Exam 2

- Will cover chapters 3 & 4
- Is scheduled for Feb 21, a week from Wednesday

Today February 12, 2007 is the

198th Birthday of

Abraham Lincoln and Charles Darwin

Abraham Lincoln -- Feb 12 1809 – Apr 14 1865

Charles Darwin -- Feb 12 1809 - Apr 19 1880

Parsimony

- Mutations as a source variation
- DNA sequences as adaptations
- Neutral and Selectively
- Conserved and Variable Sequences
- Equally parsimonious trees

STARTING TODAY -- READ CHAPTER 3.

PLAN OF ACTION:

1. Darwin's Theory & Inheritance
2. Mendel's Experiments
3. Chromosomes
    1. Meiosis
        1. Segregation
        2. Recombination
    2. Rediscovery of Mendel's theories
4. DNA

Darwin & Inheritance

- Darwin's Theory assumed
  - Offspring resembled parents
  - Both parent's contributed to the offsprings appearance
  - Offspring were not identical to parents

Blending vs Discrete

- Blending example
  - Tall parent x Short parent = medium offspring
- In the absence of strong selection, blending would tend to cause the gradual accumulation of intermediate phenotypes
- In the presence of selection, strong selection would need to be much stronger to overcome the preference for intermediates.

Blending vs Discrete

- Discrete example
  - Tall parent x Short Parent = either tall offspring or short offspring.
- In the absence of selection both traits would be present and neither increase or decrease in frequency over time.
- In the presence of selection one trait would rapidily increase in frequency, but it was unclear where more variation would come from.

Gregor Mendel

Born 1822
1843 – Entered the Monastery
1847 – Was ordained as Catholic priest
1851 – Failed qualifying exam to become a science teacher
1856 – Began peas experiments in the monastery garden
1866 – published results
1867 – Became abbey of the monastery
Died 1884
Theories –rediscovered 1900-1904

Mendel's Theory

- Traits are inherited from both parents
- Traits do not blend
- Law of Segregation
  - For each trait every individual has two alleles that determine the trait.
  - The factors segregate during the formation of gametes.
  - Each gamete contains only one allele.
  - Two gametes fuse to form a zygote that will contain two alleles, one from each gamete

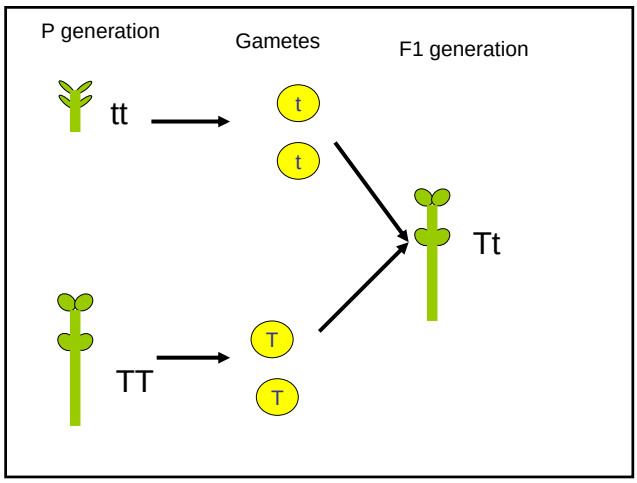
Mendel's Experiments

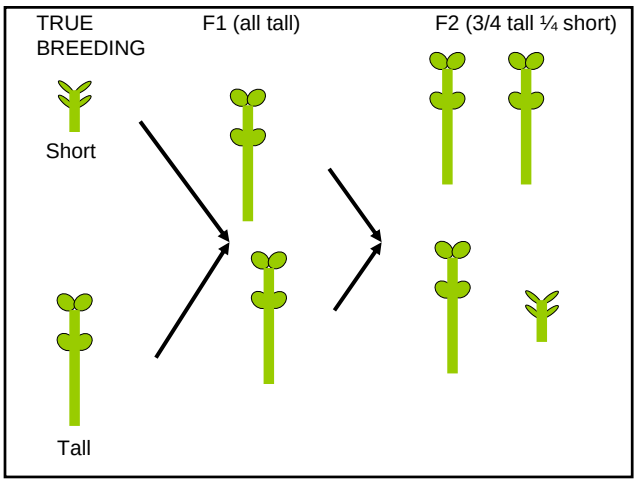
Found variety of peas that differed in one trait (height, flower color, etc.)

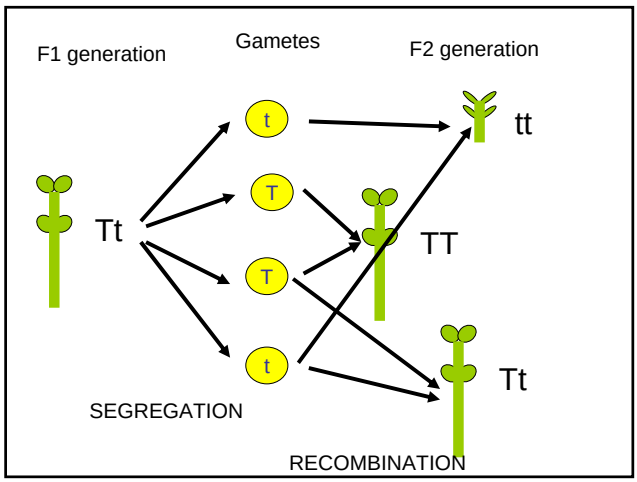
Demonstrated that varieties were true breeding plants (9+ generations).

Crossed two varieties to produce an F1 generation.

Crossed two of the F1 to produce an F2 generation - kept track of the number and kind of offspring produced.






F1 generation
Gametes
F2 generation
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SEGREGATION
RECOMBINATION