BBSRC TRAINING PARTNERSHIP FORUM 2015: MEETING REPORT

EXECUTIVE SUMMARY

The inaugural BBSRC Training Partnership Forum brought together for the first time our Doctoral Training Partnerships (DTP) and Industrial CASE Partnerships (ICP).

The Forum aimed to:

- Identify core principles for successful training partnerships
- Increase BBSRC's understanding of the differing needs of its user communities and how to manage these
- Disseminate good practice and encourage networking between training partnership managers and BBSRC
- Influence emerging BBSRC strategy, including a framework for training partnerships
- Highlight different models of training delivery

A number of key topics emerged from the Forum, including:

- The definition of a cohort, which cohorts should be developed and the characteristics of a successful, long-term cohort.

  The Forum acknowledged that successful cohorts drive up standards whilst recognising there may be challenges associated in managing disparate groups separated spatially, temporally or by discipline. Effective leadership and management, good supervision, as well as maintaining links with cohort alumni and other stakeholders, were all identified as significant factors.

- The role of the supervisor in the centralised training partnership model.

  The Forum recommended more centrally-coordinated supervisor training alongside the identification of principles associated with good quality doctoral supervision. It recognised that supervisors themselves may benefit from being part of a cohort and that they need to be properly incentivised.

- Sustainability of the partnerships and the role BBSRC should play.

  The Forum noted that BBSRC Training Partnerships delivered a "gold standard" of doctoral training which could result in the development of a "two-tier system" within organisations.

  It was considered good practice for the training partners to adopt standardised milestones across organisations, with periodic performance review from an independent body.

  The Forum recognised that managing a training partnership is resource-intensive and suggested that funding for programme management could be considered.

  BBSRC has a key role to play in bringing together communities, liaising with external partners, highlighting impact to Government, and ensuring that the student voice is heard.

INTRODUCTION

1. For the first time, on 24-25 February 2015, BBSRC's key training partners from academia and industry assembled in London to network and share good practice on delivering world-class doctoral training within the context of a partnership. The theme of BBSRC's inaugural Training Partnership Forum 2015 was "BBSRC Strategic Training Partnerships: Adding Value to Postgraduate Training".

CONTEXT

2. Excellence in doctoral training is central to BBSRC's mission to supply the UK economy with highly-skilled people. Each year we invest £50M into a diverse portfolio of circa 2000 PhD studentships to build a cohort of doctoral students equipped with cutting-edge research expertise and with broader scientific and professional skills.

3. Our approach to focus on strengthening user-relevant training by dedicating almost half of our studentship portfolio to collaborative CASE awards and by mandating that Doctoral Training Partnership (DTP) students undertake a three-month professional internship puts BBSRC in a unique position in the UK as the only funder of postgraduate research training to require all of its students to experience a placement.

FRAMEWORK FOR BBSRC TRAINING PARTNERSHIPS

4. A framework for training partnerships is, in essence, a good practice guide for the research community on how to most effectively manage the training investments made in them by BBSRC. It will build on the RCUK 'Statement of Expectations for Postgraduate Training'[1] and BBSRC's 'Industrial Training Strategic Framework'[2] to explain how we assess, monitor and showcase the BBSRC community's world-class portfolio of training.

5. Discussion groups at the Forum were used to identify a set of common characteristics that a successful training partnership would demonstrate. From there, a set of principles will be developed into a framework for training partnerships, which will be made publicly available to UK Research Organisations – including those not currently associated with a BBSRC Training Partnership.

6. The Forum addressed why BBSRC uses training partnerships; what makes a successful training partnership; and how to monitor and evaluate the outputs. It explored the different cultures that exist in BBSRC's constituency, ranging from academia to industry, from large to small organisations, and across disciplines.

7. In summary, the Forum aimed to:

- Identify core principles for successful training partnerships
- Increase BBSRC's understanding of the differing needs of its user communities and how to manage these
- Disseminate good practice and encourage networking between training partnership managers and BBSRC
- Influence emerging BBSRC strategy, including a framework for training partnerships
- Highlight different models of training delivery

---

[1] http://www.rcuk.ac.uk/documents/skills/statementofexpectation-pdf/
[2] http://www.bbsrc.ac.uk/web/FILES/Policies/industrial-training-strategic-framework.pdf

FORUM OUTPUTS

8. Delegates were asked to discuss good practice in six key elements of BBSRC Training Partnerships:

    A. Training the Cohort
    B. Training the Individual
    C. Managing a Training Partnership
    D. Capturing the Impact of a Training Partnership
    E. Managing Student Placements
    F. Managing Intellectual Assets Associated with BBSRC Training Partnerships

Training the Cohort

9. The Forum recognised that a variety of cohorts already exist and are being developed. Most obviously these include locally-based student groupings centred on subject discipline, programme type (e.g. BBSRC DTP), the year of study and the student's host organisation(s). Some of these were developed as collaborative cross-partnership cohorts spanning DTPs and/or ICPs, and are maintained in different formats that include virtual / digital cohorts (e.g. Facebook, blogspot). In addition to these a number of non-student cohorts were identified. These include cohorts of PhD supervisors and training partnership managers.

10. It was generally felt that cohort-based systems create a critical mass of students, driving up standards and creating an aspirational - yet safe and shared - learning environment. There are benefits to the individual, the partners, and to BBSRC in allowing some training to be standardised, silos to be broken down, and research collaborations to be forged. Cohorts tend to encourage larger, more multidisciplinary, durable networks where life-long connections can be established and individuals are empowered through their own tailored training. BBSRC cohorts can be viewed as the 'gold standard', nurturing future talent and networks driving the development of new and prestigious programmes.

11. Whilst recognising these benefits of the cohort-approach, delegates highlighted a number of key challenges that this model of doctoral training presents. The size of a partnership and the geographical distribution of its constituent organisations is of particular significance, for instance in relation to the financial costs and the time and administrative demands this incurs. The companies involved in Industrial CASE Partnerships (ICP) stated how building a cohort can be especially challenging for them because students tended to spend most of their time with the academic partner which makes them more transient as a body of individuals. Individual Research Organisations have different structures which often make aligning cohort-based training difficult and the timing and frequency of cohort-training needs careful consideration to ensure that the cohort body is built and maintained beyond the first year of the programme. This can be addressed through a core training programme taken by all students within a cohort. It was noted that some supervisors (and students) do not necessarily buy-in to the concept of cohort-based doctoral training, but that the driver coming from BBSRC should make it easier to encourage compliance. The Forum also recognised that partners are not just training BBSRC-funded students and that opportunities extended to Doctoral Training Partnership (DTP) students (e.g. Professional Internship for PhD Students, PIPS, placements) might create a degree a 'two-tiered' PhD student population: those with access to such opportunities and those that do not. Such a "mixed economy" might, on the other hand, allow students to choose the type of programme that best suited their goals.

12. The Forum identified a number of key principles associated with successful cohort building in both academic and industrial environments. Effective cohorts are founded on strong leadership, management and administrative support, but ultimately they must be driven from within by the students and be flexible to their needs. Involving students in developing and running a programme, therefore, is important so that student participation is driven by them wanting to be a part of it rather than feeling obliged to engage. The importance of keeping links with cohort alumni and other stakeholders as well as properly incentivising supervisors was stressed.

Training the Individual

13. The Forum commended a flexible approach to training individuals, with a focus on employability and embracing a range of options such as formal courses, on-the-job experience, impact awareness and general public engagement etc. (noting that there are inconsistencies between universities in provision). They suggested that students should undergo a training needs analysis (skills audit) at induction which ultimately results in a training agreement between the student and their supervisor. Such an agreement should take into account the current training provision available at the university and other sources, and the variety of future career trajectories open to the student. Implementing this plan requires regular feedback and review e.g. via IQA (Internal Quality Assurance), and the regular recording of the student's activities into their CV. The role of mentoring was highlighted and whether mentors have the appropriate skills, particularly amongst those postdocs associated with the student's host research group. It was suggested that Business Development Officers (or similar individuals) could review the Professional Development Plans of students as part of a mentoring arrangement.

14. It was recognised that there needs to be a balance between top-down and bottom-up training – driven by student, cohort and supervisor communities alike – including formal courses and day-to-day soft skill development. Students should be actively encouraged to partake in external training (e.g. IGEM, Biotechnology YES etc.) managed throughout their 4-year course. The Forum considered the extent to which students and training partners engage with centrally-coordinated structured training such as SysMIC. Delegates indicated that skills are empowering and provide students with a vocabulary for employability; likewise, PIPS placements were well respected creating valuable networks and opportunities to gain training experience.

15. The Forum recommended more centrally-coordinated supervisor training alongside the identification of principles associated with good quality doctoral supervision. An integral component of any programme should be the induction and mentoring of supervisors - particularly if new and / or postdoctoral - as well as re-training, feedback and accreditation possibly.

Managing a Training Partnership

16. To successfully manage a training partnership, the Forum emphasised the importance of having strong leadership alongside clear support from directors, senior managers and the pool of project supervisors. Delivering the programme was best achieved through a structure of delegated responsibility, with clear roles for programme directors and programme managers in charge of running defined training elements on a day-to-day basis (e.g. PIPS). Operationally, it was considered good practice to adopt a model which adheres to standardised milestones and targets across organisations and which assembles an external and independent body to review performance periodically.

17. The Forum recognised that effective and timely marketing of PhD studentships (e.g. via FindAPhD) – using tailored material and role models – is key to ensuring that high-

quality students from the widest possible pool are attracted and recruited. The reputation of an institution and/or supervisor, coupled with Open Days, a competitive interview process and attractive projects also had a major bearing. Additionally, specific undergraduate and Masters-level feeder courses formed part of a healthy 'supply chain'. The Forum raised concern that current student eligibility regulations effectively restricted the pool of candidates to UK and EU applicants only.

18. The Forum itself was felt to be a very effective means of adding value to individual and collective training partnerships. In particular, it was viewed that vital to success is gaining buy-in from supervisors. BBSRC has a key role to play in bringing together communities, liaising with external partners (e.g. Innovate UK) to identify industry partners, and highlighting value propositions to Government. It was suggested that funding for programme management could be ring-fenced.

19. With the involvement of often disparate partners, enthusiastic and engaged communicators represent the most effective way of sharing good practice with other stakeholders (e.g. related to career journeys, success stories, mentors, buddies etc.). Review and reflection are important, as is recognising the value of the student voice in shaping development; engagement of any form is viewed positively. Practical solutions were suggested including the production of a shared BBSRC-maintained Wiki resource, detailing good practice and FAQs, as well as a training partnership Newsletter / Bulletin.

20. The Forum discussed how a training partnership can have an impact in the wider community. They underlined how training partnerships put a critical mass of people behind emerging technologies, and how this (along with the broader body of knowledge and expertise in the cohort) creates the potential for new jobs both within and outside of the partnership. Delegates also underlined how PIPS placements and outreach programmes are providing greater engagement between Research Organisations, local employers and the wider community. Finally, they described how the training partnership model gives them a more powerful collective voice for addressing audiences such as government and other stakeholders.

Capturing the Impact of a Training Partnership

21. The Forum produced a range of ideas for what the broad impacts of doctoral training are and who benefits and how. At the individual level they discussed how doctoral training produces highly-skilled, adaptable and self-aware people with a blend of analytical, quantitative and transferable skills that benefit all sectors of the knowledge economy. Their specialist training makes them particularly employable in scientific and technological leadership roles in academia and the biotechnology industry, which tend to hire at the PhD level. PhD students will generate a wide variety of outputs from their studies (especially in the form of publications, IP and even Spin-outs) which benefit the individual but also their host universities and the wider research community. Students and their supervisors will build collaborations, professional networks and transfer knowledge between environments as a result of PhD research projects and by going on placements. It was stated that PhD training gives a purpose to universities, as this will lead to a supply of postdocs and other benefits including a "pull" on the quality of education at degree level by shaping courses and delivering applied training (e.g. to medics and engineers).

22. At societal level the Forum stressed how the UK and its taxpayers benefit through the advances in innovation, economic growth and societal aspiration that stem from the actions and outputs of doctoral graduates. The critical mass of researchers generated by training partnerships attracts industry investment into the UK, and creates a body of individuals that can engage with the public and inspire a future generation of researchers

into the profession; this in turn will push forward the widening participation agenda and potentially influence policy decisions. Delegates commented that formal recognition of industrial input (e.g. visiting professorships) was part of the evidence of this.

23. Wider effects of doctoral training were noted too. It was stated that students can become ambassadors for the UK on the international stage if they take their skills abroad and for science as a discipline if they pursue careers in other, non-research fields.

24. Finally, the Forum highlighted the importance of alumni engagement and feedback in the process of measuring the success of a doctoral training programme, and the need to log any awards received by students and institutes along the way.

Managing Student Placements

25. The Forum considered how best to manage student PIPS and CASE placements, considering each in turn.

PIPS – Professional Internship for PhD Students

26. The Forum noted that supervisors do not generally welcome the prospect of 'losing' their students for a three-month block and many often do not understand that it is a mandatory requirement. However, students often return from their PIPS reinvigorated, which is beginning to persuade some supervisors that it is a positive activity. To overcome these challenges, the Forum suggested that having an up-front agreement or 'Memorandum of Understanding' (MoU) is desirable to clarify the roles and expectations of the students, supervisors, employers and administrators in the placement process. The MoU should take into account the timing and structure of the PIPS placement, including the merits of spreading the PIPS over an extended period through multiple short visits.

27. The Forum discussed how the universities and institutes are engaging with and selecting appropriate host organisations for PIPS placements. Most delegates reported utilising their existing industry and business links and internal contacts from across their own departments and offices to build their portfolios of PIPS placement offerings. Such relationships are being actively maintained so that new internships can be advertised annually with these trusted external organisations and internal departments. To facilitate the 'matching' process the principle of student choice should be at the heart of identifying suitable opportunities, and many of the training partners are now using 'PIPS Employer Fairs' to bring together the students, supervisors and potential PIPS hosts so that they may identify appropriate opportunities and hear from the experiences of students who have undertaken their PIPS.

28. The Forum highlighted various challenges associated with managing the PIPS programme. They noted the importance of taking the time to get the PIPS choice right, and the importance of having back-up plans for students in case opportunities fall through. It was highlighted that many employers (particularly large R&D companies) choose not to engage with the PIPS programme given the length of time it takes them to complete the corporate induction process relative to the amount of time the student will be with the company. The Forum reported that some companies have long waiting lists of other students who will come to them for 6 or more months, meaning they will often turn down the chance to take on a 3-month PIPS student. Industry representatives said that getting more buy-in from larger companies would require a longer PIPS duration, whilst recognising that this would completely change the nature of the placement. In the example of PIPS it was considered good practice to run all PIPS internships over the same time period and to have a system of maintaining contact with the student

throughout the placement period to enable PIPS managers to monitor students' progress. In one example, review days were built into the programme to provide that contact time.

29. The Forum considered the ways in which students benefit from their placements, especially from non-research-related and non-experimental work. They described how placements provide an avenue for students to build their knowledge of industry and policy and establish new professional networks. By going on a placement, students get a better understanding of how their research fits into a broader societal context, how it relates to BBSRC strategic priorities, and it gives them access to top company scientists, departments and facilities that they would not normally see or get to use. The Forum noted a number of competencies that students develop on placements, including interdisciplinary research working, and broader commercial awareness and financial understanding. The Forum saw value highlighted the importance of putting systems in place to capture student feedback and to review the skills gained by the student during their placement. Many of the DTP partners underlined how the presence of PIPS as a formal element of the PhD programme is attracting more applications from fully-engaged and competent people.

CASE – Collaborative Awards in Science and Engineering

30. In relation to CASE placements, ICP partners stated the value of this scheme to their R&D operations as a mechanism to build relationships with key academics and to leverage R&D resource from the academic partners. CASE placements also presented a chance for industry staff to develop supervisory skills and acted as a valuable recruitment tool for attracting in talented students. On the downside the regulations around BBSRC remit were seen as restrictive. From the perspective of the student, the exposure to an industrial research environment was an important learning experience.

31. To track the success of a CASE placement, the Forum suggested working to a 'Placement Plan' with clear timelines and assigned responsibility for the monitoring process. The track record of CASE projects should be recorded, and there was even the suggestion of creating a CASE supervisor 'black-list' to indicate under-performing supervisors.

Managing Intellectual Assets Associated with BBSRC Training Partnerships

32. A facilitated discussion was led by a representative from PraxisUnico, which aimed to establish some key principles of a successful contractual framework for a training partnership. It considered tensions between the need for confidentiality and the need for openness; the need to create a strong culture of shared problem solving and challenges around the protection and ownership of intellectual property. It considered the ways in which training partners discharge their obligations to look after the interests of their students, and what obligations students have in return. Finally, it considered the variety of ways in which work can lead to impact – which are not always commercial or monetised.

33. The Forum recognised that essentially three parties are involved, each operating within different contexts, namely: Research Organisations (which as charities legally must act to benefit the public and keep in line with charitable aims), Companies (which legally must act for benefit of shareholders) and Students (where the RO has a clear duty of care).

34. The majority of companies were supportive of the Russell Group approach to terms i.e. the RO owns IP, company given access to a free license to use for R&D, option to

license any IP arising from the project. However, a minority held strong views to always start from their own company template, believing that a RO should not claim ownership of IP. Others viewed that university ownership is also related to charitable status and duty of care to student (enabling access to rewards and recognition). Most importantly, there was a general (albeit not unanimous) consensus that it was very unlikely that any IPR would arise from a studentship. The Forum noted that a Contract represented only one tool in achieving desired outcomes for parties and developing trusting longer term relationships.

35. The Forum emphasised the importance of clarity around the position of student IP ownership. As students are not usually employees of the RO they are not covered by the Patents Act 1977. This is an area of the most diversity in university policies. Research-intensive institutions typically assign IP to the university and treat students as staff in relation to rewards to inventors etc. Often, within less research-intensive ROs, the student owns the IP.

36. There followed a discussion around the nature of the project and suitability of projects for studentships. The majority of delegates believed that they *'should not associate crown jewels with a studentship project'* with such projects probably better suited to a PDRA. The overall conclusion was that the most appropriate projects for studentships are industrially-relevant but not business critical.

37. Finally, a number of examples of good practice were highlighted including:

- the open approach adopted by the Structural Genomics Consortia i.e. no IPR and all outputs published quickly
- the Oxford DTC where all associated companies have access to other students' knowledge and outputs – stimulating open discussion, a right to review before publication, and options on IPR (similar to BBSRC Industry Club approach).