Definitions I

- Primary cells: cell directly extracted from organisms
- Tissue culture: cell culture using antibiotics to sustain cell vitality/growth
- Immortal cells: cells (i.e., from a multicellular organism) that have mutations which disrupt the normal process of senescence and continue to divide (i.e., in vitro)
- Lytic cycle: active replication of viral genomes leading to the formation of new virus particles and release from cells via cell lysis (destruction)
- Lysogeny[용원성]: the integration of a quiescent viral genome into a host genome, the former of which may be transmitted vertically
- Integrase/transposase: enzymes that insert viral DNA/genomes into host DNA/genomes
- Insertional mutagenesis: mutations in a cell caused by inserting DNA such as viral DNA into the host chromosome
- Plasmid: a self-replicating autonomous chromosome in a cell
- Repressors: proteins (e.g., viral protein) that inhibit transcription of particular genes
- Induction: inactivation of repressors so that transcription can ensue
- Effectors: factors that induce transcription
- Transduction: the acquisition (and delivery) of cellular genes by viruses; (e.g., transmission of proto-oncogenes)
- Episome: an exogenous genetic element knot necessary for cell survival; genomes residing in cells that do not integrate

Viruses: Molecular parasites whose replication depends on host biosynthetic machinery for synthesizing the components from which they are assembled

Definition II

- Insertional Mutagenesis: mutations in a cell caused by inserting DNA such as viral DNA into the host chromosome
- Plasmid: a self-replicating autonomous chromosome in a cell
- Repressors: proteins (e.g., viral proteins) that inhibit transcription of particular genes
- Induction: inactivation of repressors so that transcription can ensue
- Effectors: factors that induce transcription
- Transduction: the acquisition (and delivery) of cellular genes by viruses; (e.g., transmission of proto-oncogenes)
- Episome: an exogenous genetic element not necessary for cell survival; genomes residing in cells that do not integrate

Central Dogma? - The principle that direction of genetic information processes DNA → RNA → Protein

- DNA → RNA (transcription)
- RNA → Protein (translation)

Genome Types and Polarity

+DNA

↓

(+RNA → -DNA)→ +-DNA
convert ↓(central dogma)
(+RNA → -RNA)→ +mRNA ← +-RNA
↑
-RNA

Definition III

- Viroid: infectiou, short-strands of nucleic acid (i.e., RNA) that are not surrounded by a protein coat but can self-replicate using host enzymes and cause disease; mostly observed in plants, however, hepatitis D in humans is caused by a viroid
- Prion: subviral infectious agent consisting only of protein that cause disease in animals
- Satellite: subviral agent composed of nucleic acid that depend upon the co-infection of a host cell by a “helper’ or ‘master’ virus for replication
- ↑↓ (synonymous ???)
- Satellite Virus: small virus that requires a helper virus for replication

Definition IV

- Capsid: protein shell of a virus that contains the viral genome
- Capsomeres: basic protein-based subunits that aggregates to form capsids and may or may not correspond to individual proteins
- Protomer: basic protein-based oligomeric structural subunits that form capsomeres
- Nucleocapsid: a capsid packaged with nuclei acid (i.e., the viral genome)
- Envelope: lipid membrane coat surrounding the capsid derived from host cell membrane structures including nuclear membrane, Golgi membrane or inner leaf of the plasma membrane
- Virion: a fully-assembled and functional (i.e., infectious) virus particle

All viral genomes are packaged inside particles that mediate their transmission from host to host.
The viral genome contains information for initiating and completing an infectious cycle within a susceptible, permissive cell.
An infectious cycle includes attachment, entry, decoding of genome information, translation of viral mRNA by host ribosomes, genome replication, assembly of new virus particles, and release of virions.
All successful viruses are able to establish themselves in a host population so that virus survival is ensured.

Research in virology is directed towards understanding how viruses:

(a) Attach and enter cells
(b) Replicate viral proteins and genomes
(c) Assemble into new infectious particles
(d) Release into the environment