Clonality of HTLV-2 in natural infection

Anat Melamed1*, Aviva D Witkover1, Rachael Brown1, Kristin Ladell2, Niall Gormley3, Edward L Murphy4, Graham P Taylor5, David A Price2, Charles RM Bangham1

From 16th International Conference on Human Retroviruses: HTLV and Related Viruses Montreal, Canada. 26-30 June 2013

We recently developed a high-throughput sequencing method for analysis and quantification of HTLV-1 integration sites in the host genome (Gillet et al, 2011, Blood). Using this method we investigated the effect of the genomic environment on integration targeting, clonal expansion and spontaneous HTLV-1 proviral expression (Gillet et al, 2011, Blood, Melamed et al, 2013, PLoS Pathogens). HTLV-2 preferentially infects CD8+ T cells, with a minority of the proviral load in CD4+ T cells. Here we describe the use of our high-throughput technique to investigate the distribution of HTLV-2 proviral integration sites in the host genome, in peripheral blood mononuclear cell (PBMC) DNA of HTLV-2 infected individuals (n=28). We also mapped and quantified proviral integration sites separately in flow-sorted CD4+CD8- and CD4-CD8+ populations. We quantified the clone frequency distribution and clonal survival over time in 10 individuals, using samples from 2 time points separated by a median of 10 years. The results show that the clone frequency distribution of HTLV-2 in PBMCs is distinct from that of HTLV-1 and resembles that of HTLV-1-infected CD8+ T cells. These results suggest that in both HTLV-1 and HTLV-2 infections, there is a greater degree of selective oligoclonal clonal expansion in infected CD8+ T cells than in CD4+ T cells. We are now investigating the selection forces that underlie this dichotomy between T cell lineages.

Authors’ details
1Section of Immunology, Imperial College London, Wright-Fleming Institute, Norfolk Place, London, UK. 2Institute of Infection and Immunity, Cardiff University School of Medicine, Cardiff, Wales, UK. 3Illumina, Chesterford Research Park, Essex, Little Chesterford, UK. 4University of California San Francisco, California, USA. 5Section of Infectious Diseases, Imperial College London, Wright-Fleming Institute, Norfolk Place, London, UK.

Submit your next manuscript to BioMed Central and take full advantage of:
• Convenient online submission
• Thorough peer review
• No space constraints or color figure charges
• Immediate publication on acceptance
• Inclusion in PubMed, CAS, Scopus and Google Scholar
• Research which is freely available for redistribution

© 2014 Melamed et al; licensee BioMed Central Ltd. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/2.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. The Creative Commons Public Domain Dedication waiver (http://creativecommons.org/publicdomain/zero/1.0/) applies to the data made available in this article, unless otherwise stated.