

AP Biology

Name: \_\_\_\_\_ Score: \_\_\_\_\_

1. The two long sides of the DNA ladder are made of a repeating...
  - ☐ chain of amino acids
  - ☐ string of metals
  - ☐ sugar-phosphate backbone
  - ☐ row of fatty acids
2. Why must a cell copy its DNA before dividing?
  - ☐ to send a hormone
  - ☐ so each daughter cell gets a full set of DNA
  - ☐ to make ATP
  - ☐ to break down glucose
3. **Transcription** copies a gene from DNA into...
  - ☐ messenger RNA (mRNA)
  - ☐ ATP
  - ☐ a lipid
  - ☐ a protein
4. **Translation** builds a protein by reading...
  - ☐ glucose into ATP
  - ☐ the mRNA into a chain of amino acids
  - ☐ DNA into more DNA
  - ☐ a protein into DNA
5. **Gene expression** means...
  - ☐ a gene being switched on to make its product
  - ☐ copying all the DNA
  - ☐ a cell dividing
  - ☐ a gene being deleted
6. An unspecialized cell that can develop into many cell types is a \_\_\_\_\_ cell.  
\_\_\_\_\_

7. A factor that increases the mutation rate, like UV light, is a \_\_\_\_\_.

\_\_\_\_\_

8. Moving a gene from one organism into another is called genetic \_\_\_\_\_.

\_\_\_\_\_

9. The repeating unit of a nucleic acid – a sugar, phosphate, and base – is a \_\_\_\_\_.

\_\_\_\_\_

10. Because each new DNA keeps one old strand, replication is called \_\_\_\_\_-conservative.

\_\_\_\_\_

### 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. **stem**

A **stem cell** has not yet specialized, so it can still become many different cell types.

#### 7. **mutagen**

A **mutagen** – UV light, radiation, or certain chemicals – makes mutations more likely.

#### 8. **engineering**

**Genetic engineering** transfers a gene between organisms – for example, putting a human gene into bacteria.

#### 9. **nucleotide**

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

#### 10. **semi**

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