Bio 11/29/11

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**Last lab:** december 6th

**Last lecture:** december 8th

**Final:** Thursday, December 15, 8 - 10am

 -there will be a review sheet to help you with studying posted to blackboard soon

**this week's lab:** home: the video lab assignment available on blackboard

 -due on December 6th

**scantron machine broken:** exams will be returned after machine is fixed

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Evolution

**Modern Definition: 3 Parts**

1. In a given population

2. Over time

3. Change in allele frequencies for characteristics

**Question:** Has science been able to see this happen in an experimental context?

 -Yes!

 -Science cannot find a population where this fails to happen

**The Results of these changes**

1. characteristics of pop. change over time

 -physical, behavioral, chemical

2. enough changes over enough time will result in?

 -a new species

**What is a species?**

 -many diff. definitions

 -most recognized: biological species concept

**Biological species concept:**

 a population/group of populations whose members have the potential to interbreed in nature and produce viable/fertile offspring, but do NOT produce viable/fertile offspring with members of other such pops.

 -problems with this definition? Example: what about dinosaurs which we can't see whether or not they can breed w/other dinosaurs? what about asexual creatures?

**For speciation to occur need:**

-Reproduction Isolation

 -can be time separation

 -can be physical separation

**Evolutionary Thought:**

-**Pre-Darwin:**

 -Early Greek philosophers: (like Anaximander, etc) simpler life forms preceded more complex ones

 -Aristotle: species are fixed/do not evolve

 -his theories had great influence on Western thinking

 -Archbishop James Usher: Earth is 6000 yrs old & Aristotle is correct

 -Judeo-Christian biblical view: all species = individually designed by God

**Advances Pre-Darwin:**

 -in century before Darwin, science was advancing

 -Carolus Linnaeus: **Binomial Nomenclature & classification hierarchy**

 -had problems where every area/language had different names for the same thing

 -so set up a systematic way we name all things

 -a two-name naming system (Binomial nomenclature)

 -Genus and species

 -put genus first so that the animals that were similar were listed near each other (classification hierarchy)

 -**Classification Hierarchy:** K P C O F G C S

 -**Kingdom:** ex: animal kingdom vs plant kingdom

 -**Phylum**: ex: all animals w/backbone are in same phylum

 -**Class**: ex. all birds = one class, all mammals = another

 -what makes a mammal: have hair, 2 sets of teeth (baby vs. adult), mammary glands

 -**Order**: ex. all carnivores in one order

 -**Family**: ex. all dogs (from domestic to wolves)

 -**Genus**: ex. splitting dog species down

 -**Species**: ex. each specific species of the dog family (ex, domestic and wolf are separate)

Saying to remember the system: Kings Play Chess On Fine-Grained Sand

 -**Hutton: Geology**

 -Gradualism: that all the features on earth (like mountains, lakes, canyons) are gradually created over the course of millions of years

 -Baron Cuvier: Catastrophism

 -according to his theory:

 -sets about to make the bible creation story fit with the known science

 -earth has been created and destroyed 5 times

 -that's where fossils came from

 -Count Buffon: the study of fossils suggests that Earth is older than 6,00 years, and fossil forms might be early versions of modern forms

 -Lamarck: Fossils are related to modern forms bc life evolves; acquired characteristics are inherited

 -Charles Lyell: "Principles of Geology", Uniformitarianism