


Biology


= the scientific study of life.



Diversity of Life

- Known ~ 1.8 million species
- Estimates: 5 - 100 million species

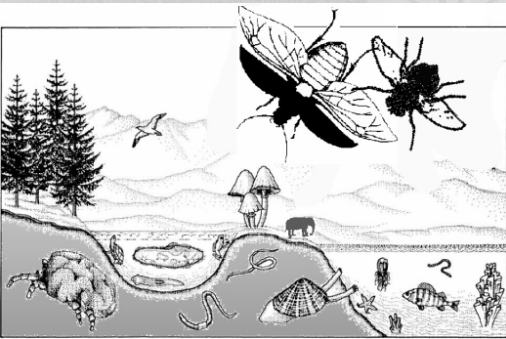
OCTOPI WALL STREET



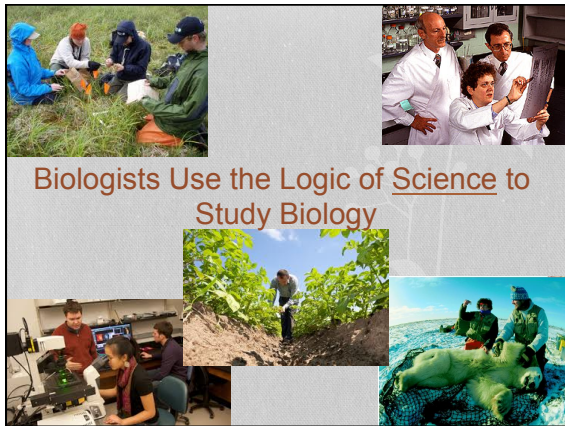
Invertebrates are 97% of animal diversity!

Brought to you by Oregon Institute of Marine Biology, University of Oregon

“The Creator, if He exists, has an inordinate fondness of beetles.”
– J.B.S. Haldane



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The Nature Of Science

- Seeks natural causes for natural phenomena.
- This limits the scope of science to what we can observe and measure.
- Methods?

Scientific Method

The Scientific Method

- Make observations in the natural world
- Ask a question about something observed in nature
- Do background research, see what others have found
- Form a working hypothesis to explain that observation
 - a proposed explanation for a set of observations
 - an idea on trial, *educated guess*.
- Conduct an experiment to test the hypothesis
- Analyze your data and find out draw a conclusion
 - (try to prove the hypothesis incorrect)
 - Repeat, repeat, repeat, repeat...
- Communicate results
 - Report objectively, Examine alternatives, Peer review

SUMMARY FROM CHAPTER 1 IN YOUR TEXTBOOK

Hypothesis-Driven Science
A scientist formulates a hypothesis (tentative explanation) to explain the natural world. The hypothesis may then be tested via the steps of the scientific method:

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graph LR; A[Observation] --> B[Question]; B --> C[Hypothesis]; C --> D[Prediction]; D --> E[Experiment]; D -- "Revise and repeat" --> C;
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Parts of an Environment

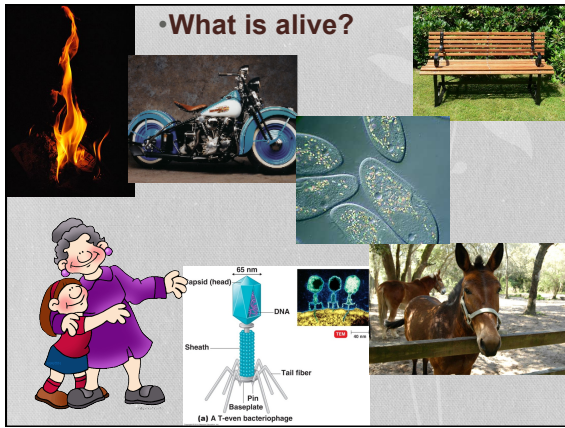
Abiotic	Biotic
• Non – living	• Living
Wind	Plants
Rocks	Animals
Currents	Bacteria

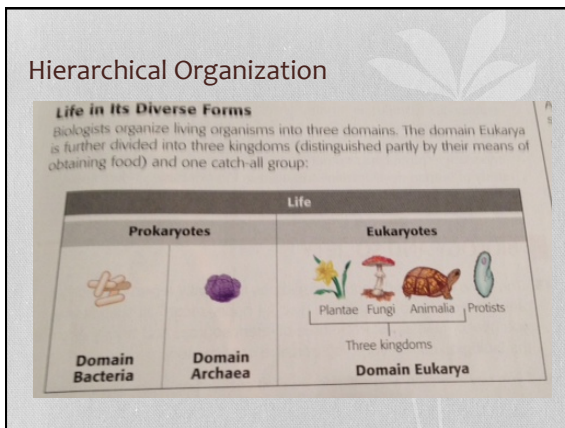
Properties of Life

1. Order (organization)
2. Regulation (Homeostasis)
3. Growth and Development

The Properties of Life
All life displays a common set of characteristics:

- Order
- Regulation
- Growth and development
- Energy utilization
- Response to the environment
- Reproduction
- Evolution







WHAT ARE YOU MADE OF?

"B bec pooot commas"
Or...

Betty Boop Eats Creamy Club
Panini's Outdoor on our Terrace.
Cartoons offer magical moments
almost secretly.

- BIOSPHERE
- BIOME
- ECOSYSTEM
- COMMUNITY
- POPULATION
- ORGANISM
- ORGAN SYSTEM
- ORGAN
- TISSUE
- CELL
- ORGANELLE
- MACROMOLECULE
- MOLECULE
- ATOM
- SUBATOMIC PARTICLES
