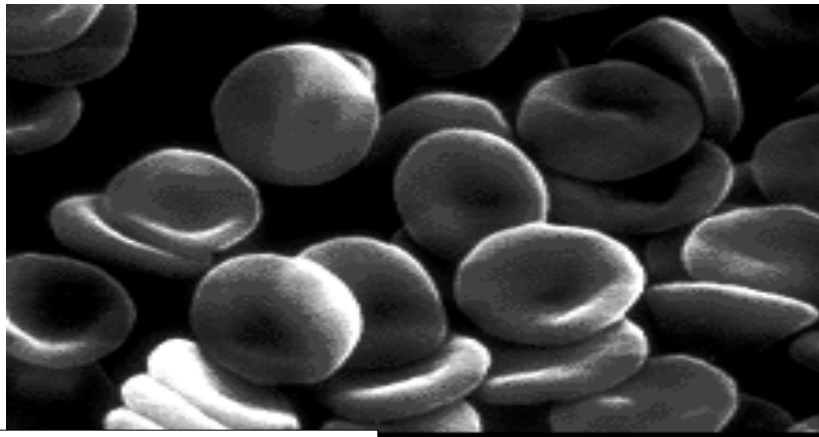


The Cell Theory



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Some Random Cell Facts

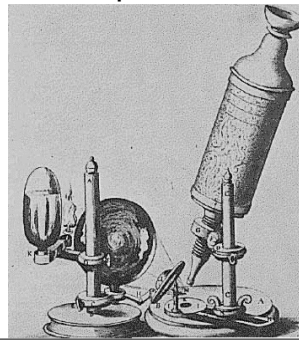
- The average human being is composed of around 100 Trillion individual cells!!!
- It would take as many as 50 cells to cover the area of a dot on the letter "i"

WOW!!!

Discovery of Cells



- 1665- English Scientist, Robert Hooke, discovered cells while looking at a thin slice of cork.
- He described the cells as tiny boxes or a honeycomb
- He thought that cells only existed in plants and fungi



Anton van Leeuwenhoek



- 1673- Used a handmade microscope to observe pond scum & discovered single-celled organisms
- He called them "animalcules"



- He also observed blood cells from fish, birds, frogs, dogs, and humans
- Therefore, it was known that cells are found in animals as well as plants

150-200 Year Gap???

- Between the Hooke/Leuwenhoek discoveries and the mid 19th century, very little cell advancements were made.
- This is probably due to the widely accepted, traditional belief in Spontaneous Generation.
- Examples:
 - Mice from dirty clothes/corn husks
 - Maggots from rotting meat

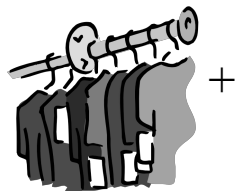


19th Century Advancement

- Much doubt existed around Spontaneous Generation
- Conclusively disproved by Louis Pasteur



Pasteur: Ummm, I don't think so!!!



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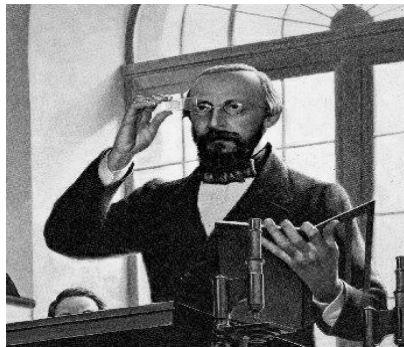
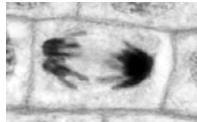
Development of Cell Theory

- 1838- German Botanist, Matthias Schleiden, concluded that all plant parts are made of cells
- 1839- German physiologist, Theodor Schwann, who was a close friend of Schleiden, stated that all animal tissues are composed of cells.



Development of Cell Theory

- 1858- Rudolf Virchow, German physician, after extensive study of cellular pathology, concluded that cells must arise from preexisting cells.



Finish these sentences:

- All living things are made of _____.
- The cell is the basic _____
_____.
- All cells come from pre-existing _____.

Congratulations! You just figured out what took scientists hundreds of years to understand!!!

The Cell Theory Complete

- The 3 Basic Components of the Cell Theory (+1) are now complete:
- 1. All organisms are composed of one or more cells. (Schleiden & Schwann)(1838-39)
- 2. The cell is the basic unit of life in all living things. (Schleiden & Schwann)(1838-39)
- 3. All cells are produced by the division of preexisting cells. (Virchow)(1858)
- 4. **The cell contains hereditary information (DNA) which is passed on from cell to cell during cell division.** (1940s)

Modern Cell Theory

- Modern Cell Theory contains 4 statements, in addition to the original Cell Theory:
- **The cell contains hereditary information (DNA) which is passed on from cell to cell during cell division.**
- All cells are basically the same in chemical composition and metabolic activities.
- All basic chemical & physiological functions are carried out inside the cells.(movement, digestion,etc)
- Cell activity depends on the activities of sub-cellular structures within the cell(organelles, nucleus, plasma membrane)



How Has The Cell Theory Been Used?

- The basic discovered truths about cells, listed in the Cell Theory, are the basis for things such as:
 - Disease/Health/Medical Research and Cures(AIDS, Cancer, Vaccines, Cloning, Stem Cell Research, etc.)



Cell Diversity

- Lots of shapes and sizes

