

Concepts in Biology

Week 1

Lecture Notes

Evolution

- Transformation of life ó cells today apart of an unbroken chain of cells
- Genetics + time
- Darwin & Wallace ó biogeography, both discovered concept of Natural Selection
- Darwin:
 - Understood natural selection, but didn't publish ideas for 20 years
 - Published at the same time as Wallace
 - Noticed animals were similar in different areas (but didn't understand tectonic plates)

Natural Selection

- Producing offspring
- Observations:
 - Excess fertility of populations
 - Populations don't sustain exponential growth
 - Limited resources
 - Large variation in individual phenotypes (characteristics)
 - Much of variation is heritable
 - Survival depends in part on heritable traits
 - Individuals best fit to an environment will leave more offspring
 - Unequal survival & production of offspring = change in population

Evidence of Evolution

- Fossil record
- Biogeography (different regions have different flora/fauna)
- Comparative Morphology
- Molecular biology (DNA)

Divergent Evolution

- Divergence from common ancestral form
- Same basic structure, different external appearance
- Morphological divergence:
 - Homologous characteristics: Same structure, different function, indicate common ancestry

Convergent Evolution