

### EPA1 - Academia, mastering a complex career

#### EPA1.1

##### **Academic careers: current and future perspectives**

Jeremy Pritchard (University of BirminghamSEB)

Academic career paths available to early career experimental biologists are becoming increasingly complex as more demands are made on those researching and teaching in universities. Unlike research in institutes and industry, academic research requires a teaching role too, which means the potential applicant will need to be able to demonstrate the ability or potential to teach. As we will see, there is more to teaching nowadays than in previous times, with an ever-demanding student population requiring more creative teaching methodologies including flexible e-learning resources.

In the context of a global recession, cut-backs in many country's research budgets are likely to increase competition for grants and an expansion of cross-disciplinary, cross-country or even international boundary collaborations. Strategic and visionary thinking, not only within a research project itself, but in order to scan the research landscape for future funding opportunities will be vital for an academic to retain his/her employability. This means that a more flexible, communicative and outward-gazing academic is likely to be favoured over the highly specialised mono-disciplinarian of the past. The transformation has been coming slowly up till now but there is likely to be an accelerated change in the next few years which will mean that aspiring and newly appointed lecturers will do well to take a proactive and self-reliant approach to their careers if they are to be successful.

Taking an international perspective, this session will describe the key areas of academia on which incoming and aspiring academics should focus: including teaching, publishing, funding and wider communication.

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10:30 Thursday 1st July 2010

#### EPA1.2

##### **Survey results of "The situation of doctoral candidates within Europe" conducted by**

#### **EURODOC with regard to career prospects and working conditions.**

Izabela Stanislawiszyn (President of Eurodoc Doctoral Candidate Warsaw School of Economics Poland)

Eurodoc is the European Council of Doctoral Candidates and Junior Researchers. It takes the form of a federation of 34 national associations of doctoral candidates and young researchers in Europe. Eurodoc's objectives are: To represent doctoral candidates and junior researchers at the European level in matters of education, research, and professional career development. To advance the quality of doctoral programmes and the standards of research activity in Europe. To promote the circulation of information on issues regarding young researchers; organize events take part in debates and assist in the elaboration of policies about Higher Education and Research in Europe. To establish and promote co-operation between national associations representing doctoral candidates and junior researchers within Europe. Eurodoc has been accepted as a working partner in the Bologna process and is a partner of the European Commission, European University Association, Euroscience and European Science Forum and various organizations consult Eurodoc on issues concerning doctoral education and research of young scientists. One of Eurodoc's current activities is the online survey entitled "The situation of doctoral candidates within Europe" which was conducted with the participation of 8900 doctoral candidates from more than 30 countries. It covers a broad range of aspects concerning young researchers such as qualification requirements, career path, funding schemes, models of training and supervision, working conditions, expected and achieved results of scientific work and mobility. The presentation will be focused on the results of the survey with regard to career paths and working opportunities for young researchers.

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#### EPA1.3

##### **Commercialisation of Research**

Eugen Kvasnak (Consultant Technology Transfer office  
Charles University Prague)

Commercialisation of research has become a new role of universities in addition to teaching (transferring knowledge from generation to generation) and research (creating new knowledge). Universities thus build their research impact within society, collaborate closely with industry, and transfer their own technology. Protection of Intellectual Property Rights, licensing, and setting-up spin-off companies are new skills for researchers to master. It is estimated that eighty percent of all technology solutions are patented, and only twenty percent are in academic publications. By mastering these new skills, a whole new world of many opportunities appears. What it means and what it needs in brief ... that's the core topic of this presentation.

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11:20 Thursday 1st July 2010

#### **EPA1.4**

##### **Teaching: different perspectives from UK**

Jeremy Pritchard (University of BirminghamSEB)

Jeremy Pritchard will introduce the session and provide a UK perspective. His own career path follows that of the classical UK academic, from an undergraduate biology degree, through to a lectureship. A career at a UK University can leave the candidate facing the contradictory situation in which they will be appointed on the basis of the quality of their research but will be expected to teach. Overlying this there are qualitative changes in the University teaching agenda underway making appointment criteria more complex, but also providing opportunities for the motivated candidate to demonstrate the full range of teaching skills required in today's competitive environment.

Thirty years ago the incoming lecturer would be expected to stand up in front of a small group of motivated students and talk unchallenged about their research area. While the academic would implicitly be delivering transferable skills, these would not be recognised or expected. Since then there has been a massive expansion in UK education; there are now many more students in a class who are increasingly driven by an assessment agenda - decisions about where to apportion their effort are made on the marks associated with any exercise leading to the fragmentation of what is arguably the indivisible whole of Biology. Anyone undertaking a university teaching career these days must be prepared for a qualitative alteration in the way teaching works - shifting from didactic delivery to facilitating student learning. Coming from a research background this can be difficult but the rewards are huge.

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#### **EPA1.5**

##### **Teaching: different perspectives from Europe**

Teresa Valencak (Veterinary University of Vienna)

Teresa Valencak will comment on the formalised process known as 'habilitation' which exists in some countries in Europe in order to secure a position in academia. This advanced step about 4-6 years after the PhD is considered to show that the applicant has successfully followed up on his/her career and has proven to independently publish, teach and acquire third party funds since then. Thus, for passing this step, it is necessary to accumulate publications, give lessons and courses and finally, to apply for grant money. If the applicant together with a mentor is considered to have the grounding for a successful habilitation, an evaluation process is started at which end the applicant has to give a public lecture. If all evaluations are positive, the "venia legendi" is granted and that document is required to independently supervise and evaluate graduate students. Also, as a kind of extra qualification, it greatly helps when applying for tenure track positions although it is mostly no more obligatory. The whole procedure of habilitation is recognised in countries such as Germany, Switzerland, Austria, Russia, Poland, Hungary and Slovakia and is not connected to a certain mode of employment.

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11:50-13:00 Thursday 1st July 2010

#### **EPA1.6**

##### **Teaching: different perspectives from USA**

Larry Griffing (Texas AM University)

Larry Griffing will highlight the differences in teaching expectations between those who postdoc at a research university and those at a primarily undergraduate institution (PMI). It is generally not wise to have postdocs teach at the former; for R1, research universities, most of the time and money is spent on research, and new faculty should negotiate for very light, or no, teaching load for at least their first year, so that they can get that all-important first grant. Even if they are interested in teaching, it does them no good to develop new undergraduate courses at this stage. If they do teach, they should teach small seminar-like classes in their area of expertise, giving them a broader perspective for developing their own research program. For PMIs, where teaching is a focus, it is not only important to establish a research program and negotiate light teaching loads, but also to start

thinking about ways to get undergraduates involved in the process of research. I will cite examples of how authentic inquiry, where the student asks the research question, can be developed through on-line databases, or laboratory experiences. For learning content in the biological sciences, there are new programs where web-based tutorials are combined with non-conventional, non-lecture, discussion-format classes. I will give examples of these (such as Calibrated Peer Review and the introductory biology program at Penn State). In all of these, what makes a good teacher is the ability to engage and monitor the audience, which is often larger than optimal.

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11:50-13:00 Thursday 1st July 2010

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### EPA1.7

#### Getting your research published: strategies, insights and ethics

Irene Hames (Managing Editor The Plant Journal and author of Peer Review and Manuscript Management in Scientifi)

Publication is an essential part of any research project and scientists who want to secure or pursue an academic career must publish their work. Promotion and research funding hinge on publication records. Not only is it important to get work published, it's also critically important where that work is published. With submissions to many journals increasing dramatically, it's becoming more and more difficult to get published, especially in the top journals. Things are likely to become even tougher and more competitive as a result of the very significant amounts of funding and attractive incentives being offered to researchers in various parts of the world, some of which have not previously had strong track records in research or had work published in the top international journals. This is changing, and changing very rapidly. This session will look at the strategies and practical issues that can help get work published and give researchers a competitive edge. It will also highlight the potential pitfalls and advise how to avoid them.

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### EPA1.8

#### Research careers: a personal perspective from a SEB President's Medallist

John Bothwell (Queen's University Belfast)

No two scientists have the same career, but the old adage about learning from other people's mistakes still holds true

for professions as vocational and capricious as Higher Education in the UK. This talk, by one of the authors of the RCUK Concordat for the Career Development of Researchers (<http://www.researchconcordat.ac.uk/>), considers how to avoid some of the most common pitfalls which face early career Researchers in the UK. By looking at how science and its practitioners are assessed and funded by Universities, Charities, and the Government, we will ask how to break the vicious circle in the postdoc's perennial question: 'How can I demonstrate that I can drive my own research when my postdoctoral job doesn't allow me to apply for grants?'

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13:40 Thursday 1st July 2010

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### EPA1.9

#### Research funding generation

Carol Featherstone (Freelance Science Editor Writer and Trainer (Toulouse France))

Where can you find funding and how do you write successful grant applications? A successful career in academic research invariably goes hand-in-hand with success in raising the funds for your work. As a first-time postdoc, a personal fellowship can get you a place in a top group and provides you with kudos and a degree of autonomy from your advisor. As you progress to running an independent research team, finding funding to hire staff and pay for their experiments becomes a major part of the job description. It is never too early to hone your skills at finding sources of funding and writing competitive grant applications!

In this session, we will look at the types of national and international organisations that provide funding for research at all stages on the career ladder and point you in the direction of how to find out more about their programmes. Focusing on postdoctoral fellowships and career development awards, we will talk about forward-planning, presentation, what to put in (or leave out of) your research proposal to make it fund-worthy and, ultimately, how it will be assessed by peer review.

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### EPA1.10

#### Outreach: working with schools - Workshop

Dominic Delaney (Edvotech)

Outreach. What does it mean to you and how do you do it? More and more, scientists are being asked to

engage with school students and the public to tell them about science, to inspire them and to demonstrate the relevance of their research to the 'real world'. You may relish the idea of going into a school or staging a science show in your institution but you may find the prospect quite daunting. Using simple and effective techniques and equipment is usually the best strategy for a successful outreach event as well as having clear aims and outcomes. In this workshop I will be able to advise you on the general do's and don'ts for doing practical science with schools, drawing upon some of my own experiences as well as giving you a practical demonstration. It will also be interesting to hear about other people's experiences of communicating science to schools or other public audiences.

Hands-on molecular biology is an exciting way to get young people thinking about how science works in the real world which is why our company have been developing more than 50 different kits to carry out experiments such as DNA fingerprinting, PCR, ELISA and many others in a classroom setting. Come along and see for yourself how you can bring the research laboratory into the classroom easily and affordably... and remind yourself how much fun science can be!

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14:00 Thursday 1st July 2010

### EPA1.11

#### **Long term matching of microclimate and air quality data at fixed points & during routine journeys along the Dee & Mersey estuaries: a tool for education & policy makers.**

Jennifer Sneddon (Liverpool John Moores University), Tim Stott (Liverpool John Moores University), Anne-Marie Nuttall (Liverpool John Moores University), Alex Warder (Neston High School Wirral)

Estuaries are environmentally sensitive locations. The two bounding the Wirral peninsula provide contrasting conditions for long-term environmental monitoring. The Wirral coast of the Dee Estuary is a RAMSAR site for migrating wildfowl overlooked by Deeside Industrial Estate. The Mersey Estuary is abutted by urban development and industry on both sides.

Estuaries are often associated with unique & unpredictable microclimates & weather patterns. These may influence environmental quality of areas in their vicinity. Reliable longitudinal data sets are rare & yet are of crucial importance in education, to the scientific community & for informing local government policy on environmental issues & wildlife management. University & School participants are monitoring environmental quality in the vicinity of both estuaries for a year and on a long-term future basis. In the first year carbon monoxide, SO<sub>2</sub>, sound, and light pollution will be logged. Logging

will be conducted with scientifically robust equipment (Sciencescope®) at fixed locations on both estuaries & on journeys to school on the Wirral side of the Dee estuary. These data will be matched & enhanced with data from weather stations and stationary air quality monitoring points situated on site or within 5 miles. Data are overlain on Google Earth maps. In this School-linked but University-based research project, data will be available to Science students for enquiry based learning at GCSE, A level & University via the Participate web site for Schools ([http://www.participateschools.co.uk/about/index\\_html](http://www.participateschools.co.uk/about/index_html)). Data will also feed into projects linking environmental quality to wildlife management and to policy making.

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Poster Session 17:00 – 19:00 Thursday 1st July 2010

### EPA1.12

#### **Five top tips for making inclusive presentations.**

Samuel P Rastrick (Bangor University)

Many issues addressed by academics in the biosciences, such as climate change, are of international interest. Therefore it is essential that we communicate our science successfully with other academics, students and members of the public. However, we often do not think about those members of the audience who may find some aspects of our delivery inaccessible. Depending on our presentation method, this may include the 10% of people with some dyslexic difficulty, the 5-8% of people who experience colour-blindness, in addition to people with other disabilities such as attention difficulties (e.g. ADHD), Meares-Irlen Syndrome or hearing problems. This poster outlines five easy to apply interventions;

- 1) Make text clear
- 2) Use appropriate colours and backgrounds
- 3) Make notes available
- 4) Use multi-sensory methods to break up presentations
- 5) A clear delivery

These interventions were identified using feedback from students and staff at Bangor University and will help you communicate information more inclusively, enhancing your presentations for all audience members including those with disabilities that can effect learning. The theoretical underpinning of each intervention is discussed as is practical advice on how to easily incorporate them in to your presentations.

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Poster Session 17:00 – 19:00 Thursday 1st July 2010

**EPA1.13****Developing the skills of STEM postgraduates in a modern UK University**

Peter J Lumsden (University of Central Lancashire),  
Mike C Holmes (UCLAN)

Training programmes for postgraduates in UK Universities have often been separated from their central research activity. In some cases such training may be delivered by a 'central' office, while more 'specialist' training may take place at a local level. Both of these have their advantages, and their disadvantages.

In 2002 the report of Sir Gareth Roberts (SET for Success) stated that all major funders of postgraduate researchers should make all funding conditional on their training meeting stringent minimum standards, which should include *the provision of at least two weeks' dedicated training a year, principally in transferable skills...*

Our experience is that across the sector the approach to 'skills' development is varied. In this poster we describe an approach to development based on a formal module, run as an intensive two-week block, which combines coverage of topics such as scientific writing, presentation techniques and statistics, with the more 'personal' skills such as teambuilding and reflective thinking. Assignments are based on activities which form a normal part of the research process

This programme is run by several staff, most with a strong research background, and it is compulsory for all new postgraduates. It has been run four times since October 2008, and we are now able to present some evaluation based on comments of students, both at the end of the two week workshops, and after a further year into their research work.

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Poster Session 17:00 – 19:00 Thursday 1st July 2010

**EPA1.14****Personality type: a comparison of Bioscience postdoctorals and postgraduates with the general normative population**

Sarah Blackford (Society for Experimental Biology)

The career development of postgraduates and postdoctoral researchers has been recognised as a key strategy for developing the 'knowledge economy' in the past 10 years<sup>1,2</sup>. It has been introduced into graduate and staff training programmes in universities and research institutes across Europe, North America, Australia and other countries. How effective these programmes have been in developing the potential of postgraduates and

postdoctorals has yet to be properly realised.

Using a well-tested, internationally recognised personality instrument, the Myers Briggs Type Indicator (MBTI), the personality type distribution of a sample of Bioscience postgraduate students and postdoctoral researchers showed a significant diversion from that of the normative population. Bioscientists demonstrated a greater proportion of 'thinking' personality types who draw upon logic and principles when making decisions rather than 'feeling' types who use empathy and values. Whilst the general population shows an equal proportion of 'thinking' and 'feeling' types, this ratio was 5:1 in the Bioscience population. Those with a preference for detail and practical application within the Bioscience sample equalled those who prefer random ideas and intuition, a ratio which is 3:1 in the general population.

The results have important implications when considering the career development of postgraduates and postdoctorals. Recognising that personality type is not the only 'measure' of an individual's 'self', it is still important to be aware that people demonstrate different areas of strength and this will impact on their training needs as well as on their overall career aspirations.

<sup>1</sup> Lisbon Strategy (2000). [http://www.europarl.europa.eu/summits/lis1\\_en.htm](http://www.europarl.europa.eu/summits/lis1_en.htm)

<sup>2</sup> Roberts Review (2002). <http://www.vitae.ac.uk/policy-practice/1685/Roberts-recommendations.html>

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Poster Session 17:00 – 19:00 Thursday 1st July 2010

**EPA1.15****Society for Experimental Biology, Education & Public Affairs section strategy 2010**

Sarah Blackford (Society for Experimental Biology),  
Jeremy Pritchard (University of Birmingham and SEB)

'Knowledge Impact' and associated policies which require scientists to expand and extend their knowledge, engagement and communication of science beyond their own peers acts as a key driver for the strategies of the EPA Section alongside the main mission statements of the SEB, i.e. to support the membership and the wider bioscience community.

**Collaboration**

EPA Section collaborates with other organisations and, as an international society, is securing stronger relationships with societies such as the American Society of Plant Biologists (ASPB), the European Plant Science Organisation (EPSO), and the International Union of Biological Science (IUBS). In the UK we work closely with the Society of Biology and its affiliated societies and, of course, we have been building intra-societal links with our own scientific sections: plant, animal and cell.

#### Communication

Recognising the decline in schools and higher education of whole organismal and plant science as well as biology as a whole, EPA Section is aiming to train and mobilise early career bioscientists to communicate these fields of biology to the next generation of scientists, their teachers and the public.

#### Career support

SEB is gaining a reputation for its expertise in this important area in line with its mission statement to support the careers of our members and those of the wider bioscience community.

#### Food Security & Safety

SEB, working with Lancaster University and other partners, is staging a prominent symposium in 2010 where we will examine the problems associated with food security whilst seeking interdisciplinary collaborations in order to identify solutions.

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Poster Session 17:00 – 19:00 Thursday 1st July 2010

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### EPA1.16

#### **Teaching Inquiry in an advanced undergraduate cell biology lab: identifying the mystery organelle.**

Lawrence R Griffing (Texas AM University)

To teach inquiry at the upper undergraduate level in cell biology, I have developed a lab for students to develop and test hypotheses to identify the (hitherto unknown) subcellular site of a GFP-fusion protein in a one credit hour laboratory course that meets for three hours each week. Each student is assigned a different *Arabidopsis thaliana* line that has had a random GFP insertion into a predetermined “interesting”, but otherwise uncharacterized, organelle in *Arabidopsis thaliana* from lines available through the Arabidopsis Biological Resource Center (ABRC, lines are reported in Cutler et al. 2000 PNAS 97:3718). The students examine the developmental history of the GFP expression in their line, compare their GFP label with the FP labels in other standard lines (most available through the ABRC), use vital dyes for known organelles to stain their organelle, analyze the effects of drugs on their organelle and on the standard lines, and enrich and identify their organelle in subcellular fractions of isopycnic gradients. Although the initial instrumentation costs may be somewhat high, the actual cost of acquiring and growing the lines under standard safety guidelines is minimal. Assessment can be done both quantitatively, with standard in-lab practicals and analysis of weekly progress by the students, and qualitatively, by determining if a potentially

correct identity of the organelle has been achieved. There are many connections of the lab with my research program, and such a lab could be adopted by others in cell biology to fulfill the “broader impact” criteria for their own funding.

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Poster Session 17:00 – 19:00 Thursday 1st July 2010