Gemma Garrett

Careers in biochemistry

On pages 17-19 of this issue of Catalyst, we looked at the science of life – biochemistry. To complement this, here are three case studies of young people working in this field.

Fiona Russell, 30

Post-doctoral Research Fellow, University of Calgary, Canada

What I do

I work in the Department of Pharmacology and Physiology. I study the nerves found in our joints.

The joints in our bodies have an extensive supply of nerves which perform an important range of functions, including controlling joint movement, controlling blood flow in the joints and keeping our joints healthy.

The lab I work in carries out research on the role of nerves in controlling joint inflammation and pain. We study disorders involving our joints, such as arthritis and injury.

How I got here

After A levels in Biology, Chemistry, Maths and Further Maths, I completed a degree in Biochemistry. During the final year of my degree I spent three months in a laboratory on my own project. I gained hands-on practical experience and realised that I wanted to pursue a career in scientific research.

I was keen to pursue some type of disease research, so I took a PhD focusing on inflammatory pain at King's College, London. After my PhD I moved to Calgary, Canada

What my job involves

My main duty as a research scientist is to undertake novel research. Most of my time is spent carrying out experiments in the lab. I record the number of action potentials (or signals) firing from joint nerve fibres in response to different drugs. I then analyse my data and interpret the results.

Alongside my practical work, I regularly present my research at university seminars and scientific conferences, and I teach undergraduate students in tutorials. I also write reports about my research for publication in scientific journals and spend time reading scientific literature to keep up to date with progress in my field.

The difficult bits...

Contracts for post-doctoral positions are usually fairly short (up to 5 years), which means you need to apply for a new job every few years.

The best bits...

I can work almost anywhere in the world, as science research is international. Travelling to scientific conferences has allowed me to make friends all over the world – see the photos above.

A PhD is an advanced degree requiring 3 or 4 years further study. It can be taken after a first degree (usually a Bachelor's or Master's degree). Science PhD's are usually lab-based and require a significant amount of hands-on practical work. With a PhD under your belt, your title becomes 'Doctor' (Dr).

Kelly Johnstone, 24

Research Information Co-ordinator, Motor Neurone Disease Association

What I do

The Motor Neurone Disease Association is a national charity that funds and promotes global research into Motor Neurone Disease (MND) and provides support for people affected by it.

MND is a rapidly progressive, fatal disease that affects the motor neurones in the brain and spinal cord. It can affect any adult at any time and five people a day die of the disease in the UK. The cause of MND is unknown and there is no known cure.,

How I got here

I studied Human Biology, Chemistry, Maths and Computing at A level. I then completed a Biology degree, with a final year genetics project, at the University of Portsmouth before beginning my current job.

What my job involves

My main duties include answering enquiries from people affected by MND (patients, their families and their carers). To do this I need to keep up-to-date with the latest research, by talking to scientists researching the causes of the condition and health care professionals involved in the diagnosis and treatment of the disease. I then explain this in a way that is easy to understand.

I also write web- and print-based articles that highlight key research findings, and help to organise scientific conferences about the disease.

The difficult bits...

Proof reading summaries of scientific research (around 400 each year).

The best bits...

Explaining research findings to people affected by MND. Research is often labelled as 'hope' for people living with the disease and so being able to put someone's mind at ease is very satisfying.

Helen Watson, 26

Post-doctoral Research Associate, University of Manchester

What I do

I work in the Life Science Faculty at the University of Manchester.

The research we do in our lab focuses on how animal cells make proteins. In order for proteins to function, they must be exactly the right 3-dimensional shape. This is achieved by protein 'folding'. Folded proteins must pass the 'quality control' checks carried out by cells. If they fail, the cell breaks them down.

Many diseases, including Cystic Fibrosis and Sickle Cell Anaemia, are caused by cells failing to make proteins correctly.

How I got here

At school I studied for A levels in Biology, Chemistry, Psychology and an AS level English Literature. I then did a degree in Biochemistry, followed by a PhD, at the University of Southampton, before starting my current role.

What my job involves

To find out more about how cells fold proteins, I make proteins in test tubes. I then use a technique called 'cross-linking' to find out which other proteins help my protein achieve it's final shape. Understanding how a protein should fold helps me to work out why some proteins fail to fold properly and how this might lead to lead to disease.

Answer to DNA fingerprint on page 19: Sample 2 matches the victim's DNA; Sample 1 matches the DNA of Suspect B.