Call for Proposals: BBSRC Doctoral Training Partnerships (DTPs)

Summary

- Proposals are invited from institutions or multi-institutional collaborations wishing to become Doctoral Training Partners with BBSRC.
- BBSRC's Doctoral Training Partnership scheme is a revised scheme replacing Quota Doctoral Training Grants (DTGs). It is one of a number of BBSRC schemes to support doctoral training for the biosciences.
- BBSRC Doctoral Training Partners will provide PhD training to support BBSRC's new Strategic Plan, and will receive a Training Grant to support three cohorts of 4-year studentships, starting in October 2012.
- Each studentship will be funded at 4-year duration, £5k p.a. research training support costs, as well as student stipend and fees at standard Research Council levels.

The deadline for receipt of full proposals **is 15 September 2011**

A competition Briefing Meeting will be arranged to take place on **23 June 2011** at a London venue; potential applicants are strongly encouraged to attend. University representatives wishing to attend the Briefing Meeting should register their interest by sending an e-mail to postgrad.studentships@bbsrc.ac.uk by 1 June 2011. BBSRC reserves the right to limit the number attending from any one Research Organisation if necessary for space reasons.

A set of FAQs is available on the BBSRC website at www.bbsrc.ac.uk/dtp

Number of Awards and Funding Available

It is anticipated that up to 15 to 20 Doctoral Training Partnerships (DTPs) will be awarded. The total funding available will support in the region of 220-30 four-year studentships p.a. for three intakes (in October 2012, 13 and 14), and will be awarded in the form of single profiled Training Grants. The normal flexibility of Research Council Training Grants will apply, enabling institutions to part-fund studentships from other sources.

Eligibility

Proposals may be submitted by eligible Research Organisations either individually or in collaboration, provided the Research Organisation(s) applying hold a minimum of £5M annual BBSRC research grant spend (2009/10). Proposals must meet this funding threshold in order to be eligible for this competition. See full call text for further information.

Multi-institutional bids are encouraged and it is anticipated that the majority of DTPs awarded will be multi-institutional. Any proposal must be *either* institution-wide *or* multi-institutional, and a Research Organisation can **only submit one proposal** as lead applicant.

Information on the eligibility of Research Organisations is available on the BBSRC website.

Assessment

The assessment of proposals to become BBSRC Doctoral Training Partners will be made in December 2011 and announcements regarding the allocation of funding are likely to be made in January 2012.

The BBSRC 'Skills Statement' provided with this call details the key priorities for research training. It also covers strategically important niche areas of expertise and the core bioscience and generic professional skills that BBSRC sees as essential for the training of the next generation of bioscientists.

Applicants will need to demonstrate robust governance arrangements for the management and planning of PhD training funded from the DTP Training Grant across the institutions involved.

The full assessment criteria for the competition are given in **Annex 1**.

How to Apply

Institutions are strongly encouraged to read in full the background information provided below in order to better address the requirements of the call.

A set of **FAQs** accompanying this call is available on the BBSRC website. These will be updated to provide answers to frequently asked questions and updates will be notified to those who have registered for the Briefing Meeting.

Proposals should be submitted through Je-S and the Je-S forms are expected to be available from 7 June 2011. Further guidance will be provided at this stage; however, **Annex 2** provides an outline of the information to be submitted.

The deadline for receipt of proposals **is 15 September 2011**

If you have any queries regarding the completion of the Je-S studentship application form, please contact the Je-S Help Desk:

- Email: JeSHelp@rcuk.ac.uk
- Phone: 01793 444164
- Staffed Monday to Friday 9am – 5pm (excluding Bank holidays and other holidays)

Further Information

For other queries relating to the requirements of the competition, please contact:

- Email: Postgrad.studentships@bbsrc.ac.uk
- Phone: 01793 413256

BBSRC Doctoral Training Partnerships (DTPs)

Full Call Text

Introduction

Proposals are invited from institutions or multi-institutional collaborations wishing to become Doctoral Training Partners with BBSRC. BBSRC Doctoral Training Partnerships (DTPs) will be awarded on the basis of the competitive assessment of proposals to provide excellent and strategically managed PhD training. The intention is to award up to 15 to 20 DTPs: these will be expected to work in partnership with BBSRC to ensure that PhD students are trained in areas aligning with its Strategic Plan, and that strategically important niche skill areas are addressed.

Background

The Doctoral Training Partnership (DTP) scheme is a revision of BBSRC's Quota scheme. The last Quota competition was held in 2007 and made awards of Training Grants covering intakes of four-year studentships in 2009, 10 and 11.

The development of the DTP scheme has been informed by BBSRC's Strategic Plan (published in January 2010), a review of BBSRC's training strategy by its Bioscience Skills and Careers Panel (July 2010), and an Evaluation of the Quota DTG scheme undertaken in November 2010.

A full explanation of how the Quota DTG Evaluation has informed key features of the Doctoral Training Partnership scheme is given in **Annex 3**.

Applicants are encouraged to read this annex carefully in order to better understand the issues which BBSRC is seeking to address in this revised scheme.

Making an Application

Proposals must be submitted via Je-S, the Research Councils' electronic submission system, and full guidance on the completion of the Je-S form is given in **Annex 2.**

One of the key documents which applicants are required to submit as part of their Je-S proposal is a 'Portfolio Agreement'. The template for this and other documents which are required to be submitted are available on the BBSRC website at www.bbsrc.ac.uk/dtp. Applicants should complete and upload these documents as part of their application, as explained in Annex 2.

Assessment and Assessment Criteria

In applying to become a BBSRC Doctoral Training Partner, institutions are assessed competitively. Institutions should seek to clearly demonstrate the excellence of their PhD training and its fit with BBSRC strategy along with the other criteria (**see Annex 1**).

Proposals to form Doctoral Training Partnerships will be considered by BBSRC's Training Awards Committee in December 2011 and announcements regarding the allocation of funding will be available by January 2012.

Student Data on Previous BBSRC PhD Funding

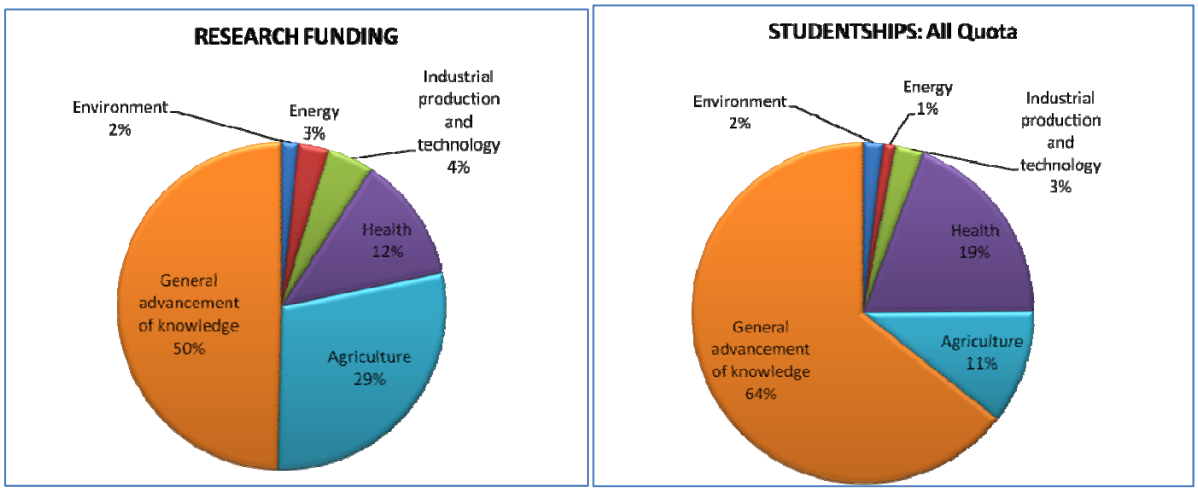
In making its decisions, the Training Awards Committee will assess the information provided by applicants as part of their DTP proposals, and will also draw on information provided by BBSRC on the current research grant and studentship funding of the institution(s) involved.

An analysis of the studentship project details which have been returned to BBSRC through the Je-S Student Data Portal (SDP) will also be presented to the Training and Awards Committee. BBSRC will extract these data on 1 September 2011, and **institutions are strongly advised to ensure that their Je-S SDP data returns are complete and accurate by this date**. Incomplete or inaccurate data are likely to lead the Training Awards Committee to question the ability of applicants to properly manage their partnership with BBSRC.

Information will be presented to the Training Awards Committee on the spread of student projects, including whether the proportion of CASE studentships meets the previous 25% requirement in the Quota scheme.

Strategic Alignment of BBSRC's PhD Training

In developing the DTP scheme, BBSRC is seeking to invest in a balanced portfolio of excellent PhD training to support its strategic research priorities, as outlined in its Strategic Plan 2011-15. The current portfolio of Quota DTG students shows a degree of mismatch with BBSRC's research portfolio, and also that some important areas have a very low proportion of studentships.



Comparison of BBSRC spend (2009/10) by research area for Quota DTG studentships and research grants in DTG holding departments

BBSRC will be seeking to achieve a balanced portfolio of training which will supply the highly skilled people needed to support its strategic priorities, as well as maintain the UK's world-class bioscience research base more broadly. Therefore, BBSRC will be advising its Training Awards Committee to award a balanced portfolio of DTPs which can provide excellence of training *and* overall a **50:50 balance** between 'general advancement of knowledge' (through the support of underpinning world-class bioscience) and the strategic priority areas in its strategic plan, together with a good balance between the different priority areas.

There is, however, no expectation that an individual DTP proposal should seek to cover the full range of BBSRC's priorities. Research Organisations are strongly advised to play to their research strengths.

As part of their proposal, institutions should explain how they will ensure that the PhD projects fall wholly within BBSRC's remit, or how they will use the Training Grant flexibility to obtain joint-funding with other Research Councils or sponsors as necessary.

Eligibility and Partnerships

BBSRC wishes to encourage partnership between Research Organisations in addressing its PhD training priorities. Proposals can be submitted by eligible Research Organisations either individually or in collaboration provided that those institution(s) applying hold a minimum of £5M annual BBSRC research grant spend (2009/10). **Annex 4** provides a list of Research Organisations and their BBSRC grant spend during this period.

Even where a Research Organisation meets the funding threshold for submitting a proposal on its own, multi-institutional bids are encouraged. It is anticipated that the majority of DTPs awarded will be multi-institutional, and Research Organisations intending to submit an individual proposal, not in partnership with others, should contact BBSRC to discuss this.

Any proposal must be *either* institution-wide *or* multi-institutional, and a Research Organisation is only permitted to submit one proposal as lead applicant.

In considering the submission of a proposal, institutions may wish to consider existing partnerships in which they are already involved. For example, these may be on a regional basis.

Research Organisations will normally only be involved in one DTP proposal. However, there may be circumstances where a Research Organisation wishes to make a case to be part of two or more partnerships. For example, the Research Organisation may decide that a particular department should be part of a DTP proposal based on *a specific subject area*, while the remainder of the Research Organisation is part of second *regional partnership*. This is permissible, but Research Organisations are advised to consider carefully the implications of this approach. BBSRC is keen to see the training of students in broad-based centres of research excellence, in order that students are exposed to a wide range of expertise and to promote and facilitate multi-disciplinary working.

Applicants are strongly encouraged to contact BBSRC office for advice if Research Organisations are considering being part of more than one partnership. If a Research Organisation does wish to be involved in more than one partnership there must be no double counting of staff: a group or department (and the staff involved) cannot itself be included in more than one proposal. The Research Organisations involved will be expected to demonstrate full commitment to the partnerships in which they are involved, and partnerships will be terminated if they are judged by the Training Awards Committee to be performing poorly due to lack of commitment from the Research Organisations involved.

In all cases, proposals must be submitted by Research Organisations, and not departments or faculties.

The award of institutional-level and multi-institutional level Partnerships is intended to promote integrated strategies for addressing niche skill areas, fostering interdisciplinarity, as well as addressing BBSRC's strategic priorities. Where a Research Organisation has previously held multiple Quota DTGs in different departments or faculties, the institution may wish to consider the creation of jointly supervised studentship projects to help develop integration across the organisation as part of their DTP proposal.

Portfolio Agreements

As part of the proposal to become a BBSRC Doctoral Training Partner, applicants are required to submit a Portfolio Agreement. This document should outline the doctoral training that the Research Organisation(s) are proposing to provide, including indicative studentship proportions between BBSRC's strategic priorities. In a similar way, MRC have introduced Portfolio Agreements with the institutions in receipt of annual algorithmic Training Grant awards.

The document should also specify the governance arrangements for the management of the award, and will effectively be the 'contract' between BBSRC and the Research Organisations(s). The Portfolio Agreement should include information about the institutional mechanisms for selecting supervisors for the allocation of studentship funding and how targeting to support specific research training priorities will be achieved. It should explain, therefore, how the Partnership intends to manage the allocation of funding across the Research Organisation(s) involved, in order to ensure a balanced portfolio of PhD training.

Institutions will be required to commit themselves to returning timely, full and accurate information on students, supervisors and student projects through the Je-S Student Data Portal.

The institution(s) will be asked to report annually against their Portfolio Agreement, and BBSRC's Training Awards Committee will monitor the performance of DTP awards on the basis of the commitments made in the document (see below).

The Portfolio Agreement template contains further guidance on completing it, and is available on the web at www.bbsrc.ac.uk/dtp

PhD Training Programmes

As part of the submission, applicants will be required to outline the broad structure of the training programmes which the Doctoral Training Partnership will provide. BBSRC wishes to encourage Research Organisations to adopt structured or 'cohort' based PhD training programmes, as compared to the traditional model where a student's training was fundamentally linked to their work with a single supervisor. BBSRC welcomes the increasing use of structured training programmes – this has enabled Research Organisations to ensure that their PhD student training reflects the wide range of expertise that today's bioscientists need in order to maximise the impact of their research.

Research Organisations should make clear in their proposals their plans for provision of 4-year PhD programmes, as well as plans for using Training Grant flexibility to ensure high-quality PhD training and to enable co-funding of studentships with other sponsors.

BBSRC also recognises that certain areas of bioscience training are extremely high-cost, and encourages institutions to use funding from the DTP Training Grant flexibly to ensure that strategically important, but high-cost, training is maintained. BBSRC currently also operates a separate 'Strategic Skills Awards' scheme jointly with MRC and the British Pharmacological Society, which provides top-up funding for BBSRC studentships involving *in vivo* research training.

BBSRC is moving to use a £5k p.a. figure for research training support in its costing of an individual studentship. As part of the Portfolio Agreement, institutions should explain how they will ensure that this higher level of funding for consumables will be used for this purpose for BBSRC funded students, and not used to increase the number of studentships created, or used to subsidise other students' research costs.

Institutional Commitment and Co-Funding

It will be important for BBSRC to form partnerships only with institutions which have a clear and long-term strategy for developing their bioscience research, and where this is backed up by recent and ongoing real investment by the institutions involved. In assessing proposals to become Doctoral Training Partners, therefore, BBSRC will ask its Training Awards Committee *to take account of the investment that institutions are committed to making in their bioscience research and training relevant to BBSRC remit*.

In particular, BBSRC would welcome a commitment from Research Organisations to underwrite the provision of a number of studentships for start in October 2012, in advance of being informed of funding through the DTP scheme. BBSRC is aware that the funding decisions on the DTP scheme will be made later than is ideal in terms of institutions being able to confirm the availability of funding to the strongest students. In order that BBSRC Doctoral Training Partners are able to attract the best students from the very start, institutions should explain what institutional funding commitments they will be able to offer students in advance of BBSRC's funding decisions.

BBSRC also welcomes proposals from institutional partnerships which are able to use BBSRC's investment to leverage additional funding from other sources, for example, Local Enterprise Partnerships, other Research Council Training Grants, industry or regional bodies. The leverage of funding must fit with BBSRC's core remit, and is particularly welcome where it supports BBSRC's strategic priorities. Where Research Organisations are involved in international partnerships relevant to BBSRC's priorities, proposals may also wish to explain how their PhD training programme may attract international students and investment from international sponsors.

While there is no requirement to create a certain proportion of studentships as CASE, collaborative studentships are still very welcome, and Partnerships may wish to make clear any specific arrangement with CASE partners. The eligibility criteria for a collaborative organisation to count as a CASE partner are given in **Annex 5**.

Strategic Alignment of PhD Training and Niche Skill Areas

In applying to become BBSRC Doctoral Training Partners, Research Organisations should explain how they will provide excellent research training in support of, and aligned with, BBSRC's Strategic Plan. In addition to maintaining its support for training across the breadth of the UK's world-class bioscience, institutions should explain how they will address one or more of BBSRC's major strategic priorities:

- Food Security
- Bioenergy and Industrial Biotechnology
- Basic bioscience underpinning health

All institutions are expected to show how they will equip students to exploit new ways of working in bioscience including:

- Mathematical and computational modelling skills
- Handling big datasets, such as from high-throughput genomic and proteomic analysis

BBSRC's new e-Learning for Systems Approaches training initiative will make available mathematical and systems biology training to all BBSRC students, and institutions are required commit to working with BBSRC to ensure the uptake of this training as part of their Portfolio Agreements.

In addition, BBSRC's Training Awards Committee will take account of a number of training priorities in recommending the award of BBSRC Doctoral Training Partnerships:

- Niche Skills**:** Where institutions are able to address strategically important and vulnerable niche research skills, this should also be explained. BBSRC's Niche Skills consultation in 2009 provided information on a range of specialist skills for which there appeared to be important unmet demand from the academic and other user sectors.

- Core Bioscience Skills: BBSRC has identified a set of 'core' bioscience skills areas. These are areas of broader scientific training to which it would expect all students to have some exposure. These are skills areas which are increasingly being seen as essential for the next generation of bioscientists.

- Generic and Professional Skills: In addition to specialist research training, BBSRC continues to place a strong emphasis on the provision of generic and professional skills. As part of this area of training, BBSRC also expects institutions to have in place clear mechanisms for providing students with appropriate career advice and guidance.

Full information on the above priorities for research training is given in the 'BBSRC Skills Statement' in **Annex 6**.

It is not expected that a single DTP proposal will cover all of BBSRC's strategic priorities, and applicants should make clear the areas they are proposing to address in the Portfolio Agreement, giving indicative proportions for the number of studentships they will establish in each area.

Professional Internships for PhD Students (PIPS) programme

As part of applying to become a BBSRC Doctoral Training Partner, institutions are required to commit to introducing a Professional Internships for PhD Students (PIPS) programme.

BBSRC will expect every student funded through the DTP scheme to take a professional internship in a non-academic setting at some point during their PhD. Internships will typically be approximately 3 months in duration, either as a block or spread over the studentship, and should provide students with broader professional experience not directly connected with their research. Such internships could be in charity or policy offices, media, industry, schools, legal / IP offices, etc.

Further information and guidance is provided in **Annex 7**.

Institutions should outline their initial plans for how a PIPS programme will be managed as part of the Portfolio Agreement. If institutions wish to plan the introduction of a PIPS programme for existing BBSRC funded students, they should also make this clear. Institutions may also wish to indicate whether they intend to broaden the scheme to non-BBSRC funded students.

Additional funding will be made available to BBSRC Doctoral Training Partners to help with the administrative costs of the introduction and management of a PIPS scheme. The level of the funding is to be agreed, but this element will be added to Training Grants separately, based on the number of studentships awarded. In future competitions, it is likely that Partners will be expected to manage the costs from within the normal flexibility of Training Grants, without the need for a specific amount to be identified within the grant for this purpose.

Supervisor Training

As part of their submission, institutions should include information on their approach to a) training for staff who supervise students funded from the DTP Training Grant, and b) how

they will recognise and support the role of postdoctoral researchers in supporting these students.

Assessment and Assessment Criteria

The Training Awards Committee will assess proposals on the basis of the excellence of the research training and facilities; the strategic alignment of the proposed research training with BBSRC's Strategic Plan; the provision of well-rounded training in bioscience and broader professional skills; the quality of the governance arrangements for planning, managing and monitoring PhD training across the Research Organisations involved; and the institutional commitment within the Partnership to invest in, and support, bioscience research training. The full assessment criteria are given in **Annex 1**.

In addition, however, the Training Awards Committee will be provided with guidance on the balance of research training needed to address BBSRC's strategic priorities. BBSRC will be seeking to have an overall DTP portfolio that is consistent with its Strategic Plan and remit. In reaching its decisions, the Training Awards Committee may decide to recommend a Partnership for support only on the condition that it amends the profile of the training it is proposing, or that it does not provide training in a specific area which is otherwise over-represented.

Proposals will be rejected on the grounds of failing to adequately address any of the elements specified in the Portfolio Agreement template, such as the introduction of a Professional Internships for PhD students (PIPS) scheme.

Awards

Awards will be made in the form of profiled Training Grants to the lead Research Organisation in the proposal. The cash limit of the grant will be specified and information will be given on the number of studentships this could support. However, the indicative number of studentships given is for guidance only. The flexibility of Training Grant Terms and Conditions means that Research Organisations can seek part-funding from other sources to increase the number of studentships being supported, provided they are within BBSRC's remit. Equally, Research Organisations may choose to draw a larger proportion of funds for student experimental work and fund fewer students.

Training Grant flexibility means that when studentships complete in less than four years, the remaining funding is available in the Training Grant for other students. The Terms and Conditions for Research Council Training Grants are available on the web.

Monitoring Arrangements and Partnership with BBSRC

In submitting a proposal to become a BBSRC Doctoral Training Partner, the Research Organisations involved thereby agree to comply with monitoring arrangements established by BBSRC, and to work in partnership with BBSRC to support its strategic priorities for PhD training.

Institutions will be asked to report annually on their provision of training and this will be reviewed by BBSRC's Training Awards Committee in connection with the Portfolio Agreement between BBSRC and the institutions. It is also envisaged that members of the Training Awards Committee will visit Doctoral Training Partners in order to meet with senior staff and students.

The Training Awards Committee will be asked to make recommendations to BBSRC regarding the continued funding of the DTP, and in the case of poor performance the Committee may recommend that a DTP be terminated, or not be permitted to apply for renewed funding in the subsequent DTP funding round.

BBSRC wishes to seek a higher level of engagement with successful Partners than has previously occurred with Quota DTG holders, in order to support Research Organisations in their postgraduate work. This will include the Research Organisations being able to seek advice on issues which may emerge in their management of the DTP Training Grant, as well as enable BBSRC to provide guidance on emerging skills issues, policy developments, and any other concerns or opportunities that have been identified by the Training Awards Committee in its annual monitoring.

The monitoring and engagement activities are therefore likely to include:

- Annual reports to BBSRC Training Awards Committee
- Hosting an annual Partnership visit by BBSRC staff and members of the Training Awards Committee
- Attending a mid-term review meeting of DTP performance
- Provision of accurate and timely information on student project to BBSRC via the Je-S Student Data Portal
- Good practice sharing events

How to Apply

Institutions are strongly encouraged to read in full the background provided in this document and the associated annexes, in order to better address the requirements of the call.

A set of **FAQs** accompanying this call is available on the BBSRC website. These will be updated to provide answers to frequently asked questions and updates will be notified to those who have registered for the Briefing Meeting.

Proposals should be submitted through Je-S and the Je-S forms are expected to be available no later than June 2011. Further guidance will be provided at this stage; however, **Annex 2** provides an outline of the information to be submitted.

The deadline for receipt of full proposals **is mid-15 September 2011 (TBC)**

If you have any queries regarding the completion of the Je-S studentship application form, please contact the Je-S Help Desk:

- Email: JeSHelp@rcuk.ac.uk
- Phone: 01793 444164
- Staffed Monday to Friday 9am – 5pm (excluding Bank holidays and other holidays)

Further Information

For other queries relating to the requirements of the competition, please contact:

- Email: Postgrad.studentships@bbsrc.ac.uk
- Phone: 01793 413256

Annex 1

BBSRC DOCTORAL TRAINING PARTNERSHIPS 2011

ASSESSMENT CRITERIA

In applying to become a BBSRC Doctoral Training Partner, institutions are assessed competitively. BBSRC intends to establish up to 15 to 20 Doctoral Training Partnerships.

In making its decisions, the Training Awards Committee will assess the information provided by applicants as part of their DTP proposals, and will also draw on information provided by BBSRC on the current research grant and studentship funding. An analysis of the studentship project details which have been returned to BBSRC through the Je-S Studentship Data Portal (SDP) will also be presented. BBSRC will extract these data on 1 September 2011, and **institutions are strongly advised to ensure that their Je-S SDP data returns are complete and accurate by this date**. Incomplete or inaccurate data are likely to lead the Training Awards Committee to question the ability of applicants to properly manage its partnership with BBSRC.

The detailed assessment criteria are described in the following table:

Number	Criterion	Weighting (%)
1.	**Strategic fit** of the research training proposed to **BBSRC's remit and Strategic Plan**, including: • Extent to which the proposal addresses the bioscience research skills needs described in the BBSRC Skills Statement • Evidence of previous use of BBSRC funding in support of BBSRC strategic priorities	**25**
2.	**Excellence of research** relevant to BBSRC's remit and Strategic Plan, including: • Size and composition of the "critical mass" of active bioscience researchers who will interact with research students • Extent of competitively won research funding relevant to BBSRC's remit and Strategic Plan • RAE2008 profiles for the institutions involved (where relevant)	**25**
3.	**Excellence of the PhD training programme** established across the institutions involved, including: • Quality of research training environment and facilities available to students • Policy for training in the core bioscience skills areas listed in the BBSRC Skills Statement • Breadth of generic and professional skills development, including the plans for a Professional Internships for PhD Students programme.	**20**
4.	**Quality of management of the training programme**, including: • Arrangements for planning, managing and monitoring the proposed PhD training across the Partnership • Policy for strategic targeting of DTP Training Grant funding, including systems and processes for assessing the suitability of	**15**

	supervisors and projects • Student recruitment, induction, progress monitoring and submission rates • Arrangements for returning accurate and timely data to BBSRC on studentships (including quality of data provided previously and extracted by BBSRC on 1 September 2011) for the purposes of the competition	
5.	**Partnership governance arrangements** to maximise the impact of BBSRC's investment across the Partnership, including: • Quality of governance arrangements for the management of the Partnership • Extent of commitment from institutional or other sources to research training in the Partnership, including underwriting of studentships for October 2012 start • Supervisor training requirements and arrangements for developing supervision skills for academic and postdoctoral staff	**15**

In addition, DTP proposals will be rejected on the following grounds:

- The combined PhD submission rate for bioscience students in the institutions involved (Research Council and non-Research Council funded) have fallen below 70% in any of the three academic years: 2008-09, 2009-10, 2010-11
- The Partnership has not committed itself to the introduction of a Professional Internships for PhD Students scheme.

Annex 2

Je-S Guidance and Summary of Information to be submitted

This Annex provides information on the completion of the Je-S form and other documentation which is required.

Je-S form

- Council: BBSRC
- Document Type: Studentship Proposal
- Scheme: Doctoral Training Grant
- Select Call: Doctoral Training Partnership

The Je-S form used with the Doctoral Training Grant competition will be available on 7June 2011, together with the associated Help Text.

Due to the transition to the Shared Services Centre it has not been possible to make changes to the Je-S form used for the previous Quota DTG competition, and therefore it **is vital that applicants refer to the table below and the Je-S Help Text in order to ensure they provide the correct information**.

Je-S Form for DTP Proposals

The table below lists the different sections of the Je-S form and the associated Je-S Help Text. You are strongly advised to read the Help Text in full before completing details in the Je-S form.

General Information		Before completing a BBSRC studentship proposal applicants must read the Je-S help text associated with the scheme to which they are applying. In addition applicants must read all information at http://www.bbsrc.ac.uk/funding/studentships/studentships-index.aspx which includes information on the calls and the following documents: • BBSRC Postgraduate Studentships Guide • Training Grants: Terms and Conditions • Training Grants: Frequently Asked Questions • BBSRC Guide to Studentship Eligibility
Organisations	**Research Organisation**	Complete details of the lead organisation and department of the individual leading the proposal and named on the Portfolio Agreement as responsible.
	Head of Department	Complete details of the individual leading the proposal and named on the Portfolio Agreement as responsible.
	Collaborating Organisations	Where appropriate, complete details for each eligible collaborating Partner organisation and department. You should list all departments whose staff may be involved in student supervision and are listed in the supervision staff section of the Je-S form.
Your Reference		Assign your own reference to this proposal in order that it is easily identifiable to you in the "Studentship Proposal - Current Documents" menu within Je-S.
Funding Details	**Research Funding**	Give details of total research grant funding from outside sources held by the potential supervisors listed in this proposal as at 1 September 2011. The following categories of funding are available:

		• BBSRC • Other Research Council • Government Departments / Agencies • Industry • Charity / Trusts • Overseas (this includes EU research funding) This should be expressed as the total awarded value not as an annual income, and include only those grants that have started on the above date. You should include all relevant funding for the Research Organisations involved in the partnership – where a grant is held jointly with a Research Organisation not involved in the partnership, the Organisations involved should agree on the split of the funding to be attributed to each. If there are any very large grants that are due to start shortly after this date, you may wish to mention this in a covering letter. Funding for equipment should be in respect of awards from equipment initiatives not equipment awarded as part of research grants. Include the number of researchers and other staff supported by that funding as at 1 September 2011. Applicants from BBSRC institutes should include all competitively won funding excluding the Institute Strategic Programme Grant. Please remember that any individual supervisor must not be included on more than one BBSRC DTP proposal. Therefore grant income relating to an individual supervisor can again only be included in one DTP proposal for the purposes of meeting the funding threshold for eligibility.
	DTG Flexibility	In this section you should provide details of how the Partnership will use the flexibility afforded by Training Grants to maximise the impact of BBSRC's funding. If the Research Organisations involved are intending to co-fund studentships from the Training Grant using institutional funding, this should be stated in terms of **clear and measureable commitments to joint funding**, rather than vague statements of intent.
Research Strategy		In this section you should give an overview of the Partnership's research training strategy, detailing the research training that the Partnership can provide, and its alignment with BBSRC's remit and Strategic Plan. You should briefly explain the rationale for including the Partners involved in the submission, and the

		benefits it will have for student training. Where a Research Organisation is coming in alone, the rationale for this should also be provided. There is a 4000 character limit on this box, and applicants are permitted to include an annex to a covering letter providing up to 5 pages of additional information on the research training strategy, in particular in relation to the strategic priorities being addressed. The covering letter and annex should be uploaded as an attachment to the proposal in the normal way. This information will supplement the details provided in the Portfolio Agreement regarding the proportions of PhD students that will be funded in each of the strategic priority areas.
Staff	**Supervisor Staff**	In this section, you should provide details of the main potential supervisors connected with the application. For all supervisors listed give details of the single most significant refereed publication since January 2009; give author(s), title, journal and name and date of the publication. Please indicate the BBSRC strategic priority area(s) to which the publication relates if relevant. The list of supervisors provided is not intended to form an exclusive list, and the Partnership is expected to decide on a case-by-case basis whether a supervisor is appropriate, whether they are on the submitted list or not. The main purpose of this information is to demonstrate the Partnership's depth of research expertise to back up its claims to be able to provide research training aligned with BBSRC's strategic priorities.
	Staff Numbers	Provide details (aggregate of lead organisation and any eligible collaborating Partner organisation(s)) of the total number of staff (headcount) covered by the proposal. Numbers should be based on the current academic year and should be split by the categories shown: • Head of Department or group / Professors • Readers / senior lecturers / principal research scientists • Lecturers / senior research scientists • Postdoctoral research scientists • Research assistants • Technicians etc • Independently funded researchers

		The box for independently funded researchers should include those who are self-funded, funded under fellowships, longer-term visiting workers (at least 6 months) but not students. This information will provide the Training Awards Committee with a broad overview of the size of the Partnership.
	Current Studentships	Give the total numbers of bioscience postgraduate students, Masters and PhD (aggregate of lead organisation and any eligible collaborating Partner organisations covered by this proposal) split by funding body for the 2010/11 academic year. The categories of funding body are: • Research Council funded • Industry • Charity/Trusts • Overseas • Other You should include all students who, in the 2010/11 academic year, were in receipt of studentship funding and/or paying fees. This information will provide the Training Awards Committee with a broad overview of the extent of the Partnership's current postgraduate training in biological sciences.
Supervision	**Supervisor Training and Selection**	**a) Describe the selection process for the project and supervisor.** In this box you should explain the Doctoral Training Partnership's management arrangements to ensure alignment of its PhD training with BBSRC's Strategic Plan. This should include processes for ensuring that student projects are within remit, or appropriate joint-funded with other funders when at the boundary of BBSRC's remit. You should explain how the Partnership will monitor the profile of PhD training being funded, alignment with commitments made in the Portfolio Agreement, and the types of action to be taken to ensure students are attracted into key areas. **b) Describe the supervisor training provided.** In this box you should describe the requirements for supervisor training and support for all staff who may

		be involved in student supervision, including postdoctoral research staff. You should provide clear information on the requirements for ongoing training and development for established academic staff to ensure that student supervisors are properly equipped to understand the current expectations for student training.
Training Details	**Proposed Training and Support**	**a) Describe the postgraduate management research training policy** In this box you should give details of the Partnership's broad strategy and policy for postgraduate research training. You should particularly address the Partnership's commitment to providing students with a broad-based research training (including the Core Bioscience Skills outlined in section C of the Skills Statement in Annex 6). You should include a clear statement of your plans for using 4-year studentships; for example, the inclusion of taught elements or lab rotations. **b) Describe the generic and employability skills development training** In this box you should particularly address the Partnership's commitment to providing students with the generic professional skills outlined in section C of the Skills Statement (Annex 6). In particular distinguish between compulsory and optional elements. **c) Training needs assessment** Give details of how student training needs are identified, met and monitored throughout the period of award. **d) Student selection, recruitment and induction procedures** Give details of the procedures and criteria used in the selection, recruitment and induction of students. Include details of how the Partnership will seek to address recruitment difficulties in strategic important and vulnerable areas through, for example, the use of enhanced stipends.
	Research Environment	**a) Describe the research environment in which the student(s) will work and the student(s) training programme** In this box, you should explain the Partnership's commitment to maintaining a rich and stimulating

		research environment for postgraduate students. This might include opportunities for interactions with other postgraduate and postdoctoral researchers, opportunities for student interactions with other senior researchers, opportunities to participate in interdisciplinary team work, and outside links and collaborations. You should also explain arrangements to allow BBSRC students from across the Partnership to meet and network with each other. **b) Describe the current facilities available within the department** In this box you should give details of the key facilities available to PhD students within the Partnership and make clear how they will be used to support research training in BBSRC strategic priorities.
	Monitoring Arrangements	In this section you should give details of the Partnership's arrangements for student monitoring and assessment arrangements during the course of the studentship, including supervision arrangements and frequency of supervisor/student contact. You should give details of supervisors' responsibilities in student monitoring and assessment and also of the involvement of staff other than the principal supervisor in the supervisory process. You should also include the procedures in place for a) student representation on relevant committees and opportunities for student feedback on the training environment; and b) encouraging return of HESA first destination data (the DHLE survey) and the monitoring of PhD student employability.
Attachments	**Additional Attachment Types** The Je-S form requires additional attachments as follows: **Department Publications (exactly 1):** In this attachment, applicants should provide details of their most significant publications in the BBSRC strategic priority areas in which they are proposing to provide research training. The template for this attachment is on the BBSRC website. **Postgraduate Performance Indicators (exactly 1):** In this attachment, applicants should provide details of PhD submission rates for the Partners involved in the submission. The template for this attachment is on the BBSRC website. CASE Collaborators (exactly 1): You should use this attachment heading for your Portfolio Agreement. The template for this	

	attachment is on the BBSRC website. **Covering Letter (up to 1):** A covering letter is optional, and applicants are permitted t**o include an annex of up to 5 additional pages of information describing the research training strategy of the partnership**, in particular connected to the strategic priorities being addressed. **NOTE: all mandatory attachments must be completed using the standard BBSRC templates available at** http://www.bbsrc.ac.uk/dtp **BBSRC will not accept stand alone documents.**

Annex 3

The Revision of BBSRC's Quota DTG scheme:

Key features in the new BBSRC Doctoral Training Partnerships

This annex is intended to explain the key features of the new DTP scheme, and the reasons behind their introduction. An Evaluation of BBSRC's Quota DTG competition made a number of recommendations, and this annex shows how BBSRC has responded to these in the development of BBSRC Doctoral Training Partnerships. The full report from the Evaluation is available on the BBSRC website:

http://www.bbsrc.ac.uk/researchevaluation/

1. Training Excellence: Competitive Assessment of Training Strategy and Environment

The Evaluation of BBSRC's Quota DTG scheme gave consideration to whether a *competition* approach to the award of PhD funding was still appropriate, and whether the administrative work involved for institutions and the peer review work for BBSRC added sufficient value. Alternative approaches such as the use of annual algorithmic allocations based on BBSRC grant funding were considered.

The Evaluation concluded that BBSRC's competition approach had provided a valuable impetus to the development and excellence of bioscience PhD training in the UK, and that this approach should be continued. The BBSRC Doctoral Training Partnership scheme therefore retains a competition approach.

2. Strategic Alignment

The Evaluation of the Quota DTG scheme recognised the value that the flexibility of Quota awards gives to departments in selecting and recruiting the best students, and matching them to specific projects available within a department. However, it was also recognised that this can lead to unevenness in the coverage of BBSRC's remit – for example, if strategically important areas are not chosen by students, or if a department's allocation process results in a disproportionate number of students working in areas of research supported by other funders.

In order to seek a balance between flexibility and the alignment of PhD training with BBSRC's strategic priorities, the Doctoral Training Partnership competition introduces the use of a 'Portfolio Agreement'. This approach is also being used by MRC in connection with the institutions holding its algorithmic Doctoral Training Grants. The Portfolio Agreement submitted as part of BBSRC Doctoral Training Partnership competition will set out the plans of the Research Organisations involved to address BBSRC's skills and training priorities. This will include flexibility for Partnerships to support PhD training across BBSRC's remit in support of the UK's broad world-class bioscience, but will also require Partnerships to make indicative commitments as to the spread of studentships across BBSRC's strategic priority areas, and plans to support strategically important and vulnerable areas of expertise.

The commitments made by institutions in their Portfolio Agreements will be assessed by BBSRC's Training Awards Committee as part of the Doctoral Training Partnership competition. The Portfolio Agreements will also inform the Committee's recommendations to BBSRC as to how to achieve a balanced portfolio of research training across its remit, and supporting its strategic priorities.

3. Concentration of funding to create major training centres

The DTP scheme will award up to 15-20 BBSRC Doctoral Training Partnerships. The Quota Evaluation recommended that BBSRC should substantially reduce the number of separate Quota awards made. Small, separate, Training Grants have less ability to use the flexibility of the training grant approach in a strategic way and do not encourage coordination and the sharing of good practice, within or between institutions.

There is also a reduction of funding available in this competition – due to increasing investment in BBSRC's CASE studentship schemes and removing the previous 25% requirement for CASE studentships to be created with Quota awards (see below). This means a concentration of funding in the DTP scheme is needed in order to ensure that Partners have significant critical mass in terms of the number of students being supported.

The move to a smaller number of major training centres is also part of the intention for BBSRC to work more closely in *partnership* with institutions in support of the provision of excellent bioscience training.

The previous Quota competition allowed institutions to apply for funding at departmental, school, faculty, and institutional, etc., levels. While there was a move to larger, more coordinated bids in the last Quota DTG competition, the DTP scheme *requires* that proposals be institutional or multi-institutional. This is intended to assist with the sharing of good practice across and between institutions; promote greater integration and strategic coordination in the provision of PhD training (compared to departments / faculties operating independently); and facilitate greater interdisciplinary / interdepartmental training.

In order to foster greater collaboration in PhD training both within and between institutions, BBSRC has introduced a funding threshold for eligibility to become BBSRC Doctoral Training Partners. The institutions involved in the proposal must together meet a minimum threshold of annual BBSRC research grant spend of £5M (2009/10). Information about institutional grant funding is given in Annex 4**.**

The figure of £5M has been chosen in order to ensure that any supported DTP has a critical mass of BBSRC funded research. It means that all but the very largest centres of BBSRC funded research have to apply in the form of partnerships. However, *all* institutions are encouraged to consider appropriate partnerships, for example, on a regional basis, or to collaborate with a specialist institution which can enhance the training provided in support of a specific BBSRC strategic priority.

4. Training for Impact: structured and well-managed PhD training programmes

The Evaluation of BBSRC's Quota scheme found good evidence of institutions moving to develop a range of structured PhD programmes, using the four-year funding available. The Evaluation highlighted the benefit of moving to more structured or 'cohort' based PhD training programmes, as compared to the previous model where a student's training was fundamentally linked to the work of a single supervisor. The Quota competition has encouraged the use of structured training programmes, enabling student training to reflect the wide range of skills that today's bioscience researchers need in order to maximise the impact of their research.

The Quota Evaluation found that BBSRC's previous insistence on institutions making studentship awards either three year (where the student had appropriate prior experience) *or* four year in duration had helped achieve a culture change in PhD training, away from the previous situation of students enduring an unfunded final year completing their PhD.

However, the Evaluation recommended that BBSRC should now relax the requirement for studentships to be either three or four years in duration, and recognise that institutions may

wish to offer more flexible durations (e.g. three and a half years) within a four year maximum. This change is reflected in BBSRC's revised Training Grant FAQs.

5. CASE Studentships

The previous Quota scheme required that 25% of the studentships created from each awarded Training Grant were taken up as CASE awards. CASE awards can provide students with valuable research training in an industrially relevant research area, as well as valuable experience of a broader, commercial research environment. However, the Evaluation recommended that the CASE requirement be removed from the scheme. The Evaluation found that many institutions expressed difficulty in managing the requirement to create CASE studentships within the broader framework of their recruitment and allocation processes.

In view of this finding, BBSRC has removed any CASE requirement from the DTP awards and will be increasing its investment in its other CASE schemes:

- Annual Industrial CASE competition
- Block awards to industrial partners (Industrial CASE Partnership)

It will still be possible to create a CASE studentship using funding from the DTP training grant, and BBSRC would welcome this as a means of meeting key industrially relevant skills, as well as providing students with valuable experience of a broader research environment. BBSRC has revised its criteria for eligible CASE partners, and these are given in **Annex 5**.

6. Research Training Support Grant

In calculating the cost of a single four-year studentship, BBSRC has previously used the figure of £1k p.a. for research and experimental costs – known as the 'Research Training Support Grant' (RTSG). The Quota DTG Evaluation strongly recommended that a more realistic figure now be used. There was concern that the low level of RTSG may act as a barrier to allocating studentships in high-cost areas, despite the flexibility that large Quota DTGs provide to draw higher levels of funding for more expensive projects.

Where a Training Grant is awarded, BBSRC will now indicate the number of studentships the grant can support using a higher figure of £5k p.a. RTSG, in order to send a clear message that the *quality* of a student's research training is paramount, rather than the 'quantity' of lower-cost studentships that can be created.

7. Supervisor Support and Training

In recent years the nature of PhD training has changed, with an increased emphasis on a PhD providing students with a broad range of scientific and professional skills, preparing them for work in a variety of contexts in which their research training can make an impact. This has meant that expectations on main supervisors and supervisory teams have also changed. The Evaluation of the Quota scheme has recommended to BBSRC that it place greater emphasis on the importance of supervisor support and training in the undertaking of this key role. It also recommended that the important role of postdoctoral researchers in the day-to-day training of research students is appropriately recognised and supported by institutions. Both of these recommendations are accepted, and the DTP scheme will seek to assess and monitor the training and support provided to postgraduate supervisors.

Annex 4

Research Grant income and meeting the threshold for eligibility

BBSRC wishes to encourage partnership between Research Organisations in addressing its PhD training priorities. Proposals can be submitted by eligible Research Organisations either individually or in collaboration, provided that those institution(s) applying have a minimum of **£5M** in BBSRC research grant spend in 2009/10.

The table below shows a list of research organisations and their BBSRC grant spend during this period[1].

Any queries about the threshold for eligibility should be sent to postgrad.studentships@bbsrc.ac.uk

Research Organisation	BBSRC grant spend 2009/10 (£K)
The University of Manchester	17,905
University of Cambridge [1]	13,686
University of Nottingham	13,528
Imperial College London [2]	11,277
University of Edinburgh	11,068
University of Oxford [3]	9,507
University of Glasgow	8,611
University College London [4]	8,073
University of Bristol	8,040
Newcastle University	7,663
John Innes Centre	7,002
University of Warwick	6,479
University of Leeds	5,795
Rothamsted Research	5,669
University of Sheffield	5,017
University of Liverpool [5]	4,879
Institute For Animal Health	4,574
University of Birmingham	4,525
University of York	4,158
University of Dundee	4,146
University of Aberdeen	3,754
King's College London	3,657
University of East Anglia	3,526
University of Leicester	2,556
Cardiff University	2,449

[1] Data taken from BBSRC grant processing and reporting systems; includes research grants awarded through standard responsive mode, initiative and other schemes, where there is research spend in the 2009-10 financial year. Does not include awards made through smaller programmes. Excludes Institute Strategic Programme Grant funding.

University of Southampton	2,149
University of Exeter	2,111
Durham University	2,067
Aberystwyth University	2,059
University of Sussex	2,045
University of St Andrews	1,841
University of Surrey	1,618
Royal Veterinary College	1,589
Queen Mary, University of London	1,549
Babraham Institute	1,480
EMBL - European Bioinformatics Institute	1,451
University of Kent	1,449
University of Reading	1,291
Institute of Food Research	1,085
University of Bath	1,018
The Wellcome Trust Sanger Institute	1,007
Queen's University of Belfast	929
Royal Holloway, University of London	896
London School of Hygiene and Tropical Medicine	876
Birkbeck College	834
National Institute of Agricultural Botany	776
University of Strathclyde	681
University of Portsmouth	649
Moredun Research Institute	629
Veterinary Laboratories Agency	576
Keele University	547
University of Hull	524
STFC - Laboratories	497
Scottish Agricultural College	492
University of Essex	489
Lancaster University	472
School of Pharmacy	428
Bangor University	408
Oxford Brookes University	399
Swansea University	353
St George's University of London	343
Scottish Crop Research Institute	340
University of Stirling	300
Sheffield Hallam University	290
University of Ulster	217
University of Greenwich	199
Plymouth Marine Laboratory	195
Aston University	165
The Natural History Museum	163
Brunel University	156

University of the West of England	154
East Malling Research	151
Heriot-Watt University	147
University of Plymouth	144
Open University	131
University of Bradford	130
Loughborough University	122
City University	122
MRC Human Genetics Unit	98
MRC National Institute for Medical Research	90
ODI - Overseas Development Institute	68
Institute of Cancer Research	62
University of Brighton	55
University of Hertfordshire	55
University of Buckingham	54
FERA - Food & Environment Research Agency	43
The Genome Analysis Centre	39
Scottish Universities Environmental Research Centre	31
CAB International	17
Zoological Society of London	15
Northumbria University	15
University of the West of Scotland	13
University of Abertay Dundee	10
Cranfield University	9

[1] University of Cambridge includes MRC Centre Cambridge

[2] Imperial College London includes MRC Clinical Sciences Centre

[3] University of Oxford includes MRC Functional Genetics Unit

[4] University College London includes Royal Free & University College Medical

[5] University of Liverpool includes Liverpool School of Tropical Medicine

Annex 5

CASE PARTNER ELIGIBILITY CRITERIA

The following is a statement agreed between BBSRC, EPSRC and MRC of what constitutes and eligible CASE partner, and the purpose of CASE studentships.

Vision for CASE Studentships

CASE awards will provide PhD students with a first-rate, challenging research training experience within the context of a mutually beneficial research collaboration between academic and partner organisations, e.g. industry and policy making organisations.

Benefits to the student - CASE provides outstanding students access to training, facilities and expertise not available in an academic setting alone. Students benefit from a diversity of experimental approaches with an applied/translational dimension. Students have an opportunity to develop a range of valuable skills and significantly enhance their future employability; many will become research leaders of the future.

Benefits to the academic / partner organisations - CASE studentships encourage productive engagement between partners who benefit from a motivated, high-quality PhD student undertaking cutting-edge research relevant to the organisations' priorities and objectives. CASE provides opportunities to explore novel research collaborations and strengthen current partnerships.

Partner Eligibility Criteria for CASE Studentships

UK-based organisations can be considered as the non-academic partner if they can provide students with distinctive research training and experience not available in an academic setting. Organisations eligible for Research Council funding[1] cannot act as a non-academic partner. Where the non-academic partner is a company, it must have an established UK-based research and/or commercial production capability. In exceptional cases, organisations based overseas may be eligible, but only where they can provide the student with an opportunity to gain skills not currently available in the UK.

If eligibility remains unclear, applicants should contact the appropriate Research Council.

Defining an excellent CASE Studentship:

- **High-quality project** - A challenging, feasible and realistically achievable PhD project which stimulates excellent hypothesis-driven research. Through a truly collaborative approach, it provides tangible benefits to all partners.

- **High-quality training environment** - Through access to distinctive but complementary environments, partners provide a stimulating framework for research training in the proposed field. Joint supervision gives a unique and broadening perspective on the impact of collaborative research.

- **High-quality student experience** - An enriched, integrated training experience allows the student to acquire novel skills and expertise. The student gains a wider understanding of, for example, applied research or policy development that will enhance their future career prospects.

[1] See: www.rcuk.ac.uk/research/Pages/Eligibilityforrcs.aspx

Annex 6

BBSRC Skills Statement: Scientific and Core Skills for UK Bioscience

The BBSRC Skills Statement brings together in one place the research-specific expertise and cross-cutting skills that BBSRC is seeking to support through its Training Grants. This statement is intended to help institutions in planning how to address BBSRC's strategic priorities for research training.

BBSRC supports studentships in research areas across its remit. The areas described here cover:

- BBSRC's broad strategic research priorities and enabling technologies to exploit new ways of working (**section A**).

- Specific strategically important and vulnerable niche skills (**section B**), which have been identified as areas where increased student capacity is required in order to maintain or develop an adequate supply of skilled researchers within the UK.

- Cross-cutting core bioscience and generic professional skills (**section C**), which are the skills that are increasingly expected of today's bioscience researchers and are expected to be included as part of all BBSRC funded studentship programmes.

This document draws on BBSRC's Strategic Plan 2010-2015 (and the consultation which informed it) and associated Delivery Plan, BBSRC's Niche Skills and other reviews, as well as views gathered from BBSRC committees, panels and groups on which BBSRC is represented.

Further information can be found in the references listed throughout the document or you can email queries to postgrad.studentships@bbsrc.ac.uk.

A. Strategically important research areas

BBSRC's Strategic Plan 2010-2015 "The Age of Bioscience"[1] outlines its current strategic priorities for research. Studentships addressing the areas described in this section should develop the skills needed to support research in the subject in question. BBSRC does *not* expect all its studentships to be relevant to its strategic priority areas, or expect a single institution to offer studentships across the whole BBSRC remit. However, across the complete portfolio of studentships funded through the Doctoral Training Partnerships, BBSRC intends to ensure that there is an appropriate balance of studentships providing sufficient training within the research community to maintain an adequate supply of high quality researchers for all the areas given below.

BBSRC's strategic research priorities are:

1. Food Security
2. Bioenergy and Industrial Biotechnology
3. Basic Bioscience Underpinning Health

Together with the following research enabling theme:

4. Exploiting New Ways of Working – including the need for researchers to develop and use new bioanalytical, bioinformatic and biological technologies, and to recognise the importance of taking a systems approach to biological problems

1. FOOD SECURITY: Bioscience for a sustainable supply of sufficient, affordable, nutritious and safe food, adapting to a rapidly changing world

A review of high level skills needs for food security[2] identified that there may be a shortage in the supply of highly skilled people in a number of niche research areas (see also section B). As part of other activities in this area, and as a contributing member of the Global Food Security programme[3], BBSRC wishes to support the development of skills and expertise relating to the following research areas:

- **Animal health and welfare**:
  - Endemic and exotic diseases of animals (including aquaculture and fisheries), including food-borne zoonoses, welfare-related disease and non-transmissible diseases
  - Farm animal welfare: improving the conditions and management of farmed animals to minimise pain, suffering, distress or lasting harm
  - Genetics and genomics for improved animal breeding

- **Crop science**:
  - Increasing the efficiency and sustainability of crop production and reducing waste in the food chain
  - Minimising negative environmental impacts and preserving biodiversity and other ecosystem services
  - Pre-competitive research that can be translated into practice, such as plant breeding

[1] http://www.bbsrc.ac.uk/publications/planning/strategy/strategic-plan-index.aspx
[2] http://www.bbsrc.ac.uk/web/FILES/Reviews/1001-high-level-skills-for-food.pdf
[3] http://www.foodsecurity.ac.uk/assets/pdfs/gfs-strategic-plan.pdf

- Crop protection: enhancing yield and quality of crops through prevention and combating of pests, diseases and weeds; generating crops adapted to future environments

- **Diet and health**: Enhancing food quality for improved nutrition

- **Microbial food safety**: Animal and plant diseases and their causative organisms that have impacts on human health

- **Agricultural systems and environment**:
  - Agricultural landscapes and systems
  - Soil science
  - Interactions of crop farming practices with the environment
  - Impacts of climatic and other environmental factors on agricultural systems

2. **BIOENERGY AND INDUSTRIAL BIOTECHNOLOGY:** Production and processing of energy and industrial materials from biological sources

Bioenergy and Industrial Biotechnology (IB)[4] is a broad research area, incorporating cross-disciplinary underpinning technologies that make use of biological resources to process and produce chemicals, materials and energy. These resources include plants, algae, marine life, fungi and other micro-organisms.

BBSRC wishes to build capacity in all areas of IB but in particular is looking to support training that addresses the following skills and research expertise:

- **Biocatalysis and other biological processes**: the production of industrial chemicals from living organisms, including through **synthetic and systems approaches**. This is an area where **cross-disciplinary research** involving biologists, chemists and engineers, as well as integration with the chemicals industry, is of particular importance. So too will be a focus on skills for **bioprocessing** and for the discovery of **novel bioactives** from first principles.

- **Bioenergy**: fundamental research on future bioenergy production, particularly liquid biofuels using **synthetic and systems approaches**

- **Biologics**: including underpinning bioscience and technology development to improve **bioprocessing**, particularly where there are clear links with industry

- **Non-food crops**: developing processes to increase the production of high value **chemicals from plants**

3. **BASIC BIOSCIENCE UNDERPINNING HEALTH:** Driving advances in fundamental bioscience for better health and improved quality of life across the life course

BBSRC wishes to support the development of skills and expertise relating to the following research area:

[4] http://www.bbsrc.ac.uk/organisation/policies/reviews/scientific-areas/1102-industrial-biotechnology-bioenergy-report.aspx

- **Lifelong Health and Wellbeing**: the basic molecular, cellular, tissue and systems mechanisms responsible for longevity or premature ageing and how these are modulated by diet, exercise and developmental factors

4. **EXPLOITING NEW WAYS OF WORKING:** Enabling innovative working practices in an era of rapid technological advancement, the next generation internet, and quantitative and computational approaches to bioscience.

This enabling theme is cross-cutting and drives bioscience research in all areas – the need for researchers to develop and use new bioanalytical, bioinformatic and biological technologies to accelerate discovery and preserve UK world class status. This includes an emphasis on the development and use of systems and modelling approaches to the study and solution of biological problems. The Exploiting New Ways of Working priority embraces multidisciplinary and quantitative approaches and covers the development of research expertise and skills as follows:

- Research expertise in and for the development of the next generation of bioanalytical and biological technologies, in areas including (but not exclusively) bioimaging, 'omics technologies and biomolecular characterisation

- Research expertise in the development of the next generation of computational and bioinformatic tools, and resources to drive data intensive bioscience and tackle the bioscience data deluge

- Research expertise in synthetic biology, an emerging area at the interface of biology, engineering, chemistry and IT that focuses on the design and construction of new biological parts, devices, and systems, and the re-design of existing, natural biological systems for useful purposes

- Boosting skills, across the biosciences, to ensure that all researchers are effective in exploiting new tools and methodologies relevant to their research as they become available

Two recent BBSRC Strategic Reviews have identified additional skills gaps in Exploiting New Ways of Working. These are the Review of Next Generation Sequencing[5] and the Review of the Computational Requirements of the Biosciences[6].

[5] http://www.bbsrc.ac.uk/organisation/policies/reviews/scientific-areas/1102-next-generation-sequencing-review.aspx
[6] http://www.bbsrc.ac.uk/news/research-technologies/2011/110120-n-computational-requirements-review.aspx

B. Other strategically important and vulnerable 'niche' research skills

In October 2009, BBSRC published a report on "Strategically important and vulnerable capabilities in UK bioscience"[7]. This review of 'niche' research skills in the UK identified a number of areas where BBSRC wishes to ensure an adequate supply of skilled people; many of these are relevant to the broad research areas described in section A. Typically niche skill areas do not require large numbers of expert scientists, and the low number needed can itself create difficulties for recruiting people into an area.

Niche skills that BBSRC is particularly keen to support include the following:

Relating to Food Security:

- Plant physiology
- Plant breeding
- Plant pathology, especially entomology and mycology
- Soil science
- Horticulture
- Agroecology

Relating to Exploiting New Ways of Working:

- Data visualisation
- Next Generation Sequencing

Other areas:

- **Systematics and Taxonomy**

This area covers systematics and taxonomy for all groups, but particularly microbes (including fungi), algae and plants. This includes research at all levels, from genetic and molecular studies to morphological approaches.

The development of skills in systematics and taxonomic approaches are important in the following scientific areas:

- identifying emerging threats from climate change, disease and invasive species
- underpinning agricultural development and food security through the identification and development of drought or pest resistant races from combining trait, genetic and distribution data
- ensuring that the UK retains a pool of trained professionals able to provide taxonomic identifications
- interpreting the outputs from various 'omic' based approaches
- searching for bioactive compounds of commercial potential therapeutic importance

- ***In vivo* skills**

This area covers whole animal physiology and integrative mammalian biology, including the development of skills for the handling of both laboratory and large animals, particularly where these skills are developed through collaboration with industry. Skills needs in this area are still considered to be vulnerable by the industry and are described in more detail in the ABPI review[8].

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[7] http://www.bbsrc.ac.uk/organisation/policies/reviews/consultations/0905-bioscience-research-skills.aspx

[8] http://www.abpi.org.uk/Details.asp?ProductID=338

C. Core Bioscience and Generic Professional Skills

In order to address the complexities and challenges facing modern biologists, BBSRC has identified areas of 'core bioscience skills' which all future bioscientists need to develop. These core bioscience skills build on the broader generic and professional skills that BBSRC, along with the other Research Councils, regard as vital for all PhD students to develop.

This section represents the skills areas which are increasingly being seen as core for the next generation of bioscientists. BBSRC does not wish to be overly prescriptive on the depth that any one student should attain in these skills. However, institutions holding BBSRC Training Grants should have mechanisms in place to provide access to such training, assess individual training needs in these areas and monitor skills development. Institutions may not wish to provide all the training themselves, but rather seek to draw on external training opportunities – for example, the *Biotechnology YES* competition[9] for the development of entrepreneurial awareness, or *Researchers in Residence*[10] for outreach opportunities.

Core Bioscience Skills

The two groups of core skills for bioscientists are:

1. Mathematics and data analysis

The use of mathematics and data analysis to manage and interpret biological data through:

- Mathematical and data handling skills
- Statistics and experimental design

2. Multidisciplinary approaches to understanding biological systems

Understanding the value of collaborative and coordinated interdisciplinary approaches to biological research; for example:

- Multidisciplinary approaches to understand biological systems[11], including an understanding of how modelling can inform subsequent rounds of experiments
- Veterinary and medical research collaboration to identify common approaches to tackling problems relating to animal diseases
- Biological and chemistry / engineering approaches to industrial biotechnology
- Biological and computational approaches to managing and analysing large datasets in the biosciences

Generic Professional Skills

As part of RCUK, BBSRC funds the Vitae programme[12] to help research organisations provide generic and professional development for PhD students and postdoctoral researchers.

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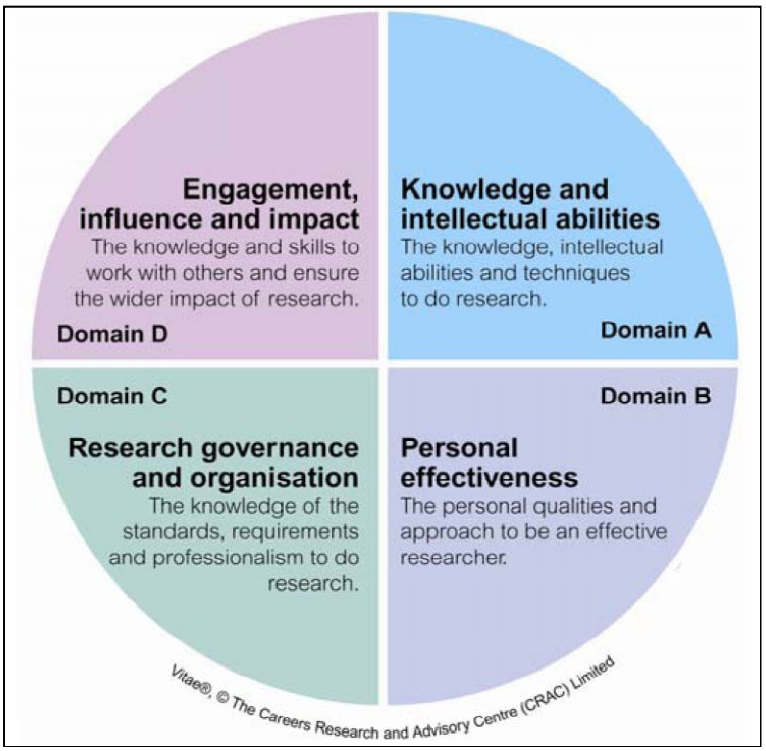
[9] http://www.biotechnologyyes.co.uk/
[10] http://www.researchersinresidence.ac.uk/rir/
[11] See further information on systems approaches to biological research at: http://www.bbsrc.ac.uk/science/systems-approach.aspx
[12] http://www.vitae.ac.uk/

BBSRC also supports the development by Vitae of the 'Researcher Development Statement'[13], which outlines the areas of professional development that research organisations should be addressing in their training programmes. The Researcher Development Statement replaces the Research Councils' Joint Skills Statement, and covers the domains shown.



These skills include those that encourage students to understand the impact of their research. BBSRC defines impact as the demonstrable contribution that excellent research makes to society and the economy. Impact embraces all the extremely diverse ways in which research-related knowledge and skills benefit individuals, organisations and nations by:

- fostering global economic performance, and specifically the economic competitiveness of the United Kingdom
- increasing the effectiveness of public services and policy
- enhancing quality of life, health and creative output

BBSRC recognises that the impact of excellent research is extremely broad, and is found in areas as diverse as industry, schools, local and national government, news and media, and international relations. Further information on BBSRC policy and guidance on impact of bioscience research can be found on the BBSRC website[14].

In particular, BBSRC would wish to see the development of skills in the following two areas:

1. **Social impact of research**
   - Public engagement and outreach opportunities[15]
   - Ethical awareness training, including animal welfare and the replacement, refinement and reduction of animals in research[16]
   - Awareness of the legal and societal context of biological research
   - Understanding how research can be used to develop evidence-based policy

2. **Commercial impact of research**
   - Commercial awareness
   - Business and management skills
   - Entrepreneurial awareness

[13] http://www.vitae.ac.uk/rds
[14] http://www.bbsrc.ac.uk/organisation/policies/position/policy/impact-policy.aspx
[15] See the Concordat for Engaging the Public with Research at: http://www.publicengagement.ac.uk/why-does-it-matter/concordat
[16] See NC3Rs: http://www.nc3rs.org.uk/

Annex 7

Professional Internships for PhD Students (PIPS)

Summary

1. All institutions applying to become BBSRC Doctoral Training Partners should include information about how they will incorporate a programme of Professional Internships for PhD students (PIPS).
2. The PIPS programme is intended to provide BBSRC funded PhD students with an opportunity to experience work in an area that is not directly related to their PhD project. Internships can be taken in a wide variety of host organisations; examples are provided in the FAQs.
3. Many BBSRC funded PhD students plan to pursue a career in academia after graduation. However, a large proportion of students enter careers outside academia and PIPS will help them to understand the types of careers that will put their skills to best use. Even students intent on a career in academia will benefit from PIPS by using them to understand the wider impact of their research.
4. Internships should be taken by all PhD students funded through a Doctoral Training Partnership award (DTP) and can be carried out at any time during the PhD, including between submission of the thesis and the viva if appropriate. Each internship should be 3 months in duration, taken either in one block or spread across smaller blocks. The internship should be completed within the four years of the PhD.
5. BBSRC anticipates that different institutions will wish to manage a PIPS programme in different ways. The programme will be monitored closely, particularly in the first two years. Additional funding will be made available to BBSRC Doctoral Training Partners to help with the administrative costs of the introduction and management of a PIPS scheme. The level of the funding is to be agreed, but this element will be added to Training Grants separately, based on the number of studentships awarded. In future, Partners will be expected to manage the cost from within the normal flexibility of Training Grants, without the need for a specific amount to be identified within the grant for this purpose.

Background and rationale

Why are PIPS needed?

6. The introduction of Professional Internships for PhD Students has been recommended by the Bioscience Skills and Careers strategy panel (BSC)[1], which advises BBSRC on its strategy for investment in bioscience skills and careers. Wider professional experience for PhD students has been identified as an area of high priority for action by BBSRC.
7. A wide variety of career paths are open to researchers and the ability to move between different roles and sectors can be key to maximising the impact from an individual's training, as well as to achieving a successful and fulfilling career. Mobility brings great benefit to the UK economy and the PIPS programme will complement other people exchange schemes that are available to academics and researchers[2].

[1] Details and panel membership at: http://www.bbsrc.ac.uk/organisation/structures/panels/skills-careers-panel.aspx
[2] See details of all RCUK knowledge transfer activities at: http://www.rcuk.ac.uk/innovation/ktportal/default.htm

8. It is anticipated that Doctoral Training Partners will be creative in the development of an internships programme and that a range of approaches will be proposed. Flexibility should be a key factor to ensure compatibility of the internship with the student, PhD project and internship host organisation. Examples of the ways in which the programme could be run are described in the FAQs.

9. The availability of Professional Internships for PhD Students builds on the employability skills supported by Vitae and Roberts skills funding. The Roberts report: SET for Success[3], published in 2002, identified the need for PhD students and postdoctoral researchers to receive wider training in professional and transferable skills.

10. BBSRC supports the development of Vitae's Researcher Development Statement (RDS)[4], which replaces the Research Councils' Joint Skills Statement. The RDS sets out the knowledge, behaviours and attributes of effective and highly skilled researchers appropriate for a wide range of careers. The PIPS programme will help to develop skills in a range of areas of the RDS.

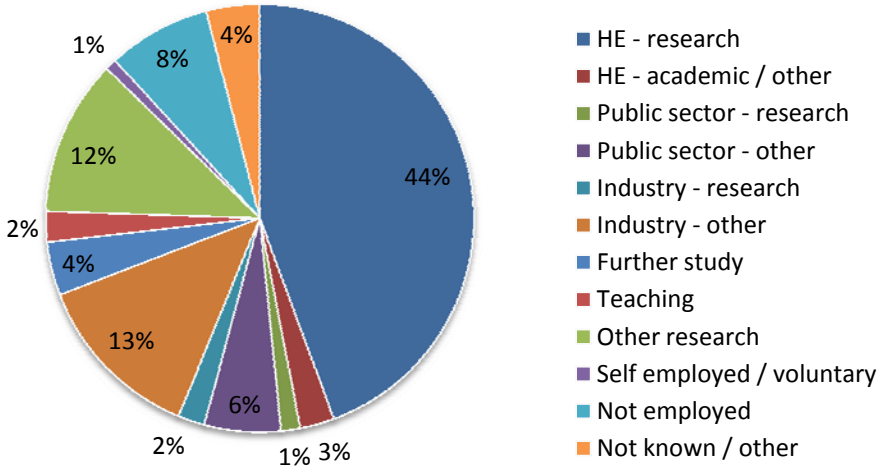
11. In addition, the BIS Postgraduate Review (2010)[5] made a number of recommendations referring to the provision of professional experience for postgraduates, for example:

    "HEIs need to be more pro-active in providing postgraduates with the opportunity to develop the core competencies they need to succeed in a competitive job market. This should include opportunities for postgraduates to undertake relevant work experience placements and internships in business, public services and the third sector." (Para 35, page 43)

Destinations of BBSRC funded PhD students

12. The destinations of BBSRC funded PhD students are wide and varied (Figure 1). Less than half remain in higher education after graduating, yet relatively few (mostly those on CASE studentships) receive any significant experience of working outside an academic research position before they do so. A significant proportion of PhD holders will also move out of academia after a first or second postdoctoral position.

Figure 1: First destinations of BBSRC funded PhD students qualifying or completing their courses between 1 August 2007 - 31 July 2008 (source: HESA DHLE data)



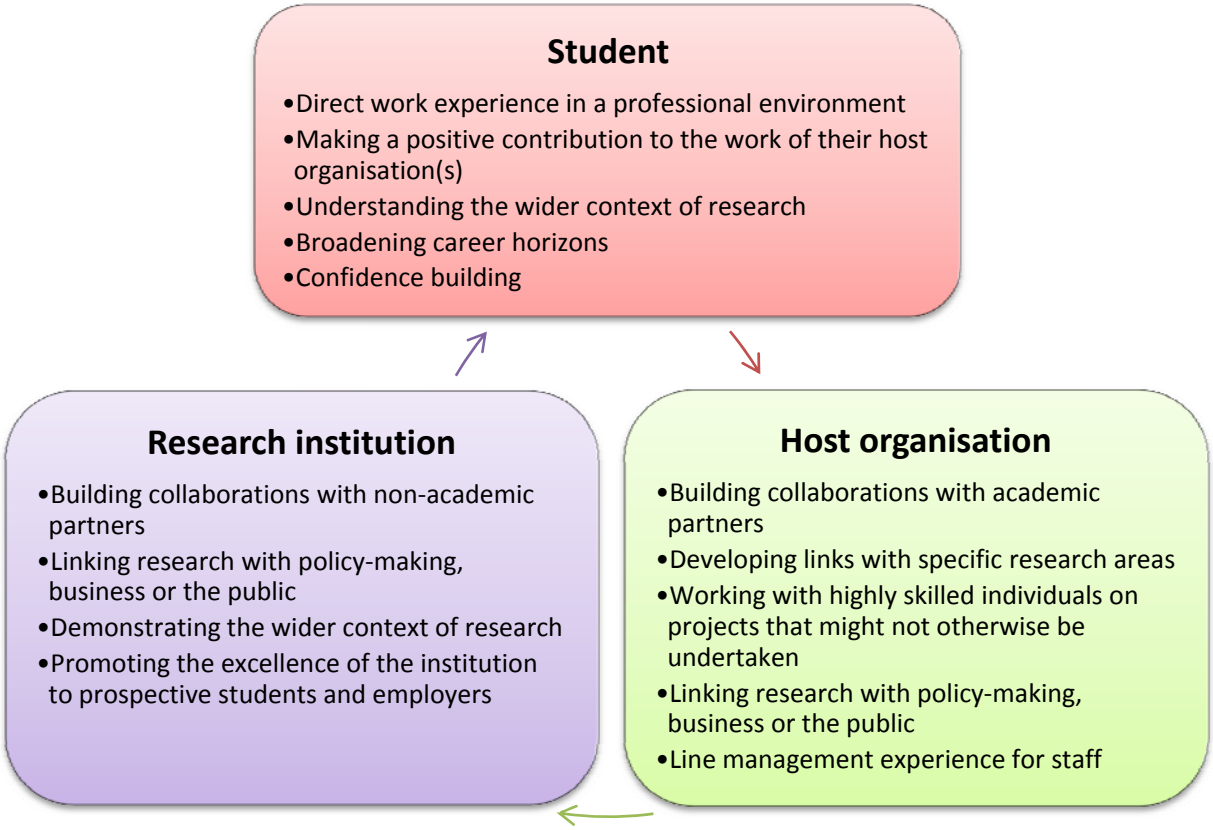
[3] The report is available at: http://www.hm-treasury.gov.uk/ent_res_roberts.htm
[4] See: www.vitae.ac.uk/rds
[5] See report "One Step Beyond: Making the most of postgraduate education" at: http://www.bis.gov.uk/postgraduate-review. In particular, recommendations 1, 6, 7 and 8 relate to professional experience for postgraduates.

13. Two existing internship schemes are supported by BBSRC: Policy Placements[6] and Researchers in Residence[7]. However, only a relatively small proportion of students participate in these schemes.

14. Internships may be with any relevant employer and **should not be directly related to the student's research project**. Examples of the types of internships that could be taken are given in the FAQs.

Who benefits from PIPS?

15. The PIPS programme will benefit not only the student's postgraduate experience, but also the research institution and the host organisation. BBSRC would hope that in due course Doctoral Training Partners will make internship opportunities available to all relevant students, not just those funded by BBSRC.



Nature of support

16. BBSRC will require all Doctoral Training Partner institutions to include a programme of PIPS in their training strategy. Institutions should outline their plans for how a PIPS programme will be managed as part of their Portfolio Agreement.

17. The 3-month internships can be included within and at any stage of the PhD, with student stipends continuing as normal for the duration of the internship. BBSRC recognises that most PhDs are completed within the four years and studentships should

[6] http://www.bbsrc.ac.uk/business/people-information/policy-placements.aspx
[7] http://www.researchersinresidence.ac.uk/cms/

not normally be extended beyond four years; the cash limit of the DTP Training Grant should not be exceeded as a result of internships.

18. The costs of managing a PIPS programme should eventually be met through standard funding mechanisms (PhD fees and Funding Council PGR funding). However, a contribution towards administration of the programme will be provided for the duration of the DTP awards (to cover students starting in 2012, 2013 and 2014). The level of support will be announced in due course.