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Working with Protein: Proteomics and Purification

1 message

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Here's what we got from you:

Working with Protein: Proteomics and Purification

What is the common range for polypeptide lengths?

- 10 - 1000 amino acids
- 100 - 1000 amino acids
- 50 - 500 amino acids
- Other:

Multisubunit proteins are made up of two or more polypeptide chains that are identical.

- True
- False

What is the minimum size of a polypeptide chain that commonly carries out a particular function?

Why are proteins greater than 1000 amino acids not very common?

What four amino acids are the rarest in proteins?

Histidine, Tryptophan, Cysteine, Methionine

What five variables need to be considered and controlled when a biochemist wants to keep a protein stable?

pH, Temperature, presence of enzymes that can degrade or damage the protein, surface adsorption potential, long term storage

What does ELISA stand for and what is it used for?

enzyme linked immunosorbent assay

Which amino acids can be strong chromophores at 280 nm?

Trp and Tyr. NOT Phe!

Describe the relationship between salting out and salting in. How are they similar and how are they different?

Really low salt concentrations will cause proteins to be insoluble. Really high salt concentrations will cause proteins to be insoluble. So as you increase the concentration of salt, you encourage solubility - this is salting in. As you keep increasing the salt, the protein precipitates - this is salting out.

What does HPLC stand for?

High pressure liquid chromatography

DAEA is a common functional group used in _____ exchange chromatography.

- cation
- anion
- polyvalent

Why is the isoelectric point of a protein important to consider when doing ion exchange chromatography?

It dictates the charge on a protein at a certain pH value.

Gel filtration chromatography separates proteins based on _____.

size

What does PAGE stand for?

polyacrylamide gel electrophoresis

Why is SDS commonly added to PAGE experiments?

it denatures the protein and coats it with negative charge giving each protein has a uniform charge and has "snake-like" properties. This ensures that the only variable that influences protein migration is a PAGE experiment is the size.

What can 2D electrophoresis do that 1D cannot?

separate proteins with similar masses or pI values. 1D can only separate based on one variable, but it is very possible (in fact, very likely) that there are multiple proteins in a cell that have the same MW or pI.

Which protease cleaves adjacent to large hydrophobic residues?

- trypsin
- chymotrypsin
- elastase
- thermolysin
- pepsin

Mass spectrometry has emerged as an important tool to sequence proteins. This technique relies on a collision cell. What does the collision cell do?

fragment one peptide bond in a peptide chain.

When comparing two protein sequences, what is meant by an invariant residue?

This amino acid exists in all similar proteins at the same position. It strongly suggests that this amino acid is required for structure or function.

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