

Viruses

Biology

Viruses

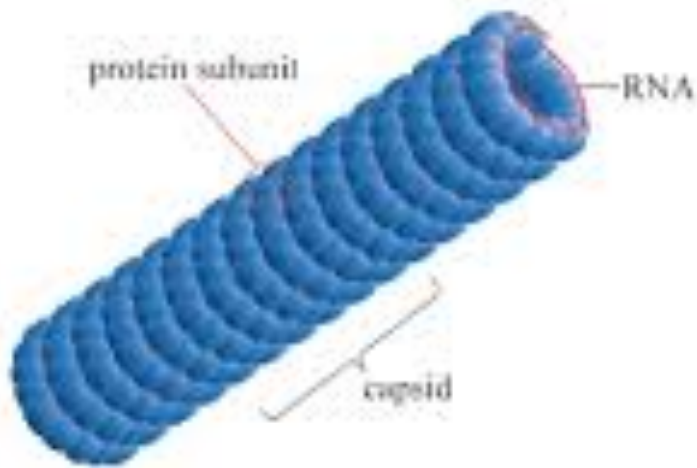
- Nonliving particles
- Not cells
- Don't exhibit all the criteria for life:
 - No respiration
 - Don't grow
 - Don't develop
- **ONLY REPLICATE**, with help from a living Host
- Smaller than Bacteria

Viral Structure

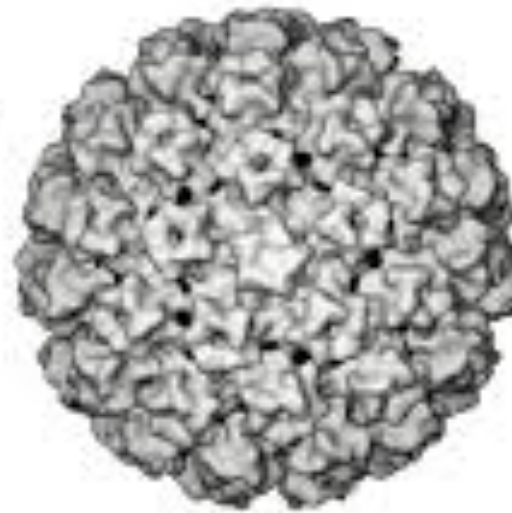
- Inner core of nucleic acid (**RNA or DNA**), only 4 genes
- Outer coat of protein called a **Capsid**
 - Arrangement of proteins in capsid determines the viruses shape
 - 4 different Viral shapes:
 1. Polyhedral Viruses – resemble small crystals (papilloma virus causes warts)
 2. Long, narrow helical shape (tobacco mosaiv virus)
 3. Envelope studded with projections (Influenza virus, HIV)
 4. Polyhedral-shaped head attached to a cylindrical tail with leg-like fibers (T_4 virus, which infects *E. coli*)

Viral Shapes

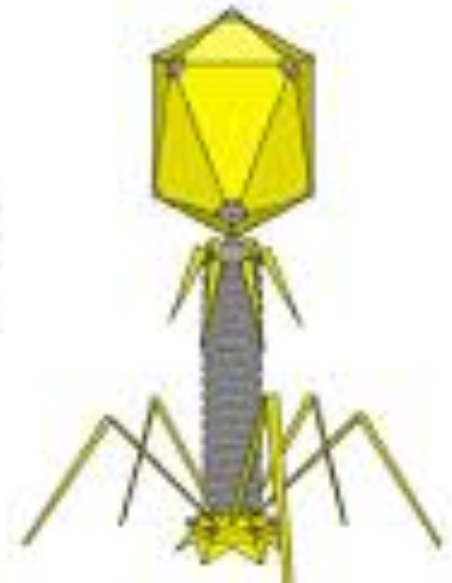
Helical



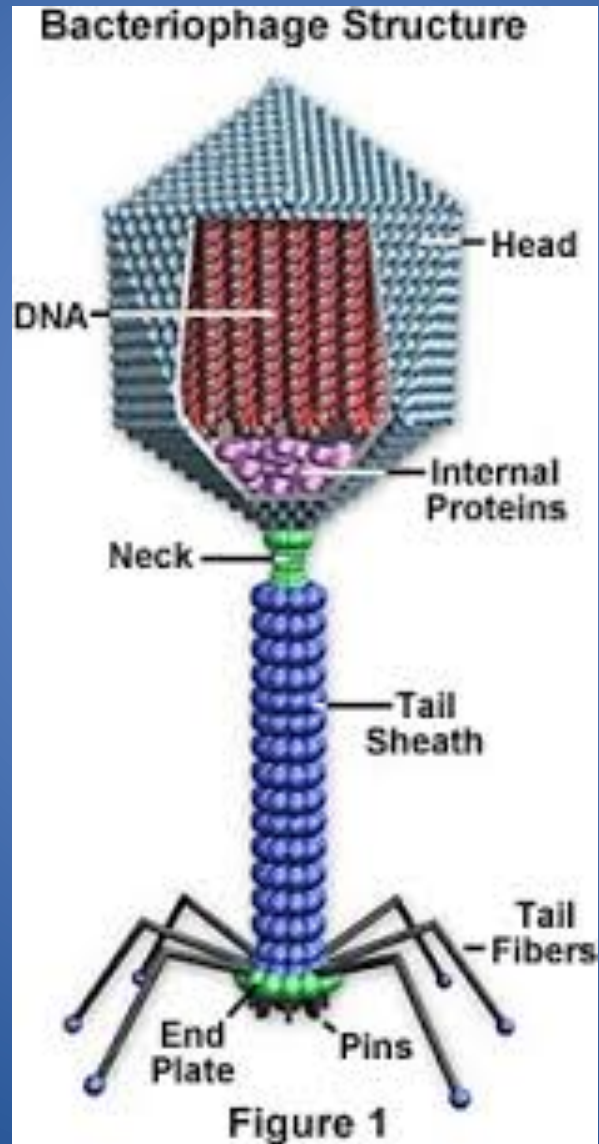
Icosahedral



Complex



Bacteriophage



Viral Shapes



Chapter 19 25

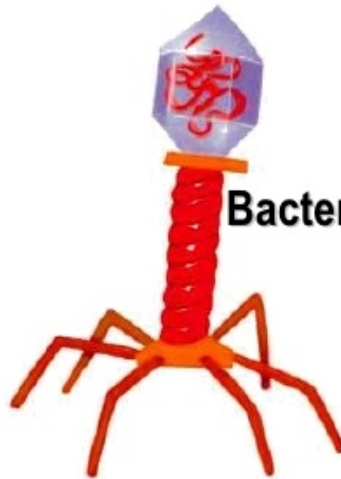
Viruses Come in Many Shapes



Rabies



Herpes



Bacteriophage

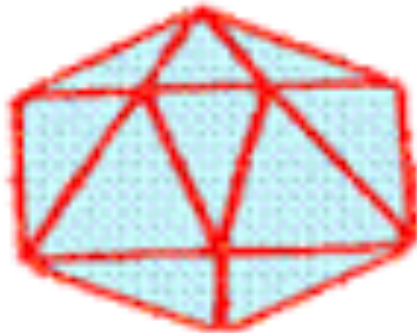


Measles

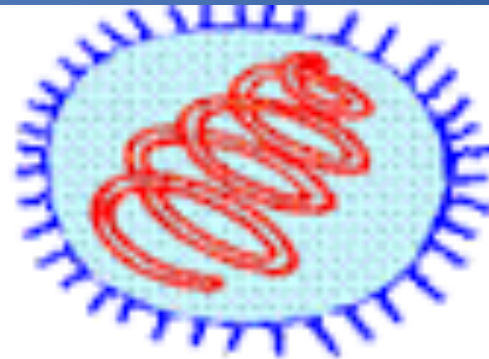


Tobacco Mosaic

Viral Shapes



ADENO VIRUS



INFLUENZA VIRUS

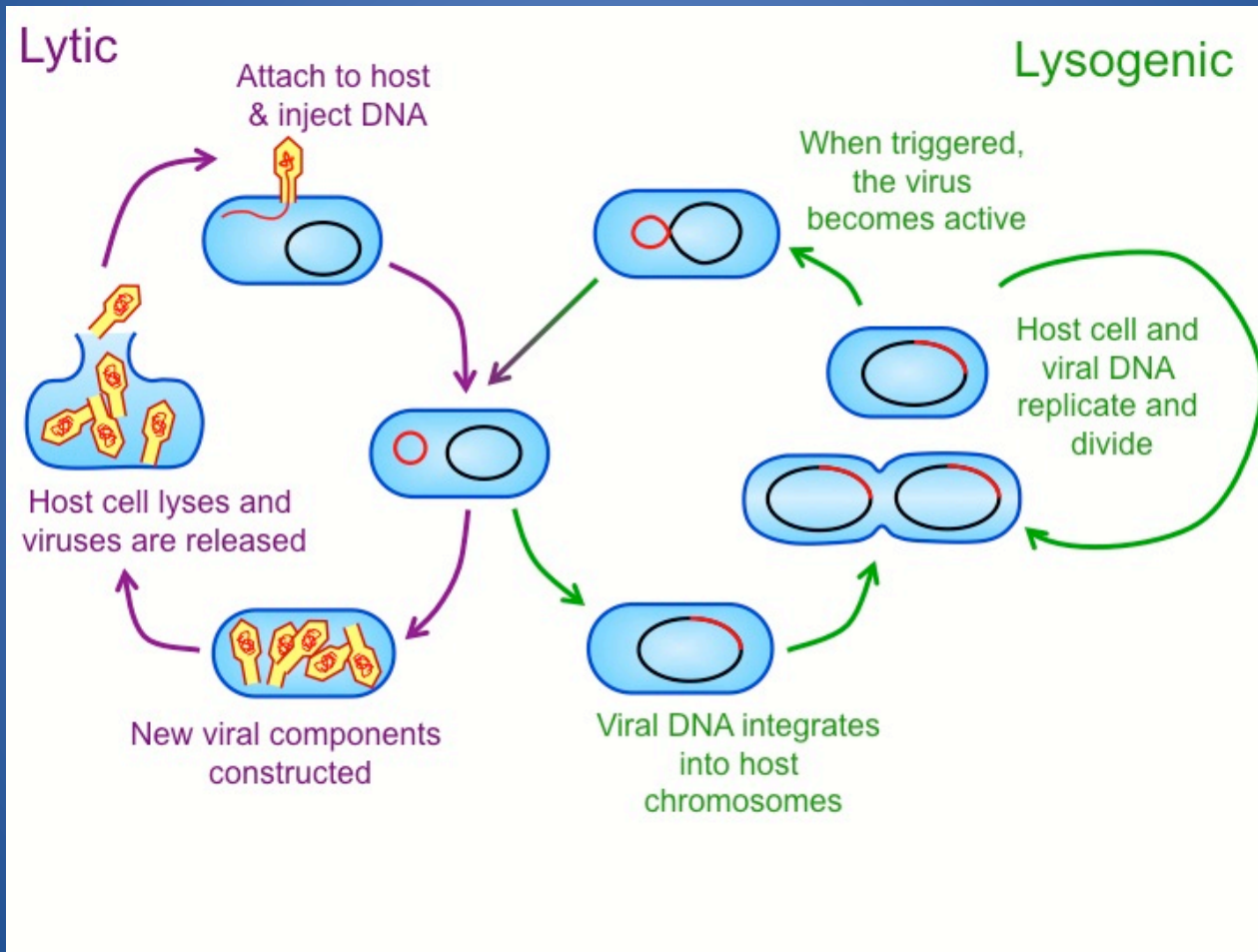


TOBACCO MOSAIC
VIRUS (TMV)

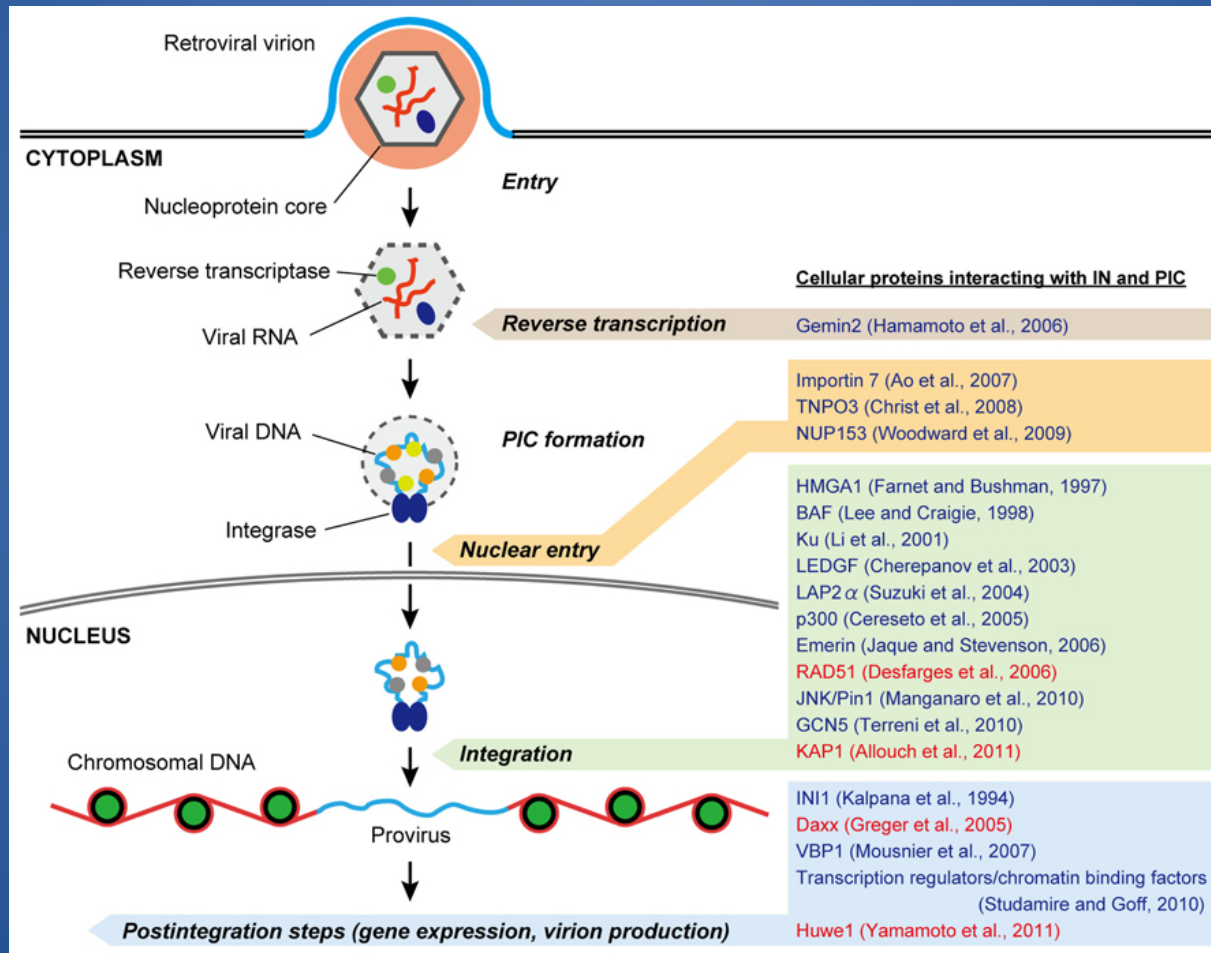


BACTERIOPHAGE

Viral Replication



Retroviruses

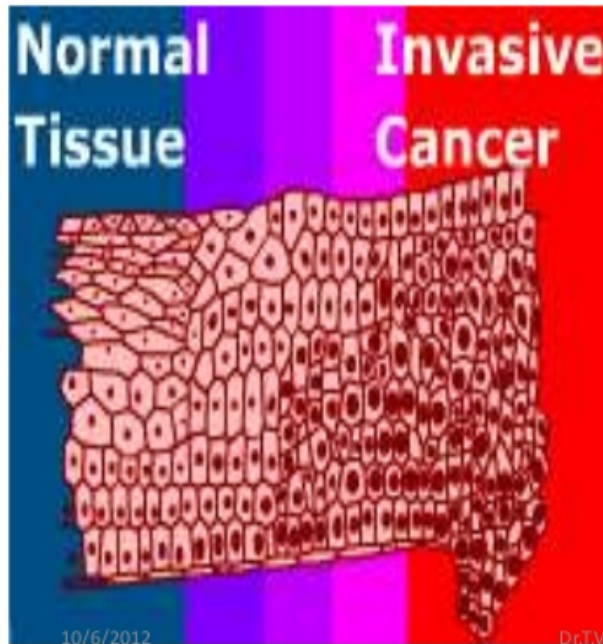


Tumor Viruses cause Cancer

- Retroviruses
- Papilloma DNA virus (Warts) cause Cervical cancer in women
- Hepatitis B virus (DNA) cause Liver cancer

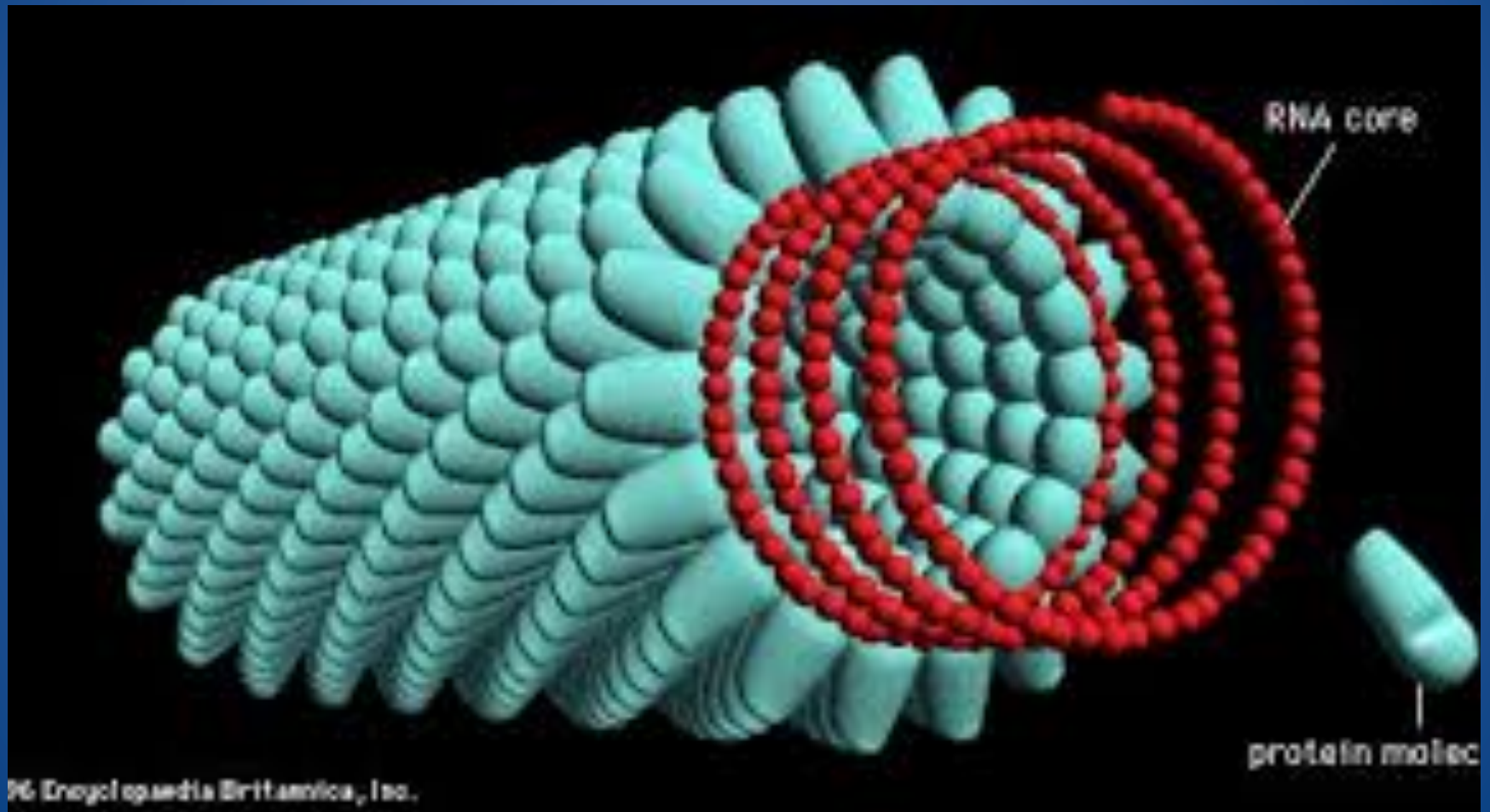
Cancer

Oncogenic viruses may be RNA or DNA



- 20% of human cancers believed to be of viral origin
- These include:
 - Cervical cancer
 - Burkitt's lymphoma
 - Hepatocarcinoma
 - Kaposi's sarcoma
- Virus is not only factor

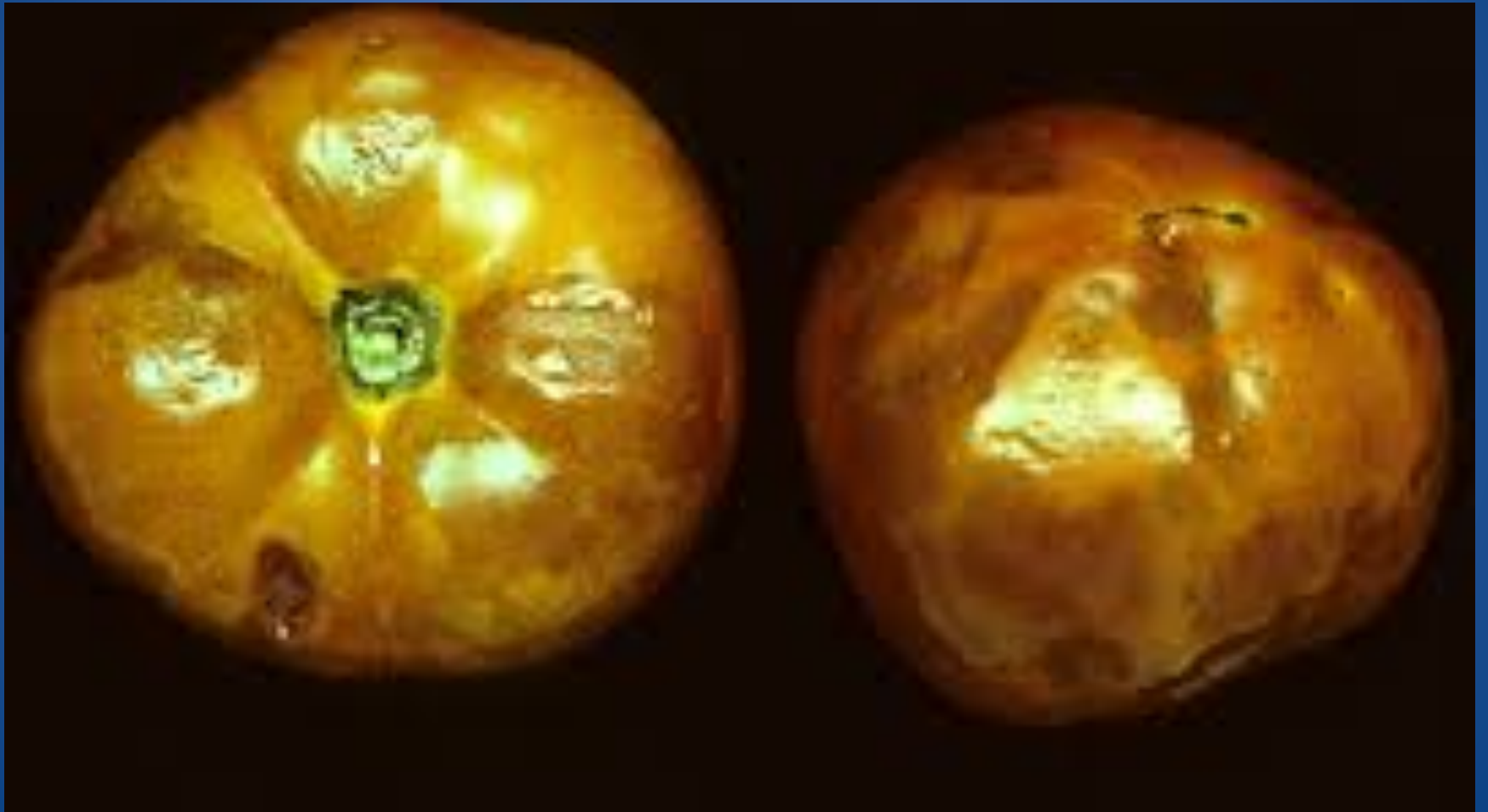
Plant Viruses



Tobacco Mosaic Virus



Tomatoes



Favorable Plant Viruses



Tulip



Plant Viruses producing striking color

