

QUICK QUESTIONS ON CELL BIOLOGY!

1. Give 2 differences between prokaryotic cells and eukaryotic cells.

See class sheets

2. State whether the following cell types are **prokaryotic** or **eukaryotic**.

Animal _____ **eukaryotic**

Bacteria _____ **prokaryotic**

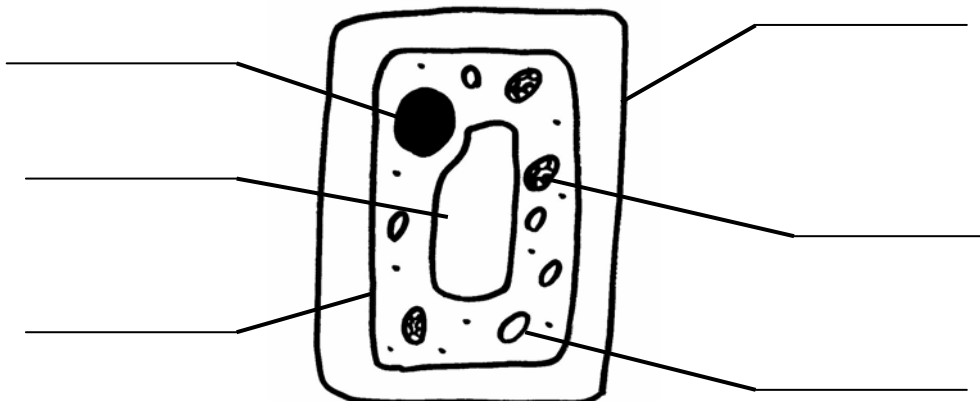
Fungal _____ **eukaryotic**

Plant _____ **eukaryotic**

3. State whether the following statements are true or false by writing T or F alongside each statement.

- Chloroplasts contain the chemical chlorophyll **T**
- Fungal cells contain chloroplasts **F**
- Animal cells have a cell membrane **T**
- Animal cells have a cell wall **F**
- Some bacterial cells have a flagellum **T**

4. Label the cell organelles **Labels are shown on Worksheet FC02**



The diagram above is an example of a **PLANT** cell.

5. Complete the paragraph below. Use the words in the box at the end of the paragraph to help you complete the puzzle. But be careful, some of the words are there to catch you out!

All cells can be classified into two groups, they are either Prokaryotes or Eukaryotes . Animals, plants and fungi are all in different Kingdoms . Fungi exist in many forms, including; Hyphae , Moulds and Mushrooms . Some fungi can exist as single-celled organism, an example is Yeast . A mushroom is an example of a fruit body produced by fungi, underneath this lies a large network of tiny filaments called Hyphae . Fungi cannot produce their own food like plants can, they are therefore called Heterotrophs , as are animals. Fungi play vital roles in our every day life. They play important roles in both the Carbon and Nitrogen cycles. They have great medical importance, and are used in the production of Antibiotics and Statins .

<i>Hyphae</i>	<i>Moulds</i>	<i>Prokaryotes</i>
<i>Nitrogen</i>	<i>Antibiotics</i>	<i>Heterotrophs</i>
<i>Kingdoms</i>	<i>Yeast</i>	<i>Carbon</i>
<i>Chloroplasts</i>	<i>Cough medicine</i>	<i>Statins</i>
<i>Autotrophs</i>	<i>Rusts</i>	<i>Mushrooms</i>
<i>Eukaryotes</i>	<i>Cytoplasm</i>	<i>Groups</i>



QUICK QUESTIONS ABOUT THE WORLD OF FUNGI!

1. Which species has been around on earth longer, fungi or humans?
fungi
2. A scientist who studies animals is called a zoologist...but what is the name for a scientist who studies fungi?
Mycologist
3. Can you name each of the 5 Kingdoms of organisms?
Animal, Plant, Bacteria, Protists and Fungi
4. Yeast is an example of a single-celled fungus, can you give 2 examples of filamentous fungi?
Mushroom, toadstool, mould, cup fungi, bracket fungi, Quorn fungus
- 5a. What is the name for the large network of hyphae?
Mycelium
- 5b. When this network branches out, what is it looking for?
Food
6. Plant cell walls are made from cellulose and fungal cell walls are made from chitin.
7. Complete the paragraph. Use the words in the box beneath the paragraph to help you complete the puzzle. But be careful, there are some words in there to catch you out!

Fungi differ from plants in the way that they feed. Plants produce their own food in a process called photosynthesis. This process requires cell organelles called chloroplasts. Fungi do not have these organelles. Fungi gain nutrients from their surroundings, they secrete enzymes from the hyphal tip. This breaks down large complex food into smaller soluble food, which is then absorbed by the hyphae.

Animal	Enzymes	Spores
Photosynthesis	Mitochondria	Absorbed
Chloroplasts	Chlorophyll	Expelled
Hyphal tip	Mushroom	Cooking

QUICK QUESTIONS ABOUT THE WORLD OF FUNGI!

1. Complete the paragraph. Use the words in the box below to complete the paragraph. But be careful, some of the words are there to catch you out!

Spores are produced in the fruiting body in a process called sporulation. When the spores arrive in their ideal environment they begin to germinate, and begin to produce hyphae. The mycelial network grows and further growth produces the hyphal knot and eventually the fruiting body. Spores are released and the process starts again.

<i>Hyphae</i>	<i>Stem</i>	<i>Germinate</i>
<i>Soil</i>	<i>Hyphal Knot</i>	<i>Decompose</i>
<i>Sporulation</i>	<i>Photosynthesis</i>	<i>Fruiting Body</i>

2. Fungi can reproduce both asexually and sexually but which is which? After each sentence write whether it is correct for asexual or sexual reproduction.

- **Produces genetically identical offspring.** **Asexual**
- **Process includes only mitosis.** **Asexual**
- **Involves the mixing and recombination of genetic material from 2 parents.** **Sexual**
- **Produces genetically different offspring.** **Sexual**
- **Involves copies of only a single parent.** **Asexual**

3. Name the 4 different methods by which fungal spores can be distributed.

Wind, Rain, Insects and Mechanical Processes.

4. What does a food web show?

Feeding patterns and energy flow within an ecosystem that consists of many different types of plants, fungi and animals.

5. Briefly describe 2 reasons why fungi may be in decline.

1.

2.

Reasons could include; increased large-scale picking for commercial sale, pollution e.g. acid rain, air pollution, clearing of woodland and lack of knowledge.

6. Can you give 2 solutions to the conservation problems facing fungi?

Solutions could include; obeying the law e.g. The Wildlife and Countryside Act, respect and caution, conservation areas and management of areas.



QUICK QUESTIONS ABOUT THE WORLD OF FUNGI!

1. Complete the paragraph. Use the words in the box below to complete the paragraph. But be careful, some of the words are there to catch you out!

When industries use microbes such as fungi to make substances, it is known as biotechnology. In industry, yeast fermentation is used to produce alcohol and bread. Yeast is a single celled fungus. Yeast can respire in 2 ways, it can use oxygen, and this is called aerobic respiration or it doesn't use oxygen, and this is called anaerobic respiration. Myco-protein produces a product often eaten by vegetarians, Quorn. Myco-protein is not a yeast nor a mushroom but instead is a filamentous fungus.

Quorn	Bread	Multi
Aerobic	Biology	Anaerobic
Alcohol	Vinegar	Filamentous
Photosynthesis	Single	Butter

QUICK QUESTIONS ABOUT THE WORLD OF FUNGI!

1. Some fungi, as well as some bacteria and viruses, can cause disease, but what is the scientific name for these disease-causing microorganisms?

- a. ~~Germs?~~ b. **Pathogens** c. ~~Polysaccharides?~~

2. Complete the paragraph. Use the words in the box below to complete the paragraph. But be careful, some of the words are there to catch you out!

Fungi can cause **disease**, not only in humans, but also in animals and plants. Plants can be affected in one of two ways – either in the ground by **soil-borne** pathogens or above ground by **air-borne** pathogens. Examples of plant diseases caused by fungal infection are **blights**, **rusts** and **mildews**. Human diseases caused by fungi are called **mycoses**. The diseases are divided into three, these are: **superficial**, **subcutaneous** and **systemic**.

disease	mycoses	mildews
soil	soil-borne	superficial
subcutaneous	skin	infection
air-borne	rusts	blights
systemic	ground	pathogens

2. Human fungal diseases are divided according to where they occur on the body. Can you match up the group name to the correct area of the body?

Superficial

Deep layers of the skin

Subcutaneous

Lungs, blood stream and then other organs

Systemic

Skin, nails and hair

3. Most human fungal infections are caused by opportunistic pathogens. Can you briefly describe what opportunistic means?

Infections of people who are already ill or have a suppressed immune system. In a perfectly healthy person the fungus would not normally cause disease.

4. Fungi produce toxins called **mycotoxins** and the diseases they cause are called **mycotoxicoses**. Food items that are particularly susceptible to fungal disease are **bread, stored grains** and **cereals**. When they are stored in the wrong conditions, mycotoxins can be found as a result of fungal growth (**mould**). The most widespread and dangerous of these toxins are the **afatoxins** which are carcinogenic, this means they can cause **cancer**. The mould can grow on badly stored grain and animal food. When eaten, the toxin is stored in the **liver**.

bread	afatoxins	liver
cancer	stored grains	mould
mycotoxins	skin	infection
air-borne	mycotoxicoses	cereals



QUICK QUESTIONS ABOUT YOUR FAVOURITE FUNGI!

- Which of the following kingdoms would you put fungi in?
a. Animal b. Protist c. Plant d. **None of these**
- Most fungi are filamentous. The main body of the fungus is made up of thread-like filaments called **hyphae** which form the **mycelium**.
- Approximately how many species of fungi have been discovered to date?
a. 5,000 b. 10,000 c. **100,000** d. 100
- Fungi are not able to produce their own food like plants do. **True**
- Fungi are only able to reproduce sexually. **False**
- The products of reproduction are spores. What are spores dispersed from?
Fruiting body
- Can you name some of the useful products produced because of or using fungi?
See class sheets
- Fungi and a type of termite found in Africa live together in symbiosis (they both benefit from their association). This occurs with the Ambrosia beetle also. Choose one of them and describe how they both help each other.
See class sheets
- Fungi can infect human, plants and animals. Infections in plants have names which describe the symptoms. Can you name any? **Smuts, rusts, spots, blights etc.**
- Human fungal infections are divided into three groups according to which part of the body is affected.

The first group is superficial infections. These are infections of the outer layers of skin, the hair and the nails. Can you give an example of a superficial infection?
Athlete's Foot and Ringworm.

The second group is subcutaneous infections. These are infections which affect deeper layers of skin. Where do most of these infectious fungi live in nature?
Soil.

The final group is systemic mycoses. Infection is caused by the inhalation of fungal spores. These infections are usually caused by opportunistic fungi. Can you describe what is meant by **opportunistic**? **See class sheets.**