

CURRICULUM VITAE

Name: John Stuart Leslie Parker

Position: Associate Professor of Virology
Director, Cornell Leadership Program for Veterinary Students
Baker Institute for Animal Health
Department of Microbiology and Immunology
College of Veterinary Medicine
Cornell University, Ithaca, NY 14853
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Freeville, NY 13068
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Education and Training:

B.V.M.S. (Bachelor of Veterinary Medicine and Surgery) 1978-1983
The University of Glasgow, Glasgow, Scotland

Ph.D., Virology 1994-1999
Cornell University, Ithaca, NY
Dissertation title: "Studies of the capsid determinants of canine parvovirus host range and mechanisms of virus uptake and infectious entry into cells *in vitro*."

Post-Doctoral Associate; Mentor: Dr. Colin Parrish 1999-2000
Baker Institute for Animal Health
College of Veterinary Medicine
Cornell University, Ithaca, NY
I was supported by an Individual National Research Service Award F32 AI10134 entitled: "Research training in virus entry studies" (1999-2002. This award was re-allocated to Harvard University when I transferred to Dr. Nibert's laboratory). During these studies I identified the canine and feline transferrin receptors as being the receptors for canine and feline parvoviruses respectively. I also showed that viral host range was in part determined by receptor differences.

Post-Doctoral Associate; Mentor: Dr. Max Nibert 2000-2002
Harvard Medical School
Department of Microbiology and Molecular Genetics
Harvard University, Boston, MA
At the beginning of these studies I was supported by a National Research Service Award (see above). In 2002, I was awarded a Mentored Clinical Scientist Award K08 AI052209 entitled: "Viral inclusion bodies and aggresomes."

Honors:

Burroughs Welcome Fund Investigator in the Pathogenesis of Infectious Disease	2005-2010
Pfizer Animal Health Award for Research Excellence.	2007

Professional Appointments:

<i>Associate Professor of Virology</i> Baker Institute for Animal Health College of Veterinary Medicine Cornell University, Ithaca, NY	March 2009 -
<i>Assistant Professor of Virology</i> Baker Institute for Animal Health College of Veterinary Medicine Cornell University, Ithaca, NY	2003-2009
<i>Instructor</i> Harvard Medical School Department of Microbiology and Molecular Genetics Harvard University, Boston, MA.	2002-2003

Veterinary Employment History:

<i>Consultant Veterinarian</i> (temporary) Cornell Feline Health Center. College of Veterinary Medicine Cornell University, Ithaca, NY	1993-1994
<i>Associate Veterinarian</i> Whitehorse Veterinary Hospital, Melbourne Australia Small animal medicine & surgery. Referral specialist feline medicine (Member Australian College of Veterinary Scientists: feline medicine)	1987-1993
<i>Veterinarian (Locum tenens)</i> Animal Emergency Center Pty Ltd., Melbourne Australia Small animal emergency work	1989-1993
<i>Veterinarian (Locum tenens)</i> Various small animal practice locations in the UK and Australia	1985-1987
<i>Associate Veterinarian</i> Cockburn & Nadin Veterinary Surgery, Leicestershire, UK Mixed animal practice	1983-1985

Teaching:

Biology of Animal and Plant Viruses, VMI 700 (alternate years; 2 lecture hours).	2003 - present
Block IV, VETMED540 ‘Host, Agent, and Defense’. Tutor, 7 weeks, Mon, Wed, Fri (2 hour tutorials) on alternate years. In other years I serve as a substitute Tutor. In addition, I give 3 lectures in veterinary virology each year, Fall. Average of 24 contact hours per yr.	2005 - present
Mechanisms of Microbial Pathogenesis, VETMI725 I gave two lectures: “Introduction to Viruses and parasites” and “Tissue tropism,” plus 3 hour tutorial sessions.	2005, 2006
Principles of Virology, BIOMI/VETMI 409. I co-organize this course with Drs. Lazarowitz and Osterreider in the Fall. I am responsible for 8 lectures. Average of 10 contact hours per yr.	2006-present
Science and Technology Approaches to Problems in Human Health, BME 4110. I give one lecture: “Oncolytic viruses”	2009-present

Other Teaching and Training-Related Activities:

Facilitator, Emerging Infectious Diseases Seminar. Cornell Leadership Program for Veterinary Students.	2004-present
Organizer, Infectious Disease Forum, Department of Microbiology and Immunology.	2004-2008
Director, Cornell Leadership Program for Veterinary Students	2010-present
Director, NIH T32 training grant “Graduate Training Program in Comparative Medicine”	2010-present
Biology & Society Faculty Member (http://www.sts.cornell.edu)	2014-present

Trainees:

Postdoctoral Associates and Clinical Fellows:

Weiwei Yan (currently Research Associate, Cornell University)	2004-2005
Louis G. Hom (currently Lead Scientist ZeaChem Inc, San Francisco)	2007-2008
Jae-Won Kim (Microbial Materials Team Head at Research Institute of Biotechnology, CJ CheilJedang Co., Seoul, Korea)	2008-2010
Irene Alexandra Amaro (currently Research Scientist Vybion Inc, Ithaca)	2009-2012
Emily Desmet (postdoctoral associate)	2012 – present
Jodie Gerdin (clinical fellow)	2012 – 2013
Zhengchen Lu (postdoctoral associate)	2013 – present
Kata Juhasz (postdoctoral associate)	2014 - present

Graduate Students:	Degree Sought	Dates
Major Advisor to:		

Caroline Coffey*	Ph.D., Comparative Biomedical Sciences (Deceased).	2003-2007
Meagan Wisniewski	Ph.D., Comparative Biomedical Sciences (Meagan is currently a Captain in the US Army)	2004-2009
Robert Ossiboff	DVM/Ph.D dual degree. Veterinary Medicine (Oz, is currently an Associate Pathologist at the Bronx Zoo)	2005-2008 (PhD awarded) DVM awarded 2010
Susanne Kauffer	Ph.D., Comparative Biomedical Sciences (Susanne is currently taking family leave from her post-doctoral position)	2007-2011
Amanda Fischer	MS, Comparative Biomedical Sciences (currently in veterinary school)	2013-2014

*Winner of the Baker Institute Bicknese Family Prize, Fall 2006

Rotating students:

Caroline Solomon	Rotating PhD. Student	Fall, 2013
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Minor Advisor to:

Becky Bean	Ph.D., Biochemistry (Chair: Dr. Volker Vogt)	2004-2007
Woraporn Sukhumavasi	Ph.D., Immunology (Chair: Dr. Eric Denkers)	2004-2008
Jany Chan	Ph.D., Biochemistry (Chair: Dr. Volker Vogt)	2006-present
Ben Kaufer	Ph.D., Virology (Chair: Dr. Klaus Osterreider)	2006-2010
Anne Schneider	DVM-Ph.D., (Chair: Dr. Eric Denkers)	2006-2013
Chien-Che Hung	Ph.D., CBS (Chair: Dr. Craig Altier)	2007-2011
Yueting Zhang	Ph.D., CBS (Chair: Dr. Gary Whittaker)	2008-2012
Sungkwon Kang	Ph.D., BME (Chair: Dr. Moonsoo Jin)	2008-2011
Kang Wang	Ph.D., BME (Chair: Dr. Peter Doerschuk)	2009-2011
Xiaoyue Chen	Ph.D., BME (Chair: Dr. Moonsoo Jin)	2008-2012
Kurtis Feng	Ph.D., CBS (Chair: Dr. Colin Parrish)	2012-present
David Gludish	DVM-Ph.D., (Chair: Dr. David Russell)	2014-present
Soreen Cyphers	Ph.D., (Chair: Dr. Gary Whittaker)	2014-present

Veterinary and Medical Students:

Robert Ossiboff*	Leadership student	2004
Timothy Stell	Leadership student	2005
Carole Harbison	Research elective	2005
Justine Shotton	Leadership student from the UK	2006
Amy Fulton	Research elective	2006
Ashley McCaughan	Research elective – co-mentor with Dr. Stokol	2006
Sarah Caddy [#]	Leadership student from the UK	2007

Nasser Mohamed	Hughes Scholar, Medical student from Qatar	2007
Sally-Anne Iverson	Research elective	2008
Anna Heymer	Leadership student from Hanover Germany	Summer 2008
Anne Poujol	Research training – Veterinary student from Toulouse, France	Summer 2008
Stuart Davenport [#]	Leadership student from the UK	Summer 2009
Dana Anchassi	Hughes Scholar, Medical student from Qatar	Summer 2009
Samantha Hodgkins [#]	Leadership Student	Summer 2010
Scott Dudis	Leadership Student	Summer 2011
Amanda Fischer	Veterinary Investigator Program	Summer 2011
Amanda Fischer	Research Elective	Spring 2012
Lauren Griggs	Research Elective	Spring 2012
Luca Bertzbach	Leadership Student	Summer 2012
Amanda Fischer	Veterinary Investigator Program	Summer 2012
Amanda Fischer	Veterinary student trainee in biomedical research, Masters student	2013
Callum Bennie	Leadership Student	Summer 2014

*Winner of Leadership Program Integrative Biology Prize

[#]Winner of Leadership Program Prize

Undergraduate Research Students:

Sheila Ambata	Undergraduate research assistant	2004
Jason Perlmutter	New Horizons Scholar	2005
Aki Ueda	Hughes Scholar; Honors thesis	2005-2006
Meg Crapster-Pregont	Hughes Scholar; Honors thesis	2007-2008
Rachel Mays	Undergraduate research assistant	2007-2008
Patrick Lightfoot	Undergraduate research assistant	2008
Sharilyn Brandel	Undergraduate research assistant	Summer 2008
Sarah Mattmiller	Undergraduate research assistant, McNair scholar, University of Wisconsin	Summer 2008
Sharilyn Rose Brandell	Undergraduate research assistant	Fall 2008
Stephen Berds	Undergraduate research assistant	Fall 2008
Jegath Athilingham	Undergraduate research assistant	2008
Amanda Fischer	Undergraduate research assistant	2009
Natalie Katchmar	Undergraduate research assistant	2010
Andrea Lopez-Cepero	Leadership Alliance scholar	Summer 2010
Emily Throwe	Undergraduate research assistant	Spring 2012
Benjamin Gandesbury	Undergraduate research assistant	Spring 2012, Fall 2012, Spring 2013
Emily Throwe	Undergraduate research assistant (currently a freshman in the DVM program at Cornell)	Summer and Fall 2012
Jeffrey Wang	Undergraduate research assistant	Fall 2012, Spring 2013
Patrick Weill	Honors thesis, undergraduate student	Fall 2012, Spring 2013
Bruno Hortelano-Roig	Undergraduate research assistant	Spring 2013

Alex Polino	Undergraduate research assistant, Tanner Dean Scholar	Fall 2013 - present
James Eaglesham	Undergraduate Honors thesis, Presidential Scholar	Spring 2014 - present

Service:

Committees and Advisory Activities:

Member, Microbiology Search Committee	2004
Member, Graduate Field of Comparative Biomedical Sciences	2003-present
Member, Dog Watch editorial board	2005-2007
Member, Institutional Biosafety Committee	2006-2012
Member, Veterinary Library Committee	2006-2008
Chair, Veterinary Leadership student selection Committee	2010-present
Member, Ad hoc committee to review guidelines for tenure	Fall 2007
Member, search committee for Joint Director of the Baker Institute for Animal Health and the Cornell Feline Health Center	Fall 2008-Spring 2009
Chair, selection committee for Cornell Clinical Fellows Program 2009	Spring 2009
Member, General Committee	2009-2012
Member, Admission Committee for Hughes Undergraduate Scholars	2010
Member, College of Veterinary Medicine Cancer Biology planning committee	2010
Member, Molecular Medicine Search Committee	2010
Member, Curriculum Re-design Working group	2010 – present
Member, Chair Advisory Committee	2011
Member, Feline Health Center, Associate Director Search Committee	2011
Member, Baker Institute Search Committee Viral pathogenesis position	2011
Member, Ad hoc tenure review committee	2011
Member, College website redesign group	2011
Member, Veterinary Research Training Oversight Committee	2013-present
Member, Committee for the Faculty Status of Women	2013-present
Chair, Search Committee for Faculty member in Optimizing the Immune response	Spring 2014

Service and Other Activities Specific to the Baker Institute

Participant and presenter, Baker Institute Advisory Council meeting	Spring 2005
Coordinator, Baker Institute Research Seminar Series	Spring 2005
Participant and presenter, Baker Institute Advisory Council meeting	Fall 2013
Coordinator, Baker Institute Research Seminar Series	Spring 2014

Extramural Scientific and Editorial Activities:

Editorial Board Virology	2010-2015
Ad hoc grant reviewer for the Wellcome Trust	2003-present
Ad hoc grant reviewer for BBSRC (Biotechnology and Biological Sciences Research Council, UK).	2013-present
Editorial Board Journal of Virology	2011-2014
Ad hoc reviewer Journal of General Virology	2005-present

Ad hoc reviewer for Apoptosis	2006-present
Ad hoc reviewer for Journal of Veterinary Medicine B	2006-present
Ad hoc reviewer for Journal of Virological Methods	2007-present
Ad hoc reviewer Cell Biochemistry and Biophysics	2007-present
Ad hoc reviewer for the Carver Trust	2008-present
Ad hoc reviewer for Archives of Virology	2008-present
Ad hoc reviewer for Journal of Emerging Infectious Diseases	2008-present
Ad hoc reviewer for PLoS Pathogens	2008-present
Ad hoc reviewer for PLoS One	2010-present
Ad hoc reviewer for mBio	2012 – present
Ad hoc reviewer for Clinical Microbiology Reviews	2014-present
Ad hoc reviewer for Cell, Host & Microbe	2014-present
Ad hoc reviewer for Journal of Clinical Investigation	2014-present
Ad hoc reviewer for PNAS	2014-present
External Examiner for PhD thesis, Murdoch University, Melbourne, Australia	Spring 2014
Ad hoc reviewer, NIH MIDB study section	Spring 2014
Ad hoc reviewer, NIH, ZRG1 IDM U02 special emphasis panel	Spring 2014
Convener, American Society for Virology Meeting, Reovirus Workshop	2005
Participant, Focus group discussion on early careers of DVM clinician scientists. Organized by the Burroughs Wellcome Foundation, Houston Texas.	2007
Participant, Career Development course for Veterinarians “Becoming faculty”. Organized by the Burroughs Wellcome Foundation, Raleigh, North Carolina	2009
Elected as Councilor for Veterinary Virology, American Society for Virology.	2010-2013
Facilitator, Career Development course for veterinarians “Becoming faculty”. Organized by the Burroughs Wellcome Foundation, Athens, Georgia	2010
Facilitator, Career Development course for veterinarians “Becoming faculty”. Organized by the Burroughs Wellcome Foundation, Orlando, Florida	2011
Organizer, Veterinary Satellite Symposium, American Society for Virology Meeting, University of Minnesota	2011
Convener, American Society for Virology Meeting, Reovirus Workshop	2011
Co-organizer International double-stranded RNA virus meeting, San Juan, 2012	2010-2012
Facilitator, Career Development course for veterinarians “Becoming faculty”. Organized by the Burroughs Wellcome Foundation, Fort Collins, Colorado	2012
Organizer Veterinary Satellite Symposium “Changing viruses in a changing environment”, American Society for Virology Meeting, Pennsylvania State University	2013

Current Research Support:

NIH R56 AI090076-01A1

“Regulation of reovirus-induced apoptosis”

Principal Investigator, 9/19/12-8/31/13, (\$278,000 direct costs) NCE until 8/31/14

Reovirus-induced apoptosis causes disease in the heart, liver, and brain of newborn mice. The reovirus outer-capsid protein $\mu 1$ is the primary determinant of reovirus-induced apoptosis, and ectopic expression of $\mu 1$ allows a detailed analysis of the processes mediated only by that protein. In this project we will define the mechanisms by which $\mu 1$ induces apoptosis, how the process is regulated during infection, and the consequences of $\mu 1$ -induced membrane destabilization for viral replication in cells and for pathogenesis in animals. The specific aims are: (1) To identify mechanisms of apoptosis induction by the outer-capsid protein $\mu 1$; and (2) to determine the functional consequences of post-translational modifications of $\mu 1$.

Morris Animal Foundation

“The role of feline junctional adhesion molecule A in feline calicivirus (FCV) infection”

Principal Investigator, 9/1/11-8/31/14, \$213,540 (total direct costs).

The long-term goal of this project is to understand the roles that receptor-virus interactions play in the pathogenesis of FCV disease. The objective is to define the molecular interaction between FCV and its receptor fJAM-A and how this interaction mediates infectious virus entry. The Specific Aims are: 1) to identify specific residues in the FCV capsid that interact with fJAM-A; and 2) to identify residues in the fJAM-A ectodomain important for FCV binding and infection.

Cornell Feline Health Center grant program

“Mechanisms of Feline Calicivirus (FCV) infection of polarized epithelial cells”

Principal Investigator, 08/01/13 – 07/31/14, \$50,000.

The goal of this proposal is to identify the cellular and molecular mechanisms required for entry of feline calicivirus (FCV) into polarized epithelial cells, the cell type first encountered during natural infection. We hypothesized that FCV infection of polarized epithelial cells requires activation of cellular signaling and endocytic pathways that differ from those required to infect non-polarized cells. The specific aims are: (1) To determine binding patterns and mechanisms of uptake of FCV in polarized epithelial cells; and (2) to identify cellular signals required for FCV uptake and infection of polarized epithelial cells.

NIH, NIAID, 1R21 AI105520

“Studies of the global translational response to human virus infection”

Principal Investigator (Co-PI, Qian, ShuBing), 02/10/2014 – 01/31/2016, \$247,500 (total direct costs). (Impact score, 13)

The overall goal of this project is to determine and quantify which cellular and viral transcripts are being translated and which open reading frames (ORFs) are being decoded at different times post-infection examining three different human viruses – influenza A virus (IAV), herpes simplex virus 1 (HSV-1), and mammalian orthoreovirus (REOV). Recently developed and novel approaches based on next generation sequencing of total RNA and ribosome-protected fragments of RNA will be used to test two hypotheses; (1) that virus infection induces a cohort of common changes in global cellular translation patterns overlaid by unique changes specific for each virus type and (2) that viral genomes contain more ORFs than that have been identified thus far. The specific aims are: (1) to determine the host cell translational changes in response to virus infection and (2) to identify novel viral ORFs not predicted by bioinformatics analysis.

Winn Feline Foundation

“Identifying the role of allelic variations of feline junctional adhesion molecule A in susceptibility/resistance to feline calicivirus infection”

Principal investigator, Awarded – funds pending release, \$22,500 (total amount funded).

The major goals of this project are to identify allelic variations in the fJAM-A receptor in cats and assess their capacity to support FCV infection *in vitro*.

Atkinson Center Venture fund,

“Addressing the problem of infectious disease in endangered and threatened species”

PI with Co-PIs: Hewson, Dubovi, and Kollias, 07/31/14 – 07/30/16, \$80,981 (total direct costs requested).

Major goals: Disruption of ecosystems shifts the ecological balance such that endemic pathogens cause epidemics or spillover into other species. Spillover events often adversely impact the health of endangered/ threatened species. We lack an organized infrastructure to respond to such events, show association with disease, and implement preventative measures. We propose to develop resources to allow rapid identification of pathogens in endangered/ threatened species. We will develop for exotic species (i) a cell/ reagent repository; (ii) a metagenomic pipeline for rapid identification of putative pathogens alongside more traditional measures; and (iii) a database of expertise and reagents for pathogen identification.

Research Funding Pending:

Research Funding (Completed):

United States-Israel Binational Agricultural Research and Development Fund, #IS-4192-09

“Development of a plasmid-based reverse genetic system for the Bluetongue and Epizootic Hemorrhagic Disease viruses to allow a comparative characterization of the function of the NS3 viroporin in viral egress”

Co-PI with Dr. Marcelo Ehrlich, Tel Aviv University, 09/01/09 – 08/31/12, \$310,00 (total amount funded); \$150,000 (total amount funded, Cornell portion).

Major goals: This is a collaborative grant with Dr. Marcelo Ehrlich, Tel Aviv University (PI).

The major goal of this project is to identify the specific viral determinants responsible for virulence, growth and transmission of the orbiviruses BTV and EHDV. Dr. Parker will supervise

and help design the strategy to prepare a plasmid-based reverse genetics system for BTV-17 in collaboration with Dr. Terence Dermody, Vanderbilt University.

Cornell Feline Health Center

“The role of receptor-induced conformational changes in the capsid of Feline Calicivirus during virus infectious entry”

Principal Investigator, 09/01/2011 – 08/31/2012, \$50,000 (total amount funded)

The major goal is to understand how the interactions between FCV and its receptor control infectious virus entry, viral tropism and virulence. The Specific Aims are: 1) to determine the capacity of purified soluble fJAM-A to mediate genome release and membrane association of WT and mutant FCV capsids; and 2) to determine if capsid mutations that dramatically reduce the capacity of FCV-5 to be neutralized by soluble fJAM-A, alter the kinetics of infectious entry.

NIH, NIAID, K08 AI052209

“Viral inclusion bodies and aggresomes: form and function”

Principal Investigator, 8/1/02-4/30/05, \$328,989 (total direct costs).

The major goal of this project was to test the hypothesis that reovirus inclusion bodies co-opt the cellular misfolded protein response in order to concentrate and sequester viral proteins and RNAs away from the general cellular milieu.

Cornell Feline Health Center

“Virus entry studies of feline calicivirus: is virulence related to differences in attachment and uptake?”

Principal Investigator, 12/1/03-11/30/04, \$20,000 (total amount funded).

The major goal of this project was to elucidate the mechanisms of feline calicivirus entry into cells.

Cornell Feline Health Center

“Cell binding and tropism of feline caliciviruses and mechanisms of antibody neutralization”

Principal Investigator, 10/01/05 - 9/30/06, \$13,500 (total amount funded)

The major goals of this project are: 1) to identify the mechanisms of binding of feline caliciviruses to the surfaces of cells; to initiate studies to identify the cellular receptor for FCV; and 2) to map the epitopes recognized by a panel of FCV mAbs on the surface of the FCV capsid.

Cornell Feline Health Center

“Interactions between feline calicivirus and its receptor – feline junctional adhesion molecule-A”

Principal Investigator, 10/01/06 - 9/30/07, \$18,573 (total amount funded)

The major goal of this project is to provide an answer to the question: *What makes one FCV isolate more virulent than another?* Specific Aims are to 1) measure the kinetics of binding of different FCV isolates to fJAM-A; 2) identify the molecular determinants required for binding of fJAM-A to FCV; with a goal to 3) prepare purified FCV capsids and fJAM-A receptor ectodomain for structural studies.

Cornell Feline Health Center

“Interactions between feline calicivirus and its receptor feline junctional adhesion molecule-A”

Principal Investigator, 9/01/07 - 8/31/08, \$18,936 (total amount funded).

The major goal of this project was to determine the molecular details of the interaction between FCV and feline JAM-A. Specific Aims are to 1) Identify amino acids on the FCV capsid that are required for binding fJAM-A; 2) identify the amino acid residues within the D1 and D2 domains of fJAM-A that form the contact site for FCV; 3) Identify the role of the transmembrane region and cytosolic tail of fJAM-A in FCV infection; with a goal to 4) obtain high resolution structures of the FCV capsid and the FCV-fJAM-A complex.

Note: This grant was renewed under a modified title, 1/1/09 – 12/31/10 (see active funding).

JohnsonDiversey Corporation

“Viral surrogates for use in studies of disinfectants or cleaning procedures”

Co-Principal Investigator (C. Parrish, PI), 7/1/04-8/31/05, \$52,512 (total amount funded).

This was a collaborative project with the Cornell laboratories of Drs. Parrish, Parker, and Dubovi to study a variety of pathogenic viruses affecting animal and human health for the purpose of establishing a reference library of pathogenic agents.

Winn Feline Foundation – Miller Trust

“Identification of *in vitro* correlates of differences in virulence between feline calicivirus strains – what determines the increased virulence of feline calicivirus isolated from cats with severe systemic disease?”

Principal investigator, 1/1/05-12/31/05, \$20,940 (total amount funded).

The major goal of this project was to determine *in vitro* correlates of virulence for a variety of FCV strains.

United States Israel Binational Science Foundation

“The vesicular trafficking machinery: a crossroad of virus reproduction, virally induced apoptosis and cellular defense in Reovirus infection”

Co-PI (US) with Dr. M. Ehrlich (PI, Israel), 10/1/06 - 9/30/08, \$10,350 (total amount funded, Cornell portion)

The major goal of this project was to document the changes in membrane trafficking during reovirus infection, and to understand their function and the mechanisms by which they are elicited.

Collaborative Research Program, Cornell University

“Production of recombinant nanobodies for diagnostic and research applications”

Co-Investigator with Dr. Judy Appleton (PI), 9/01/07 - 8/31/08, \$20,012 (total amount funded).

The major goal of this project was to use new nanobody technology to generate high affinity probes for diagnostic and research applications in animal health. This is a collaborative project among 7 researchers at Cornell University, overseen by Dr. Appleton. Dr. Parker provided feline calicivirus pro-pol for immunization and pan for VHH that recognize the protein and inhibit enzymatic activity.

NIH, NIAID, 5 R01 AI063036-05

“Reovirus factories: structure, function, and dynamics”

Principal Investigator, 7/15/05-12/31/09, \$857,002 (total direct costs).

The major goal of this project is to understand how cellular and viral factors interact within VFs to regulate viral assembly and replication. Specific aims: 1) to identify cellular proteins associated with VFs and their function(s) in viral assembly and/or replication; 2) to identify the role(s) of HSP70 chaperones in outer capsid $\mu 1:\sigma 3$ heterohexamer assembly and in regulating heterohexamer recruitment to VFs; and 3) to determine the role that remodeling of the VF matrix plays in assembly of the double-layered particle.

Cornell Feline Health Center

“The role of feline junctional adhesion molecule-A in feline calicivirus infection.”

Principal Investigator, 1/01/09 - 12/31/09 (total direct / total funded).

The major goals of this project are 1) to understand the relationship between FCV-receptor interactions and viral tropism, and 2) to identify what role these interactions play in FCV virulence.

Winn Feline Foundation – Miller Trust, #MT07-008

“Are differences in feline calicivirus (FCV) tissue tropism and virulence determined by changes in virus interactions with cell surface glycans?”

Principal Investigator, 1/1/08-12/31/08, \$15,750 (total amount funded).

The major goal of this project is to determine the role of cell surface glycans in FCV binding, tissue tropism, and virulence. Specific Aims are to: 1) Determine the glycan-binding profiles of FCV isolates F9, FCV-5, and Kaos; 2) Determine the glycosylation status of the FCV receptor, feline junctional adhesion molecule-A; and 3) Identify the role of $\alpha 2,6$ sialic acid binding in FCV infection of CHO cells which stably express the fJAM-A receptor.

Burroughs Wellcome Fund: Investigator Pathogenesis of Infectious Diseases, #1005528

“Reovirus-induced apoptosis: the role of the viral outer capsid protein $\mu 1$ ”

Principal Investigator, 7/1/05-6/30/12, \$470,000 (total amount funded)

The major goals of this project are 1) to identify the molecular mechanisms by which the reovirus outer capsid protein $\mu 1$ induces apoptosis, and 2) to identify the part this protein plays in reovirus-induced apoptosis.

Current Training Grants:

NIH, T32 OD01100

“Graduate Training Program in Comparative Medicine”

6/1/10 – 5/31/15, \$2,245,810 (total direct and indirect costs)

J. Parker, Project Director/Preceptor.

NIH, T35 AI07227

“Short term Training of Students in the Health Professions”

7/25/13 – 6/30/18, \$295,110 (total direct and indirect costs)

J. Parker, Project Director/Preceptor.

NIH, T32 RR018269

“Veterinary Student Training in Biomedical Research”

9/28/09 – 8/31/14; \$662,450 (total direct and indirect costs)

J. Baines, Project Director/Preceptor; J. Parker, Preceptor

NIH, 1DP7OD018425

“Cornell University BEST Training Program”

9/20/13 – 8/31/18; \$1,819,509 (total direct and indirect costs)

J. Baines, Project Director; J. Parker, Co-Director, C. Schaffer, Co-Director.

Patent (filed 2007):

Modified Apoptosis-Inducing Genes, Proteins, and Mutant Reoviruses for the Treatment of Cellular Proliferative Disorders, Including Cancer. CCTEC: D-4243. Patent filed.

Publications (complete):

Journal Articles

1. Lubasova, D, Netravali, A., **Parker, J. S. L.**, and B. Ingel (2014). Bacterial filtration efficiency of green soy protein based nanofiber air filter. *Journal of Nanoscience and Nanotechnology*. 14:4891-4898.
2. Connelly, J. T., Kondapalli, S., Skoupi, M., **Parker, J. S. L.**, Kirby, B. J., and A. J. Baeumner (2012). Micro-total analysis system for virus detection: microfluidic pre-concentration coupled to liposome-based detection. *Anal. Bioanal. Chem.* 402:315-23.
3. Kaufer, S., Coffey, C. M., and **J. S. L. Parker** (2012). The cellular chaperone hsc70 is specifically recruited to reovirus viral factories independently of its chaperone function. *J. Virol.* 86:1079-89.
4. Kim, J-W., Lyi, S. M., Parrish, C. R., and **J. S. L. Parker** (2011). A proapoptotic peptide derived from reovirus outer-capsid protein $\mu 1$ has membrane-destabilizing activity. *J. Virol.* 85:1507-16.
5. Wisniewski, M. L., B. G. Werner, L. G. Hom, L. J. Anguish, C. M. Coffey, and **J. S. L. Parker**. (2011). Reovirus infection or ectopic expression of outer-capsid protein $\mu 1$ induces apoptosis pathways independently of the cellular proapoptotic proteins Bax and Bak. *J. Virol.* 85:296-304.
6. Pesavento, P. A., T. Stokol, H. Liu, D. A. van der List, P. M. Gaffney, and **J. S. Parker**. (2011). Distribution of the Feline Calicivirus Receptor Junctional Adhesion Molecule A in Feline Tissues. *Vet Pathol.* 48:361-8.
7. Ossiboff R. J., Zhou, Y., Lightfoot, P. J., Prasad, B. V. V. and **J. S. L. Parker**. (2010). Conformational changes in the capsid of a calicivirus upon interaction with its functional receptor. *J. Virol.* 84:5550-5564. *Featured on cover.*
8. Pesavento P., H. Liu, R. J. Ossiboff, K. M. Stucker, A. Heymer, L. Millon, J. Wood, D. van der List, and **J. S. L. Parker**. (2009). Characterization of a continuous feline mammary

- epithelial cell line susceptible to feline epitheliotropic viruses. J Virol Methods (epub ahead of print).
9. Danthi, P, C. M. Coffey, **J. S. L. Parker**, T. W. Abel, and T. S. Dermody. (2008). Independent regulation of reovirus membrane penetration and apoptosis by the $\mu 1$ ϕ domain. PLoS Pathog, 4(12) pp. e1000248.
 10. Pesavento, P. A., Chang, K-O., and **J. S. L. Parker**. (2008). Molecular virology of feline calicivirus. Vet Clin Small Anim. 38:775-786.
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 14. Yin, P., N. D. Keirstead, T. J. Broering, M. M. Arnold, **J. S. L. Parker**, M. L. Nibert, and K. M. Coombs. (2004). Comparisons of the M1 genome segments and encoded $\mu 2$ proteins of different reovirus isolates. BMC Virology J. 1:6 (17 pages).
 15. Miller, C. L., **J. S. L. Parker**, J. B. Dinoso, C. D. S. Piggott, M. J. Perron, and M. L. Nibert. (2004). Increased ubiquitination and other covariant phenotypes attributed to a strain- and temperature-dependent defect of reovirus core protein $\mu 2$. J. Virol. 78:10291-10302.
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 19. Chandran, K., **J. S. L. Parker**, M. Ehrlich, T. Kirchhausen, and M. L. Nibert. (2003). The δ region of outer-capsid protein $\mu 1$ undergoes conformational change and release from reovirus particles during cell entry. J. Virol. 77:13361-13375.

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23. **Parker, J. S. L.**, T. J. Broering, J. Kim, D. E. Higgins, and M. L. Nibert (2002). Reovirus core protein μ 2 determines the filamentous morphology of viral inclusion bodies by interacting with and stabilizing microtubules. *J. Virol.* 76:4483-4496.
24. **Parker, J. S. L.**, W. J. Murphy, D. Wang, S. J. O'Brien, and C. R. Parrish (2001). Canine and feline parvoviruses can use human or feline transferrin receptors to bind, enter, and infect cells. *J. Virol.* 75:3896-3902.
25. **Parker, J.S.L.** and C.R. Parrish (2000). Cellular uptake and infection by canine parvovirus involves rapid dynamin-regulated clathrin-mediated endocytosis, followed by slower intracellular trafficking. *J. Virol.* 74:1919-1930.
26. Roy, A-M., **J. S. L. Parker**, C. R. Parrish, and G. R. Whittaker (2000). Early stages of influenza virus entry into Mv-1 lung cells: involvement of dynamin. *Virology* 267:17-28.
27. Weichert, W. S., **J. S. L. Parker**, A. T. M. Wahid, S-. F. Chang, E. Meier, and C. R. Parrish (1998). Assaying for structural variation in the parvovirus capsid and its role in infection. *Virology* 250:106-117
28. **Parker, J. S. L.**, and C. R. Parrish (1997). Canine Parvovirus Host Range Is Determined by the Specific Conformation of an Additional Region of the Capsid. *J. Virol.* 71:9214-9222.
29. **Parker, J. S. L.** (1997). Chap. 28. Immune System and Disorders. In: *Cornell Book of Cats*, Ed. M. Siegal. Publ. Villard Books, New York.
30. Llamas-Saiz, A. L., M. Agbandje-McKenna, **J. S. L. Parker**, A. T. M. Wahid, C. R. Parrish, M. G. Rossman (1996). Structural Analysis of a Mutation in Canine Parvovirus which Controls Antigenicity and Host Range. *Virology* 225:65-71.
31. **Parker, J. S. L.** (1991). A Probable case of Hypoparathyroidism in a cat. *J. Small Anim. Pract.* 32:470-473.

Textbooks

1. Dermody, T. S. , **Parker, J. S. L.**, and B. Sherry. (2013). Orthoreoviruses. In *Fields Virology*, 6th Edition. Eds. Racaniello, Knipe, and Howley.

Publications (Submitted or in preparation)

1. Kaufer, S., Kim, J-W., Wisniewski, M. L., Werner, B. G., and **J. S. L. Parker** (In preparation). Cleavage of the reovirus $\mu 1$ protein by cellular caspases regulates the balance between $\mu 1$ -induced apoptosis and membrane permeabilization.
2. Kaufer, S. and **J. S. L. Parker** (In preparation). Recruitment of reovirus outer capsid proteins $\mu 1$ and $\sigma 3$ to viral factories is mediated by cellular chaperone hsc70.
3. Desmet, E., and **J. S. L. Parker** (Submitted). Virus-mediated compartmentalization of the cellular translational machinery.

Seminars/Invited Talks:

1. International Union of Microbiological Societies, (2014) Congress, Montreal, Canada. Invited speaker and Co-chair of session, "Caliciviruses and astroviruses".
2. Department of Molecular Virology and Microbiology, Baylor College of Medicine, Houston TX (2014). "A novel translational trick from the mammalian reoviruses". Departmental seminar.
3. Department of Microbiology, School of Medicine, University of Colorado (2014). "A novel translational trick from the mammalian reoviruses". Departmental seminar.
4. Department of Cell Research and Immunology, University of Tel Aviv, Israel (2013). "Translation and chaperones in reovirus-infected cells". Invited seminar.
5. Department of Biology, Indiana University (2013). "Translation and chaperones in reovirus-infected cells". Departmental seminar.
6. Department of Microbiology and Immunology, University of Rochester Medical Center (2011). "The role of cellular chaperones in reovirus replication and assembly?". Departmental seminar.
7. Department of Clinical Sciences, College of Veterinary Medicine, Cornell University (2011). "Canine hepatitis virus a new virus of dogs?". Departmental Seminar
8. Cornell Virology Retreat, Cayuga Nature Center (2011). "Feline calicivirus receptor interactions and their consequences".
9. International Calicivirus Conference, Santa Cruz, Chile (2010). "Feline calicivirus receptor interactions and their consequences". State of the Art talk.
10. Department of Microbiology and Molecular Genetics, Harvard Medical School (2010). "The role of the reovirus outer capsid protein $\mu 1$ in reovirus-induced apoptosis". Departmental seminar.
11. American Society for Virology, 28th Annual meeting, Veterinary Satellite symposium, Vancouver, Canada (2009). Invited speaker "The role of the reovirus outer capsid protein $\mu 1$ in reovirus-induced apoptosis".
12. Department of Biology, Colgate University Hamilton NY (2009). "Feline calicivirus-receptor interactions". Departmental seminar.
13. 20th Annual Fred Scott Feline Symposium, Cornell University Ithaca NY (2008). "Virulent systemic feline calicivirus update". Invited speaker.

14. Department of Biomedical Sciences, Cornell University Ithaca NY (2008). “Feline calicivirus-receptor interactions – Insights” Pfizer Animal Health award for research excellence seminar.
15. Department of Molecular Virology and Microbiology, Baylor College of Medicine, Houston TX (2008). “Calicivirus-receptor interactions”. Departmental seminar.
16. Department of Cell Research and Immunology, University of Tel Aviv, Israel (2008). “Calicivirus-receptor interactions”. Departmental seminar.
17. Department of Biomedical Engineering, Cornell University, Ithaca NY (2007). “Reoviruses and apoptosis – cell defense or viral strategy?”. Departmental seminar.
18. Baker Institute for Animal Health, Seminar series, Cornell University, Ithaca NY (2006). “Reoviruses and apoptosis – cell defense or viral strategy”. Departmental seminar.
19. Biological and Biomedical Sciences Program Symposium, College of Veterinary Medicine, Cornell University, Ithaca NY (2003). “The assembly and functions of viral factories in reovirus-infected cells”. Seminar.
20. Gordon Research Conference “Viruses and Cells”, Il Ciocco, Italy (2003). “Reovirus nonstructural protein μ NS recruits viral core surface proteins, host cell chaperones, and entering core particles to viral factories”. Poster session.
21. Gordon Research Conference “Viruses and Cells”, Tilton School, Tilton New Hampshire (2001). “Reovirus core protein μ 2 associates with microtubules and determines the filamentous morphology of the viral inclusions seen in infected cells”. Poster session.
22. James A. Baker Institute for Animal Health Conference on Canine Infectious Diseases (1999). “Cellular entry and trafficking of canine parvovirus”.

Other Presentations:

23. Panelist, Cornell BEST program opening event: “Industry, entrepreneurship & management”, Ithaca, New York (2014).
24. Invited panelist, Business of pet writing workshop “Emerging trends in veterinary research”, New York, New York (2011)
25. American Society for Virology, 21st Annual Meeting, Lexington, Kentucky (2002). “Reovirus minor core protein μ 2 is a microtubule-associated protein that links the viral nonstructural protein μ NS to the cytoskeleton”.
26. VIIIth International Parvovirus Workshop, Mont Tremblant, Quebec Canada (2000). “Canine parvovirus and feline panleukopenia virus use the transferrin receptor (TfR) for infectious entry into feline and human cells”.
27. American Society for Virology 19th Annual meeting, Fort Collin, Colorado (2000). “Canine parvovirus (CPV) is trafficked to the recycling endosome after virus entry in mink and feline cells but not in canine cells”.
28. American Society for Virology, 18th Annual Meeting, Amersham, Massachusetts (1999). Small DNA virus workshop. "Studies on the entry of canine parvovirus into mink lung cells".

29. American Society for Cell Biology, 39th Annual Meeting, Washington, D.C. (1999). “Canine parvovirus (CPV) enters mink lung cells by clathrin-mediated endocytosis and is trafficked to a perinuclear recycling compartment”. American Society for Virology, 17th Annual Meeting, Vancouver British Columbia (1998). Parvovirus Workshop. “The Infectious Entry of Parvovirus into Cells”.
30. American Society for Virology, 15th Annual Meeting, London, Ontario (1996). Virus Structure and Assembly Workshop. “Analysis of the capsid properties of canine parvovirus and host range mutants”.
31. American Society for Virology, 14th Annual Meeting, Austin Texas (1995). Parvovirus Workshop. “Detailed structural analysis of the host range determinants in the capsid of canine parvovirus”.
32. VIth Parvovirus Workshop, Montpellier, France (1995). “Detailed structural analysis of the host range determinants in the capsid of canine parvovirus”.

Memberships in Scientific Organizations:

American Society of Microbiology
American Society for Virology