

## EDUCATION IN STRUCTURAL BIOLOGY – WHAT ARE THE AIMS?

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Biology and biochemistry are now very information-rich subjects. Data are being produced at an amazing rate. Therefore a question might be: what are our aims in educating the next generation of biological scientists? Is it more important to educate them in how science is done, and how to find information, rather than requiring them to remember a vast number of 'facts'? (And remembering 'facts' with less than 100% accuracy as so often happens when students are asked to write answers in an examination from memory alone is surely rather pointless!) Our examination systems however, tend to reward remembering factual information rather than the ability "to do", although it is the ability "to do" something that will ensure success in a future career in science. In practice it is easier and less time-consuming to test for remembered information than to check whether a person can actually carry out a procedure successfully. (The ability "to do" involves a variety of skills, including the ability to trouble-shoot when things go wrong – which leads to independence as a scientific investigator, and is more difficult to assess objectively.) In terms of the structures of macromolecules, for which there is now a vast amount of information, it serves no purpose to ask students to remember structures: the computer is the repository of the precise information. What they really need to know is how the structures are arrived at experimentally, how to use the plethora of databases that are now available (which in itself will require some IT skills, but not necessarily particularly high level ones), and eventually to be able to recognize and compare patterns within the macromolecules so that the structures can (hopefully) be related to biological function at the molecular level. To what extent do we train students in this way and to what extent should be changing our teaching and assessing procedures?