Chapter 12 & 13 (section 1 only) – Inheritance Patterns and Human Genetics

Remember we skipped chapter 11

I. Vocabulary: Covered in chapter 10

- Sex-linked genes and traits
- Multiple Allele
- Incomplete Dominance
- Polygenetic Characteristic

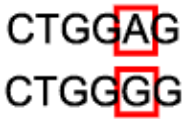
Linked Genes: Pairs of genes that tend to be inherited together (Morgan's fruit fly experiment)

Chromosome Map: a diagram that shows the linear order of genes on a chromosome (Alfred H. Sturtevant, Morgan's student made the first map).

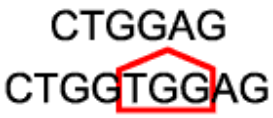
II. Mutation:

A. Gene mutation = Point mutation

i. Base substitution : One base switch Example: Sickle cell anemia

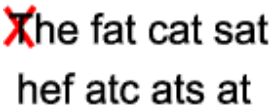


ii. Base insertion : one base added

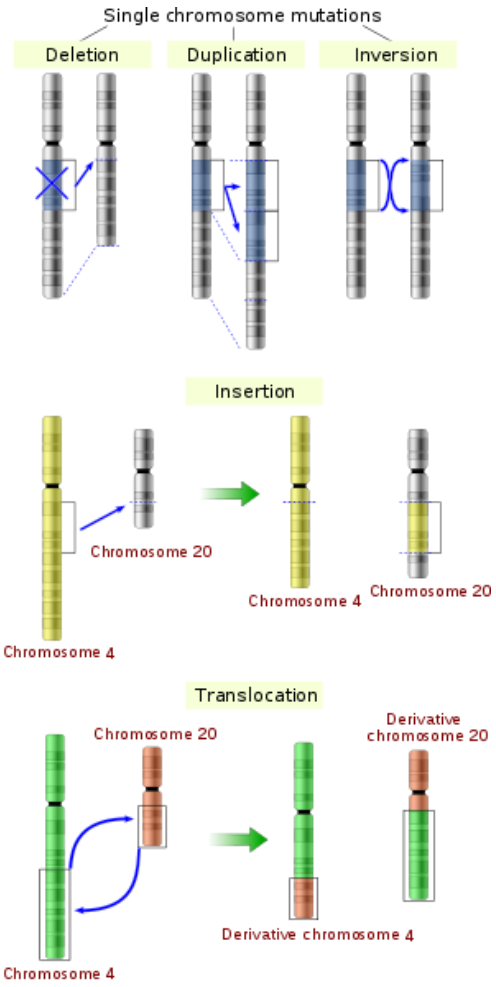


iii. Base deletion: One base omitted.

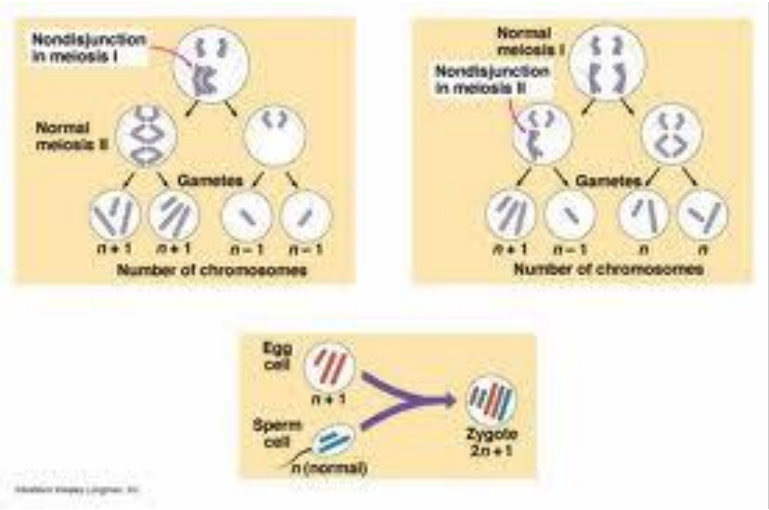
→ Frame shift results with insertion and deletion



B. Chromosome mutation



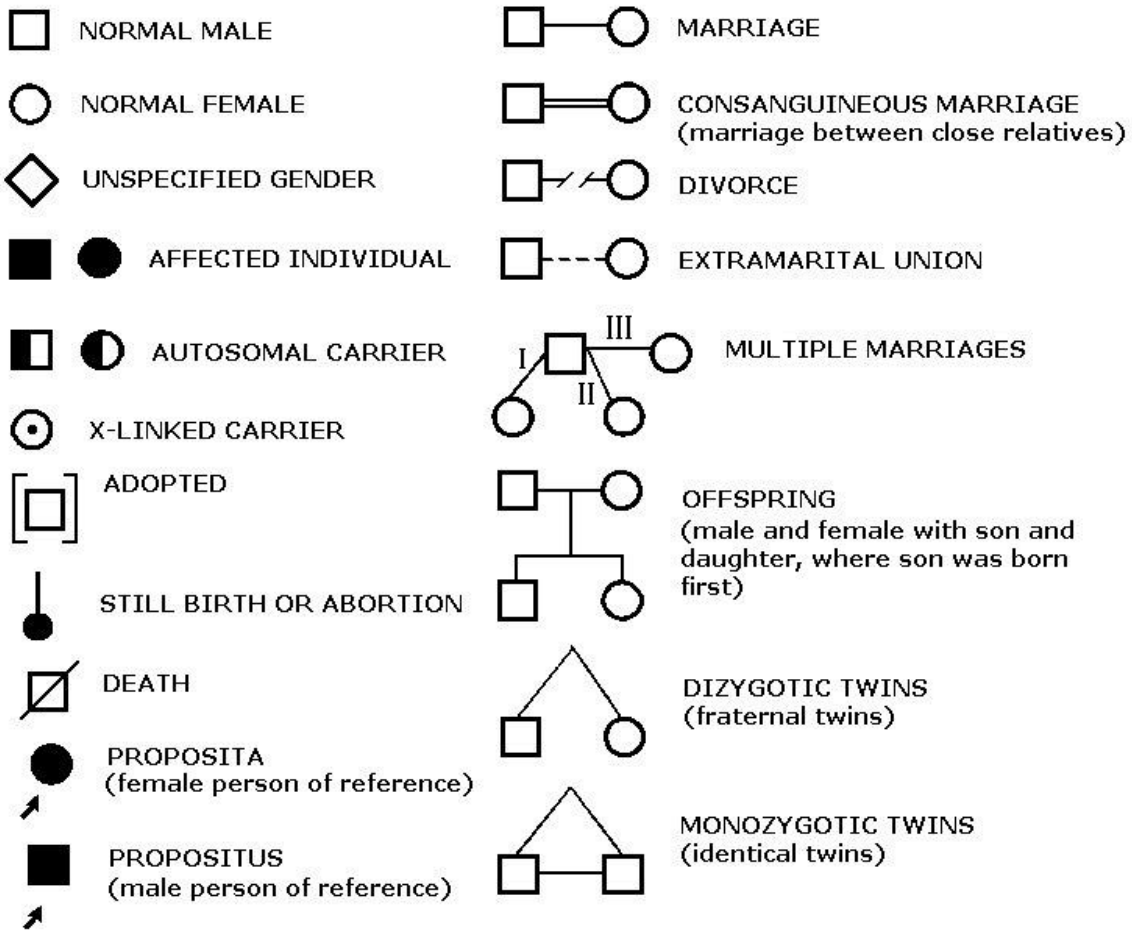
C. Chromosome number change – Non disjunction

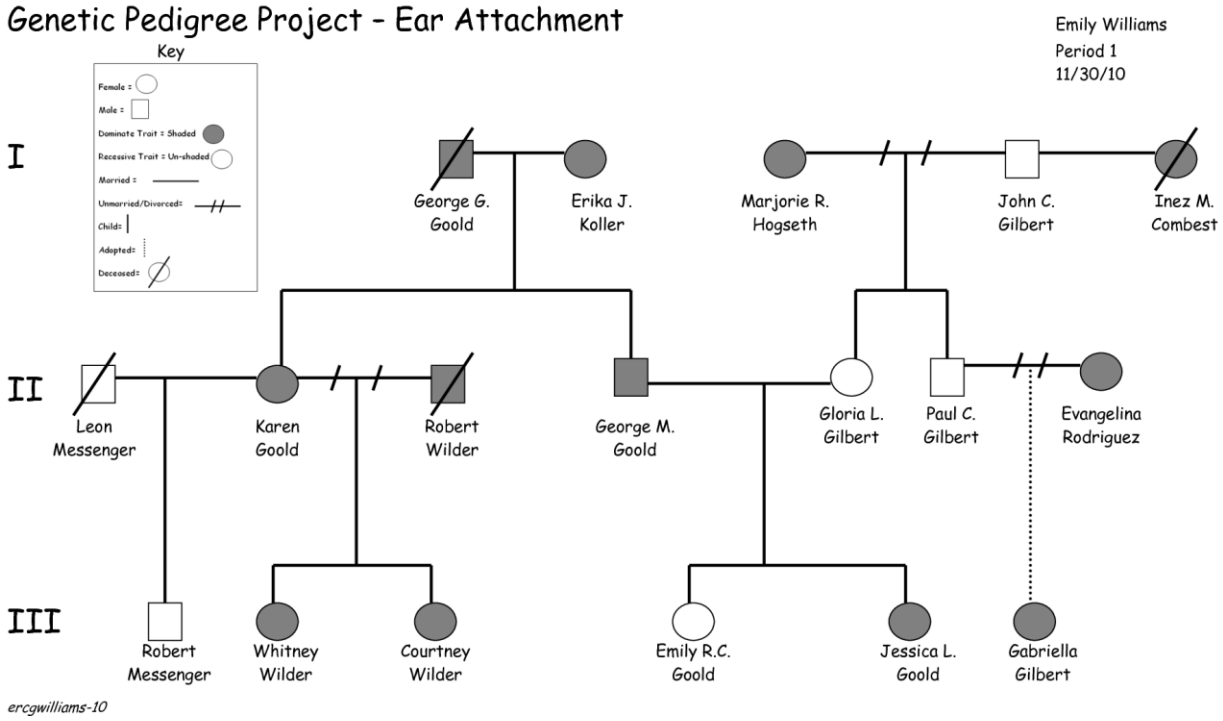


Example: Down Syndrome

III. Pedigree (Family Tree)

Pedigree is a diagram that shows how a trait is inherited over several generations.





IV. Genetic Disorder

Sickle Cell Anemia (base substitution) - co dominance

Huntington's Disease (duplication on chromosome 4) - dominance

Hemophilia (x-chromosome defect) - sex-linked recessive

Polydactylism - automsomal dominant

PKU – recessive dominant

Tay-Sachs – recessive dominant

Trisomy 21 - Down Syndrome

Klinefelter's Syndome (XXY)

Turner's Syndrome (x)

Metafemale (XXX)

XYY condition (XYY)

Gene Therapy