

THE MIDWINTER CONFERENCE OF IMMUNOLOGISTS POSTER ABSTRACT - 2005

Name: Chengyi Jenny Shu E-mail: jennyslu@gmail.com
Use same name on subject line of e-mail when transmitting abstract; **not** "Asilomar abstract."

In the box provided below, briefly summarize the theme of your abstract. **By Friday, December 17, 2004, send an electronic copy and a hard copy** with this signed form to Dr. Carl F. Ware, Division Molecular Immunology, La Jolla Institute for Allergy and Immunology, 10355 Science Center Drive, San Diego, CA 92121.

E-mail: carl_ware@liai.org.

All abstracts are accepted for poster presentation. Receipt of your abstract **will not** be confirmed.

(Poster size: 4'w x 4'h, maximum)

Do you approve that this abstract appears on the MCI web page?	YES (X)	NO ()
E-mail your abstract as requested above.		
Send this form with hard copy of abstract. Sign: <u>Chengyi Shu</u>	Date: <u>12/16/04</u>	

In Vivo Visualization of an Effective CTL Response to a Solid Tumor

Jenny Shu¹, Young J. Kim², Stephanie Shelley¹, Pritha Ray³, Sam Gambhir³, Owen Witte^{1,4}

¹Department of Microbiology, Immunology and Molecular Genetics, UCLA; ²Division of Head and Neck Surgery, David Geffen School of Medicine at UCLA; ³Department of Radiology Bio-X program, Stanford University School of Medicine; ⁴Howard Hughes Medical Institute, UCLA

Efficient anti-tumor immune responses rely on the generation of antigen-specific lymphocytes, as well as temporally and spatially well organized trafficking to the tumor site. Current methods to visualize effector cell migration during immune responses have depended on the adoptive transfer of labeled cells of interest into recipient animals. It has been difficult to dynamically quantify effector cell expansion against tumor burden in mice over extended periods of time. Our study demonstrates a new technique to study primary and secondary immune responses non-invasively under homeostatic conditions. Chimeric reporter mice were generated by introducing a bioluminescent and microPET reporter probe stably into hematopoietic stem cells, labeling early progenitor cells and mature myeloid and lymphoid populations. Mice were challenged with a virally-induced rhabdomyosarcoma tumor on the right forearm. MicroPET imaging captured the kinetic events of immune responses during a primary and secondary tumor challenge. [¹⁸F]FDG PET marked tumor growth and regression, and activated peripheral lymphoid tissues. [¹⁸F]FHBG PET collaborated with [¹⁸F]FDG images displaying signals at draining lymph nodes adjacent to the tumor site, and infiltration of immune cells into the tumor bed. Our study demonstrates the ability to non-invasively quantify cytotoxic lymphocyte expansion against tumor challenge; enabling evaluation of immune cell trafficking against disease pathogenesis and the effects of therapeutics in vivo.