DNA segregation contd
Nature of Alleles and their products
Dominance vs Recessiveness
Pedigrees for Single Gene traits

Direct Detection of Segregation of DNA using different methods

RFLP- Restriction fragment length polymorphisms. This was perhaps the first method used to follow DNA segregation directly.

Below, these are based upon use of PCR.

CAPS - cleaved amplified polymorphisms
RAPDS- random amplified polymorphic DNA
AFLP- amplified fragment length polymorphisms
SSCP- single stranded conformational polymorphism
SNP's - single nucleotide polymorphism [follow a single nucleotide change]

- Many ways of detecting DNA segregation. [RFLP (Detect restriction fragments by using Southern Analysis); Cleaved Amplified Polymorphism;

CAPS - cleaved amplified polymorphisms

- Very Similar to RFLP
- First PCR amplify gene or DNA of interest , from all individuals then digest with restriction enzyme, then run on agarose gel and stain the gel.
- Amplify the gene, throw in primers and polymerase and run PCR on it. Ends up with hundreds of amplifications of just the region of interest. Can see it directly on a gel. Then put in a restriction enzyme and cut that gene. A homozygous would have one 300 bp fragments - **[refer to slides online]** A heterozygous would have 3 fragments; 100, 200 and 300 bp's.
- Don't need probe and transfer on to a membrane because many copies present and can see it on the gel.
- Trying to distinguish alleles using restriction enzymes.
- Heterozygotes display additive patters on the gel. May see 5 fragments, because the enzyme cuts 5 times. doesn't matter how many fragments there are, heterozygotes will always be additive. **[bands in AA and aa will equal Aa]**
- Theory of Dominance.
- Only see 1 homozygous pattern and 1 heterozygous pattern on the gel.