Curriculum Vitae

Jennifer E. Totonchy, PhD

Published as Jennifer E. Vomaske through 2012

Education

2010 - Doctor of Philosophy
Molecular Microbiology and Immunology
Oregon Health and Science University, Portland, Oregon, USA

2002 - Bachelor of Arts
Integrated Science and Molecular Cell Biology
Northwestern University, Chicago, Illinois, USA

Research

September 2012 -to Present - Postdoctoral Training

Laboratory of Ethel Cesarman, MD, PhD
Weill Cornell Medicine, New York, New York, USA

Focus: Basic KSHV virology in B lymphocytes and relevant primary cell types

Projects

- Development of B lymphocyte models for KSHV infection - Primary tonsil lymphocytes and lymphoblastoid cell lines
- Investigation of the contribution of KSHV-vFLIP to infection and pathogenesis in various cell types
- Investigation of KSHV pathogenesis and spread within tonsil tissue and tonsil-derived cell types

Key Techniques and Training

- B cell immunology
- Next generation RNA and DNA sequencing analysis
- Differential Gene Expression analysis: Programming in R
- Cell sorting
- Primary cell isolation and tonsil organ culture techniques
- Immunohistochemistry
- Grant writing - NIH 5 year award
- Grant fiscal management
- Direct supervision of a research technician

September 2010 to September 2012 - Postdoctoral Training

Laboratory of Ashlee V. Moses, PhD
Oregon Health and Science University, Portland, Oregon, USA

Focus: KSHV subversion of host chemokine signaling in Kaposi Sarcoma

Projects

- Investigation of the function of the CXCR7 chemokine receptor in primary endothelial cells
- Mechanisms underlying KSHV induction of host proteins involved in pathogenesis - CXCR7 and HO1
- Investigation of the contribution of CXCR7 and HO1 to KSHV pathogenesis in an in vitro model of Kaposi Sarcoma

Key Techniques and Training

- Primary endothelial cell culture
- Adenoviral and lentiviral vector construction
- KSHV molecular virology: Introduction and optimization of Bacterial Artifical Chromosome mutagenesis
- Functional cell biology in endothelial cells: migration, invasion, angiogenesis
- Grant writing - Training grant award
- Mentorship of a Graduate Trainee

Research (continued)

January 2006 to September 2010 - PhD Dissertation Research

Laboratories of Jay A. Nelson, PhD and Daniel N. Streblow, PhD
Oregon Health and Science University, Portland, Oregon, USA

Focus: Cytomegalovirus subversion of host chemokine signaling in vascular disease

Projects

- Determination of HCMV-US28 mediated signaling events leading to cellular migration in relevant cell types
- Investigation of the contribution of CMV-encoded chemokines to vascular disease in a rat solid organ transplant model
- Immunology and pathogenesis of Chikungunya virus infection in a Rhesus Macaque model

Key Techniques and Training

- Biochemistry: intracellular cellular signaling pathways, recombinant protein production
- Generation of adenovirus vectors
- Functional cell biology: chemotaxis
- Image restoration deconvolution immunofluorescence microscopy
- Immunology: multi-color flow cytometry
- Processing of animal specimens for immunological studies
- Grant writing - non-governmental fellowship award
- Mentorship of undergraduate students

November 2002 to May 2003 - Research Technician

Laboratory of Jay A. Nelson, PhD
Oregon Health and Science University, Portland, Oregon, USA

Key Techniques and Training

- Biochemistry: intracellular cellular signaling pathways, in vitro kinase assay, immunoprecipitation
- Immunofluorescence microscopy
- Basic tissue culture
- Adenovirus vector production and purification

Septermber 2000 to June 2002 - Undergraduate Research

Laboratory of Robert Lamb, PhD
Northwestern University, Chicago, Illinois, USA

Key Techniques and Training

- Molecular biology: cloning, mutagnesis and transfection of mammalian cells
- Immunofluorescence and confocal microscopy
- Basic tissue culture

June 1997 to May 1998 - Research Internship

Laboratory of Robert Shapiro, PhD
Oregon Health and Science University, Portland, Oregon, USA

Key Techniques and Training

- Molecular biology: cloning
- Biochemistry: western blot
- Basic laboratory techniques

Funding

January 2015 to Present - K99/R00 Pathway to Independence Award
Factors Influencing KSHV Infection and Spread within the Oral Cavity
National Institute of Dental and Craniofacial Research

Funding (continued)

July 2011 to July 2013 - T32 Training Grant Fellowship
Host-Pathogen Interactions
OHSU Department of Molecular Microbiology and Immunology

July 2008 to July 2010 - Predoctoral Fellowship
Cytomegalovirus Encoded Chemokines and Vascular Disease
The American Heart Association

Manuscripts Submitted/in Press

1. Nayar U, Sadek J, Reichel J, Hernandez-Hopkins D, Akar G, Barelli PJ, Totonchy JE Sahai MA, Zhou H, Guasparri I, Hassane, D, Liu Y, Sei S, Shoemaker RH, Warren JD, Elemento O, Kaye KM, Cesarman E. Exquisite sensitivity of plasma cell malignancies to a novel nucleoside analog is mediated by overexpressed adenosine kinase. *Journal of Clinical Investigation*. Submitted.
2. Gautam A, Totonchy JE, Osborn JM, Cesarman E. Latent KSHV infection downregulates TLR9 expression and impairs TLR9 mediated innate immune responses in B cells. *Journal of Virology*. Submitted.
3. Giulino-Roth L, van Besien, HJ, Totonchy JE, Rodina A, Taldone T, Bolaender A, Erdjument-Bromage H, Chadburn A, Barth MJ, DelaCruz FS, Rainey AR, King AL, Choisis G, Cesarman E. Inhibition of Hsp90 suppresses PI3K/AKT/mTOR signalling and has anti-tumor effect in Burkitt lymphoma. *Blood*. Submitted.

Publications

Please note: previous name Jennifer E. Vomaske

1. Botto S, Totonchy JE, Gustin JK, Moses AV. Kaposi Sarcoma Herpesvirus Induces HO-1 during De Novo Infection of Endothelial Cells via Viral miRNA-Dependent and -Independent Mechanisms. *MBio*. 2015 Jun 4;6(3):e00668. PubMed PMID: 26045540; PubMed Central PMCID: PMC4462627
2. Reichel J, Chadburn A, Rubinstein PG, Giulino-Roth L, Tam W, Liu Y, Gaiolla R, Eng K, Brody J, Inghirami G, Carlo-Stella C, Santoro A, Rahal D, Totonchy J, Elemento O, Cesarman E, Roshal M. Flow sorting and exome sequencing reveal the oncogenome of primary Hodgkin and Reed-Sternberg cells. *Blood*. 2015 Feb 12;125(7):1061-72. PubMed PMID: 25488972.
3. Totonchy JE, Clepper L, Phillips KG, McCarty OJT, Moses, AV. CXCR7 Expression Disrupts Endothelial Cell Homeostasis and Causes Ligand-Dependent Invasion. (2014). *Cell Adhesion and Migration*. Mar 20;8(2). PMID: 24710021
4. Totonchy JE, Osborn JM, Clepper L, Moses, AV (2013). Aberrant proliferation in CXCR7+ endothelial cells via degradation of the retinoblastoma protein. (2013). *PLoS One*, Jul 23;8(7):e69828. PMCID: PMC3720914
5. Messaoudi I, Vomaske J, Totonchy T, Kreklywich C, Haberthur K, Springgay L, Brien JD, Diamond M, Defilippis V, Streblow DN. (2013). Chikungunya Virus infection results in higher and persistent viral replication in aged Rhesus Macaques due to defects in anti-viral immunity. *PLoS Neglected Tropical Diseases*, Jul 25;7(7):e2343. PMCID: PMC3723534
6. Vomaske JE, Denton M, Kreklywich C, Andoh T, Osborn JM, Chen D, Messaoudi I, Orloff S, Streblow DN. Cytomegalovirus CC chemokine promotes immune cell migration. *Journal of Virology*, (2012). 86(21):11833-11844. PMCID: PMC3486311

Publications (continued)

7. Vomaske JE, Varnum S, Melnychuk R, Smith P, Pasa-Tolic L, Shutthanandan JI, Streblow DN. HCMV pUS28 Initiates Pro-Migratory Signaling via Activation of Pyk2 Kinase. (2010). *Herpesviridae*, 1:2. doi10.1186/2042-4280-1-2. PMCID: PMC3050435
8. Vomaske J, Nelson JA, Streblow DN. Human Cytomegalovirus US28: A Functionally Selective Chemokine Binding Receptor. (2009). *Infectious Disorders – Drug Targets*, Nov; 9(5):548-56. PMCID: PMC3496389
9. Baca Jones CC, Kreklywich CN, Messaoudi I, Vomaske J, McCartney E, Orloff SL, Nelson JA, Streblow DN. Rat Cytomegalovirus Infection Depletes MHC II in Bone Marrow Derived Dendritic Cells. (2009). *Virology*, 388(1):78-90. PMCID: PMC2749604
10. Vomaske J, Melnychuk RM, Smith P, Hall L, DeFilippis V, Frueh K, Smit M, Schlaepfer DD, Nelson JA, Streblow DN. Differential Ligand Binding to a Human Cytomegalovirus Chemokine Receptor. (2009). *PLoS Pathogens*, 5(2):e1000304. PMCID: PMC2637432
11. Melnychuk RM, Smith P, Kreklywich CN, Ruchti F, Vomaske J, Hall L, Loh L, Nelson JA, Orloff SL, Streblow DN. Mouse Cytomegalovirus m33 is Necessary and Sufficient in Virus-Induced Vascular Smooth Muscle Cell Migration. (2005). *Journal of Virology*, 79(16):10788-95. PMCID: PMC1182681
12. Streblow DN, Vomaske J, Smith P, Melnychuk R, Hall L, Pancheva D, Smit M, Casarosa P, Schlaepfer DD, Nelson JA. Human Cytomegalovirus Chemokine Receptor US28-induced Smooth Muscle Cell Migration Is Mediated by Focal Adhesion Kinase and Src. (2003). *Journal of Biological Chemistry*, 278(50):50456-50465. PMID: 14506272

Presentations

July 2016- International Herpesvirus Workshop
KSHV Induces Revision of B cell Receptors - Oral Presentation
Madison, Wisconsin USA

July 2016- 19th International Workshop on Kaposi Sarcoma Herpesvirus and Related Agents
KSHV Induces Revision of B cell Receptors - Oral Presentation
Los Angeles, California USA

October 2015- International Conference on Malignancies in AIDS and Other Acquired Immunodeficiencies
KSHV Induces Revision of B cell Receptors - Oral Presentation
NIH Main Campus, Bethesda, Maryland, USA

July 2015- 18th International Workshop on Kaposi Sarcoma Herpesvirus and Related Agents
A Model System for the Establishment of KSHV Latency via de novo Infection of B cell Lymphoma Cell Lines - Oral Presentation
Immunophenotypic Characterization of KSHV-infected Primary Tonsil Lymphocytes - Oral Presentation
Hollywood, Florida, USA

Presentations (continued)

July 2013- 16th International Workshop on Kaposi Sarcoma Herpesvirus and Related Agents
KSHV vMIP-II and Multiple NFkB-activating Factors Modulate Expression and Function of CXCR7 in Endothelial Cells - Oral Presentation
Puerto Vallarta, Mexico

August 2012- 1st International Congress on Oncogenic Herpesviruses and Associated Diseases
The KSHV-encoded miRNA miRK12-1 Influences CXCR7 Expression During Latency - Poster Presentation
Philadelphia, Pennsylvania, USA

November 2011- 13th International Conference on Malignancies in AIDS and Other Acquired Immunodeficiencies
KSHV Infection of Endothelial Cells Manipulates CXCR7-mediated Signaling: Implications for Kaposi Sarcoma Progression and Intervention - Oral Presentation
NIH Main Campus, Bethesda, Maryland, USA

August 2011- 14th International Workshop on Kaposi Sarcoma
KSHV Infection of Endothelial Cells Manipulates CXCR7-mediated Signaling: Implications for Kaposi Sarcoma Progression and Intervention - Oral Presentation
Helsinki, Finland

November 2009- 4th Annual NIH National Graduate Student Research Festival
Differential Ligand Binding to a Human Cytomegalovirus Chemokine Receptor Determines Cell Type Specific Motility - Poster Presentation
NIH Main Campus, Bethesda, Maryland, USA

May 2009- 12th International Cytomegalovirus Workshop
Differential Ligand Binding to a Human Cytomegalovirus Chemokine Receptor Determines Cell Type Specific Motility - Oral Presentation
Boston, Massachusettes, USA

Honors

May 2010 - School of Medicine Alliance Award
Oregon Health and Science University
In recognition of outstanding potential for contributions to science

May 2008 - Award for Outstanding Oral Presentation in Cardiovascular Research
Oregon Health and Science University Student Research Forum

Courses/ Certifications

November 2015 - Scientist to CSO
New York Academy of Sciences
Business and management skills for scientists

April 2016 - Scientists Teaching Science
New York Academy of Sciences
Skills and tools for teaching science coursework at the university level including both traditional and online course design.

Other Relevant Skills and Experience

July 2003 to April 2005 - Public Health Volunteer

United States Peace Corps, Kenya

- Lived and Worked in a rural village in Western Province, Kenya
- Assisted and advised community groups in planning and implementation of health related projects
- Performed general health education specifically focused on HIV/AIDS, Tuberculosis, Water Sanitation and Vaccination

Language Proficiencies

Swahili - Two years formal Study at Northwestern University follwed by two years immersion in a Swahili-speaking community in East Africa

Computing Skills

Familiarity with Windows, Mac, Linux and Unix operating systems. Basic proficiency in Unix command line coding as well as C++ and R. Experience with the installation and use of Unix-based bioinformatics tools for sequence analysis including BWA, Samtools and Bowtie, Previous experience in database construction in Microsoft Access. Proficiency with Adobe software including Illustrator, InDesign, Photoshop and Acrobat.