

Advanced Life Science Concepts

Life Science · Answer Key · 7 Questions

1. What is the primary role of the enzyme RuBisCO in the Calvin cycle of photosynthesis?

- A) Catalyzing the reduction of 3-phosphoglycerate
- B) Fixing carbon dioxide to ribulose-1,5-bisphosphate**
- C) Regenerating RuBP from glyceraldehyde-3-phosphate
- D) Splitting water molecules during photolysis

2. Which type of non-coding RNA is primarily involved in post-transcriptional gene regulation by binding to specific mRNA molecules and inhibiting translation or promoting mRNA degradation?

- A) Transfer RNA (tRNA)
- B) Ribosomal RNA (rRNA)
- C) Small nuclear RNA (snRNA)
- D) MicroRNA (miRNA)**

3. Which specific type of glial cell is responsible for forming the myelin sheath around axons in the central nervous system (CNS)?

- A) Schwann cells
- B) Astrocytes
- C) Oligodendrocytes**
- D) Microglia

4. In ecological succession, which term describes the sequence of communities that colonize and replace one another in an area that has previously supported life but has been disturbed, such as after a forest fire?

- A) Primary succession
- B) Allogenic succession
- C) Secondary succession**
- D) Autogenic succession

5. Which plant hormone is primarily responsible for mediating apical dominance, promoting cell elongation, and regulating phototropism?

- A) Gibberellin
- B) Absciscic acid
- C) Cytokinin
- D) Auxin**

6. In the human circulatory system, which specific valve prevents the backflow of blood from the right ventricle into the right atrium?

A) Mitral valve (Bicuspid valve)

B) Aortic valve

C) Tricuspid valve

D) Pulmonary valve

7. Which class of antibodies is the most abundant in human serum and is notably capable of crossing the placenta, providing passive immunity to a developing fetus?

A) IgA

B) IgE

C) IgM

D) IgG