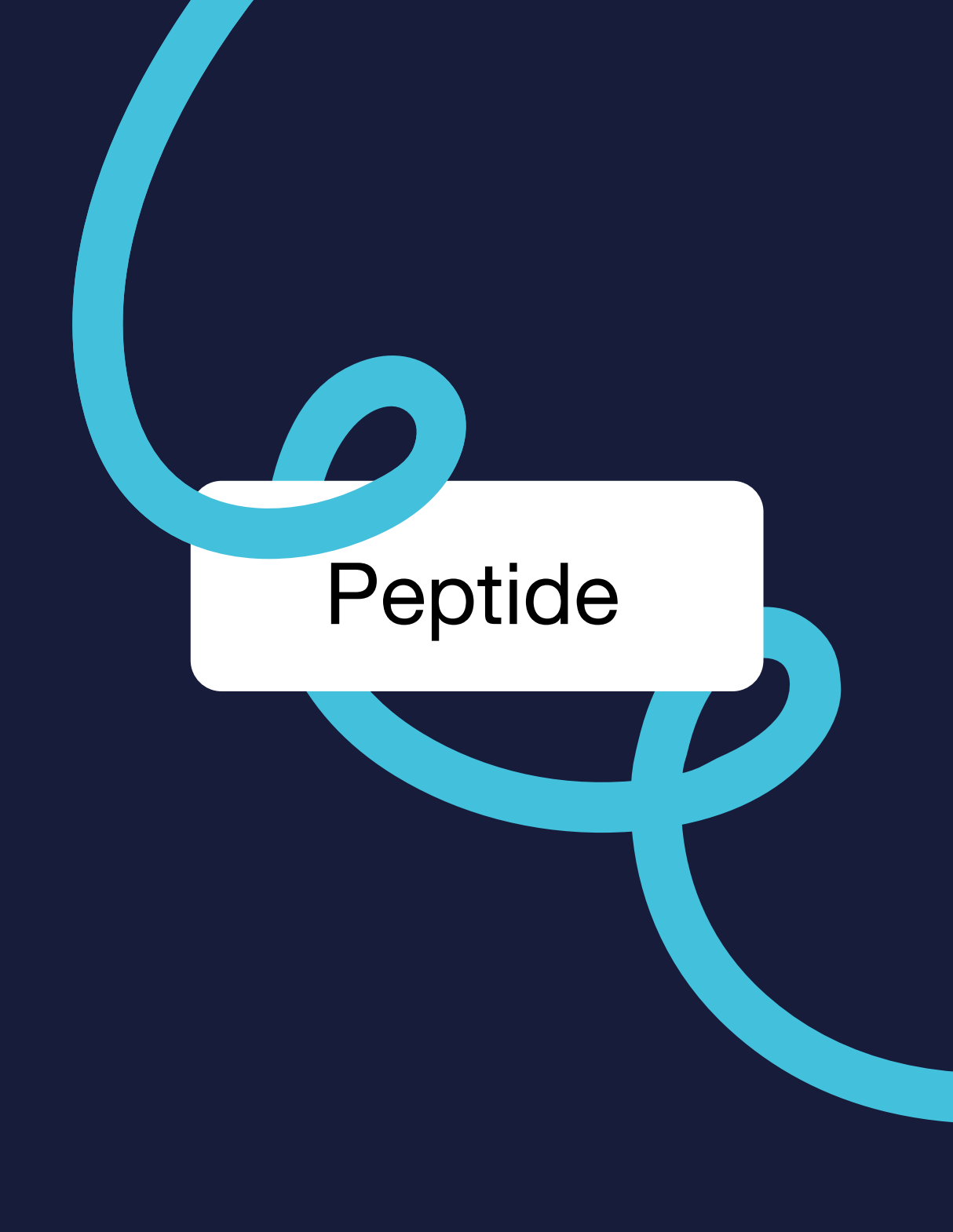
Peptide

1 What is a residue in the context of peptides?

- A. A single amino acid in a (poly)peptide
- B. A peptide bond
- C. A short chain of carbohydrates
- D. A fragment of a broken protein

2 What is the molecular weight range of most proteins?

- A. 500-2,200 Daltons
- B. 5,500-22,000 Daltons
- C. 5500-220,000 Daltons
- D. 550,000-2,200,000 Daltons

3 What type of bond is a peptide bond?

- A. Ionic bond
- B. Hydrogen bond
- C. Amide bond
- D. Disulfide bond

4 Why can't proline be a hydrogen bond donor?

- A. It is too large
- B. It has a cyclic structure causing the nitrogen to lack a hydrogen atom
- C. It is highly hydrophobic
- D. It is an aromatic amino acid

5 What is the average molecular weight of an amino acid residue?

- A. 50 Daltons
- B. 110 Daltons
- C. 220 Daltons
- D. 330 Daltons

6 What is the general structure of a peptide bond?

- A. Linear, flexible, and uncharged
- B. Planar, charged, and rotatable
- C. Planar, uncharged, and rigid
- D. Spherical, charged, and rotatable

7 How many amino acids are in a protein with a molecular weight of 33,000 Daltons?

- A. 30
- B. 110
- C. 300
- D. 330

8 What does the resonance structure of a peptide bond contribute to?

- A. Its ability to rotate freely
- B. Its flexibility and single bond nature
- C. Its partial double bond character and planarity
- D. Its instability and high reactivity

9 What is the difference between the cis and trans configurations of proline?

- A. Cis configuration is more stable than trans
- B. Both configurations have about equivalent energies due to steric hindrance
- C. Trans configuration is always found in proteins
- D. Cis configuration is never found in proteins

10 Which of the following amino acids is an exception to hydrogen bonding in peptides?

- A. Glycine
- B. Serine
- C. Proline
- D. Lysine

11 Which of the following best describes the function of carnosine?

- A. Acts as a neurotransmitter
- B. Protects cells from reactive oxygen species and aids muscle contraction
- C. Serves as a structural component in cell membranes
- D. Functions as an enzyme in metabolic pathways

12 How do oxytocin and vasopressin differ in structure and function?

- A. Oxytocin has phenylalanine and arginine, while vasopressin has isoleucine and leucine; oxytocin regulates smooth muscle contraction, vasopressin regulates uterine contractions
- B. Oxytocin has isoleucine and leucine, while vasopressin has phenylalanine and arginine; oxytocin regulates uterine contractions, vasopressin regulates water retention and blood pressure
- C. Oxytocin has glycine and tyrosine, while vasopressin has alanine and valine; both regulate smooth muscle contraction
- D. Oxytocin has cysteine and methionine, while vasopressin has cysteine and leucine; both regulate blood pressure

13 What is the role of glutathione in cells?

- A. It acts as an energy source
- B. It scavenges oxidizing agents and protects against ROS
- C. It forms structural components of the cell membrane
- D. It aids in the replication of DNA

14 Which peptide functions as an analgesic in the brain?

- A. Oxytocin
- B. Carnosine
- C. Enkephalin
- D. Glutathione

15 What happens to the function of a protein if its 3D structure is altered due to a mutation?

- A. It becomes more stable
- B. It gains additional functions
- C. It may become non-functional or cause other problems
- D. It remains unaffected

Answer: 1-A
2-C
3-C
4-B
5-B
6-C
7-C
8-C
9-B
10-C
11-B
12-B
13-B
14-C
15-C