

“The best summer job

Gemma Garrett (Head of Education, the Biochemical Society) and **Alexa Hime** (Science Education Manager, the Biochemical Society)

The opportunity of a laboratory-based placement is a valuable one for any science undergraduate. They develop their practical skills, take ownership of their own research and find out whether life in the laboratory really is for them. It also acts as coveted work experience towards their future career.

Each year the Biochemical Society awards Summer Vacation Studentships to support promising science undergraduates to do just this. The grants are in stipends of £200 a week for up to 8 weeks (£1600) over the summer, and the students work under the guidance and supervision of Society members.

Getting involved with the studentship scheme also has great advantages for the supervisor and their team. It allows our members to further their experience of writing grant applications and supervising projects, and provides an excellent mentoring opportunity for PhD students and postdocs. In addition, their laboratory benefits from an enthusiastic and fresh-thinking extra pair of hands!

In 2010 we awarded studentship grants to 55 undergraduates, working in laboratories throughout the UK as well as overseas. Below are short accounts of the experiences of three of these students, including Kotryna Teminicaite – the 2010 winner of the Eisenthal Prize for best grant application.

Kotryna Teminicaite

Kotryna is an undergraduate at the University of St Andrews. She spent 12 weeks working with Professor Malcolm White, also at St Andrews.



Kotryna Teminicaite

During my summer vacation, I was working in a laboratory on a novel lysine methyltransferase project under the supervision of Professor White. The aim of the project was to express, purify and assay candidate lysine methyltransferases from *Sulfolobus solfataricus* in order to identify a hypothetical lysine methyltransferase capable of methylating its target proteins with a relaxed sequence specificity.

Although we had a straightforward plan, the work itself did not go as fluently as I expected. Expressing a protein from an archaeon in *Escherichia coli* has its own difficulties because of the differences between the organisms. I did not succeed in getting a sufficient expression level of one of the candidate proteins; two were expressed as inclusion bodies, and only one was soluble. Such results influenced the further direction of the research. In order to investigate those insoluble proteins, I had to find a suitable technique for purifying them and refolding them in order to obtain full functionality, as changing expression conditions did not have any effect on the solubility. However, every result that made us adjust and alter the following plans helped me to develop scientific thinking and increased my skills in researching information, finding ways to overcome existing problems and moving on towards the project aim.

Whenever I faced any difficulties in my work, my supervisor, as well as the whole team, supported me. Everyone was happy to share their knowledge and experience no matter how busy they were at the time. What made the time spent in the laboratory even more enjoyable was the fact that the environment was not only scientifically inspiring. I was working among people from different cultures with a wide range of interests with whom I could discuss various topics from arts and travel to food. They

I've had yet!"

represent the type of scientists I have always admired – not limited to their own research field, but open to the whole world and having outstanding personalities.

In the course of this project not only I was given an opportunity to master new laboratory techniques, but also I enhanced my research skills such as time and resource planning, scientific communication, and interpretation and presentation of results. Moreover, spending time in research environment only proved that this is a suitable career path for me. It was also an enjoyable experience and the environment enhanced my growth as a person as well as a scientist. I had a great pleasure working with Professor White and his team in a friendly and stimulating laboratory environment and I look forward to further collaboration with them. I also thank the Biochemical Society for making this project possible.

Karishma Asiani

Karishma is studying at the University of Leicester. She did her summer placement with Dr Rajnikant Patel, who is also based at Leicester.

Picture this... a room full of colourful bubbling potions in test tubes surrounded by vibrant explosions. Various species of genetically engineered creatures obtaining super-human abilities and a mad scientist fantasizing, in his white coat, of becoming the world's number one power. From a very young age, this is exactly how the various forms of media have brought science and laboratories to our attention. However, this summer, I had the opportunity to experience life as a real scientist working in a real laboratory, based at the University of Leicester. Now, don't get me wrong, I wasn't under any delusions as I walked into the laboratory on my very first day of my Summer Vacation Studentship. But I did have one very important question that could only be answered following such an encounter: would I fit into and suit the life of a medical researcher?



Karishma Asiani with a lot of chemicals

My first impressions of the environment upon entering the laboratory were somewhere along the lines of, "Whoa... that's a lot of chemicals!" And trust me, there really were a lot. That's where all of the awesome people working in the laboratory came in handy. Me being me, I was glad that I was able to get stuck into the practical stuff right away, yet having such fantastic Masters and PhD students easing me into an atmosphere alien to me, it made it all the more fun! Spending time with these helpful individuals made me realize just how passionate all scientists are about the work they do and it wasn't before long that I felt like one of them. Seriously, the feeling of excitement that overwhelms you when you actually get some positive results is inexplicable. Nevertheless, that doesn't mean it will always go right. Alongside the fact that experiments will go wrong, I also realized how patience, repetition, forward planning and time management play a vital role in such a field.

By giving me a real taste of what working in a laboratory is all about, this Studentship has allowed me to gain numerous skills, thus helping to expand the opportunities presented to me in the future. Following the lecture and textbook roots of education, I was able to integrate my knowledge to perform and understand good laboratory practice using modern advanced techniques and equipment. The experience has proven to be beneficial by increasing my confidence and competence when it comes to the planning and conduction of experiments in an actual laboratory.

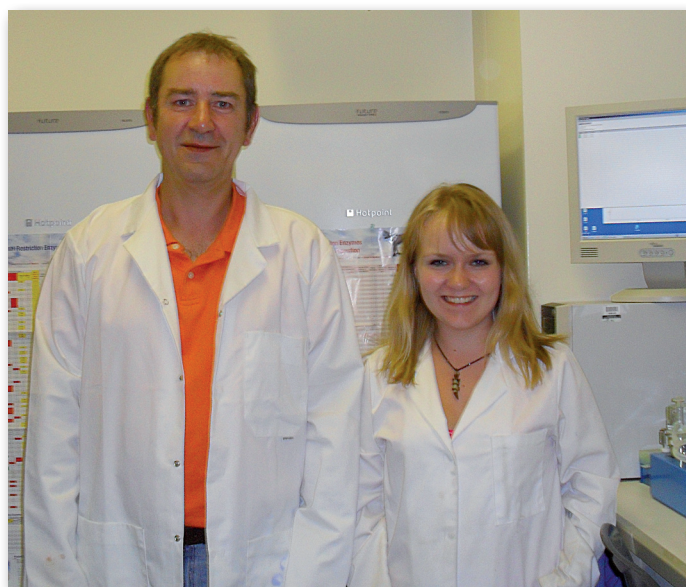
Participating in this Studentship has not only allowed me to witness a medical advance in the making, but has also given me the rare

opportunity of getting involved in this novel research. This invaluable experience has answered my one very important question and has fortified my certainty of pursuing an everlasting and stimulating career in science. I am therefore grateful to have had the opportunity to carry out this Research Studentship with the support of my Project Supervisor, Dr Raj Patel, and the Biochemical Society.

I hope that I have been able to help some of you gain an understanding from a student's perspective of the Studentship and strongly encourage those of you interested to apply!

Robyn Foster

Robyn is an undergraduate at the University of St Andrews and spent her studentship at Queen's University, Belfast, under the supervision of Dr Christopher Law.



Robyn Foster with Christopher Law

Well, what an interesting summer I have had! I was lucky enough to be awarded a Biochemical Society Summer Studentship for 8 weeks working in a research laboratory at Queen's University in my home city, Belfast, under the supervision of Dr Christopher Law. The project involved the overexpression of two integral membrane proteins in *E. coli* cells. One is a protein involved in the virulence of Lyme disease, and the other is a multidrug transporter found in *E. coli*. The aim is that, in the future, the proteins will be fully purified and their structure and mode of function determined.

I started my project at the same time as a Masters student who really helped me settle into the laboratory dynamic and soon became a good friend. I did not have much experience in a laboratory before this project, so I had to learn quickly how to do the simplest of tasks such as using pipettes, preparing growth media and sterile techniques. However, after a few days, they became second nature. I learned so many new techniques that I will certainly be able to use

later in my studies, from preparing glycerol stocks of *E. coli*. to SDS/PAGE to PCR. This project also allowed me to design and carry out my own experiments which, although daunting at first, forced me to fully immerse myself in the project and create my own protocols. This experience makes me feel so much more comfortable moving into my Honours years when I will be spending much more time and given lots more responsibility in the laboratory.

This is not to say there were not some challenging aspects to my project. For quite some time, no positive results were forthcoming, and I soon learnt the value of perseverance in such an unpredictable area of research. I have learned that biological research may not go exactly to plan, no matter how well designed the project is, but that is the exciting part. It is its unpredictable nature that stimulates you to use your brain and troubleshoot, or work out exactly what the unexpected results actually mean. After all, if research was easy, it would not be nearly as rewarding!

I thoroughly enjoyed my 2 months in the laboratory, and I would highly recommend doing a placement like this to anyone who is thinking of research as a career. It has provided me with a much more realistic idea of what a career in this area of science would involve and, on top of that, given me some hands-on experience to boost my CV. Definitely the best summer job I've had yet!

Get involved

We are now inviting applications for the next round of Summer Vacation Studentships. To help to celebrate the Biochemical Society's Centenary year, we will be awarding a whopping £100 000 worth of grants in 2011.

If you an undergraduate who will benefit from a summer spent in the laboratory, or a potential supervisor keen to support and inspire a budding bioscientist, please visit www.biochemistry.org/vacationstudentships for more information.

You can also help us by promoting the scheme within your institution. We can send you free posters and an HTML email advertising the scheme if you email us at education@biochemistry.org.

The deadline for the next round of applications is 15 February 2011. ■