Postgraduate life

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Emily works in the Alfred Denny building of the University of Sheffield.

***Emily Beardon** is a research student at the University of Sheffield, studying the interaction between the parasitic plant Striga hermonthica and its host. She told **Caroline Wood** what it's like to be working towards a PhD degree.*

A typical day in the lab...

9.00 Set up a PCR experiment (see page 12) to clone a sequence of DNA that may be linked to genetic *Striga* resistance in rice. The PCR program will run for 2-3 hours so it's best to do it first thing! After preparing all the chemicals and the polymerase enzyme, I set the machine to run a pre-set programme. I can get on with other jobs while it runs. I also prepare an agarose gel which I use to check my PCR product later on.

Emily checks her plants in the growth chamber.

10.30 Join the members of the other labs for the departmental coffee break. It's a good opportunity to catch up with each other. On Wednesdays, the departmental news is read out and we get free chocolate biscuits!

11.00 Head down to the growth chambers where my plants are kept in the tropical growth chamber. Set up some more rice seeds to germinate and check the automatic watering system.

12.00 The PCR has finished, so I load the solutions into a DNA Electrophoresis Gel and set it to run. I check the gel after 45 minutes to see if the correct DNA sequence has been amplified. The bands show the right product size – success! I then take a photo of it for my lab book.

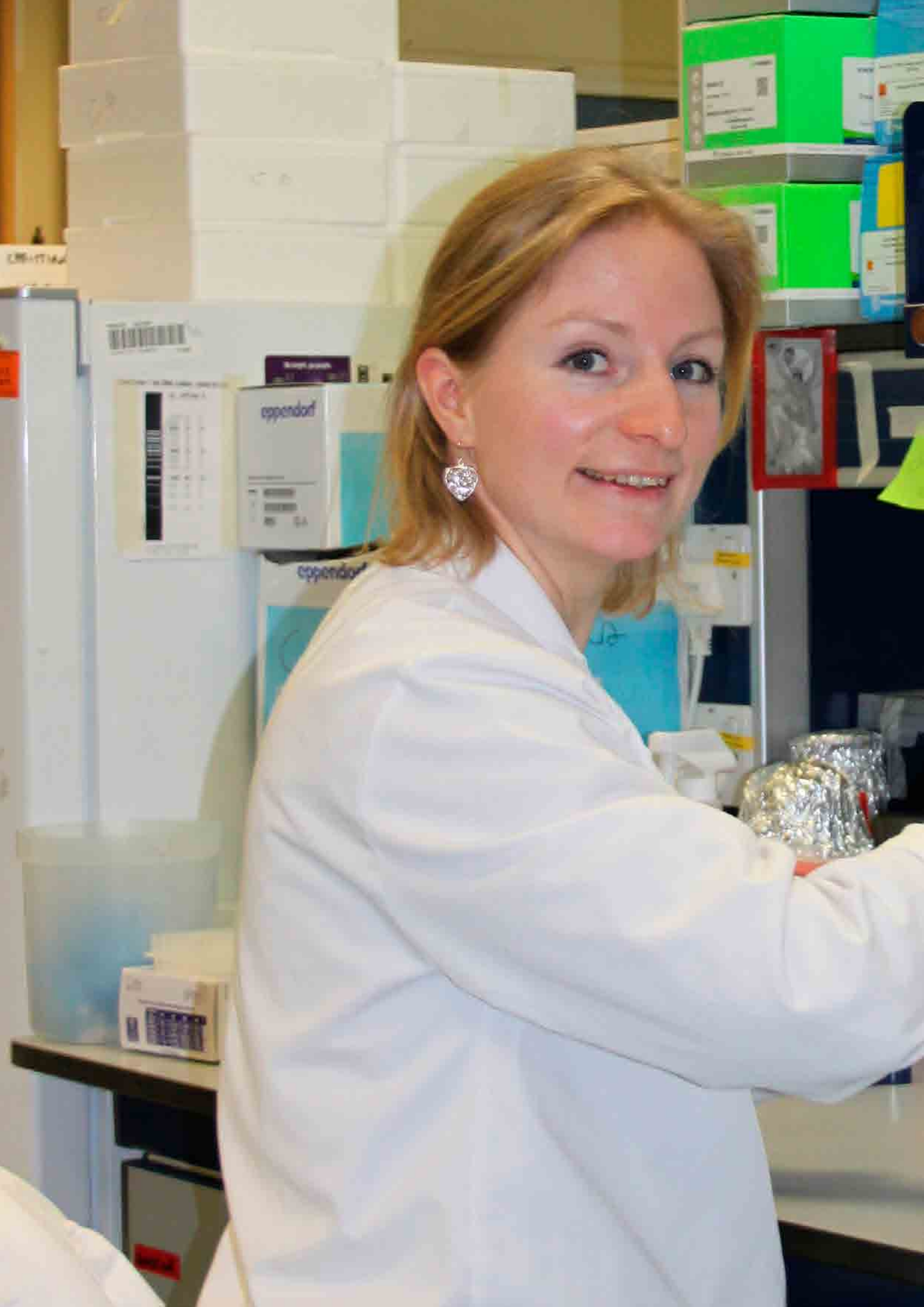
13.00 Take my lunch to Krebs Café and catch up with some more colleagues. (Sir Hans Krebs of the University of Sheffield won the Nobel Prize for Physiology or Medicine in 1953 for his pioneering work on cellular respiration.)

14.00 Go to the departmental seminar. Speakers from other universities and research institutions are invited to give seminars to explain their work. It's a good way to keep up to date with new research findings and techniques, and can lead to new collaborations between different lab groups. Today the talk is about the importance of plant cell walls in defence against bacterial and fungal pathogens.

15.00 Before I forget what I have done today, I write everything up in my lab book, and then plan my work for the next day. I also need to read a paper ahead of our lab meeting tomorrow – we take it in turns to present studies published in scientific journals.

The photograph on pages 10-11 shows Emily working at the bench in her lab. The photograph is explained on page 12.

More about parasitic plants: Catalyst Vol 24 issue 2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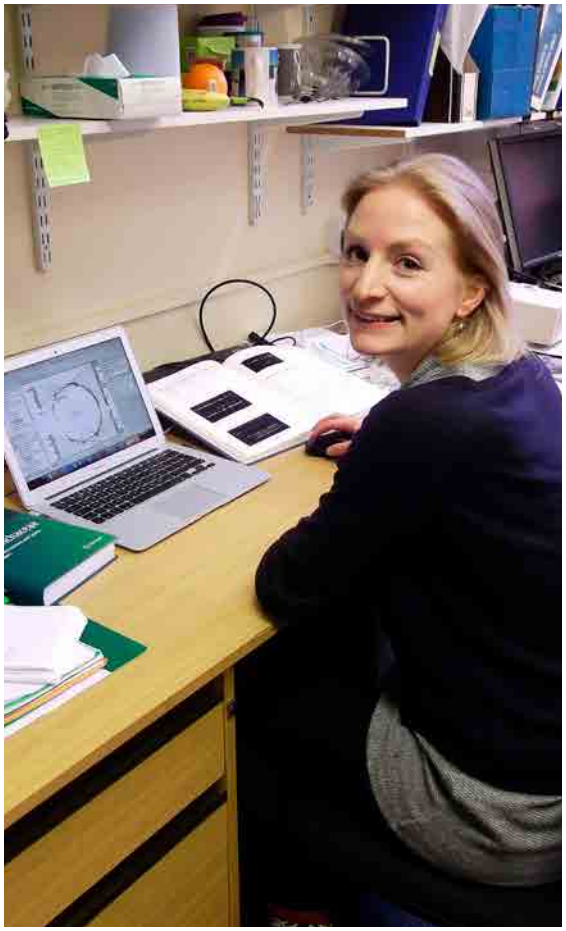
Emily Beardon, a postgraduate student at Sheffield University, working at her lab bench – see the key on page 12.



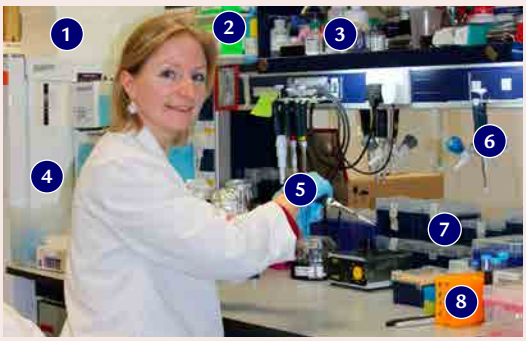
How did you get here?

"I did Biology and Chemistry A-Level, and then came to the University of Sheffield to do a degree in Biology. I didn't become interested in plant science until I attended a series of lectures on plant physiology and sustainable agriculture. I first found out about *Striga* after learning about it in a lecture given by Professor Julie Scholes, who I then chose to supervise my Masters' Project.

"Julie then offered me a 1-year job as a research technician working on a different parasitic plant called *Orobanche* (broomrape), before offering me my current PhD project on *Striga* resistance in rice."

Emily graduated with a Master of Biological Science degree, so she can write MBiolSci after her name. When her thesis has been examined, she will become Dr Beardon.

Emily Beardon and Caroline Wood are postgraduate students in the Department of Animal and Plant Sciences, University of Sheffield, UK.



At the bench

Emily keeps much of the equipment she uses regularly close at hand, at her work station.

1. Ice boxes: these are important for when we are working with tissue samples that can be easily damaged and have to be kept on ice.
2. Molecular Biology Kits: these contain all the chemicals and reagents for specific reactions such as Polymerase Chain Reactions (PCR).
3. Stocks of chemical buffers: long-lasting chemical mixtures don't need to be refrigerated.
4. Fridge: for storing more delicate chemical mixtures that can break down at room temperature.
5. Lab gloves: essential for sterile conditions, and stopping the germs on our skin from affecting our experiments!
6. Pipette: the scientist's 'third arm'! Used to transfer specific volumes of solution. Some researchers have to use these so often, they can develop a 'pipetting arm' injury – the scientific equivalent of 'tennis elbow'.
7. Pipette tips: these are different sizes depending on the amount of solution that needs to be transferred.
8. Sample rack: for keeping specimen tubes upright and orderly.

Look here! Studying DNA in the lab

Emily uses two important techniques to find out about the DNA of the plants she is studying.

PCR (short for Polymerase Chain Reaction) is a method used to create lots of copies of a specific section of DNA, such as a gene of interest. Find out how this works: *http://www.yourgenome.org/facts/what-is-pcr-polymerase-chain-reaction*

DNA Electrophoresis is used to check whether the correct sequence was amplified in a PCR reaction. Find out how this works: *http://www.yourgenome.org/facts/what-is-gel-electrophoresis*