

A) Sex pheromone sequence determination

Male newts use decapeptide pheromone X to attract females. When this decapeptide was treated with Edman's reagent, a serine derivative of hydantoin was obtained along with nonapeptide Y. When decapeptide X was treated with trypsin, two pentapeptides, A and B were obtained. When pentapeptide A was boiled in 6 M HCl, amino acids **Ala, Asp, Glu, Leu, and Lys** were obtained in equal amounts. When pentapeptide B was boiled in 6M HCl, amino acids **Ile, Leu, Lys, and Ser** were obtained in a molar ratio 1:1:1:2.



Answer the following questions:

- 1) *What is the N-terminal amino acid in the pheromone X?*
- 2) *What is the C-terminal amino acid in the pheromone X?*
- 3) *What is the fifth residue from the N-terminus?*
- 4) *Can the ninth residue of pheromone X be serine?*
- 5) *Is it possible that pheromone X does not contain glutamic acid?*
- 6) *What else needs to be done to determine the complete sequence of pheromone X?*

B) Proteins, peptides, and amino acids can be separated by electrophoresis based on their charge: positively charged peptides migrate toward the cathode, negatively charged peptides migrate toward the anode, and neutral molecules stay where they are. True or false:

- 1) *Peptide with sequence Ala-Ala-Ala travels toward the cathode at pH 2.34?*
- 2) *Peptides with sequence Ala-Glu-Ala and Ala-Lys-Ala travel to opposite directions at pH 10.79?*
- 3) *Amino acid Gly stays where it is at pH 5.79?*
- 4) *The products of treatment of hexapeptide Ser-Lys-Phe-Ser-Ala-Phe with chymotrypsin migrate to the same direction than the original hexapeptide at pH 9.18?*