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Role of SNARE proteins in HIV-1 assembly and release

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Retrovirus assembly is a complex process that requires the orchestrated participation of viral components and host-cell factors. The concerted movement of different viral proteins to specific sites in the plasma membrane allows for virus particle assembly and ultimately budding and maturation of infectious virions. The soluble N-ethylmaleimide-sensitive factor attachment protein receptor (SNARE) proteins constitute the minimal machinery that catalyzes the fusion of intracellular vesicles with the plasma membrane, thus regulating protein trafficking. Using siRNA and dominant negative approaches we demonstrate here that generalized disruption of the host SNARE machinery results in a significant reduction in human immunodeficiency virus type 1 (HIV-1) and equine infectious anemia virus particle production. Further analysis of the mechanism involved revealed a defect at the level of HIV-1 Gag localization to the plasma membrane. Our findings demonstrate for the first time a role of SNARE proteins in HIV-1 assembly and release, likely by affecting cellular trafficking pathways required for Gag transport and association with the plasma membrane.

Biography

Dr. Anjali Joshi is a Research Instructor in the Department of Biomedical Science at Texas Tech University Health Sciences Center. She pursued her PhD in Feline Immunodeficiency virus from North Carolina State University, Raleigh, USA. Immediately after completing her PhD, she received four years of post doctoral training in the Lab of Dr. Eric Freed, Head of the viral assembly section at the National Cancer Institute, Frederick. At NCI, she worked on various aspects of retrovirus assembly including the role of cellular factors in this pathway, role of viral domains in determining the site and process of assembly and several basic aspects of cellular trafficking pathways and retrovirus biology.

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