

Genes and DNA rules – Reference Summary

A **gene** is a piece of nucleic acid which contains all necessary instructions to generate a product (RNA or protein)

Genes are usually DNA (but sometimes RNA, e.g., in RNA viruses like SARS-CoV-2)

Genes are the units of hereditary

Molecular biology relies on information transfer

REPLICATION: DNA (gene) replicates

TRANSCRIPTION: DNA is copied into RNA

TRANSLATION: RNA is translated into a protein

This constitutes the **CENTRAL DOGMA OF MB** (already mentioned in Lesson 3)

DNA rules:

Base Pairing

For **DNA**, there are 4 nucleotide bases: Guanine (G), Cytosine (C), Adenine (A), and Thymine (T).

G pairs with C between **complementary** strands via the formation of 3 hydrogen bonds. Similarly, A pairs with T via the formation of 2 hydrogen bonds.

For **RNA**, the bases are the same, except Uracil (U) is used instead of Thymine.

In RNA, A pairs with U, and they form 2 hydrogen bonds.

(Therefore, the RNA bases are: G, C, A, U.)

