

FINDING ANTIBODIES THAT NEUTRALIZE HIV

Beatrix M. Ueberheide¹, David Fenyo¹, Johannes F. Scheid¹, Michel C. Nussenzweig¹, **Brian T. Chait**¹

1 - Rockefeller University, NY

Passive transfer of broadly neutralizing HIV antibodies can prevent infection, which suggests that vaccines that elicit such antibodies would be protective. Thus far, however, few broadly neutralizing HIV antibodies that occur naturally have been characterized. Here, we describe an investigation of the broadly neutralizing response against the CD4 binding site of HIV on a monoclonal level. To determine whether these antibodies are part of a larger group of related molecules, we cloned 576 new HIV antibodies from four unrelated individuals. All four individuals produced expanded clones of potent broadly neutralizing CD4-binding site antibodies that mimic binding to CD4. The new antibodies share a consensus of 68 IgH chain amino acids and arise independently from two related IgH genes. This led to the identification and characterization of several “highly active anti-CD4 binding site antibodies” and their expanded B cell families^[1]. This presentation will highlight aspects of our mass spectrometric investigation that allowed us to compare for the first time the memory B cell and plasma cell compartments for these highly neutralizing protective antibodies.

¹ J.F. Scheid et al, *Science* 333 (2011) 1633-7.