



ORAL PRESENTATION

Open Access

Exosomes derived from HTLV-1 infected cells contain the viral protein Tax

Aarhi Narayanan¹, Elizabeth Jaworski¹, Rachel Van Duyne^{1,2}, Sergey Iordanskiy^{1,2}, Irene Guendel¹, Ravi Das¹, Robert Currer¹, Gavin Sampey¹, Myung Chung¹, Kylene Kehn-Hall¹, Charles Bailey¹, Anastas Popratiloff³, Fatah Kashanchi^{1,2*}

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

Human T-lymphotropic virus type 1 (HTLV-1) is the causative agent of adult T-cell leukemia. The HTLV-1 transactivator protein Tax has been identified as a critical component in the proliferation and transformation of human primary T-cells. This 40 kDa phosphoprotein not only manipulates chromatin remodeling within the host, but also subverts host cell DNA damage response mechanisms, cell cycle progression, and apoptosis. Here we utilized a combination of filtration and ultracentrifugation methods to enrich for exosomes from culture supernatants of HTLV-1 infected cells. We then employed western blots, mass spectrometry, and cytokine arrays to proteomically characterize the host and viral components in these exosomes. Additionally, RT-PCR was used to determine the presence of viral transcripts in these exosomes. Our results demonstrate that exosomes derived from HTLV-1 infected cells contain traditional exosome proteins. Furthermore, our proteomics studies revealed that these exosomes contain viral components such as gp46 and Tax, as well as inflammatory mediators including IL-6 and IL-10. We also investigated the presence of HTLV-1 mRNA transcripts of Env, Tax, HBZ, and 5'LTR contained within exosomes. Moreover, we evaluated the functional impacts of treating naïve recipient cells with exosomes secreted from HTLV-1 infected cells, and determined that the exosomes were able to induce a response in reactive oxygen species production. Our observation that the viral protein Tax is contained within exosomes and may be transmitted in an extracellular capacity raises important

implications to pathogenesis associated with HTLV-1 infections.

Authors' details

¹Department of Molecular and Microbiology, National Center for Biodefense & Infectious Diseases, George Mason University, Manassas, VA, USA.

²Department of Microbiology, Immunology, and Tropical Medicine, The George Washington University Medical Center, Washington, DC, USA.

³Center for Microscopy and Image Analysis, The George Washington University Medical Center, Washington, DC, USA.

Published: 7 January 2014

doi:10.1186/1742-4690-11-S1-O46

Cite this article as: Narayanan *et al.*: Exosomes derived from HTLV-1 infected cells contain the viral protein Tax. *Retrovirology* 2014 **11**(Suppl 1):O46.

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

Submit your manuscript at
www.biomedcentral.com/submit



* Correspondence: fkashanc@gmu.edu

¹Department of Molecular and Microbiology, National Center for Biodefense & Infectious Diseases, George Mason University, Manassas, VA, USA
Full list of author information is available at the end of the article