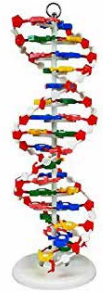


Childhood Arthritis Genetics

- A DNA strand is made up of nucleotides (think of these as letters) **ATGCTCGAATAAA**
- Each set of three nucleotides are codes for a different amino acid (think of these as words) and the nucleotides make genes (think of these as sentences).
- Sometimes during DNA replication a mistake can be made.
- Even in change in a single nucleotide (letter) can alter the whole gene (sentence)



For Example **ATG CTG AAT AAA** **ATG CGG AAT AAA**
 Her hat was red Her cat was red

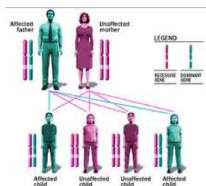


This is part of evolution and leads to natural variation such as eye colour, hair colour or height.

Unfortunately, sometimes these changes can also lead to disease or determine how we respond to a particular treatment.

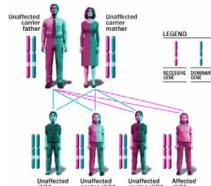
Single Gene Disorders

Sometimes errors in a single gene can be enough to cause disease.



Autosomal Dominant Disease

Only one copy of mutated gene required.

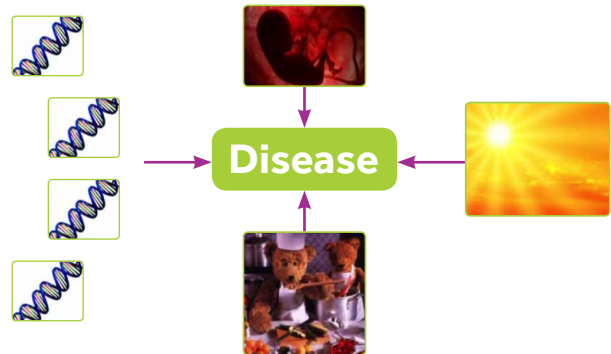


Autosomal Recessive Disease

Two copies of mutated gene required.

Complex Genetic Disease

Caused by a combination of genes and environment.



Evidence that childhood arthritis is genetic comes from both twin and family studies.



Recent studies have identified 17 different regions of the human genome that are important in childhood arthritis.

The challenge now is to determine how each gene plays a role in disease.

Understanding which genes are involved may help us understand the biological pathways involved in disease and lead to the development of new therapies.

