

Gradline aims to inform and entertain members in the early stages of their career in microbiology. If you have any news or stories, or would like to see any topics featured, contact **Jane Westwell** (e j.westwell@sgm.ac.uk).

The island of opportunity

As a PhD student from overseas, **Federico Dorati** shares with readers his experiences of some UK schemes that have been a great boost to his personal development.

I am Italian, and in 2007 I moved to Reading to do a PhD in Microbiology. Two exciting years have already flown by and I have been very lucky during this period, both professionally and personally, because here in England I have had the opportunity to find a system of serious institutions and great people that allow me to express myself and which can help me transform my research into something more. I would particularly like to tell you about two competitions, *Biotechnology YES* and *SET for Britain*; participating in these has literally changed my life. By writing this I hope to be able to communicate not just my gratitude to the scientific community and the organizers of these wonderful events, but also to convince young scientists like me to participate too. Science doesn't finish on the bench – it can go much further...

Biotechnology YES

Biotechnology YES (Young Entrepreneurs Scheme – www.biotechnologyyes.co.uk/index.html) is a science/business competition developed to raise awareness of the

commercialization of bioscience ideas among postgraduates/postdocs. Participation is free; you just need an idea which is scientifically 'possible' (whether or not it's real) that could potentially be sold to industry. The preliminary phase is based on a 3-day workshop where the participating teams have the opportunity to learn about business and acquire the knowledge to build a real company around their idea. During the meeting I met people from the BBSRC (the organizers of the event) and I had the opportunity to talk with scientists that started their own business. I learnt a lot about communicating science to a wide audience (many businessmen are not scientists) and realized that research is not only successful if it's published, as its potential can be exploited in different ways.

I was part of a team of bioscientists from the University of Reading (Nadia Abed, Joao Lopes, Cristina Fante, Abby Thompson and myself, mentored by Samantha Decombel). We were lucky enough (and worked hard enough!) to be one of 14 teams



out of 73 that made it through to the national finals in London. Our proposal for a hypothetical company called Ovega and its revolutionary new product which aims to produce vegetarian Omega-3 oil from food industry waste impressed the judges. We won! We received a prize of £1,000 and a trip to Houston, Texas. Whilst there we presented our company at the RICE Business Plan Competition, the biggest business/science-based competition in the world, where all the companies that were participating were real. I can't describe how exciting and interesting it was to be there; the organization is extraordinary and so are the people and the professional experience. It truly made me realize how many opportunities there are in life and what a pity it would be to miss them, just because we are intimidated and think that what we are doing is not 'good enough'.

SET for Britain

SET for Britain (www.setforbritain.org.uk/) is a scientific poster-based competition, organized to encourage and promote early-stage career research scientists. The 1-day-long competition is held in the House of Commons. After abstract selection, the best 60 works are presented in

poster format to a panel of judges. I was the lucky winner of the second prize this year with a poster entitled *A threat to our conkers? Characterization of the horse chestnut bleeding canker pathogen*, a research project supervised by Dr Robert Jackson (my PhD tutor at Reading). This prestigious prize brought a lot of publicity and attention to our research. At the House of Commons I had the opportunity to speak to Reading's MP Robert Wilson, who communicated my research to the local media. Being in the House of Commons and being able to discuss the research done in the University of Reading was an amazing experience!

I hope I have communicated how important these experiences were for me. Even if we are in a period of

economic recession, the scientific world is still active and vibrant and there are groups of passionate people working hard to highlight and communicate the work of young researchers and give them these great opportunities.

Organizations such as the BBSRC and societies like the SGM really do offer postgraduates the opportunity to do more than just research; they offer us tools to realize our goals and reach our dreams. Personally I hope that my scientific contribution will allow me to give something back to this country that has already given me so much.

Federico Dorati
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In the melting pot

Crucible (www.nesta.org.uk/crucible), organized by National Endowment Scheme for Science Technology and Arts, brings together early- and mid-career researchers in three weekend workshops to explore issues such as creativity, policy-making, communication and public engagement. Participants, who come from the arts, humanities, technology and sciences, have the opportunity to explore ideas outside their own discipline and develop new collaborations. SGM member **Mark Clements**, senior lecturer in biotechnology at University of Westminster and part of the 2009 cohort shares his impressions of the first weekend workshop.

I first heard about Crucible through my Dean of School, but my interest really grew after watching a video about the programme via the NESTA website. It looked like a fun way to meet fellow scientists from a wide range of disciplines. The application process was straightforward, and I was very excited when I heard I had been selected for the programme.

I went to first innovation camp weekend with trepidation as I was not sure what to expect, and I was going to spend a long weekend with 30 people I had never met before. Upon arrival, however, my reservations soon evaporated due to the well-designed programme and the expert facilitation of writer and broadcaster Vivienne Parry (former *Tomorrow's World* presenter) who made the whole weekend stimulating and fun.

The first session involved each participant presenting a poster about themselves, including personal and professional interests, to break the ice. Initially, I wondered what a palaeontologist, sociologist, chemist, physicist, archaeologist and myself could have in common, but it was clear we all had a passion for our subjects and an open-minded desire to breakdown conventional discipline boundaries to generate new ideas.

We explored ways of engaging the public with our research as well as how to get involved with the media and other communication-based organizations. We also examined our role in influencing government policy and the mechanisms by which we can do this. Each session was led by a panel of experts who shared their experiences and gave practical tips



about how various organizations work. It was refreshing to talk about science with people outside of my subject area and to find areas of common interest. By the end of the weekend I was buzzing with new ideas and had made an exciting group of new friends. We have continued to get to know each other through an online network forum which has facilitated the sharing of ideas emerging from the first camp. Crucible has exceeded my expectations and I am really looking forward to the next weekend where we are going to explore ways to develop cross-disciplinary ideas.

Mark Clements
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Profile

Present occupation

Assistant Professor in Molecular and Cellular Nutrition, Texas State University

Previous employment

New York University Medical Center, 2004–2007
I worked on an NIH-funded study aimed at understanding how dietary fish oils exert their beneficial lipid-lowering effects. One way fish oils are able to do so is by reducing the output of very low density lipoproteins (VLDL) by the liver. These lipoproteins are the precursor to 'bad' LDL-cholesterol and also associated with raised plasma triglycerides. My project investigated the effect of fish oils on the various stages of VLDL assembly in liver cells in order to elucidate the molecular mechanism of reduced VLDL output.

University of Reading, 2003–2004
Short-term contract on a BBSRC-funded study aimed at understanding how different dietary fats influence lipoprotein composition and the progression of atherosclerosis.

Education

PhD, Food Biotechnology, University of Reading, 2003
My project was aimed at synthesizing 'anti-adhesive' oligosaccharides with defined structures to mimic the biological receptors of certain gut pathogens. The goal was to use these sugars as decoys for pathogen attachment, thus preventing bacterial attachment to their real receptors in the gut and subsequent infection. I developed enhanced enzyme-based techniques for the synthesis of these decoy sugars at higher yields and purity.

MSc, Food Technology, Central Food Technological Research Institute, Mysore, India, 1999
BSc Microbiology, Mount Carmel College, Bangalore, India, 1997

A job in... Research in the USA

If you are planning your next career move, you might be considering a period of postdoctoral research in the USA. Although the current economic climate is having an impact on recruitment in the USA, there are still some opportunities. Catherine Armstrong outlines the current situation on the jobs.ac.uk website.

Vatsala Maitin's profile shows how a combination of careful planning, networking and planned happenstance (covered in the last issue of *Gradline*) can lead to achieving career goals.

Q What influenced your choice of PhD project?

It was governed by a combination of factors, including my research interests, prior exposure to published research from the supervisor's lab and being awarded a Felix scholarship and Overseas Research Student award to support my PhD studies at the University of Reading. As an undergraduate and master's student, I had a keen interest in microbial biotechnology and also gained some research experience in the area of microbial enzymes. Fortunately, the project matched my interests well and had considerable prophylactic potential, making it an attractive subject for a PhD thesis.

Q How did you go about finding your postdoc in America?

I took two different approaches: sending open applications to a faculty whose research I was interested in, and responding to advertised positions of interest. As an international applicant, I also needed faculty support for a visa to work in the USA. I obtained the postdoc by responding to an advert in *New Scientist*. The principal investigator in offered me a 3-year contract along with a secure visa status. The lab had a good



publication output, was in a renowned institution and offered good potential for collaboration and networking. I accepted this position after conferring with both my mentors at Reading who supported my decision.

Q How did you obtain your faculty position?

I heard about this post through my spouse, who was already a faculty member in my current department.

I had been anticipating a possible faculty position opening for about 2 years, considering the steady growth in the scope of the nutrition programme in the department. I met the department chair informally to express my interest in any positions that might open up. I applied for this post and underwent a two-stage interview process; a telephone interview followed by an on-site interview which was a gruelling all-day process. It included a teaching presentation and research presentation, including a research proposal for my own lab if hired. I was interviewed by two different committees, the college dean and the department chair. Following negotiations on the lab start-up package, equipment needs and salary, an informal offer was extended to me via email outlining the conditions of employment. This was followed by a formal letter in the mail.

Q You have worked in different research fields – was this planned?

The course of my research has certainly been very varied, spanning biotechnology, enzymology and basic cell biology. For the most part, this was circumstantial rather than planned. My foray into lipoprotein research happened due to the departure of the assigned postdoc one year before the end of the project, which coincided with the completion of my PhD. This serendipitous occurrence not only allowed me to work on a very exciting project, but also helped lay the foundation to my postdoc position in New York and my present faculty position.

Q It sounds quite challenging

The main challenge I faced was lacking in-depth knowledge of

literature and techniques in the new research area, but I was able to overcome this over time, by extensive reading and the help of my colleagues and faculty mentor. In the current research environment I have found my multidisciplinary training to be an asset rather than a drawback.

Q What workplace cultural differences have you noticed in the countries you have studied and worked in? How easy was it to adapt?

My transition to PhD research was fairly smooth as the Indian education is closely modelled on the UK system. I also benefited from the prior experiences of my father who also got his PhD in the UK. A feature of the UK system was the emphasis on the ability to work independently to drive a project. This was hard to adapt to at first, but has really helped me in my career.

Compared to the UK, I have found the work environment in the USA to be considerably more demanding, competitive and regimented, especially in big cities with multiple premier institutions. There is an expectation to consistently perform at the highest level and one cannot rest on one's laurels. While it does lead to high productivity it can be a little stressful at times. The academic tenure process is much longer and uncertain compared to the UK, lasting about 6–7 years.

On the plus side, networking and collaborations are easier since most professors are very approachable and helpful. Funding opportunities and salaries are also slightly better than elsewhere

Q Can you describe a typical day?

During semesters, my week is usually organized into teaching

and non-teaching days. I teach 2 days a week, and the bulk of the time on those days is spent on lecture preparation and delivery. On 'non-teaching' days, my time is spent on research-related activities such as meeting graduate students, following up on research progress, analysing data, planning new experiments, review of manuscripts, catching up on literature and writing up research for publication.

At this stage of my career, I spend a lot of time on identifying and applying for funding. I do not teach in summer, so I use this block of time to focus on research, writing and idea-development. In addition, I have to spend a few hours each month on committee work and administrative duties.

Q What is rewarding about your job?

Aside from the joy and stimulation of driving new research ideas, the most rewarding part of my job is to be able to really engage some students and get them excited about a career in research. When I am able to spark that kind of interest, it is really satisfying. I also enjoy contributing to students' career development.

Q How do you see your future?

Over the next few years, I hope to establish a well-funded and well-published research laboratory and carve a niche for myself in my research area.

Further information

www.jobs.ac.uk/careers/articles/1250/Staffing_Crisis_the_US
Staffing Crisis: the US by Dr Catherine Armstrong
www.txstate.edu
Texas State University