



Friday, Feb 3, 2017

Pick up: none

Today you will:

- Review Early Ideas of Scientists
- Learn about Darwin's Theory of Natural Selection & Adaptation
- Stated Clearly-Natural Selection
- A Sisters Natural Selection & Bacterial Resistance

Homework/Planner:

Study

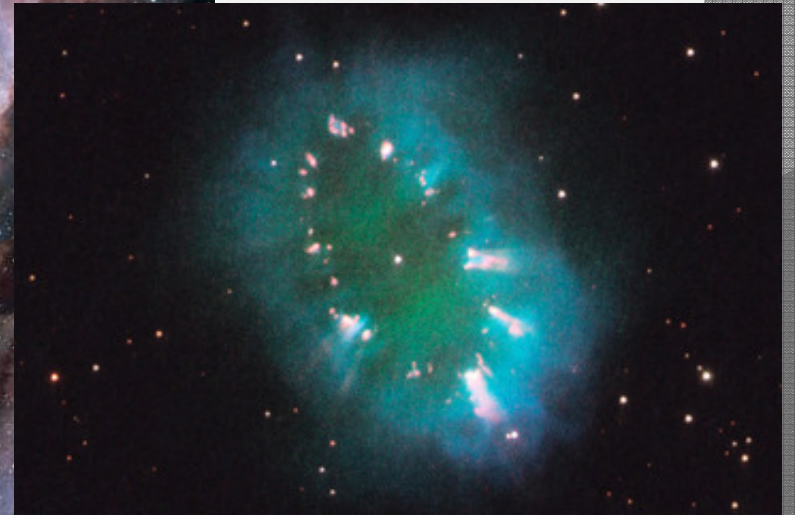
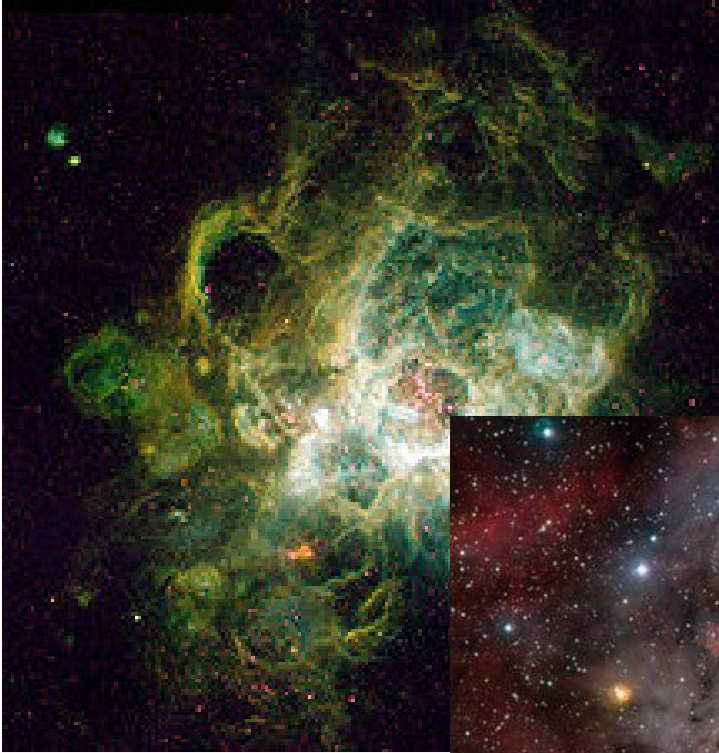
# The Origin of the EARTH

## 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 & lightening → 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

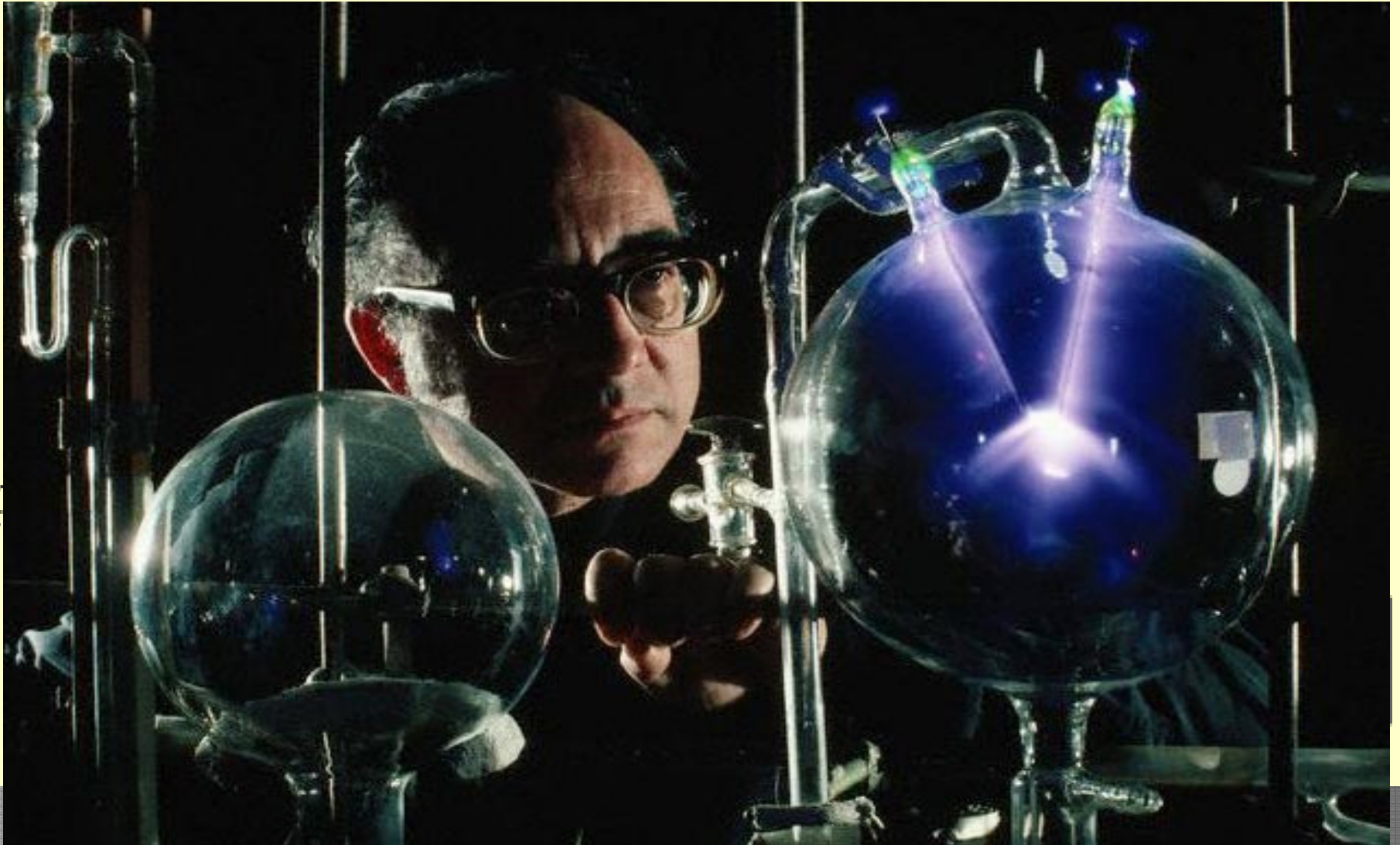
1. Model of early earth in lab
2. Electric spark represented lightening
3. Produced ORGANIC compounds!

### 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!!!

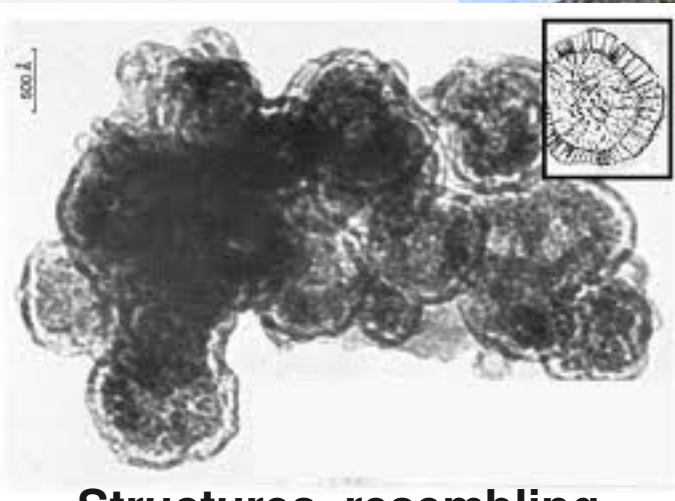
# Miller-Urey

*How amino acids, nucleotides formed*



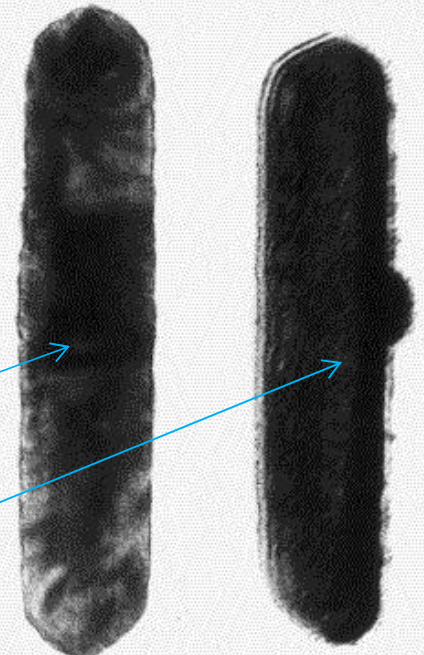
# Meteorite...

***Murchison, Australia 1969***



**Structures resembling influenza virus!**

0,1  $\mu\text{m}$       0,1  $\mu\text{m}$



MURCHISON

18 Nov. 1969,  
Alt. 25,6 km

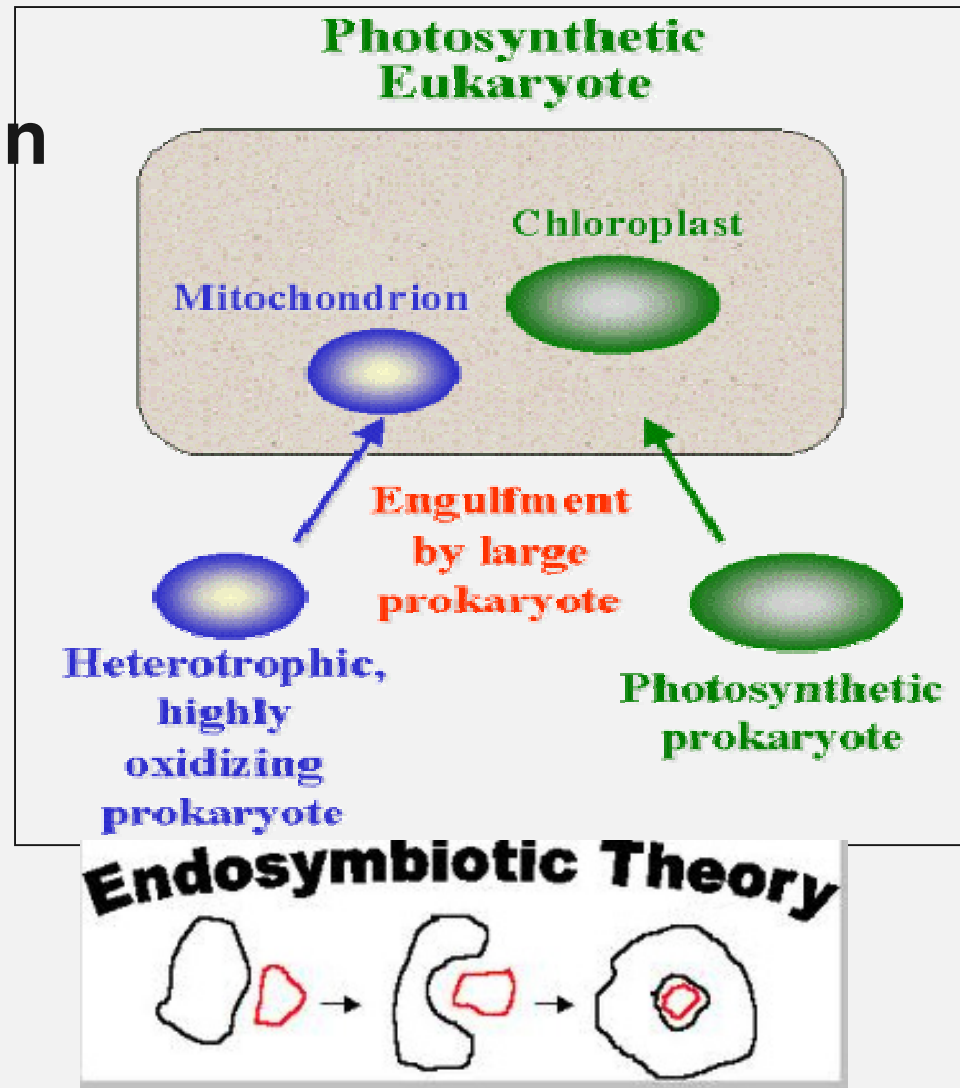
**Left is fossil from Murchison meteor & Right is bacteria collected at high altitude**

# The Origin of CELLS

## Endosymbiont Hypothesis

*How 1<sup>st</sup> cells may have developed*

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



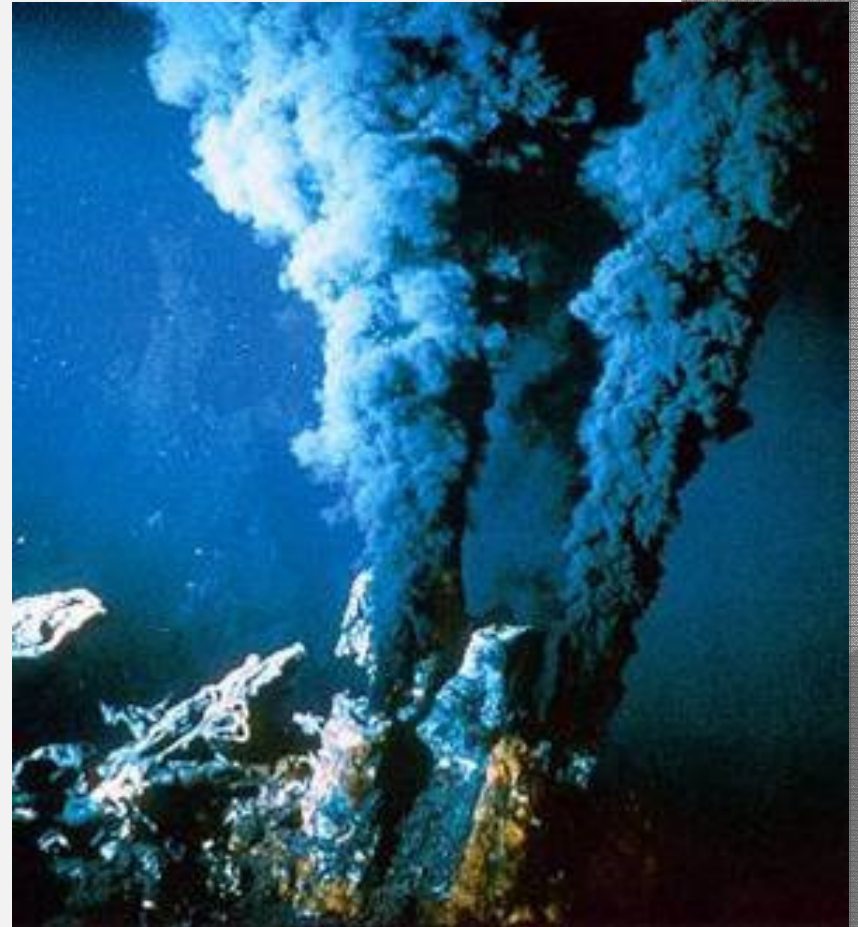
# The Origin of Cells

## Cell Structure Hypothesis

*How 1<sup>st</sup> 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 1<sup>st</sup> cells formed*

### Lipid Membrane Hypothesis

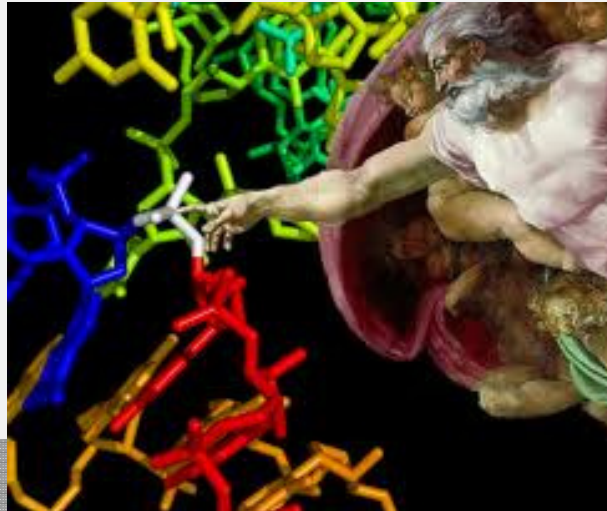
1. IMPORTANT BECAUSE cells have a lipid bilayer....
2. Maybe those membranes came from **liposomes** → have membranes similar to cells
3. → which could then form around organic molecules (a.a., nucleotides, sugars)

# 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!***



# So What is Evolution?

ISN pg 145

- ⦿ The change in the **INHERITED traits of** a population of organisms thru the generations
- ⦿ Over time, those **INHERITED traits** become more, or less, **common.**

# EOC Review Questions

- ◎ Origin of Life

- ◎ <http://ecsd-fl.schoolloop.com/L.15.8>

# *Yesterday's Notes* on ISBN pg 143

## A. Origin of Earth →

**A. Nebula Hypothesis**

## B. Origin of Life →

**A. Miller-Urey**

**B. Meteorite Hypothesis**

## C. Origin of Cells →

**A. Endosymbiont Hypothesis**

# You read about Early **Ideas About Evolution**

*How life changed over time*

1. Linnaeus = classification system to name and categorize species
2. Buffon = said species shared ancestors instead of arising separately!
3. LaMarck = changes in organism's environment caused an organism to change its body = inheritance of acquired traits...!

# Lamarck's Ideas of Acquired Traits being passed on to the offspring....!

