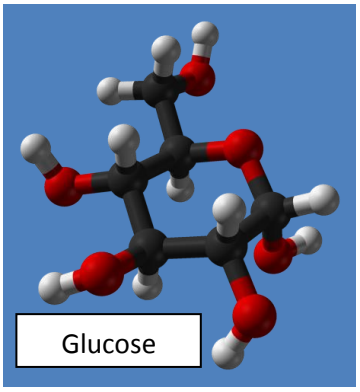
Molecular Visualization of Polysaccharides

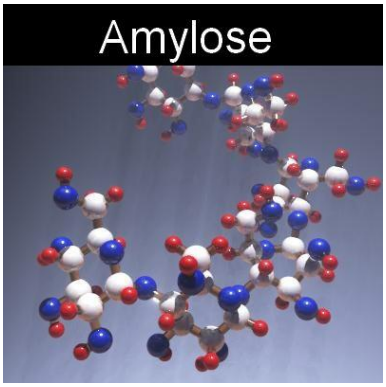
- **Click on the models, the hyperlinks or go to http://www.biotopics.co.uk/jsmol/glucose.html to access the molecules**
- **Play with the models, move them, zoom in and out**
- **Test yourself by answering the questions below:**

1. Select the glucose molecule and identify the colors used to represent carbon, hydrogen and oxygen atoms .



2. Using the models identify and describe the differences between glucose, sucrose and fructose (hint: descriptions will be clearest if you refer to the numbered carbon atoms, see powerpoint)

3. Look at the amylose model and zoom out from it. Describe the overall shape of the molecule.



4. Zoom in on the amylose molecule.
    a) Each glucose sub-unit is bonded to how many other sub-units?

    b) Which carbons atoms are used to form the glycosidic bonds?

    c) Are there any exceptions to these rules?

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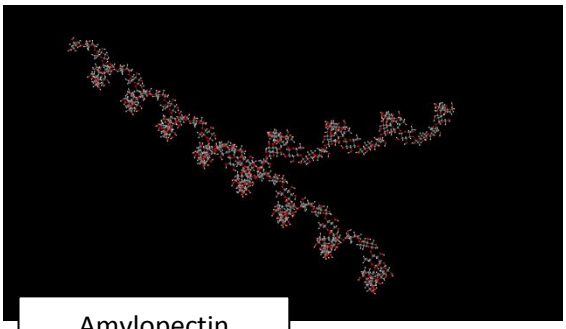
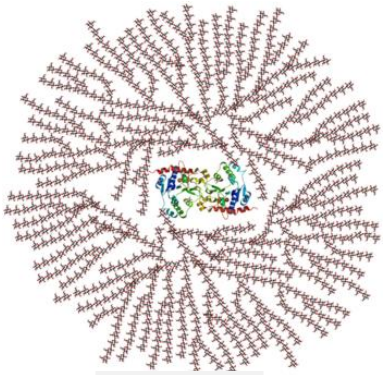
5. Select the amylopectin model and zoom in on the branch point.
    a) This glucose sub-unit is bonded to how many others?

    b) Which carbon atoms are used for bonded compared with the un-branched amylose molecule?


Amylopectin

6. Using a similar approach to that above investigate the structure of glycogen and find the similarities and differences between it and both amylose and amylopectin.


Glycogen

7. Investigate cellulose and list how it differs from glycogen and starch.