

# SCI141 – Integrated Earth Science and Biology

## → Biology Section

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Topic 2 Handout → The nature of all living things

The characteristics of life:

1. **Metabolism** → Cells will survive only as long as they are metabolizing
  - A. Nutrient uptake
  - B. Nutrient processing
  - C. Waste elimination

Metabolism is related to creating and/or releasing energy.

2. **Generative Processes** → Heredity, Reproduction, Growth → All organisms display characteristics based on their unique DNA and strive to pass on that DNA to the next generation.

How does genetic diversity come about?

3. **Responsive Processes** → Adaptation → All organisms strive to change to meet the needs of survival in their environment. This leads to diversity from unity.

What does diversity from unity mean?

4. **Control Processes** → Homeostasis → All organisms strive to maintain a stable internal environment based on the conditions of their external environment.

Sometimes this means balance, sometimes it requires not maintaining a balance.

5. **Structural Similarities** → Cells → All organisms are made up of cells and follow similar organization patterns.

What type of organizational patterns? Well that depends.

A. Order of life

CELL → Organ → Organ System → Organism

B. Molecule or “package” assembly

Activity #1 Does it qualify as living?

<i>Object</i>	<i>Cells</i>	<i>Metabolism</i>	<i>Reproduction</i>	<i>Adaptation</i>	<i>Homeostasis</i>
Human					
Bacteria					
Rock					
Tulip					
Yogurt					
Virus					
Computer					
Cork					