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Metals in Purely Structural Roles- In Class Exercise/Discussion

General Questions:

1. The metals most often used for purely structural roles in proteins are ones like zinc and calcium. Why do you think this is so?
2. If you wanted to bind a Zinc ion to a protein, which amino acids might you choose and how many of them?
3. Most Zinc fingers fold into an alpha helix (along with one or two beta sheets). How might the alpha helix be important for interacting with DNA?



In some metalloproteins, the metal does not give us a good handle by which it can be studied. In these cases it is often possible to substitute one metal for another.

1. What characteristics of a metal center might make it spectroscopically boring or hard to study?
2. When choosing a metal to replace the native metal with, what properties of the substitute metal should you consider?
3. How might one go about this substitution process?
4. Once you have substituted the metals, what might you want to confirm, before you even begin studying the site and how might you go about doing this?