



Wednesday, Jan 10, 2018

Pick up: new tab for topic

Today you will:

- Stated Clearly-Evolution
- Stated Clearly-Origin of Life
- Origin of Life on Earth & Early Ideas Notes

Homework/Planner:

- Read & Study what we've done so far

Biological Evolution

Four friends were discussing the meaning of the term *biological evolution*. This is what they said:

Mario: "I think it is another term for natural selection."

Sally: "I think it mainly explains how life started."

Cameron: "I think it mainly explains how life changed after it started."

Paz: "I think it includes both how life started and how it changed after it started."



Who do you most agree with? Explain what you think biological evolution is.

Be sure to skip the appropriate pages!

Evolution Section

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1	Unit Overview	184
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On a new page outline this:

Origin of Life

- Earth-
 - Nebula
- Life-
 - Miller-Urey Hypothesis
 - Meteorite Hypothesis
- Early Cell Structure
 - Bubble
 - Endosymbiosis
 - Lipid Membrane
- RNA Hypothesis

The Origin of the EARTH

The Nebula Hypothesis

Most popular hypothesis of Earth's beginning:

- 4.6 billion yrs ago → Earth & planets formed thru space debris collisions in cloud of gas & dust in space called a nebula, which circled the sun
- **BTW:** 3.8 billion years ago → *Conditions... After collisions → earth cooled → water vapor condensed to rain → energy from radiation & lightning → formed ORGANIC molecules → MAJOR EVENT because all living things are ORGANIC!!!*

Nebula



The Origin of **LIFE**

Organic Molecule Hypothesis

How amino acids, nucleotides formed

Miller-Urey Hypothesis

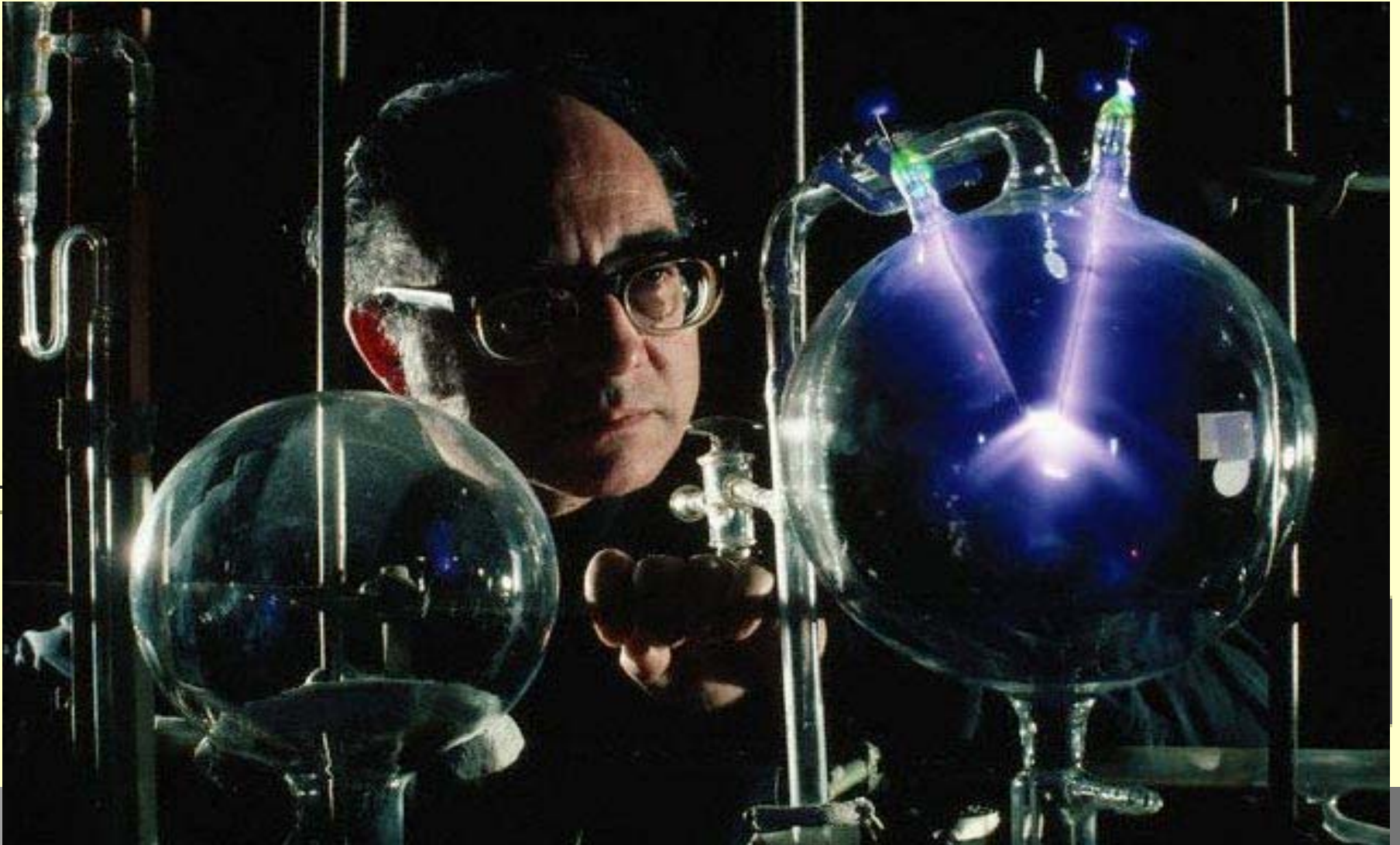
1. Model of early earth in lab
2. Electric spark represented lightening
3. Produced **ORGANIC** compounds!

Meteorite Hypothesis

1. Analysis of meteorite that fell in Australia in 1969
 1. 100s of pieces
 2. Ounces to 113 lbs
2. Ninety amino acids have been identified → **BUT** only 19 of these are found on Earth!!!

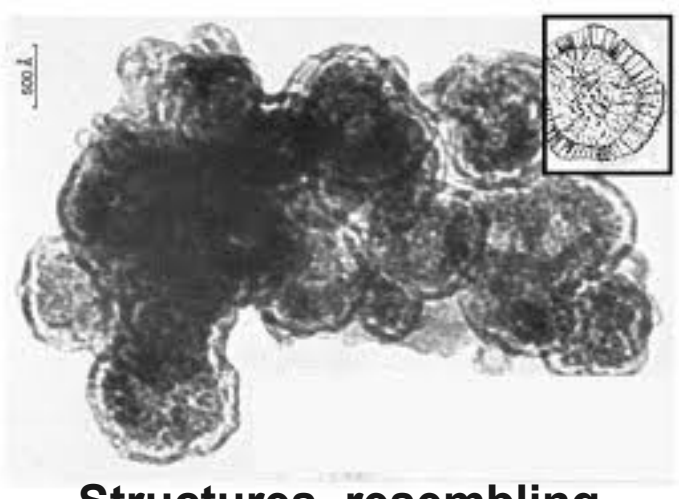
Miller-Urey

How amino acids, nucleotides formed

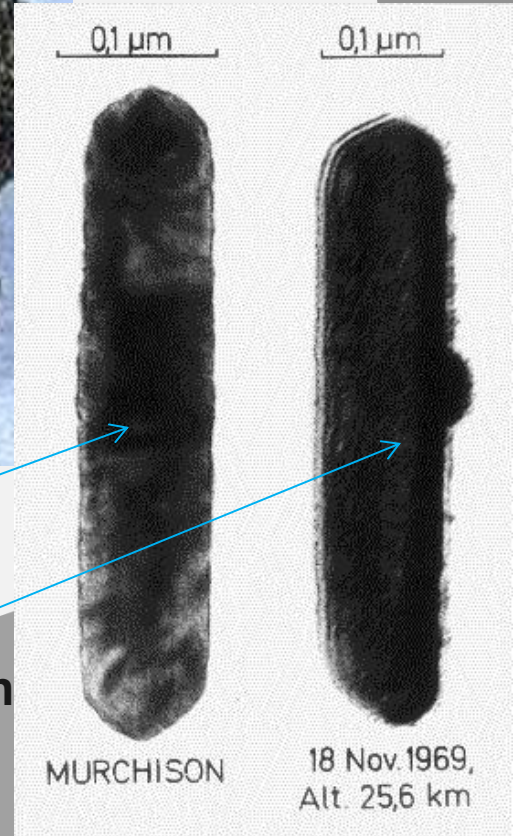


Meteorite...

Murchison, Australia 1969



Structures resembling influenza virus!



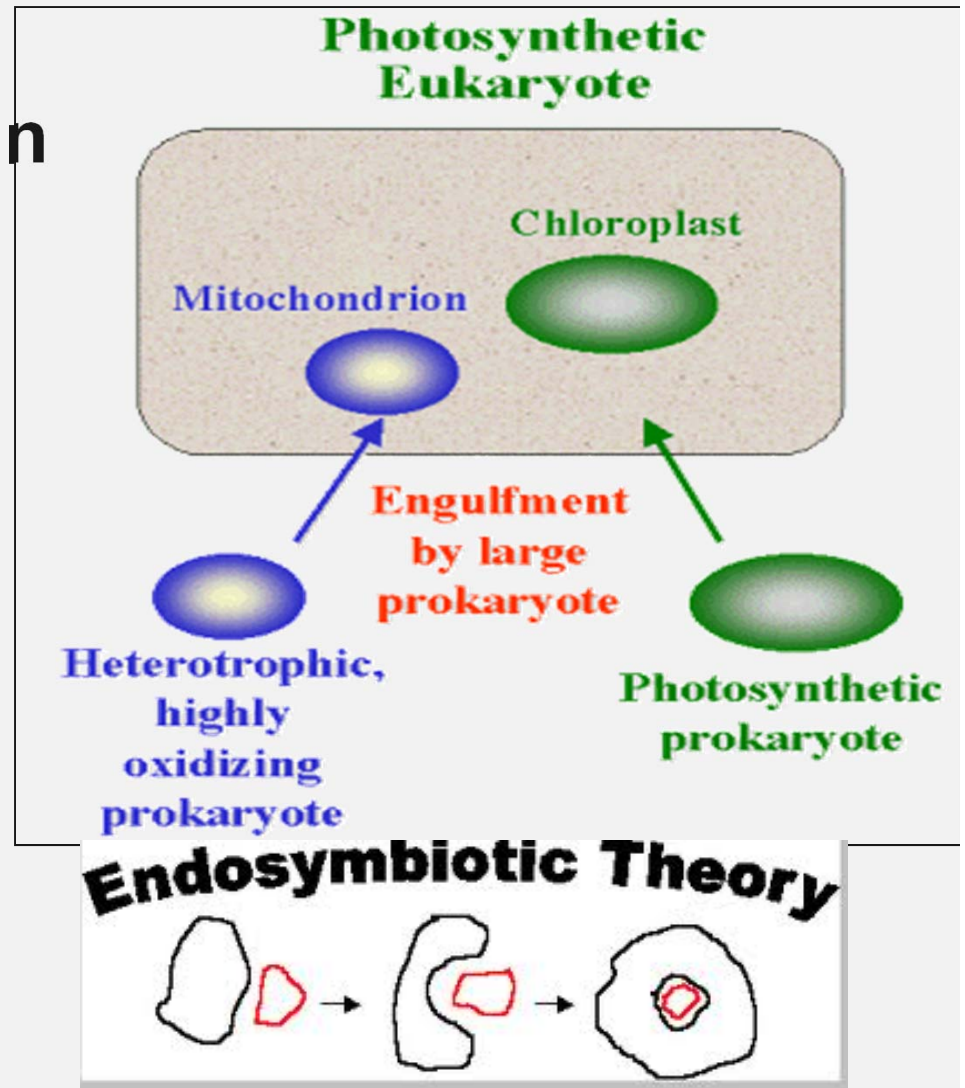
Left is fossil from Murchison meteor & Right is bacteria collected at high altitude

The Origin of **CELLS**

Endosymbiont Hypothesis

How 1st cells may have developed

1. Endosymbiont = any organism that lives within the body or cells of another organism
2. Maybe the 1st cells were mitochondria & chloroplasts living together as simple prokaryotes → then were taken up by larger prok.
 - Mitochondria prov. energy
 - Chloroplast prov. food



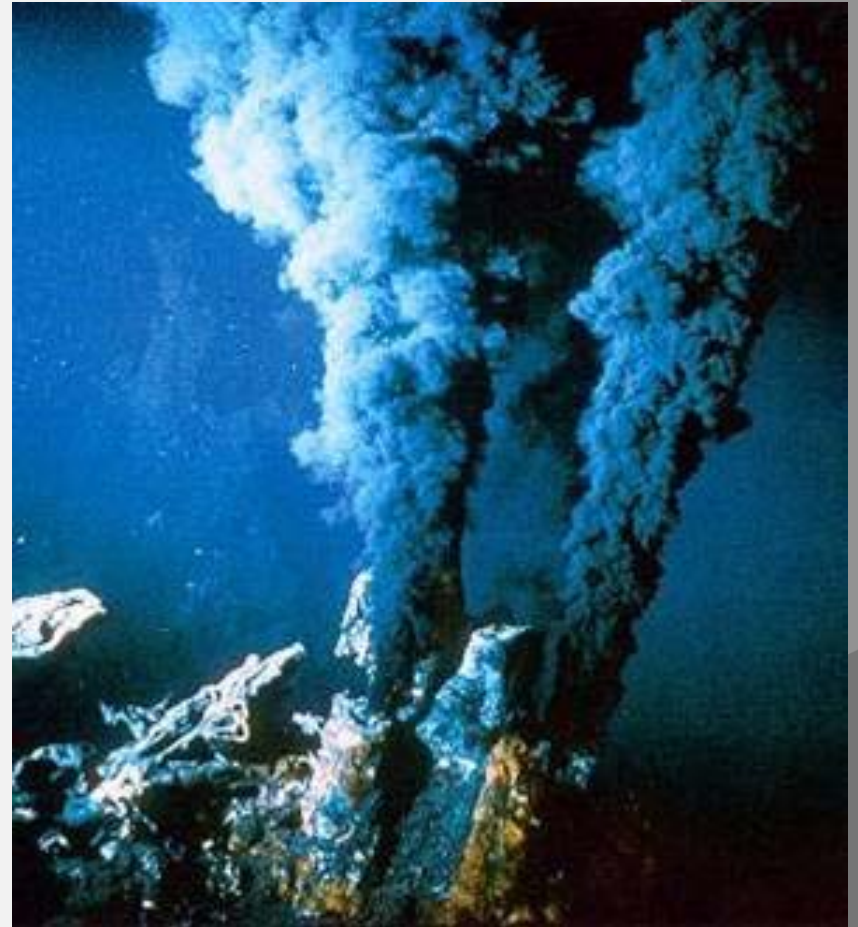
The Origin of Cells

Cell Structure Hypothesis

How 1st cells formed

Iron Sulfide Bubble Hypothesis

1. Biological molecules combined forming hydro-thermal vents on ocean floor →
2. These acted as the first cell membranes



CONT... The Origin of Cells

Cell Structure Hypothesis

How 1st cells formed

Lipid Membrane Hypothesis

1. IMPORTANT BECAUSE cells have a lipid bilayer....
2. Maybe those membranes came from **liposomes** → have membranes similar to cells
3. → which could then form around organic molecules (a.a., nucleotides, sugars)

The Origin of RNA

Ribozyme Hypothesis

How RNA formed

1. Ribozymes are RNA molecules that can start chemical reactions
2. They can replicate themselves and do NOT need other enzymes to do so... like DNA does
- 3. *So maybe RNA came first!***

