

Lipid-dependent assembly and budding of emerging viral pathogens

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Lipid enveloped viruses replicate and bud from the host cell where they acquire their lipid coat. Lipid-enveloped viruses include dangerous pathogens such as coronaviruses (SARS-CoV-2, etc.), filoviruses (Ebola virus and Marburg virus) and paramyxoviruses (Nipah virus, Hendra virus, etc.). Despite understanding some of the basics of how these viruses cause disease and enter host cells, not much is known on how these dangerous pathogens interact with host cell lipids to achieve new virion formation. The viral matrix or membrane protein regulates assembly and budding from the host cell membrane, connecting the viral lipid envelope to the viral nucleocapsid. Depending on the virus family, this assembly and budding may occur at the plasma membrane or the ER-Golgi intermediate compartment. This presentation will detail the biophysical and biochemical basis of how these emerging pathogens hijack host lipid membrane and metabolic networks to form new virus particles that undergo release from the host cell.