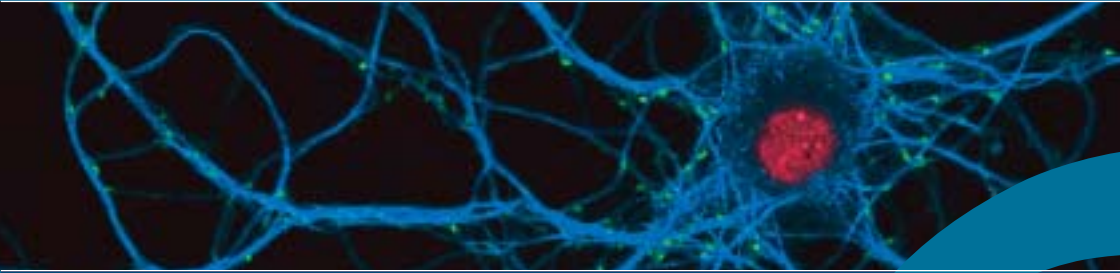


Corporate Plan 2005 - 2010



Published by The Babraham Institute and Babraham Bioscience Technologies (BBT) Ltd.

The Institute undertakes research and training in the mechanisms of cell communication and gene regulation which underlie normal cellular processes and functions, and on how their failure or abnormality may lead to human disease.

It is a company limited by guarantee, registered in England and Wales No. 3011737 and a registered charity in England and Wales No. 1053902. The trading arm of the Institute, a wholly owned subsidiary, is Babraham Bioscience Technologies (BBT) Ltd, registered in England and Wales No. 3241492. Together, the Institute and BBT comprise the Babraham Group.

The Institute is sponsored by the Biotechnology and Biological Sciences Research Council.

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Director's introduction

The Corporate Plan for 2005–2010 is an important document written within a novel context for both the Institute and Babraham Bioscience Technologies Ltd (BBT).

The context is novel because a decade of revolutionary change has come to an end and the Babraham Group faces the major challenge of building from a position of considerable success. I shall explain why I take this view.

Today, mid 2005, the Institute has a very strong reputation for its research and our success can be quantified. For example our success rate for applications for research grants from the BBSRC places us in the top five Institutions in the UK: we are more than twice as successful as the average UK institute or university. The citation rate for our published papers for the period 2001 to 2004 is exceptionally good: amongst UK universities only Dundee and Oxford have marginally better figures. Our Graduate Programme was externally assessed in 2004 and described as 'a model of best practice for postgraduate student training from which other BBSRC institutes and the Higher Education sector could learn'. We are able to recruit excellent new science leaders whilst retaining the best of our 'home grown' team. The research at the Institute is well known and well recognised: Babraham has developed a strong reputation for quality science.

The Babraham Research Campus is an attractive location: attractive both because of the physical environment and the quality of professional life. BBT took a visionary decision to borrow money and build a new Bioincubator during the recent period of recession in the biotechnology sector. With empty buildings around Cambridge voices in corners expressed doubt about our wisdom. The building was completed in February 2005 and by July was 75% full. People and companies want to come to Babraham: we have developed a strong reputation for our contribution to the development of biotechnology.

All of this is, of course, remarkably positive. But the fact remains that it can be said that 'the easy part is done but the next stage will be much more difficult.' What is the next stage?

The 'next stage' is described in this Corporate Plan. There needs to be consolidation and strengthening without any hint of complacency: there must be robust sustainability of our science, of our people, of our equipment and of our estate. Most importantly of all, there must be robust sustainability of our financial planning for without cash little can be achieved. This text hitherto can

be read as a desire to maintain the *status quo*. There is necessarily some truth in that but only as part of a process to build a platform to move the Babraham Group (Institute and BBT) forward. Good though some of our achievements are they can be bettered. For the research this is likely to involve identification of a very big scientific question where Babraham scientists can now take international leadership. This is achievable. Our research has opened up opportunities but true international leadership will need reassessment of our usual scale and scope of project work. BBT, through Bioconcepts, has attracted much acclaim for its company formation strategy. These companies need to succeed and this will require inward investment on a scale not seen here before.

All in the Babraham Group share the objective of building on our successes to achieve greater standing in our user communities. This Plan will help guide us to this objective.

Finally, I have written much of this text in the first person plural. However, I retire from Babraham at the end of 2005 after more than a decade as the Institute's Director and Chief Executive. It has been a huge privilege to have had this position and to work with so many very able and supportive colleagues: there have been challenges and difficulties but my over-riding emotion is one of happiness. I offer my successor every best wish in the confidence that the team of more than 300 that has supported me so well will support him in equal measure.



Key business objectives for the Babraham Group*

To achieve:

- **Excellent international standard science, within the Institute's remit.**

- International leadership
- Synergistic research
- Collaborative partnerships
- Graduate and postdoctoral training programmes

- **Excellent and fit-for-purpose infrastructure for science.**

- Technical
- Animals
- Corporate

- **A high standard of Corporate Social Responsibility and public reputation.**

- Values and impact of our research
- Community partnerships
- Environmental impact of the Campus
- Science and Society programme

- **An internationally recognised contribution to the Eastern Region and UK's economic competitiveness.**

- Inward investment to the Babraham Research Campus
- Commercialisation and wealth creation
- Partnerships and knowledge flow

- **Robust sustainability**

- Financial planning
- Estate strategy

- **Efficient and effective management**

- Operations
- People

- **A high standard of Corporate Governance**

- Risk control and contingency planning
- Regulatory
- Boards and committees; executive decision-making structure and authorities

Institute Mission Statement

- To be one of the world's pre-eminent life science innovative research institutions through internationally competitive science in basic cell and molecular biology.
- To serve society through science by directing discoveries to the improvement of the quality of life and through communicating the significance of our findings to the public.
- To enjoy a reputation for successfully translating good science into good business opportunities through partnerships for wealth creation.
- To provide a unique and highly successful environment at Babraham as the leading campus in the Cambridge Cluster for bioscience start-up and developing companies.

Institute Remit

- The Babraham Institute is an independent charitable life sciences Institute, sponsored by the BBSRC, carrying out world-leading innovative research and advanced training with relevance to the biomedical, biotechnological, pharmaceutical and healthcare research and user communities.
- The Institute's research focuses on the mechanisms of cell signalling and gene regulation which underlie normal cellular processes and functions, and on how their failure or abnormality may lead to disease.
- The knowledge we gain is made publicly available and the Institute actively seeks partnership with relevant companies and with clinical researchers to ensure effective application of its research. The Institute runs a Bioincubator providing full business, scientific and technical mentoring to help biotechnology start-up companies be successful.
- As part of the UK Science Base, the Institute contributes to the wealth creation, quality of life and public understanding of science objectives of Government.

* The Babraham Institute and its wholly owned trading subsidiary Babraham Bioscience Technologies Ltd. are together known as Babraham Group.

Strengths, Weaknesses, Opportunities, Threats: July 2005

Strengths

- The BBSRC fully supports the Health and Life Sciences focus of the Institute.
- Babraham retains a good international reputation for scientific excellence.
- Babraham has recently recruited a strong cohort of young project leaders; over a quarter of the total number of project leaders are in receipt of prestigious externally competitive personal Fellowships.
- Recent focussing of the Babraham science programmes has improved the concentration of resources, enhancing the attractiveness of the programmes to potential recruits but retaining important multidisciplinary.
- All the Institute's work is now closely focussed on the biotech/biomedical user base.
- The Institute has excellent support services and technical facilities boosted by recent high spend on capital equipment.
- A substantial portion of the Institute's income is guaranteed from the BBSRC in the medium term.
- Whilst further investment is needed, almost all Institute scientists are housed in new or renovated laboratory space.
- Babraham now has a viable and successful Bioincubator – the most active bioincubator in the UK. The companies' activities synergise with the Institute's science.
- Babraham has obtained a second award from the East of England Development Agency to support the activities of its Knowledge Transfer (KT) out-reach activities and the BioConcepts technology accelerator.
- BBSRC's guarantee of the Bank of Scotland loan to BBT for the first BioDevelopment Building, has enabled BBT to complete construction of the building and 'Minerva' was handed over to BBT in December 2004. The first tenants move in during September 2005.
- Babraham has strong regional and high national profiles, and growing international profile for its Bioincubator and Babraham Research Campus activities, which will further enhance the commercial potential of the Babraham Campus.

Weaknesses

- Due to intense local competition and near zero unemployment Babraham sometimes experiences difficulties recruiting/retaining a full complement of good staff in selected support functions. The Institute therefore needs to continually review and revise employment packages and training programmes to improve both recruitment and retention.

- A significant proportion of the Institute's funding comes from medical charities who do not pay overheads, which increases the pressure on both the BBSRC's competitive strategic grant (CSG) and other forms of funding that will pay overheads. This is particularly pertinent with the imminent move by the Research Councils to FEC (Full Economic Costing) funding and implementation of the sustainability agenda.
- Most of the CSG is locked up in salaries, with limited scope for reduction in CSG-funded headcount due to the increase in contractual redundancy liability following on from the new regulations governing fixed term contracts.

Opportunities

- The Laboratories are creating many scientific opportunities upon which to build.
- Babraham has just recruited a further four project leaders and in addition three recent graduates of our Career Progression Fellowship scheme have been promoted to Project Leader status after gaining external senior Fellowships.
- A new agreement has been reached with the Wellcome Trust to allow Babraham staff to apply to the Trust from 1st October 2005. Similar agreements are being negotiated which will expand the range of organisations to which Babraham staff may apply.
- Completion of the human and mouse genome sequences, and shortly thereafter that of the rat, together with strengthening of our bioinformatics section and transgenic facilities, will greatly improve opportunities and services to Babraham scientists in this important area.
- The commercial development of the Babraham Research Campus should help BBT generate significant income providing the opportunity for continued and more substantial investment in campus infrastructure.
- Having completed the first Biodevelopment Building, Minerva (B250), Babraham is able to demonstrate credibility to potential customers and stakeholders, and its delivery on time and under budget adds to that credibility. In addition to signed-up tenants there is substantial interest in the remaining space.
- BBT can use the innovation framework it has created through the Bioincubator, BioConcepts and the commercial development of the Babraham Research Campus to facilitate an increasing role in the regional development agenda, so increasing its profile in the public and private sectors.
- Building on BioConcepts through establishing a spin-off venture to attract equity funding will allow BBT to expand its technology translation role both for Babraham Institute and external biotechnologies.

- The MRC is planning to expand its facilities on the Campus, further strengthening existing links with the MRC's Laboratory of Molecular Biology.
- The Institute's Estate Strategy promises world-class facilities for Babraham science.
- The new FEC model for grant funding will enable the Institute to achieve a more robust sustainability, although the transition period must be managed carefully to ensure that we do not lose research volume due to meeting other commitments for estates or implementing the fixed term directive.

Threats

- The new young project leaders are at the start of their international science careers: in a competitive market Babraham must remain the best place for them to do their science and ensure terms and conditions of employment meet reasonable aspirations.
- The recent tough funding climate for biotech/pharma makes securing successful CASE and LINK partnerships difficult.
- The anticipated cost of implementing the fixed-term directive will reach the mid-six-figure range shortly which creates a significant financial pressure, although we have been able to plan to meet this challenge.
- Whilst accepting that excellent science needs good facilities, the targets for expenditure are financially challenging in the transition period to FEC funding on grants.
- Inflation for scientific journals and science equipment outstrips normal retail price index inflation under which public sector and charity monies are disbursed. The nature of current journal subscriptions contracts is highly unsatisfactory.



Scientific strategy

Focus and international contribution

The overall science focus for the Babraham Institute is cutting edge research in molecular cell biology in the genetic model organism the mouse, with relevance to (and potential applications in) biomedicine and the pharmaceutical and biotech industries. This places Babraham science in the centre of the key BBSRC objective, the Healthy Organism, and contributes strongly to its sister objective on Integrative Biology.

The current areas of science that are particularly strong at Babraham are Cell Communication and Signalling and Epigenetics, which are key priority areas for the BBSRC. Particular strengths at Babraham include imprinting [Nature (2004) **432**, 53; Nature Genetics (2004) **36**, 818; Nature Genetics (2004) **36**, 889; Nature Genetics (2004) **36**, 894; Nature Genetics (2004) **36**, 1291; Nature Genetics (2005) **37**, 625], epigenetic reprogramming [Nature (2003) **423**, 390], chromatin remodelling and intranuclear dynamics [Nature Genetics (2004) **36**, 1065; Nature Immunology (2004) **5**, 630] inositolide signalling [Current Biology (2004) **14**, 1380; Current Opinion in Pharmacology (2005) **5**, 357; Current Biology (2005) **15**, 566] signalling and development in lymphocytes [Immunity (2003) **18**, 777; Cancer

also plans to increase the links between signalling and epigenetics through new initiatives in the general area of signalling to chromatin. Larger teams of researchers, led by Babraham, are beginning to collaborate in a 'systems biology' type of approach in three areas: a systematic approach to map all dynamic interactions of genes in the mammalian nucleus (Fraser *et al.*); deciphering the PI3K code in the immune system (Stephens *et al.*); and integrative physiology of imprinted genes (Kelsey *et al.*). These approaches are described in more detail below, under Collaborative Scientific Partnerships. Further details of our science are available via our website (www.babraham.ac.uk) or our Scientific Review series of publications (contact the Corporate Affairs office for a copy of the latest edition).

Science Leadership and Assessment at Babraham

The overall science direction of the Babraham Institute is determined by the Babraham Executive Committee (BEC). The key instruments for its implementation are firstly recruitment of new project leaders, which are decided upon by subcommittees of BEC and SPOC (Science Policy Committee); secondly the allocation of resources by the Director to scientists – both appointments



Cell (2004) **5**, 37], and the role of calcium in cellular processes [EMBO Journal (2004) **23**, 312; Cell (2005) **120**, 4; Nature Neuroscience (2005) **8**, 730]. These areas of work underpin a significant platform of themes identified by BBSRC Research Committees, including the integration of cellular responses (BCB), integrative animal physiology (AS), neuroscience and behaviour (AS), fundamental studies of gene regulation, expression and action (GDB), and stem cells (GDB). We intend that current work outside these areas will move increasingly towards signalling/epigenetics and become incorporated in established or new programmes. The Institute

and capital or consumables funding; and thirdly by decisions to invest substantially in capital equipment or buildings to enable a new area of research or technology to be established.

The fundamental strategic unit of research at Babraham is the Laboratory, of which (from 2006) there are nine, each of which is comprised of two or more Project Leaders, who have complementary approaches to address a common set of biological questions, and share resources, techniques, and skills. Each Head of Laboratory is charged with leading and co-ordinating a cohesive programme of research that contributes importantly to the mission of the Institute and to participate fully in this programme. It is expected

Summary of Objectives

- To deliver against the objectives set by the Laboratories for their future scientific plans.
- To support individual project leaders, especially those at the early stage of their careers, in making wise and innovative decisions on their science.
- To continue to focus the Institute's science towards signalling/epigenetics.
- To increase the links between signalling and epigenetics through new initiatives in the area of signalling to chromatin.
- To continue to promote cross-Laboratory working, for example by funding further SYNERGY grants.
- To take leadership roles external to the Institute by coordinating research-led collaborative programmes.

that Laboratories will generate significant external financial support and Heads of Laboratories are expected to ensure that relevant opportunities are not missed and that new opportunities for financial support are sought, in addition to overall responsibility for the Core funded budget of the Laboratory. Heads of Laboratory are expected to provide scientific guidance and leadership. At the quadrennial Visiting Group (Institute Assessment Exercise) each Laboratory forms one of the units of assessment and presents both a written report and future plans. The team presents these plans to the Visiting Group committee (assembled by the BBSRC from experts in the field and representatives of different 'user groups' for our science). Taken with assessments of the Institute's overall business strategy, Graduate and Postdoctoral Programmes, Knowledge Transfer performance and Science and Society Programme, the Visiting Group's report determines the overall level of funding the Institute receives from the BBSRC. However monitoring and assessment of our science is not only an externally-mediated process. Heads of Laboratories report to members of SPOC, and SPOC assesses the science in all Laboratories on a regular basis, one year and three years after the Visiting Group assessment. Based on SPOC's assessment, it makes recommendations to the Director on the level of Core funding that each Laboratory should receive, so that research is carried out most effectively.

Within the Laboratory each Project Leader is responsible for running their own group and is expected to create, lead, maintain and develop an internationally excellent programme of innovative research important to the Institute's remit. In addition to the Visiting Group's overall assessment of the Laboratory's strategic direction, Project Leaders are assessed individually on publication record, grant awards and their wider

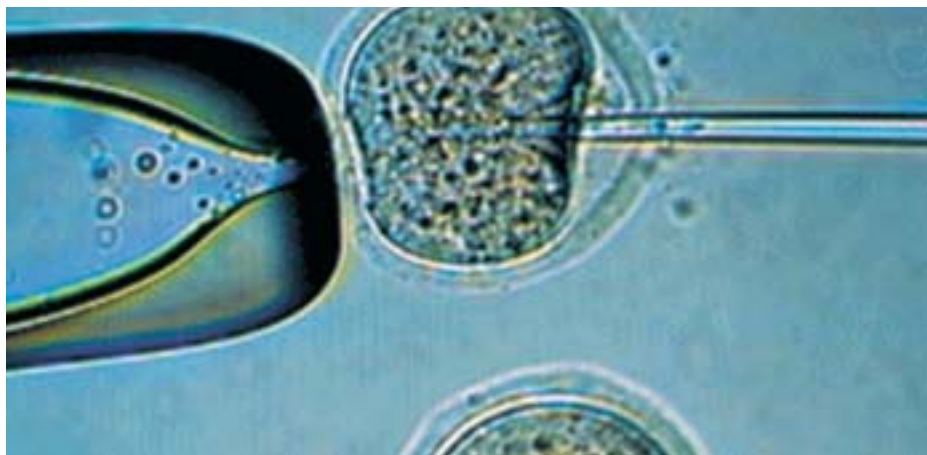
impact in science. BEC also monitors individual performance through regular reports (e.g. Fellowship holders' annual reports) and metrics (e.g. publication record and grant application success). Project Leaders are expected to achieve promotion to Band 4 within five years of active research at Band 5 and personal or individual merit promotion to Band 3 within eight years of active research at Band 4.

Science Policy Committee (SPOC)

The function of SPOC is to provide senior scientific leadership and overall scientific vision for the Institute. The committee currently has a membership of ten active scientists, the two Associate Directors, and the Director, and is chaired by the Associate Director for Research Strategy. Membership of the committee rotates every three years. The remit of SPOC is:

- To develop the science vision for the Babraham Institute;
- To develop and recommend to BEC implementation of a single coherent Babraham science policy;
- To plan Project Leader recruitment;
- To make Major Capital investment recommendations to BEC;
- To assess Laboratory performance and to recommend to the Director recurrent funding levels on the 'scientific promise' component of the performance-based laboratory funding formula. To take place one year and three years after the Visiting Group;
- To allocate from the SPOC initiatives budget – including supporting a portfolio of Synergy Projects and other emerging opportunities requiring funding;
- To allocate from the Grant overheads budget (in future a proportion of FEC);
- To devise the Annual Project Leaders Retreat programme, followed by a SPOC meeting to solidify ideas and decide on actions;
- To develop science policy and strategy for scientific service user groups;
- To decide the Babraham Annual Lab Talks programme;
- To coordinate the scientific direction of local seminar series;
- To provide scientific guidance for administrative and service sections of the Institute.

The budget available to SPOC is composed of a Core component (currently £100k pa), and a proportion of grant overheads of FEC funding (in the current financial year, 2005/06, £138k).



One of the key activities of SPOC is the award of SYNERGY grants, which are 'pump priming' grants. These usually fund a postdoc for approximately a year and some consumables costs, and always for collaborative work between two or more project leaders from different science areas, resulting in substantially new, synergistic, and exciting pieces of science. For example, Gavin Kelsey (identification of imprinted genes) and Lawrence Wilkinson (cognitive neurobiology) have decided to work together to understand how imprinted genes influence adult behaviours. They have already discovered genes that have an impact on novelty seeking (Molecular Cell Biology), and others that influence reversal learning (Nature Genetics). SPOC is aiming to fund four to five SYNERGY projects at any one time. The projects that are currently running are:

- Imprinted genes and cognition (Wilkinson, Reik, Kelsey);
- Role of PI3K, GEFs, and GTPases in chemotaxis and the respiratory burst (Turner, Hawkins, Stephens);
- Characterisation of phospholipase D function in *Drosophila* (Ktistakis, Padinjat);
- Dissection of the c-Fos immediate early gene expression pathway: from signalling to chromatin to transcription factories (Fraser, Cook);
- A mammalian cell system to manipulate and analyse epigenetic gene regulation *in vivo* (Reik, Oxley).

Another important activity of SPOC is the organisation of the annual Project Leaders Retreat meeting. At this meeting, all Project Leaders discuss various aspects of their science, and themed discussions are aimed at exploring new avenues for scientific directions, from a multidisciplinary point of view. Discussions of this nature have led, for example, to new work (funded by a BBSRC grant) on allelic exclusion in the immune system.

Collaborative Science Partnerships

An analysis of Babraham's publications shows that from 2001-2004 inclusive approximately 85% of Babraham's papers had at least one co-author from another research organisation and 46% had at least one international collaborator. However, we aspire towards giving greater leadership than merely the contribution, albeit at a high international level, of our individual research groups.

SPOC is leading the development of collaborative grant applications to BBSRC and other leading national funders that include systems biology approaches. One area which is most advanced in this regard is a systematic approach to map all dynamic interactions of genes in the mammalian nucleus, led by Peter Fraser. This work builds upon the observation by the Fraser group that a limited number of 'transcription factories' exist in the nucleus, and that actively transcribed genes from different genomic regions can share these factories. The purpose of the planned application to the BBSRC is systematically to map all possible interactions between gene loci in a particular cell type, and in this way derive information about gene interaction networks in the nucleus, which will then be mathematically modelled. Two further applications of a similar type are planned; one is led by Len Stephens and deals with all the possible components of the PI3Kinase pathway in development and function of the immune system, again involving substantial modelling approaches, and the last, led by Gavin Kelsey, deals with the integrative physiology of imprinted genes in fetal and placental growth, postnatal physiology, and behaviour and cognition.

Scientific objectives

LABORATORY OF DEVELOPMENTAL GENETICS & IMPRINTING

The overall aim of this programme is to elucidate a number of key epigenetic and genetic factors in mammalian development spanning from conception to birth to adulthood.

1. **To study epigenetic mechanisms, including imprinting mechanisms, epigenetic reprogramming, early lineage determination, and environmental programming.** The role of non-coding RNA and higher order chromatin organisation in imprinting will be investigated. Chromatin and methylation reprogramming will be studied in early embryos and germ cells, and screens to isolate reprogramming factors will be established. The role of epigenetic mechanisms in earliest lineage specification, and in long term developmental programming, will be examined. (Kelsey, Reik, Hemberger, Constanica, collaborating with Oxley and Fraser)
2. **To study genetic and developmental mechanisms in early postimplantation development of the embryo and placenta.** The caudal (Cdx) group of transcription factors will be investigated for regulation and function in early placental, and in later embryonic development. Processes leading to formation of a functional placenta will be examined by studying the role of cathepsin proteases in trophoblast differentiation, invasion and vascular remodelling. (Gaunt, Hemberger)
3. **To analyse imprinted gene function in fetal growth, postnatal adaptations, and adult behaviour.** We shall test hypotheses of imprinted gene function to understand why genes should be controlled by imprinting in mammals. We have developed a series of specific gene knock-outs and shall generate new conditional knock-outs of key genes. We have set up specialised assays for placental, neonatal and adult physiology. (Constanica, Kelsey, Reik, Hemberger, collaborating with Wilkinson)
4. **To study by comparative genomic bioinformatics the evolution of epigenetic systems in mammals, including major imprinting clusters, and epigenetic regulators.** Major imprinting clusters, and regions containing epigenetic regulators (for example methyltransferases), will be sequenced in eutherian mammals, marsupials, and monotremes, and evolutionary conserved regions (ECRs) will be identified and annotated. Functional analysis *in vitro* and in mouse models will be used to establish the significance of ECRs in the evolution of epigenetic systems. (Kelsey, Reik)

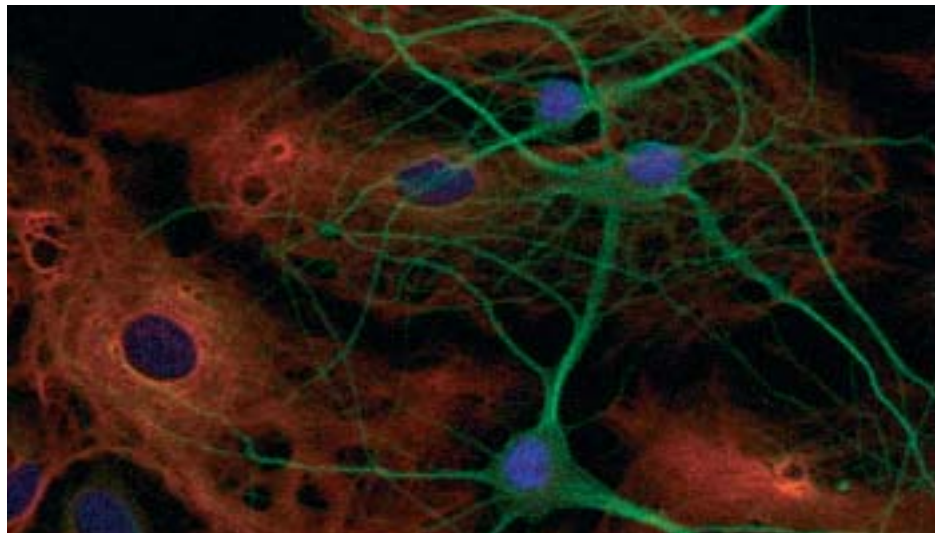
LABORATORY OF CHROMATIN & GENE EXPRESSION

The objectives of the programme are aimed at a greater understanding of the roles of chromatin and chromosome structure in control of gene expression in differentiation and development as well as the processes, mechanisms and machinery that initiate and maintain different chromatin and gene expression states. The ultimate aim is to create an integrated understanding ranging from single nucleosome dynamics to nuclear architecture.

1. **To identify and characterise chromatin remodelling, modification and effector complexes for chromatin replication, epigenetic inheritance and genome maintenance.** We will also assess the role of specific complexes in chromatin accessibility in intergenic transcription, VDJ recombination and gene regulation. (Varga-Weisz, Fraser, Corcoran collaborating with Reik and Oxley)
2. **To identify molecular mechanisms by which non-coding RNAs regulate chromatin structure, gene expression and epigenetic inheritance.** We are investigating the role of non-coding RNAs and intergenic transcription in epigenetic regulation. We will examine the roles of large functional non-coding RNAs and intergenic transcripts. (Corcoran, Fraser, Varga-Weisz, collaborating with Turner, Mårtensson-Bopp and Reik)
3. **To investigate functional chromatin structure including higher-order structures, nuclear organisation and functional nuclear architecture.** We are interested in the nuclear organisation of transcription, the role of higher-order structures in transcriptional activation and are attempting to understand the underlying rules that govern migration to transcription factories. (Fraser, Corcoran, Varga-Weisz, collaborating with Cook)

LABORATORY OF LYMPHOCYTE SIGNALLING & DEVELOPMENT

1. **We aim to decipher the signalling pathways regulating B and T lymphocyte maturation and function.** Emphasis is on the role of the Vav proteins, PI3K, PLC γ and CD45 and how they integrate signals that regulate differentiation, survival and activation. (Alexander, Mårtensson-Bopp, Okkenhaug, Turner)
2. **To elucidate the contribution of postranscriptional regulation to cell fate decisions.** We wish to understand how members of the TIS11 family of RNA binding proteins regulate lymphocyte development. Studies will employ conditional gene targeting to investigate terminal differentiation of B lymphocytes; identify TIS11 target genes and link the function of TIS11 to BCR signalling pathways. (Turner)
3. **To characterise signal transduction pathways regulating Natural Killer (NK) cell development and function.** We will characterise the pathways underlying the interactions between innate and adaptive immunity. This will involve the establishment of new model systems which will test immunity to pathogens and tumours. (Colucci)
4. **To understand the mechanism of action of the pre-B cell receptor.** This receptor signals immunoglobulin heavy chain allelic exclusion, selection and pre-B cell proliferation. Genetic approaches are being combined with analysis of gene regulation at the level of chromatin to understand how the receptor signals to the nucleus. (Mårtensson-Bopp, Turner, collaborating with Corcoran)

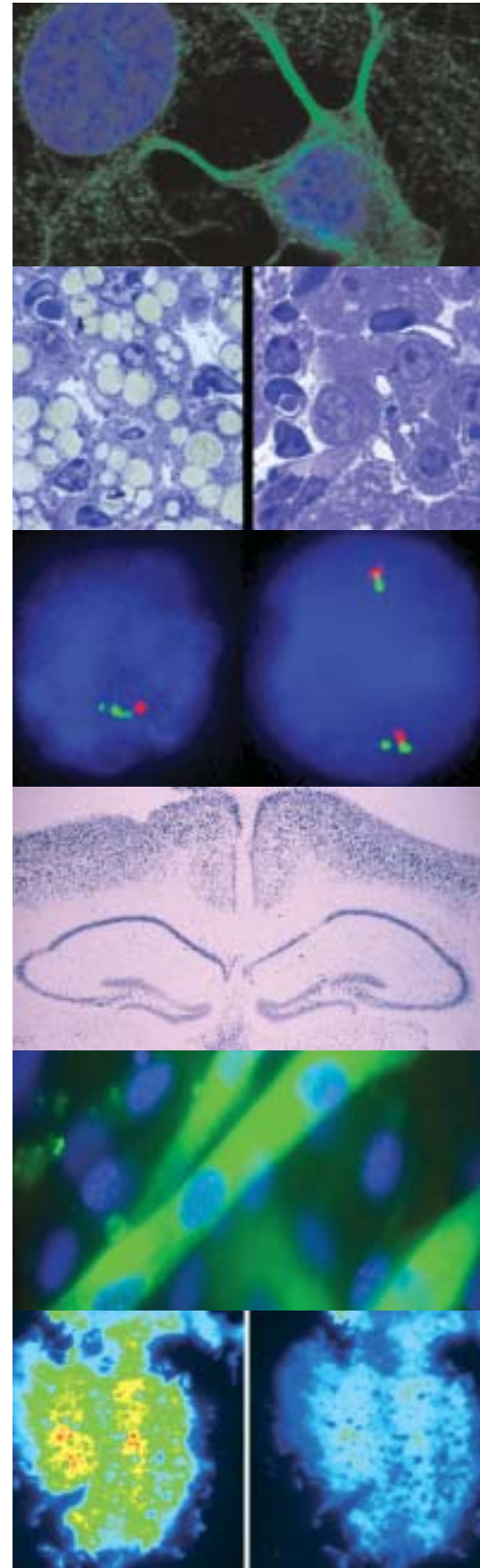


LABORATORY OF FUNCTIONAL IMMUNOGENETICS

1. To investigate the hypothesis that *Ian1* plays a role in the maintenance of the naïve, quiescent, T cell pool. We will introgress a wild-type *Ian1* gene on to the BN rat strain background and study T cell naïve versus memory phenotype. Using an inducible system *in vitro* we will study anti-proliferative effects of *Ian1* and identify the cell-cycle stage of the effects seen. (Butcher)
2. To elucidate the function of *Ian9*. The *Ian9* gene comprises three complete *Ian* domains and encodes a corresponding protein, found in immune cells. We will ask whether *Ian9* is essential for immune (or other function) using genetic and biochemical approaches. (Miller)
3. To identify proteins interacting with the *Ians*. We will pursue the description of *Ian1*-interacting proteins using Yeast 2 Hybrid. We will confirm, using independent techniques, the interaction already identified and characterise their molecular mechanism. (Butcher/Miller)
4. To devise further strategies to modulate cadherin affinity. New point mutations and other structural modifications designed to increase affinity will be introduced into N- and E-cadherin. Based on our recent results on the mechanism of cadherin-mediated adhesion, we will investigate the possibility of modulating cadherin affinity. In addition, we wish to investigate the molecular mechanism underlying the inhibitory effect of cadherin HAV peptides. (Kilshaw)
5. To understand the molecular basis of cadherin specificity. We shall test our hypothesis that homophilic preference in cadherin adhesion depends on an equal balance of free energy changes that accompany mutual strand exchange by the two adhesive partners. (Kilshaw)

LABORATORY OF COGNITIVE & BEHAVIOURAL NEUROSCIENCE

1. To establish neural encoding principles and neurochemical systems underlying sensory discrimination and recognition memory. Combined use of *in vivo* multiarray electrophysiological recording methods with computational and mathematical approaches to establish both local and global encoding principles involved in sensory detection, recognition and learning in the olfactory system and visual association cortex. (Kendrick)
2. To establish how the brain dissociates and integrates components of visual and vocal signals used for identification and communication of emotion. Combined use of behavioural analysis, molecular neuroanatomy, *in vivo* multiarray electrophysiology, neurochemical sampling and pharmacological treatments to identify the specific roles of neural networks and transmitter systems in association cortex and limbic system involved in processing social and emotional cues in faces and voices. (Kendrick)
3. To model principles of biological information processing and incorporate then into artificial systems. Application of information processing algorithms derived from neural networks to computer-based and electronic systems and in the construction of artificial organic nanoparticle-based models. (Kendrick)
4. To examine imprinted gene action on brain and behaviour. Work under this objective exploits recent discoveries suggesting key roles for imprinted genes in regulating brain development/function and behaviour. We are at the forefront of this emerging field, which is an important component of the way in which epigenetic modifications (gene effects not involving changes in DNA sequence) may influence behaviour. (Wilkinson)
5. To investigate the genetics of impulsive behaviour. Impulsivity is a complex psychological construct that impacts on decision making and action and contributes to human personality and mental abnormalities including, AD/HD, OCD and addiction. We are using animal models to investigate genetic effects on impulsive responding and to test for the influence of specific gene variants, in particular those related to brain serotonin function. (Wilkinson)



Scientific objectives *continued*

LABORATORY OF NEURONAL DEVELOPMENT & SURVIVAL

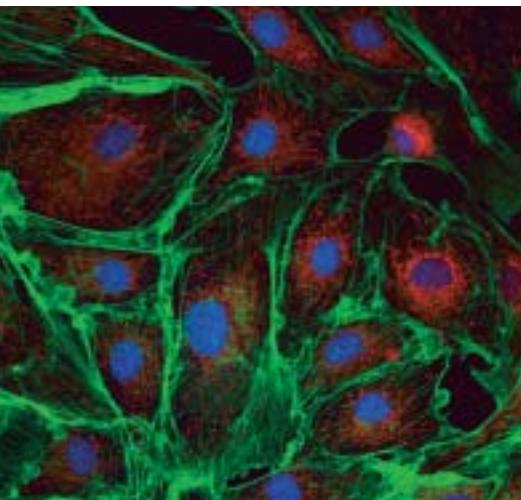
1. To understand the Wallerian degeneration mechanism and its delay by the *Wld^s* gene. We aim to identify downstream effector proteins of *Wld^s* by testing whether a binding partner mediates neuroprotection and by studying altered gene expression in *Wld^s* mice. We will also image Wallerian degeneration in real-time to characterise how axons die. (Coleman)
2. To explore the relationship between axon degeneration in disease and Wallerian degeneration. Building on our finding that these mechanisms are related in some cases, we will investigate morphological similarities using new imaging methodology. We will also test the hypothesis that there are circumstances where *Wld^s* can protect axons permanently. (Coleman)
3. To define key factors that regulate the migration of GnRH neurons from the olfactory system to the forebrain during embryonic development. Based on our characterization of transgenic mice in which GnRH migration is disrupted and fertility is impaired (mirroring aspects of Kallmann's Syndrome), we are aiming to clarify the functional role of Eph/ephrin signalling in mediating the normal migration process which takes place in association with a subset of pioneer olfactory axons. (Bicknell)

INOSITIDE LABORATORY

1. To dissect the PI3K signalling code and its physiological roles. We shall form a regulation of the PI3Ks and phosphatases that shape phosphoinositide signals, the effectors that decipher those signals and the way PI3K signals are integrated with others to coordinate cellular responses, particularly in neutrophils. (Stephens, Hawkins)
2. To study the functional roles and regulation of the P-Rex family of guanine-nucleotide exchange factors. The P-Rex family consists of three members that activate the GTPase Rac and are regulated by $\text{PtdIns}(3,4,5)\text{P}_3$ and G $\beta\gamma$ subunits. We will use mouse genetics, biochemistry and cell biology to study the P-Rex family. (Welch)
3. To understand how lipid-derived signals underpin membrane trafficking events. Our strategy involves understanding the structure/function of lipid-modifying enzymes, and the identification and characterisation of novel targets for signalling lipids. In this general context we study phospholipase D in mammalian and *Drosophila* cells, and novel PA, $\text{PI}(4,5)\text{P}_2$ and $\text{PI}(3)\text{P}$ targets. (Ktistakis)
4. To understand the role of $\text{PI}(4,5)\text{P}_2$ derived lipids in regulating Ca^{2+} influx. We propose to analyse the activation of TRP channels, mediators of Ca^{2+} influx in *Drosophila* photoreceptors, as a genetic model system for our studies. Both forward and reverse genetic approaches will be used to address this issue *in vivo*. (Padinjat)
5. To characterise the signalling properties of a novel family of β -adrenergic-like G-protein coupled receptors. We will investigate the signalling abilities of this novel class of receptors which may be responsible for some of the rapid, non-genomic actions of steroids. We will characterise the functional roles of additional novel members of this family from *Drosophila*, from the protochordate *Amphioxus* and from higher vertebrates. (Evans)

LABORATORY OF MOLECULAR SIGNALLING

1. To explore mechanisms of IGFBP-5 regulation of cell fate, and consequences for growth and development. Examination of IGFBP-5 primary sequence reveals motifs unrelated to IGF binding; we have demonstrated significant IGF-independent actions e.g. in cell survival. We will now identify the dual actions of IGFBP-5 in cell function and subsequent development. (Pell)
2. To determine the role of Akt in myogenesis and muscle metabolism. Akt is essential for myogenesis. We will define key downstream targets and binding partners associated with differential Akt isoform activation, and examine the hypothesis that Akt forms a mechanism for reciprocal compensatory insulin and IGF receptor signalling in muscle metabolism. (Pell)
3. To investigate how the MAPK and SAPK pathways integrate with other signalling pathways to regulate cell cycle progression. How do ERK1/2 and p38 cooperate to cause a G_1 arrest? How does ERK5 regulate the cell cycle and which target genes are responsible? (Cook)
4. To investigate the role and regulation of AP-1 dimers. We will examine the biological role and MAPK-dependent regulation of individual c-Jun dimer pairs. (Cook)
5. To use a proteomics screen to identify novel MAPK and/or CDK substrates. Proteins identified will be investigated to determine their biological role, the influence of phosphorylation and the kinase responsible. (Cook)
6. To investigate how Bim and other BH3-only proteins are regulated and the role they play in cell death in human cancer cell lines. (Cook)
7. To determine, in collaboration with the pharmaceutical industry, the specificity of proprietary inhibitors of the ERK1/2 pathway. We will also identify the cellular factors that determine tumour cell sensitivity to such drugs. (Cook)

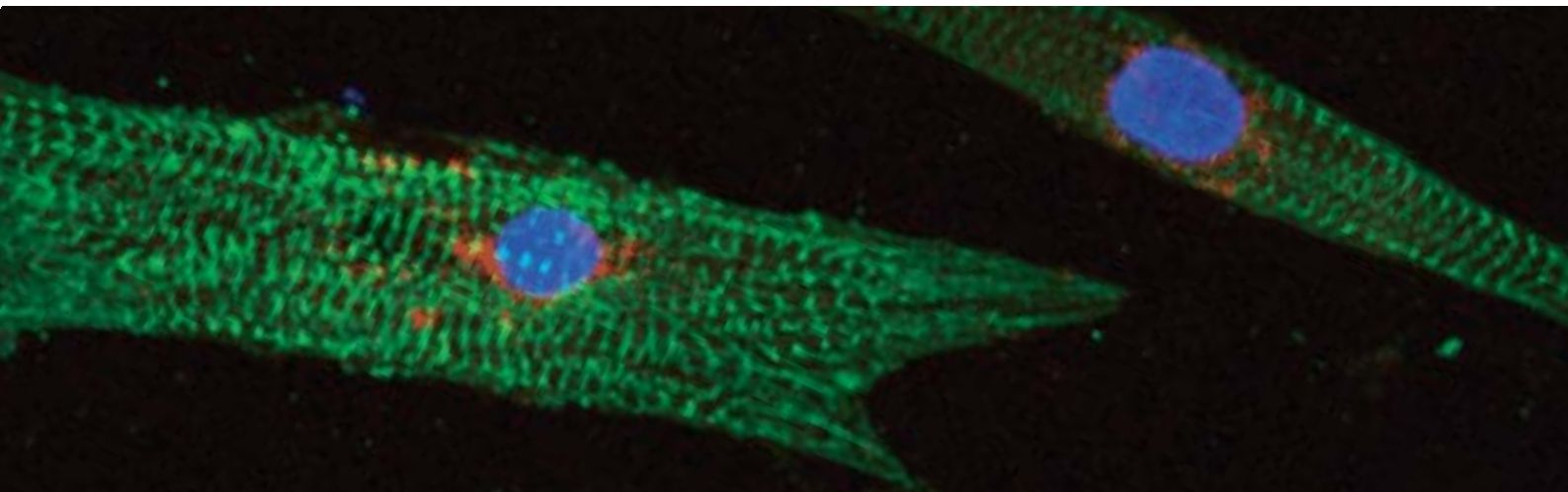


8. To determine the function of Ca^{2+} -regulated Ras GTPase-activating proteins (Ras GAPs). We have a programme of work studying phenotypes of Capri null mice, as well as generating conditionally-disrupted animals for Capri and Rasal. We are investigating protein function *in vitro* using biochemical/structural methods combined with cell biological analyses in culture. (Lockyer)
9. To understand the dynamic regulation of small GTPase signalling in live cells. We are using fluorescent 'biosensors' to track the spatial and temporal activation of small GTPases with particular reference to regulation by Ca^{2+} -dependent mechanisms e.g. CAPRI and RASAL, and also the study of compartmentalised Ras/Rho signalling. (Lockyer)
10. To characterise the role of the acute and chronic activation of the GPCR/InsP₃R axis on the spatiotemporal regulation of Ca^{2+} signals and contractility in cardiac myocytes. A combination of confocal microscopy, photometry, long-term culture and molecular techniques are being used to investigate the mechanisms underlying the inotropic and hypertrophic actions of cardiotoxic stimuli on primary atrial and ventricular myocytes. (Bootman)
11. To determine the mechanisms that confer selectivity between the calcium-mediated regulation of transcription and contraction in cardiac myocytes. Real-time PCR and RNA-FISH will be used to measure transcription of calcium transporter- and hypertrophy-associated genes in close temporal proximity with GPCR/depolarisation-induced calcium signals. (Bootman and Roderick)
12. To investigate the mechanisms that regulate InsP₃R expression during cardiac development, ageing and disease, and the consequences of variations of InsP₃R expression levels upon cardiac physiology. (Bootman and Roderick)
13. To identify and characterise novel interactions between the InsP₃/InsP₃R signalling pathway and other signal transduction cascades. Bioinformatic and proteomic approaches will be used to identify proteins that bind InsP₃R and modify their function. The consequences of these interactions for cell physiology will subsequently be investigated. (Roderick)
14. To characterise the molecular mechanisms that regulate development of metabotropic signalling within the CNS, and probe the contribution of neuronal calcium dysregulation to diseases such as Alzheimer's and Parkinson's. (Bootman and Roderick)
15. To characterise Ca^{2+} signalling pathways in cerebellar astrocytes. The spatiotemporal properties of astrocyte Ca^{2+} signalling pathways will be determined, and related to the frequency and strength of synaptic stimulation. The impact of astrocyte Ca^{2+} elevation on the excitability of adjacent neurones and the strength of synaptic transmission will be explored. (Bellamy)

PROTEIN TECHNOLOGIES LABORATORY

The laboratory's research projects develop analytical proteomics techniques, including mass spectrometry, protein arrays, ligand binding molecules and transgenic systems, and apply them to analysis of protein function in a biological context.

1. To employ and develop mass spectrometry-based methods, including solid phase chemistry and affinity isolation, for analysis of protein post-translational modifications (phosphorylation, glycosylation, histone modifications) and complex protein mixtures by LC-MS/MS. Collaborative projects include characterisation of nucleoprotein complexes associated with epigenetic changes and identification of novel targets of proline-directed phosphorylation. (Oxley)
2. To study molecular genetic aspects of B cell development, using the information to develop healthcare-related technologies. Aims are to understand the expression of endogenous and heterologous single-chain antibodies in knock-out and transgenic mice, and effects of B cell receptor configuration on signalling, for which *in vivo* tandem affinity purification will be developed. (Brüggemann)
3. To develop high throughput, cell-free technologies for proteomics applications. These include functional protein arrays created from DNA templates, selection of binding molecules from libraries by ribosome display, and their combined application in screening protein-protein interactions, e.g. in cell signalling pathways. We coordinate a European project (ProteomeBinders) towards an infrastructure of binders against the human proteome. (Taussig)



Graduate Programme

The aim of our Graduate Programme is to train talented individuals for future roles in science and technology or in the communication and utilisation of these disciplines. We therefore aim to promote acquisition of a profound knowledge base in one of our research areas, to hone critical faculties by exposure to the discipline of hypothesis-led research, and to encourage excellence in the communication of scientific results and ideas. We cannot emphasise too strongly that at Babraham, students are not 'extra pairs of hands' to be squeezed into a lab whenever possible, but instead a carefully selected, valued and nurtured addition to academic life at the Institute.

not to stay at the bench can instead use their skills productively. Babraham has achieved excellent recent external evaluations of its Graduate Programme. However we are not complacent and we are committed to continue the evolution of our Graduate Programme to yet higher standards of excellence.

A comprehensive description of our current Graduate Programme is available on our website (www.babraham.ac.uk) or from the Graduate Studies Tutor (peter.evans@bbsrc.ac.uk). The Corporate Report 2001–2005 describes the major improvements we have introduced to our Graduate Programme in recent years.



The strategy by which we deliver our aims is our comprehensive Graduate Programme. Whilst the emphasis is on qualifying the students for a career in research at international level, careful attention is also paid to transferable skills and career advice so that those few students electing

A major aim of our Graduate Programme over the next five years will be to ensure that we continue to strive to recruit students of outstanding intellectual quality and experimental skills. We plan to improve the information provided to potential new students about our Graduate Programme on our website to emphasise the high quality of training offered at the Institute and the diversity of cutting edge science carried out by current students working at the Institute. The

Summary of Objectives

- To strive to recruit students of the highest quality to our Graduate Programme.
- To review our Graduate Programme to ensure it remains responsive to need, effective, balanced between generic and specific skills training, and achieves the very highest standards.
- To develop our newly introduced 4-year studentship programme so that our students benefit maximally from the increased funding period and to ensure that they are able to submit their theses within the four year time period.
- To introduce the Training Credits scheme for all new students.
- Only to accept a limited number of studentships that are not fully funded to Research Council standards in order to ensure that there is adequate support for the student.

main criterion for acceptance on our Graduate Programme is student excellence. Thus, a major aim of our Graduate Programme will be to attempt to increase the number of high quality students applying to attend our recruitment Open Day.

A second major objective will be to continue to review our Graduate Programme to maintain its effectiveness and its high standards to produce a programme balanced between the time spent on formal training for generic transferable skills and the time the students spend on laboratory based research. We will do this by continuously monitoring and evaluating the standards and relevance of the skills courses we offer to students and by introducing appropriate novel courses tailored to the needs of the students. We plan to introduce a number of new courses on such topics as 'Advanced Technical Writing', the 'Construction of Web Pages' and 'How to start Writing a Thesis' which have been requested by our students. These will be supplemented by additional courses initiated by the Graduate Committee on 'How to set up New Spin Off Companies', a workshop on 'Bioethics' and a series of 'Personal Careers Advice Interviews' for students. We are also continually alert to improvements we can make in training and support for supervisors.

A further major target of our Graduate Programme will be the development of our recently introduced 4-year Studentships. We are extremely supportive of this development and believe that its introduction will help students cope more easily with the growing level of achievement expected from Graduate Students scientifically, and the increased focus on training in generic transferable skills. However, we wish to ensure, through a structured extension to our three year programme, that the students

Postdoctoral Programme

embarking on this extended course of study will benefit maximally from the opportunities the longer period of funding provides. We also need to manage the risk that the Institute's excellent four-year completion rates will suffer with the removal of financial pressures to submit quickly. We will therefore modify and develop our monitoring and assessment programme to ensure that we give the maximal support and feedback to the students during the course of their study and to ensure that they submit their PhD thesis before the end of their fourth year.

During academic year 2004/05 we have developed, in association with the University Graduate School, a strategy for the implementation of additional 'Roberts' training and the use of the associated new funds. Based upon a survey of ongoing best practice, we have developed a system of credits that recognises and extends the existing transferable skills training given at the Institute. Babraham's students currently achieve over 80% of the target 10-days per annum training at this level. The new funding will be mainly used to provide the additional training courses that the students will need to attend to meet their full requirement. The credits recognise both formal and experience-based training, for example science and society work with school pupils, and there are caps to the number of credits that can be gained in particular areas of activity to ensure each student achieves a balanced portfolio of training. The new credits system will apply to the October 2005 intake onwards, although existing students may use the system as a template for completing their own training, if they wish.

Finally, we are conscious that as the UK funding climate moves towards the concept of FEC and achievement of sustainability, that many competitive and prestigious studentships are in fact poorly funded. Since it is accepted that even Research Council studentships do not meet the full direct costs of biological research, this funding gap is not sustainable. We have therefore decided that in future we will limit the number of studentships held at Babraham that do not achieve Research Council funding levels. We appreciate that this particularly affects overseas students on their own government bursaries, but do not feel that the low level of funding some of these offer is commensurate with the high standards we wish to achieve. The Institute's ability to subsidise these students is finite and will be limited to a selected cohort.

Building on the substantial training programme and the career development schemes introduced for postdoctoral scientists over the last five years, it will be important for the Institute to regularly review training needs and make adjustments to the training provision. This will be achieved via the annual Personal Performance Development Review (PPDR) meetings with individual postdocs and through more general discussion with the postdoc members on the Postdoc Programme Committee. This will ensure that the additional funds provided as a result of the Roberts Review are used to the best advantage. In addition, after its first year of operation, we will be reviewing the effectiveness of the Advanced Research Training Scheme offered by the Institute's Senior Research Associates (SRAs) and developing a framework of the Institute's requirements against which to appoint any further SRA positions to sustain the expertise base in our Laboratories.

Summary of Objectives

- To regularly review the training needs of our postdoctoral scientist cohort.
- To review the effectiveness of our Advanced Research Training Scheme.
- To proactively seek feedback from the postdoctoral scientist community on issues that concern them and to resolve problems or provide routes to advice where possible.



Infrastructure for science

Overview

The Institute endeavours to provide access to all the facilities that its scientists require in order to achieve their research objectives. This aim is delivered through a mixture of in-house services, detailed below, strategic partnerships (for example in structural biology) or favourable procurement deals with the commercial sector (for example oligo synthesis). The Institute aspires to offer in-house facilities which provide skills at the interface between technical development and service provision. When the services become more widely adopted in the scientific community it is often more effective and efficient for the Institute to redirect resources to other emerging technologies and enter into partnership with external service providers. In contrast, there are some facilities which are provided at both national and international level primarily through the public/university sector – for example in the life sciences, X-ray crystallography, NMR and some types of whole-body imaging. For access to these national and international centres Babraham scientists form strategic partnerships as appropriate – for example we have close links with the University of Cambridge for structural studies.

The Corporate Report 2001-2005 describes some of the recent changes we have made to our in-house service provision, which accounts for approximately 15% of the Institute's annual expenditure. The strategic direction of the services is led by the service user groups, each of which is chaired by a senior scientist, which advise the respective Heads of Service. The Science Policy Committee in turn advises the User Groups about emerging scientific opportunities which may require changes in service provision. Periodically BEC commissions a comprehensive review of service provision in a particular area. Such a review led to closure in 2004-2005 of our Instrumentation facility in favour of using several local firms offering a range of similar facilities.

Babraham Tech^{nix}

Babraham Tech^{nix} is the 'badged' gateway to our services for users external to the Institute. This interface is managed by BBT (Babraham Bioscience Technologies Ltd., the Institute's wholly-owned trading company). At present we are finding it difficult to satisfy demand from both Institute scientists and all potential external clients. We plan to take advantage of the increased interaction between the Institute and companies resident on the Babraham Research Campus, some of which offer technical services themselves, to reconsider the position of

Babraham Tech^{nix}. By expanding its horizons Tech^{nix} could provide a coordinated approach to scientific and technical service provision through a combined offering of Institute and commercial services.

Technical Services

Proteomics Facility

As of January 2005, our Proteomics Facility is managed from within the newly created Protein Technologies Laboratory, with some key staff running both 'service' and 'personal' research projects. We will monitor these arrangements during 2005-2006 with the aim of ensuring the most effective usage of the equipment and staff provision. Our aim is to continue to provide a cutting-edge suite of protein technologies and expertise for the Institute's science. We therefore plan:

- To purchase a nanoLC system and a micro fraction collector, which will add extra off-line fractionation capability for the analysis of highly complex samples;
- To explore whether to purchase a liquid handling robot for increased automation of sample preparation and increased throughput;
- To review the requirements and timescale for an upgrade of the mass-spectrometry facilities. Mass spectrometer technology is developing very rapidly and in order to be internationally competitive in our existing areas of science we will need to add a new instrument within the life of this Corporate Plan.

Imaging Facility

The Imaging Facility established in October 2004 is already heavily used. We plan the following:

- To introduce Total Internal Reflection Fluorescence microscopy (TIRFM). We have a grant in to fund an Olympus TIRF microscope. If successful this equipment will benefit many researchers interested in imaging near-membrane fluorescence (useful for a number of applications). If this grant is unsuccessful the facility will seek other means of introducing this technology;
- To purchase of a second point-scanning confocal to complement the Zeiss 510 META. As more people are being trained to use the Zeiss it is becoming increasingly hard to get access to it. We will explore purchasing a second confocal to alleviate this pressure and increase the rate at which science is being done;
- To improve access to and expand the range of imaging software available. This would include the purchase of more licences for Volocity software. We currently have one site licence

for Volocity and we predict demand for this software will increase dramatically over the next couple of years. New software purchases would include an off-line licence for the Zeiss confocal software to ensure the instrument was not being tied up for analysis and the purchase of Bitplane's Imaris imaging suite which is possibly the most powerful and user friendly software for image analysis and processing. Having one or two dedicated high-spec computers for image processing and analysis would also be of great benefit;

- To explore the opportunities for expanding the space which the Facility occupies. The Imaging Facility is currently housed within one room in our main Laboratory block. If the amount of equipment in the Facility grows (TIRFM, new point scanner, imaging work stations) then the amount of physical space required will exceed what is currently available;
- To introduce a series of seminars and workshops given by both company representatives and researchers within Babraham who are using certain imaging techniques. This will help broaden people's understanding of what is available in the Facility and ensure the equipment and services we offer are being used to their full extent.

Fluorescence Activated Cell Sorting

At present the FACS facility has two benchtop analysers (FACSCaliburs) which are analogue technology; it is highly likely one or both of them will need to be replaced by newer digital models in the next five years, enabling the analysis of more colours and greater sensitivity. This is likely to require an investment of around £100K.

We have two cell sorters, the older FACS DiVa, and our new (one year old) FACS Aria. To maintain capability, which is likely to be required by Babraham's science, the FACS DiVa will probably have to be replaced by another FACS Aria (around £250K investment) in the next five to ten years.

Bioinformatics

The Bioinformatics group provides a central resource that is increasingly important for biology. The team's expertise extends into computational biology and statistics (complementing our formal arrangements for providing statistical expertise through a consultant). The service is continually evolving to meet and anticipate the needs of scientists at Babraham. Over the next five years we aim:

- To monitor closely the bioinformatics input to grant applications to ensure that a realistic and appropriate amount of support is being claimed.

- As part of this we will encourage scientists to involve the bioinformatics team at an early stage of the grant-writing process;
- To consolidate and develop links between proteome and genome;
 - To examine genetic/transcriptional variation;
 - To undertake computational modelling of biological systems on multiple scales [multi-scaling];
 - To undertake comparative genome studies with a view to whole systems comparisons;
 - To review the management of complex biological data with respect to – provenance, visualisation, storage and retrieval;
 - To promote embedding a bioinformatics culture in the Institute by providing an infrastructure of effective discipline integration and training at all levels.

Animal Services

Small Animal Facility (SAF)

We have prioritised the construction of a new Small Animal Barrier Unit (SABU) to replace the existing barrier unit and non-barrier facility. A significant investment jointly by the Institute and BBSRC in order to fund this building has been agreed. Full details of the rationale and current plan for the building are given in the outline of our Estate Strategy Plan. The new facility will be suitable for producing and maintaining both immuno-competent and immuno-compromised lines. In addition to the capital investment in the building, it is likely that a significant proportion of the Institute's capital equipment budget for 2006-07, 2007-08, 2008-09 and 2009-2010 will be required to purchase essential items of equipment for the above new facility. We will also face a considerable challenge in staffing the new building and managing the overlap period when both SABU and the new facility need to run simultaneously in order to transfer animals. The construction of our original SABU some ten years ago has proved to be a significant milestone in the Institute's drive for scientific excellence and we intend to maintain this position through continued forward thinking and investment.

In the next few years we also plan:

- To increase the space allocation in the SAF for grant supported work that is funded at the appropriate level. This may lead to a reduction in CSG-funded research space;
- To undertake a small amount of refurbishment to the Small Animal Unit (SAU) to allow more animal housing for Babraham scientists. Additional space within SABU is very limited hence we plan to move forward as fast as possible with our replacement building;

- To discontinue sperm freezing as there is no sufficient technology available to easily rederive frozen mouse sperm. Embryo freezing still continues to be used both in-house and at Harwell, MRC Oxford as an efficient tool towards space allocation and the reduction of the numbers of mouse strains held.

Gene Targeting Facility

Key objectives for the next few years are focussed upon improving increased efficiency and effectiveness. These are:

- To guarantee germline transmission using male embryonic stem cells from a single male chimera produced. Achievement of this target would have enormous economic potential;
- To use C57BL/6 line as the default line which would result in a time saving of around two years on backcrossing;
- To perfect BAC injections;
- To achieve IVF and ICSI with all strains.

Corporate Services

Computing

Computing provision is a fast-moving field due to the enormous investment of the IT industry in developing ever faster and higher capacity systems and more capable software. The Institute has to be selective in targeting the best innovations that will deliver the greatest benefits to Babraham science. In the next five years we plan:

- To migrate desktop operating systems to meet the demands of changes in scientific applications and also new O/S releases, including developments within Windows, Apple and Linux platforms;
- To provide generalised campus-wide secure wireless connectivity to allow users to connect from anywhere on the Babraham campus;
- To promote secure off-campus connection to the Institute to assist flexible working patterns;
- To establish an electronic laboratory notebook facility;
- To extend central storage provision and uptake to ensure all data is held on central stores for security backup and with development of IS facilities for data mining purposes;
- To implement and develop Grid technology as required, meeting scientists' demands;
- To implement Voice over IP for both local and potentially external communications;
- To develop the WAN to facilitate higher data transfer needs including extension of videoconferencing facilities;
- To migrate building monitoring and management mechanisms from their own network structure into integration with the Institute LAN;

- To establish non-JANET internet connection to facilitate commercial requirements;
- To explore the business case for migrating all Institute desktop and laptop equipment to lease rather than outright purchase in order better to accommodate the rapid changes in IT hardware and the requirements to ensure up to date facilities throughout the Institute. This would also greatly reduce in terms of volume the Institute's requirement to follow the new regulations on certified disposal of equipment.

Library

The Library is set to undergo a quiet revolution in the period 2005-2010 as it moves from its traditional print-based provision to fully electronic. The specific objectives are:

- To go E-Only from 2006 – print subscriptions will be cancelled apart from a handful of journals of very general interest, e.g. Nature, Science, and any journals still not available in electronic format;
- To respond to the challenge of E-Only Library service for staff, including maintaining the Library's profile and good customer relations when scientists use Library services primarily at a distance;
- To monitor changes to publishers' models for electronic resources which may potentially lead to unsustainable price increases for existing electronic resources and any new electronic resources being unaffordable;
- To develop contingency planning to manage the increased risk of over-dependence on electronic resources in the event that there is a major breakdown, e.g. viral attack, on computing services;
- To monitor the situation on the viability of long-term access to E-Only journal archives.
- To continue to develop shared purchasing to maximise Institute, BBSRC and Research Council spending;
- To become better placed to participate in more cost-effective JISC deals through the Research Councils' full participation in JISC.

Fotografix

A recent survey on photographic provision highlighted the difficulties sometimes presented by electronic submission of manuscripts to journals. The service intends to develop the capacity to offer a 'one-stop shop' for scientists who need help with this. Greater use of the web as a communication tool, both internal and external, is planned - which will impact on the service's design team.

Values and impact

The Babraham Institute undertakes innovative research in functional genomics with relevance to the biomedical, biotechnological, pharmaceutical and health care research and user communities. This work will hopefully lead to new medicines and treatments for diseases and conditions such as Alzheimer's, cancer, heart problems and low birth weight. The resident commercial organisations on the Babraham Research campus are required to work in areas of biomedical research and discovery that fall within the Institute's research remit. The Babraham Group is committed to adopting and promoting scientific, social, ethical and environmental best practice in connection with carrying out its own activities and to ensuring that its Campus tenants, suppliers and contractors do the same.

Quality of Life impact of Babraham's research

The Institute's Laboratories make different and complementary contributions to Babraham's quality of life impact assessment, and fit very well with the BBSRC's strategic objectives. Common to almost all of our work is a desire to 'close the phenotypic gap' where we aim to define the function of individual or families of related genes, at the level of cells and tissues, through to whole animal physiology. This is most readily achieved by targeted modifications in gene function in whole animals and by use of integrative biology, which applies current advances in genomic and molecular sciences to understand systems biology.

By studying cell signalling (biological communication) we will learn more about the normal processes by which our body's cells proliferate, differentiate, grow and die. Signals may act to regulate gene expression but may also act independently, for example by regulating calcium flow, to control cell function. Our study systems include retinal degeneration, neutrophil and macrophage function and cardiac cell biology. By understanding normal physiology we gather important clues about what might be going wrong in illnesses such as cancer, heart disease, inflammation or the problems that accumulate as the body ages.

For example, dissecting the molecular mechanisms that regulate lymphocyte (white blood cell) development, selection and activation *in vivo* during innate and adaptive immune responses will have a significant impact on our understanding of the fundamental factors that regulate immunity in health and disease. Our aim is that our work will eventually guide the design of more effective technologies for therapies against infectious disease, autoimmunity (e.g. Type 1/juvenile diabetes), cancer and transplantation medicine.

We also are working to understand the fundamental mechanisms by which genes are controlled, activated and repressed. This includes examining the key factors, machineries, structures, processes and architectures involved in dynamic chromatin control. Our particular model systems are developmental remodelling of the immunoglobulin (antibody) genes and the beta-globin locus. We also focus on genomic imprinting which determines for a particular gene whether the version inherited from either the mother or father is used. This mechanism (and its failure) has particular significance for cancer predisposition, growth of the baby in the uterus, postnatal adaptations and adult behaviour (for example there are some cognitive problems which show a marked gender imbalance in prevalence, such as autism, which may be due to imprinted gene involvement). Our work may also have relevance to psychiatric conditions such as bipolar disorder ('manic depression') or schizophrenia. Epigenetics also opens avenues to explore the influence of environmental factors, particularly early life nutrition, on human health.

Our work on brain systems controlling cognitive, social and emotional behaviours extends to establishing direct causative links between neurone biology and animal behaviour. Our model system is sensory discrimination and recognition memory which has relevance to developmental disorders such as autism and Asperger's syndrome, or psychiatric disorders such as depression – and sometimes in other problems such as Alzheimer's disease. Finally, we are studying ways of modulating neurone degeneration after injury, and the migration during development of neurons that are key for the control of fertility.

All our research findings are eventually published openly – and usually as quickly as possible – but if important intellectual property arises from our work then we protect it first. This ensures that we can work constructively with biotech and pharmaceutical companies which is essential for translating our discoveries into new medicines and treatments.

Ethical conduct

We expect our staff and students to abide by the highest ethical standards in carrying out their work, whether in science or support functions. All new staff and students are given, on appointment, a copy of the US National Academy of Sciences booklet 'On being a Scientist' which discusses various ethical dilemmas that might face a scientist in their career, and how to deal with these issues should they occur. We also comply with the BBSRC Statement on Safeguarding Scientific Practice, and have a

Summary of Objectives

- To carry out our research to the highest standards of rigorous methodology and statistical validity.
- To conduct our science to the highest ethical standards, respecting and recognising the work of co-researchers and collaborators.
- To achieve the highest standards of animal care and to seek to apply the 3Rs (replacement, reduction and refinement) to our experimental protocols wherever possible.
- To respect patient confidentiality and rights when using clinical samples.
- To publish our research findings in the best peer-reviewed journals to ensure the widest dissemination of our results.
- To seek to ensure that our research findings are translated wherever possible to the public and national benefit.
- To recognise our responsibility to explain our research, its societal context and topical science issues to the public and our stakeholders.
- To promote a culture of mutual respect and equal opportunity amongst our employees and students, and encourage and support their personal development.
- To use our financial resources in a prudent, ethical and accountable manner.
- To enhance the positive environmental impact of the Campus and seek to minimise any negative impact.
- To be a 'good neighbour' within our local community.
- To achieve high standards of corporate governance.

locally developed Authorship policy for scientific papers. The proper conduct of research is a topic in the student induction programme and project leaders are charged with ensuring that the work of their group is conducted to high standards. We are planning to raise the profile of ethical conduct training with induction programmes. A comprehensive BBSRC Staff Code, supplemented by Local Rules where necessary, describes in detail the standards expected and the penalties for transgression – for example with respect to accepting hospitality and gifts. We also expect scientists to adhere to the expectations of funders, for example following the MRC's guidelines on the conduct of research involving patients and/or human tissue. There are established procedures for: whistleblowers to raise their concerns with senior management; dealing with accusations of scientific misconduct; and investigating any suspected irregularities. If we suspect a crime has been committed we always involve the police as a matter of policy. We are committed to a high standard of Corporate Governance (see page 27).

Research with animals

All work with animals on the Babraham Research Campus is overseen by the Institute's Animal Experimentation and Ethics Committee (AWEEC). This ensures that all working on Campus undertake to uphold the same values and adhere to the Institute's policy on research with animals. Research falls into three broad categories. The first does not require living tissue, for example computer modelling or molecular analysis. The second uses the culture of tissues or cells. Finally, living animals are only used when essential, to study or utilise biological responses that cannot be reproduced in tissue culture. All such experimentation undertaken on the campus conforms to Home Office regulations concerning the use of animals in research and is carried out under a single Certificate of Designation, issued by the UK Government Home Office through their independent scientific procedures Inspectorate. The Inspectorate makes frequent unannounced visits to ensure that the law is being followed. All applications for Home Office Project Licences to use living animals under the Animals (Scientific Procedures) Act 1986, are subjected to ethical review and must be approved in advance by AWEEC. This committee includes Institute and external scientists, veterinary surgeons, animal care staff and lay members. A commitment to reduce, refine and replace animal experiments where possible underpins the work of this committee and will continue to be given a high priority. All those working with animals are carefully selected and trained to ensure that the experimental care given to the animals is of the same standard as would be expected by a patient in hospital, using anaesthetic, disease-free conditions and respect. No experiments involving statutory testing of substances for their safety, quality or efficacy are conducted on the campus, and as a matter of policy there are no cats, dogs, primates or horses on the Campus.



Quality Assurance

The Institute does not intend to seek accreditation under ISO9000. However, where possible we aim to meet these standards of rigorous methodology, recording and storage of results – for example we engage a consultant statistician to advise our researchers on experimental design and analysis. The Institute has an internally published Quality Assurance (QA) Code of Practice with which all scientists are expected to comply. We particularly focus on standardisation and calibration of equipment, and standard operating procedures for common techniques and apparatus use. Babraham's QA policy can be summarised as follows.

- We are committed to maintaining high quality standards in all areas of our research and will provide the appropriate mechanisms and funds to do so.
- Maintenance of high quality standards requires contributions from all Babraham staff, coupled to a commitment to take individual responsibility for quality assurance and to adhere to the guidelines set out in the QA Code of Practice.
- We will continuously assess and improve working practices and provide training and information awareness for all staff.

Our staff, students and visitors

The Babraham Institute has high standards regarding the training and development opportunities for its staff, believing that this not only contributes towards the success of the individuals but also enhances the reputation and standing of the Institute. We are, therefore, committed to ensuring that every individual who comes to Babraham receives the training and development which will not only support them in their current post but will also provide them with transferable knowledge and skills that will be useful throughout their career. The Institute is an exemplar in the training of graduates and postdoctoral scientists. We are also firmly committed to providing equal opportunities, and a culture of mutual respect embedded into the workplace by, for example, enforcing an anti-harassment policy. See pages 10, 11 and 26.

Dialogue with stakeholders

The Institute is committed to establishing channels for dialogue with society: to create a better understanding and appreciation of the Institute's research portfolio; to illustrate the potential applications and implications of our discoveries in biomedical research and human health; and an opportunity for the concerns of stakeholders to be heard and discussed with experts. Institute scientists, staff and PhD students are encouraged, and given support, to participate in a broad range of events organised

under the auspices of our Science and Society Programme (see page 16). We also seek to understand better the societal context for our work and to actively and constructively engage with those who have concerns about either the ethical issues or technological implications surrounding our work. The Institute places high value on ensuring high standards of internal and external communication, striving to facilitate constructive communication with the media and to promote effective networking with the bioscience community and our stakeholders.

Environmental Impact

Babraham recognises that its activities have significant potential for both positive and negative environmental impact and is committed to an active environmental management policy. Please see Operations (page 24) for details of our plans to improve our net environmental impact, including our Green Transport Plan.

Community Partnerships

The Babraham Group is committed to the prevention of pollution and the protection of our Campus environment, with particular regard to the farmland, ecology and water quality of the River Granta, the Conservation Area status of the site, the listed buildings and possible archaeological remains. We will ensure that the environmental impact of new buildings and surrounding landscapes is improved through enhancement of environmental specification and design. The demolition of old buildings and construction of new facilities is managed in such a way to ensure minimal disturbance to the inhabitants and environment of our campus and surrounding communities. We will continue to work closely with South Cambridgeshire District Council and its officers to find constructive solutions to challenges.

We are particularly aware of Babraham village's concerns about traffic flow to the Campus and have brought forward to 2006 the construction of a new roundabout on the A1307 and entrance to the Institute which will help to alleviate car, delivery van and lorry traffic through the village.



Science and Society

Policy and strategy for public engagement

The Babraham Institute strives to achieve a high standard of Corporate Social Responsibility and public reputation. The Science and Society programme is a vital strategic element to achieve this policy objective. We aim to engage the public in dialogue about science, to create a better understanding and appreciation of the Institute's research, its potential applications and the implications these advances have for human health. We also seek to understand better the societal context for our work and to actively and constructively engage with those who have concerns about either the ethical issues or technological implications surrounding our work. Our scientists and PhD students are encouraged to stimulate dialogue and enter into debate.



Our communications aims are to:

- liaise with local schools and colleges, to enthuse young people about science and encourage them to follow careers in science;
- publicise the Institute's research through a variety of channels, including direct contact with scientists, visits and events, scientific and corporate publications, websites and the media;
- establish links with local community groups and organisations to promote partnerships and enhance communication and mutual understanding;
- support and encourage Institute scientists to participate in events and respond to queries;
- stimulate informed debate on the socio-economic and ethical dimensions of science within our remit;
- facilitate and promote constructive communication with the media;
- promote effective networking with the bioscience community;
- listen and respond to the needs and concerns of our various public audiences.

Over the next five years we will intensify the scope of existing relationships, create more sustainable partnerships and expand the scale of our activities. We are embarking on a wider Key Stage 1 & 2 programme and aim to enhance our adult outreach programme, incorporating socio-economic and ethical dimensions.

In 2004 the Babraham Executive Committee agreed that all project leaders must commit,

either personally or via postdocs (taking into account an individual's ability as a communicator) to a minimum of two days per year on Science and Society activities. Further, under the newly introduced essential credits system for graduate students, a maximum of six credits is available for them to earn by carrying out these activities on their own account.

Since 2001 we have ensured that all senior scientists participate in 'media training', giving priority to those whose work makes them likely spokespeople on topics of public interest. We focus on practical training in interview techniques, rather than non-technical writing, because we find that the demand from both media and community groups is for articulate speakers who can clearly communicate the key points. Whilst project leaders and PhD students are covered by formal training programmes in this area, participation by post-docs has hitherto been more *ad hoc*. We intend to extend, through the Institute's established postdoctoral training programme, more tailored training, especially concentrating on presentation skills for engaging the non-technical audience.

Contributions to public debates on science through the media or public events

Our scientists are contacted through the press office or independently to contribute to news and articles in the print and broadcast media. Three of Babraham's Project Leaders are on the Science Media Centre's list of 'technical experts', providing comment or opinion on issues of public interest. We aim to increase the number of skilful communicators as experts the Institute can offer and increase media uptake.

We review drafts of our scientists' publications to identify those that may be of interest to the general public and press. Our aim is to highlight our advances in bioscience research, releasing an average of one new story per month and sending press releases to journalists at the regional and national newspapers, trade and business press. News is added to our own website, the Cambridge Network website, and press releases are supplied to AlphaGalileo for distribution to scientific and media contacts. In 2005 we subscribed to Mediadisk, a communications tool for tracking media contacts, to ensure that our news always reaches the most appropriate people in their preferred format.

We plan to pilot the use of new media (video, film clip) to promote research undertaken at Babraham and present a more personal view of scientists, their work and lives, thereby breaking down some of the perceived barriers between science and other parts of society. We aim to

Summary of Objectives

- To intensify the scope of existing relationships, create more sustainable partnerships and expand the scale of our Science and Society programme.
- To explore the possibilities of using new media for more effective story placement.
- To take a more proactive role in public science events.
- To evaluate Babraham's involvement in the national Researchers in Residence programme, with a view to expanding our commitment.
- To increase the number of resources we can offer schools.
- To cater for a wide range of abilities within the mainstream educational system and extend our outreach to non-school-based youth and community groups.
- To make our website more accessible and informative.
- To initiate wider engagement with stakeholders in our research, especially on ethical issues.

expand coverage from the news to longer feature articles such as BBC's Horizon or TV channels devoted to science coverage.

Institute scientists are frequently invited to speak at national and international public lectures. Keith Kendrick has repeated his Gresham College public Lectures for a local mixed audience of non-scientific Institute staff (an important internal 'public'), schools, and community groups, which have proved immensely popular.

We have had some exploratory involvement with the Science, Engineering and Technology (SET) annual conference, hosted at the House of Commons, where young scientists have the opportunity to present a poster outlining the wider implications of their research. Following positive feedback, this is an activity we intend to support in the future, along with similar initiatives from the British Association for the Advancement of Science, the BBSRC and other foundations providing an opportunity for scientists to engage in dialogue with a variety of public audiences. Will Davies has been named as a finalist in the British Association Perspectives Science and Society Poster competition to take place in Dublin in September 2005. Similarly, we aim to participate in the Royal Society's summer exhibition – which presents particular challenges in improving the portability and scale of some of our 'hands-on' resources developed for schools.



Activities to explain the Institute's research programme to lay audiences

The Institute maintains close links with the local community, regularly informing residents of Babraham village and the surrounding area about progress in scientific research and building developments on the Campus, and responding to requests and enquiries. We will hold an Open Evening for local residents in summer 2006 and, as before, will include a speaker from our Bioincubator in addition to Institute scientists.

The Bioincubator companies have proved willing participants in public outreach events held on the Campus. We invite local organisations to visit the Institute to hear about our science and intend to identify and approach other community groups, such as the Cambridgeshire Women's Institutes and Parish Councils for inclusion in future events and to identify areas of need.

Involvement in school science programmes

A strong focus of our Science and Society programme has been to develop information and resources that complement and enhance school science at both primary and secondary level. In the Spring of 2005 the number of links was 16 and is still rising. We host visits to the Campus – notably the main Schools' Open Day during National Science Week – and make visits to the classroom. Our school liaison programme continues to be supported by the BBSRC's Local Schools Co-ordinator scheme.

We have developed several 'demonstration packs', enabling different scientists to take a particular demonstration to different schools - for example Blood and Circulation; Making sense of the Senses; What is a Scientist?; Nerves. The reception to these from local primary schools is very enthusiastic so we plan to extend both visits and the variety of 'packs'. Our brochure 'Real Life, Real Science', summarising opportunities in our schools' programme, has been sent to local schools and requested for distribution at a schools' regional resources forum. Sawston Village College, our nearest secondary school, now has Technology College status and consequently a strong policy to promote their science curriculum in their primary feeder schools – we are supporting them in this exciting venture.

Teachers' Information Evenings are a valuable exercise for ensuring that we listen to what schools need from the Institute and that what we offer is closely allied to the National Curriculum, but extending it where appropriate to bring new experiences to pupils and richer resources for the classroom. The evenings also include technology briefings for secondary school teachers on topics suggested by them. We plan to broaden the scope of these evenings to include discussion of

societal issues surrounding research, involving both science staff and PSHE tutors. We already sponsor a science prize at a local school and will explore with other schools whether this would be appropriate in the context of their assessment and reward strategies. We intend to explore how we might contribute to Foundation Stage learning, principally by providing resources (e.g. skeletons), collaborating with our own Babraham Nursery. One successful visit to another local Nursery has already taken place.

The Institute has provided five 'Researchers in Residence' for the national scheme run by the Wellcome Trust and Research Councils UK. Four scientists are linked with local secondary schools and one is a 'Virtual Researcher' available online for pupils' questions. For the future we need to evaluate the impact of the scheme with the intention to build sustainability and ensure that schools are provided with a continuous commitment when researchers move elsewhere. We will explore whether other schools would benefit from a similar link, in particular widening the scope of the scheme to the primary sector.

For the first time in 2005, in conjunction with the National Academy for Gifted and Talented Youth, we organised a study visit for exceptionally gifted pupils. This was judged by NAGTY to be very successful and Babraham has been asked to repeat the event in 2006, which we will be delighted to do. At the less able end of the secondary education spectrum, in July 2005 we hosted 'Enterprise Day' for 50 pupils from Manor Community College, which has a high percentage of under-achieving pupils from deprived backgrounds. The aim was to provide an aspirational vision of employment alternatives and the value of education as well as an opportunity to take part in a science practical to extract their own DNA. This event was part of a pilot scheme for a new part of the National Curriculum which will be introduced nationwide in September. The visit was a success and we are exploring the potential value of a mentoring programme. In a neatly symmetrical partnership, Sawston Village College (see above) is a partner school for Manor Community College and their science staff helped our PhD students with the demonstrations to reinforce the learning experience for the pupils. We are keen to foster such networking to enhance the experience for all participants.

Finally, we are aware that schools are not the only route by which we can outreach to young people. We intend to approach Youth Groups and the Scout and Guide movements to explore whether we can assist with their educational agenda. Further ahead we will explore

opportunities for working with other disadvantaged groups, such as young offenders. In brief, most of the focus of Babraham's Science and Society programme is on work with schools and young people, and we are planning, in the next four years, several initiatives to increase the scale and scope of our activities.

Public engagement via the Institute website

The style and content of the Institute website was renovated in September 2005: the site is regularly updated with information about our research and the Institute's business, as well as the latest news and details of events. We aim to make the site more accessible to visitors with visual or hearing disability and to meet the RNIB standard. To complement the website, the Institute produces a number of printed publications, including a Scientific Review (aimed at students and bioscientists in general), Corporate Plan and Corporate Report, and leaflets about our conservation work on Babraham Hall and the estate. The BRoadCast newsletter, currently an electronic publication available by e-mail and on the website, highlights news from the Babraham Research Campus.

Mechanisms for responding to issues of public concern

The Institute maintains a profile on www.epolitix.com – a website dedicated to providing policymakers and journalists with relevant information. We aim to make more proactive use of this, linking with parliamentary briefings, the Government press timetable and 'hot topics'. Scientists are available for interview independently and through the Science Media Centre when issues appear in the press. We aim to increase our panel of experts and thus the scope of issues to which we can contribute.

We aim to initiate wider engagement with stakeholders in our research both directly and via funders, for example the medical charities. We will use existing links to build dialogue and stimulate debate about the societal issues surrounding our research, especially the use of animals. Through this 360 degree feedback, we aim to become better attuned to the audiences we are trying to communicate with and to use the information to develop future key messages and resources.



Contributing to the knowledge-based economy

Babraham Bioscience Technologies Ltd (BBT), the Institute's trading company, brings together and promotes the Institute's world-renowned research, its facilities and its geographical location within the Cambridge Cluster to build an holistic approach to Knowledge Transfer (KT) and stimulate investment. In this way BBT delivers Babraham's objective to make an internationally recognised contribution to regional and national economic competitiveness. By coalescing scientific, technological and commercial excellence on a knowledge-driven campus we are delivering Babraham's KT policies through the wider landscape of the Babraham Research Campus.

BBT's portfolio of activities encompasses:

- Promoting awareness in Babraham Institute scientists of KT policies and objectives;
- Actively managing and exploiting the patent portfolio;
- Promoting and negotiating research partnerships with the pharmaceutical and healthcare biotechnology sectors;
- Managing and promoting the development of the commercial aspects of the Babraham Research Campus, for example:
 - managing the Babraham Bioincubator;
 - managing and developing the technology accelerator - Babraham BioConcepts;
 - delivering and managing the commercial premises in the development of the Babraham Research Campus;
 - stimulating inward investment to the Campus and region.

We are developing the Babraham Research Campus as a true science park focussed on biomedical science and technologies bringing

of knowledge into biomedical products and services. This broadens the KT activities to encompass stimulating economic and wider social benefits, such as job creation and increased regional prosperity whilst maximising returns to the Institute, both financial and reputational. This out-reach activity helps to ensure the Babraham Group proactively engages with its user communities.

Inward investment to the Babraham Research Campus - stimulating regional development

BBT's promotion of the Babraham Research Campus places the Babraham Institute at the corner-stone of a knowledge-driven initiative, one which brings together the resources necessary for competitiveness; knowledge, skills and science (DTI 5 Year programme 'Creating wealth from knowledge' July 2004). Linking with the private sector by facilitating and supporting start-up and early-stage bioventures promotes links with Babraham Institute, whilst it also stimulates economic development by creating the environment in which new jobs can be created. The new building plans will provide accommodation for the full business development cycle for such ventures by offering start-up and phased grow-on space for expanding companies. The BioConcepts facilities will be developed and offer start-up space for companies employing 1-10 employees with the BioDevelopment Buildings offering grow-on capacity with units of 300 to 1,000 m² for companies that have graduated from the Bioincubator-style accommodation. Thereafter design-and-build schemes will offer larger buildings, 2-5000 m², for more established companies.

BBT has undertaken development of the commercial real-estate to create the premier location for entrepreneurs to establish new and exciting bioventures. In terms of BBT's business objectives, whilst the property development is seen as essential to deliver its approach to knowledge transfer, it is seen as being supportive, rather than a key objective in its own right. BBT's activities have been recognised by the East of England Development Agency (EEDA) and it currently part-funds the BioConcepts activities within BBT as a Regional Enterprise Hub. EEDA has also provided additional grant funding to support an advisory service for the biotechnology and biomedical sectors and this too is managed by BBT.

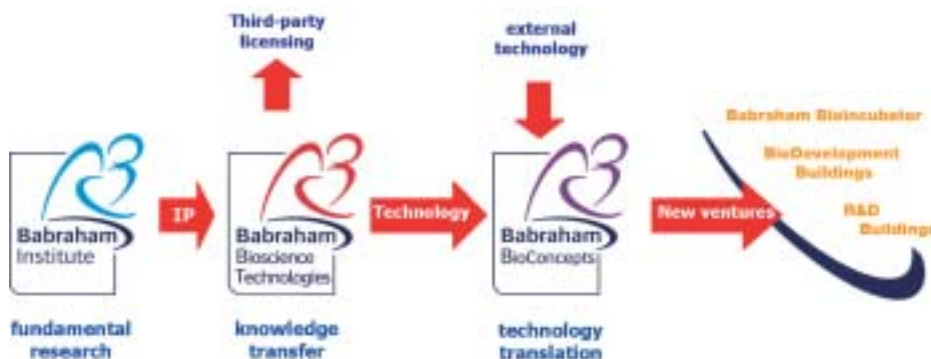
Exploiting the bioventuring focus and physical infrastructure it is developing on the Babraham Research Campus, BBT will aim to catalyse regional development via its bio-innovation framework. This will broaden the reach of the BBT KT remit as a logical extension to its current technology transfer and business mentoring and support initiatives.

Commercialisation and wealth creation

The Babraham Group (the Institute and BBT together) has developed a KT infrastructure that enables it to deliver a portfolio of commercial activities concerned with managing a dynamic IP strategy, sensitive exploitation of the Institute's technical services and developing the commercial estate. BBT ensures the Group preserves the core research mission of the Institute whilst at the same time ensures KT and collaboration with industry also remain part of the mission.

An embedded entrepreneurial culture within the Institute will be continually reinforced by encouragement and support from BBT and the BioConcepts team. Regular interaction with the companies on the Babraham Research Campus will stimulate interaction and collaborations with commercial colleagues. In this way the 'KT Continuum' becomes the route to engaging the user communities with the Babraham Institute science.

The degree of exemplification required by the investment community before it will invest in early-stage biotechnologies is ever greater. Increasing due diligence requirements and proof of technology and business concepts means that the Babraham Institute, in common with other innovators looking to commercialise their ideas, needs to span an ever increasing funding gap. If exciting new bioventures are to be created in a fiscal environment that lacks significant start-up



together fundamental research, applied science and commercial R&D. We are creating an interactive, supportive environment to maximise the prospects of success of both the curiosity-driven science and the transfer and exploitation

BBT's objective is to ensure that, at a regional and national strategic level, the Babraham Research Campus will increasingly become the prime focus for the translation of biosciences into quality technology supporting viable bioventures.

Summary of Objectives

- To promote the Babraham Research Campus as the premier location for entrepreneurs to establish new bioventures.
- To stimulate inward investment to the Campus and regional development.
- To provide specialist accommodation on the Campus for bioventures at any stage in the business development cycle and support the full spectrum of science from fundamental research to commercial R&D.
- To lead regional partnerships to promote knowledge and skills flow.
- To stimulate KT awareness and to support entrepreneurial spirit in Institute scientists, and interest in Babraham's science from potential commercial collaborative partners.
- To manage an active and wealth-creating IP portfolio and seek a funding route for 'Babraham BioConcepts Ltd.' as a fully fledged business.

funding, a new support infrastructure is required that will accelerate these maturation processes. What is needed is a vehicle that 'invests' in technologies to add value and create investment-ready bioventures. As a consequence of the stage BBT has reached in its own development it is now in a unique position to create this technology translation vehicle as part of the overall development of the Babraham Research Campus.

As Babraham BioConcepts is developed it will provide the infrastructure through which to deliver the focussed development of Babraham Institute IP, strengthening and exemplifying the IP in order to enhance the value of licenses or mature technologies for consideration as spin-out ventures. As well as a route to effective commercialization of the Institute's technologies Babraham BioConcepts will also aim to import innovative concepts either informally or through formal collaborations with regional or national organisations. The Cambridge Cluster acts as a major driving force with over 200 regional biotechnology companies as a source of new start-up bioventures. BioConcepts could also be used within the BBSRC to help in the translation of biomedical or related IP from other institutes.

BBT is actively pursuing routes to financing 'Babraham BioConcepts Ltd' through private and possibly public funding rounds in order to create a world-leading bio-technology accelerator.

Partnerships and knowledge flow

BBT needs to continue to build bridges between the finance and biotech communities so that it is increasingly in a position to take its own initiatives to span the funding gaps, to actively sustain development, not just transfer, of the biotechnologies that develop on the Campus. BBT will continue to develop its activities as a Regional [Biotechnology] Enterprise Hub and is in discussions with EEDA about other means of stimulating bio-innovation in the Region. A major issue for an individual looking to start or progress a new bioventure is the ability to network with like-minded individuals to exchange information, ideas and contacts. This readily occurs in cluster environments through formal and informal meetings. BBT has hosted several of these events each year. With BBT as the lead we are looking to establish out-reach activities to promote interactions within the regional biotechnology community and not least with Babraham Institute science. The EEDA grant received in November 2004 is a first step in the development of this out-reach activity. Other initiatives that we are developing include:

- *CEO club* – bringing together experienced CEOs from the biotech community with those starting out on the commercial journey;
- *Skills exchange workshops* – in support of founders as they go up a rapid learning curve whilst establishing their new ventures, we will bring together the management teams in existing businesses with those just setting out to promote skills exchange. The format will be themed sessions: finance/budgeting; employment; IP management, clinical trials, marketing etc. and there is a possibility of providing directly, or in association with third parties, a more formal series of INSET courses tailored to the needs of innovators as they develop their skills to match and lead their companies' development;
- *Knowledge transfer market place* – gaining knowledge about licensing opportunities is always an issue for start-up concerns where they are focussed on the delivery of their own intellectual property. However, in today's climate, single-technology companies will be seen as a greater risk than those that encompass IP portfolios consisting of related and additive technology opportunities. Through web-page posting and KT days BBT will provide a market place for biotechnology acquisition from academic and commercial sources in the region;

- *Biotech Investment Forum* – we will bring together business angels with a view to provoking informed debate on issues as they relate to bioventures, to encourage more angels to consider biotechnologies as investment opportunities - and then to present them with prospective investments. This Forum will bring together angels and the early stage venture community to provide a shop window on new technologies being developed in BioConcepts and in affiliated external bioincubators.

The objective of the knowledge-driven campus is to provide the opportunity for interaction between the Babraham Institute scientists and their commercial colleagues in the companies in the Bioincubator and Biodevelopment Buildings.



This is a key activity for BBT. Early-stage ventures are not in a position to fund research within the charity but as they grow this does become tenable and by creating partnerships with the companies from the outset the likelihood that such collaborative research activities will follow is increased.

BBT will continue to promote interactions through Campus 'open days' where scientists from both 'camps' present their research, thereby ensuring awareness of the types of science being explored either side of the academe/commerce divide. Such activities are already leading to small collaborations on chemical syntheses and novel assay development between companies and the Institute's research programmes. CASE awards, a LINK project and one major research collaboration have been established in the last twelve months.

At another level this interface provides an opportunity to reconsider the position of Babraham Tech^{mix}, the 'badge' used to provide one-stop-access to the Institute's scientific, technical and administrative services. By expanding its horizons Tech^{mix} will present a coordinated approach to scientific and technical service provision through a synchronised combination of Institute and commercial services operating through the Tech^{mix} badge.

Sustainability – financial planning

Achieving sustainability

The Institute takes a conservative approach to budget setting for each year in order to ensure that all commitments can be met. In this way the Institute has been able to build up healthy cash reserves in order to operate effectively and efficiently. A reserves policy also makes provision for future planned expenditure, for example as a consequence of the fixed term employment directive or the Institute's Estate Strategy (see page 22). As good science needs good people, a large proportion of the Institute's recurrent budget is committed to salaries. Whilst we are keen to ensure that we pay competitive salaries and thus attract the best scientists, the flexibility of the Institute to respond to new initiatives and to support adequately the researchers' current programmes means that the percentage paid on salaries must be contained.

At the time of writing (July 2005) the basis on which the Institute applies to the BBSRC for grants is to change to an FEC (Full Economic Cost) basis. Whilst there are some change management issues to be addressed, the long term prospects are better for the Institute, placing it on a more sustainable footing. However this assumption is only correct if we can retain the current grant volume – at present Babraham achieves a 50% success rate when applying for BBSRC grants. As part of the new funding climate, from late 2005/06 Babraham scientists should be able to apply to funding bodies traditionally closed to them which will again improve the Institute's financial prospects. However, at present the medical research charities are not proposing to fund on an FEC basis, so that there will be a persisting funding gap. We will continue to seek other ways of broadening our funding base.

We are grateful for the continued support of our sponsoring research council, the BBSRC, in assisting us with achieving our goals, particularly with respect to capital investment. The current Estate Strategy is backed by a comprehensive investment programme in order to ensure it is achieved. The Institute has an excellent track record in completing large capital build projects on time and on budget.

Achieving growth for BBT

The financial stability and opportunity for growth of BBT is integral to a successful Research Campus. Achieving occupation of the Minerva building has been a key issue. Because of its status as a wholly owned trading subsidiary, the growth model for BBT is necessarily conservative as in the absence of third party investment development can only be through organic growth.

However, through the development of the commercial facilities on the Campus and by the use of joint ventures, BBT is anticipated to be able to create wealth for the Babraham Group, as well as delivering the Institute's knowledge transfer responsibilities (see page 18). The BBT Business Plan projects being able to fulfil BBT's long term financial commitments though staged activities as a knowledge transfer company, supporting and interfacing with commercial bioscience and promoting regional development.

Efficient and effective financial management

Following the introduction of new accounting software, we will be able to make improvements to our business processes which will increase the efficiency and effectiveness of each area within the Finance Section during the forthcoming years. Our aim is to ensure that the information produced by the Section should be accurate, relevant, and timely.

Sales Ledger

- We plan to introduce electronic input into the finance system for Nursery costs prior to invoicing out. Currently this time consuming exercise is a re-input of information from the Nursery into the finance package (Great Plains) in order to raise sales invoices.

Summary of Objectives

- To operate a prudent balanced budget which allows scope to build substantial reserves to meet future large capital commitments.
- To ensure that the proportion of recurrent income committed to salaries is contained, whilst remaining a competitive employer.
- To ensure BBT is on a stable financial footing with an appropriate amount of risk-taking.
- To create wealth for BBT and thus the Group by using joint ventures to fund innovative projects and by developing the commercial facilities of the Campus.
- To improve our financial business processes to optimise efficiency

- We will implement a form of automatic invoicing for the houses and hostels rents. Tenants are usually invoiced a similar amount each month, each invoice having to be raised manually. We will introduce an improvement in the finance package to produce standard monthly rental sales invoices which would decrease the time spent raising re-occurring monthly sales invoices

Grants and External Funding

- We will be investigating better ways of making grant information available to more end users.



Purchasing

- The daily routine of inputting purchase orders onto the system needs to be replaced with e-requisitioning, which is coming into place with Great Plains version 8. The current system of filling in a requisition, which is then input by the purchasing department onto the system to produce a purchase order to be sent to external suppliers, is a time consuming data entry task.
- The finance package could be improved to deal with overspends on budgets. Currently manual checks of budgets and costs are undertaken. This process needs to be automated to ensure all potential overspends are identified by the system rather than relying on manual reports and checks by the finance staff.

Purchase Ledger

- Currently all invoices are entered manually by the purchase ledger team onto the system. Given the quantity of invoices, this task would be considerably improved by employing Optical Character Recognition (OCR) software to scan invoices and import the relevant information onto the system.
- Currently locating invoices to deal with queries can be a lengthy task, especially older archived invoices. This would be improved if invoices were scanned and stored electronically, providing all users with the ability to bring up invoices on their workstations rather than having to manually find the invoices.

Finance

- Reports to end-user are currently available in real time using Anyview. This could be redesigned to highlight any overspends more dramatically than it currently does.
- Management reports are circulated in hard copy. This could be improved by sending (using a secure source) all management accounts electronically to senior staff. It would be useful also to have the ability for users to 'drill down' in these electronic management accounts to see further detail where needed for specific areas of income and expenditure. This would be of particular use where categories of expenditure are summarised together (e.g. light, heat and water).
- The current situation is that management accounts are prepared on a quarterly basis. It is anticipated that early in the financial year 2005/06 we will begin to produce these accounts on a monthly basis, together with supporting documentation and written commentary as required.
- Budgets need to be adjusted in real time. This is currently undertaken monthly in a time consuming process of downloading the 'old' budget and uploading a new adjusted budget. A real time approach needs to be instigated to allow budget adjustments to be made and reflected in Anyview so that real time 'actual' data can be compared against real time 'budget' data.



- An improved bar code system could be implemented in Stores, which will improve reporting to customers.
- There is a requirement for the Institute, as with any business, to forecast its cash flow position on a regular basis. We will be seeking to install the necessary data management systems to facilitate the production of quarterly cash flow forecasts.



Summary of Objectives

- To implement the development of the campus in an integrated and financially sustainable plan.
- To provide a replacement Biological Support Unit for rodents as the highest priority.
- To build a replacement central Stores building with enhanced functional capability as a high priority.
- To plan for a major extension to our main Laboratory block in order to move most scientists into one building and in turn release an older Laboratory block to provide better accommodation for scientific services.
- To construct a new entrance for the Campus from the A1307.
- To build laboratory accommodation suitable for life sciences ventures at all stages of the business development cycle, as appropriate for the BBT business plan.
- To give a high priority, as part of the Campus developments, to demolitions and landscaping to improve the appearance of the estate for the forthcoming decades.
- To make concomitant improvements to the Campus infrastructure to accommodate all these developments.
- To commit to a programme of maintenance that ensures buildings are well-maintained and fit for purpose.

has developed many incurable leaks. The Stores provides an essential service in support of our research by stocking some 700 high-throughput items including a wide range of expensive molecular biology kits, other chemicals and disposable plastic ware. We will also include a scientific archive store within this building. As the new stores building is a relatively low specification structure, compared to research facility buildings, it provides an opportunity to include in the design an area to be used as the central control point for a CCTV security network. Providing there are no planning obstacles we currently anticipate construction work commencing early 2006 with completion in six months.

Although we are unlikely to commence the design process for the major extension to building 540 within the next five years we have nevertheless included this project in our planning deliberations to ensure that no single element of our current strategic plan will have a negative impact on either of the other projects. We will therefore be seeking advice and comments from the local planning authority at an early stage so that we can be reasonably confident that all three schemes will stand a good chance of full planning approval.

Additional plans for the next five years include; phasing in a CCTV system to enhance and support the existing foot patrols; the possibility of converting building 522 to provide additional catering facilities to meet the needs of the expanding campus; to make significant investment in hard and soft landscaping schemes including the kitchen yard; to make continued improvements to electrical distribution; to replace main road bridge and approach roads; and to replace or upgrade the sewage treatment plant.

Major BBT Capital Projects

The new building plans will provide accommodation for ventures throughout the full business development cycle by offering start-up and several phases of grow-on space for expanding companies. The BioConcepts facilities will be developed and offer start-up space for companies employing one to ten employees with the BioDevelopment Buildings offering grow-on capacity with units of 300 to 1,000 m² for companies that have graduated from the Bioincubator-style accommodation. Thereafter design-and-build schemes will offer larger buildings, 2-5,000 m², for more established companies.

In order to service the new build, significant infrastructural improvements are also planned. Principal amongst these is the new entrance to the Campus from a roundabout to be constructed at the north-eastern side of the estate, on the A1307. Leading from the roundabout will be a new access control point and road through the site. By selective use of access control permissions we will reduce the volume of Institute traffic through Babraham village.

Landscaping

The planned works will also ensure that we demolish a large area of redundant and unsightly buildings, replacing either with new build, car

parking or landscaping. There is an integrated landscaping plan for the entire Campus which aims to restore so far as possible the original parkland setting for the Hall, provide replacement specimen trees for those now reaching the end of their safe life and to soften the environmental impact of the building developments.

Maintenance

We are aware that as both the number and complexity of buildings on the Campus grows this will inevitably place greater responsibility and workload on the in-house engineering department. It is therefore most likely that the engineering department's present accommodation, including workshops and offices, will require extensive refurbishment and be extended, to provide the appropriate accommodation to meet these additional responsibilities. We have just recruited (July 2005) a new Head of Engineering who will be expected to provide senior management with proposals as to how best the engineering department can efficiently and effectively meet all future responsibilities including new projects and 'backlog' and 'planned preventative and reactive' maintenance schedules.

The Institute is committed to allocating significantly larger funds to meet annual BBSRC targets set for both of the above categories of maintenance for building, plant and infrastructure. A 10 year funding strategy to eliminate all backlog maintenance (as detailed in the Drake & Kannemeyer Report for the Institute) has been established. However, BBSRC has made available for each of the next four years additional annual funding of £3M to assist Institutes with their backlog programme. Bids from Babraham for additional backlog funding totalling £965K have been approved for 2005/06. This will take the total spending during 2005/06 on all maintenance to £2.57M.



Operations

The over-riding principles we apply to the management of our support operations is to ensure that the service provided is fit-for-purpose and that wherever possible we follow the Gershon* approach to release resources to the front line (in Babraham's case, directly to fund our scientific research). The three areas identified by Gershon for central Government that are most applicable to Babraham are Procurement, 'Back office' (e.g. business systems) and productive time. On page 20 we explain in more detail how we plan for the Finance back office function to achieve significant time savings and improved delivery of information. This is achievable through reforming our business processes subsequent to implementing new accounting software. Plans for other functions are detailed below.

Business systems

- To implement a comprehensive facilities management system to manage all Institute facilities in line with dual support reform principles.
- To establish new server systems for Administration.
- To increase online facilities for all staff to gain access to administrative and scientific information.
- To achieve efficiency savings from utilising procurement data more effectively to achieve better purchasing prices and contracts.

Health & Safety

- To hold six-monthly H&S seminars for senior management to inform them of changes in legislation or responsibilities.
- To adopt a formal annual reporting system to interface with the Institute's Governing Body and senior management on H&S issues.
- To improve the H&S committee's performance by producing 'Action Sheets' based on the minutes of the meetings.
- To improve the emergency planning system and review the plans for foreseeable emergencies.

Security

- To move to a centralised system for franking all Institute post saving duplication of machines and focussing expertise on postal systems use.
- To introduce an electronic visitor control system allowing a quicker, more efficient and more controlled entry, allowing staff and companies to electronically pre-register visitors
- To increase CCTV provision to supplement the security patrols.
- To update the current Fire Alarm Panels.
- To ensure that numbers of staff and patrol dogs are appropriate for the number of buildings and range of duties.
- To review and overhaul all security and emergency procedures.

Nursery

- To review demand and as necessary to expand the facility to provide more childcare places, as the Babraham Campus develops and new government initiatives are implemented that support childcare expenses for parents.
- To continue the development of Nursery and Playscheme facilities to meet the Disability Discrimination Act requirements. To provide a dedicated outdoor sleeping area for babies in prams, a separate office for Nursery Manager and cycle storage facility.
- To continue with the development of the garden to make an area to encourage wildlife and to provide pathways, dens and a vegetable patch for the children.
- To encourage ongoing childcare and education training for staff to include NVQ level four training for Nursery Manager, NVQ level three training for Nursery Nurses and NVQ level two training for Nursery Assistants. For staff to partake in other training such as IT, child protection, Special Educational Needs and first aid.

Housing

- To convert a pair of semidetached houses which are in need of renovation into two one-bedroomed and two two-bedroomed flats. This change in provision will better meet the needs of our staff.
- To continue our programme of renovation and updating, especially to include more economic and effective heating and hot water systems.
- Through staged increases to bring the rent paid by all tenants to the appropriate level for the accommodation they occupy, under the new rental structure.
- To assess the effective life of the accommodation and undertake a preliminary review of the future options in the light of demand for housing.



Conferencing

- To maximise room use by Campus staff and suitable external companies so that the facilities are well used.
- To review the use of the Library Reading Room, once the Library becomes e-only in 2006, with a view to providing another high quality meeting room.

Green Transport Plan

The Babraham Research Campus has set the following overall targets to against which to measure achievement of the Green Transport Plan goals.

- Campus mileage - 2% annual reduction in business travel (to achieve a 10% reduction by 2010 from a 2005 baseline).
- Carbon dioxide - 3% annual reduction, (through mileage reduction and investing in more efficient driving styles).
- Monitor staff travel needs - annually through site-wide surveys.

These will be achieved by:

- Promoting sustainable transport to all staff commuting to work. Raising awareness of the environmental impacts of transport and recommending or providing alternatives to the use of private cars;
- Reducing miles travelled on Research Campus business;
- Maintaining a car share database.

In addition, we plan the following initiatives.

- To review campus vehicle usage and investigate alternatives to car/van use.
- To implement a rolling programme of providing pool cycles on site.
- To make links with public transport groups and local companies
- To promote Car Free Day, held during European Mobility Week, and communicate information to staff including via leaflets and poster campaigns.

* Releasing resources to the front line (Independent Review of Public Sector Efficiency) - Sir Peter Gershon, CBE (July 2004)

Summary of Objectives

- To apply the Gershon principles to release resources to directly fund scientific research.
 - To provide support systems to assist scientists to maximise their productive time directly carrying out or supervising research.
 - To regularly review the fitness for purpose of our 'back office' functions, aiming to provide excellence but not 'gold-plating'.
 - To implement our new and comprehensive environmental action plan.
- Recently moving to using rechargeable batteries across the campus including the establishment of a 'swap' program for batteries that are no longer charged;
 - Recycling of a variety of materials e.g. paper, cardboard, toner cartridges, cans, bottles and fluorescent lighting tubes;
 - Composting animal faeces and using compost on Institute land;
 - Use of biodegradable bags for holding animal faeces;
 - Planning to move to an E-library by January 2006;
 - Providing bicycles to staff to access areas around the campus;
 - Availability of video conferencing facilities in order to reduce travel between the campus and other sites;
 - Actively promoting the green travel plan;
 - Undertaking significant refurbishment and restoration works in the Main Hall, a grade II listed building; and
 - Holding seminars on alternative approaches to using radioactive materials.

- To provide better facilities for cyclists and walkers, for example drying facilities and lockers to be installed at agreed points on site.
- To undertake a costing analysis for an Institute Bus Service, particularly exploring options for sharing such a service with other local research sites.
- To develop and implement a reward system for drivers and passengers who car share during work journeys in private vehicles.
- To encourage staff to utilise the video conferencing equipment available on site and support enhancements to the facilities.
- To produce a 'Green Thinker' newsletter.

Estate and Environmental Management

In 2005 environmental consultants Casella Stanger visited Babraham and carried out a comprehensive review of our environmental impact (actual and potential). The team also examined our management processes for handling any associated risks or negative impact and the scope for making positive impacts. A Gap Analysis was undertaken of the environmental management of Babraham against the International Standard for Environmental management ISO 14001. An action plan with objectives and targets has been developed in order to address the findings of this review. We will also examine examples of best practice at other Institutes which have been drawn to our attention, to see if they are applicable to Babraham. The review concluded that the Institute continues to demonstrate a very good level of awareness of environmental issues and an active and enthusiastic approach to environmental management. The Institute follows best practice in environmental management in a number of areas:

- Actively working to consolidate ordering and reduce the number of suppliers used;
- Requesting environmental policies from the majority of suppliers and actively encouraging those without one, to develop one;

A full action plan has been developed with the following headline objectives.

- Develop an Environmental Management Strategy appropriate to Babraham's activities, in line with the requirements of ISO 14001.
- Develop and implement procedures for all construction and demolition work to ensure that the activities of contractors are monitored and controlled.
- Minimise and manage waste generated by Babraham's activities, ensuring that wherever possible waste is reduced, recycled, or reused.
- Minimise the use of natural resources at the institute with particular emphasis on water, and energy consumption.
- Investigate the environmental performance of suppliers and develop an Environmental Supply Chain Management (ESCM) Strategy.
- Minimise emissions to air from vehicles at Babraham.
- Minimise the environmental risks associated with Babraham's activities with particular emphasis on fuel storage.
- Ensure that all staff have an awareness and understanding of the environmental aspects associated with their roles at Babraham and ensure that staff receive appropriate environmental training.
- Ensure that all tenants and contractors have an awareness and understanding of the environmental aspects associated with their roles and responsibilities whilst at Babraham.



- Collate from disseminated records a central copy of environmental records and data in line with the requirements of the Environmental Information Regulations which came into force this year. We will also develop an expanded 'environmental risk map'.
- Begin a programme of regular environmental audits (as distinct from existing Health and Safety audits) to ensure that the Institute is complying with legislation and with its own environmental management requirements.
- Develop a strategy to deal with the possible environmental consequences of trespassers on the site, for example fly tipping or interference.
- Emphasise the conservation aspects of estate management by exploring the Entry Level Scheme from DEFRA; improving the Parkland and Woodland areas of campus by planting and managing trees; and paying attention to wildlife habitat requirements.
- Complete all Landscaping throughout the main Campus (Forum, Conference centre etc).
- Examine aspects of best practice in place at sister Institutes for their applicability to Babraham, in particular:
 - Procurement and use of LPG dual fuel vehicles;
 - Successful negotiations with some suppliers to recycle their own products and to reduce packaging of goods;
 - Installation of a live/online building management system to monitor water, energy and gas usage;
 - Further installation of energy efficient lighting and various water saving initiatives;
 - Purchase of 100% renewable energy to power the site;
 - Installation of a software system for radioactive waste, which operates through the network and provides live information regarding radioactive receipts, usage and waste.

People

Excellent research needs good people, whether as innovative scientists or as part of the many different support teams. We recognise that to remain internationally competitive we need to be able to recruit and retain the very best staff. During their time at Babraham we aim to encourage their personal development and to make the most of the training opportunities available. We also promote a culture of mutual respect and equal opportunity and try to help staff achieve a reasonable work-life balance.

Continuing the initiatives introduced in the previous five years in promoting flexible working and work-life balance, and in conjunction with the BBSRC, we intend to introduce a stress management policy and strategy for the Institute in 2005/06. In addition, the introduction of the BBSRC's Decade of Retirement enables staff to negotiate their retirement date up to age 65 and will also enable staff to apply to the Institute for more flexible working during their last few years before retirement. Succession planning and career training and development will be vital to ensure that the Institute is prepared for possible early retirement of key staff and the careers of younger staff with potential are not blocked by those wishing to retire later. More emphasis will be placed on helping individuals to adjust to retirement through the introduction of more targeted retirement courses and literature.

The Personnel Section will need to proactively manage the issues which result from the introduction of the Fixed Term Directive, which changes the traditional employment expectations for scientists at the start of their careers. Timely communication and advice to staff regarding their contractual terms and conditions and possible redundancies or redeployments at the end of contracts with limited funding will be an on-going and a time consuming exercise. The

Summary of Objectives

- To introduce a stress management policy and strategy in 2005/06.
- To focus on succession planning and career training and development to ensure the Institute responds well to the flexibilities introduced by the Decade of Retirement policy.
- To proactively manage the issues which result from the introduction of the Fixed Term Directive.
- To investigate and introduce initiatives and benefits which will help to recruit and retain professional and skilled staff.
- To meet the demands of BBT as it grows, to develop and introduce further Human Resources and training strategies and procedures.
- To regularly review training needs and make adjustments to our training provision, using our newly formed Training & Development group to channel and develop ideas.

Personnel Section will work closely with the unions in this area.

The Institute will continue to investigate and introduce initiatives and benefits which will help to recruit and retain professional and skilled staff. Early in 2005 a Nursery Salary Sacrifice scheme was introduced for Institute staff using the Institute's Nursery. Later in 2005 a salary sacrifice Home Computer Initiative will be introduced to enable all staff to save on the purchase of IT equipment. A mentoring system will also be introduced to assist new staff settle into the Institute, as an extension of the induction programme already offered.

New methods and ideas for attracting and recruiting staff are constantly being investigated and assessed, especially in job areas where there is a shortage of skilled workers and high competition from local employers, e.g. Animal Technicians. The Apprenticeship scheme which was successfully introduced four years ago will continue and expand into other skill based areas.

As BBT continues to expand its activities, and grow its workforce, further Human Resources and training strategies and procedures will be introduced to meet the demands of a developing organisation. There will also be an increasing additional requirement to provide a Human Resources advisory service to the growing number of small but rapidly growing companies joining the BioIncubator and BioConcepts.

Building on the substantial training programme and fellowship scheme introduced for postdoctoral scientists over the last five years, it will be important for the Institute to regularly review training needs and make adjustments to the training provision. This will ensure that the extra funds provided due to the Roberts Review are used to the best advantage. Taking this training initiative further, we will look to build up a new training and career development scheme specifically targeting non-postdoctoral research assistants which covers widely applicable scientific and transferable skills important for the future scientific progress of the Institute.

To assist the promotion of training and career development across the Institute for both scientific and non scientific staff, a newly formed Training & Development group will receive ideas and suggestions from all areas of the Institute, from which strategies can be established to ensure all individual training needs are met. Currently all staff receive a copy of their training record on an annual basis. The creation of a new skills database will ensure that these records can be put to even greater use, including the planning and organisation of future training events. The Institute now has its own Training Officer who is not only responsible for organising and administering all training activities provided, but also for delivery of some courses. Having an in-house training resource has provided not only financial benefits but has ensured that courses are more closely targeted to the Institute's culture and the specific needs of staff. External trainers and training courses are constantly reviewed and assessed and it is planned to introduce new courses such as project management, statistics, interpersonal relationship skills, etc. within the next year.



Corporate governance and risk management

A high standard of corporate governance is crucial for Babraham's public reputation; our regulatory relationships with Companies House and the Charity Commission; interactions with funding bodies including our sponsor, the BBSRC; and building trust in the integrity of our research. Quality assurance and the ethical conduct of our science are discussed on page 14 (Values and Impact).

As one of the larger research charities, we have consistently adopted the highest standard of reporting (SORP 2000 and now SORP 2005). We aim to meet the very best standards as advised by the Institute of Chartered Secretaries and Administrators for limited companies in the not-for-profit sector and participated actively in consultations about improvements to charity governance. The Institute is naturally subject to all appropriate UK regulatory legislation, for example Health and Safety.

This Corporate Plan is the first to be produced with an embedded risk management approach lying behind the objectives we seek to achieve. In the next two years we are aiming to improve the understanding of a risk management approach to decision making, cascading from senior and middle management to more junior staff. We have encapsulated the *modus vivendi* of Babraham into an explicit values statement (see pages 14/15). We are re-constructing our intranet site to provide, *inter alia*, a more direct linkage to local rules and value-led guidelines.

For the first time in September 2005 we will advertise for Trustees for the Institute, and hope to increase the participation of women on the Board commensurate with efforts to increase the participation of women in science. We are attentive to the need to have a diverse range of relevant perspectives on the Boards of both the Institute and BBT. The executive is very grateful for the commitment and interest shown by Babraham's current and past Board members.

The operational aspects of risk management are the responsibility of the Quality, Risk and Crisis Management Committee (QuaRC). Whilst a framework for dealing with a range of foreseeable situations is in place, this needs to be constantly held under review. For example, in the autumn of 2005 we will revisit our plans (last tested at the time of the millennium) for running the Institute on a minimum of staff, to plan for the possibility of a major public health emergency such as avian flu. The Institute and BBT's risk registers are regularly reviewed and mapped onto the SWOT analysis to ensure we have an up-to-date top-level analysis of the main threats and opportunities facing the Institute, so that we can plan to either manage risk or seize opportunity.

Summary of Objectives

- To improve understanding of a risk management approach to decision-making, for more junior staff.
- To improve the communication of local rules and value-led guidelines by re-constructing the intranet site.
- To advertise openly for applicants for Trustee positions.
- To ensure that Babraham's contingency plans and SWOT analysis are regularly reviewed in the light of changing circumstances.



Board and committee members

Members of the Babraham Institute and Babraham Bioscience Technologies Ltd Boards of Directors at 1 July 2005

The Babraham Institute

Board of Directors

Dr David Bloxham (Chairman)
Evolutec Ltd

Professor Bill Cushley*
University of Glasgow

Dr Richard G Dyer*
The Babraham Institute

Professor Sir Martin Evans FRS
Cardiff University

Mr Derek Flint*
Lay Member of Medical Research Council, Ex-European Director
of TSB and Carivita, Ex-Director of FIMBRA

Dr Richard Henderson FRS
MRC LMB

Professor Ray Hill
Merck Sharp and Dohme

Professor Barry Keverne FRS
University of Cambridge

Professor Jim Smith FRS*
Wellcome Trust/Cancer Research UK

Babraham Bioscience Technologies Ltd (BBT Ltd)

Board of Directors

Dr Richard G Dyer* (Chairman)
The Babraham Institute

Dr Caroline Edmonds*
The Babraham Institute

Dr David Hardman*[∇]
BBT Ltd

Professor Ray Hill
Merck Sharp and Dohme

Dr Keith Humphreys*[∇]
Ex Managing Director, Rhône Poulenc (retired);
Ex Director, AMEC

Mr Richard Jonas[∇]
Ex-Cluttons

Dr Andy Richards
Non-Executive Director, Vectura plc.

Mr Steve Visscher
BBSRC

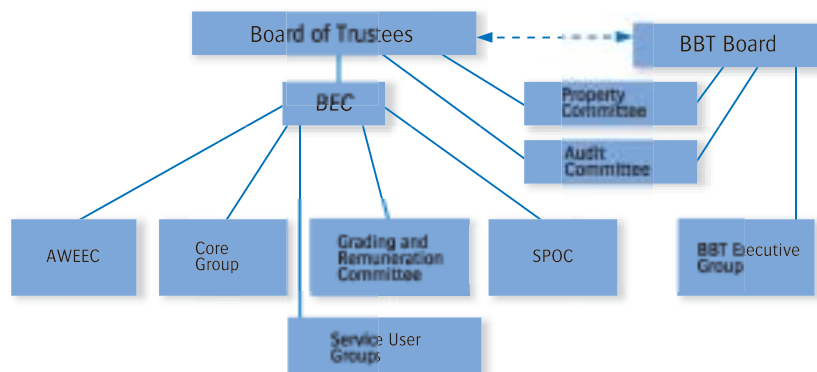
Mr Bob Williams*
The Babraham Institute

* Member or executive attendee at the Audit Committee

∇ Member of the Property Committee

Dr Edmonds is Company Secretary to both Boards

Committee Structure



BEC – Babraham Executive Committee

AWEEC – Animal Experimentation and Ethics Committee

SPOC – Science Policy Committee

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* Dr Dyer will be leaving Babraham on 31 December 2005 and will be succeeded by Professor Philip Ingham, FRS

