

Unit 1: DNA & the Genome

Key Area 5 : The Structure of the Genome

The **Genome** of an organism is its **entire hereditary information encoded in DNA**.

A genome is made up of **GENES** and other **DNA sequences that do not code for proteins**. Most of the eukaryotic genome consists of non-coding sequences.

Genes

DNA sequences that **code for protein** are defined as **GENES**. These sequences are transcribed to produce the Primary mRNA transcript during protein synthesis.

Non-coding Sequences

Other sequences that **do not code for protein** can either

- **regulate transcription**

or are

- **transcribed but never translated**. E.g **tRNA and rRNA** are non-translated forms of RNA.

Exam Style Question

Which line in the table below shows features of the human genome?

	<i>Contains base sequences that regulate transcription</i>	<i>Contains base sequences transcribed to RNA but never translated</i>	<i>Contains base sequences from which primary transcripts are produced</i>
A	X	✓	X
B	X	X	✓
C	✓	✓	X
D	✓	✓	✓

In the above example, **D is the correct** answer because the Genome contains DNA sequences that **regulate transcription** AND sequences that are **transcribed to RNA but never translated** (tRNA and rRNA) AND sequences **from which primary transcripts are produced** (GENES).