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Differential effects of in-vitro and in-vivo virus infection on Akt signalling in CD4+ T cells

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Apoptosis of immune cells is an important factor in pathogenesis of certain viral diseases. Specifically those viruses, which target directly immune cells - e.g. lymphocytes - manifest often, at least in part, with increased cell death with consequent immune deficits. Typically in the diseases like HIV infection, the virus targets CD4+ T cells, which then undergo apoptosis or activation induced cell death at an increasing rate. Conversely, there are viruses like varicella-zoster virus (VZV), which are not typically associated with infection of lymphocytes. However, the in vitro analysis shows, that VZV is capable of infecting CD4+ T cells at rates depending on the individual isolates and that the frequency of apoptotic cells is proportional to this rate. One of the major pathways involved in the regulation of apoptosis is the signaling centered around the kinase Akt. We use the in vivo SIV infection of non-human primates as a model of HIV infection together with the model of the in vitro VZV infection of CD4+ T cells to study the association of the rates of activation induced cell death (AICD) with signaling patterns of Akt-GSK3 pathways. These studies show, that differential phosphorylation of Akt at its individual phosphorylation sites plays a role in the response to the virus infection and presence or absence of AICD.This is one of a handful of recent studies indicating the activity of Akt can be specific to only one phosphorylation site and may be linked to the differences in AICD.

Biography

Pavel Bostik completed his MD at Charles University School of Medicine in Prague, Czech Republic in 1990 and his PhD at FMHS in Czech Republic.He conducted his postdoctoral studies the University of Iowa School of Medicine. He subsequently workedat the Emory University School of medicine in Atlanta, GA until 2009. He is the Vice Dean for Research at the FMHS and Professor at Charles University School of Medicine in Hradec Kralove, Czech Republic. He has published more than 50 papers in reputed journals.His focus is in the effect of viral infections on intracellular signaling in T cells.

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