

Picornavirus

Picornaviruses are non enveloped, single stranded positive sense RNA viruses with an icosahedral capsid. These viruses encode all of their viral proteins in one single, long, open reading frame and form one large polypeptide that is cleaved by proteases. This virus family includes many important human pathogens including enteroviruses and rhinoviruses. Enteroviruses infect the enteric tract, replicate at 37 degrees C, and are stable under acid conditions like the stomach whereas rhinoviruses replicate better at 33 degrees C and are inactivated or destroyed by low pH conditions. Therefore, rhinoviruses infect and are restricted to the nose and throat and cause the common cold. Enteroviruses that cause human disease include poliovirus, echovirus, coxsackievirus, and hepatitis A virus.



PLAY PICMONIC

Characteristics

Non-enveloped

Nun-envelope

These viruses do not have an envelope covering their protein capsid.

RNA Virus

RNA-rhino

The picornaviruses have RNA genomes.

Icosahedral

Ice-cathedral

This virus has an icosahedral protein capsid with 20 identical equilateral triangular faces.

Positive Sense

Positive-cross

Single stranded positive sense linear viruses have their genome directly utilized as mRNA. Host ribosomes translate the RNA genome directly into a single protein that is modified by host and viral proteins to form the various proteins necessary for replication.

A large polypeptide cleaved by proteases

String of Peptides Cleaved by Propeller-ace

These viruses encode all of their viral proteins in one single, long, open reading frame and form one large polypeptide that is cleaved by proteases.

Viruses

Rhinovirus

Rhino-virus

Rhinoviruses are different than the entero picornaviruses because rhinoviruses replicate better at 33 degrees C and are inactivated or destroyed by low pH conditions. Therefore, rhinoviruses infect and are restricted to the nose and throat and cause the common cold.

Poliovirus

Polio-player

This virus is the causative agent of poliomyelitis, which can infect the central nervous system, preferentially infecting and destroying motor neurons causing muscle weakness and paralysis.

Coxsackievirus

Cock-in-sack

Coxsackievirus is a picornavirus that can cause a wide variety of human diseases including hand foot and mouth disease, aseptic meningitis, and febrile pharyngitis. This virus is also associated with type 1 diabetes and dilated cardiomyopathy.

Hepatitis A Virus

Happy-tie-liver Apple

This virus is a member of the picornavirus family and is usually asymptomatic but can cause an acute hepatitis. Like the other enteroviruses, it is transmitted via fecal-oral route. This virus does not cause a chronic hepatitis.

Echovirus

Yodeling Echo-virus

Echovirus is a common cause of aseptic meningitis, which is inflammation of the meninges without a pyogenic bacterial source.

Aseptic meningitis

Apple-scepter Men-in-tights

Echovirus is a common cause of aseptic meningitis, which is inflammation of the meninges without a pyogenic bacterial source.