Name:
Date:

WA2 – Interactions within Proteins

Download and open the file **4m4j_SS_CuHis** using PyMOL. This is an insulin unit, which is a hormone which helps to regulate the amount of glucose in the blood stream. In the right-hand pane on PyMol, you will see a series of structures which you can select to show them on the screen. By working through them, and selecting each in turn, answer the following questions.

1. How many different polypeptide chains make up the quaternary structure of this insulin protein?

2. Which secondary structures are visible?

3. Which type of interactions maintain these secondary structures?

4. The overall 3D shape which includes the secondary structures is called the tertiary structure. Which type of bonding gives this protein its tertiary structure?

5. Which types of bonds give the protein its overall quaternary structure?

6. The insulin protein has two Cu^{2+} copper ions attached to it. How are they attached?

7. What effect would changing one amino acid in the primary structure have on the overall shape and function of the protein?

Produced by Adam Stubbs at Newcastle University as part of a summer outreach project.