



SEGi UNIVERSITY GROUP

Preview from Notesale.co.uk
Page 1 of 50



Genetic Control And Genetic Engineering (Week 9 & 10)

PowerPoint® Slides by
M. Lokanathan

Introduction

Humans are made up of
trillions of **cells.**

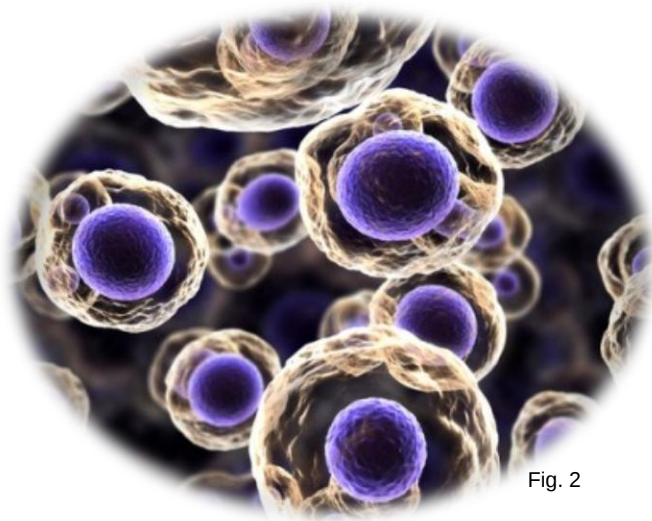
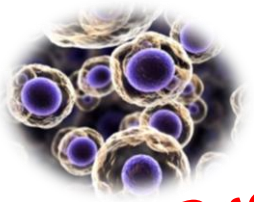


Fig. 2



Fig. 1

Introduction



Each cell have:

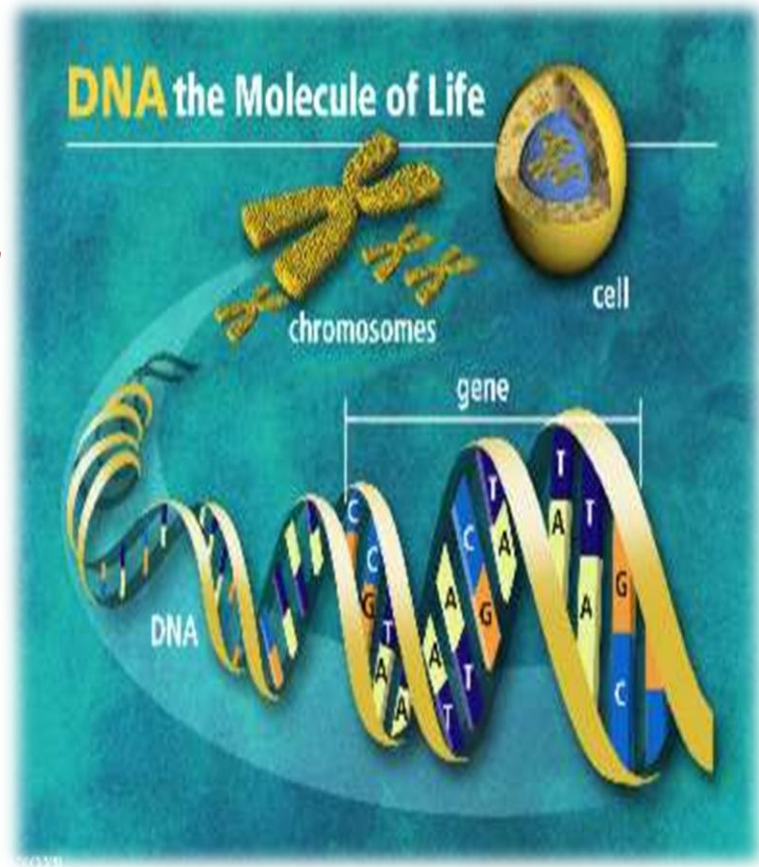
Preview from Notesale.co.uk
Page 5 of 50

46 human
chromosomes

2 metres of
DNA

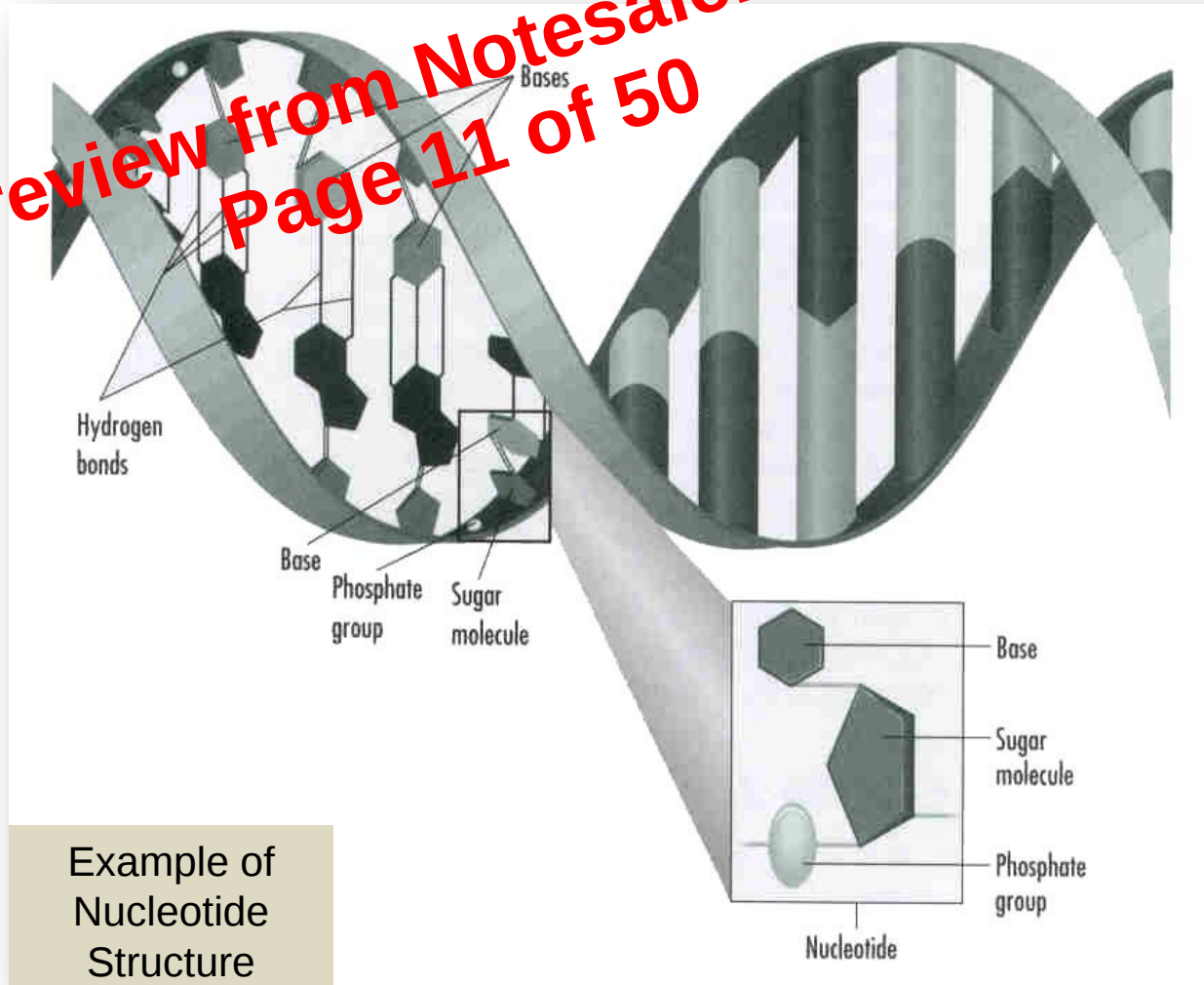
3 billion DNA
subunits
(A,T,G,C)

Approximately
30,000 genes



DNA Structure

Preview from Notesale.co.uk
Page 11 of 50



DNA Shape

- DNA consists of two strands of nucleotides twisted (ladder shape) into double helix.
- On the outside of the ladder is phosphate and sugars, and in the middle are the rungs of bases.

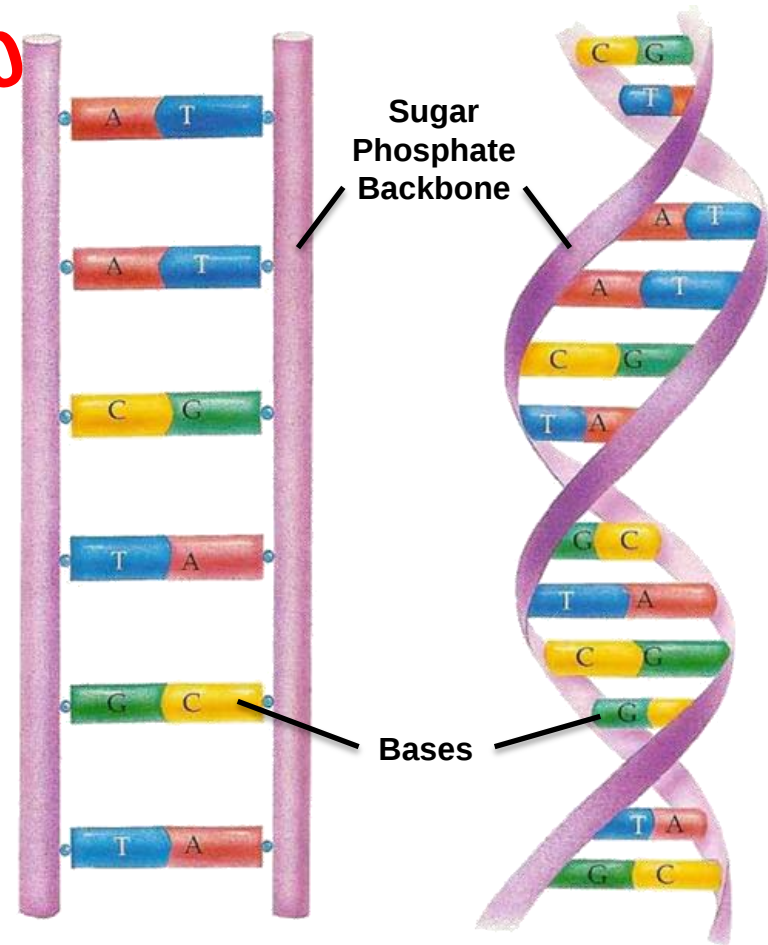


Fig.7

Protein Synthesis

RNA

- There are three types of RNA:

Messenger RNA (mRNA)

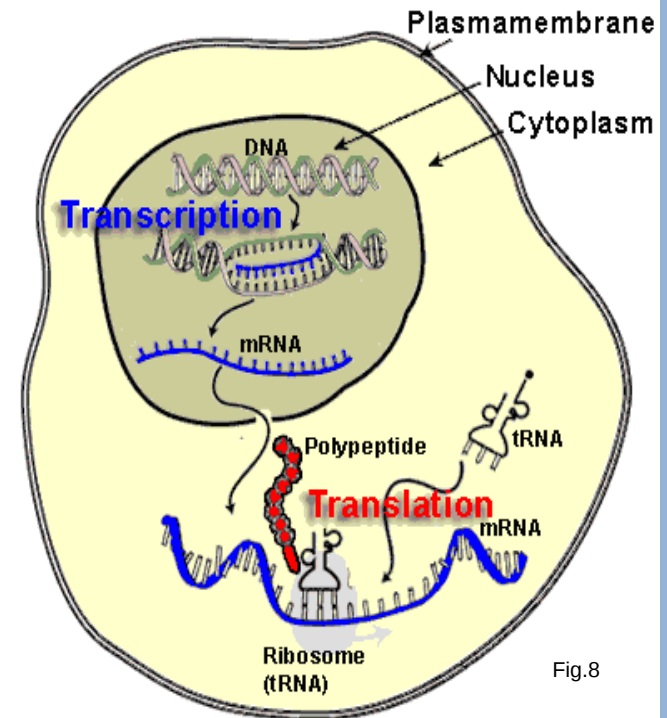
- Brings coded information from DNA to the ribosomes.

Ribosomal RNA (rRNA)

- Combines with proteins to form ribosomes upon which polypeptides are assembled.

Transfer RNA (tRNA)

- Carries the amino acids to the ribosomes and pairs with mRNA.



Purpose of Genetic Engineering

- It allows genes from one organism to be inserted into a cell of a different organism or a different species.

Examples

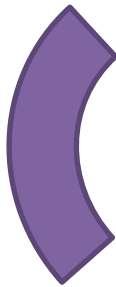
- Human genes can be inserted into a bacterium.
- Human genes can be inserted into cells from other animals.
- Bacterium genes can be inserted into plant cells.

Process of Genetic Engineering

3 Transformation (Ligation)

- The donor DNA is now inserted into the plasmid DNA.
- Enzyme DNA ligase bonds sticky ends together.
- Recombinant DNA formed.

Donor DNA
with sticky
ends



Recombinant
DNA



Plasmid DNA
with sticky
ends