>Seq8(Salim)

MVKIIFVFFIFLSSFSYANDDKLYRADSRPPDEIKQSGGLMPRGQSEYFDRGTQMNINLYDHARGTQTGFVRHDDGYVSTSISLRSAHLVGQTILSGHSTYYIYVIATAPNMFNVNDVLGAYSPHPDEQEVSALGGIPYSQIYGWYRVHFGVLDEQLHRNRGYRDRYYSNLDIAPAADGYGLAGFPPEHRAWREEPWIHHAPPGCGNAPRSSMSNTCDEKTQSLGVKFLDEYQSKVKRQIFSGYQSDIDTHNRIKDEL

**1. Which protein is this? What’s the basis of this identification?**

* **Cholera toxin subunit A,**

**2. Find five orthologs of the given protein in different species. Explain the process and list the orthologs (name, species name, and accession number/UniProt ID).**

* **Name: Cholera toxin subunit A,**
* **species name: Vibrio phage pre-CTX**
* **accession number: 1001196A**
* **UniProt ID:** A0A142I6Y0

**3. Construct a phylogenetic tree of the five orthologs. Draw the tree. What’s the distance of two closest orthologs from their common node? How did you find this information?**

**4. Are there any conserved residues in all five orthologs? List any three conserved residues and explain how you found them. The number of the residue must be in reference to the given amino acid sequence.**

**5. Is the 3D structure of the protein known? If yes, comment on the secondary structures found in the protein. How did you find this information?**

**6. What’s the structural classification of this protein? Provide the ancestry of its structural classification. How did you find this information?**

**7. Does the protein contain any domains or motifs? List at least one domain or motif present in the protein and provide its location within the protein. How did you find this information?**

**8. Does the protein have any sites of posttranslational modification? If yes, which are these sites? (Mention any three). How did you find these sites?**

**9. What is the theoretical molecular weight and isoelectric point of the protein? How did you find this information?**

**10. Are there any proteolytic cleavage sites present in the protein? If yes, list any three proteases and their cleavage sites. How did you find these sites?**