

Bioinformatics CSM17

Week 5: DNA and Genetics

- Genetics
- Cell Structure
- DNA
- Transcription (->RNA)
- Protein Structure

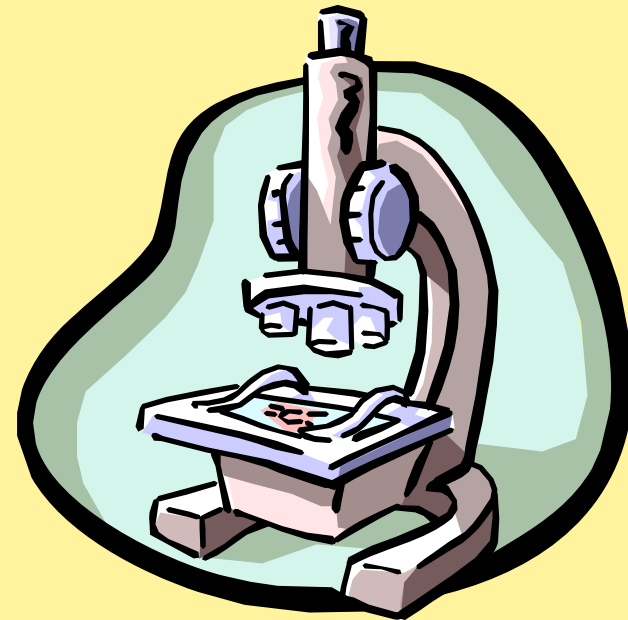
Genetics

- Gregor Mendel (1865)
- Chromosomes
 - 46 in humans
- Reproduction
 - female has XX
 - male has XY



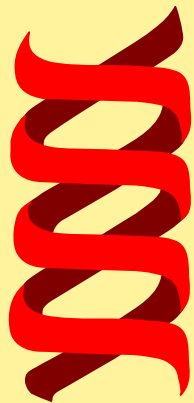
Cell Structure

- Nucleus & cytoplasm
- Mitochondria
- Chloroplasts
- Endoplasmic reticulum



DNA - history

- Watson & Crick (1953)
- The double helix (like a twisted ladder)

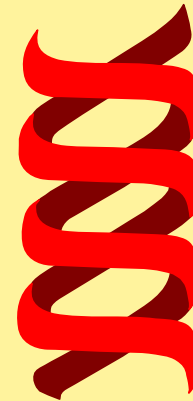


DNA - copying

- Replication
- DNA polymerase

DNA - structure

- double helix (spiral)
- sugar-phosphate backbone
- nucleotide bases
- Adenine (A)
- Guanine (G)
- Cytosine (C)
- Thymine (T)



Prokaryotes (simple cells)

- Circular DNA
- Mitochondria (in animals, plants, fungi)
- Chloroplasts (in plants)
- Endosymbiosis ... leads to Eukaryotes

Transcription - reading the data

- enzyme - transcriptase
- gene opens up and...
- messenger RNA is formed
- mRNA moves off through nuclear pores...
- ...to the ribosomes