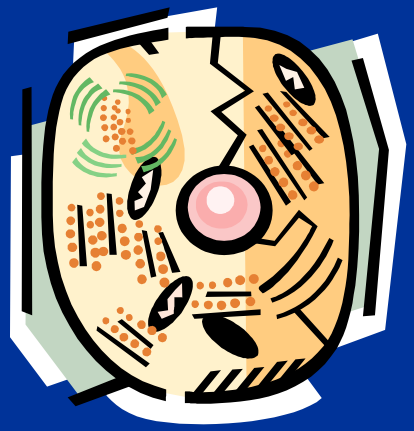
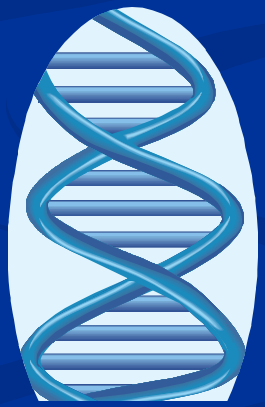
1.3 Ten themes unify the study of life



- Mrs. Kerstetter
  - Biology



Biological Systems

- **System**= a complex organization formed from a combination of smaller parts
  - Has properties based on the arrangement and interaction of its parts
  - Examples:
    - Your body!
    - Ecosystem

Cellular Basis of Life

- All organisms are made of cells
- Most multicellular organisms have cells that are specialized for different functions
  - What does specialized mean?
- Most multicellular organisms have higher levels of organization
  - Interaction of cells determines development and survival

Cell→tissue→organ→system→organism

Form and Function

- How something works is related to its structure
  - AKA "form fits function"
- What are some examples in nature where "form fits function?"

Reproduction and Inheritance

- "Like begets like"
  - Organisms reproduce their own kind
- Genes (units of genetic information) are responsible for family inheritance
- Genes are made of DNA
  - Each cell contains copy of ALL DNA in your genome
  - Inherited info in the form of DNA enables organisms to reproduce their own kind

Interaction with the Environment

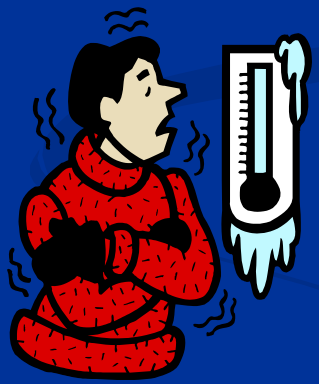
- Each organisms interacts continuously with its environment
- Imp in an ecosystem (of which we are a part!)
  - Transfer of chemicals b/w organisms and the environments
  - React to environmental stimuli

Energy and Life

- Energy is needed in chemical form
  - Carbohydrates, lipids, etc.
- Ecosystem

Regulation

- **Homeostasis**= regulation of internal conditions
- Examples?

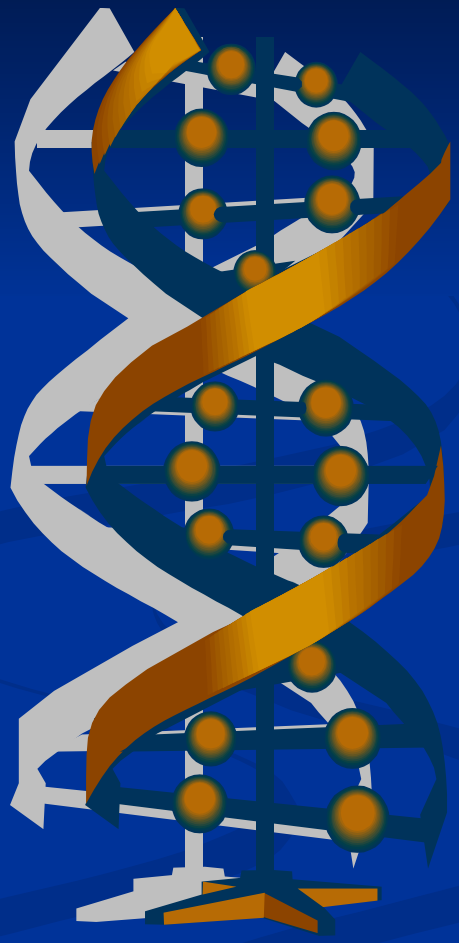


Adaptation and Evolution

- **Adaptation**= an inherited trait that helps an organism's ability to survive and reproduce
- **Population**= localized group of organisms of the same species
- **Natural selection**= individuals with beneficial variations may live longer and produce more offspring than those that don't
- **Evolution**= generation-to-generation change in the proportion of different inherited genes in a population

Biology and Society

- DNA
- Medicine
- Agriculture
- Pharmaceuticals
- Environmental issues
- Genetics



Scientific Inquiry

=asking questions about nature

=using observations or experiments to to find possible answers