An Introduction to the Viruses "Medical Virology"

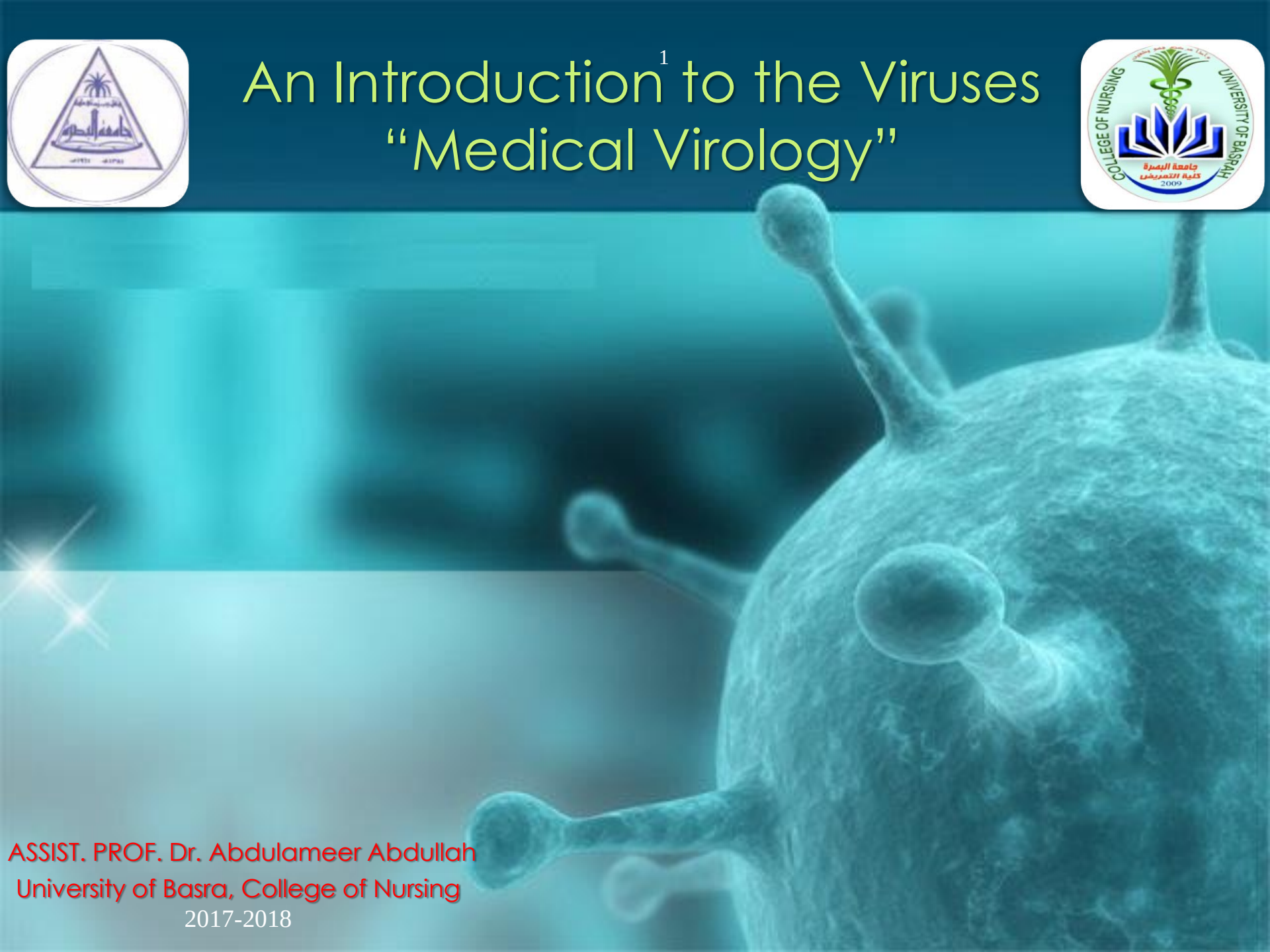

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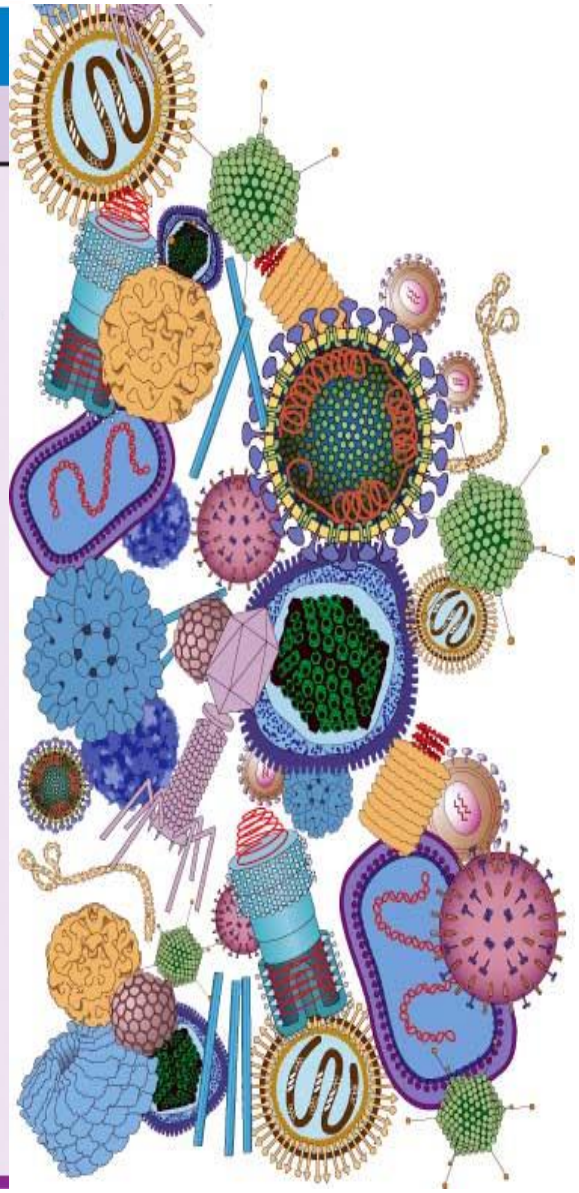
TABLE 6.1

Novel Properties of Viruses

- Are obligate intracellular parasites of bacteria, protozoa, fungi, algae, plants, and animals.
- Ultramicroscopic size, ranging from 20 nm up to 450 nm (diameter).
- Are not cells; structure is very compact and economical.
- Do not independently fulfill the characteristics of life (see chapter 2).
- Are inactive macromolecules outside of the host cell and active only inside host cells.
- Are geometric; can form crystal-like masses.
- Basic structure consists of protein shell (capsid) surrounding nucleic acid core.
- Nucleic acid can be either DNA or RNA but not both.
- Nucleic acid can be double-stranded DNA, single-stranded DNA, single-stranded RNA, or double-stranded RNA.
- Molecules on virus surface impart high specificity for attachment to host cell.
- Multiply by taking control of host cell's genetic material and regulating the synthesis and assembly of new viruses.
- Lack enzymes for most metabolic processes.
- Lack machinery for synthesizing proteins.



Size of viruses

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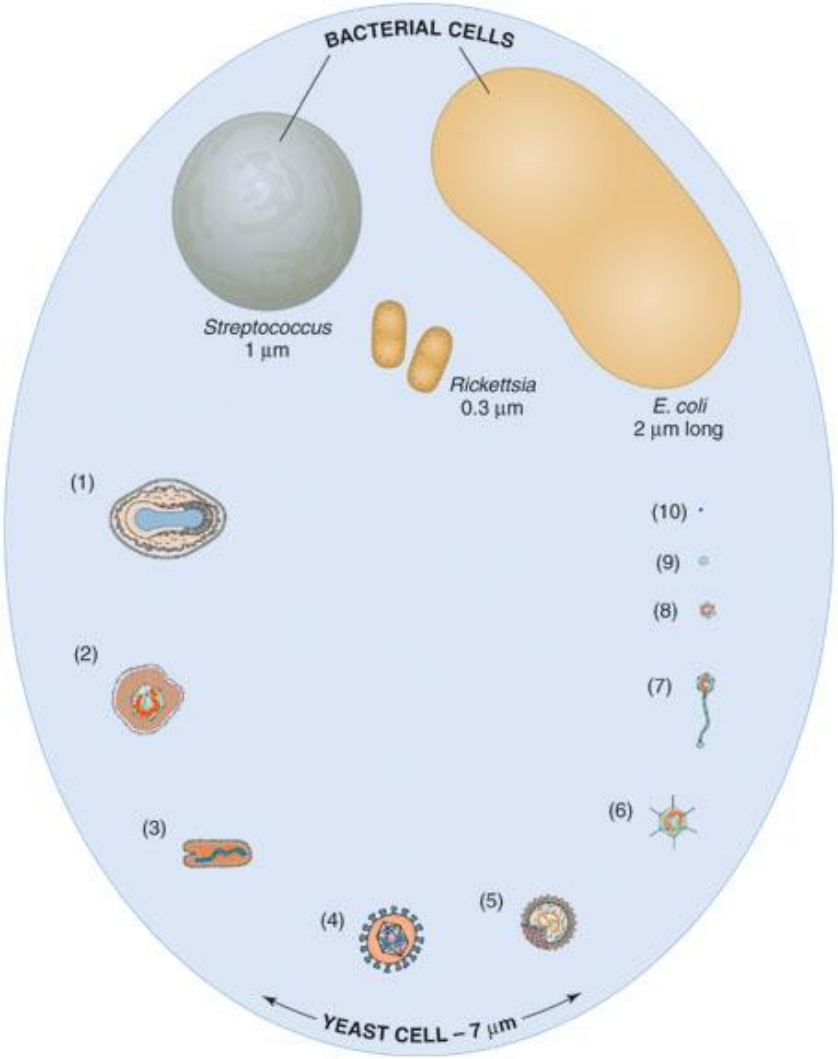
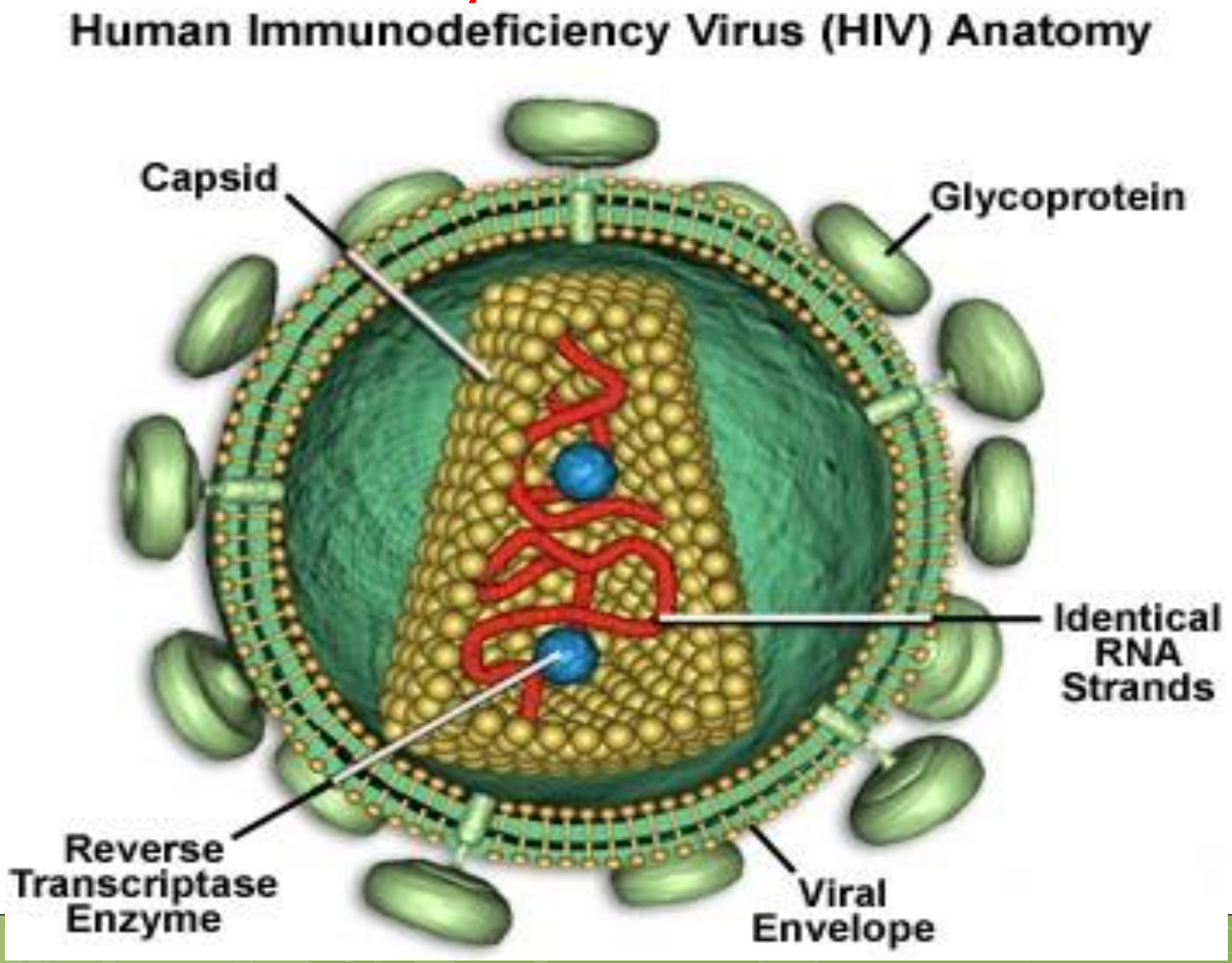


Viruses	
1. Poxvirus	250 nm
2. Herpes simplex	150 nm
3. Rabies	125 nm
4. HIV	110 nm
5. Influenza	100 nm
6. Adenovirus	75 nm
7. T2 bacteriophage	65 nm
8. Poliomyelitis	30 nm
9. Yellow fever	22 nm
Protein Molecule	
10. Hemoglobin molecule	15 nm

Anatomy of Virus



Naming viruses

- No taxa above Family (no kingdom, phylum, etc)
- 19 families of animal viruses
- Family name ends in -viridae , Herpesviridae
- Genus name ends in -virus, Simplexvirus
- Herpes simplex virus I (HSV-I)

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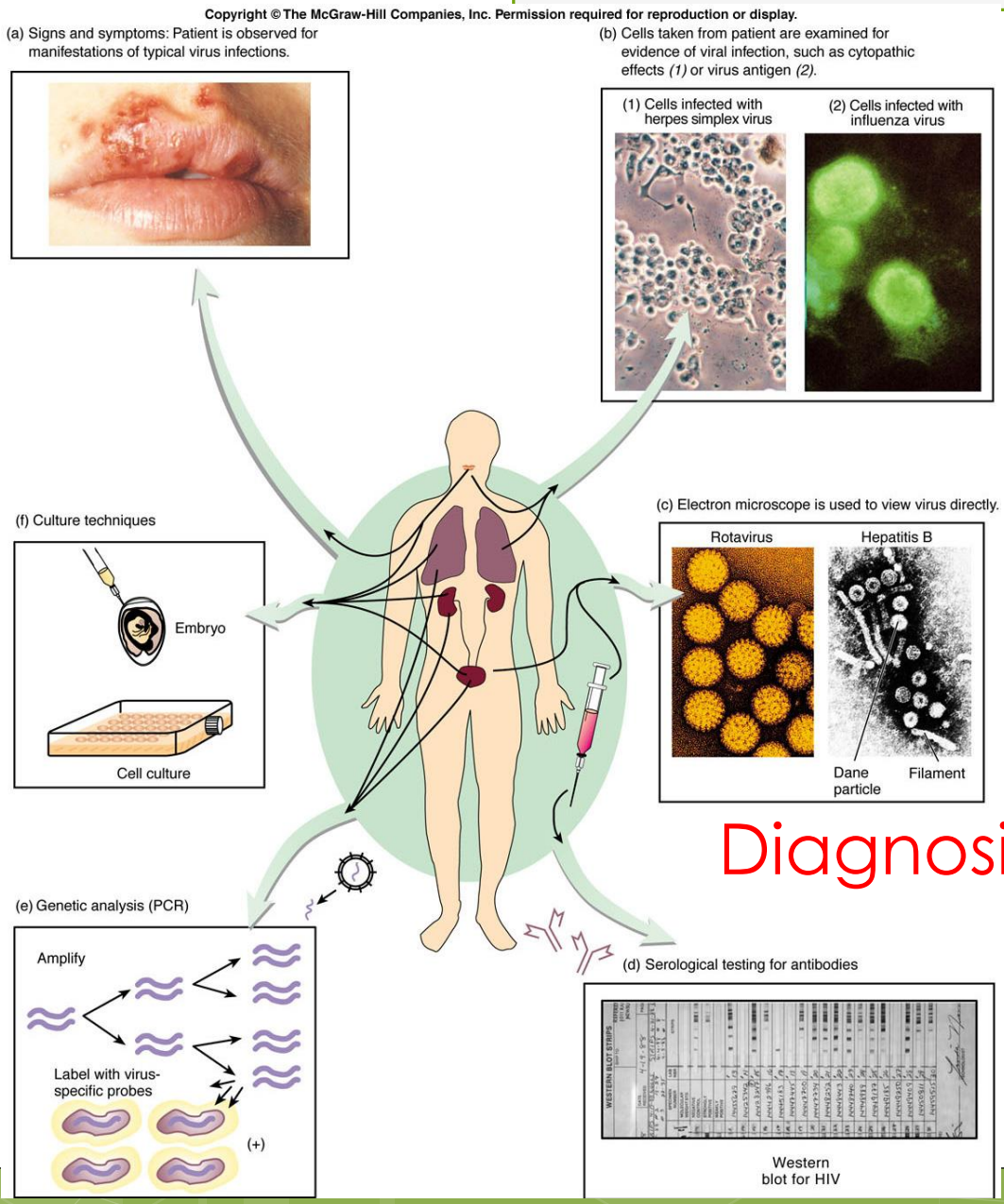
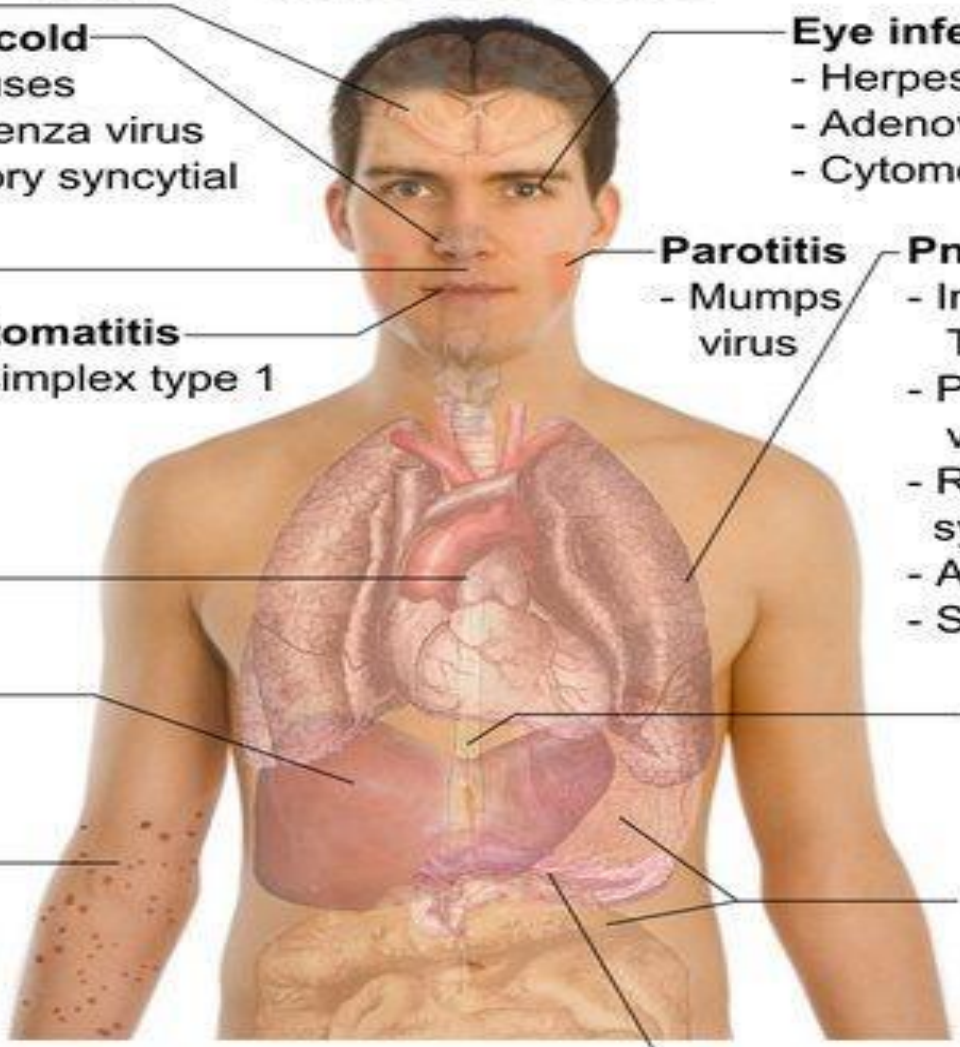


Diagnosis of Viruses

Overview of Viral infections



Encephalitis/ meningitis
- JC virus
- Measles
- LCM virus
- Arbovirus
- Rabies

Common cold
- Rhinoviruses
- Parainfluenza virus
- Respiratory syncytial virus

Eye infections
- Herpes simplex virus
- Adenovirus
- Cytomegalovirus

Parotitis
- Mumps virus

Pneumonia
- Influenza virus, Types A and B
- Parainfluenza virus
- Respiratory syncytial virus
- Adenovirus
- SARS coronavirus

Pharyngitis
- Adenovirus
- Epstein-Barr virus
- Cytomegalovirus

Gingivostomatitis
- Herpes simplex type 1

Cardiovascular
- Coxsackie B virus

Hepatitis
- Hepatitis virus types A, B, C, D, E

Myelitis
- Poliovirus
- HTLV-I

Skin infections
- Varicella zoster virus
- Human herpesvirus 6
- Smallpox
- Molluscum contagiosum
- Human papillomavirus
- Parvovirus B19
- Rubella
- Measles
- Coxsackie A virus

Gastroenteritis
- Adenovirus
- Rotavirus
- Norovirus
- Astrovirus
- Coronavirus

Sexually transmitted diseases
- Herpes simplex type 2
- Human papillomavirus
- HIV

Pancreatitis
- Coxsackie B virus