Review Packet: Cell Test

1. What are the three main tenants of the Cell Theory? Explain what they mean.

All living things are made of one or more cells

All cells come from living cells

Cells are the basic unit of structure and function

1. What are light microscopes? What are they good for?

Basic classroom microscopes. Great for basic viewing and seeing living specimens.

1. What are scanning electron microscopes? What are they good for?

Microscope that is computer based. High Res images of the surface of objects. Must kill specimens.

1. What are transmission electron microscopes? What are they good for?

Microscope that is computer based. High Res images of the inside of objects. Must kill specimens.

1. Describe in detail why cells are small.

It is more efficient with energy use. It is easier to transport nutrients and wastes.

* 1. How does being small help transport?

Nutrients do not have to move far to be transported.

* 1. How does being small help save energy?

Less energy expended in everyday tasks.

1. What is the mathematical formula for determining a cell will live?

Surface Area / Volume

* 1. What happens if that cell gets smaller? Does the ratio go up or down?

When a cell gets larger, the SA/V ratio goes down.

1. There are 18 cells all measuring 1x1x1 and one large cell that measures 18sx18x18. Which group of cells will have the largest surface area?

The 18 cells

* 1. Which group of cells will have the largest volume?

They have the same volume

1. What are prokaryotes?

Ancient line of cells. Simple, small and do not have a nucleus, much smaller.

* 1. What are the types of prokaryotes?

Bacteria and archaea

* 1. What features are unique to a prokaryotic cell?

Peptidoglycan cell wall, no nucleus

1. What are eukaryotes?

“True” nut. More advanced cells, much larger.

* 1. What are the types of eukaryotes?

Plants, Animals, Protists and Fungi

* 1. What features are unique to a eukaryotic cell?

Nucleus, membrane bound organelles

1. How do plant cells differ from animal cells?

Plant cells have cell walls. They generally don’t move.

* 1. What organelles do plants have that animals do not have?

Chloroplasts, Cell Walls, Central Vacules

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Function** | **Where Is It Located?** | **Picture** |
| Nucleus | Store DNA | Cytoplasm |  |
| Smooth ER | Make Lipids | Near Nucleus |  |
| Rough ER | Make Proteins | Near Nucleus |  |
| Golgi Apparatus | Package, Transport and modify | Cytoplasm |  |
| Lysosomes | Break down cellular components | Cytoplasm |  |
| Vacuole | Storage of nutrients and waste | Cytoplasm |  |
| Mitochondria | Produce Energy | Cytoplasm |  |
| Chloroplasts | Make sugars | Cytoplasm |  |
| Cillia/Flagella | Move the cell | Cytoplasm |  |
| Cell Junctions | Connect cells, anchor cells, waterproof barriers | Outside of cells |  |
| Plasmodesmata | Allow plant cells to communicate | Outside of cells |  |
| Peroxisomes | Break down cellular components | Cytoplasm |  |

1. What is the fluid mosaic model?

Many things make up the cell membrane, it is a fluid at room temperature

* 1. What is in the fluid mosaic?

Many objects make up a larger picture that is fluid at room temperature.

1. Describe how water gets across the plasma membrane.

It fits between the spaces in the plasma membrane.

1. Why is it important that phospholipids are unsaturated?

The unsaturated bonds have a different bond angle. They slightly kick out and create space between each phospholipid

1. Define passive transport.

Transport from high concentration to low concentration. It requires no energy.

1. What are the three different types of passive transport? Define each one.

Diffusion – movement of molecules from high to low concentration

Osmosis – Movement of water across a membrane

Facilitated Diffusion – Diffusion of large molecules across the membrane

1. Describe the different types of diffusion. What are the differences between them?

Diffusion – Small molecules across a membrane

Facilitated Diffusion – Large objects across a membrane

1. Explain why it is called facilitated diffusion.

Carrier proteins are moving objects within the cell

1. Draw three pictures below. Show osmatic activity.

|  |  |  |
| --- | --- | --- |
| **Isotonic Solution** | **Hypertonic Solution** | **Hypotonic Solution** |
|  |  |  |

1. Define active transport.

Movement of molecules from a high concentration to a low concentration with the help of energy.

1. What are the two main types of active transport?

Pumps and vesicles

1. What is a cell membrane pump? How does it work? Provide an example.

Pumps mineral ions across a membrane. The sodium potassium pump is an excellent example. Three sodium are pumped out of the cell (with help from ATP) and two potassium are pumped into the cell (with help from the same ATP)

1. What are vesicles?

Small sacs of membrane that hold nutrients for a cell. They are made from the membrane or the golgi apperatus

1. What is the difference between endocytosis and exocytosis?

Endocytosis – materials enter the cell

Exocytosis – materials exit the cell

1. What are the three main types of endocytosis? Define each.

Endocytosis – Materials entering the cell

Pinocytosis – Liquids and dissolved particles enter the cell

Phagocytosis – Solids enter the cell

1. What is ATP?

Molecule that a cell uses for energy

1. What is the function of ATP?

Give energy to cells when needed

1. How does ATP transfer energy to a molecule?

Phosphorylates another molecule

1. What is an enzyme?

Protein catalyst

1. Why does an enzyme have to “fit” with a protein?

An enzyme weakens the bonds of a substrate. This means that it has to fit perfectly with a substrate to put bonds in stressful positions

1. How does an enzyme make a reaction happen faster?

It reduces activation energy

* 1. How does it lower activation energy?

It puts bonds in stressful positions. This makes them easier to break