

REPORT OF THE VISITING GROUP TO THE BABRAHAM INSTITUTE

26-30 SEPTEMBER 2005

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WHOLE INSTITUTE ASSESSMENT

SUMMARY ASSESSMENT

1. In the opinion of the VG, the institute was world-leading in signalling and epigenetics, and was making a unique and distinctive contribution to the understanding of mechanisms of cell signalling and gene regulation which underlie cellular processes and functions, and their relationship to disease. The VG also highlighted the international research in neurodegeneration and cognitive neuroscience.
2. The VG congratulated the director on his visionary leadership and effective management of the institute, which had created an environment in which productive collaborations had flourished both internally and with external organisations, particularly with the Cambridge research community. The VG recognised that this environment had attracted excellent independent young scientists, many with competitively-won fellowships, and that this was further contributing to the overall high quality of science at the institute.
3. The VG saw a continued need for the Babraham Institute, which provided added value in bringing together unique sets of skills and state-of-the-art technologies focused around genetically-tractable models.

Recommendation 1

The VG endorsed the continued need for the Babraham Institute which was providing world leadership in signalling and epigenetics and carrying out international quality research in neuroscience. The VG further applauded the director on his visionary leadership which had created an environment which attracted world-class scientists working in highly productive partnerships. There was clear added value provided by the institute environment in which unique skill sets were combined effectively with cutting-edge technologies.

4. The VG welcomed the recently improved focus in the institute research programme and applauded the increasing cohesion and strengthening and integrating of research programmes. The VG recognised that, while the signalling and epigenetics themes provided focus for the scientific strategy, it was important to maintain and develop breadth in integrative biology. Further focusing on signalling and epigenetics could reduce future flexibility and relevance of the science, and a purely reductionist approach should be avoided. By maintaining the current breadth of research programmes the institute would be able to develop and explore new model systems that became available.

Recommendation 2

The VG welcomed the recent increased focus of the institute's science strategy on the signalling and epigenetics themes but recommended that BI now develop breadth in integrative biology, to maintain future flexibility and relevance of the institute's science.

5. The VG highlighted the postgraduate programme at the institute which was providing access to an excellent intellectual and physical environment for research training, agreeing with the Studentships and Fellowships Training (SFT) assessment panel that the institute provided a model of best practice for student training, from which other BBSRC-sponsored institutes and the wider Higher Education sector could learn.
6. The VG was impressed by the institute's activities in communicating with the public. BI had an impressive schools programme and was forging strong links with the local community. In particular the VG highlighted the proactive approach of the institute in dealing with public concern about animal research.
7. The VG endorsed the relationship between BI and Babraham Bioscience Technologies Ltd (BBT), the knowledge transfer company managing the commercial interface between the institute and its stakeholders. The VG was impressed by the number and diversity of companies located in the Bioincubator on the Babraham site. There was strong evidence of a genuine two-way partnership between BI scientists and this expanding industrial activity, which was of benefit to both parties. In the view of the VG this offered significant potential for the future development of the institute.
8. The VG felt strongly that the institute should develop mechanisms to anticipate the technology demand of its science, and should seek opportunities to develop core technologies in advance of user demand. In particular the VG recognised the need for the urgent replacement of the Small Animal Barrier Unit (SABU).
9. The VG also felt that the institute should seek to share best practice in bioinformatics, platform technologies, training and career development, and science and society, with other BBSRC-sponsored institutes.
10. Overall the VG was impressed with the management structures at the institute which it thought were appropriate and democratic, although the communication and transparency of the structures could helpfully be improved. The VG also had some concerns about apparent anomalies in institute policy for allocating funds, which meant that not all researchers had equal access to core funding or resources.

COLLABORATION

11. There was evidence from across the research portfolio at BI of good, effective and productive collaborations with a range of universities (eg externally-funded joint grants; joint publications). There was also institute-wide evidence of good collaboration with the Cambridge research community, with around 20% of all refereed publications being joint with another Cambridge-based author. At the time of the visit there were over 40 collaborative projects with Cambridge institutions, including university departments, as well as the Sanger Institute and the MRC Laboratory of Molecular Biology (LMB). The

VG also noted that all postgraduate students were registered with Cambridge University.

12. The VG noted that, although the director was chair of the Bioscience Network, a forum for BBSRC-sponsored institute directors, there were no formal, funded research collaborations with other BBSRC-sponsored institutes. Although BI science did not necessarily align directly with many other institutes, the VG identified potential opportunities for collaborative research, for example with the Institute of Food Research (IFR) on diet and health and with the Institute for Animal Health (IAH) on immunology.
13. The VG was pleased that the institute had initiated dialogue with other BBSRC-sponsored institutes about postgraduate training, making available information from the BI Studentships and Fellowships Training assessment. The VG felt that the institute should also consider developing closer links with other institutes in relation to sharing best practice in activities such as bioinformatics, platform technologies, science and society, and career development.

Recommendation 3

The VG recommended that, where appropriate, the institute form closer research links with other BBSRC-sponsored institutes, and share best practice with other institutes in bioinformatics, platform technologies, science and society, and career development.

14. There were many examples of good and effective links with overseas partners including participation and leadership in EU programmes. The institute's high international profile was clear from the number of visiting research workers who had visited BI. In the two years prior to this assessment, over 80 visiting scientists had spent a period of at least two weeks at the institute. There was less evidence of BI scientists spending time in other laboratories. In the same period three institute scientists had spent three months or more on sabbatical. However, the VG was pleased that the director strongly supported such activity and provided financial assistance for it.

Recommendation 4

The VG recommended that the director encourage more BI scientists to spend time in other laboratories in the UK and overseas, to enhance the international profile of the institute and to increase the skill base of its staff.

STRATEGIC RELEVANCE

15. Most of the research at BI was of clear relevance to the BBSRC Strategic Plan 2003-2008 priorities on the healthy organism and integrative biology. Aspects of the work at BI were directly relevant to key BBSRC goals including: to increase the understanding of normal development in animals and human systems; to increase understanding of the role of chromosome structure and epigenetics (including molecular level events) in gene expression; and to advance the understanding of normal brain function from genes to cells to

function and behaviour. The research, at the interface with the diseased state, was also relevant to other sponsors including the Medical Research Council (MRC) and the cancer charities. As the boundaries between research areas break down this would become more important.

16. The implementation of BI's effective knowledge transfer (KT) strategy via BBT appeared to be working well, providing underpinning science for the industrial biomedical sector, relevant to the BBSRC bioscience for industry priority which included the key goal to increase the understanding of secondary metabolism in animals as sources of new chemistry, pharmaceuticals and enzymes. The VG was impressed with the level of interaction with the wider biotech and medical industrial sector, directly relevant to the key BBSRC goal to promote collaborative funding mechanisms with industry, and encouraged the development of the important opportunities this provided.
17. The VG noted that BI science was making a long-term contribution to the public good through its potential to make a significant contribution to increasing the understanding of important human diseases and dysfunctions. Underpinning science at the molecular and cellular level in epigenetics, signalling, neuroscience and immunogenetics was contributing to increased understanding of key processes which underlie important events and dysfunctions therein, including: embryonic and later stage development; neurodegenerative diseases such as Alzheimer's and other brain dysfunctions; immunodeficiency, autoimmunity and tumour formation.

SCIENCE AND SOCIETY

18. The VG commended the excellent range of science and society activities coordinated by the impressive and professional Corporate Affairs team at the institute. BI engaged with a range of audiences, with an emphasis on schools and the local community. The institute used various tools for engagement, and recognised the need for two-way communication. The VG felt the institute's work with schools was particularly strong. The institute recognised the value of dialogue with target audiences and evaluation to tailor their activities, and had shown responsiveness to feedback. BI was well-positioned within its local community and this had undoubtedly resulted from a strong policy of engaging with and listening to local audiences. The institute recognised the value and necessity of engaging with a range of stakeholders and the VG felt above all that its efforts in this area should be commended.
19. The institute's website had recently been redesigned, and this was welcomed by the VG. The science 4all section, FAQs and feedback mechanisms were particularly commendable. Evidence of the institute's willingness to develop the site in response to feedback was already available from internal users, and the views of external audiences were actively being sought. The potential of the site as a means for maintaining a continuing dialogue with schools, including those who could use it for preparation and follow-up work in connection with a visit, was highlighted by the VG.

20. In order to achieve the objectives of an ambitious science and society strategy the institute relied on its scientists to undertake activities with public audiences. There were good processes and resources in place to ensure involvement of a wide range of staff from students to project leaders, and commendable programmes of training and support. Commitment to this area was shown from the top of the organisation, with some excellent role models for working with the media and with schools, provided by senior scientific staff. These factors meant that the VG shared the confidence of the Corporate Affairs team that the targets set could be achieved. However, at times the institute must have to prioritise, and the way in which this happened, and the criteria used, were not explicit. Current targeting of schools and the local community was understandable, but meant that other audiences might be neglected. The VG suggested that a strategic stakeholder analysis would inform the institute about all its stakeholders' needs, and would help the institute develop clear criteria for future prioritisation. Linking these to the desired outcomes for the institute as a whole, including the benefits to individual scientists and research groups, would also ensure that the science and society strategy was completely embedded within the institute's overall aims.
21. It was possible that developing and using the criteria as described above might alter the institute's balance between achieving local and national impact. The VG felt that many of the institute's approaches and activities could be used more widely to increase BI's national impact and to share best practice. Developing existing and new partnerships and working more regularly with national networks would help this process. These could include working more frequently with other BBSRC-sponsored institutes and the Swindon Office, developing existing partnerships, for example with the Science Media Centre, and working particularly through local and regional networks, where available, to share approaches to working with schools.
22. The institute engaged the public on a range of issues that raised societal interest and concern. Its approach to engagement about the use of animals in research was particularly commendable. The institute had managed, over the last 10-15 years to change the perception of the local community to its work. This had been achieved through a policy of engagement and openness, allowing activists to enter the site and view facilities, through engagement with groups by the director and many other members of staff and through clear and helpful information provided on their website. This positive and open approach had reaped great rewards for the institute. The success of this approach must be shared with other organisations, particularly at a time when some scientists are deterred from engaging with the public because of the perceived risks.
23. Overall, the VG felt that the institute's approach to the animals issue, its work with schools and with local community groups was extremely good. In the view of the VG the Corporate Affairs team's professional and enthusiastic leadership of the area, the scientists' commitment and admirable use of

available resources to maximise outputs and achieve targets should be congratulated.

Recommendation 5

The VG commended the ambitious Science and Society strategy of the institute, and felt that it would be helpful if the criteria for prioritisation within it were more explicit. A strategic stakeholder analysis would help implement this recommendation. As a leading national institute, BI must strike a balance between achieving local and national impact. In order to extend their national impact and to derive greater benefit from it, the institute should explore the development of new and existing partnerships in the science and society field. The strategic stakeholder analysis recommended above should help identify both the appropriate balance and key national partners.

KNOWLEDGE TRANSFER (KT)

24. The VG endorsed the key commendations and reservations in the KT report. The VG was particularly impressed with the proactive approach to developing a strong biotech sector on the Babraham site through Babraham Bioscience Technologies Ltd (BBT), the knowledge transfer company managing the commercial interface between the institute and its stakeholders. There was evidence of a good level of interaction between institute science and the biotech companies in the on-site Bioincubator, which was hosting over 20 companies employing 150 people. Ambitious plans were presented to increase capacity over the next few years, such that the number of staff would far exceed those employed by the institute. The VG also highlighted the role of the Babraham Bioconcepts programme, set up by BBT, to establish proof of principle developing from early intellectual property (IP), allowing BI scientists to maintain focus on innovative research relevant to the core mission of the institute.
25. The VG strongly supported the current arrangements for the ownership of BBT, a company limited by guarantee with all shares held by the institute. The VG was satisfied that there was a sufficiently strong 'firewall' between BBT and the institute with separate accounts and auditing. BBT was run as a company with no subsidy from BI, was currently generating a small cash surplus to the institute and covered patent and salary costs, which the institute would otherwise have had to meet from core funding. The intention was that BI staff would always have first call on facilities and technology that were also offered to companies in the Bioincubator. The VG felt that managing the potential conflicts of interests between the needs of the institute and an expanding private biotech sector would require careful business and risk management to ensure the institute's core activities were not adversely affected. In addition to competition for facilities the expanded site would create a more competitive employment market and the institute must develop a strategy, in particular, to retain key technological skills.

Recommendation 6

The VG endorsed the KT strategy at BI and particularly the role of BBT. However the VG thought it was essential that the expanding private biotech sector on the BI site

did not adversely affect core institute science, particularly in access to finite resources (facilities and staff). The current ownership arrangements of BBT should provide a measure of protection, but the VG recommended that this be coupled with careful business and risk management.

STUDENTSHIPS AND FELLOWSHIPS TRAINING (SFT)

26. The VG endorsed the main conclusions of the SFT report. It was noted that the institute had been rated at the highest level in all assessment categories and, based on informal meetings with students, it was clear to the VG that students were receiving high levels of support and training at BI. The VG was pleased that most of the minor recommendations had already been accepted by the institute. However the VG felt that the SFT panel should, in the light of the terms and conditions of studentship grants, reconsider the recommendation to deploy Doctoral Training Accounts (DTA) funds to three-year funded studentships to support students to prepare their theses after the final year of funding. The full report is at Annex 2.

BUSINESS PLANNING AND ORGANISATION

27. The Babraham Executive Committee (BEC) was responsible for the overall management of the institute. It had two sub-committees, the Science Policy Committee (SPOC), responsible for the implementation of science policy, and the Core Group, responsible for non-science activities such as finance, estates and administration. There were also a number of user groups charged with managing key facilities and resources (eg cell sorting; gene targeting; animal resources).
28. The BEC's primary role was the development of science strategy, specifically to: initiate or close research programmes; approve fellowship and grant applications; recruit new project leaders and make decisions on tenure; allocate funds for capital equipment and approve all budgets. BEC membership included the director, institute senior management, senior representatives from each research programme and chairs of most of the user groups.
29. SPOC's primary role was the delivery and implementation of science policy. The VG welcomed the project leader retreats organised by SPOC, which provided opportunities for project leaders to contribute to the debate on the science strategy for the institute. However, the exact role of SPOC in the allocation of funds and key resources such as animal space, to research programmes was not clear. It was suggested that SPOC might also become responsible for a formal assessment of each research programme at years 1 and 3 between VGs and implied that this would affect the distribution of CSG, although the precise mechanism for this was not clear. The director accepted

that SPOC's role in shaping financial and other resource allocations needed to be sharpened and made clearer.

Recommendation 7

The VG supported the director's intention to increase the role of SPOC in contributing to the allocation of funds and other resources between programmes and recommended that the processes through which this was to be accomplished be clearly defined and communicated to all staff.

30. Membership of SPOC included the scientists from BEC on a permanent basis and three additional scientists whose membership was for a fixed term, providing a turn-over of scientific membership. The VG was impressed by this innovative approach to SPOC membership, although the process through which individuals could join SPOC needed to be more transparent. Nevertheless the VG applauded the encouragement given to younger scientists to participate in and gain experience of management roles in the institute, as demonstrated further by the membership of other user groups.

Recommendation 8

The VG commended the rotational membership element of SPOC which was extending the number of staff with experience of senior management roles. However the VG recommended that there be more transparency in how membership was determined.

31. The VG commended the introduction of SYNERGY grants, managed through SPOC, through which project leaders, ideally from different programmes, could apply jointly for new projects. The aim was to fund pre-competitive work that would lay the foundations for longer-term grant funding. The VG noted five SYNERGY projects, each funding a postdoc and consumables from a total annual budget of £240K from the CSG. Projects were funded for between 1 and 3 years. Although this was a relatively new venture for the institute, it appeared to be an effective use of the CSG and was leading to further integration of research programmes at BI, in some cases resulting in follow-on grant funding. The VG felt it was important that the institute should closely monitor the outcomes of these SYNERGY grants as they become established.
32. Overall the VG was impressed by the strong and effective management of the BI research programme and the associated infrastructure. From informal discussions with staff and students it was clear that most researchers supported the current structures and the outcomes they produced. Most felt that they were adequately represented through their programme leaders, who sat on BEC and SPOC.
33. However, at times the VG had the impression that the management system was not always transparent and that communication between senior management and other, more junior, staff could be improved. For example, not all staff were clear about the remit of the various user committees: although this information was available on the intranet, this was not widely realised by staff.

Recommendation 9

The VG commended the strong and effective management structures in place at BI. For the most part, staff were satisfied with these arrangements and the outcomes they produced. The VG was concerned, however, that lines of communication between senior management and other, more junior, staff were not always clear and recommended that the institute increase the transparency of institute policy and operation of committees.

34. The VG was impressed with how effectively the user committees, responsible for the detailed management of key resources and facilities including the animal resources and platform technologies, operated. Although it was recognised that most facilities were stretched, BI was managing these resources effectively and, for the most part, fairly.
35. The VG strongly supported the plan to replace the small animal barrier unit (SABU) which was scheduled for completion in 2009, but was concerned about the estimated additional £1.2M annual running costs of the new facility. Part of these costs were to be met from the move to full economic costing on Research Council grants, and part from grant income the institute anticipated winning in future from the MRC and the Wellcome Trust. The transition costs of running both facilities in parallel were likely to be met from reserves.
36. As well as the increased costs of animal resources, the VG recognised that the institute would need to meet the on-going costs of all its platform technologies if it were to retain competitive advantage. Demand on all resources was also likely to increase as the expansion plans for the Bioincubator were rolled out. The VG felt that this would need careful operational management, prioritisation of resources and long-term financial planning (see also Recommendation 6).

Recommendation 10

The VG commended the institute for the effective management of key resources and facilities at the institute. As demand from BI and non-BI users was likely to increase the VG recommended that the institute ensure it had in place careful operational management and long-term financial planning to ensure these resources were developed in a sustainable way that did not impact on the core research activities of the institute.

37. The VG was impressed with the general mechanisms and procedures in place for the mentoring and career development of all post-doctoral staff at BI. The VG commended the institute's Career Progression Fellowship (CPF) scheme which provided a route for BI postdocs to develop independent research ahead of obtaining external funding for a project grant or fellowship. The institute's Senior Research Associate (SRA) scheme offered opportunities for a small number of postdocs who did not want to progress to a project leader role, but who could offer a high level of generic skills to the institute, for example in platform technologies. There was clearly close mentoring by BEC of externally-funded fellows, and the Postdoc Mentoring Panel provided independent support and career development advice.

38. The VG was concerned, however, by the level of research support provided to young investigators within BI (particularly David Philips Fellows and their equivalent), especially the consumables budgets and animal resources provided from the core grant. The VG noted with concern that the fellows were, in some cases, unable to obtain core funding for animal work, relying instead on their fellowship award to purchase these facilities: some fellows were cash-limited, and apparently not able fully to support their animal work. The VG felt that young investigators needed better support in this respect: not to do so was likely to be a serious hindrance to their research.
39. The VG was also concerned that 'tenure-track' staff were prevented from applying for research grants or studentships when there was less than two years of funding remaining. The VG understood that the institute wanted to avoid making commitments to staff beyond the period of the tenure, but felt that this was hampering the career development of these staff. The situation appeared to be aggravated by the BBSRC staff code conditions on redundancy. The institute wanted to avoid building up significant redundancy liabilities which would be incurred under the code if staff were kept on beyond the tenure period.

Recommendation 11

The VG was concerned about a number of apparent anomalies in the support provided to younger scientists, including access to core funding or resources for new fellows, and restrictions on 'tenure-track' staff in applying for research grants or studentships within two years of the end of their appointment. The latter in particular was felt to greatly hinder the development of young scientists at precisely the time when their research was likely to be at its most productive. The VG recommended that the institute review practices and processes in this respect to ensure that all staff received equitable levels of support, and put in place a mechanism that allows tenure-track staff to apply for grant support throughout the period of their appointment.

40. The VG was also disappointed that, in some programmes, the level of mentoring of young scientists appeared to vary in quality. For example, fellows did not always seem to be aware of the broader and longer-term possibilities of their research in physiological systems: this more strategic view should be provided by senior researchers within the institute. It was also important that mentoring and advice should be available from outside the researcher's own programme. The role of the Post Doc Mentoring Panel needed to be communicated clearly to all relevant staff.

Recommendation 12

Whilst satisfied that there were good mechanisms in place for mentoring of young scientists, the VG was concerned that the quality varied and recommended that the role of the Post Doc Mentoring Panel be widely promoted within the institute.

RESEARCH FOOTPRINT

Research footprint assessment summary					
	Number of programmes in each assessment category				
	High international	Inter-national	High national	National	Unsatisfactory
BBSRC-funded	4	2	2	1	

Programme rating

(all BBSRC-funded)

Assessment

Lymphocyte Signalling and Development Laboratory (LSD)	High international
Neuronal Development and Survival Laboratory (NDS)	High national
Cognitive and Behavioural Neuroscience Laboratory (CBN)	International
Developmental Genetics and Imprinting Laboratory (DGI)	High international
Molecular Signalling Laboratory (MS)	International
Inositide Laboratory (IL)	High international
Functional Immunogenetics Laboratory (FI)	High national
Protein Technologies Laboratory (PT)	National
Chromatin and Gene Expression Laboratory (CGE)	High international

ANNEX 1: VISITING GROUP MEMBERSHIP AND ACKNOWLEDGEMENTS

MEMBERSHIP

- i. The Babraham Institute (BI) was reviewed by a Visiting Group (VG) between 26 and 30 September 2005, The Group comprised:

Professor C Tickle (chair)	University of Dundee
Professor D Cantrell	University of Dundee
Dr G Dawson	Merck Sharp & Dohme Ltd
Professor J Endicott	University of Oxford
Professor J Engel	University of Michigan
Dr Mark Fidock	Pfizer Ltd
Dr M Ford	GlaxoSmithKline plc
Professor C French-Constant	University of Cambridge
Professor E Jones	University of Warwick
Dr L Lillien	University of Pittsburgh
Professor R Ohlsson	University of Uppsala
Professor O Petersen	University of Liverpool
Professor E Smythe	University of Sheffield
Professor G Vinson	Queen Mary College, University of London
Dr R Zamoyska	National Institute of Medical Research

- ii. The Group was joined by additional experts to review the institute's contributions to the Science and Society agenda:

Sir Roland Jackson	The British Association
Mr C H Johnson OBE	Independent

- iii. The following people attended from the BBSRC Office: Professor Julia Goodfellow; Professor Nigel Brown; Dr Doug Yarrow; Dr Bill Eason; Mr David McAlister; Ms Sophia Abassi; Mrs Carol Milner

ACKNOWLEDGEMENTS

- iv. The VG was most grateful for the welcome and hospitality extended by the director and staff of the institute, who had done much to contribute to the smooth-running of the visit. The VG also appreciated the considerable amount of background work that had been undertaken by the institute in preparation for the visit.

ANNEX 2: REPORT ON STUDENTSHIPS AND FELLOWSHIPS TRAINING ASSESSMENT

BIOTECHNOLOGY AND BIOLOGICAL SCIENCES RESEARCH COUNCIL

2005 INSTITUTE ASSESSMENT EXERCISE

STUDENTSHIPS AND FELLOWSHIPS TRAINING (SFT) ASSESSMENT

VISIT TO THE BABRAHAM INSTITUTE: 10 NOVEMBER 2004

INTRODUCTION

1. The Babraham Institute was visited by a BBSRC Studentships and Fellowships Training (SFT) assessment panel on 10 November 2004. The SFT assessment forms part of the Institute Assessment Exercise (IAE). The SFT panel comprised two members of the Committee on Studentships and Fellowships (CSF): Professor David Rice (University of Sheffield; chair) and Professor Mary Bownes (University of Edinburgh). The panel was accompanied by staff from BBSRC Swindon Office: Dr Ian Lyne (Head of Postgraduate Training and Fellowships) and Dr Bill Eason (Evaluation and Policy Unit).
2. The visit was informed by a background paper prepared by the Institute, which provided the basis for a meeting with senior Institute staff with designated responsibilities for postgraduate and postdoctoral training. The panel subsequently met with groups of postgraduate students and postdoctoral fellows from Babraham for an informal, free-ranging and confidential discussion about their experiences and expectations of the training provided by the Institute. In addition, the panel viewed examples of laboratory and office accommodation used by students and fellows at Babraham, together with some of the site's specialised facilities.
3. In assessing its provision of postgraduate training, the panel had regard to Babraham's effectiveness in meeting the requirements of the Joint Statement of the Research Councils Skills Training Requirements for Research Students (http://www.bbsrc.ac.uk/funding/training/skill_train_req.html) including:
 - Research skills and techniques
 - Research environment
 - Research management
 - Personal effectiveness
 - Communication skills
 - Networking and team working
 - Career management

In making their assessments the panel considered a range of factors which contribute to the delivery of the requirements set out above, including the environment and facilities; links with universities; supervisory practice; generic training and pastoral care and the student community.

4. The panel provided an overall assessment in three key areas:
 - provision of research-based training
 - provision of generic, non research-based training
 - the quality of the training environment
5. Each aspect was assigned to one of three broad categories
 - (i) good
 - (ii) adequate
 - (iii) unsatisfactory

PROVISION OF RESEARCH-BASED TRAINING

Overall rating: Good

6. The panel noted that the Babraham Institute was widely recognised as a leading centre for biomedical research. Research was focused on the biological events associated with genetic, developmental and signalling events in normal and abnormal cell function. Babraham used the latest technology to study conditions such as cancer, neurodegenerative disease and foetal abnormality. On-site was the associated Babraham Bioscience Technologies Ltd (BBT) BioIncubator housing over 20 companies. Students benefited from the Institute's geographical proximity to a number of key organisations including Addenbrooke's Hospital, the MRC Laboratory of Molecular Biology, the Sanger Institute Wellcome Trust Genome Campus as well as the University of Cambridge.
7. At the time of the visit, there were approximately 60 students at Babraham. Of the 19 students in the 2004 intake, most were funded by Research Councils (10 by BBSRC and 5 by MRC). One student (due to start in January 2005) was to be funded through a Dorothy Hodgkin Postgraduate Award and one by the Gates Cambridge Trust. Two further students had transferred from other universities. Of the BBSRC studentships six were part of the Babraham Research Quota, two were Quota CASE and two were Research Committees studentships.
8. Institute senior management indicated that Babraham had the status of a recognised postgraduate institution within the University of Cambridge. All students had joined a College at the University and were registered with the Faculty of Biology, with Babraham staff recognised as University supervisors and the director as the equivalent of a Head of Department. Babraham students made up 6% of the total postgraduate population within the Faculty. The Institute had full representation on the supervising committee of the Graduate School of Biological, Medical and Veterinary Sciences. The Graduate School

coordinated and provided training, networking and career support for all postgraduate students in the biological sciences registered with the University. Babraham followed the postgraduate training and supervision guidelines of the Graduate School. As Babraham had already been running a well-established Graduate Programme, it had been proactive in the development of the Graduate School and its associated policy. The Institute had an agreement with the University whereby it received 50% of the university fees (approximately £1000 per student per year), but did not receive any of the associated HEFCE funding. In the view of the panel it was clear that Babraham's relationship with the University was critical to its Graduate Programme strategy and that it was benefiting considerably from the relationship in addition to the receipt of fees. Although students cited project choice as the main reason for applying for a studentship at Babraham, most were also clear that there was added value by registering for a degree at the University of Cambridge.

9. The panel considered that the presentation made by the Graduate Studies Tutor was excellent. The Graduate Programme at Babraham was managed by the Graduate Committee (GC), was chaired by the Graduate Studies Tutor and included 5-6 Project Leaders covering key areas of the research programme. In addition, senior management was represented by the Head of Personnel, the Head of Corporate Affairs and a senior member of the Commercial Affairs Office. The four student representatives on the GC were full members with voting rights except in relation to individual student matters when the GC was limited to Babraham staff. The GC was responsible for:
 - all operational and policy matters, including student recruitment, training, supervision, assessment and pastoral care;
 - (with the Institute Personnel section) the development and implementation of the training programme;
 - managing the relationship with the University.
10. The panel was impressed by the clear and strong management structures in place; it felt that the GC was not only committed to ensuring that all aspects of the Graduate Programme were working effectively at an operational level, but also that regard was given to further development of both operation and policy. The panel was also impressed by the importance attached to the GC, made clear by its wide-ranging remit, the commitment of senior Institute staff to monthly meetings and clear lines for student representation. Robust safeguards were in place regarding student project selection, with equally robust mechanisms should problems subsequently arise.
11. Recruitment procedures were managed by the GC. Every January potential students were invited for laboratory tours and interviews. Data tabled during the visit by Institute senior management indicated that studentships were strongly oversubscribed each year. The GC selected the best students and then matched students to the most appropriate projects. Students reported that every effort was made by the Institute to match them to a suitable project. The panel was impressed by the quality of the students at Babraham. It was reported by Institute senior management that around 60% had a 1st class degree from

leading UK universities. Significantly, in the view of the panel, it was also reported that 70% had some previous industrial and/or laboratory experience. In the view of the panel, effective selection procedures were clearly contributing to highly motivated and capable students, resulting in submission rates (typically 80-85%), reported by Institute senior management, that were above the average for the University of Cambridge in the Faculty of Biology.

12. Students were located in one of ten Laboratories at Babraham. Each Laboratory consisted of a group of Project Leaders. Supervisors had to be a Project Leader. All new supervisors and those new to Babraham had to attend a University Supervising Symposium. No Project Leader could have more than three students at any one time. Although there was no mandatory training for existing supervisors, the panel was satisfied by the role of the GC, which had the authority to decline a studentship if they felt the quality of supervision would not meet required standards.
13. Each student had a Personal Committee, comprising: a supervisor responsible for the day to day supervision; a mentor, usually from the same Laboratory, who had a good understanding of the project; and an assessor, from a different Laboratory, to provide an independent input to the review process. Students reported that they had a clear understanding of the roles of, and confidence in, each member of their Personal Committee. Mentors were often postdocs in the same Laboratory and were particularly helpful in the first few months. They also provided a sounding board to discuss the student's work. Students reported that the assessors provided a different perspective to their work and were particularly useful in a critical examination of their progress at key reporting stages (see section 14). Students also reported that they would approach the Graduate Studies Tutor and/or other members of the Graduate Committee if they felt that any issues could not be dealt with by their Personal Committee. The panel was satisfied that the Personal Committee represented a sound model for student supervision and mentoring. It was clear it had the full support and confidence of the students.
14. Students had to produce an introductory feasibility report after 2 months. This identified the main hypothesis-led strategies the student would follow in their studies. At 8 months an upgrading report was required before the student could be registered for a PhD. At 24 months students produced a thesis plan, with further formal reviews at 30 and 36 months, by which time all laboratory work was expected to be finished and thesis writing completed or well under way. For four-year studentships all laboratory work was expected to be completed at 42 months, with thesis completion by 48 months. All reports had to be approved by the GC. Other aspects of assessment recently introduced by the GC included termly self-assessments completed by supervisors and students, intended to flag up problems as soon as possible; an annual survey of student seminars, attendance at meetings, prizes awarded, etc; and exit interviews to get feedback to improve the Graduate Programme. All assessments were recorded in student files. In addition a record was made (and signed by student and supervisor) of all progress meetings, in an individual personal progress log (PPL).

15. Research skills training was mainly undertaken in the Laboratory where the student was based, but students also gained new skills by working in other Laboratories on site (and in some cases at other sites where there was a joint project). The Institute ran workshops on core facilities (e.g. fluorescent activated cell sorting) and techniques (e.g. experimental embryology) some of which were organised by Senior Research Associates (SRA). The SRA scheme provided an alternative career route for postdocs who did not want to become independent group leaders or senior fellows. It was clear to the panel that students were receiving excellent levels of research skills training and support from the Institute. It singled out in particular the innovative use of SRA staff to provide advanced training for all staff and students in the use of key facilities.
16. In their first year students had to present a seminar to their Laboratory and present a poster on the Institute Student Poster Day. A further seminar was reviewed by the GC, and in their final year all students had to give a seminar to the whole Institute. In addition, students gave seminars on a more frequent basis at Journal Clubs and at Laboratory meetings. Students reported that they were funded to participate in at least one international conference and were encouraged to apply for funds to attend more. This was all recorded in the PPL. Babraham also ran a weekly seminar series with external speakers and in-house seminars almost daily. Students had access to seminar programmes at the University and other nearby organisations. Students were clearly well motivated to attend seminars, and they always attended seminars of other students. Student ability in communicating science was also formally recognised in the new Credits for Transferable Skills Training (see section 22). It was clear to the panel that most students were taking full advantage of the scientific opportunities offered at the Institute and further afield. The panel endorsed the recognition of science communication in the new Credits systems.
17. Babraham had introduced four-year studentships for all eligible BBSRC funded students for the 2004 intake. The Institute had modified its assessment schedules accordingly (see section 14). Institute senior management made it clear they would like to see more students funded for four-year periods, but they were concerned about the different models of student funding that were being developed. Other BBSRC studentships and all MRC studentships were still only funded for three years. Most students reported that they were not able to complete their studies within three years, with particular difficulties where projects involved transgenic animals. Students welcomed the idea of funding beyond three years. At the time of the visit students reported considerable financial hardship when writing up. Students also expressed concern about the possible tensions that would arise by mixing three and four-year studentships in a single cohort year. The panel was sympathetic to these potential problems and felt that the Doctoral Training Account (DTA) should be used for additional funding of three-year studentships to facilitate writing up.
18. Postdoctoral training and career development strategy was outlined in a separate presentation to the panel. Institute senior management reported that there were around 100 postdoctoral researchers at Babraham, including nine

senior fellows. The panel met seven senior Fellows and three Career Progression Fellows (see section 20) during the visit.

19. Since 2000 Babraham had been host to 16 senior Fellowships (six BBSRC David Phillips Fellowships; five MRC Senior non-clinical Fellowships; three MRC Career Development Awards; a Cancer Research UK Senior Fellowship and a Senior National Kidney Research Fund Fellowship). All fellows new to Babraham had access to a range of over 30 training courses, some of which were compulsory for all new entrants (e.g. induction training, team working, equal opportunities, harassment awareness). Parts of the training programme were also compulsory, but previous training or experience could allow exemption (e.g. technical writing, computing); remaining components were optional. Fellows cited the excellent research environment as one the main reasons for choosing to work at Babraham. This included access to fully supported facilities including those supported by the SRA scheme (see section 15).
20. Two of the senior fellows at Babraham had benefited from the Career Progression Fellowship scheme run by the Institute. The CPF scheme was intended to act as a bridge assisting postdocs at Babraham early in their career including the move towards obtaining either a senior fellowship or project leader status. Current and previous CPFs, seen by the panel, were very supportive of the scheme. It had provided them with an opportunity to begin independent research and provided the necessary boost for progression to either a senior fellowship or Project Leader.

PROVISION OF GENERIC, NON RESEARCH-BASED TRAINING

Overall Rating: Good

21. Generic skills training requirements were clearly set out in the PPL. Most course-based training was carried out at the Institute rather than the University. The student cohort was of a sufficient critical mass to make this feasible and time-efficient. Most courses were run by Babraham staff. Some courses were also run by the BBSRC (e.g. technical writing). Students reported that they could attend courses run at the University if these fitted in better with other activities. All training was monitored and had to be signed off by the supervisor, and was recorded in the PPL. Non-attendance was penalised: the student's laboratory had to pay the attendance fee if the student did not attend. Compulsory and optional training elements were clearly set out and students understood what was expected of them. The panel was impressed by the training content. Induction training included ethics, intellectual property and science in a commercial environment. In year 2 students had to attend training on research management including grant preparation. Students reported that the courses were generally of a good quality. BBSRC-run courses on Technical Writing and Presentation Skills were singled out for praise by students. Students had made suggestions about adjustment of timings of certain courses and had made a request for more statistics training, both of which had been acted upon by the GC. The panel was satisfied that the generic

skills training programme at Babraham was closely aligned to the needs set out in the Research Councils Skills Training Requirements for Research Students. The training was very well managed, clearly set out, and understood by students. There were good levels of student feedback and evidence that this had been acted upon. In the view of the panel the Institute was to be congratulated on the very professional way it organised its training programme.

22. The Institute had recently introduced new Credits for Transferable Skills Training in association with the Faculty of Biology at the University of Cambridge, and these were also clearly shown in the PPL. Students were expected to accumulate a minimum of 60 credits, equivalent to 10 days training each year. Although most credits were awarded for course-based training, a significant element was made up of credits awarded for skills development achieved through experience including seminars, journal clubs, poster presentations, attendance at conferences, demonstrations, committee membership, schools days and other science outreach activities. Each type of activity had an agreed credit rating attached to it, approved by the Faculty to ensure consistency. In addition credits were awarded for the preparation of key progress reports (see section 14). There were compulsory elements in the training in both course-based and experience-based elements, with mechanisms in place to prevent any abuse of the system (for example credits for seminar attendance were capped). The panel was thoroughly impressed by this approach, which rewarded students who had obtained a well-rounded training through both formal course-based study and through experience. It represented a model of best practice from which others could learn.
23. Of the students the panel saw, about 25% reported attendance at a UK GRAD School. Students spoke favourably about the courses and had encouraged others to go. Some were, however, concerned about the time involved. Though attendance levels reported by the students reflected the average for most UK universities, the panel recommended that the Graduate Committee place a stronger emphasis on attendance, with the expectation that all students would attend.
24. Students reported that they could obtain excellent careers advice from the University careers service, including a number of different advisors specialising in different fields. Students were able to subscribe to an email service on available jobs. Formal courses on interview skills and preparation of a CV were also available, and students reported that they were able to discuss career options with their Personal Committee.
25. All but one of the students seen by the panel felt they wanted to continue with a research career. The first destination data supplied by the Institute showed that most went on to postdoc positions although almost a third went to work in industry. Students at the Institute benefited from the presence of the BBT Bioincubator on site. This housed over 20 companies employing some 150 staff, many of whom interacted with students and fellows on a daily basis through the use of shared core facilities at Babraham. Many students arrived with some industrial experience (see section 11). Some returned to industry,

including a small number who went to work for one of the companies in the Bioincubator. Students were also encouraged to participate in the Biotechnology YES competition run by the BBSRC.

26. Fellows had access to a confidential Postdoc Mentoring Panel which provided confidential careers advice, independent of their associated Laboratory. The Babraham intranet provided information on jobs and training and development courses.
27. The Postdoc Committee, established in 2000, comprised eight postdoctoral and four senior staff. It met twice a year and was the forum for discussion of all matters relating to the postdoctoral community, including fellows. This included input on career development issues. The Babraham Postdoctoral Conference Travel Fund, run by the Postdoc Committee, was open to all fellows and was an Institute-sponsored competitive source of funding to enable participation at international conferences.

THE QUALITY OF THE TRAINING ENVIRONMENT

Overall Rating: Good

28. All students and fellows had access to minimum levels of laboratory and desk space. No problems of access to scientific equipment or facilities were reported. Core facilities (e.g. FACS, mass spectrometry) were available to all staff and students.
29. Students raised some concerns about the number of available computers. This appeared to vary significantly between Laboratories. Recent GC minutes seen by the panel, stated that the aim was to allocate one computer to each final year student. Students in other years would have, as a minimum, one computer between two. There were also a number of multi-user points where computers were available to all staff and students (the library, the Forum and the Computer section), although students reported that these were not always available (in the case of the Computer section), or were not apparently well maintained (in the case of the Forum). Institute senior management reported plans for an expanded multi-user facility in the library for 2006. In addition, students were able to bring their own computers on-site and have them maintained by the Institute. However in a document (Comments from the 2001 Institute Assessment Exercise on Studentships) tabled by the Institute, the panel noted that the previous assessment of training in 2001 had raised similar concerns about the availability of computers. The panel felt that insufficient progress had been made in the intervening period. Given the current need to share computers, the panel recommended that the Institute should ensure that quality and quantity of multi-user points was maintained. However the panel felt that each student should have access to a designated Institute-supplied computer.
30. Students had access to excellent library facilities, which included networked computers. The Institute planned to move to an e-only journal system in 2006.

31. The Forum was a central meeting point with tea or coffee available. It clearly encouraged people from different Laboratories to meet, and provided a further venue for students and fellows to discuss their research ideas with a wide selection of people.
32. All staff and students had access to a recently refurbished refectory, which served meals at subsidised prices. Students, however, raised issues of provision of cooked food out of hours. Many students needed to work during the evenings and weekends and they understood this to be a consequence of the nature of the work, but complained about the lack of provision of on-site facilities out of hours, aggravated by the lack of suitable local facilities. The panel recommended that a high priority be given to student requests to overcome the practical problems associated with out of hours working.
33. The panel was impressed by the strong sense of identity among the Babraham students. They clearly formed a strong community within the Institute, and students were very supportive of each other. Students had their own web site and organised regular sports and social events. Although students spent most of their time at the Institute, they could also benefit from their College community, which gave them access to additional events and activities.

GENERAL COMMENTS

34. Students and Fellows were well served by the Babraham Institute, which provided an excellent intellectual and physical environment for training and research. This included access to excellent facilities and equipment. Students and Fellows benefited from the Institute's association with the cluster of biomedical research organisations around Cambridge and from the links with the University. The Babraham Institute, recognised as part of the Faculty of Biology, also contributed significantly to the overall quality of the University's postgraduate population, as evidenced by their above-average submission rates.
35. The Graduate Programme at Babraham, in the view of the panel, represented a model of best practice for postgraduate student training from which other BBSRC institutes and the HE sector could learn. The panel was impressed by the clear and strong management provided by the Graduate Committee, which was maintaining the highest possible standards in almost every aspect of the Graduate Programme, from initial recruitment through to supervision, assessment, and training. The Graduate Committee had applied fresh and creative thinking in a number of areas, which was helping to keep the Graduate Programme at Babraham ahead of competitors.
36. The panel was particularly impressed by the recently introduced training Credit system, which had been developed in conjunction with the Faculty. By allocating Credits in a controlled way for experience-based training activities, such as committee membership and the communication of science, students were being encouraged to take a broad range of training. Individuals were

developing high levels of transferable skills that would serve them well, whether or not they chose to pursue scientific research as a career.

37. The panel was very impressed by Babraham's approach to the training of fellows. Babraham had attracted and retained a significant number of senior fellows, which was further contributing to the vibrancy of the research environment. The Senior Research Associate (SRA) and Career Progression Fellowship (CPF) schemes were contributing to an excellent and supportive training and research environment and to the recruitment and retention of fellows at the Institute respectively.

SUMMARY OF RECOMMENDATIONS

Recommendation 1

Students expressed concern about the possible tensions that would arise by mixing three and four-year studentships in a single cohort year. The panel was sympathetic to these potential problems and felt that the DTA should be used for additional funding of three-year studentships to facilitate writing up.

Recommendation 2

Though attendance levels by students at a UK GRAD School reflected the average for most UK universities, the panel recommended that the Graduate Committee should place a stronger emphasis on attendance, with the expectation that all students would attend.

Recommendation 3

The panel was disappointed with the provision of computing facilities, particularly given the comments of the previous training assessment. Given the current need to share computers, the panel recommended that the Institute should ensure that quality and quantity of multi-user points was maintained. The panel felt however, that each student should have access to a designated Institute-supplied computer.

Recommendation 4

The panel recommended that a high priority should be given to student requests to overcome the practical problems associated with out of hours working.

The following documents were tabled at the meeting:

Graduate Programme: Introduction

Graduate Studies Programme: Training needs analysis form

Graduate Studies Programme: Student-College-Tutor

Graduate Studies Programme: Students-Exit Interviews

Graduate Studies Programme: Graduate Education Committee for the School of Biological Sciences (Minutes)

Graduate Studies Programme: Graduate Committee Minutes (April-October 2004)

Graduate Studies Programme: Self Assessment Exercise (Students/Supervisors)

Graduate Studies Programme: Examples of Student Files

Graduate Studies Programme: Supervisor's Training

Examples of Personal Progress Log

Comments from the 2001 Institute Assessment Exercise on Studentships
List of new initiatives taken since the last Visiting Group
Recruitment/Open Day pack including schedules
Induction pack
Reference Guide for PhD Students
Guidelines for Graduate Student Supervisors
Graduate Training and Development brochure
Statistics on student training for compulsory and optional Courses
Blank Exit Interview form for students
Information on students and submission rates since 2000 (in addition to OPI data)
List of student publications (1994 intake to 2002 intake)

Postdoctoral Training and Career Development: Introduction
Postdoctoral Programme Committee (Remit and recent minutes)
Postdoctoral Conference Travel Fund
Webpage: Postdoc Mentoring Panel
Webpage: Career Progression
Webpage: Sports and Social Club
List of recent new training initiatives with particular relevance for postdocs
Training and development for postdoctoral and fellowship positions
Postdoctoral research careers at the Babraham Institute from January 2004
List of fellowships (both employees and visiting scientists) since 2000
History of Career Progression Fellows and Senior Research Associates
Advanced Research Training scheme
Induction pack
Postdoc Training and Development
Statistics on Postdoc and Fellows training for compulsory and optional courses since 1998
First destination data from Postdocs since 2000
First destination data for Fellows since 2000

