystic Fibrosis with Pseudomonas aeruginosa and Staphylococcus aureus
  To test and refine currently available mouse models of cystic fibrosis (CF) chronic lung infections. Key determinants for this refinement include the ability to screen existing clinical isolate collections (both P. aeruginosa and S. aureus) to identify bacterial strains with increased likelihood of establishing chronic lung infections in wild-type (WT) mice using an established protocol for embedding bacteria in agar beads and the availability of Cftr-deficient mice to test the outcome of chronic infection with novel bacterial strains.

- **HHSN272201700036I** **(PI: Baric)** **09/15/19-03/14/22**
  NIH/NIAID $271,640
  Task Order A36 - Efficacy of Coronavirus Vaccines and Monoclonal Antibodies in Mouse Models
  To use our novel panel of recombinant virus challenge strains to assess the efficacy of candidate vaccine and therapeutic monoclonal antibodies in murine coronavirus challenge models and to understand the immunological mechanisms and correlates of protection.

- **R21AI151231** **(PI: Koller)** **03/03/20-02/28/22**
  NIH/NIAID $150,000
  Genetically humanized mice for modeling human Fc-receptor interaction during influenza infection
  The goal of this proposal is to develop and refine tools for the study of human antibody receptor interactions in vivo. Role: Investigator

- **R01AI148260** **(PI: Baric)** **03/05/20-02/28/25**
  NIH/NIAID $622,759
  Antibody Landscape following Human Norovirus Infection and Vaccination
  These studies will reveal important new insights into the virus epitopes that elicit type specific and broadly neutralizing antibody (bnAB), reveal mechanisms of cross

protection, antibody neutralization and escape, and provide an atomic level understanding of HuNoV neutralization and pandemic strain emergence mechanisms, leading to improved 2nd generation vaccines for in vivo testing.

- **U54CA260543 (MPI: Baric-Contact PI; Wolfgang MPI) 09/30/20-08/31/25**
  NIH/NCI $2,882,503
  North Carolina Seronet Center for Excellence
  Our overall goals are to 1) characterize the immune responses elicited to SARS-CoV2 infection, 2) understand the mechanisms driving the serological, humoral and cellular immune responses, 3) determine modifiers of the serologic memory and 4) determine the serological correlates of disease pathogenesis, and protection against future infection.

- **R01 AI157253 (MPI: Heise/Baric) 09/25/20-08/31/25**
  NIH/NIAID $499,242
  Genetic Analysis of COVID-19 Susceptibility and Resistance Determinants in the Collaborative Cross
  This work will accomplish two critical research objectives by: 1) developing critically needed mouse models of nCoV2-induced disease, and 2) identifying polymorphic host genes/pathways that regulate resistance or susceptibility to nCoV2-disease.

- **R01AI157155 (MPI: Diamond, Crowe, Baric)09/15/20-08/30/25**
  Univ Washington/NIH $1,029,675
  Human Ab based countermeasures against the Wuhan Coronavirus SARS-CoV-2
  The development, characterization, and ultimately deployment of an antibody-based treatment against SARS-CoV-2 could prevent substantial morbidity and mortality, and possibly mitigate its epidemic spread. This interactive multi-PI proposal leverages complementary expertise in the Diamond, Crowe, and Baric laboratories to rapidly develop highly neutralizing and therapeutic human mAbs against SARS-CoV-2 for immediate use in humans.

- **R01 AI110700 (MPI: Baric/Li) 09/25/20-08/31/25**
  NIH/NIAID $621,077
  Cell entry, cross-species transmission and pathogenesis of novel coronavirus from Wuhan
  The overall program goals are to identify the viral and host determinants, which regulate the atomic-level interactions between the SARS2 S-glycoprotein and various ACE2 receptor and associated entry components such as cellular proteases.

- U19 AI151797 (Daszak, PI) 6/17/2020-6/15/2025
  Understanding Risk of Zoonotic Virus Emergence in EID Hotspots of Southeast Asia. The overall program goals are to identify zoonotic virus transmission risk to human populations in Southeast Asia. Baric (Co-investigator)

- **P01AI158571-01 (Haynes, B: Duke University) 12/01/2021-11/30/2024**
  Design and Development of a Pan-betacoronavirus Vaccine. The goal of the program is to develop pan-betacoronavirus vaccines against emerging coronaviruses using mRNA and nanoparticle Spike vaccine formulations.**Baric, R (Project 1 PI) Panbetacoronavirus Chimeric Vaccines**

- **NIH HHSN272201700036I (Baric, R: Contact PI) 6/1/2-22-11/30/23**

TASK ORDER NO. 75N93022F00001 (Gralinski/Graham/Schaefer Lead PIs). The goal of this task order is to provide high throughput neutralization assays for vaccine studies by commercial partners working through NIH.

- **NIH AID: P01AI167966 (Neil King, PI) 09-02-2022-08-31-2025**
  Structure-based design of broadly protective coronavirus vaccines. The goal of this program is to build RBD nanoparticle vaccine formulations against the betacoronaviruses.
  Baric, R (Core B: Virology Core Lead)

Completed

1. **Harvey Weaver Scholar, National Multiple Sclerosis Society**. 7/1/84-5/1/86. Total: $44,000. Postdoctoral fellow research fellow support. PI: RS Baric

2. **National Institutes of Health, Allergy and Infectious Diseases (AI 23946 years 1-3)** Studies into the mechanism of MHV transcription. 7/1/86-3/31/90. $324,000 Direct costs. PI: RS Baric, 40% effort.

3. **National American Heart Association Grant in Aid.** Coronavirusinduced myocarditis in rabbits. July 1987-June 1990. $29,609 first year; total for three years: $94,227 (direct costs), PI: RS Baric 10% effort.

4. **Career Development Award from the National American Heart Association, Established Investigator Award** "Coronavirus-Induced Rabbit Cardiomyopathy". Established Investigator-American Heart Association. Direct costs: $175,000. 7/1/89 - 6/30/94. PI: RS Baric

5. **School of Public Health, BRSG**. Coronavirus-induced myocarditis in rabbits. 1986-1987. $7,150 direct costs. PI: RS Baric

6. **School of Public Health, BRSG.** Incidence of the enteric rotaviruses, adenoviruses, and coronaviruses among migrant farm workers. 1987-88. Direct costs $7,150. PI: RS Baric

7. **School of Public Health, BRSG** Small Instrument Program. Direct costs $7,477.80. PI: RS Baric. 1989

8. **National American Heart Association Grant in Aid.** "Coronavirus-induced myocarditis and dilated cardiomyopathy. 7/1/90 - 6/30/93. Direct costs $108,000. PI: RS Baric, 10% effort.

9. **School of Public Health, BRSG.** Development of PCR techniques for detection of HAV and other enteroviruses. 1989 - 1990. Direct costs $3,200. PI: RS Baric

10. **School of Public Health, BRSG**. Small Instrument Program. $7,200. (1987), PI: RS Baric

11. **School of Public Health, BRSG**. Small Instrument Program $6,200. (1988), PI: RS Baric

12. **American Water Works Association.** "Gene probes to analyze for waterborne microorganisms and virus". 10/1/90 - 9/30/92. Direct costs $150,000/yr (Co-PI with Mark Sobsey ENVR).

13. **National Shellfish Indicator Study**. Detection of human and nonhuman fecal indicators in shellfish and environmental samples. 11/1/90 - 10/30/92. Direct costs $205,000 (Co-PI with Mark Sobsey, ENVR).

14. **Environmental Protection Agency**. Development of ultra-sensitive gene probes for the detection of HAV and other enteroviruses in environmental samples. Direct costs $315,000 (Co-PI with Mark Sobsey, ENVR). 6/5/91 - 6/4/93

15. **National Institutes of Health, Allergy and Infectious Diseases**. "Studies into the Mechanism of MHV Replication". 1/1/92 - 12/31/96. Total costs: ~$895,000. PI: RS Baric, 40% effort. Years 4-8.

16. **North Carolina Biotechnology Center**. Studies into the mechanism for mefloquine resistance in plasmodium falciparum in vitro. 7/1/92 - 12/31/93 $40,000 direct costs. PI: RS Baric, 5% effort.

17. **World Health Organization.** Molecular screening strategies for antimalarial drugs. 1994-1996, $75,000 Direct Costs. PI: RS Baric, 10% effort.

18. **North Carolina Biotechnology Center**. "**Molecular Methods to detect and control human calicivirus infections**" 7/1/2000-12/21/01. $55,000 total costs. RS Baric, PI 5% effort.

19. **National Institutes of Health, Allergy and Infectious Diseases**. "Studies into the Mechanism of MHV Replication". 7/1/97-6/30/02. Total costs: 1,000,000. PI: RS Baric, 40% effort. Years 9-13.

20. **American Water Works Association Research Foundation. "Development of a Molecular Method to Detect Infective Viruses."** T. Cromeans and M.Sobsey, PI; RS Baric, co-investigator 5% effort. $250,000 total costs, 1/1/2000-12/31/03.

21. **Environmental Protection Agency**. "**Research to Assess the Potential for the Use of Noninvasive Assays to Measure Infections Caused by Exposure to Viral Pathogens in Drinking and Recreational Waters**." PI: C.Moe, subproject: to RS Baric. 10/1/01-9/31/03. $400,000 total costs, 5% effort.

- **National Institute of Health, Allergy and Infectious diseases**. **"Reverse Genetics with a Coronavirus Infectious cDNA Construct."** 4/1/2001-3/31/005 $1.0 million total costs/yr. RS Baric, PI 25% effort. GM 63228

- **National Institutes of Health, Allergy and Infectious Diseases**. R01. **Remodeling the SARS Coronavirus Genome Regulatory Network.** RS Baric, PI 10% effort. 7/1/04-6/30/09. $2.1 million.

- **NIH Southeastern Regional Center for Excellence**. Marburg virus reverse genetics and pathogenesis 12/1/04-11/30/06. $200,000 total costs. RS Baric, PI 2% effort.

- **National Institute of Health, Allergy and Infectious Diseases: "Studies into the Mechanism of MHV Replication".** 4/1/03-3/30/08, ~2,000,000 total costs. RS Baric, PI-30% effort. (years 14-19) AI23946, 1 year no cost extension in progress.

- **NIH AID Supplement 1 and 2: SARS Reverse Genetics**. AI23946-14A1 $250,000 direct costs. Supplements to develop a full length cDNA of the SARS-CoV and equip a BSL3 laboratory in the School of Public Health, Room 3221D McGaveran Greenberg Hall. RS Baric, 5% effort, PI. 9/1/03-8/30/04.

- **National Institute of Health, Allergy and Infectious Diseases. Susceptibility and Protective Immunity to Noroviruses.** 7/1/03-6/30/08. RS Baric, PI; 20% effort; 2.3 million total costs. **RO1 AI056351-01**.

- **National Institutes of Health, Allergy and Infectious Diseases. SARS Reverse Genetics. AI059136-01**. $1.7 million total costs, RS Baric, PI. 10% effort. 4/1/04-3/31/09.

- **GC11714-130654 (Engle, PI; Baric, Co-PI) NIH Univ VA-Subcontract** 6/1/08 - 5/31/09. Yeast Based Assays for Chemical Screens Against SARS-CoV Targets

- **Gillings Foundation. UNC GIL 200710.0017. "Vaccines for Global Health".** Baric, RS PI. Total Direct Costs: $528,371. 09/01/2008-08/31/2010.

- **National Institutes of Health, Allergy and Infectious Diseases. P01 AI059443-05. Developing vaccine candidates for the SARS Coronavirus**. RS Baric, PI 30% effort. Total direct costs: $9,025,984; 5/1/05-1/31/11.

- **National Institutes of Health, Allergy and Infectious Diseases. RO1. HL080621**. **Macaque Model and Gene Expression Profiling of SARS** Michael Katze, PI (University of Washington); RS Baric Subcontract PI. 5% effort. Total direct costs: $375,000 direct costs/year. 01/01/06-12/30/10.

- **NIAID/NHLB, R21 AI079521 Targeted Gene Expression from NL63 Vaccine Vectors (Sims-PI; Baric Co-Investigator, 5% effort)** Total Direct costs: $275,000. 07/01/08-06/30/11

- **National Institutes of Health, Allergy and Infectious Diseases. R21/R33 AI 076159-03 Human Coronaviruses as Multigene Mucosal Vaccine Vectors for HIV (Sims-PI; Baric Co-Investigator); Total Direct costs: $286,661. 04/01/08 - 03/31/11**

- **HHSN2722010000191/HHSN27200001 (Palese, P. PI) 9/30/11-9/29/2012**
  Mt Sinai School of Medicine/NIH/NIAID Total Direct Costs: $200,000
  NIAID Animal Models of Infectious Diseases-Task Order A26
  New Animal Models for Chronic Chikungunya Virus Diseases in At-Risk Populations

- **National Institute of Health, Allergy and Infectious Diseases. R01AI075297SARS-CoV Pathogenic Mechanisms in Senescent Mice. 4/1/08-3/31/14 NCE. Baric, R.S. (PI); Total direct costs: $1,966,516**

- **SERCEB U54 AI057157 (Sparling, PI; Denison, Project PI; Vanderbilt; Baric, R-Co-PI) 3/1/09 – 2/28/14 Project 1.1. Platforms for the Synthesis and Testing of Emerging Zoonotic Viruses**

- **SERCEB U54 AI057157 (Sparling, PI; De Silva, Project PI; Baric, R-Co-PI). Project 3.2. "Antibody in Protective and Pathogenic Immunity to Dengue Type 3" 3/1/09 – 2/28/14**

- **PNWRCE U54 AI080680 (Nelson, PI Baric-Project PI) 4/21/09 – 2/28/14**
  Project 3.1 Pathogenomics of Severe Respiratory Virus Infection. PI, RS Baric. Annual total direct costs: $430,000.

- **02-340-0213337 (PI: Baric) 03/01/13-02/28/14**
  RTI/DOD $200,000
  Human Emulated Response with Microfluidic-Enhanced Systems (HERMES)

- **Univ Wash/NIH-Subcontract, R01 HL080621 A Systems biology Approach to Emerging Respiratory Viral Diseases, PI: M. Katze(UWash) $16,954,607 (total contract); Baric SubProject: Systems Biology of Lethal and Attenuated SARS-CoV Infection (~$300,000/yr direct costs). 9/15/08 - 9/14/13.**

- **RO1 RO1 AI056351 (PI: Baric) 02/01/2009 - 01/31/2015**
  NIH/NIAID Total direct cost: $2,854,241
  Susceptibility and Protective Immunity to Noroviruses.

- **R01 AI085524 (PI: Marasco) 06/09/10-05/31/15**
  Dana Farber/NIH $184,059
  Broad Spectrum Neutralizing Human Abs to SARS-CoV and Related Zoonotic Coronaviruses. Role: Consortium PI

- **U19 AI 107810-Supplement (PI: Baric) 09/01/14-05/31/15**
  NIH/NIAID $57,395
  Characterization of novel genes encoded by RNA and DNA viruses

- **R56 AI106006 (PI: Baric) 09/01/14-8/31/16**
  NIH/NIAID $759,938
  Mechanisms of Norovirus Protective Immunity

46. 246823 **(PI: Baric) 01/27/15-09/16/17**
PNNL/DHS $205,569
Generation of Predictive Models of Viral Pathogenesis

47. **Not Assigned (PI: Desilva) 03/01/13-09/30/18**
Sanofi Pasteur Vaccines $130,000
UNC-Sanofi Pasteur Pilot Study to Characterize Human Antibody Response to Tetravalent Dengue Vaccine Role: Investigator

48. **HHSN272201000019I-HHSN27200003 (PI: Palese) 09/30/13-03/31/17**
MSSM/NIH $481,223
MERS-CoV Mouse Model for Vaccine & Therapeutic Testing (Task Order A57) Role: Consortium PI

49. **60045042 (PI: Saif) 02/01/15-01/31/18**
Ohio State Univ/USDA $44,804
Molecular attenuation mechanisms of porcine epidemic diarrhea virus in pigs

Role: Co-Investigator

50. **U19-AI106772-02 (PI: Kawaoka) 08/01/13-05/31/18**
Univ of Wisconsin/NIH/NIAID $411,563
Modeling Host Responses to Understand Severe Human Virus .Role: Investigator

Supplement to OMIC (PI: Kawaoka) 08/25/14-9/30/17
Univ. of Wisconsin/NIH/NIAID $200,000
Epigenetic Regulation of Interferon-Stimulated Genes Following MERS-CoV Infection
Role: Investigator

- **Not assigned (PI: deSilva) 02/01/2015-09/30/19**
Johns Hopkins U/Gates Foundation $726,498
The dengue human infection model: Defining correlates of protection and advancing vaccine development
Role: Co-Investigator

- **U19 AI107810 (PI: Baric) 07/01/13-06/30/19**
NIH/NIAID $7,346,408
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.

U19 AI 107810-Supplement (PI: Baric) 06/01/16-05/31/17
NIH/NIAID
Characterization of novel genes encoded by RNA and DNA viruses
One year administrative supplement to identify viral gene products encoded by Zika Virus

- **U19 AI 109680 CETR (PI: Whitley) 03/01/14-02/28/19**
UAB/NIH/NIAID $1,611,425
Antiviral Drug Discovery and Development Center
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: Co-Investigator

- **U19 AI109761 CETR (PI: Lipkin) 03/01/14-02/28/19**
Columbia/NIH/NIAID $2,999,060
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: Project Leader, Consortium PI

- **Not Assigned (PI: Baric) 01/01/16-07/31/19**
Takeda Vaccines, Inc $1,243,048
In Vitro and In Vivo Characterization of Bivalent DENV Live Virus Vaccines
To provide expertise in molecular virology required for creating recombinant dengue viruses for in vitro and in vivo testing.

- **Not Assigned (Baric, PI) 07/01/16-6/30/19**
  Takeda Vaccine, Inc.
  Global Rise & Development: Breadth of Blockade Antibody Responses Following Norovirus Vaccination.
  Takeda and UNC will collaborate to evaluate the breadth of the antibody blockade response following norovirus vaccination in various human volunteer populations.

- **Not Assigned (deSilva-PI) 05/01/14 – 12/31/19**
  Takeda Global Res & Development Ctr, Inc $130,191
  UNC-Takeda Study to Characterize Human Antibody Response to DENVax
  Takeda and UNC will collaborate to determine if the Takeda vaccine induces antibodies against the neutralizing epitopes discovered at UNC

- **00008956 (PI: Harris) 07/29/15-06/30/20**
  UCB/NIH/NIAID $275,000
  Protective immunity following dengue virus natural infections and vaccination
  We will perform studies to characterize the B-cell/ antibody (responses in people who receive dengue live attenuated virus vaccines (DLAV). Role: Co-Investigator

- **R21 AI135682 (MPI: Georgiou/Baric) 02/01/2018-1/31/2020**
  Univ of Texas Austin/NIH $213,813
  Molecular Analysis of Serum Antibody Constituents in Zika Virus Infection
  To identify nonneutralizing antibodies which enhance ZIKV infection in primary adult and fetal cord monocytes (antibody dependent enhancement-ADE), which may be associated with more severe clinical presentations like Guillain-Barre syndrome and microcephaly.

- **R21 AI137887 (MPI: Moorman/Heise) 02/05/18-01/31/21**
  NIH/NIAID $275,000
  Molecular Characterization of Functional RNA Structures in the ZikV genome
  The goal of this project is to study The RNA Structure of Zika virus, an emerging pathogen that is associated with severe congenital neurologic defects, such as microcephaly. The proposed studies will identify new viral virulence determinants that can be targeted to generate safer and more effective Zika virus vaccines and therapeutics. Role: Co-I

- **Career Development Awards (Also listed in previous support)**

1. **Harvey Weaver Scholar, National Multiple Sclerosis Society**. 7/1/84-5/1/86. $44,000**.** Postdoctoral fellow research fellow support. **PI: RS Baric**

2. **Career Development Award from the National American Heart Association, Established Investigator Award** "Coronavirus-Induced Rabbit Cardiomyopathy".. Direct costs $175,000. 7/1/89 - 6/30/94. PI: RS Baric

- **Mentor: Student/Postdoc Fellowship Awards**

1. Lorraine K. Alexander. Rabbit Coronavirus induced myocarditis and dilated cardiomyopathy. $60,000, Bird Dunn Awardee.(Postdoctoral Fellowship-North Carolina Chapter from the American Heart Association, RS Baric, Mentor

2. Wan Chen. Persistence and evolution mechanisms of Mouse Hepatitis Virus. Pathogenesis Training Grant. Postdoctoral Fellowship Support $36,000 direct costs. RS Baric, Mentor

3. Kris Curtis, Virology Training Grant 9/1/01-8/30/02. Coronavirus reverse genetics, $18,000 direct costs, RS Baric, Mentor

4. Patrick Harrington, Virology Training grant 9/1/02-8/30/03. Norovirus capsid-ABH antigen interactions. $18,000 Direct Costs, RS Baric, Mentor.

5. Will McRoy, Virology Training Grant 9/1/03-8/30/04. Coronavirus Host Shifting Mechanisms. ~$18,000 Direct Costs. RS Baric, Mentor

6. R.J. Cleveland, Department of Defense, Breast Cancer Research Program. Insulin-like-growth factor 1-gene polymorphisms in breast cancer. Predoctoral fellowship award 4/1/01-3/31/04; $65,858 total costs. Mentor: M. Gamon, RS Baric and B. Millikan, co investigators.

7. Amy Sims, Postdoctoral Fellowship Award; Pathogenesis Training Grant. 6/1/02-5/30/04. $75,000/total costs. RS Baric, Mentor

8. Matt Frieman, NIH Postdoctoral Fellowship Award, "SARS-CoV mediated Modulation of Innate Immunity". $120,000 total costs; Oct 1, 2005-Sept 31, 2008. RS Baric, Mentor

- Rachael Graham, NIH Postdoctoral Fellowship Award. Rewiring the SARS-CoV Genome. $120,000 total costs; Oct 2008-2010. RS Baric, Mentor

- Vineet Menachery, NIH Postdoctoral Fellowship Award. RS Baric, Mentor

- Deanna Zhu, NIH Predoctoral Fellowship. RS Baric, Mentor

- Victor Long Ping Tse, Pfizer-NCBC Fellowship. RS Baric, Mentor

- David Martinez, NIH Postdoctoral Fellowship Award. RS Baric, Mentor

- David Martinez, HHMI Hanna Gray Fellowship, RS Baric, Mentor

- **Training Grant Participation at UNC**

1. Virology Training Grant (Department of Microbiology, Mark Heise, PhD, Director) 1993-present.

2. Pathogenesis Training Grant (Department of Microbiology and Division of Infectious Diseases; David Margolis, Director) 1992-Present.

3. Nutritional Biochemistry and Epidemiology of Cancer (Epidemiology Department; Lenore Kohlmeier, Director). 1997

- Environmental and Molecular Epidemiology Training Grant (David Savitz, Director) 1997-2004.

X. SERVICE

- **Professional Development/Invited Presentations**

Selected Invited Presentations:

1. Studies into the Mechanism of MHV Transcription. N.C. State University, November 19, 1987.
2. Studies into the mechanism for MHV transcription, May 1988, Virology Triangle Meeting.
3. Rabbit cardiomyopathy. Glaxo, Research Triangle Park, December 13, 1988.
4. AIDS, SPH Alumni Conference, April 1988.
5. AIDS, AHEC Fayetteville, NC, March 1989.
6. Modern approaches for health risk assessment, SPH Alumni Conference, May 2-3, 1990.
7. Studies into the Mechanisms of MHV Transcription and RNA Recombination. Loyola University, Department of Microbiology, Chicago, Illinois, February 6, 1991.
8. Genetics of MHV transcription. University of Pennsylvania, School of Medicine, Department of Microbiology and Immunology, Philadelphia, Pa. October 1992.
9. Transcription and Recombination Mechanisms of Mouse Hepatitis Virus, Uniformed Services, Department of Microbiology, Bethesda, MD, November 1993.
10. Convener and presenter: Coronavirus RNA transcription and Recombination, International Coronavirus Symposium, Quebec, Canada 1994.
11. Invited Speaker: International Symposium on Positive Strand RNA Viruses. Genetics of Mouse Hepatitis Virus Transcription. The Netherlands, May 26 - June 1, 1995. Audience of 600+
12. Evolutionary Mechanisms of virus persistence and interspecies spread. Univ. Colorado Health Sciences Center, Dept. of Microbiology, Denver, Co. Feb. 1996.
13. Evolutionary Mechanisms of Mouse Hepatitis virus Persistence and interspecies spread. Research Triangle Park, Triangle Virology, NC, April 1996.
14. Molecular Mechanisms of Virus Persistence and Interspecies Traffic. Vanderbilt University, Department of Microbiology, Nashville, Tn. Jan 7, 1997.
15. Invited Speaker: Molecular and Evolutionary mechanisms of virus cross species transmission. Meeting on the Pathogenesis and Cross species Transmission of Viruses. National Institutes of Health. July 1997. Audience of 400+. Part of USDA hearings on the Public Health Concerns of Xenotransplantation and virus cross species transmission. (Bethesda, Md)
16. Molecular Mechanisms of Virus Cross Species Transmission. North Carolina State University, Department of Microbiology, Oct. 1998
17. Coronavirus reverse genetics. Baylor School of Medicine, Department of Microbiology, Houston Tx. April, 2001
18. Coronavirus reverse genetics. Department of Microbiology, University of Tennessee, Knoxville, Tn. April, 2001

19. Invited Speaker: Consequences of gene order rearrangements on coronavirus replication. International Symposium on Positive Strand RNA Viruses. Paris, France. May 27-June 2, 2001. 500 in attendance.
20. Coronavirus vaccine vectors. Department of Microbiology, North Carolina State University, Sept. 2001
21. Coronavirus reverse genetics. Department of Microbiology, East Carolina University, Oct. 2001
22. Combination vaccines against swine nidoviruses. Department of Microbiology and Immunology, School of Veterinary Medicine, Univ. of Minn., Dec. 2001
23. Coronavirus Heterologous gene expression vectors. Department of Microbiology, University of Iowa, Dec. 2001.
24. Coronavirus Heterologous Gene Expression Vectors. Department of Pathobiology, Microbiology and Immunology, Univ. of Texas, Austin. Mar 2002.
25. Invited speaker, Seventh Southeastern Regional Virology Conference, Georgia State University, Atlanta Ga. April 12-14, 2002. ~150 participants
26. Coronavirus Reverse Genetics. Baylor University, Houston Texas. Department of Microbiology and Immunology. April 9, 2001.
27. Coronavirus Reverse Genetics. University of Tennessee, Department of Microbiology and Immunology, Nashville, TN. April 24, 2001.
28. Invited speaker: International Symposium on RNA Positive Strand Viruses, Paris France. May 27th-June 2nd 2001.
29. Coronavirus Reverse Genetics. East Carolina University, Department of Microbiology, Oct 3, 2001.
30. Coronavirus Reverse Genetics. University of Iowa, Department of Microbiology, Nov, 2001.
31. Coronavirus Reverse Genetics. University of Minn. Dec, Department of Path biology, School of Veterinary Medicine. 2002.
32. Coronavirus Reverse Genetics. University of Texas at College Station, Department of Pathology, March 2002.
33. Reverse Genetics using Coronavirus Infectious cDNAs. University of Texas at Galveston, Department of Microbiology and Immunology, Oct 2002.
34. Coronavirus Reverse Genetics. University of Minn, Department of Path biology, School of Veterinary Medicine. December 2002.
35. Coronavirus Reverse Genetics. University of Texas at College Station, Department of Pathology, March 2002.
36. Reverse Genetics using Coronavirus Infectious cDNAs. University of Texas at Galveston, Department of Microbiology and Immunology, Oct 2002.
37. Coronavirus Reverse Genetics. Layola University School of Medicine, March 2003.
38. Invited Speaker: Engineering the Genomes of Microorganisms. DARPA Meeting on “Synthetic Biology”, Menlo Park, California. March 2003.

39. Invited Speaker: Coronavirus Vaccines. NIAID. SARS: Developing a Research Response, May 30, 2003.
40. Invited Speaker: Susceptibility to Norovirus Infections. International Glycovirology Meeting, Sweden. June 2003.
41. Coronavirus Reverse Genetics. Mount Siani School of Medicine, New York. Sept 9, 2003.
42. University of Colorado, Health Sciences Center. Sept. 2003. SARS Reverse Genetics.
43. Focus Technology: Expert Consultant: Norovirus Pathogenesis and SARS-CoV Pathogenesis, Sept. 2003.
44. World Health Organization: SARS: Oct 29-Nov1, 2003. Geneva Switzerland. Invited Speaker.
45. SARS CoV Pathogenesis and Reverse Genetics. Jan 6-11th, 2004. Keystone Colorado. Invited speaker: Bioterrorism and Emerging Infectious Diseases: antimicrobials, therapeutics and immune modulators.
46. SARS CoV Reverse Genetics. Emory University, Jan 15th, 2004.
47. Cruising with Noroviruses. Southeastern Viroogy Conference, Atlanta Ga. March 26th-28th, 2004. Keynote Address.
48. SARS-CoV Genome Organization and Replication. American Society for Virology. Invited Speaker, May 24-27th, 2004. New Orleans
49. Cruising with Noroviruses. International RNA Positive Strand RNA Virus Meeting. May 27-30th, 2004. Invited Speaker. San Francisco, Calif.
50. SARS-CoV Reverse Genetics, Beijing, China. July 2004.
51. Invited Seminar Speaker, Sept 29, 2004. University of Virginia. Title: TBA.
52. SARS-CoV Genetics and Pathogenesis, Madrid Spain, Oct 2004.
53. SARS Pathogenesis, Regional Center for Excellence, Durham, NC (Invited speaker). Nov 2004.
54. SARS-CoV Pathogenesis. The US-Japan Cooperative Medical Science Program 40th Anniversary Meeting Kyoto, Japan December 7-10, 2004 (Invited speaker)
55. SARS-CoV Replication and Genetics. Department of Microbiology, University of Utah, Mar, 2005.
56. Coronavirus Reverse Genetics and Pathogenesis, University of Washington, Seattle, WA. April, 2005. (Invited speaker)
57. Synthetic Coronaviruses. Biohacking: Biological Warfare Enabling Technologies, June 2005. Washington, DC. DARPA/MITRE sponsored event. Invited Speaker
58. SARS-CoV Genetics and Pathogenesis. American Society for Virology, College Park, Penn State University. June 2005. "State of the Art Lecturer"
59. SARS-CoV Genetics and Vaccine Development. International Nidovirales Conference, Colorado, June 2005. Invited keynote speaker.
60. Coronavirus Cross Species Transmission Mechanisms. NIH Workshop, Sept 2005. Emergence of new epidemic viruses through host switching. (Invited Speaker).

61. Human Coronavirus Pathogenesis and Genetics. Charles Gould Easton Seminar series, Department of Immunology, University of Toronto. Sept. 2005. (Invited Speaker)
62. SARS-CoV Pathogenesis. Department of Microbiology, UCLA. Sept 2005. (Invited speaker).
63. SARS-CoV Pathogenesis and Replication, University of Pittsburg, 2006.
64. American Society for Virology, Keynote Speaker, July 2006.
65. Synthetic Genomics. March 27-28. Washington, DC. 2006
66. SARS-CoV Pathogenesis. University of Washington, March 7, 2006.
67. Genetics of SARS-CoV Pathogenesis. Vanderbilt University. May 9, 2006.
68. Biosafety and SARS-CoV. American Society for Microbiology, National Meeting Orlando Florida. May 22, 2006.
69. Synthetic biology Workshop. Synthetic Reconstruction of Viral Genomes. June 1, 2006; Washington DC.
70. Plenury Address, American Society for Virology. Madison Wisconsin, July 2006. SARS-CoV Pathogenesis
71. Synthetic Virology. NSAAB Meeting, Washington DC, July 2006
72. SARS-CoV Pathogenesis, University of Kentucky, Sept. 2006.
73. Genetics of SARS-CoV Pathogenesis. SARS Workshop, Paris, Fr. Oct, 2007
74. SARS-CoV Pathogenesis, North Carolina State University, Feb, 2007.
75. Norovirus Pathogenesis, UNC Chapel Hill, Friday Morning ID Seminar, March 2007
76. SARS-CoV Innate Immunity, University of Florida, April, 2007.
77. Norovirus Pathogenesis, Loyola University, Chicago, May 2007.
78. Norovirus Vaccine Design, NIH Food and Waterborne Disease Network Vaccine Development Meeting. Baltimore, Md. May 2007.
79. Synthetic Virology, American Society for Microbiology, Toronto, Ca. May 2007.
80. Rewiring Coronavirus Genomes, Positive Strand RNA Virus Meeting, Washington, DC, May 2007.
81. Genetics of SARS-CoV Pathogenesis and Norovirus Evolution and Pathogenic Mechanisms, University of Madrid, Spain. June 2007.
82. Norovirus Pathogenesis and Vaccine Design. Atlanta GA. SERCEB Planning Meeting. June 2007.
83. Genetics of SARS-CoV Pathogenesis, University of Amsterdam, The Netherlands, June 2007
84. SARS-CoV Pathogenesis, Vaccine Design and Therapeutics, NIH Advisory Meeting and Planning Committee, Oct 1-2, 2007.
85. Norovirus Evolution and Persistence in Human Populations, Invited Speaker, International Calicivirus Meeting, Cancun Mexico, Nov 2007.
86. SARS-CoV Antagonism of Host Innate Immunity, University of Penn, Department of Microbiology, April 2008.

87. Norovirus Evolution and Persistence, Invited Speaker, American Society for Microbiology, Boston, MA June 2008
88. Mechanisms of Coronavirus Cross Species Transmission. American Society for Virology, medical virology working group, July 2008.
89. Norovirus Pathogenic Mechanisms, Louisiana State University, Baton Rouge, Oct 2008.
90. Synthetic Virology, Invited Speaker, Synthetic Biology 4.0, Hong Kong, China. Oct 2009.
91. Synthetic Virology and Biodefense, American Society for Microbiology and Biodefense Meeting, Baltimore Feb 2009. Invited speaker.
92. SARS Pathogenesis Seminar-University of Arkansas-April 2010
93. Synthetic Genomics National RCE meeting. Las Vegas, NV. Invited Speaker. April 2010.
94. Systems Virology Meeting. Madison, WI Invited Speaker. May 2010.
95. Positive Strand Meeting. Atlanta, GA. Invited Speaker. May 2010.
96. System Biology and Immune Response. Veyrier du Lac France. Invited Speaker. June 2010.
97. American Society for Virology. Bozeman Montana. Session Host, 14 presentations. July 2010.
98. NIAID Workshop on Dengue Virus Infection & Immunity. Portland, OR. Invited Speaker. August 2010.
99. PNWRCE Meeting. Invited Speaker. September 2010.
100. SERCEB Meeting. Presenter. October 2010.
101. International Calici Virus Meeting. Santiago, Chile. Keynote address. October 2010.
102. University of Texas, Austin, TX Invited Seminar. October 2010.
103. St. Louis, MO. Invited Seminar November 2010
104. Systems Virology Meeting. Boston, MA. Invited Speaker. November 2010.
105. University of TX. Galveston. Invited Seminar. November 2010.
106. Arterivirus Meeting. Chicago, IL Keynote Speaker. December 2010
107. University of Iowa. Invited Seminar. December 2010.
108. Gordon Conference, Invited Speaker. Ventura, CA. March 2011.
109. National RCE meeting. Presenter. Denver, CO April 2011.
110. Vaccines and Adjuvants for Emerging Infectious Diseases. Invited Speaker. Montego Bay Jamaica. May 2011
112. International Nidovirus Conference. June 2011
113. Molecular Basis of Disease Research Day, Keynote Speaker, Georgia State University. June 2011
114. WHO. Geneva Switzerland. Invited Speaker. June 2011.

- 27th International Mammalian Genome Conference, 2 lab presentations, Education session, Salamanca, Spain July 2013

- Campus Universidad Autonoma, Cantoblanco, Invited Lecturer, Madrid Spain July 2013
- St. Louis University, Invited Speaker, “Cruising with Noroviruses” St. Louis, MO Oct 2013
- 5th Int’l Conference on Calicivirus, State of Art Speaker. 3 lab presentations, Beijing, China Oct 2013
- 43rd Annual Symposium-Eastern Pennsylvania Branch-American Society for Microbiology, Invited Speaker “Emerging Human Coronaviruses including SARS and MERS-COV: Mechanisms of cross-species transmission”, Philadelphia, PA Nov 2013
- BSC program review, NIH invited reviewer, Washington, DC Dec 2013
- RTI-DOD review meeting. Participant. Washington DC, Dec 2013
- Emerging Viral Diseases Meeting, IOM Forum, Invited participant. Washington, DC Mar 2014
- 3rd WHO meeting for Improving Influenza Vaccine Virus Selection, Invited Speaker/consultant. Geneva Switzerland. April 2014
- Mahy Lecture, Guest Lecturer, Emory University, Atlanta, GA May 2014
- 27th International Conference on Antiviral Research, Invited Speaker. Raleigh, NC. May 2014
- XIIIth International Nidovirus Symposium, Invited Speaker. Salamanca Spain June 2014
- Common Barriers in Vaccine Research & Development, Invited Speaker, Rockville, MD. June 2014
- American Society for Virology Annual Meeting, Plenary Talk, (13 lab presentations) Ft Collins, CO June 2014
- Symposium, “Virology in the Last 4 decades: Breakthroughs & Benefits” Invited speaker. Rotterdam, Netherlands July 2014
- Congress. International Union of Microbiological Societies. “Pathogenic mechanisms of emerging coronaviruses”. Invited Speaker. Montreal Canada July 2014
- Systems Biology of Infectious Diseases: Pathogenesis to Personalized Medicine. Invited Speaker. Seattle, Washington August 2014
- Workshop. NIAID Human Rotaviruses and Noroviruses: Models for Understanding Virology, Cell Biology and Treatment/Prevention Strategies. Invited Speaker. Washington DC September 2014
- American Society for Tropical Medicine and Hygiene. 3 presentations from lab. New Orleans, LA November 2014
- 11th Annual One Medicine Symposium, Invited Speaker Durham NC Dec 2004
- Systems analysis and host-pathogen interactions Meeting, Invited Speaker. San Diego, CA
- US-Japan Cooperative Medical Science Program 17th International EID Conference. Invited Speaker. Taipei, Taiwan Jan 2015
- University of Kentucky, Invited Speaker, Louisville, KY Mar 2015
- MERS-CoV Stakeholders Workshop, Invited participant, Washington, DC April 2015
- UC Irvine, Invited Speaker Irvine California May 2015

- Gilead Sciences, Inc. Collaborative meeting. Invited Speaker Foster City, CA May 2015
- NIH-sponsored meeting: Emergence of New Epidemic Virus Meeting, Invited Speaker, Bethesda, MD August 2015
- International Conference on Emerging Infectious Diseases, Atlanta GA, Invited Speaker August 2015
- Takeda Deep Dive meeting, Invited presenter. Bozeman, MT September 2016
- Chinese Academy of Science and Nat'l Academy of Sciences hosting "Responsible Research on Human Gene Editing Meeting" and "China-U.S. Workshop on the Challenges of Emerging Infections, Laboratory Safety, and Global Health Security" Invited Speaker. Beijing, China Sept 2015
- IDWeek Symposium, San Diego CA Immunity and Natural Resistance to NoV Infection, Invited Speaker.
- American Society for Tropical Medicine and Hygiene Annual Mtg, 4 presentation from lab. Philadelphia PA November 2015
- Nat'l Academy of Science-The Royal Society "Trends in Synthetic Biology and Gain of Function and Implications for Regulation" symposium. Invited speaker. Nov 2015
- DAIT Subcommittee NIAID Council meeting, Ad Hoc member. Bethesda, MD Jan 2016
- NIAID LVD Meeting, Invited Speaker. Bethesda MD Feb 2016
- Dengue Immune Correlates of Progection Invited Speaker, Annecy France, March 2016
- Invited Speaker, UPENN, Philadelphia PA, March 2016
- 2016 IDEA Meeting, Baltimore, MD Gates Foundation, Invited Speaker April 2016
- 5th Pan-American Dengue Res Mtg, Panama City Panama, Presenter, April 2016
- Stanford University, Palo Alto, CA. Invited Speaker June 2016
- The Center for Innate Immunity and Immune Disease Kick off Symposium, Seattle, WA, Invited Speaker July 2016
- NEIDL Inaugural Symposium, Boston University, Invited Speaker, Sept 2016
- Crip Advisory Board Mtg, Steering Committee member. New York, NY, Oct 2016
- 6th International Calicivirus Conference, Presenter. Savannah GA Oct 2016
- AST+ESOT Basic Science in Transplantation (BeST), Invited Speaker, Ft. Lauderdale, FL November 2016
- ASMTH, Atlanta, GA 3 presentations from lab. November 2016
- Autumn Immunology Conference, Chicago, IL, Invited Speaker November 2016
- Viruses & Cells Gordon Research Conference, Luca Italy. Session Chair May 2017
- 14th Int'l Nidovirus Symposium. Kansas City, MO, Session Chair June 2017
- ISIRV-AVG Shanghai China, Invited Speaker, June 2017
- R. Mark Buller Symposium. Invited Speaker. St. Louis Mo., September 2017

- Nat'l Academy of Sciences, US China Dialogue on the Challenges of Emerging Infections, Lab. Safety & Global Health Security, Invited Speaker, Galveston, TX. January 2018
- Emory University, Invited Speaker, Atlanta GA, April 2018
- NIH Vaccine Research Center, Invited Speaker, Bethesda, MD. April 2018
- Columbia University, Invited Speaker, New York, New York. May 2018.

A. Grant Review-pre1998

1. USDA, Molecular Biology/Gene Animal Structure, 1988-2002
2. NIH AID Ad Hoc reviewer 1992 (1 proposal)
3. Veterans Administration 1992, 1996 (1 proposal each)
4. NIH Evolution of Infectious Diseases, Special ad hoc committee. July 1997
5. Programme de Recherche Fondamentale en Microbiologie et Maladies Infectieuses et Parasitaires French Government 1998 (1 proposal).

A2. Grant Review 1999:

1. NIH MBRS Score: primary reviewer 7 grant applications from University of Puerto Rico MBRS-SCORE PROGRAM, decide which proposals are submitted to NIH for review
2. Ad hoc reviewer United States Department of Agriculture-Animal Health and well-being
3. Ad hoc reviewer, National Institutes of Health, Experimental Virology Study Section, 1 grant, conference call

A3. Grant Review 2000-2001

1. National Institutes of Health, Genetics Study Section, Feb 2000. Ad hoc
2. National Institutes of Health, Genetics Study Section June 2000. Ad hoc National Institutes of Health, AIDS Vaccines Study Section, Sept. 2000. Conference call
3. National Institutes of Health, Genetics Study Section, Feb 2001. Ad hoc National Institutes of Health, 3. Genetics Study Section June 2001. Ad hoc.
4. Veterans Administration, Virology (March, 2001). Ad hoc.
5. Experimental Virology Study Section. Ad hoc reviewer with 6 grants to review. Oct 15-17, 2001.

A4. Grant Review 2002

1. National Institutes of Health, Genetics Study Section, Feb 2002. Ad hoc
2. AD hoc reviewer, The Welcome Trust. March, 2002

A5. Grant Review 2003

1. Genetics study section Feb and Oct, 2003. Ad hoc.
2. Experimental Virology, February, 2003. Ad hoc
3. NIH ad hoc review, Poxvirus vaccine program project. Sept 2003.

A6. Grant Review 2004

1. National Institutes of health, Experimental Virology Study Section, Feb 2004. Ad hoc member
2. National Institutes of health, Experimental Virology Study Section, Oct 2004. Ad hoc reviewer
3. National Institutes of health, Experimental Virology Study Section, Mar, 2005. Ad hoc reviewer

A7. Grant Review, 2005-09

•Permanent Member, Virology B Study Section, Oct 2005-2009. Three Meetings/year in Oct, Feb and June. Average 6-9 grants to review per session.

A8. Grant review 2017

•**Ad Hoc member of CMIA**

A9. Grant Review 2020-2023

- Permanent member of Cell-mediated Immunity A (CMIA)

XII. Other Professional Development

- NIH MBRS External Review Committee (1999-2010) National Institutes of Health, MBRS SCORE Proposal for the University of Puerto Rico at San Juan. Visit yearly and review the UPR MRBS SCORE NIH PROGRAM PROJECT GRANT (a compilation of 17 NIH grants to a minority institution), recommended and reviewed new grants for submission to NIH as part of MBRS SCORE (5 projects), reviewed individual PI progress (5 funded applications), reviewed UPR research infrastructure and made recommendations to the Chancellor and Dean of the Medical School for enhancing basic and clinical research on campus.
- Task force on Veterinary Virology-American Society for Virology
- Veterinary Virology Finance Committee-American Society for Virology
- Manuscript Review/Editorial Boards:
    - Editorial Board, Journal of Virology 2004-2006.
    - Editorial board, Journal of Virology, 2007-.
    - Associate Editor, Plos Pathogen 2007-2008.
    - Senior Editor, Plos Pathogens 2008-2014.

- University and Department Committees:
    - UNCSchool of Public Health Shop Committee, 1987-89
    - Departmental (Parasitology and Lab Practice) Curriculum Committee, 1987-1990
    - Co-Chair, Parasitology Departmental Space Committee, 1987, 1988
    - Infectious Disease Program Task Force, 1988
    - UNC-School of Public Health Safety Committee, 1988-1989
    - Epidemiology Doctoral Program Committee, 1990-95
    - Infectious Disease Program Committee, 1990-present
    - Epidemiology Laboratory Committee, 1991-present, Chair
    - University Recombinant DNA Committee (1996-2001)
    - Space Committee (School of Public Health) 1998-2009
    - BSL-3 Team Committee (University wide) 2012-present

- Task Force for Select Agents (University wide) 2013-present
- School of Public Health Appointment and Promotion Committee 2014-2017

- Meeting Organization, Planning and Committees:
  - International RNA Positive Meeting Steering Committee, Atlanta 2010
  - International Calcivirus Conference Steering Committee, Chile 2010
  - International Nidovirus Conference Steering Committee, US 2011
  - Systems Biology Conference, Host: Chapel Hill, NC 2011
  - International Nidovirus Conference Steering Committee, US 2014
  - Going Viral Flu Symposium, Planning Committee, SPH 2018

- Faculty Mentorship Committee
  - Raymond Pickles, Associate Professor, Microbiology and Immunology
  - Jason Whitmire, Assistant Professor, Genetics
  - Jennifer Smith, Research Assistant Professor, Epidemiology
  - Amy Sims, Research Assistant Professor, Epidemiology
  - Martin Ferris, Research Assistant Professor, Genetics
  - Kathleen Dorsey, Research Assistant Professor, Epidemiology
  - Rachel Graham, Research Assistant Professor, Epidemiology
  - Patricia Basta, Research Assistant Professor, Epidemiology
  - Timothy Sheahan, Assistant Professor, Epidemiology
  - Lisa Gralinski, Assistant Professor, Epidemiology
  - Alexandra Schaefer, Res Assistant Professor, Epidemiology

- **UNC Patent/Invention Reports**

  - US. Patent No. 6,593,111. 2003. Ralph S. Baric, Boyd Yount. Directional Assembly of Large Viral Genomes and Chromosomes.
  - US Patent No. 7,279,327, 2007. Ralph S. Baric, Boyd Yount, Kristopher Curtis. Methods for Producing Recombinant Coronavirus
  - US Patent No.7,618,802. Ralph S. Baric, Kristopher Curtis, Rhonda Roberts, Boyd Yount. Methods and Compositions for Infectious cDNA of SARS Coronavirus.
  - US Patent Pending. Application #: 12/875367. Ralph S. Baric, Anna LoBue, Joseph M. Thompson, Robert E. Johnston, and Lisa Lindesmith. Multivalent Immunogenic Compositions against Noroviruses and methods of use.
  - Invention Report (Protected under US Patent 6,593,111). Dengue virus infectious clone: Methods for producing recombinant Dengue Viruses. Ralph S. Baric, Boyd Yount, William Messer and Aravinda de Silva.
  - WIPO/PCT International Publication Number WO 2014/145245 A2. Ralph S Baric, Lisa C Lindesmith, Kari M Debbink, Eric F Donaldson, Jesica A Swanstrom. Methods and Compositions for Norovirus Blockade Epitopes.