Think Like a Biologist
The Living Earth

- The Living Earth is California’s new biology class.
- It combines traditional biology topics with some earth science topics.
- Learning with now be more hands on and scientific!
  - You will no longer simply memorize facts!
  - Now we will learn to think and act like scientists.
What is Biology?

- **Biology** is the study of living organisms

What is **Science**?
- an organized way of using evidence to learn about the natural world.
Why Study Biology?

- Two important reasons for studying Biology:
  1. Biology is relevant to our everyday experience
     - Medical advances
     - Addressing needs of growing human population
     - Challenges of decreasing rate of biodiversity
     - Biotechnology advances
Why Study Biology?

2. Biology can be controversial

- Examples:
  - Dealing with endangered species?
  - Use of human fetal tissue in biomedical research?
  - Safety of irradiated foods?
What is Life?

- Living organisms:
  - Highly organized and complex.
  - Are composed of one or more cells.
  - Contain a blueprint of their characteristics. -- DNA
  - Acquire and use energy.
  - Carry out and control numerous reactions.
What is Life?

- Living organisms:
  - Grow.
  - Maintain constant internal environment.
  - Produce offspring.
  - Respond to environmental changes.
  - May evolve.
Major Topics in The Living Earth

- Evolution
- Inheritance
- Cells
- Homeostasis
- Ecology
- Climate Change
The Goals of Science

1. Deals only with the natural world
   - The supernatural is outside the realm of science
2. Collect and Organize Information

Estimated annual cost to the U.S. economy for several diseases (dollar amounts in billions)

- Osteoporosis: 10 billion
- Stroke: 30 billion
- Depression: 44 billion
- Arthritis: 65 billion
- Mental disorders: 148 billion
- Diabetes: 138 billion
- Alzheimer’s: 100 billion
- Cancer: 104 billion
- Heart Disease: 128 billion
3. Propose explanations that can be tested
4. Summarizing

- SCIENCE is a body of knowledge that explains the natural world.