

Making the most of PRACTICAL WORK

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Practical work is an important aspect of all biological science courses, aimed at motivating you by stimulating interest as well as developing necessary laboratory skills required in your scientific careers after higher education. It also serves as a way of applying your knowledge of scientific concepts to practical situations, reinforcing key ideas, whilst encouraging you to think and behave as a scientist. When I started practical work in the first semester of my course (medical biochemistry), I was excited about using the sophisticated techniques and equipment that were not accessible in school. Initially, the greatest challenges I faced were learning how to use the equipment and the

very precise way in which the work was carried out – both very different from my previous school experiences. I was particularly excited about learning the various techniques used by scientists in the real world. Many students enjoy practical work because it provides variation on the theoretical aspects of their course. By taking on board the advice below, you can ensure that your practical sessions are as beneficial to you as possible.

Read your notes beforehand

Your tutors will provide you with information to supplement the techniques you will be using in your practical work – this may be in the form of lectures, summary sheets, independent reading, etc. It is important to have revised this information before coming to the practical sessions because, in my experience, is unlikely that there will be sufficient time in the lab to do this. Without doing so, you may find yourself trying to follow instructions of how to perform a technique without knowing what the aim is. It is important to know the aim from the outset so you have an idea of what you are working towards.



Be inquisitive

Ask yourself questions as you progress with the work. For example, what do I expect the results to show? Are my results supporting my hypothesis? Are there any outliers, and if so, what factors may have contributed to these? This encourages you to think as a scientist and accustoms you to working independently. If you need extra help or don't understand anything, ask a member of lab staff – they are there to help and have the knowledge to be able to explain specifically what you don't understand.

Learn basic experimental techniques & calculations



Although you will most likely perform experiments that underpin a range of topics, there are basic techniques that are commonplace in many experiments, and becoming proficient at these is vital so as to not compromise the accuracy of your results. Perhaps the most important technique in bioscience practicals, and one in which I have used for all my practicals so far, is pipetting – simple, but vital to minimise inaccuracies. Molar calculations are also very important and they come into practise when performing dilutions and finding the concentration of a sample. When you have collected your results, you will often need to represent them visually in a graph – for this reason, a basic understanding of how to accurately draw simple graphs is assumed. Finally, the interconversion of units of measurement (e.g. mol, mmol, μ mol) is a fundamental requirement of all bioscientists, so a thorough grasp of this will be needed.

Use your time effectively

You may find that during your practical work, there are periods of time where you are waiting for a result to develop, or there may be many students waiting to use a piece of equipment, for example. Avoid wasting this time – begin the practical write-up if this is possible, or look ahead in the practical instructions to see if any later stages can be performed in the meantime. The most common criticism of the practical sessions on my course is that they are too lengthy, causing concentration levels to drop too early – making effective use of time could significantly reduce the time needed for practical work.

ACKNOWLEDGEMENTS:

Teaching Labs, "From Fingerprinting to the Future" p.9 Available at: <http://www.le.ac.uk/ge/pages/aboutus/files/Dept%20of%20Genetics%20Booklet.pdf>

Scientific Papers Available at: http://www.anagnostics.com/pics/Scientific-Papers_Web.jpg

Pipetting Blueberries Available at: <http://www.flickr.com/photos/34038808@N06/3984942137/>