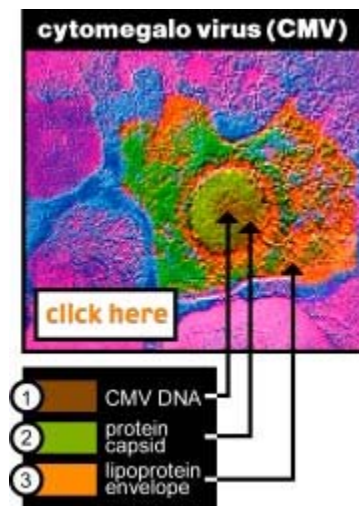


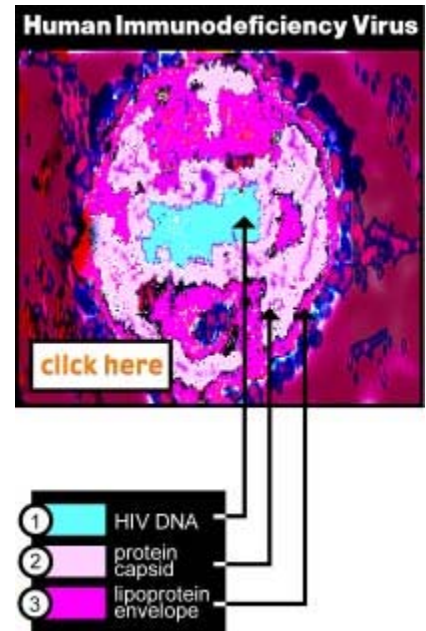
LIPID COATED VIRUS and BACTERIA

(LCVs) and Bacteria (LCBs) - Some of the microorganisms inactivated by the



lauric acid monoglycerides are listed in the table below. Many of the pathogenic organisms reported to be inactivated by these antimicrobial lipids are those known to be responsible for opportunistic infections in HIV-positive individuals. For example, concurrent infection with cytomegalovirus is recognized as a serious complication for HIV+ individuals.

The properties that determine the anti-infective action of these lipids are related to their structure; e.g., monoglycerides, free fatty acids. The monoglycerides are active, diglycerides and triglycerides are inactive. Of the saturated fatty acids, lauric acid has greater antiviral activity than either caprylic acid (C-8), capric acid (C-10) or myristic acid (C-14) for these viruses.



The antiviral action attributed to monolaurin is that of solubilizing the lipids and phospholipids in the envelope of the virus causing the disintegration of the virus envelope. In effect, it is reported that the fatty acids and monoglycerides produce their killing/inactivating effect by lysing the (lipid bilayer) plasma membrane. However, there is evidence from some recent studies that one antimicrobial effect of monolaurin is related to its interference with signal transduction in cell replication.

Table 1a Lipid Coated Viruses (LCVs)

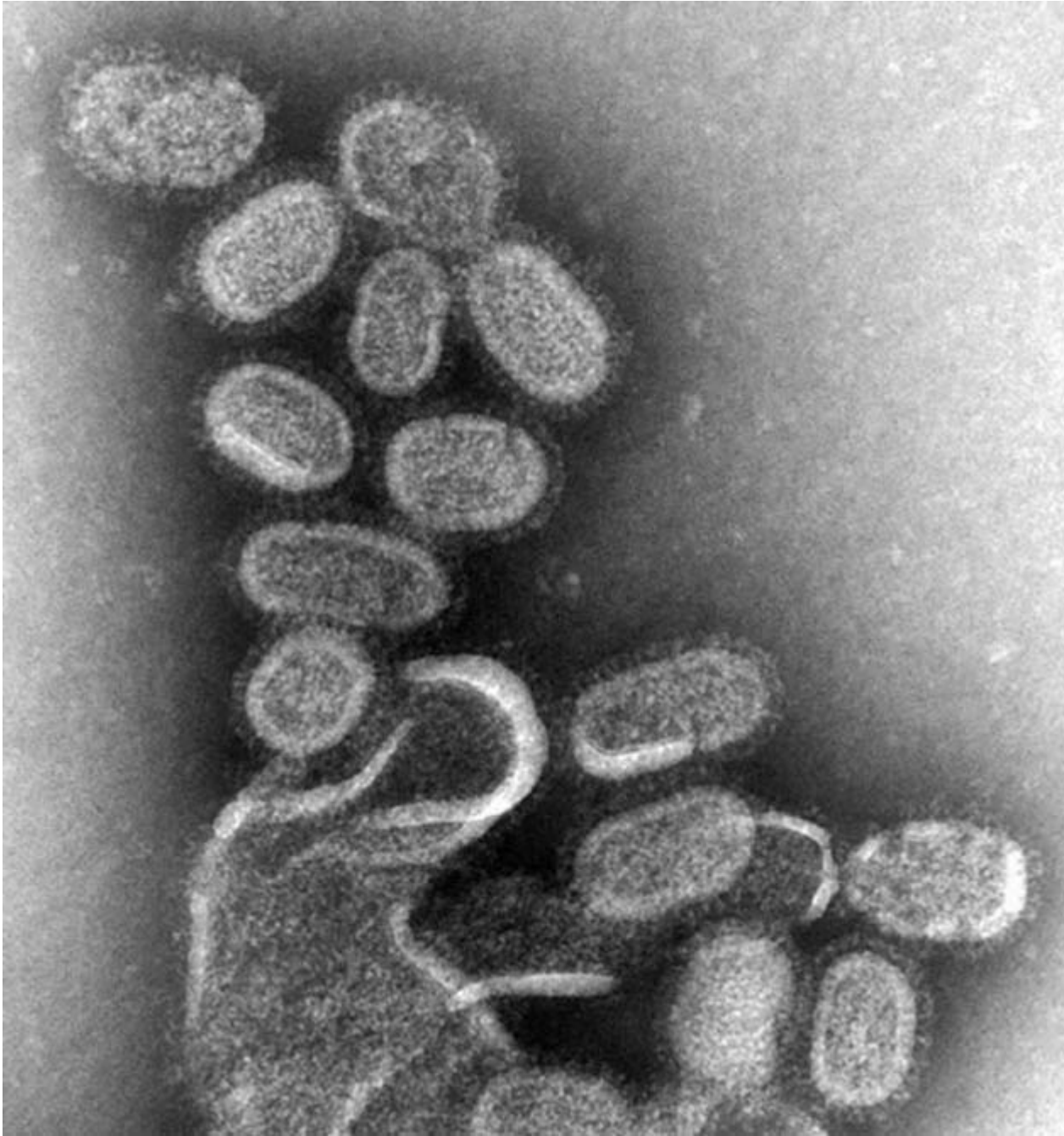
type	description
virus	Human immunodeficiency virus HIV-1 or HIV+
virus	Measles virus
virus	Herpes simplex virus-1 (HSV-1)
virus	Herpes simplex virus-2 (HSV-2)
virus	Herpes viridae (all)
virus	Human lymphotropic viruses (type 1)
virus	Vesicular stomatitis virus (VSV)
virus	Visna virus
virus	Cytomegalovirus
virus	Epstein-Barr virus
virus	Influenza virus
virus	Leukemia virus
virus	Pneumovirus
virus	Sarcoma virus
virus	Syncytial virus
virus	Rubeola virus

Table 1b Lipid Coated Bacteria (LCBs)

type	description
bacterium	Listeria monocytogenes
bacterium	Helicobacter pylori (gram negative)
bacterium	Hemophilus influenzae (gram negative)
bacterium	Staphylococcus aureus
bacterium	Streptococcus agalactiae
bacterium	Groups A,B,F & G streptococci
bacterium	Gram-positive organisms
bacterium	Gram-negative organisms if pretreated with chelator

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Recreated influenza virions from the 1918 flu that killed an estimated 50 million people. Credit: CDC/Terrence Tumpey