

## Documents ressources sur l'activité numérique (amylase)

Figure 1 Page d'accueil du site

**BioTopics**  
Site author Richard Steane

The BioTopics website gives access to interactive resource material, developed to support the learning and teaching of Biology at a variety of levels.

Google Custom Search

Introductory Topics Classical Topics Further Topics Higher level Topics 3D molecules [Jsmol]

**Biological Facts and Fallacies**  
Last modification 25/02/2020

**Recent material - mostly AS and A level**  
new topics \*  
Click on the categories below to expand/contract  
Biological Chemicals \* ... Cells and cellularity  
Energy transfers \* ... Response... \* Evolution & speciation  
Some tabular data updated  
More than just H<sub>2</sub>O - and in 3-D  
and Most recent 3-D Molecules \*  
Don't miss these: \*This summer's howlers\*

**3-D interactive structures of over 130 Biological molecules**  
Being carbon-based, Biological molecules deserve better than a flat sheet of paper. Check out the examples, and the interactive display format.

**What other visitors have said about this material:**  
"Very good topics covered - worth browsing - easy to understand and well presented. Definitely use it again."

**Howlers - 35 pages!**  
(now with a few additions from 2019)

**This one made me smile :**  
"Means of preventing malaria: take precautions at night."

**Click here to see some others!**

**Books**

- LATEST AS and A level books
- GCSE books
- Recommendations for the 6th form
- Universal book finder
- General Interest (popular authors, other stuff)

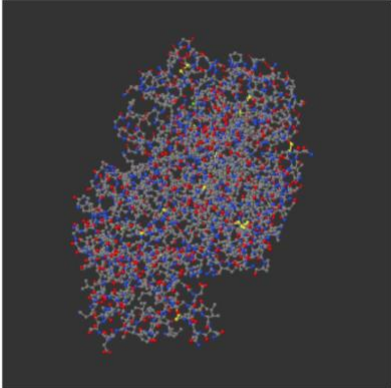
**Biological supplies**

- Anatomical models

**Richard Steane**

Figure 2 Structure tridimensionnelle de l'amylase

### The 3-dimensional structure of the amylase molecule



Start rotation Stop rotation

The human pancreatic amylase molecule consists of 496 amino acid residues.

**Protein display options**  
... ball and stick ... wireframe ... trace ... cartoon ... spacefill ...

**Primary structure**  
Colour each amino acid .... Show residue numbers .... Show residue names  
... Remove labels & restore default colours

**Secondary structure**  
Cartoon format coloured by structure -  $\alpha$  helices pinkish red, other helices purple/dark blue,  $\beta$  sheets gold  
Note especially the central barrel-shaped section through which the substrate presumably passes as it is fed into the active site.  
Show / hide main chain H bonds

**Tertiary structure**  
(protein) Molecular surface on .... Molecular surface off . . . Show / hide sidechain H bonds

**Active site**  
Rotate molecule to look down into active site  
The following amino acid residues have been identified (reference below) as contributing to the conversion of glucose polysaccharides (amylose, starch) into disaccharides (maltose). Interestingly, they all have acidic side-chains (aspartic acid and glutamic acid).  
Show / hide ASP 197, GLU 233 & ASP300 at active site (white spacefill)  
Show / hide enzyme co-factors: calcium (orange) and chloride (turquoise) ions  
Show / hide glucose dimer (maltose - the product of starch hydrolysis) red and grey

Figure 3 : les différentes représentations (dans l'ordre)

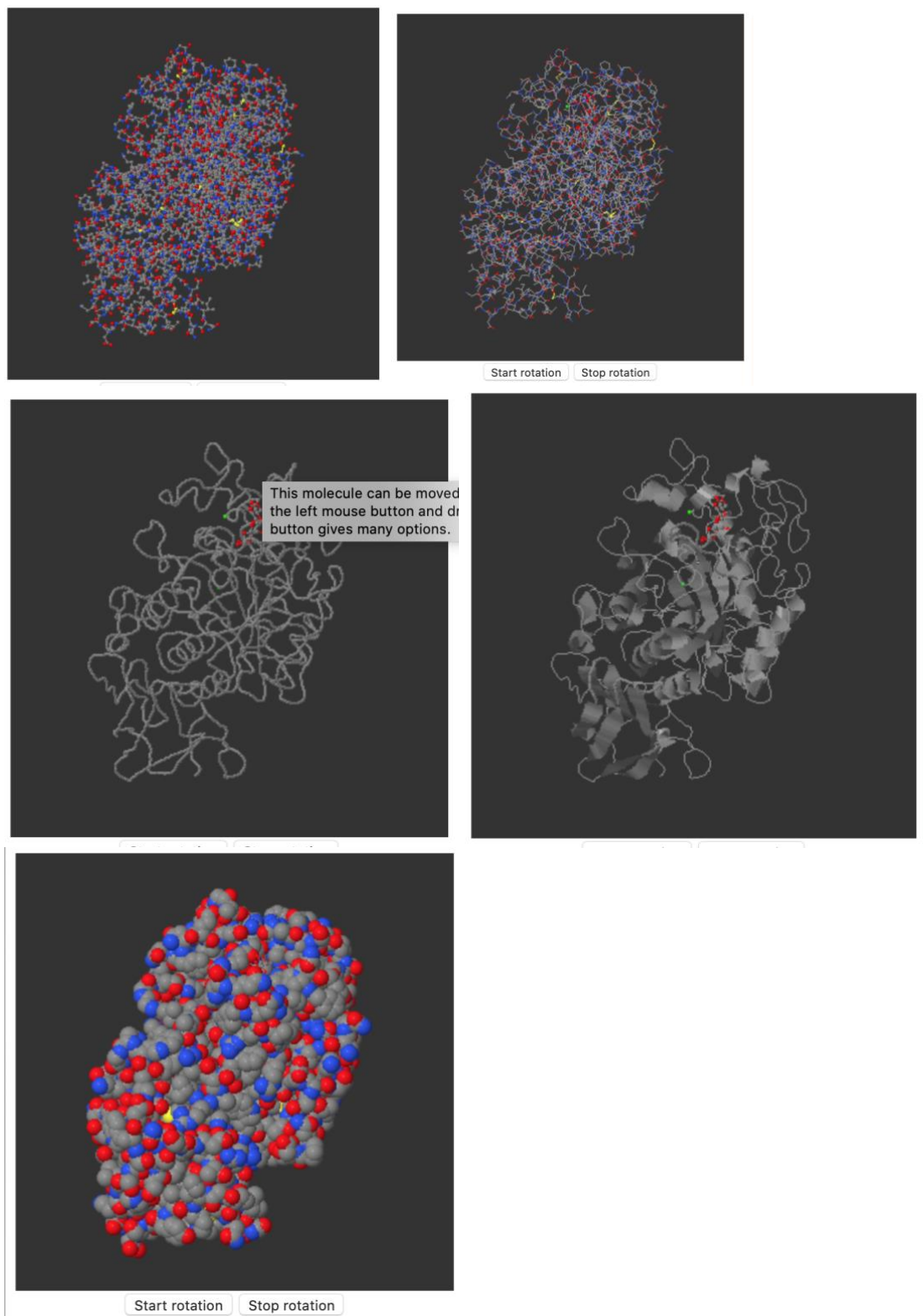
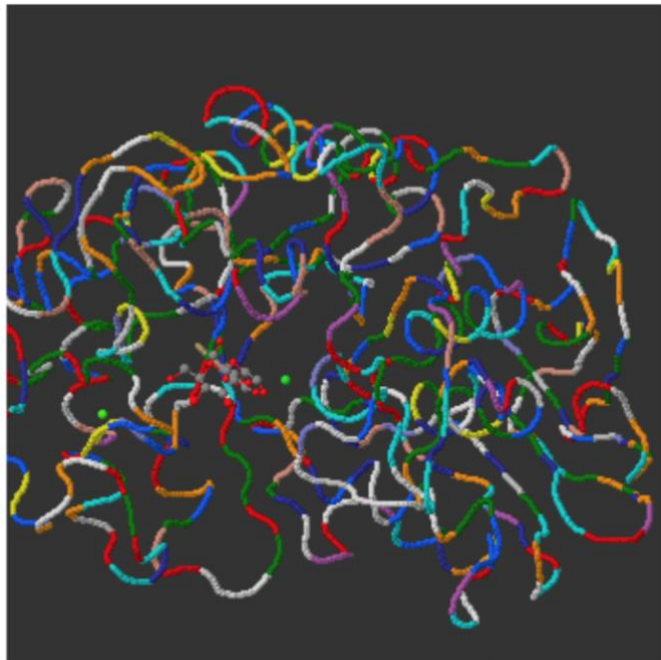


Figure 4 : la structure secondaire

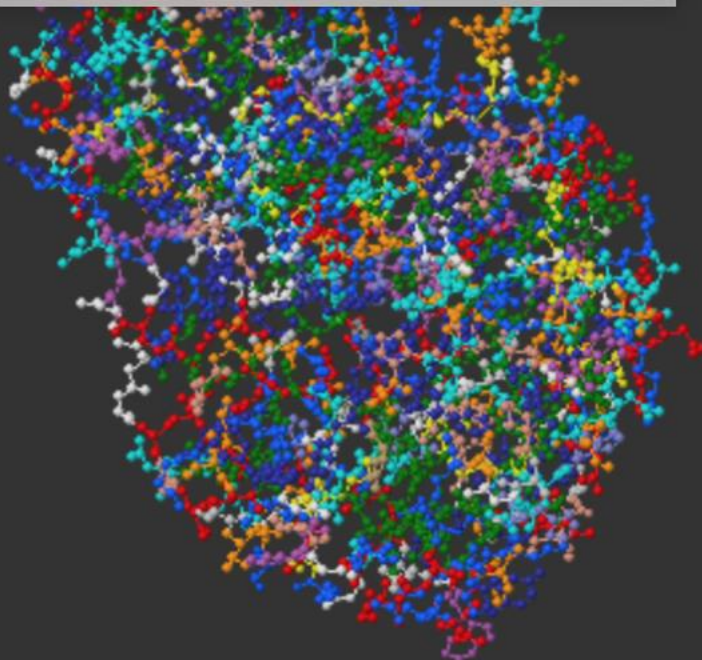


Figure 5 le site actif



The human pancreatic amylase molecule consists of 496 amino acid residues.

This molecule can be moved by holding down the left mouse button and dragging. The right button gives many options.



The human pancreatic amylase molecule consists of 496 amino acid residues.

