

4th World Congress on Virology

October 06-08, 2014 Hilton San Antonio Airport, TX, USA

Varicella virus latency and reactivation in an animal model

Ravi Mahalingam
USA

Varicella zoster virus, an exclusively human herpesvirus, causes chickenpox in children establishes a latent infection in ganglia and reactivates decades later to produce zoster and associated neurological complications in the elderly. Development of an animal model is essential to study VZV pathogenesis, latency and reactivation. Pathological, virological and immunological features of simian varicella virus (SVV) infection in nonhuman primates are similar to VZV infection in humans. Experimental infection of African green monkeys (AGM) with SVV has been used to demonstrate hematogenous spread of virus to ganglia in the absence of varicella rash. During primary infection in AGMs, alveolar myeloid and T-cells are infected in lungs and during viremia SVV initially infects central memory and subsequently effector memory T-cells. SVV is found in perivascular skin infiltrates composed of macrophages, dendritic cells, dendrocytes and memory T-cells, implicating hematogenous spread. In ganglia, SVV is found primarily in neurons and occasionally in memory T-cells adjacent to neurons suggesting the role of memory T-cells in dissemination. Intrabronchial inoculation of Rhesus macaques with SVV provides the most useful model to study latency. Immunosuppressive treatments of monkeys latently infected with SVV results in zoster. T-cell infiltration in ganglia with reactivated SVV in cynomolgus macaques correlates with expression of CXCL10 transcripts but not with SVV proteins, suggesting that SVV-specific T-cells do not control reactivation in ganglia. Thus, SVV infection of nonhuman primates provide a way to dissect, at the molecular level, the cascade of cellular and immune factors during primary infection as well as reactivation.

Biography

Ravi Mahalingam completed his PhD in Southern Illinois University, USA in 1983 and did post-doctoral work in the Department of Microbiology and later in Department of Neurology, University of Colorado Health Sciences Center. He is a Research Professor at the Department of Neurology, University of Colorado Anschutz Medical Campus. He is also a PI in the program project grant from the National Institute of Aging titled "The Molecular Pathogenesis of Varicella Zoster Virus Infection".

Ravi.Mahalingam@ucdenver.edu