**Fungi**

The Evolutionary History of Biodiversity

*Concept 2: Analyzing the diversity of bacteria, archaea, protists, and fungi (Ch 26, 27, 28, 31)*

*You must know:*

* The characteristics of Fungi.
* Important ecological roles of fungi in mycorrhizal associations, and as decomposers and parasitic plant pathogens

*Refer to Ch 31 in Campbell*

Fungi and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_are more closely related to each other than either is to plants or most other eukaryotes



Characteristics of Fungi

Multicellular heterotrophs

* Fungi are VERY diverse but they do share some common traits, specifically, the way they derive\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_make their own food...just like animals (heterotrophs)
* But, unlike animals, they don’t eat their food...instead they \_\_\_\_\_\_\_\_\_\_nutrients from the environment outside its body!
* Many do this by secreting hydrolytic enzymes to its surroundings (ie plant walls).

Body Structure

The most common fungal body structure are \_\_\_\_\_\_\_\_\_\_\_\_\_filaments and \_\_\_\_\_\_\_\_\_\_\_\_yeasts (yes! Yeast is a fungi)

Multicellular

* Typically form a network of tiny filaments called\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  Hyphae consist of tubular cell walls surrounding the plasma membrane and cytoplasm
* Fungal cell walls are strengthen by\_\_\_\_\_\_\_\_\_\_\_\_\_, not cellulose (the same stuff in arthropod shells that make them crunch!)
* Fungal hyphae form an interwoven mass called a \_\_\_\_\_\_\_\_\_\_he infiltrates the material on with the fungus feeds
* Some fungi have specialized hyphae that allow them to feed on living animals.

* Mutually beneficial relationships between fungi and plant roots are called\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.   Mycorrhizae improve delivery of phosphate ions and other materials to plants because the vast network is more efficient.  In exchange, plants supply the fungi with organic nutrients such ss carbohydrates.
* Mycorrhizae are a HUGE deal.  Most agriculture and forestry industries rely on them.  Without human, mycorrhizal fungi colonize solids by \_\_\_\_\_\_\_\_\_\_\_\_\_\_dispersal

Reproduction

Sexual or asexual...either way...it’s mostly through spores.

Spores can be carried long distances by\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  If they land in a \_\_\_\_\_\_\_\_\_\_\_\_\_place where there is food, they germinate and produce new mycelia

Lichens

A lichen is a \_\_\_\_\_\_\_\_\_\_\_\_\_association between a photosynthetic microorganism and a fungus in which millions of photosynthetic cells are held in a mass of fungal hyphae.

These photosynthetic cells are unicellular or filamentous \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_or\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The algae generally occur an inner layer below the lichen surface and the fungus is what gives it the overall shape.

Where else do you see Fungi?

30% of the 100 000 know species of fungi are parasites or pathogens...mostly to plants

50 fungal species are known to parasitize animals - these infections are called mycosis.

Examples: ringworm, athlete’s foot, coccidioidomycosis (tuberculosis-like symptoms) yeast infections, indoor molds

Practical uses include: cheeses, citric acid in colas, truffles for eating, yeast for beverages and cooking

Also used in the medical field: some fungi produce antibiotics (penicillium)