

## Influence of pathogen-associated molecular patterns on HIV-1 latency

**Alberto Bosque**

University of Utah School of Medicine, USA

Pathogen-associated molecular patterns (PAMPs) are molecules present on microbes and are recognized by cells of the innate immune system to activate innate immune responses and protect the host from infections. PAMPs are recognized by Toll-like receptors (TLRs) and other pattern recognition receptors (PRRs). CD4 T cells have been shown to express TLRs, however the effects of PAMP recognition and its downstream signaling on the HIV-1 latent reservoir are largely unknown. We have developed a system whereby naive cells from the periphery of healthy donors are induced to undergo normal development *ex vivo* in the presence of select cytokine cocktails or antigenic stimulation through CD3/CD28. These cells are infected while in the activated state, and return to quiescence as central memory cells (TCM). Infection of these *ex-vivo* generated memory cells leads to latency with a high frequency (about 90% of infections) and leads to a polyclonal population of integrated viruses. Using this paradigm, we have explored the influence of PAMPs on HIV-1 latency in cultured TCM.

We have found that the triacetylated lipopeptide Pam3CSK4, a TLR2 agonist, can reactivate latently infected cultured TCM cells. Interestingly, other tested TLR2 agonists, such as the diacetylated lipopeptides Pam2CSK4 or FSL-1; the yeast cell wall glucan Zymosan or the heat-killed *Listeria monocytogenes* failed to induce reactivation of latent viruses. Moreover, LPS and Poly(I:C)LMW/LyoVecTM, TLR4 and RIG-I/MDA-5 ligands, respectively, reactivated latent HIV only in a subset of human blood donors. The mechanisms behind these differences are under investigation.

### Biography

Dr. Alberto Bosque is a Research Assistant Professor in the Department of Pathology at the University of Utah. He completed his Ph.D in Human Immunology at the University of Zaragoza, Spain. After completing his Ph.D, he undertook his postdoctoral training at University of Utah School of Medicine. In 2011, he became Research Assistant Professor at the Division of Microbiology and Immunology at the University of Utah. He has published more than 20 papers in reputed international journals, in the areas of apoptosis, autoimmunity and HIV-1 latency.

[alberto.bosque@path.utah.edu](mailto:alberto.bosque@path.utah.edu)