



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).

Microbiologists planning a career in research very often follow their PhD studentship with a spell as a postdoc, employed on one or more short-term contracts. The funding is sought by the principal investigator who usually maintains an overview of the project's direction. Postdocs on this type of contract can build up a good portfolio of laboratory skills but, for those aiming at a long-term research career, it is necessary to develop as an independent researcher. One of the stages on that journey to independence is getting funds to support your own research ideas.

year to consider the proposals. Grants are usually for 2–3 years and include staff salary costs and associated research expenses. This approach can offer postdocs the opportunity to develop skills in writing a good proposal, but because the application must be made by the established researcher (the PI) it isn't a fast route to recognition as an independent scientist. However, some funding bodies do accept applications made jointly by experienced postdoctoral researchers with a principal applicant who has been in a permanent post for at least 5 years. It is worth bearing

The direct approach

There are a number of schemes to support early-career scientists who wish to strike out on their own. Funding bodies do want to support talented early-career researchers and can offer financial support at this crucial stage. Eligibility criteria (such as EU or UK citizenship) for these awards can be a factor, so it is worth checking carefully before starting the application process.

Microbiologists whose research is rooted in the biomedical sciences can apply to the Wellcome Trust and Medical Research Council (MRC) for support. Newly qualified postdocs can apply for a Sir Henry Wellcome Postdoctoral Fellowship. Applicants are expected to identify an important biomedical research question and develop a research programme. The fellowship is 4 years full-time, but may be taken up on a part-time basis with the tenure of award lengthened

high strategic importance to the research council. These fellowships are targeted to different institutes and different areas of science each year. Both schemes award a salary for 5 years and a significant grant towards research costs. The Natural Environment Research Council (NERC) makes about 30 3-year Postdoctoral Research Fellowships each year, aiming to support outstanding environmental scientists as they become independent. Although applicants are usually expected to have at least 1 year of postdoctoral experience, some grants are made to candidates before they are awarded their PhD. Postdocs with at least 2 years of experience who can prove their ability as independent researchers can apply for an Advanced Fellowship. NERC fellowships are open to any nationality.

Mid-career postdocs (with 1–3 contracts behind them) can apply to the Royal Society's University Research Fellowships scheme. The fellowships last for 5 years with the possibility of a further 3 years of funding. At the end of the fellowships, it is expected that candidates would be in a strong position to obtain permanent university posts. The Leverhulme Trust offers Early Career Fellowships to scientists with a proven record in research. Applications are accepted in any discipline, and in 2008 they expect to award 55 fellowships which can be held at any UK university or research institution. The fellowships are for 2 years and include 50% of total annual salary costs and up to £5,000 a year to support research costs. The host institution is expected to make up the salary shortfall and it is anticipated that the fellowship will lead to a permanent position.

Returning to research

The Daphne Jackson Trust provides university and industrial fellowships to help scientists who have had a career break of more than 2 years. Applicants must have completed their PhD before the career break started. The fellowships are usually of 2 years duration, are carried out flexibly and involve an element of retraining and updating of skills. Projects can be hosted by university departments or by research divisions of industrial establishments. The Wellcome Trust runs a similar scheme for researchers in the biomedical sciences. Their Career Re-entry Fellowships are tenable for 2–4 years and may be taken up on a full or part-time basis.

Flexible approach

For those who require an element of flexibility in balancing their work and home commitments, the Royal Society administers the Dorothy Hodgkin Fellowships. Women are particularly encouraged to apply to the scheme which is designed to help successful candidates progress to permanent academic positions in the UK. A useful feature is that successful fellows can work on a full- or part-time basis or even convert from one to the other, depending on

personal circumstances. Applicants have usually completed one or two postdoctoral contracts, although it is possible to apply to the scheme after completion of a PhD project. Some of the other fellowships outlined earlier can also be awarded to scientists wanting to work on a part-time basis (usually for a minimum of 50% full-time hours). It is worth checking the fellowship handbooks (published on the funding bodies' websites) for full details.

International perspective

Some fellowship opportunities are funded by the EU Marie Curie Actions scheme. Grants allow early-stage researchers to spend a period of 1–2 years in a host laboratory. This funding is viewed as a training grant, so must form part of a long-term plan for professional development. Marie Curie Intra-European Fellowships support travel to labs within the European Union. International Outgoing Fellowships for Career Development support travel by European researchers to a laboratory outside of Europe. Conversely, International Incoming Fellowships support researchers from outside Europe to work on research projects in an EU member state with a view to developing collaborations between that country and the researcher's home country. Grants include a monthly living allowance, travel and limited research costs.

The Newton International Fellowships scheme was launched this spring. The scheme is run by a group of organizations, including Research Councils UK and the Royal Society. It funds promising early-career scientists from any country outside the UK who want to carry out work at a UK research institution for up to 2 years. The awards provide a substantial contribution towards subsistence and research expenses, plus a one-off relocation allowance. The long-term aim is to encourage new international collaborations and a feature of the grant is a 10-year follow-up package, for those who remain in research, to support activities that maintain links with the UK.

Getting an award

Competition for these funding schemes is strong and the majority look for researchers with potential to be leaders in their chosen field. If you are thinking of applying for any of these grants, give yourself plenty of time, target the application very carefully, and it is a good idea to find a mentor who will support you during and after the application process.

Further information

cordis.europa.eu	www.bbsrc.ac.uk
www.daphnejackson.org.uk	www.mrc.ac.uk
www.nerc.ac.uk	www.newtonfellowships.org
royalsociety.org	www.wellcome.ac.uk

Getting funding to become a successful independent researcher is tricky, but it can be done, as **Jane Westwell** describes.

Funding your research

Stepping stones

The problem for most postdocs seeking to establish themselves is a lack of track-record, but there are ways around this. Some researchers take the opportunity to develop their own ideas whilst still fulfilling the obligations of their contract. They then work up an idea for a new project with their principal investigator (PI) who submits a grant application to a funding body. This type of grant is awarded under the response mode – funding bodies outline their research priorities and scientists submit applications within the relevant remit. Committees meet a few times each

in mind that the success rate for response mode grant applications to the Research Councils can be lower than 30%, so even the most carefully targeted grant application may not always meet with success.

Industrially funded researchers may spot a good opportunity for further funding and develop a project proposal, with their PI, which they pitch to the sponsor. This would probably involve developing a good written proposal followed by meetings to discuss the work to ensure it matches the sponsor's requirements (as well as offering the postdoc the chance to do some publishable research).

accordingly. Biomedical researchers with 3–6 years postdoc experience can apply to the Wellcome Trust for a Postdoctoral Fellowship or to the MRC for a Career Development Award. Both schemes cover the applicant's salary, research expenses and sometimes the cost of employing support staff.

The BBSRC offers up to 10 David Phillips Fellowships each year to scientists with 2–6 years postdoctoral experience who want to establish themselves as independent researchers. They also offer Institute Career Path Fellowships to early-career researchers wishing to work in a BBSRC institute in areas of



Working towards a career in university research & teaching

Gail Ferguson is a senior lecturer at University of Aberdeen. She shared her experience with early-career microbiologists at the Spring Meeting this year.

Profile

Name Gail Ferguson **Age** 38
Present occupation Senior Lecturer, School of Medicine, University of Aberdeen
Previous employment Lecturer in Biological Sciences, University of Edinburgh (Sept 2004–May 2007); Postdoctoral Associate, Massachusetts Institute of Technology (Oct 1999–Sept 2004); Wellcome Trust Postdoctoral Toxicology Fellowship, University of Aberdeen (Oct 1996–Sept 1999); Postdoctoral Associate, University of Aberdeen (Jan 1994–Oct 1996).
Education University of Aberdeen, *PhD Microbiology*; University of Stirling, *BSc Biochemistry Hons (2i)*.

Q What attracted you to microbiology research?

I became fascinated with microbiology during my undergraduate degree, during which I conducted two summer projects and an honours project on trichomonads. From this experience, I knew that I wanted to pursue a research career. I would thoroughly encourage undergraduates to gain research experience as this can ensure that you choose a PhD in an area that interests you.

Q What influenced your decision to work as a postdoc in the USA?

After my Wellcome postdoc fellowship I had to make a decision whether or not to apply for lectureships. However,

since my research experience had mostly focussed on *E. coli*, I wanted to gain further experience in more diverse bacterial species before taking up a permanent position. I went to work in the USA at MIT, due to its reputation and that of the 'Boston Bacterial' community. I chose to go to Graham Walker's lab as I was really interested in his work on *Sinorhizobium* and *Brucella*.

Q How did this compare with your previous postdoctoral experience?

When I arrived in the USA I was given a bench and just had to get on with it. Graham was fantastic in terms of the 'big picture', which was exactly what I needed in terms of my career at that stage. However, I would recommend that people do at least one postdoc before going to the USA where more is expected of postdocs since the PhD there is longer (5–7 years). The work ethic is a bit different in the USA. Most people arrived in the lab around 10 am and worked until 8–10 pm, yet Graham did not micromanage and was more interested in progress. He was also very happy to allow people to take holidays and wasn't strict about this as long as people worked hard. He was a very positive role model, managing to balance work and life and still be extremely successful.

Q How did you find the transition to an academic post in the UK?

It was a bit of a shock. I went from

being in a lab with plenty of money to an empty lab with very little money. I had to go back to basics – filling tip boxes and pouring my own gels! However, there are many funding opportunities in the UK for new investigators and I was lucky to be awarded several grants. It has taken a while to get re-involved with the UK and European microbiology community, but I very much enjoy the UK system and am happy to be back.

Q How do you see your future?

I would like to continue in academia and build my research group. I enjoy the university environment and the balance between research and teaching.

Q What advice can you offer people planning a career as an academic?

During your postdoc, aim to develop the skills for running your own lab:

- Gain experience in writing and reviewing papers and grants
- Develop projects that you can take with you to your own lab
- Apply for fellowships (and check deadlines!)
- Make sure that you get a wide range of experiences during your postdocs (courses, work on different microbial systems and in different labs)
- Publish your research regularly and try to aim for high-quality journals
- Help in the supervision of student projects
- Do some teaching but do not take on too much – at the end of the day, it's your research record that will get you the position
- Have a mock interview for fellowships or academic positions as it's important to know the types of questions you may be asked.