

10/17 Lecture summary Origin of Life

7 Characteristics of Life:

1. Cellular organization
2. Ordered Complexity
3. Sensitivity (response to stimuli)
4. Growth, development, reproduction
5. Energy utilization
6. Homeostasis
7. Evolutionary adaptation

Big Bang: 13.8 BYA

Earth is uniquely suited for life:

1. Right distance from sun (temp)
2. Right size and density (perfect gravity for our atmosphere)

Hypothesis on the origin:

1. Devine creation
2. "Spore" theory (pansperma)
3. Originated on Earth
 - a. Spontaneous Generation

Primary Abiogenesis:

1. Inorganic molecules
2. Organic molecules
3. Interacting chem systems
4. Reproducing molecules
5. Cells
6. Multicellular organisms

CHEMICAL EVOLUTION

BIOLOGICAL EVOLUTION

Molecules have been detected in space, relatively easy to make organic molecules from inorganic

- Polymerization experiments: Can be done by Evaporation, freezing, heating
 - Simple sugars → complex carbs
 - Amino Acids → Proteins

Interacting chemical systems:

- Coacervates: colloidal drops of organic materials in solution
- Properties of coacervates: "feeding", size of small cell, membrane, cell division

Reproduction: Some RNA's can stimulate the formation of more RNA