

Similarities and Differences of a Prokaryotic Cell and a Eukaryotic Cell

Prokaryotic Cell

(Archaea, Bacteria)

Similarities

- DNA
- Ribosomes
- Cytoplasm
- Cell Membrane
- Cell Wall (most)

Differences

- No Nucleus
- No Membrane-bound Organelles

Eukaryotic Cell

(Fungi, Animal, Plants, Protists)

Similarities

- DNA
- Ribosomes
- Cytoplasm
- Cell Membrane
- Cell Wall (some)

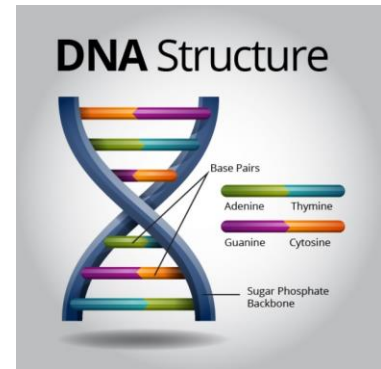
Differences

- Membrane-bound organelles (Nucleus, Mitochondria, Endoplasmic Reticulum, Golgi Apparatus)

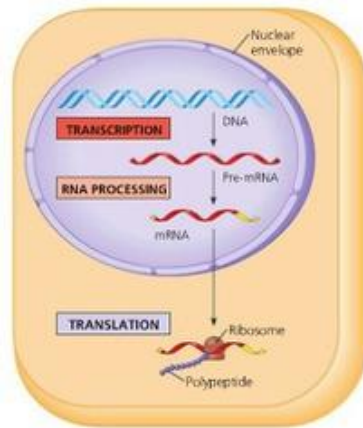
DNA (Deoxyribonucleic Acid)

- Has 3 types of chemical component:
 - Phosphate (T phosphate group)
 - A sugar called deoxyribose
 - Four nitrogen bases:
 - ❖ Adenine
 - ❖ Guanine
 - ❖ Cytosine
 - ❖ Thymine

- The other 2 bases, Adenine and Guanine, have a double-ring structure characteristic of a type of chemical called a Purine.
- The other 2 bases, Cytosine and Thymine, have a single-ring structure of a type called a Pyrimidine.
- Its chemical components are arranged into groups called nucleotides.
- Made up of genes
- Its shape is a double helix



Preview from Notesale.co.uk
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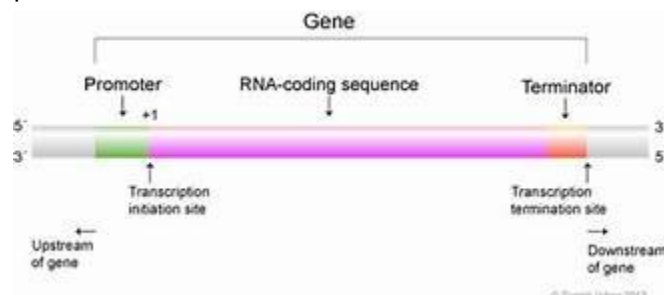
- Transcription and translation are spatially and temporally separated in eukaryotic cells; that is, transcription occurs in the nucleus to produce a pre-mRNA molecule.
- The pre-mRNA is typically processed to produce the mature mRNA, which exits the nucleus and is translated in the cytoplasm.

Concept 3: Different Genes for Different RNAs

- There are 4 types of RNA, each encoded by its own type of gene.
- The genomic DNA contains all the info. for the structure and function of an organism.
- In any cell, only some of the genes are expressed, that is, transcribed into RNA.
- There are 4 types of RNA, each encoded by its own type of gene:
 - mRNA – Messenger RNA: encodes amino acid sequence of a polypeptide.
 - tRNA - Transfer RNA: brings amino acids to ribosomes during translation.
 - rRNA - Ribosomal RNA: with ribosomal proteins, makes up the ribosome, the organelles that translate the mRNA.
 - sRNA- Small nuclear RNA: with proteins, forms complexes that are used in RNA processing in eukaryotes. (not found in prokaryotes)

Concept 4: Basis Structure of a Protein-Coding Gene

- A protein-coding gene consists of a promoter followed by the coding sequence for the protein and then a terminator.



- The promoter is a base-pair sequence that specifies where transcription begins.