

# RNA VIRUSES, HUMAN

13 Aug 2008, 12 Aug 09  
Bauman 2<sup>nd</sup>, p 704-738

## HUMAN RNA VIRUSES, Table: p 738

### NAKED, POSITIVE ssRNA VIRUSES

#### PICORNAVIRUSES:

Rhinovirus p 704

**Common cold:** caused in decreasing frequency by : rhinoviruses, paramyxoviruses, enteroviruses, coronaviruses, reoviruses, adenoviruses. Single virus can infect... Can be mixed infection.  
**Portal of Entry:** mucous membrane of nose and eyes, finger introduces. Person to person most common.

Enteroviruses p 706

**Poliomyelitis:** fecal-oral transmission "polio water." 90% asymptomatic. >2% paralytic polio.

Vaccines: **Salk:** killed cells injected

**Sabin:** attenuated live cells orally (prob with reversion?)

**Foot & mouth Dis:** mostly eradicated, but highly contagious in livestock (many thousands animals slaughtered in Britain in 2001)

**Gastroenterovirus:** 10% of all Giiitis. Norwalk-like or noroviruses.

[http://biology.clc.uc.edu/fankhauser/Labs/Microbiology/Norwalk\\_viruses.htm](http://biology.clc.uc.edu/fankhauser/Labs/Microbiology/Norwalk_viruses.htm)

Incubation 24 hrs, diarrhea, nausea, vomiting. Resolve in 12-60 hrs.

**Hepatitis A and E:** (table of hepatitis infections on p 709) resist chlorine etc disinfectants. Infect hepatocytes, which are then killed by immune system leading to fever, fatigue, nausea, anorexia, jaundice. Incubation period one month. Complete recovery 99% time.

#### ENVELOPED, POSITIVE ssRNA

Togaviruses p 710

##### Encephalitis

because enveloped in membrane "cloak" Many are arboviruses (arthropod born viruses) Variety of diseases, Eastern Equine Encephalitis EEE), Western EE

**West Nile Disease.** 80% asymptomatic. Spread by mosquitoes, especially Asian Tiger Mosquito:

([http://biology.clc.uc.edu/fankhauser/Animals/mosquitoes/Aedes\\_albopictus.html](http://biology.clc.uc.edu/fankhauser/Animals/mosquitoes/Aedes_albopictus.html))

Dengue Fever 713

"Break bone fever" because of pain associated with it. Aedes mosquito spread, tropical, 100 mil people afflicted, usually self limiting in a week.

Yellow Fever 712

intestinal bleeding causes "black vomit." Liver damage = jaundice. 20% mortality. Mosquito control eliminates it. Walter Reed elucidated cause.

Rubella 713

German measles, "three day measles," crosses the placenta. Teratogen: deafness, blindness, low IQ, microcephaly, fetal death.

Coronavirus 715

2<sup>nd</sup> most cause common cold, spread by aerosol.

SARS (severe acute respiratory syndrome): highly infectious, 5-8% mortality.

#### RETROVIRUSES

Enveloped +ssRNA, with reverse transcriptase (p 715) Virus contains:

two strands of ssRNA, two tRNAs, reverse transcriptase, protease, integrase.

HIV 719

**Human Immunodeficiency Virus:** Primarily parenteral POE, through wound or sore. Attaches to CD4 receptor on T cells, uncoating, dsDNA synthesized, integrated into host chromosome, latency, synthesis and assembly, budding to release viruses. Loss of T cells leads to Acquired Immune Deficiency Syndrome, opportunistic infections and rare cancers leading to death from many causes. Parenterally transmitt

Dangerous activities

In decreasing degree of risk: sharing needles, anal sex, rough forced sex, consensual sex in presence of lesions, consensual sex without lesions. Oral sex carries little risk. (Some disagree, but data is scant)

#### ENVELOPED, NEGATIVE ssRNA Paramyxoviruses, Rhabdoviruses, Filoviruses

Measles 726

Koplik's spots ("salt grains surrounded by red halo) pathognomic, spread by droplet aerosols, maculopapular rash from head to rest of body.

Mumps 727

infection of salivary glands, testes. Recovery usually complete.

Rabies 728

zoonotic disease, usually parenterally (a bite), causes CNS degeneration (Negri bodies), hydrophobia due to painful spasms of the esophagus.

Hemorrhagic Fvr 730

Ebola, Marburg, parenteral transmission, viral glycoprotein prevents cells from adhering to each other, blood leaks out of vessels. 90% death rate.

Influenza 731-734

H = hemagglutinin, N = neuraminidase. Alterations in H and N make virus undetected by immune system until after infection. **1918:** New antigens: H1N1, killed 20 million world wide. More troops died of flu than combat. 1957, "Asian" flu pandemic: H2N2, 1968 "Hong Kong" flu: H3N2, 1976 swine flu in recruits: H1N1.