

SUMMARY

GENERAL PROPERTIES OF VIRUSES

- Viruses do not have cellular organization.
- one type of nucleic acid, either DNA or RNA, but never both.
- obligate intracellular parasites.
- lack the enzymes necessary for protein and nucleic acid synthesis and are dependent for replication on the synthetic machinery of host cells.
- multiply by a complex process and not by binary fission
- Range in sizes from 20 – 250 nanometers(.02-.23um)
- Unaffected by antibiotics.

CLASSIFICATION:

I: **dsDNA viruses** (e.g. Adenoviruses, Herpesviruses, Poxviruses)

II: **ssDNA viruses** (+ strand or "sense") DNA (e.g. Parvoviruses)

III: **dsRNA viruses** (e.g. Reoviruses)

IV: **(+)ssRNA viruses** (+ strand or sense) RNA (e.g. Picornaviruses, Togaviruses)

V: **(-)ssRNA viruses** (- strand or antisense) RNA (e.g. Orthomyxoviruses, Rhabdoviruses)

VI: **ssRNA-RT viruses** (+ strand or sense) RNA with DNA intermediate in life-cycle (e.g. Retroviruses)

VII: **dsDNA-RT viruses** DNA with RNA intermediate in life-cycle (e.g. Hepadnaviruses)

STRUCTURE:

- Virus particle = virion
- Protein which coats the genome = capsid
- Capsid usually symmetrical
- Capsid + genome = nucleocapsid
- May have an envelope
- Capsid protects NA. Its antigenic.

In non-enveloped virus capsid initiates attachment to host cells for entry

PROPERTIES OF NAKED VIRUS

Stable in hostile environment

- Not damaged by drying, acid, detergent, and heat
- Released by lysis of host cells
- Can sustain in dry environment
- Can infect the GI tract and survive the acid and bile
- Can spread easily via hands, dust, fomites, etc
- Neutralizing mucosal and systemic antibodies are needed to control the establishment of infection

VIRAL REPLICATION

- ADSORPTION
- PENETRATION
- UNCOATING AND ECLIPSE
- SYNTHESIS OF VIRAL NUCLEIC ACID & PROTEIN
- ASSEMBLY
- RELEASE

TRANSMISSION:

Feco – Oral

Respiratory

Sexual

Congenital

Blood borne.

CLINICAL SPECTRUM & IMMUNE RESPONSE

LABORATORY DIAGNOSIS

- Direct Demonstration
- Detection of viral antigen
- Detection of antibodies
- Molecular methods
- Isolation of virus