**Module 7**

**Chapter 12 – The Eyukaryotes**

**Fungi**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: the study of fungi
* Fungi important in food chain
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ dead matter
	+ Recycle \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Used for \_\_\_\_\_\_\_\_\_\_\_, produce food, \_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Most are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ anaerobes
	+ Few anaerobes known

**Characteristics of fungi**

* Multicellular fungi identified based on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Colony characteristics, reproductive spores
* Classified into 3 groups:

*Molds and fleshy fungi*

* \_\_\_\_\_\_\_\_\_\_\_: body of fungus
	+ Consist of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of cells joined together called \_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_ (singular)
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: filamentous mass of fungi
* Hyphae grow by elongating at the \_\_\_\_\_\_\_
	+ Each \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is capable of \_\_\_\_\_\_\_\_\_\_
	+ Fragments that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can form new hypha
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ hypha: portion of thallus that obtains \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 🡪 actively \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ portion

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *Hypha*

* Most hyphae have \_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ into cell-like units

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *Hypha*

* Few have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Appear as long continuous cells with \_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Reproductive Hyphae*

* Concerned with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Aka \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ hyphae
	+ Project \_\_\_\_\_\_\_\_\_\_\_\_\_\_ the surface

*Yeasts*

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, unicellular fungi
	+ - Typically \_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_
* Yeasts divide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ - Daughter cell (\_\_\_\_\_\_\_) is \_\_\_\_\_\_\_\_\_\_\_\_\_ than parent cell
* Yeasts capable of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ growth
* Can use \_\_\_\_\_\_\_\_\_\_\_\_\_\_ as final electron acceptor
	+ Produce \_\_\_\_\_\_\_\_\_\_ and water
* Can use \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as final electron acceptor
	+ Forms \_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_
	+ Important in food industry

*Dimorphic fungi*

* Can grow as \_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_
* In pathogens, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is temp-dependent
	+ \_\_\_\_\_\_°C – yeastlike
	+ \_\_\_\_\_\_°C – moldlike

*Characteristics of Fungi*

* Fungi are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Compete with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for food
* Nutritional characteristics provide some advantages
	+ Fungi can grow \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Resistant to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Can grow in low \_\_\_\_\_\_\_\_\_\_\_\_\_, low \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ environment
	+ Capable of degrading \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; lignin in wood

*Life Cycle of Fungi*

* Reproduction accomplished by forming \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Spores \_\_\_\_\_\_ from parent
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ into new mold
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ fungi
	+ Produce both \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_ spores
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ fungi
	+ Produce only \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ spores
* Spores can survive for extended periods in \_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_ to the extreme like bacterial \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Filamentous fungi reproduce \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by fragmenting \_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Asexual spores formed by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ hyphae
* Spores are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Conidiospores*

* Spore \_\_\_\_\_\_\_ enclosed in \_\_\_\_\_\_
* Conidia (pl) or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ produced in chain at end of \_\_\_\_\_\_\_\_\_

Arthrospores

* A type of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Septate hyphae fragment into a \_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_ spore, an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Sporangiospores*

* Formed within \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_ at end of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Can contain hundreds of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Sexual Reproduction*

* *Sexual* spores result from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Requires opposite \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Spores have characteristics of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: fusion of haploid cells produces one \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: formed in a sac (\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: formed externally on a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (\_\_\_\_\_\_\_\_\_\_\_\_)

**Fungal Diseases**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: a fungal infection
* Generally \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (long-lasting) because fungi \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Classified into 5 groups according to
	+ Degree of tissue involvement
	+ Mode of entry into host
* *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mycoses*
	+ Infections \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the body
	+ Route of entry is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Begin in \_\_\_\_\_\_\_, spread to other tissues
* *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mycoses*
	+ Fungal infections \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Infection occurs by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of spores \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Sporotrichosis is subcutaneous infection acquired by gardeners, farmers
* *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_mycoses*, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mycoses
	+ Infect epidermis, hair, and nails
		- Secrete \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ keratin in hair, skin
	+ Transmitted by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mycoses*
	+ Localized along \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_ skin cells
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is invaded, often unaware of infection
* *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pathogen*
	+ Generally \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in normal habitat
	+ Becomes pathogenic in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ host
		- Under treatments with antibiotics, suppressed immune system

**Chemotherapy**

* Difficult to target fungi – cells are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Structures, metabolism is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* **Sterols** in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ differ in fungi
	+ **Ergosterol** vs **cholesterol**
* Fungal \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are also a target
* In general, anti-fungal treatments require \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Fungi grow \_\_\_\_\_\_\_\_\_\_\_\_\_\_ than bacteria

*Ergosterol Synthesis Inhibitors*

* Causes excessive \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of membranes
* Polyenes:
	+ Amphotericin B most common, but \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to kidneys
* Azoles
	+ Most widely used anti-fungal
	+ Imidazoles used as \_\_\_\_\_\_\_\_\_\_\_\_\_ for athlete’s foot and yeast infections
	+ Triazoles (fluconazole, itraconazole) have \_\_\_\_\_\_\_\_\_\_\_\_\_, very commonly used

*Cell Wall Synthesis Inhibitors*

* Primary target is \_\_\_\_\_\_\_\_\_\_\_\_\_\_, found in chitin cell wall
* Incomplete cell walls lead to \_\_\_\_\_\_\_\_\_
* Echinocandins useful for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ myoses

**LIchens**

* Mutualistic combination of an \_\_\_\_\_\_\_\_\_\_\_ (or a cyanobacterium) and \_\_\_\_\_\_\_\_\_\_\_\_
* Alga produces and secretes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; fungus provides \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Colonize habitats that are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for either the alga or the fungus alone
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ growing
* Three morphologic categories
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ lichen: grow \_\_\_\_\_\_\_\_\_\_\_\_ or encrusting on surface
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ lichen :\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ lichen – \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ projections

**Protozoa**

**Characteristics of protozoa**

* Unicellular \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Inhabit water and soil
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: feeding and growing stage
* Relatively few cause disease
	+ But diseases are significant
* Involve complex \_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Often with multiple \_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Reproduce asexually and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: formation of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ called a \_\_\_\_\_\_\_\_\_\_
	+ Occurs as part of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Parasites can survive \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Mostly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Some capable of anaerobic growth
* All live in areas with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Malaria*

* *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*: causative agent of malaria
* *Anopheles* mosquito is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ host - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Human is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ host – \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ reproduction

*Toxoplasmosis*

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - causative agent of toxoplasmosis
* Felines are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Mammals are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Cysts are excreted in feces of cats
* Humans \_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_ cysts
* Especially harmful to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 🡪 can cause \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Helminths**

*Characteristics of helminthes*

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ eukaryotic animals
* Parasitic helminths have characteristics that differ from free-living helminths
	+ Lack \_\_\_\_\_\_\_\_\_\_\_\_\_ system
	+ Reduced \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ system
	+ Reduced or absent \_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Complex \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ system
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (hermaphroditic)
	+ Male and female reproductive systems in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Separate male and female
* \_\_\_\_\_\_\_\_\_\_\_\_\_ 🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Two groups of helminths
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Platyhelminths
	+ The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 🡪 flukes and tapeworms
* Nematodes
	+ The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Two modes of transmission
	+ Eating of \_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Excreted in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Eating of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- From \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Lung Fluke: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are definitive hosts
* Lives in \_\_\_\_\_\_\_\_\_\_, excreted in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are intermediate hosts
* Humans infected by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from mollusks

*Trichinosis: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

* Nematode grows inside \_\_\_\_\_\_\_\_\_\_\_ intestines
* Humans gets infected by eating \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Rat Lungworm: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

* \_\_\_\_\_\_\_\_\_\_\_\_\_ are definitive hosts
	+ Lives in \_\_\_\_\_\_\_\_\_\_, excreted in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_ are intermediate hosts
* Humans get infected by eating \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Humans are “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_” or “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_” hosts
	+ Can be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, but not \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Chapter 13 – Viruses, Viroids, and Prions**

**General characteristics of viruses**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Especially \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Can’t be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from solution
* Obligate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ parasites
	+ No \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ when isolated
* Multiply \_\_\_\_\_\_\_\_\_\_\_\_\_\_ living cells
* Cause synthesis of special structures
* Contain \_\_\_\_\_\_\_\_\_\_ type of nucleic acid (\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_)
* Protein coat (\_\_\_\_\_\_\_\_\_\_\_\_\_) surrounding the nucleic acid
	+ Some are enclosed by an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Viruses have \_\_\_\_\_\_\_\_\_\_\_\_\_ enzymes of their own
	+ Completely \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on host cell
* Antiviral treatments \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Drugs that target replication machinery also target host cell
* \_\_\_\_\_\_\_\_\_\_\_\_ range: the \_\_\_\_\_\_\_\_\_\_\_\_\_ of host cells that virus can \_\_\_\_\_\_\_\_\_\_\_\_\_
* Most viruses are limited to \_\_\_\_\_\_\_ cell type of \_\_\_\_\_\_\_\_\_ host species
* Host range determined by:
	+ Virus’ requirements for \_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Availability of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for multiplying
* Viral host range gives potential in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Use of bacteriophage to treat \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ infections
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ viruses infect only tumor cells

*Virions*

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, fully \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ infectious viral particle
* Composed of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, surrounded by a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Capsid protects virus, determines \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Nucleic acid can be either \_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_ genome, never \_\_\_\_\_\_\_\_\_
* Can be \_\_\_\_\_\_\_\_\_\_\_\_ stranded (ds) or \_\_\_\_\_\_\_\_\_\_\_ stranded (ss)
* Viruses classified by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Some viruses have capsid covered by an \_\_\_\_\_\_\_\_\_\_\_\_ made of \_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_, carbohydrates

*Helical Viruses*

* Resemble \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Can be \_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_

*Polyhedral viruses*

* Many \_\_\_\_\_\_\_\_\_
* Most are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: 20 triangular faces, 12 corners

*Enveloped viruses*

* Covered by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ From plasma membrane from \_\_\_\_\_\_\_\_\_\_
* Can be enveloped \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, enveloped \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ used for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Complex viruses*

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ structures in addition to capsid
* Additional structures can include \_\_\_\_\_\_\_\_, tail pin, \_\_\_\_\_\_\_\_\_\_\_, baseplate

**Taxonomy of viruses**

* Classification of viruses is based on type of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, replication, \_\_\_\_\_\_\_\_\_\_\_\_\_
* Family names end in *–\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*
* Genus names end in *–\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*
* Viral species: group of viruses that share same \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ names are used for species
	+ Subspecies are designated by a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Growing Viruses**

* Viruses cannot replicate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of host
* In laboratory, viruses must be cultures in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Growing animal viruses in the laboratory*

1. In \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Include mice, rabbits, and guinea pigs
* Most studies of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ involve live animals
* Some viruses cannot be grown in animals, or do not cause disease
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, HIV has no live animal model
	+ Difficult to study
1. In embryonated \_\_\_\_\_\_\_\_\_\_
* Convenient and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_ is drilled in \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of embryonated egg
	+ Viral suspension, virus containing tissue injected
	+ Many membranes in egg can support growth of virus
* Many viral \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ prepared in eggs
1. In \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Preferred growth medium of viruses
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ population of cells, handle much like \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_ to work with than live animals, eggs
* Cell cultures (not \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) grown in liquid culture media in lab
	+ Viruses grow in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Viral multiplication**

*Multiplication of animal viruses*

* All animal viruses have similar life cycles
* Major difference between viruses is in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Attachment*

* Attach to \_\_\_\_\_\_\_\_\_\_\_ (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) on host \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ distributed all over viruses
	+ - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Entry*

* Nonenveloped viruses enter by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Transport of molecules into a cell via vesicles
* Enveloped viruses enter through \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ to host membrane

*Uncoating*

* Separation of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Many ways this happens

*Biosynthesis and Maturation*

* Biosynthesis
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of viral DNA 🡪 viral \_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of viral mRNA 🡪 viral \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Uses mostly \_\_\_\_\_\_\_\_\_\_\_ enzymes
* Maturation
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Release*

* Nonenveloped viruses released by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plasma membrane
* Enveloped viruses obtain envelope by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Assembled \_\_\_\_\_\_\_\_ pushed though \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Live Cycle of Enveloped Virus 🡪 HIV*

* \_\_\_\_\_\_\_\_ genome
* Must convert \_\_\_\_\_\_\_\_\_\_ into \_\_\_\_\_\_\_
* Uses \_\_\_\_\_\_\_\_\_\_\_\_\_ enzyme
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* HIV infects \_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells (\_\_\_\_\_\_ cells)
	+ A white blood cell
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ binds to protein on T cell
	+ Protein receptor \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Helper T cells
* HIV enters cell
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ fuses with membrane
* Uncoating
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ converts viral RNA into DNA
* Retroviral DNA enters \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Inserts into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Integrated viral DNA is known as \_\_\_\_\_\_\_\_\_\_\_\_\_
* Can exist in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ state
* Productive state – HIV matures
	+ Maturation
	+ Released by \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Viruses and cancer**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: genes associated with cancer
* Many oncogenes control when a cell \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Activated oncogenes transform normal cells into \_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells grow uncontrolled, leading to \_\_\_\_\_\_\_\_\_\_\_\_\_\_
* The genetic material of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ viruses becomes integrated into the host cell’s \_\_\_\_\_\_\_\_\_\_ 🡪 forms \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Insertion can activate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Latent viral infections*

* Viruses remains \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ host cell for long periods

*Persistent viral infections*

* Disease process occurs \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ over a long \_\_\_\_\_\_\_\_\_\_\_; generally \_\_\_\_\_\_\_\_\_