

CURRICULUM VITAE

STEPHANIE M. KARST

Department of Molecular Genetics & Microbiology
University of Florida College of Medicine (UFCOM)
1600 SW Archer Road
Gainesville, FL 32610

phone 352-273-5627
fax 352-273-8905
email skarst@ufl.edu

1. EDUCATION

2001-2005 Washington Univ School of Medicine, St. Louis, MO
1995-2000 University of Missouri, Kansas City (UMKC)
1991-1995 Southern Illinois University, Edwardsville

Postdoctoral training
Ph.D. Cell Biology
B.S. Biology/Chem

2. POSITIONS AND HONORS

Positions and Employment

2011-present **Associate Professor**, UFCOM
2009-2010 **Member**, Louisiana State University Health Sciences Center – Shreveport
(LSUHSC-S) Gene Therapy Program, *LA Gene Therapy Consortium*
2005-2010 **Assistant Professor**, LSUHSC-S
2005-2010 **Member**, Center for Molecular & Tumor Virology, LSUHSC-S
2001-2005 **Postdoctoral Fellow**, Washington University School of Medicine, St. Louis, MO

Professional Service (External)

2011-present **Committee member** American Society for Virology (ASV) Membership Review committee

Manuscript peer review

2012-present **Reviewer (ad hoc)**, *Molecular Therapy*
2012-present **Reviewer (ad hoc)**, *Journal of General Virology*
2012-present **Reviewer (ad hoc)**, *Journal of Visualized Experiments (JoVE)*
2011-present **Reviewer (ad hoc)**, *Clinical and Vaccine Immunology*
2011-present **Reviewer (ad hoc)**, *Journal of Clinical Virology*
2009-present **Reviewer (ad hoc)**, *PLoS Pathogens*
2009-present **Reviewer (ad hoc)**, *Journal of Virological Methods*
2008 **Reviewer (ad hoc)**, *Norovirus Case Study in Case Studies in Infectious Disease*, Garland Science, Taylor & Francis Group (Eds), Abingdon, England.
2008-present **Reviewer (ad hoc)**, *Applied and Environmental Microbiology*
2007-present **Reviewer (ad hoc)**, *Journal of Virology*
2007-present **Reviewer (ad hoc)**, *Virus Research*
2007-present **Reviewer (ad hoc)**, *Expert Reviews in Molecular Medicine*

Grant peer review

2011 **Reviewer**, *Special Emphasis Panel*, NIH (2011/05 ZRG1 IMM-G [02] M)
2010 **Reviewer**, *Portuguese Foundation for Science and Technology*

- 2010 **Reviewer**, *Special Emphasis Panel*, NIH (Development of Technologies to Facilitate the Use of, and Response to, Biodefense Vaccines)
- 2009 **Reviewer**, *Special Emphasis Panel*, NIH (P01)
- 2009 **Reviewer**, *Special Emphasis Panel*, NIH (2009/10 ZRG1 IMM-E [58] R)
- 2009 **Reviewer**, Medical Research Council, UK

Professional Service (Internal)

- 2008-2010 **Member**, LSUHSC-S Radiation Safety Committee
- 2007-2010 **Member**, LSUHSC-S Institutional Biosafety Committee
- 2008-2009 **Course Coordinator**, LSUHSC-S MICRO 276, Graduate Level Virology
- 2008 **Course Coordinator**, LSUHSC-S MICRO 298, Dept. of Micro & Immuno Seminar Series

Awards

- 2011 School of Biological Sciences Alumni Achievement Award, UMKC
- 2008-2010 NIH COBRE P20-RR018724-01
- 2005-2008 NIH COBRE P20-RR018724-03
- 2004-2005 NIH MRCE Clinical/Translational Fellowship
- 2003-2004 NIH Training Grant T32-AI07163
- 2001-2003 NIH Training Grant T32-CA09547

Society Memberships

- 2005-present **Member**, American Society for Virology
- 2005-present **Member**, American Society for Microbiology

TEACHING EXPERIENCE

UFCOM

- 2012 **Lecturer**, GMS 6121, Graduate Level Infectious Diseases
- 2011 **Faculty moderator**, Current Topics in Microbiology, Medical School

Louisiana State University Health Sciences Center at Shreveport

- 2007-2010 **Lecturer**, Immunology, Medical School MSI
- 2007 **Lecturer**, IDSP #112, Basic Biochemistry
- 2007-2010 **Lecturer**, Micro#297, Graduate Level Immunology
- 2006-2010 **Lecturer**, Micro#276, Graduate Level Virology
- 2006-2010 **Lecturer**, Micro#289, Molecular Pathogenesis of Infectious Diseases II
- 2006-2010 **Lecturer**, Microbiology and Infectious Disease, Medical School MSII

University of Missouri at Kansas City

- 1999 **Lecturer**, AAAS Midwest assembly for undergraduates
- 1995 **Teaching Assistant**, Anatomy and Physiology, lab section
- 1995 **Teaching Assistant**, Biology, lab section

Teaching preferences

I most enjoy teaching subjects in my primary research areas including RNA virology, and innate and mucosal immunology. I also enjoy teaching viral pathogenesis, especially with respect to interactions between mucosal surfaces and pathogens.

3. MENTORING EXPERIENCE

Graduate Student Mentor

2011-present **Doron Regev**
2007-2012 **Shannon Kahan** (Received Ph.D. March 2012)

Post-doctoral Fellow Mentor

2011-present **Danielle Hickman**
2011-present **Shu Zhu**
2007-2010 **Guangliang Liu**
2006-2008 **Harish Changotra**

Medical Student Mentor

2008-2009 **Dianne Grunes**

Graduate Student Committee Mentor

2012-present **Michael Nelson** (Ph.D. Student; Mentor, Shannon Wallet; UF College of Dentistry)
2011-present **Stephanie Lamb** (Ph.D. Student; Mentor, Grant McFadden; UFCOM)
2009-2010 **Kathleen Richards** (Ph.D. Student; Mentor, Martin Sapp; LSUHSC-S)
2009-2010 **Emily Stevenson** (Ph.D. Student; Mentor, Andrew Yurochko; LSUHSC-S)
2008-2010 **Elizabeth Trainor** (Ph.D. Student; Mentor, David McGee; LSUHSC-S)
2007-2010 **Maciej Nogalski** (Ph.D. Student; Mentor, Andrew Yurochko; LSUHSC-S)
2006-2009 **Christina Gardner** (Graduated; Ph.D. Student; Mentor, Kate Ryman; LSUHSC-S)
2006-2009 **Mulu Tesfay** (Graduated; Ph.D. Student; Mentor, William Klimstra; LSUHSC-S)
2006-2008 **Kathy Meier** (Graduated; Masters' Student; Mentor, Kate Ryman; LSUHSC-S)

Undergraduate Student Mentor

2012-present **Kenny Wang**
2012-present **Allison Rosen**
2012 **Emily Waldman**
2012 **Gabriela Guevara**
2011-present **Jonnathan Singh**
2011-present **Robert Hunter**
2011 **Gabriel Ible** (UF Summer Research for Rising Seniors Program)
2011 **Joshua Fonzi**
2008 **Devin Chretien** (Minority Bridging Program)
2002-2003 **John Davidson**

4. PUBLICATIONS

Book Chapters

M.K. Jones and **S.M. Karst**. Noroviruses (Chapter 17). In J. Glenn Morris (Ed), *Foodborne Infections and Intoxications*. Elsevier (in progress).

S.M. Karst. Murine norovirus pathogenesis and immunity (Chapter 10). In G. Hansman, J. Jiang, and K. Green (Eds), *Caliciviruses: Molecular and Cellular Virology*. Horizon Scientific Press (April 2010; ISBN: 978-1-904455-63-9) p. 183-203.

Peer-reviewed journal articles

1. **S.M. Karst.** The role of type I interferon in regulating norovirus infections. *Journal of Clinical & Cellular Immunology* S1:<http://dx.doi.org/10.4172/2155-9899.S1-001> (2011).
Invited peer-reviewed review article.
2. S.M. Kahan, G. Liu, M.K. Reinhard, C.C. Hsu, R.S. Livingston, and **S.M. Karst.** Comparative murine norovirus studies reveal a lack of correlation between intestinal virus titers and enteric pathology. *Virology* 421(2):202 (2011).
3. **S.M. Karst.** Pathogenesis of noroviruses, emerging RNA viruses. *Viruses* 2(3):748 (2010).
Invited peer-reviewed review article.
4. G. Liu, S.M. Kahan, Y. Jia, and **S.M. Karst.** Primary murine norovirus 1 infection fails to protect from secondary challenge with homologous virus. *J Virol* 83(13): 6963 (2009).
5. H. Changotra, Y. Jia, T.N. Moore, S.M. Kahan, G. Liu, and **S.M. Karst.** Type I and type II interferon inhibit the translation of murine norovirus proteins independent of PKR. *J Virol* 83(11): 5683 (2009).
6. S.M. Mumphrey, H. Changotra, T.N. Moore, E.R. Heimann-Nichols, C.E. Wobus, M.J. Reilly, M. Moghadamfalahi, D. Shukla, and **S.M. Karst.** Murine norovirus 1 infection is associated with histopathological changes in immunocompetent hosts, but clinical disease is prevented by STAT1-dependent interferon responses. *J Virol* 81(7): 3251 (2007).
7. S.V. Sosnovtsev, G. Belliot, K-O. Chang, V.G. Prikhodko, L.B. Thackray, C.E. Wobus, **S.M. Karst,** H.W. Virgin, and K.Y. Green. Cleavage map and proteolytic processing of the murine norovirus nonstructural polyprotein in infected cells. *J Virol* 80(16): 7816 (2006).
8. C.E. Wobus, **S.M. Karst,** A. Krug, K-O. Chang, S.V. Sosnovtsev, G. Belliot, J.M. Mackenzie, K.Y. Green, and H.W. Virgin. Replication of a *Norovirus* in cell culture reveals a tropism for dendritic cells and macrophages. *PLoS Biology* 2(12): e432 (2004).
9. **S.M. Karst,** C.E. Wobus, M. Lay, J. Davidson, and H.W. Virgin. STAT1-dependent innate immunity to a Norwalk-like virus. *Science* 299:1575 (2003).
Editors' choice, Science 2003(173):tw104 (2003).
Research round-up, The Scientist 4(1) (2003).
Faculty of 1000 (categorized as 'Must Read' with a rating of 4.8).
10. **S.M. Karst,** M.I. Rutz, and T.M. Menees. The yeast retrotransposons Ty1 and Ty3 require the RNA lariat debranching enzyme, Dbr1p, for efficient accumulation of reverse transcripts. *Biochem Biophys Res Comm* 268(1):112 (2000).
11. **S.M. Karst,** N. Sadeghi, and T.M. Menees. Cell cycle control of reverse transcriptase activity for the yeast retrotransposon Ty3. *Biochem Biophys Res Comm.* 254(3):679 (1999).

F. INVITED PRESENTATIONS

1. Elucidating critical determinants of efficacious norovirus vaccines (2011). Department of Biochemistry & Molecular Biology, **UFCOM**, Gainesville, FL.
2. Meet Ralph, your cruise director – norovirus, you don't want it (2011). Guest host on This Week in Virology, episode 134.
3. Defining critical determinants of efficacious norovirus vaccines (2011). Division of Biological Sciences, **University of Missouri**, Kansas City, Missouri.
4. Pathogenesis and immunity to noroviruses (2011). Undergraduate Virology Club, **UF**, Gainesville, Florida.
5. Pathogenesis and immunity to noroviruses (2010). Undergraduate Level Seminar Series, **LSU-S**, Shreveport, Louisiana.
6. Defining critical determinants of efficacious norovirus vaccines (2010). Emerging Pathogens Institute. **UFCOM**, Gainesville, Florida.
7. Defining critical determinants of efficacious norovirus vaccines (2010). Department of Molecular Genetics & Microbiology. **University of Florida College of Medicine**, Gainesville, Florida.
8. Defining critical determinants of efficacious norovirus vaccines (2010). Department of Molecular Microbiology & Immunology. **University of Southern California Keck School of Medicine**, Los Angeles, California.
9. Defining the critical determinants of norovirus pathogenesis that prevent long-term protective immunity (2010). Department of Molecular Genetics & Microbiology. **University of Texas**, Austin, Texas.
10. Defining the critical determinants of norovirus pathogenesis that prevent long-term protective immunity (2010). Department of Microbiology & Immunology. **University of Maryland School of Medicine**, Baltimore, Maryland.
11. Defining the critical determinants of norovirus pathogenesis that prevent long-term protective immunity (2009). Department of Microbiology, Molecular Biology & Immunology. **University of Kansas Medical Center**, Kansas City, Kansas.
12. Defining the critical determinants of norovirus pathogenesis that prevent long-term protective immunity (2009). Department of Microbiology Seminar Series. **University of Iowa**, Iowa City, Iowa.
13. Atypical memory immunity to noroviruses (2008). Joint Meeting of the Texas/South Central Branches of the American Society for Microbiology, **University of Texas**, Austin, Texas.
14. Defining the immune responses that control norovirus infection (2007). Seminars in Infections & Immunity, **Cornell University**, Ithaca, New York.

15. Pathogenesis and immunity to noroviruses (2010). Undergraduate Level Seminar Series, **LSU-S**, Shreveport, LA
16. Defining the immune responses that control norovirus infection (2007). Rheumatology Research Conference, **LSUHSC-S**, Shreveport, LA
17. The molecular mechanisms of replication of a norovirus (2006). Department of Biochemistry Seminar Series, **LSUHSC-S**, Shreveport, LA
18. Pathogenesis and immunity to noroviruses (2006). Undergraduate Level Seminar Series, **LSU-S**, Shreveport, LA
19. Discovery of the first murine norovirus: A model system to study immunity, pathogenesis and replication of noroviruses (2005). **LSUHSC-S**, Shreveport, LA.
20. Discovery of the first murine norovirus: A model system to study immunity, pathogenesis and replication of noroviruses (2005). **Michigan State University**, East Lansing, MI.
21. Discovery of the first murine norovirus: A model system to study immunity, pathogenesis and replication of noroviruses (2005). **University of Michigan Medical School**, Ann Arbor, MI.
22. Discovery of the first murine norovirus: A model system to study immunity, pathogenesis and replication of noroviruses (2005). **University of Alabama at Birmingham**, Birmingham, AL.
23. Discovery of the first murine norovirus: A model system to study immunity, pathogenesis and replication of noroviruses (2005). **Loyola University Medical Center**, Maywood, IL.
24. Discovery of the first murine norovirus: A model system to study immunity, pathogenesis and replication of noroviruses (2004). **National Jewish Medical and Research Center**, Denver, CO.
25. Discovery of the first murine norovirus: A model system to study immunity, pathogenesis and replication of noroviruses (2004). **The University of Texas M. D. Anderson Cancer Center**, Houston, TX.
26. Discovery of the first murine norovirus: A model system to study immunity, pathogenesis and replication of noroviruses (2004). **University of Texas Southwestern Medical Center**, Dallas, TX.
27. Discovery of the first murine norovirus: A model system to study immunity, pathogenesis and replication of noroviruses (2004). **La Jolla Institute for Allergy & Immunology**, La Jolla, CA.

G. ABSTRACTS & PRESENTATIONS

1. S.M. Kahan and **S.M. Karst** (2011). Attenuation of a murine norovirus correlates with reduced late replication in dendritic cells and macrophages. *30th Meeting of the American Society for Virology*, University of Minnesota, Twin Cities, MN. Oral presentation.

2. S.M. Kahan and **S.M. Karst** (2010). Genetically related murine norovirus strains display disparate host cell interactions. *29th Meeting of the American Society for Virology*, Montana State University, Bozeman, MT. Poster.
3. G. Liu, S.M. Kahan, Y. Jia and **S.M. Karst** (2010). Protective norovirus immunity inversely correlates with primary inoculum dose. *29th Meeting of the American Society for Virology*, Montana State University, Bozeman, MT. Poster.
4. S.M. Kahan, G. Liu, Y. Jia, and **S.M. Karst** (2009). Norovirus vectors for oral tolerance-based therapy. *2009 Gene Therapy Research Symposium*, New Orleans, LA. Poster.
5. D. Grunes and **S.M. Karst** (2008). Norovirus pathogenesis: Does ORF3 encode a viral enterotoxin? *Medical Student Research Forum*, LSUHSC-S, Shreveport, LA. Poster.
6. G. Liu and **S.M. Karst** (2008). High-dose murine norovirus infection induces incomplete protective immunity. *27th Meeting of the American Society for Virology*, Cornell University, Ithaca, NY. Poster.
7. G. Liu, S.M. Kahan, and **S.M. Karst** (2008). Murine norovirus 1 shares pathogenic properties with human noroviruses. *27th Meeting of the American Society for Virology*, Cornell University, Ithaca, NY. Oral presentation.
8. H. Changotra and **S.M. Karst** (2007). The mechanisms by which interferon inhibits murine norovirus replication. *26th Meeting of the American Society for Virology*, Oregon State University, Corvallis, OR. Poster.
9. S. Mumphrey, T.N. Moore, E. Heimann, H. Changotra, and **S.M. Karst** (2006). Murine norovirus 1 infection in the intestine and in peripheral tissues is controlled by interferon responses through several mechanisms. *Biennial Institutional Development Award Program Symposium*, Washington D.C. Poster.
10. S. Mumphrey, T.N. Moore, E. Heimann, H. Changotra, and **S.M. Karst** (2006). Murine norovirus 1 infection in the intestine and in peripheral tissues is controlled by interferon responses through several mechanisms. *Fondation Merieux Conference: Vaccine Interference*, Annecy, France. Poster.
11. **S.M. Karst**, C.E. Wobus, and H.W. Virgin (2005). The RNA genome of Murine Norovirus 1 adopts a lariat conformation during its replication in infected macrophages. *Viral Immune Evasion Conference*, Acapulco, Mexico. Poster.
12. **S.M. Karst**, C.E. Wobus, and H.W. Virgin (2004). The RNA genome of Murine Norovirus 1 adopts a lariat conformation during its replication process in infected macrophages. *7th International Symposium on Positive-strand RNA Viruses*, San Francisco, CA. Oral presentation.
13. **S.M. Karst**, C.E. Wobus, and H.W. Virgin (2003). Role of innate and adaptive immune responses in murine norovirus 1 pathogenesis. *22th Meeting of the American Society for Virology*, University of California, Davis, CA. Oral presentation.

14. **S.M. Karst**, C.E. Wobus, and H.W. Virgin (2003). Role of innate and adaptive immune responses in murine norovirus 1 pathogenesis. *Gordon Conference: Viruses and Cells*, Barga, Italy. Oral presentation.
15. **S.M. Karst** and T.M. Menees (2000). Identifying host factors for Ty3 retrotransposition by protein-protein interaction. *Yeast Genetics and Molecular Biology Conference*, Seattle, WA. Poster.
16. **S.M. Karst** and T.M. Menees (1999). Host cell regulation of the Ty retrotransposons in *Saccharomyces cerevisiae*. *Annual Meeting of the American Association for the Advancement of Science (AAAS)*, Omaha, NE. Oral presentation.
17. **S.M. Karst** and T.M. Menees (1998). Cell cycle regulation of Ty3 reverse transcription. *Yeast Genetics and Molecular Biology Conference*, College Park, MD. Poster.
18. **S.M. Karst** and T.M. Menees (1995). Effect of phosphatase inhibitors on measles virus infectivity of Vero cells. *Undergraduate Research Academy*, Edwardsville, IL. Oral presentation.

H. PATENTS AND INVENTIONS

S.M. Karst, C.E. Wobus, and H.W. Virgin. *Norovirus infected cell cultures and uses therefor* U.S. Patent No. 7,264,923 (Awarded 09/04/2007).

I. RESEARCH SUPPORT

Ongoing Research Support

R01AI081921-01 (Karst P.I.)

NIH/NIAID

07/05/2010-06/30/2014

Title: Lack of protective immunity to murine norovirus infection

The major goal of this research is to test the hypothesis that norovirus infection fails to fully activate mucosal dendritic cells, leading to an induction of regulatory immune responses and a lack of mucosal immunity.

Role: P.I.; 6 calendar months

Direct costs (4 yrs): \$900,000

Global Emerging Infections Surveillance (GEIS) C0654_12_UN (P.I. Afsar Ali)

Department of Defense, Armed Forces Health Surveillance Center

02/15/12-09/30/12

Title: Clinical surveillance for enteric pathogens in Haiti

The major goal of this research is to determine the incidence of specific pathogens (bacteria, parasites, and viruses) in cases of diarrhea in a semi-rural community of Haiti. My direct involvement will be diagnostics of noroviruses.

Role: co-P.I., 1.2 calendar months

Directs costs: \$

Completed Research Support

1R21AI082310-01 (Karst P.I.)

NIH/NIAID

05/15/10-04/30/12

Title: Persistent norovirus infection impairs protective immunity

Role: P.I.

Direct costs (2 yrs): \$275,000

LA Board of Regents Research Competitiveness Subprogram Grant

07/01/08-12/31/10

Title: The contribution of mucosal interferon to the control of enteric norovirus infection

Role: P.I.

Direct costs (3 yrs): \$102,000

R56AI08192 (Karst P.I.)

NIH/NIAID

09/01/2009-07/04/2010

Title: Lack of protective immunity to murine norovirus infection

Direct costs: \$225,000

NIH, COBRE P20-RR018724-03 (O'Callaghan Grant P.I./Karst Project P.I.)

05/01/08-04/30/10

Center for Biomedical Research Excellence: Center for Molecular and Tumor Virology

Title: Persistent norovirus infection of lymphoid tissue impairs protective immunity

Direct costs (2 yrs): \$300,000 (Karst, Project 1)

LSUHSC-S Intramural Research Award in Gene Therapy (Karst P.I.)

01/01/09-12/31/09

LA Gene Therapy Consortium

Title: Attenuated norovirus vectors for oral tolerance-based therapy

Direct costs (1 yr): \$25,000

LSUHSC-S Intramural Research Support Award (Karst P.I.)

01/01/08-12/31/08

Title: The molecular mechanism of interferon-mediated inhibition of murine norovirus replication

Direct costs: \$25,000

NIH, COBRE P20-RR018724-01 (O'Callaghan Grant P.I./Karst Project P.I.)

08/01/05-04/30/08

Center for Biomedical Research Excellence: Center for Molecular and Tumor Virology

Title: Replication of murine noroviruses

Role: Junior P.I.

Direct costs: \$546,344 (Karst, Project 4)

NIH, MRCE Clinical/Translational Fellowship

07/01/04-06/30/05

Title: A lariat form of a norovirus genome

Stipend award (2 yrs): \$36,000/yr