* **Genetics**
  + Alleles: different version of the same gene
  + Phenotype: what is visible in population
  + Genotype: all genes an organism has
* ***Do advantageous traits arise out of need?***
  + No, new alleles & physical traits that appear because of them are random!
* ***What does natural selection act upon?***
  + Selection is a phenomenon if individuals
  + Survival & reproduction is a package deal
* **Patterns of natural selection**
  + Directional Selection: selection of extreme traits
  + Stabilizing Selection: selection of no extremes, traits are “in the middle”
  + Disruptive selection: the extreme traits (both) are more useful than middle traits
* **Mechanisms underlying evolution**
  + Mutation
  + Gene flow
    - Exchange of alleles among populations
    - conjugation
  + Natural selection
  + Genetic drift
  + Sexual selection
* **Founder Effect**
  + A portion of the population breaks away & begins a new population that is genetically different because founders were not genetically representative of the population
  + Bottleneck effect
    - A portion of the population dies off & the survivors are not representative of rest of population
* **Sexual Selection**
  + Seen in natural world when males produce ornamentation to attract females
  + Signal of good genes
    - Ex: peacocks, deer, cardinals
  + Can give things to females
* **Convergent evolution**
  + Distantly related (or not related) can evolve similar structures when they survive under similar environmental pressures