

# I. Evolution

1. be able to define **biologic evolution**.
2. be able to define and apply the principles of **Natural Selection**.
3. be able to describe Gregor Mendel's experiment with pea plants.
  - a) be able to explain the difference between **genes** and **alleles**
    - (1) be able to define **dominant allele**
    - (2) be able to define **recessive allele**
4. be able to describe **mutation**
  - a) Are all mutations inheritable?
5. be able to define the word **species**
6. be able to describe **allopatric speciation**
  - a) What are **peripheral isolates** and why do they evolve more quickly?
7. be able to explain:
  - a) **Divergent evolution**
  - b) **convergent evolution**
  - c) **parallel evolution**
8. be able to describe **phyletic gradualism**
9. be able to describe **punctuated equilibrium**
10. Be able to discuss the connection between plate tectonics and evolution

## II. Pre-Cambrian Earth

1. Be able to describe the origins of the Earth using the [Solar Nebula Hypothesis](#).
2. Be able to name the eons of the precambrian in correct order and know the approximate beginning and end of each eon
3. Be able to describe the origins of the Earth using the [Solar Nebula Hypothesis](#).

### 4. Archean

a) be able to describe the evolution of Earth's

(1) Geosphere-- make sure you understand and can apply the processes involved in forming igneous rocks and how they influenced the evolution of Earth's crust.

(a) Continental Development

i) Be able to define [craton](#)

1. Be able to define [shield](#)

2. Be able to define [platform](#)

ii) Be able to describe Greenstone belts

1. Be able to describe the composition of greenstone belts and what they tell us of Earth's evolution over time

2. Be able to describe the possible origins of greenstone belts using their stratigraphic composition as evidence

iii) Be able to describe [continental accretion](#)

(2) Magnetosphere

1. Be able to explain how the development of a magnetosphere affected the evolution of Earth's atmosphere

### (3) Atmosphere

1. Be able to describe the origins and composition of Earth's earliest atmosphere

2. Be able to describe how plate tectonics affected earth's atmosphere. What is [outgassing](#)?

3. Be able to describe the composition of Earth's first, true, atmosphere and how it evolved to our current atmosphere

4. Be able to describe the evidence behind our understanding of Earth's early atmosphere

### (4) Hydrosphere

1. Be able to describe the origin of Earth's hydrosphere

2. be able to describe the evidence used to determine the presence of water

3. know when Earth's oceans developed

### (5) Biosphere

1. Be able to provide a working definition for identifying life.

#### 1.1.Origins of life

- 1.1.1.be able to explain why Oparin postulated that early organisms developed in an atmosphere with little to no oxygen

1.1.2.be able to describe the conditions necessary for the chemical development of life compounds

1.1.3.be able to describe Stanley Miller's experiment and describe the consequences of his work

2. be able to describe a **protenoid**
3. be able to define **protobiont**
4. be able to describe a **prokaryote**
5. be able to describe a **stromatolite**

## 5. Proterozoic

- (1) Be able to name the subdivisions of the proterozoic
- (2) Be able to define what is meant by a **geologic province**--You should be able to name the six provinces that make up the North American craton
- (3) Be able to fully describe a **Wilson Cycle**
- (4) Be able to use lithologic evidence preserved in the **Wopmay** orogenic zone to show the geologic events that produced the Wopmay
- (5) Be able to define and identify an **aulacogen**
- (6) Be able identify the regions affected by and the cause of the:  
Trans-Hudson orogeny  
Labrador Trough
- (7) Be able to describe the **Gowgonda Formation** and use its composition to infer the climate during which it was produced

- (8) Be able to identify the regions affected by and the cause of the **Grenville Orogeny**.
- (9) Be able to describe what **Rodinia** is how the formation of Rodinia affected the global climate
- (10) Be able to describe the life of the proterozoic
  - (a) what is a **heliotropic stromatolite** and what does it tell us about the earth during the proterozoic?
  - (b) Be able to describe a **Eukaryote** and suggest possible evidence of their evolution
  - (c) Be able to describe a **Metazoan**
  - (d) Be able to describe how earth's environment evolved throughout the Proterozoic.
    - i) What effect did the changing environment have on life?