

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors in the order listed on Form Page 2. Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Christopher Hamilton Parsons, MD		POSITION TITLE Associate Professor of Medicine	
eRA COMMONS USER NAME (credential, e.g., agency login) parsonch			
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	MM/YY	FIELD OF STUDY
Kenyon College, Gambier, Ohio	B.A.	1989-1993	Chemistry
Case Western Reserve University, Cleveland, Ohio	M.D.	1993-1998	Medicine
Johns Hopkins Hospital, Baltimore, Maryland		1998-2001	Internal Medicine
University of Virginia, Charlottesville, Virginia		2001-2004	Infect. Disease/Research

A. PERSONAL STATEMENT

Over the last 12 years, we have developed integrated research programs whose principal objectives are: 1) to identify virus-associated mechanisms for HIV cancer pathogenesis; and 2) to develop novel interventional strategies for treatment and prevention of HIV-associated cancers. Our research group uses the Kaposi's sarcoma-associated herpesvirus (KSHV)—the causative agent of Kaposi's sarcoma (KS) and various forms of malignant lymphoproliferative disease—as our model pathogen in the laboratory. We have identified three novel determinants of KSHV pathogenesis: 1) KSHV induces secretion of reactive oxygen species (ROS) by infected cells, as well as expression of xCT, an exchanger of intracellular glutamate with extracellular cystine at the cell surface; these coordinated events result in ROS-induced enhancement of viral replication and concurrent replenishment of intracellular glutathione to protect infected cells from oxidative stress; we are now testing interventions for suppressing KSHV-associated oxidative stress and xCT expression as a strategy for reducing KSHV replication and tumor pathogenesis; 2) KSHV induces expression and function of the Extracellular Matrix Metalloproteinase Inducer (emmprin; CD147), and emmprin and its surface binding partners (the “emmprin complex”) facilitate invasiveness, cytokine release, and drug resistance for KSHV-infected cells; using *in vivo* models, we are developing new therapeutics for pre-clinical testing which target the emmprin complex; 3) sphingosine kinase (SK) generates bioactive sphingosine-1-phosphate (S1P), and we have determined that small molecule targeting of SK reduces KSHV/EBV+ lymphoma progression *in vivo*.

As Director of the HIV Malignancies Program within the Louisiana Cancer Research Center (LCRC), my long-term goal is clinical translation of more effective targeted therapeutic approaches for HIV/virus-associated cancers. The LCRC works directly with the HIV Outpatient (HOP) Clinic at LSUHSC and its affiliated clinics in New Orleans and Baton Rouge (which rank 3rd and 2nd, respectively, among large metropolitan areas in the U.S for HIV incident case rates). These clinics are the focal point for enrollment of HIV⁺ patients in cancer therapeutic and prevention trials administered through the LCRC. Enrollment focuses on underrepresented, minority-predominant urban cohorts for whom risk of morbidity and mortality for HIV-associated cancers is greatest. Integrated patient navigation and outreach programs assist participants with linkage to resources and study compliance, and clinical samples from these trials are stored within the HIV Biorepository at the LCRC. This interactive environment offers a unique setting for completion of clinical and translational research related to HIV and cancer and attracts extramural funding for early-phase clinical trials. Phase I/IIa therapeutic trials are currently open for patients with KS, lymphoma, anorectal cancer and liver cancer, as are cancer prevention trials focusing on contributions of oncogenic viruses and oxidative stress.

B. POSITIONS AND HONORS**Positions and Employment**

- 1993-1995 **Research Assistant**, Department of Neurosurgery, Case Western Reserve University, Cleveland, Ohio.
- 1998-2001 **Intern and Resident**, Department of Internal Medicine, Johns Hopkins Hospital, Baltimore, Maryland
- 2001-2004 **Fellow**, Division of Infectious Diseases, Department of Internal Medicine, University of Virginia, Charlottesville, Virginia
- 2004-2006 **Research Assistant Professor**, Division of Infectious Diseases, University of Virginia, Charlottesville, Virginia
- 2006-2012 **Assistant/Associate Professor**, Departments of Internal Medicine, Microbiology/Immunology, and Craniofacial Biology (Center for Oral Health Research), Medical University of South Carolina, Charleston, South Carolina
- 2012-present **Associate Professor**, Departments of Medicine and Microbiology/Immunology, Louisiana State University Health Sciences Center, New Orleans, Louisiana
- 2012-present **Director**, HIV Malignancies Program, Louisiana Cancer Research Center, New Orleans, Louisiana

Awards and Honors*(national/international)*

- 2002 **Special Original Research Commendation Award**, The 40th Annual Meeting of the Infectious Diseases Society of America.
- 2006 **“Faculty of 1000” (Biology subgroup) Award** (<http://www.f1000biology.com/article/id/1033508/evaluation>). This citation (nominated by Dr. Patrick Moore, the co-discoverer of KSHV) recognized the creation of the first available model for *de novo* KSHV infection (*J Clin Invest.* 2006; 116(7): 1963-73)
- 2006 **“Editor’s Pick” Citation**. Special recognition by editors of the *Journal of Clinical Investigation* for the creation of the first available animal model for *de novo* KSHV infection and expansion of relevant hematopoietic cells (*J Clin Invest.* 2006; 116(7): 1963-73)
- 2006 **“Faculty of 1000” (Biology subgroup) Award** (<http://www.f1000biology.com/article/id/1046936/evaluation>). This citation (nominated by Dr. Jeffrey Cohen) recognized the establishment of the first high-throughput assay for quantifying KSHV gene expression at the single cell level (*J Virol.* 2006; 80(20): 10073-82)
- 2008 **Infectious Diseases Society of America Medical Scholars Program Award**
- 2010 **Editor’s Choice Award: “Pivotal Advance.”** Recognition by editors of the *Journal of Leukocyte Biology* for publishing the first report of a specific mechanism through which viral microRNA induce innate immune cell secretion of tumor-promoting cytokines (*J Leukoc Biol.* 2010; 87(1): 25-34)
- 2011 **“Faculty of 1000” (Microbiology subgroup) Award**. (<http://www.f1000biology.com/article/id/1033508/evaluation>). This citation (nominated by Drs. Jennifer Folster and Scott Schmid, National Center for Infectious Diseases, Centers for Disease Control, Atlanta, GA) acknowledged the discovery that extracellular Hsp90 regulates herpesvirus gene expression (*Virology.* 2010; 403(1): 92-102) *(local/regional)*
- 1998 **Alpha Omega Alpha Medical Honor Society**, Case Western Reserve University School of Medicine.
- 2008 **MUSC Department of Medicine Research Award for Translational Science**
- 2009 **MUSC Department of Medicine Most Outstanding Basic Science Award**
- 2010 **MUSC Foundation Developing Scholar Award**. Given for outstanding achievement in basic/translational research within 6 years of first independent faculty appointment.
- 2011 **MUSC Department of Medicine Excellence in Teaching Award**. Given annually to two Department faculty members by internal faculty/student/resident committee review panel based on letters of recommendation from students and residents and demonstration of commitment to teaching on clinical service.
- 2012 **Special Recognition Award**. Medical University of South Carolina, for outstanding contributions to research, education, and clinical care.

B. SELECTED PUBLICATIONS (of 32 total)**Original Publications**

1. Adang, L.A., **Parsons, C.H.**, Kedes, D.H. Asynchronous progression through the lytic cascade with variations in intracellular viral loads revealed by high-throughput single cell analysis of KSHV infection. *J Virol.* 2006; 80(20): 10073-82. PMC1617294.
2. Qin, Z.H., Kearney, P., Plaisance, K., and **Parsons, C.H.** Pivotal advance: Kaposi's sarcoma-associated herpesvirus (KSHV)-encoded microRNA specifically induce IL-6 and IL-10 secretion by macrophages and monocytes. *J Leukoc Biol.* 2010; 87(1): 25-34. PMC2801620.
3. Qin, Z., Freitas, E., Sullivan, R., Mohan. S., Baclieri, R., Branch, D., Romano, M., Kearney, P., Oates, J., Plaisance, K., Renne, R., Kaleeba, J., and **Parsons, C.H.** Upregulation of xCT by KSHV-encoded microRNAs facilitates KSHV dissemination and persistence in an environment of oxidative stress.. *PLoS Pathogens.* 2010; 6(1): e1000742. PMC2813276.
4. Qin, Z., Dai, L., Slomiany, M.G., Toole, B., and **Parsons, C.H.** Direct activation of emmprin and associated pathogenesis by an oncogenic herpesvirus. *Cancer Res.* 2010; 70(10): 3884-9. PMC3202426.
5. Qin, Z., DeFee, M., Isaacs, J., and **Parsons, C.H.** Extracellular Hsp90 serves as a co-factor for MAPK activation and latent viral gene expression during de novo infection by KSHV. *Virology.* 2010; 403(1): 92-102. PMC3202419.
6. Qin, Z., Dai, L., Robertson, R., and **Parsons, C.H.** Regulation of Nm23-H1 and cell invasiveness by Kaposi's sarcoma-associated herpesvirus. *Journal of Virology.* 2011; 85(7): 3596-3606. PMCID: PMC3067884.
7. Qin, Z., Dai, L., Bratoeva, M., Slomiany, M.G., Toole, B., and **Parsons, C.H.** Cooperative roles for emmprin and LYVE-1 in the regulation of chemoresistance for Primary Effusion Lymphoma. *Leukemia.* 2011; 25: 1598-1609. PMC3683648.
8. DeFee, M.R., Qin, Z., Dai, L., Toole, B.P., Isaacs, J.S., and Parsons, C.H. Extracellular Hsp90 serves as a co-factor for NF- κ B activation and cellular pathogenesis induced by an oncogenic herpesvirus. *American Journal of Cancer Research.* 2011; 1(5): 687-700. PMCID: PMC3189828.
9. Dai, L., Qin, Z., Toole, B.P., and **Parsons, C.H.** KSHV activation of VEGF secretion and invasion for endothelial cells is mediated through viral upregulation of emmprin-induced signal transduction. *Int J Cancer.* 2012; 131(4): 834-43. PMC3518925.
10. Qin, Z., Dai, L., DeFee, M., Toole, B., Kirkwood, K., and **Parsons, C.H.** Kaposi sarcoma-associated herpesvirus (KSHV) induces a functional tumor-associated phenotype for oral fibroblasts. *Cancer Letters.* 2012; 318(2): 214-20. PMC3303930.
11. Ruiz, M., **Parsons, C.H.**, and Cole, J. Characterization of HIV-associated Hodgkin's Lymphoma in HIV-infected Patients: A Single Center Experience. *J Int Assoc Physicians AIDS Care (Chic).* 2012; 11(4): 234-8. PMCID: In Process.
12. Qin, Z., Dai, L., Defee, M., Findlay, V.J., Watson, D.K., Toole, B.P., Cameron, J., Peruzzi, F., Kirkwood, K. and **Parsons, C.** KSHV suppression of DUSP1 facilitates cellular pathogenesis following *de novo* infection. *Journal of Virology.* 2013; 87(1): 621-35. PMC3536420.
13. Strong M, O'Grady C, Lin Z, Xu G, Baddoo M, **Parsons C**, Zhang K, Taylor C, and Flemington E. Epstein-Barr Virus and Human Herpesvirus 6 Detection in a non-Hodgkin's Diffuse Large B-Cell Lymphoma Cohort using RNA-Seq. *Journal of Virology.* 2013; 87(23): 13059-62. PMC3838131.
14. Qin, Z., Dai, L., Trillo-Tinoco, J., Senkal, C., Wang, W., Reske, T., Bonstaff, K., Del Valle, L., Rodriguez, P., Flemington, E., Voelkel-Johnson, C., Smith, C.D., Ogretmen, B. and **Parsons, C.** Targeting sphingosine kinase induces apoptosis and tumor regression for KSHV-associated primary effusion lymphoma. *Molecular Cancer Ther.* 2013; 2013 Dec 17. [Epub ahead of print]. PMCID In Process.
15. Fontana, J.M., Mygatt, J.G., Conant, K.L., **Parsons, C.H.**, Kaleeba, J.A.R. Kaposi's sarcoma-associated herpesvirus subversion of the anti-inflammatory response in human skin cells reveals donor-specific correlates of latency and disease pathogenesis. *Journal of Skin Cancer.* 2013 (*in press*)

Review Articles

1. **Parsons, C.H.**, Kinase Lynks to herpesvirus lymphomagenesis. *Blood.* 2005; 105: 3762.

2. DeFee M.R., Qin Z., Dai L., Isaacs J.S., and **Parsons C.H.** Interactions between Hsp90 and oncogenic viruses: implications for viral cancer therapeutics. *American Journal of Cancer Research*. 2011; 1(6): 763-72.
3. Qin Z., Findlay, V., Jakymiw A., and **Parsons, C.H.** KSHV-encoded microRNAs: Lessons for Viral Cancer Pathogenesis and Emerging Concepts. *Int J Cell Biol*. 2012; 2012: 603961. PMID: PMC3296157.
4. Dai, L., Bai, L., Lu, Y., Xu, Z., Reiss, K., Del Valle, L., Kaleeba, J., Toole, B.P., **Parsons, C.**, and Qin, Z. Emmprin and KSHV: new partners in viral cancer pathogenesis. *Cancer Lett*. 2013; 337(2): 161-6.

C. RESEARCH SUPPORT

Current Support

Clinical Trial Award

11/6/2013-11/30/2016

ALDOXORUBICIN-P2-KS-01

PI: Chris Parsons

CytRx Corporation

“A Randomized Pilot Phase II Study to Investigate Efficacy, Safety, and Intratumoral Kinetics of ALDOXORUBICIN in HIV-Infected Patients with Kaposi’s sarcoma.”

R01CA142362

PI: Chris Parsons

02/01/2010-2/31/2014

NIH/NCI

“Regulation of the Tumor Microenvironment by KSHV”

This award provides support for *in vitro* and translational studies to determine mechanisms for KSHV regulation and interaction with cell surface proteins and their contribution to the tumor microenvironment.

Louisiana Cancer Research Center

07/01/2013-06/30/2014

LSUHSC

PI: Chris Parsons

“HIV-associated viral cancer pathogenesis”

Funding is provided to support basic and translational studies relevant to HIV-associated viral cancer pathogenesis, and for administration of clinical trials initiated within the HIV Malignancies Program.

NIH Mentored Clinical Scientist Research Award

07/01/2013-06/30/2017

F31-CA180449

NIH/NCI

PI: Christina O’Grady (Co-Mentor: Chris Parsons)

“EBV-mediated carcinogenesis in AIDS-associated Diffuse Large B Cell Lymphoma”

Award provides support for viral and cellular RNA sequencing within diffuse large B-cell lymphoma tumors arising in HIV-infected patients.

NIH Center for Biomedical Research Excellence Award

07/01/2010-06/30/2015

P20GM103501

PI: Augusto Ochoa

NIH/NIGMS

Subaward PI: Zhiqiang Qin (mentor: Chris Parsons)

“Mentoring Translational Researchers in Louisiana”

This award provides support for junior investigators in the Stanley S. Scott Cancer Center, Louisiana State University Health Sciences Center.

Louisiana Clinical and Translational Science Center Pilot Award

05/01/2013-04/30/2014

U54-GM104940

NIH

Subaward PI: Francesca Peruzzi (Co-Investigator: Chris Parsons)

“MicroRNAs as biomarkers for cognitive impairment and cancer risk in HIV patients”

Award provides support for determination of clinical associations between neurocognitive dysfunction and plasma miRNA profiles in HIV-infected patients.

Louisiana Clinical and Translational Science Center Pilot Award

05/01/2013-04/30/2014

U54-GM104940

NIH

Subaward PI: Zhen Li (Co-Investigator: Chris Parsons)

“Analysis of the Pathogenesis of HIV/EBV-associated DLBCL”

Award provides support for identifying pathologic/genetic determinants for diffuse large B-cell lymphoma in patients with HIV infection.