

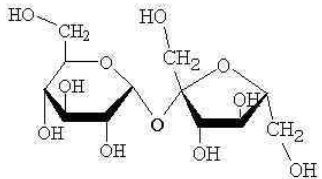
Cellular Functions Review

Hearts



1. What is the formula for glucose?

2. Identify the following molecule:



3. The monomer of all important polysaccharides is:

4. Draw an saturated triglyceride.

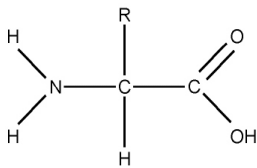
5. What are 2 things you learned about unsaturated fats?

6. The name of the bond that links amino acids together is called...

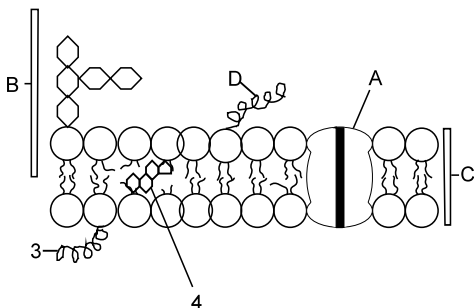
7. Name two functions of proteins.

8. Why do athletes load up on complex carbohydrates the night before the event, rather than eat monosaccharides?

9. Identify the following molecule:



10. Label the following diagram:



A:

B:

C:

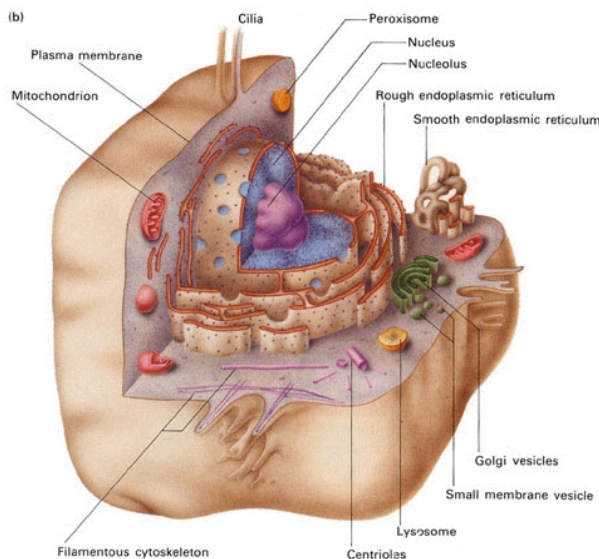
D:

Cellular Functions Review

Diamonds



1. What happens to the volume of a cell when the surface area increases?
2. Why could salt be used as an antiseptic (sterilizes) for a cut?
3. Under a microscope, a cell was found to contain many mitochondria, a nucleus chloroplasts, cytoplasm as well as other organelles. This cell is most likely a:
a) bacterial cell b) kidney cell c) plant cell d) all of the above
4. List 2 similarities between simple diffusion and facilitated diffusion.
5. List 2 differences between facilitated diffusion and active transport.
6. Identify the macromolecules present in the mystery solution if the following results were obtained:
Benedict's solution: yellow Biuret's solution: purple
Sudan IV: red Iodine: dark purple
7. What would happen if a solution with a higher concentration of water than is in your body cells, was added to your bloodstream. Refer to cell size.
8. What is the difference between an intrinsic and an extrinsic protein?
9. Why is cholesterol present in the cell membrane?
10. Label the following diagram:



A:

B:

C:

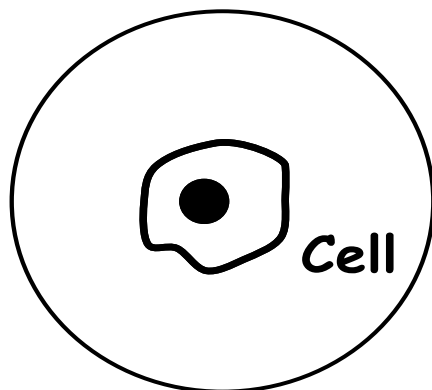
D:

Cellular Functions Review

Spades



1. What is the chemical equation for aerobic cellular respiration?
2. Why is oxygen a necessary part of aerobic cellular respiration (ie. where is it used in the series of reactions)?
3. Where do the following reactions take place?
glycolysis:
Kreb's cycle:
ETC:
4. What is the role of ATP in the cell?
5. What is the role of enzymes in providing energy for living organisms?
6. Account for any differences in ATP production among different kinds of cells?
7. What are the products of anaerobic cellular respiration in:
yeast:
animals:
8. If anaerobic cellular respiration only makes 2 ATP, why do yeast and animals perform it?
9. How many ATP are made during aerobic cellular respiration?
10. What is the size of the cell if the diameter of the field of view is 420 μm .



Cellular Functions Review

Clubs



1. What is the word equation for photosynthesis?
2. Where do the following reactions take place:
light absorbing reactions:
Calvin Cycle:
3. Explain the following statement: "Without cellular respiration, photosynthesis would come to a halt."
4. How many molecules of carbon dioxide must enter the Calvin Cycle to produce one molecule of glucose?
5. What is the most important product of the light reaction in plants, for humans? Justify.
6. What is the most important product of the Calvin Cycle in plants, for humans? Justify.
7. What structure increases the surface area in the chloroplast.
8. Why is a high surface area in the chloroplast important for its survival?
9. What controls the resolution of a microscope?
10. What happens to the apparent size of an object as you move from low power to high power?.

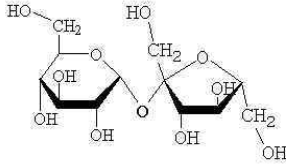
Cellular Functions Review (Answers)

Hearts



1. What is the formula for glucose? $C_6H_{12}O_6$

2. Identify the following molecule: **sucrose**



3. The monomer of all important polysaccharides is: **glucose**

4. Draw an saturated triglyceride.

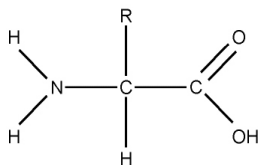
5. What are 2 things you learned about unsaturated fats? **liquid at room temperature, at least 1 double bond present, more healthy, plant source**

6. The name of the bond that links amino acids together is called... **peptide bond**

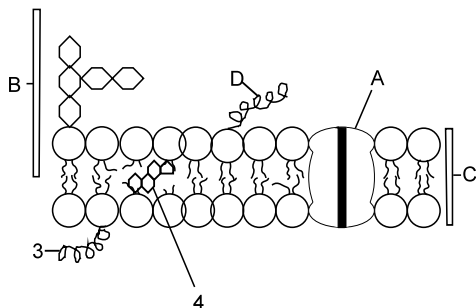
7. Name two functions of proteins. **fight disease, carry oxygen, move muscles, protection, insulation, chemical messenger**

8. Why do athletes load up on complex carbohydrates the night before the event, rather than eat monosaccharides? **it is an energy source that is released slower than a monosaccharide**

9. Identify the following molecule: **amino acid**



10. Label the following diagram:



A: **intrinsic protein**

B: **glycolipid**

C: **phospholipid bilayer**

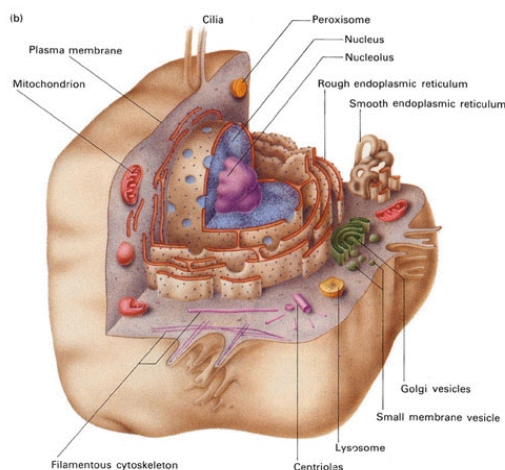
D: **extrinsic protein**

Cellular Functions Review (Answers)

Diamonds



1. What happens to the volume of a cell when the surface area increases?
stays the same
2. Why could salt be used as an antiseptic (sterilizes) for a cut? **salt creates a hypertonic environment around the bacterial cells, thereby dehydrating them and consequently killing them**
3. Under a microscope, a cell was found to contain many mitochondria, a nucleus chloroplasts, cytoplasm as well as other organelles. This cell is most likely a:
a) bacterial cell b) kidney cell c) plant cell d) all of the above
4. List 2 similarities between simple diffusion and facilitated diffusion.
both move from high to low conc, don't need energy (ATP)
5. List 2 differences between facilitated diffusion and active transport.
f.d. moves w/ conc. gradient, a.t. moves against the gradient and needs energy
6. Identify the macromolecules present in the mystery solution if the following results were obtained: **glucose, protein and starch**
Benedict's solution: yellow Biuret's solution: purple
Sudan IV: red Iodine: dark purple
7. What would happen if a solution with a higher concentration of water than is in your body cells, was added to your bloodstream. Refer to cell size.
the cells would gain water and could burst (cell lysis)
8. What is the difference between an intrinsic and an extrinsic protein?
extrinsic: located on the surface of membrane; intrinsic: embedded in the membrane. They have different functions(can you name them?)
9. Why is cholesterol present in the cell membrane? **helps to maintain fluidity**
10. Label the following diagram:



A: Golgi body

B: mitochondria

C: rough endoplasmic reticulum

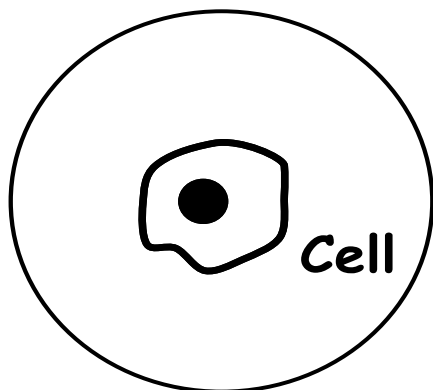
D: cytoplasm

Cellular Functions Review (Answers)

Spades



1. What is the chemical equation for aerobic cellular respiration?
$$\text{C}_6\text{H}_{12}\text{O}_6 + \text{H}_2\text{O} \rightarrow \text{CO}_2 + \text{O}_2$$
2. Why is oxygen a necessary part of aerobic cellular respiration (ie. where is it used in the series of reactions)? **it is the final electron acceptor at the end of the Electron Transport Chain**
3. Where do the following reactions take place?
glycolysis: **cytoplasm**
Kreb's cycle: **in the mitochondria**
ETC: **in the mitochondria**
4. What is the role of ATP in the cell? **it is the energy currency of the cell**
5. What is the role of enzymes in providing energy for living organisms? **they speed up the rate of reactions (eg. in cell. resp.), w/o them, we would die**
6. Account for any differences in ATP production among different kinds of cells? **cells that require more energy, ie. major organs will have more mitochondria compared to cells such as skin cells**
7. What are the products of anaerobic cellular respiration in:
yeast: **ethanol and carbon dioxide**
animals: **lactic acid**
8. If anaerobic cellular respiration only makes 2 ATP, why do yeast and animals perform it? **short-term solution when oxygen supply is low**
9. How many ATP are made during aerobic cellular respiration? **36**
10. What is the size of the cell if the diameter of the field of view is 420 μm .



d=140 μm

Cellular Functions Review

Clubs



1. What is the word equation for photosynthesis?
carbon dioxide + water → glucose + oxygen
2. Where do the following reactions take place:
light absorbing reactions: **grana or thylakoid membranes**
Calvin Cycle: **stroma or the fluid in the chloroplast**
3. Explain the following statement: "Without cellular respiration, photosynthesis would come to a halt." **the products of one reaction are the reactants of the other**
4. How many molecules of carbon dioxide must enter the Calvin Cycle to produce one molecule of glucose? **6**
5. What is the most important product of the light reaction in plants, for humans? Justify. **The production of O₂, because it is necessary for our survival**
6. What is the most important product of the Calvin Cycle in plants, for humans? Justify. **The production of Glucose, because it is necessary for our survival**
7. What structure increases the surface area in the chloroplast. **Grana**
8. Why is a high surface area in the chloroplast important for its survival? **A high surface area allows the chloroplast to absorb more light and therefore produce more O₂ and glucose.**
9. What controls the resolution of a microscope? **The type of light**
10. What happens to the apparent size of an object as you move from low power to high power?. **It appears to be bigger.**