Studying Genetic Changes

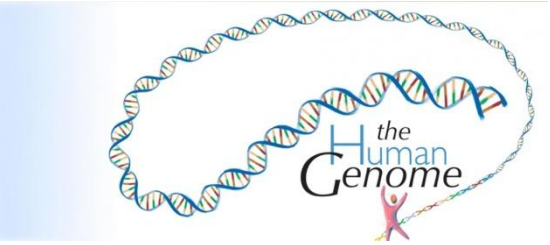
A genetic timeline…

10,000 B.C.E Early farmers saved seeds to cultivate next year's crops, so there was an understanding that traits were passed on!

Mid-1800s Gregor Mendel experimented with inherited traits in pea plants and was able to isolate parts in the seeds that passed on specific traits (i.e. colour and shape)

1953 James Watson and Francis Crick describe the structure of DNA as an organization of *genes* into a double helix shape with paired nitrogen bases that are a code

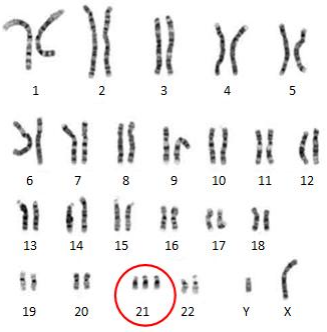
2003 Human Genome Project is completed mapping all of the 25,000 genes in the human DNA (though we're still researching what exactly it all means)



Identifying genetic diseases:

Allderdice Syndrome: A high incidence of birth defects in Sandy Point, NL led to scientific research and the discovery of a mutation on a single chromosome. This gene is passed on from the mother and causes low birth weight, hand and facial abnormalities, and mental and physical challenges.

Down Syndrome: One of the most frequently occurring types of chromosome mutations involves individuals having an extra 21st chromosome. This causes characteristic facial features, shorter stature and a propensity for heart defects and diseases such as Alzheimer's and leukemia.



Male karyotype with Down syndrome - characterised by three copies of chromosome 21

Cystic Fibrosis: A genetic disease caused by one of 1300 different mutations in one particular gene. This gene should code for a protein which transports chloride ions into and out of lung cells. When not 'built' properly, it causes mucus to build up in the individual's lungs making breathing very difficult.