BIOGRAPHICAL SKETCH

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NAME: Sung, Julia Anne Marsh

eRA COMMONS USER NAME (agency login): julia_sung

POSITION TITLE: Clinical Assistant Professor, Department of Medicine

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Harvard University	BA	05/2004	Biochemistry, Magna Cum Laude
Yale School of Medicine	MD	06/2008	Medicine
Johns Hopkins Hospital	Resident	06/2011	Internal Medicine
Duke University Hospital	Fellow	07/2013	Infectious Diseases
University of North Carolina at Chapel Hill	Postdoctoral Fellow	07/2015	Research Fellowship

A. Personal Statement

My work currently focuses on means of measuring and enhancing immune responses to HIV-infected cells as they emerge from latency in individuals who have been maintained on suppressive ART. I am currently an assistant professor in the division of infectious diseases at UNC, investigating means of enhancing the immune response to latent HIV infection to effect eradiation of HIV. My previous training experiences, including participating in a postdoctoral research fellowship under the mentorship of David Margolis, MD, a recognized leader in the field of HIV translational research, have built a strong foundation in molecular and cellular biology as well as HIV immunology and cemented my interest in HIV cure related research. During my time at UNC, I have been actively involved in 6 ongoing HIV cure related translational studies as a coinvestigator, and have been involved in protocol design and implementation of the proposed project, as well as serving as a key player in shepherding the project through the IRB and IND process. Additionally, my focus in the laboratory has been on the development and optimization of a novel latency clearance assay as a means of evaluating the ability of various immunotherapeutics to clear latent HIV infection. This assay serves as both a tool to evaluate the therapeutic potential of various agents, as well as a mechanism for probing the kinetics of HIV latency reversal. My particular interest is in optimizing and standardizing assays to detect such an enhancement, and elucidating the mechanisms underlying an effective anti-latency immune response. My previous and ongoing work has led to a skill set that is uniquely suited to assist in implementation of both the clinical as well as the laboratory correlative studies described in this project.

1. Lam S, Sung J, Cruz C, Castillo-Caro P, Ngo M, Garrido C, Kuruc J, Archin N, Rooney C, Margolis D, Bollard C. Broadly-specific cytotoxic T cells targeting multiple HIV antigens are expanded from HIV+ patients: implications for immunotherapy. Mol Ther. 2015 Feb;23(2):387-95. PubMed PMID: 25366030; PubMed Central PMCID: PMC4445615.
2. Sung JA, Lam S, Garrido C, Archin N, Rooney CM, Bollard CM, Margolis DM. Expanded Cytotoxic T-cell Lymphocytes Target the Latent HIV Reservoir. J Infect Dis. 2015 Jul 15;212(2):258-63. PubMed PMID: 25589335; PubMed Central PMCID: PMC4490234.
3. Sung J, Pickeral J, Liu L, Stanfield-Oakley S, Lam C, Garrido C, Pollara J, LaBranche C, Bonsignori M, Moody M, Yang Y, Parks R, Archin N, Allard B, Kirchherr J, Kuruc J, Gay C, Cohen M, Ochsenbauer C, Soderberg K, Liao H, Montefiori D, Moore P, Johnson S, Koenig S, Haynes B, Nordstrom J, Margolis D, Ferrari G. Dual Affinity Re-Targeting (DART) proteins direct T cells to mediate cytolysis of patients' latently HIV-infected cells. The Journal of clinical investigation. 2015 Nov 2;125(11):4077-90. doi: 10.1172/JCI82314. Epub 2015 Sep 28. PubMed PMID: 26413868; PubMed Central PMCID: PMC4639974.

B. Positions and Honors

Positions and Employment

2008 – 2011 Internal Medicine Resident, Johns Hopkins Hospital
2011 – 2013 Infectious Disease Fellow, Duke University
2013 – 2015 Research Fellow, University of North Carolina at Chapel Hill
2015 - Clinical Assistant Professor, University of North Carolina at Chapel Hill

Other Experience and Professional Memberships

2013 - Member, UNC Cure Center
2015 - Member, Infectious Disease Society of America

Honors

2000 Presidential Scholar Award, Virginia, United States of America
2011 Basic Student Teaching Award, Department of Medicine, Johns Hopkins Hospital
2012 BMS Virology Fellows Research Training Award, BMS
2012 NIH Loan Repayment Program award recipient, NIAID
2013 T32 fellowship in HIV/STD training awardee (competitive internal award), University of North Carolina at Chapel Hill
2015 CTSA-KL2 Scholar, University of North Carolina at Chapel Hill, Chapel Hill, NC
2015 NIH Loan Repayment Program renewal recipient, NIAID

C. Contribution to Science

1. **Understanding the mechanisms contributing to HIV control in Elite Controllers.** During my clinical residency in internal medicine, I had the opportunity to engage in research work in the Siliciano lab at Johns Hopkins, under the direct supervision of Dr.Joel Blankson, studying the impact of rituximab treatment on an HIV elite suppressor. As part of this work, I performed full genome sequencing of multiple viral isolates grown out from the patient's latent reservoir, demonstrating that, despite an absence of peripheral viremia in the face of rituximab, the virus itself did not harbor any mutations that would be expected to impact viral fitness in a significant manner. Overall, these findings reinforced the lack of contribution of the humoral immune system to viremic control in elite controllers, and the relative importance of CD8 T cells in controlling viremia in HIV elite suppressors. These findings have direct implications for HIV cure studies and therapeutic vaccine development.

    a. Gaillard S, Dinoso JB, **Marsh** JA, DeZern AE, O'Connell KA, Spivak AM, Alwood K, Durand CM, Ambinder RF, Blankson JN. Sustained elite suppression of replication competent HIV-1 in a patient treated with rituximab based chemotherapy. J Clin Virol. 2011 Jul;51(3):195-8. PubMed PMID: 21550842; PubMed Central PMCID: PMC3117974.

2. **Enhancing the Immune Response to Persistent, quiescent HIV infection.** My current work has focused on enhancing the immune response to latent HIV infection. This work has several facets: 1) development of novel assays to detect an immunotherapeutic's ability to target and clear diverse antigen presented on rare, latently infected cells as they emerge from latency following exposure to latency reversing agents and 2) development and optimization of strategies to enhance the immune response to latent HIV infection in the lab 3) translation of the most promising immunotherapeutics from the bench to the bedside through design and implementation of pilot trials and 4) characterization of immune correlates of an effective anti-latency immune response, which generates critical data that will help inform therapeutic HIV vaccine development. As part of this work, I have developed two novel assays that I am now applying to the investigation of multiple immunotherapeutics, including 3 ongoing pilot clinical protocols, and has resulted in two first author publications, several abstracts, and 3 oral presentations given at an international meeting.

a. Archin NM, **Sung** JM, Garrido C, Soriano-Sarabia N, Margolis DM. Eradicating HIV-1 infection: seeking to clear a persistent pathogen. Nat Rev Microbiol. 2014 Nov;12(11):750-64. PubMed PMID: 25402363; PubMed Central PMCID: PMC4383747.

b. Lam S, **Sung** J, Cruz C, Castillo-Caro P, Ngo M, Garrido C, Kuruc J, Archin N, Rooney C, Margolis D, Bollard C. Broadly-specific cytotoxic T cells targeting multiple HIV antigens are expanded from HIV+ patients: implications for immunotherapy. Mol Ther. 2015 Feb;23(2):387-95. PubMed PMID: 25366030; PubMed Central PMCID: PMC4445615.

c. **Sung** JA, Lam S, Garrido C, Archin N, Rooney CM, Bollard CM, Margolis DM. Expanded Cytotoxic T-cell Lymphocytes Target the Latent HIV Reservoir. J Infect Dis. 2015 Jul 15;212(2):258-63. PubMed PMID: 25589335; PubMed Central PMCID: PMC4490234.

d. **Sung J**, Pickeral J, Liu L, Stanfield-Oakley S, Lam C, Garrido C, Pollara J, LaBranche C, Bonsignori M, Moody M, Yang Y, Parks R, Archin N, Allard B, Kirchherr J, Kuruc J, Gay C, Cohen M, Ochsenbauer C, Soderberg K, Liao H, Montefiori D, Moore P, Johnson S, Koenig S, Haynes B, Nordstrom J, Margolis D, Ferrari G. Dual Affinity Re-Targeting (DART) proteins direct T cells to mediate cytolysis of patients' latently HIV-infected cells. The Journal of clinical investigation. 2015 Nov 2;125(11):4077-90. doi: 10.1172/JCI82314. Epub 2015 Sep 28. PubMed PMID: 26413868; PubMed Central PMCID: PMC4639974.

Complete List of Published Work in My Bibliography:
http://www.ncbi.nlm.nih.gov/myncbi/1PSe1_v8RBqk4/bibliography/46362088/public/?sort=date&direction=ascending

D. Research Support

Ongoing Research Support

8/2015-4/2018
1KL2TR001109, National Center for Advancing Translational Sciences (NCATS)
Role: KL2 Scholar

Completed Research Support

5U19AI096113-02 (PI: Margolis) 7/2012-6/2015
Interventions to perturb and clear latent HIV infection
University of North Carolina, Chapel Hill
Role: Coinvestigator

T32 AI007001-37 (PI: Miller) 8/2013-8/2015
Training in Sexually Transmitted Diseases and HIV
University of North Carolina, Chapel Hill, NC
Role: Postdoctoral Research Fellow

BMS Virology Fellowship training (no number assigned) 7/2012-6/2014
The immune response and novel agents to destroy the latent reservoir of HIV
University of North Carolina, Chapel Hill
Role: Research Fellow