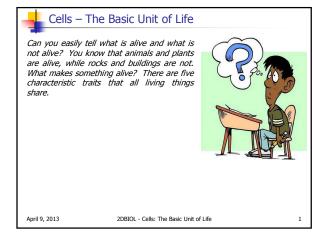
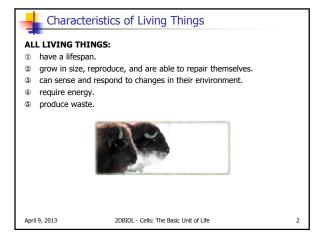
SNC2D BIOLOGY

TISSUES, ORGANS & SYSTEMS OF ... Cells – The Basic Unit of Life (P.8-16)





Cells & the Cell Theory

All living things are made up of cells. A **cell** is the smallest and most basic unit of life that can perform all the tasks listed previously. Large organisms, such as humans, are made up of trillions of cells. Other organisms, such as bacteria, are so tiny that they are made up of only one cell.

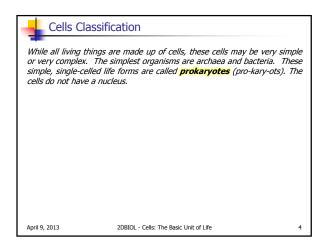
CELL

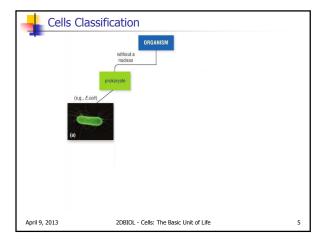
- the smallest and most basic unit of life that displays the 5 characteristics of living things
- most have a cell membrane, cytoplasm, nucleus, mitochondria, and vacuoles

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Cells Classification

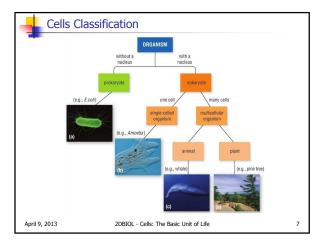
More complex cells can exist as single-celled organisms or multicellular organisms. The cells of these organisms, known as **eukaryotes** (eu-karyots), have a more complex internal organization, including a nucleus. Eukaryotes include all protists, fungi, animals, and plants, from the tiniest amoeba to the longest whale and tallest tree. The cells of eukaryotes are much larger than the cells of prokaryotes: tens to thousands of times larger.

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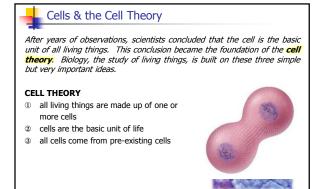
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Animal & Plant Cells

Each part of your body has a specific function. Your heart pumps blood. Your teeth chew and break down food. In a similar way, individual cells contain organelles that perform specific tasks. An **organelle** is a smaller part of a cell that has a specific function. The nucleus, vacuoles, and mitochondria are examples of organelles. The various organelles of a cell work together so that the cell can perform all life functions including the intake of nutrients, the exchange of gases, movement, growth, waste removal, and reproduction.

ORGANELLE

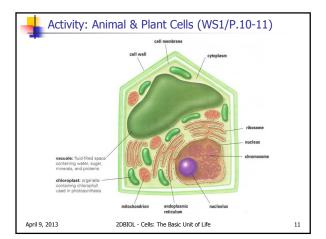
- \ast $\;$ cell structure within the cytoplasm that performs a specific function
- cell membrane, nucleus, vacuoles, ...

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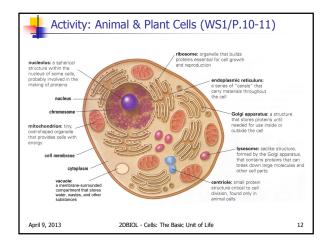
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| Activity: Anir | mal & Plant Cells (WS1/P.10-11) | |
|----------------|---|------|
| | n on (i) the next two slides and (ii) P.10-11 of DBIOL - WS1 (Animal & Plant Cell Structures). | your |
| | | |
| | | |
| | | |
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| Activity: Animal & Plant (| Cells | 5 (V | /S1/P.10-11) |
|---|----------|----------|-----------------------|
| · · · · · · · · · · · · · · · · · · · | | • | |
| ANSWERS | | | |
| covers the entire cell | 1 | 6 | cell membrane |
| rigid material that | Х | 2 | cell wall |
| small protein structure critical to | 12 | Х | centriole |
| organelle containing chlorophyll | Х | 8 | chloroplast |
| threadlike structure containing | 3 | 10 | chromosome |
| area of cell where nutrients are | | 7 | cytoplasm |
| series of "canals" that carry | | 9 | endoplasmic reticulum |
| structure that stores proteins | | 4 | Golgi apparatus |
| saclike structure formed | | Х | lysosome |
| tiny, oval-shaped organelle that | 6 | 3 | mitochondrion |
| spherical structure within | | 12 | nucleolus |
| acts as the control centre | | 11 | nucleus |
| organelle that builds proteins | | 5 | ribosome |
| small membrane-surrounded | | 1 | vacuole |
| | | | |
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Chromosomes & DNA

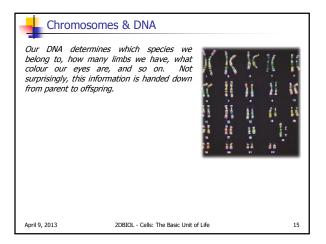
As you probably already know, almost everything in a cell is controlled by the cell's DNA. **DNA** (deoxyribonucleic acid) is a set of very large molecules that carries genetic information. These molecules are strung together in long strands called **chromosomes**. Human cells have 46 chromosomes; hamsters have 22; some kinds of goldfish have more than 100. Clearly, the size or complexity of the organism is not related to the number of chromosomes.

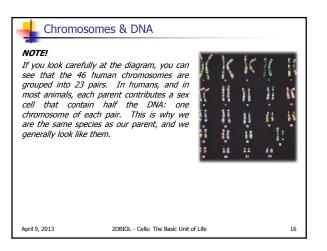
CHROMOSOMES

- threadlike structures in the nucleus
- contain the genetic information (DNA) of the cell

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| Chromosomes & DNA |
|---|
| DNA |
| controls the cell determines an organism's appearance and function |
| found in the chromosomes (humans have 46 chromosomes grouped into 23 pairs) |
| NOTE! |
| The size/complexity of an organism is not related to the number of chromosomes. |
| |
| |
| |
| |

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Chromosomes & DNA

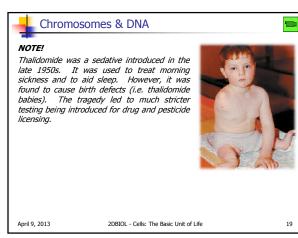
The DNA is exactly the same in every cell in an organism's body. Occasionally, a random change occurs in the DNA. This is called a **mutation**. If a mutation occurs in a sperm or egg cell, it can be passed on to the offspring that grows from that cell. The mutation in the DNA is copied in every cell of the growing offspring. The young organism is now genetically different from its parent.

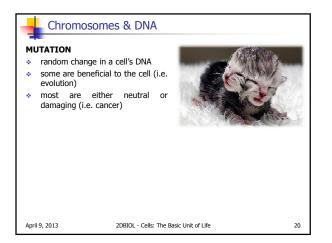


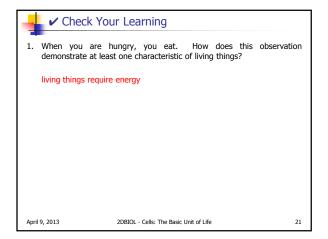
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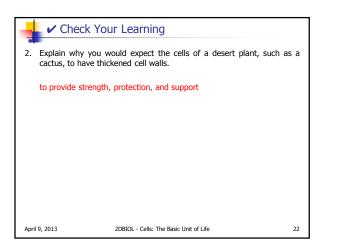
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| Chec | k Your Learning | | |
|--|---|----|--|
| view cells ta the skin of | the function of the mitochondria. You have been asked then from the leg muscle of an athlete and cells taken fr an elderly individual. What differences in the number a would you see in the two samples? Explain. | om | |
| since mitochondria provide cells with energy, you would expect to see more of them in the leg muscle of an athlete | | | |
| | | | |
| | | | |
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| Check You | ır Learning | |
|-------------------------------|--|----|
| ТЕХТВООК P.16 Q.3,5 | | |
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