# WP3 - PyMOL Worksheet 

Using the features available in PyMOL, answer the following questions about these proteins:
Human obesity protein, leptin
2m6z
1grj
1ubq

1. What is the PDBe code for the 'human obesity protein leptin'?
2. Looking at the secondary structure for this protein, how many $\alpha$-helices are there?
3. What is the main form of non-covalent bonding which gives the protein its overall structure?
4. What would happen to the shape and structure of the protein if this bonding wasn't present?
5. What would happen to the effectiveness of the protein to perform its function if this bonding wasn't present?
6. Looking at 2 m 6 z , how many polypeptide chains are present?
7. Does this protein have a quaternary structure?

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8. By using different types of representations, predict where ligands may bind to this structure. The two most useful representations to do this would probably be the cartoon and surface/mesh view, whilst colouring by chain.
9. How many separate $\alpha$-helices and $\beta$-strands are in the protein 1 grj ? - Be careful, it might help to colour by secondary structure!
10. Which two other secondary structural features are present?
11. For $1 u b q$, write a short description of the protein. Include what you know about its secondary structure, the number of each type of secondary structure, and the effect of hydrogen bonding on it. What would happen to this protein's structure without hydrogen bonding? Does this protein have a quaternary structure? What is its name on the PDBe website?

