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| **Core Knowledge Map** |
| Subject: Biology | Year: 9 | Term: 1 |
| What are we learning? |
| How to use a microscope and how to calculate magnificationHow to do a biological drawingWhat cells are and what they doHow do substances get into and out of cells |
| How will I be assessed  |
| Classwork will be checked by teacherMid topic assessment by extended writing task in lesson 8End of topic test with a mixture of multiple choice, short answer and longer answer questions. |
| Big questions: |
| What is a cell and how do we know?What do cells do? Are all cells the same?How do substances get into and out of cells? |
| How does this build on previous learning? | How will this link to my future learning? |
| At KS2 students will have learned about plant and animal organs. How liquids are moved around plant and animals.  | How cells make organs and what those organs do.How the products of digestion and hormones enter cells |
| Core knowledge: | Key vocabulary: |
| Plant and animal cells (eukaryotic cells) have a cell membrane, cytoplasm and genetic material enclosed in a nucleus. Plant and algal cells also have a cell wall made of cellulose, which strengthens the cell.Bacterial cells (prokaryotic cells) are much smaller in comparison. They have cytoplasm and a cell membrane surrounded by a cell wall. The genetic material is not enclosed in a nucleus. It is a single DNA loop and there may be one or more small rings of DNA called plasmidsSubstances may move into and out of cells across the cell membranes via diffusion. Diffusion is the spreading out of the particles of any substance in solution, or particles of a gas, resulting in a net movement from an area of higher concentration to an area of lower concentration. Some of the substances transported in and out of cells by diffusion are oxygen and carbon dioxide in gas exchange, and of the waste product urea from cells into the blood plasma for excretion in the kidney. Active transport moves substances from a more dilute solution to a more concentrated solution (against a concentration gradient). This requires energy from respiration.  | **active transport** - the movement of substances from a dilute solution to a more concentrated solution against a concentration gradient, requiring energy from respiration**bacteria** - single-celled prokaryotic organisms**cell membrane** - the membrane around the contents of a cell that controls what moves in and out of the cell**cell wall** - the rigid structure around plant and algal cells. It is made of cellulose and strengthens the cell**diffusion** - the spreading out of the particles of any substance in a solution, or particles in a gas, resulting in a net movement of particles from an area of higher concentration to an area of lower concentration down a concentration gradient**eukaryotic cells** - cells from eukaryotes that have a cell membrane, cytoplasm, and genetic material enclosed in a nucleus**mitochondria** - the site of aerobic cellular respiration in a cell**nucleus** - organelle found in many living cells containing the genetic information surrounded by the nuclear membrane**prokaryotic cells** - from prokaryotic organisms have a cytoplasm surrounded by a cell membrane, and a cell wall that does not contain cellulose. The genetic material is a DNA loop that is free in the cytoplasm and not enclosed by a nucleus. Sometimes there are one or more small rings of DNA called plasmids |
| Need more help? |
| BBC Bitesize - <https://bbc.in/3JiJG9U>You tube cells - <https://bit.ly/3Nf5q89>You tube microscopes required practical - <https://bit.ly/3Nur9Kp>You tube osmosis required practical - <https://bit.ly/3X9SlkK> |