

6. Gene Expression and Regulation

Starter Quiz · 课前小测

AP Biology

Name: _____ Score: _____

1. The two long sides of the DNA ladder are made of a repeating...

- ☐ sugar-phosphate backbone
- ☐ chain of amino acids
- ☐ row of fatty acids
- ☐ string of metals

2. Why must a cell copy its DNA before dividing?

- ☐ so each daughter cell gets a full set of DNA
- ☐ to make ATP
- ☐ to break down glucose
- ☐ to send a hormone

3. **Transcription** copies a gene from DNA into...

- ☐ messenger RNA (mRNA)
- ☐ a protein
- ☐ ATP
- ☐ a lipid

4. **Translation** builds a protein by reading...

- ☐ the mRNA into a chain of amino acids
- ☐ DNA into more DNA
- ☐ glucose into ATP
- ☐ a protein into DNA

5. **Gene expression** means...

- ☐ a gene being switched on to make its product
- ☐ a gene being deleted
- ☐ copying all the DNA
- ☐ a cell dividing

6. A cell keeps every one of its genes switched on all the time.

- ☐ True
- ☐ False

7. The repeating unit of a nucleic acid — a sugar, phosphate, and base — is a _____.

8. Because each new DNA keeps one old strand, replication is called _____-conservative.

9. The enzyme that builds the mRNA copy is RNA _____.

10. The molecule that carries an amino acid to the ribosome is called _____ RNA.

AP Biology

1. **sugar-phosphate backbone**

Each strand's backbone is an alternating **sugar-phosphate** chain; the bases stick out from it.

2. **so each daughter cell gets a full set of DNA**

Replication ensures both daughter cells receive a complete, identical copy of the DNA.

3. **messenger RNA (mRNA)**

Transcription makes an **mRNA** copy of one gene, which can leave the nucleus.

4. **the mRNA into a chain of amino acids**

Translation reads the mRNA message and builds the matching chain of amino acids — a protein.

5. **a gene being switched on to make its product**

Gene expression is a gene being used — transcribed and translated to make its protein.

6. **False**

A cell expresses only the genes it needs right now; the rest are switched off.

7. **nucleotide**

Each **nucleotide** is one sugar + one phosphate + one base; many joined make a strand.

8. **semi**

Replication is **semi-conservative**: each copy has one original strand and one new strand.

9. **polymerase**

RNA polymerase reads the DNA template and joins RNA nucleotides into mRNA.

10. **transfer**

Transfer RNA (tRNA) carries an amino acid and has an anticodon that matches the mRNA codon.