Lecture 10
Thursday, October 11, 2018
BIO1130

Finishing Chapter 5…

- Natural selection acts on the hereditary part of a trait
- Way to distinguish what is associated with the environment vs associated with the heredity of a trait:
    - Small experiment OR different types of measurements which give a heritability value for a trait
        - selection will act on that aspect of the trait, not the environmental aspect
            - this is because selection acts on hereditary particles
- If you have a trait that provides you with an advantage in terms of reproduction, therefore you may have high fitness/high adaptive value/ high selective value for a trait
    - This is the co-response to the contribution of an individual to the genetic pool of the next generation when compared to the contribution of other individuals
    - **Ex:**
        - if you bear all the genetic makeup that allows you to survive well in high altitude, then, you have a high fitness
        - if you go in high altitude but you don't have the genetic makeup to survive there, then, you have a low fitness
        - Therefore, its not a matter of health, its a matter of genetic basis that allows you to survive in a different environment
- It takes about 8 generations before the first allele gets fixed
    - This is because its favoured by selection (much more than the other allele)
- What type of traits are affected by natural selection?
    - Qualitative Traits: often linked with one/a couple of genes, where the expression of these genes will be discrete
        - Ex: if you have a species of birds on an island with a specific colouration (green), and a different colouration on another island (blue)
            - These are discrete traits that distinguish the population, often linked with 1 gene. This is referred to as qualitative or discrete variation
    - Quantitative Traits: continuous variations that can be measured (height, weight, skin colour…)
        - Continuous traits are often polygenic traits (many genes that act on the phenotype at the same time). This is referred to as continuous variation
        - This will create polymorphic (many morphs within a species) populations within the species, meaning, populations that are distinguishable from one another by certain traits, will differ
            - This can be due to selective pressures that differ from one environment to another, or due to sexual selection
        - Ex: colouration from pale to dark brown

        - Frequency of individuals: meaning that the average value is usually the mid-brown type of morph, so that's the most abundant one in the population
- Natural Selection is subdivided into 3 types:
    - Directional Selection - common. selection will act on 1 portion of the bell curve and will displace the average value that you observe in the population