Natural Sciences 360
Legacy of Life
Lecture 6
Dr. Stuart S. Sumida

Fungi: More Similar to Animals than Plants

FUNGI SIMILARITIES

PLANTS	ANIMALS
Cell Walls	-
Immobile	-
Often need substrate	-
-	Heterotrophs
-	Not photosynthetic

Fungi Cell Walls are Different from Those of Plants

They are made of chitin, not cellulose.

Fungi are Heterotrophs

SAPROBES – they digest organic matter external to their bodies and absorb the component materials.

Digestion (in general) – reducing food to smaller component parts

- chemical
- mechanical

Absorption – transporting molecules across a cell membrane.

As saprobes, Fungi (along with bacteria) are very important for breakdown of used organic materials.

They are the great recyclers of most ecosystems.

Fungi are not uncommon fossils, but they have received little attention. Their fossils tend to be microscopic, and very few large, macroscopic, fungal bodies (such as mushrooms) have ever been found.

When you “see” a fungus, it’s usually only the fruiting body.

Fungal Parts:

Hyphae – twisted, associated strands of fungus. (Single strand is “hypha”.)

Mycelium – total body of a single fungus

Fruiting Body – spore producing component

Hyphae – twisted, associated strands of fungus.

(This is a fossilized, Devonian age fungus.)

Often, most of the fungal mycelium is not visible (below the surface of the host or substrate)

Epigeous – above ground / surface

Hypogeous – below ground / surface

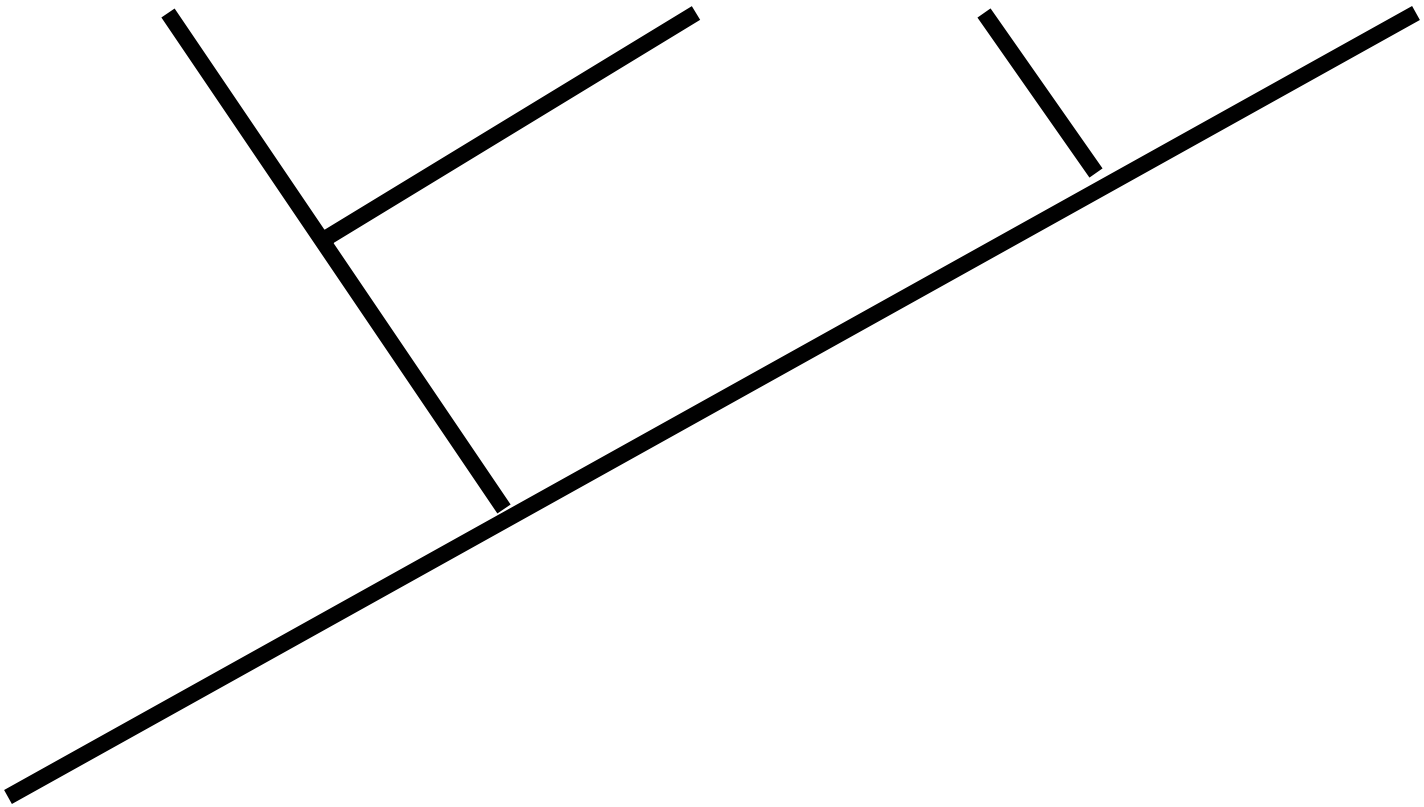
The oldest known fossil fungus is from the Late PreCambrian. (Found in northern Russia.)

Fun Fungus Facts…

- Athelete’s foot
- Yeast (baking and brewing)
- Cheese and antibiotics
- World’s biggest organism
- “Fairy Rings”

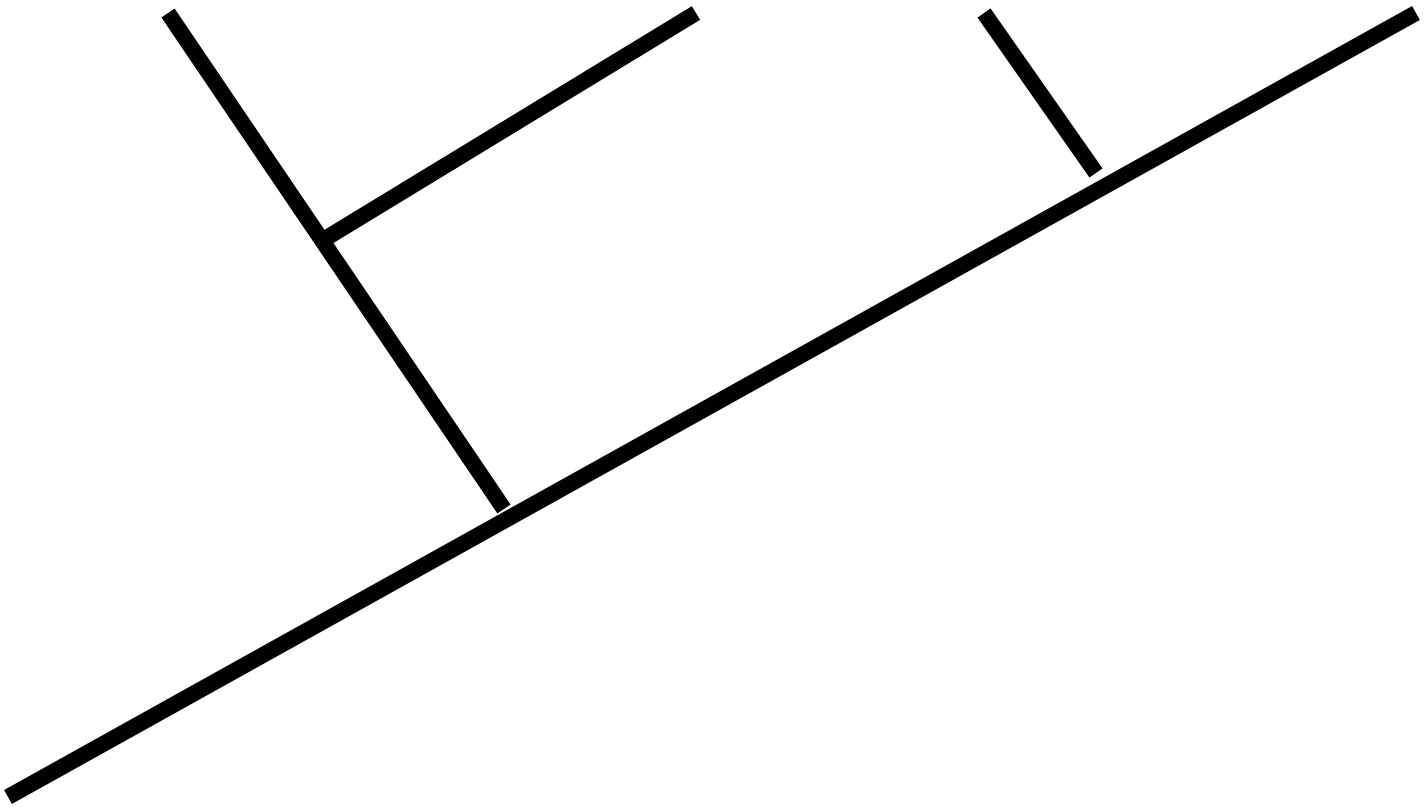
FOUR MAJOR GROUPS OF FUNGI

Chytridiomycota Zygomycota Ascomycota Basidiomycota



Includes oldest known fossil forms.

Chytridiomycota Zygomycota Ascomycota Basidiomycota



ZYGOMYCOTA:

Best known example is black bread mold.

Ascomycota: Includes yeast, many molds, morels, truffles

Basidiomycota: Includes many things we call mushrooms or toadstools

Ascomycota: Includes yeast, many molds, morels, truffles

Truffles

(This one would be worth thousands of dollars.)

Ascomycota produce their spores in special pods or sac-like structures called ASCI.

Basidiomycota: Includes many things we call mushrooms or toadstools

Species in this group produce spores on a club-like structure called the BASIDIUM.

Boletus edulis

Fly Agaric mushroom (*Amanita muscaria*)

Symbiotic Relationships:

Remember that LICHENS are a symbiotic relationship between a fungus and a green alga.

Many plants require a symbiotic fungus to aid them in acquiring water and nutrients. Specialized roots that the plants grow and in which the fungi are housed are called MYCORHIZZAE.

NatSci 360 First Midterm: Example topics for Study

- Age of the earth
- Evolution and its mechanisms
- Food acquisition strategies
- Culture of the Enlightenment and how it contributed to scientific understanding
- Special adaptations of plants
- What is a synapomorphy? How do we define (versus describe) groups?
- Comparison of plants versus fungi versus animals
- Scientific method
- What is science versus what is not.
- Continental drift
- Major plant groups and their ages
- Major fungal groups and their ages
- Oldest multicellular organisms

Possible “Essay” Question Topics:

•Explain and define the different types of food acquisition strategies described in class, and give an example of each.

•Explain, either as a list of components or with text/prose, the process of Natural Selection as described by Charles Darwin.

•What is convergent evolution? Give at least two examples.

•The earth it now acknowledged to be extremely old. Describe how it came to be understood that the earth was extremely old during the Age of the Enlightenment.

What is Symbiosis? Describe at least one example.