

Diversity of plants

Kingdom Fungi

What is a Plant?

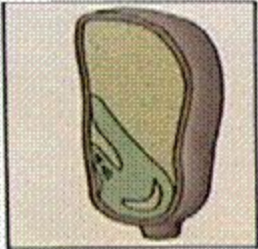


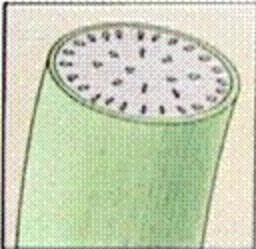
- Plants are the base for the food chain on land.
- Provide shade, shelter and oxygen
- Evolved more than 470 million years ago
- Multicellular, Eukaryotes
- Cell walls made of cellulose
- Photosynthesis using chlorophyll a and b
- Most are autotrophs; few parasites + saprobes
- Ex. Trees, shrubs, grasses, mosses and ferns



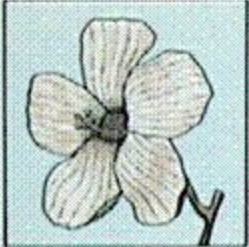
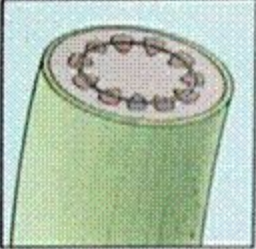
PLANTS				
LOWER ORDER PLANTS	HIGHER ORDER PLANTS			
Have no true roots, stems and leaves	NONVASCU LAR PLANTS	VASCULAR PLANTS		
	Have primitive roots, stems and leaves	Don't make seeds	Make seeds	
		Have roots, stems and leaves	Nonflowering	Flowering
ALGAE	MOSSES	FERNS	GYMNOSPE RMS	ANGIOSPER MS

Monocots and Dicots

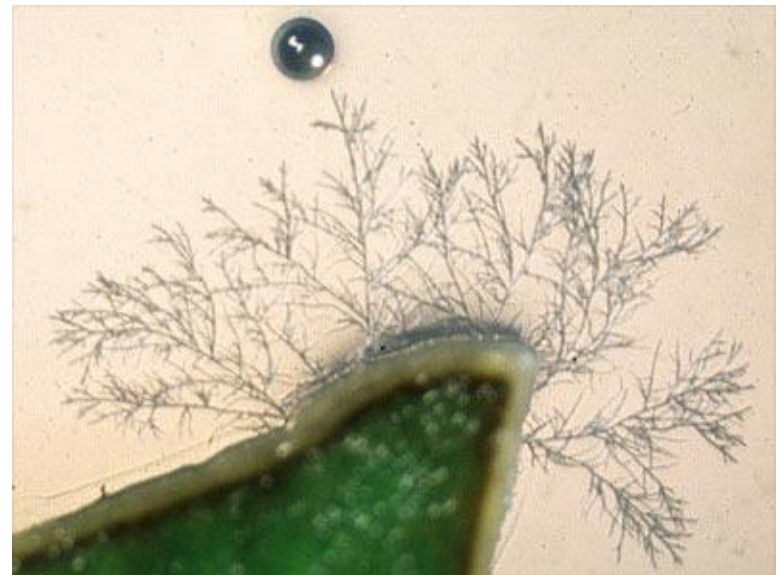
- Cotyledons-Seed leaves in the plant embryo
- Monocots-One seed leaf, parallel veins, multiples of 3 floral parts, vascular bundles scattered and fibrous roots
- Dicots-Two seed leaves, branched veins, multiples of 4 or 5 floral parts, vascular bundles in a ring and a taproot

Monocots and Dicots

MONOCOTS			
Cotyledons	Veins in leaves	Flower parts	Arrangement of primary vascular bundles in stem
			
One cotyledon	Usually Parallel	Usually in multiples of three	Scattered

DICOTS			
Two cotyledons	Usually netlike	Usually in fours or fives	In a ring
			

Kingdom Fungi



Characteristics of all Fungi

- Eukaryotic
 - Most are multicellular & filamentous
 - A few are single celled (yeasts)
 - Heterotrophic – do not make their own food
 - Absorb nutrients through the cell wall
 - Do not move
- Mushrooms help digest dead, decaying matter.



Structure of Fungi

- Each cell has a cell wall made of chitin
- Hyphae are hair-like filamentous chains of cells.
- Structure consists of:
 - Mycelium (mass of hyphae)
 - Fruiting body (the reproductive structure)
- Fungi come in many sizes, shapes, and colors.



Reproduction

- Fungi can reproduce asexually by budding and by asexual spore production.
 - The hyphae and asexual spores are haploid (1N) like the gametes of higher organisms (eggs and sperm).
- Under certain conditions a fruiting body is formed.
 - It is the product of two opposite mating “types” combining to form a diploid (2N) cell.

Classification of Fungi

- Fungi are classified into 4 phyla (divisions) depending on the type of fruiting body they produce.
 - Basidiomycota
 - Ascomycota
 - Zygomycota
 - Deuteromycota

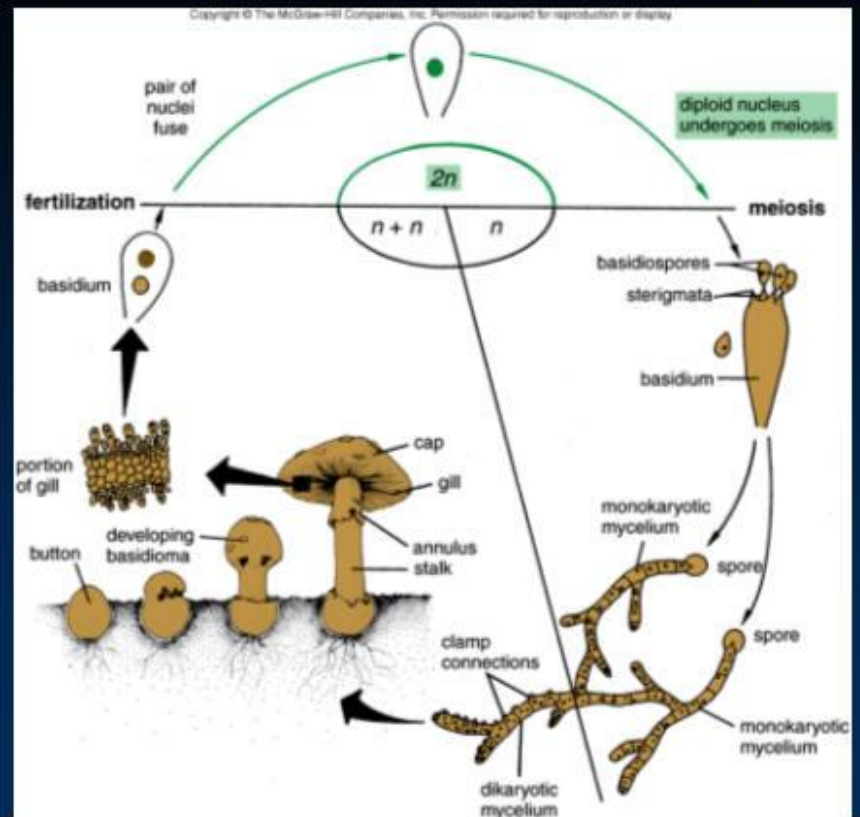
Basidiomycota-Club Fungi

- Importance:
 - A few are poisonous
 - High in protein, calcium, phosphorous, & iron
 - Nutrient recycling
 - Pharmaceuticals

- Examples:
 - mushrooms and shelf fungi



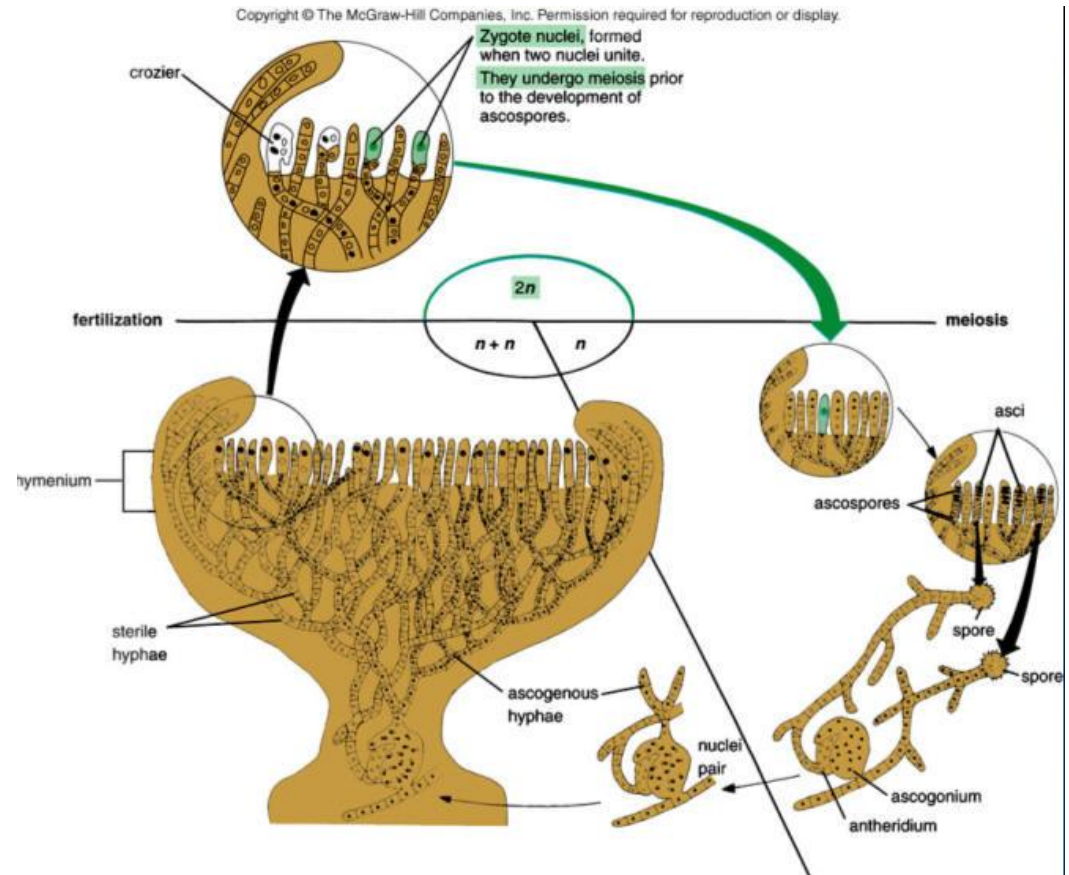
Sexual Reproduction in Basidiomycota



Ascomycota

- Also known as sac fungi
- Fruiting bodies form sacs of spores where fertilization occurs.
 - Examples: truffles, morels, yeasts
 - Usually, yeast reproduce asexually by budding

- Sac Fungi life cycle



Importance of Ascomycota

- Truffles and morels have been prized for centuries.

Morel



Truffles



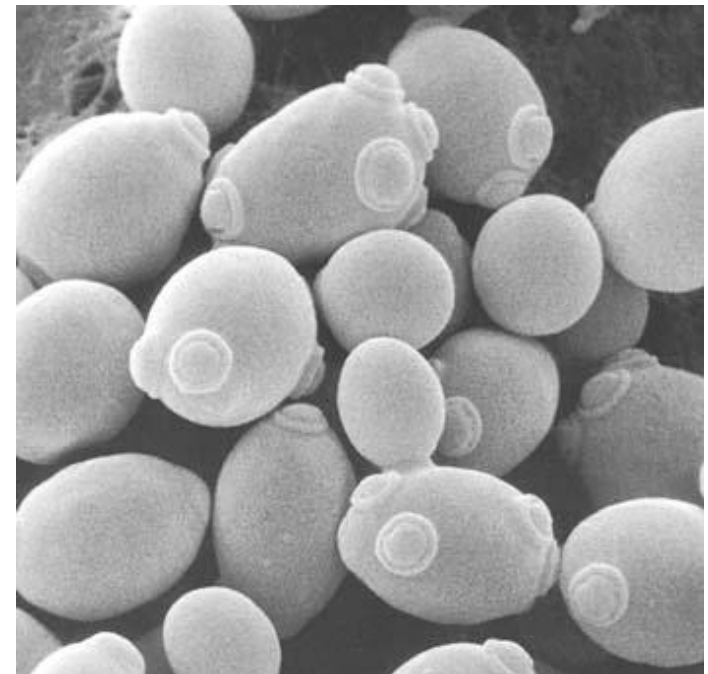
Importance of Ascomycota (continued)

- Ergot fungus may infect rye and other grains.
 - Ergotism (poisoning) may occur in those who eat the contaminated bread.
 - Ergot drugs are medicinally useful in small amounts.
 - Initial source for the manufacture of LSD
- Ergot in the grain head of rye



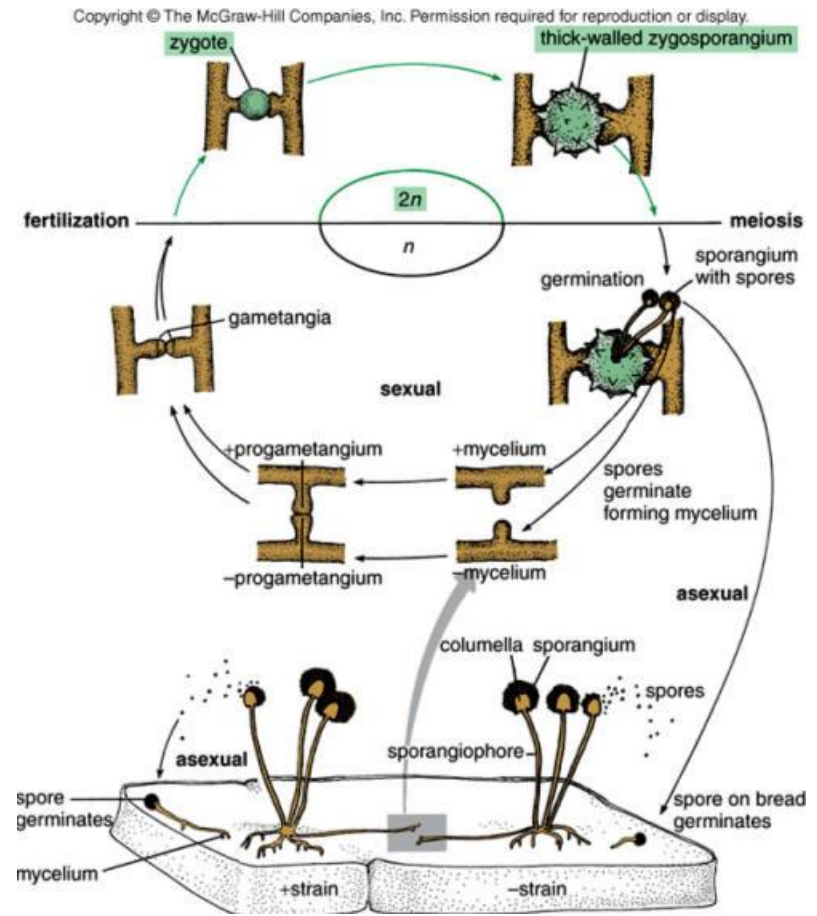
Importance of Ascomycota (continued)

- Yeast is very important for humans in that
 - Yeast enzymes aid in preparation of baked goods (fermentation)
 - Some yeasts cause disease of plants and animals (parasites)
 - Yeasts used in production of glycerol.
 - Explosives



Zygomycota-Common Molds

- The zygospore is the fruiting body.
- Human and Ecological Relevance
 - A few species used as food sources.
 - Industrial Uses
 - Pharmaceuticals
 - Pigments



Deuteromycota-Imperfect Fungi

- Fungi for which no sexual stage has been observed
- Grouped together into an artificial phylum
 - May be reclassified if they ever produce a fruiting body

All reproduce by conidiospores on the end of hyphae.



Importance of Deuteromycota

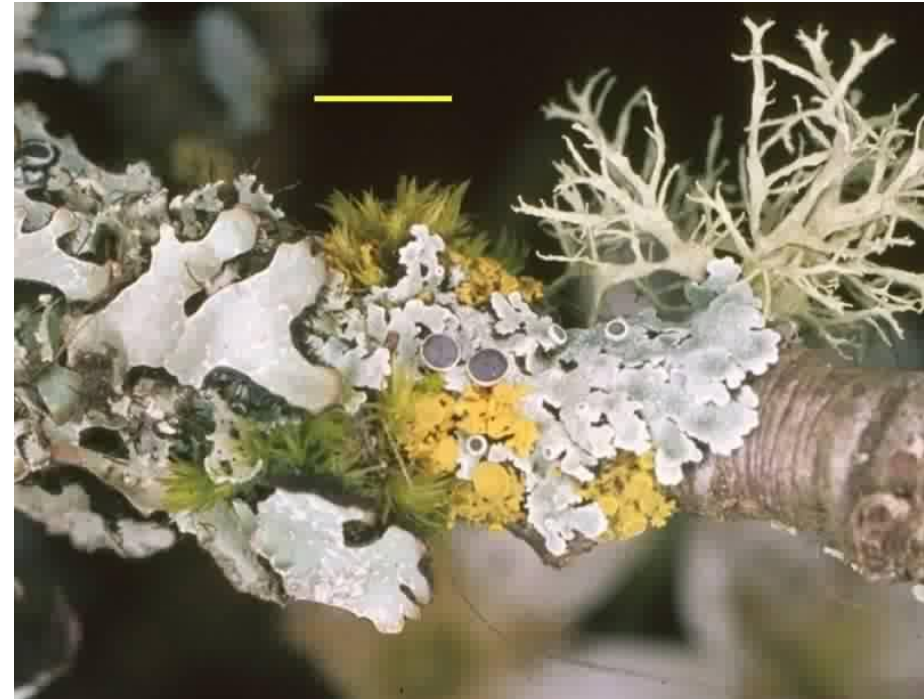
- Penicillium Molds
 - Antibiotics
 - Gourmet Cheese
- Aspergillus
 - Citric Acid
 - Soy Sauce
 - Aspergillosis (Respiratory Disease)
 - Aflatoxin (Carcinogen)





Symbiotic Relationships

- Mutualism-two species living together, both benefit
 - Example: Lichen
 - The fungus hangs on to the rock or log and catches water
 - The algae has color and can collect sunlight to photosynthesize



Terminology

English	Russian	Kazakh
Algae	Водоросли	Балдырлар
Angiosperm	Покрытосеменное	Жабықтұқымды
To distinguish	Различать	Ажырату
Endangered	Под угрозой исчезновения	Жойылу қаупі бар
Fern	Папоротник	Қырықжапырақ
Gymnosperm	Голосеменное	Ашықтұқымды
Higher order plants	Высшие растения	Жоғары сатыдағы өсімдіктер
Juniper	Можжевельник	Арша
Landscaping	Озеленение	көгалдандыру
Lower ordered plants	Низшие растения	Төменгі сатыдағы өсімдіктер
Moss	Мох	Мүк
Needle	Игла	Ине
Nonvascular	Несосудистое	Өткізгіш ұлпасы жетілмеген
Pine	Сосна	Қарағай
To preserve	Сохранять	Сақтау
Vascular	Проводящий	Түтікті

Terminology

English	Russian	Kazakh
Champignon	Шампиньон	Қозықұйрық
Chanterelle	Лисичка	Түлкіжем
False chanterelle	Ложная лисичка	Жалған түлкіжем
Death cap	Бледная поганка	Боз арамқұлақ
Decomposer	Редуцент, разлагать	Шірітуші, ыдыратушы
Honey agaric	Опята	Түбіртек
False honey agaric	Ложные опята	Жалған түбіртек
Mold	Плесень	Зең саңырауқұлақ
Revenge	Месть	Кек алу
Tomb	Могила	Мола, қабір
Toxin	Токсин, яд	Токсин, у , уыт