Chapter 2: Section 3

Discovering Cells

Main Ideas

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| What are cells? | Cells are the basic units of structure and function in living things. That means that they are the smallest piece of living material. |
| How did the invention of the microscope help scientists learn more about living things? | The invention of the microscope made it possible for people to discover and learn about cells. |
| What is the cell theory? | It is a widely accepted explanation of the relationship between cells and living things.  What does this mean?   * All living things are composed of cells. * Cells are the basic units of structure and function in living things. * All cells are produced from other cells. |
| How do microscopes produce magnified images? | The lenses in light microscopes magnify an object by bending the light that passes through them. |
|  | Invisibility cloaks may be a bit closer to reality, researchers say, thanks to the development of two new materials that are the first to bend visible light the "wrong" way in three dimensions. The so-called metamaterials are artificial composites designed to manipulate light in ways that natural materials can't—in these cases by refracting it backward. (Related: ["The Power of Light"](http://science.nationalgeographic.com/science/space/universe/power-of-light.html) in *National Geographic* magazine.) |
| Key Terms |  |
| Cell | The basic unit of structure and function in living things.   * Cells are able to perform very specific tasks in a multi-cellular organism. * Cells are able to complete all the requirements of a living thing as a one-celled organism. * Life processes include obtaining oxygen, getting rid of waste, obtaining food, and growing. |
| Microscope | A tool that allows scientists, and students, to examine organisms or tissues and cells that are too small to see with our eyes.  It makes small objects appear larger.  Like vorticella . |
| Cell theory  Prokaryotes lack a nucleus.  Eukaryotes have a nucleus.  The nucleus is the control center of the cell.  All processes in the cell are driven by the production of proteins in the nucleus of the cell. | A widely accepted explanation of the relationship between cells and living things.  Prokaryotes Eukaryotes  {Bacteria, Archea} {Protists, Plants,  Animals, Fungi} |
| Compound light microscope | Use more than one lens. An eyepiece and an objective lens are used. |
| Electron microscope | Use a beam of electrons instead of light to produce a magnified image. The resolution is incredible relative to the compound light microscope. |
| Extra notes: |  |