

Abstract

Exosomes facilitate intercellular communication and transport of cellular cargo. Understanding the mechanisms underlying the cargo sorting to exosomes and the transport itself is crucial for vaccine development and diagnostic research. Exosome-mediated transfer contributes to immune response as well as progression of several diseases, including cancer and viral infections. Research on exosomes and their role in life cycles of tumorigenic viruses links already known mechanisms of viral carcinogenesis to the transport mechanisms of both cellular and viral proteins and nucleic acids. Epstein-Barr virus employs exosomes for transmission of the LMP1 oncoprotein and regulatory RNAs, whereas human immunodeficiency virus exploits cellular exosomal pathway for hijacking its membrane during budding, which helps it evade the immune system. It has been discovered that hepatitis C virus transfers its infectious virions between cells in exosomes. Exosomes containing oncoproteins and viral RNAs are also released from cells infected with other human tumorigenic viruses. However, mechanisms and implications of such events remain to be discovered.

Keywords: exosome, cancer, viral infection, tumorigenic viruses, immunity, intercellular communication, hepatitis C virus, Epstein-Barr virus, human immunodeficiency virus