

## Gene Expression Quiz PDF

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**What is the primary role of mRNA in gene expression?**

- Carry genetic information from DNA to ribosomes
- Synthesize DNA
- Modify proteins
- Replicate RNA

**Which of the following is a post-transcriptional modification of mRNA?**

- DNA replication
- Protein folding
- Polyadenylation
- RNA splicing

**Which type of mutation does not change the amino acid sequence of a protein?**

- Missense mutation
- Nonsense mutation
- Silent mutation
- Frameshift mutation

**Which enzyme is responsible for synthesizing RNA during transcription?**

- DNA polymerase
- RNA polymerase
- Ligase
- Helicase

**What is the function of tRNA during translation?**

- Transcribes DNA into RNA
- Carries amino acids to the ribosome

- Synthesizes ribosomal RNA
- Modifies mRNA

**Discuss the differences between prokaryotic and eukaryotic gene expression.**

**How do enhancers and silencers affect gene expression? Provide examples.**

**Outline the steps involved in the translation process and their importance.**

**What are the potential applications of gene expression profiling in medicine?**

**Explain the process of transcription and its significance in gene expression.**

**Describe how a frameshift mutation can affect protein synthesis.**

**Which factors can influence epigenetic regulation of gene expression?**

- DNA methylation
- Histone modification
- RNA interference
- Codon usage

**What are the roles of enhancers in gene expression?**

- Increase transcription levels
- Decrease transcription levels
- Bind transcription factors
- Replicate DNA

**What is the primary function of ribosomes in gene expression?**

- Replicate DNA
- Translate mRNA into proteins
- Transcribe RNA
- Modify proteins

**Which of the following techniques are used to study gene expression?**

- RT-PCR
- Western blotting
- RNA-seq
- Microarrays

**What is the central dogma of molecular biology?**

- RNA → DNA → Protein
- DNA → RNA → Protein
- Protein → RNA → DNA
- DNA → Protein → RNA

**Which of the following are stages of translation?**

- Initiation
- Elongation
- Termination
- Replication

**Which processes are involved in the regulation of gene expression?**

- Transcriptional control
- Post-transcriptional control
- Translational control
- Post-translational control

**In prokaryotes, what is an operon?**

- A single gene
- A group of genes regulated together

- A type of mutation
- A protein synthesis site

**Which of the following are components of the transcription process?**

- RNA polymerase
- Promoter region
- Ribosome
- Transcription factors