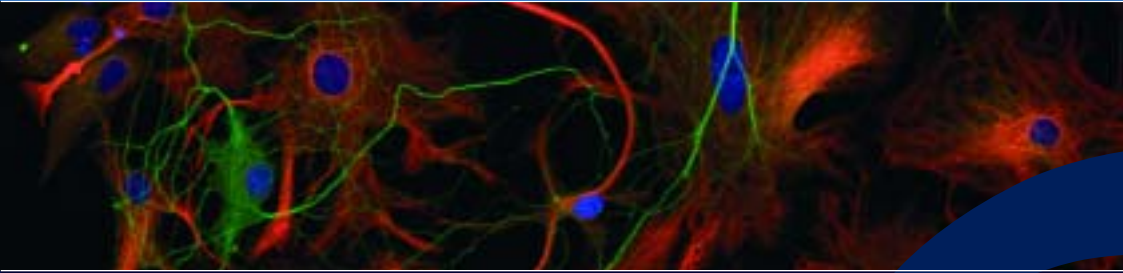
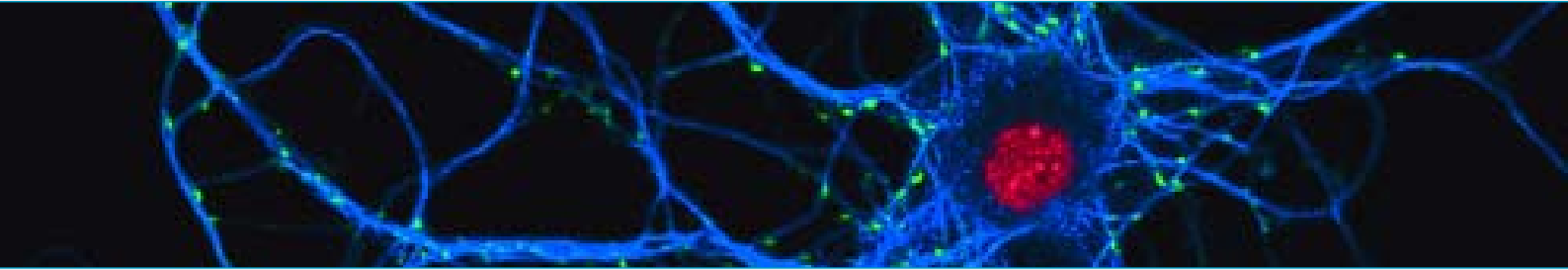


Corporate Report 2001-2005





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.

A company limited by guarantee, registered in England and Wales No. 3011737. 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.

© **The Babraham Institute and Babraham Bioscience Technologies (BBT) Ltd. 2005.**

Babraham Corporate Report 2001-2005 is available on application to:

Corporate Affairs
The Babraham Institute
Babraham
Cambridge CB2 4AT
UK
Tel: +44 (0)1223 496000
Fax: +44 (0)1223 496002
Web: www.babraham.ac.uk (Institute)
www.babraham.co.uk (BBT Ltd)
Email: babraham.contact@bbsrc.ac.uk

Editor Caroline Edmonds

Design and Production Richard Powell Design

Graphics Sorcha Rabbitte

ISBN 0-9544486-3-4

ISSN 1747-065X

Contents



02	Director's Introduction
03	Selected Recent Publications
05	Infrastructure for Science
08	Operations and Efficiency
10	HR, Training and Graduate Programme
12	Estate Strategy
14	Knowledge Transfer
16	Science and Society
18	Financial Summary and Balance sheet
19	Consolidated Financial Statement
20	Metrics
21	Contacts

Director's introduction

The Introduction to the Corporate Plan for 2001 – 2005 stated that recruitment, development of cross Campus interactions and provision of appropriate and strong infrastructure, were all central to our strategy for success. During the period of the last Plan we have been successful in all three of these key areas.

The Institute has continued to recruit excellent graduate students and the 2004 external review of our Graduate Programme described Babraham as an exemplar to other Institutes and the Higher Education sector generally. Our students continue to have a 100% record in obtaining career employment after graduating. We have successfully recruited a cohort of project leaders who already have an impressive record of achievement. Every year the competition to obtain a post at Babraham increases. Our postdoctoral scientists flourish and a disproportionate number of young Babraham scientists obtain *ad hominem* Fellowships from UK Research Councils or other national funders. Finally, we have also been fortunate to recruit very good staff in other parts of the Institute and into Babraham Bioscience Technologies Ltd (BBT Ltd). Babraham is palpably stronger than five years ago. Science is a 'people business' and an organisation can be no better than its people: we continue to move forward but will need to have recruitment and retention as a key component of our future plans.

Cross campus interactions have markedly increased in recent years. First, the Institute has proactively sought to recruit project leaders and postdoctoral scientists who will work to bridge the gaps between individual laboratories in order that emerging opportunities are grasped and that these interfaces can be exploited effectively. The laboratories themselves have strengthened their capacity and the science at Babraham is, I believe, more focussed and excellent than ever before.

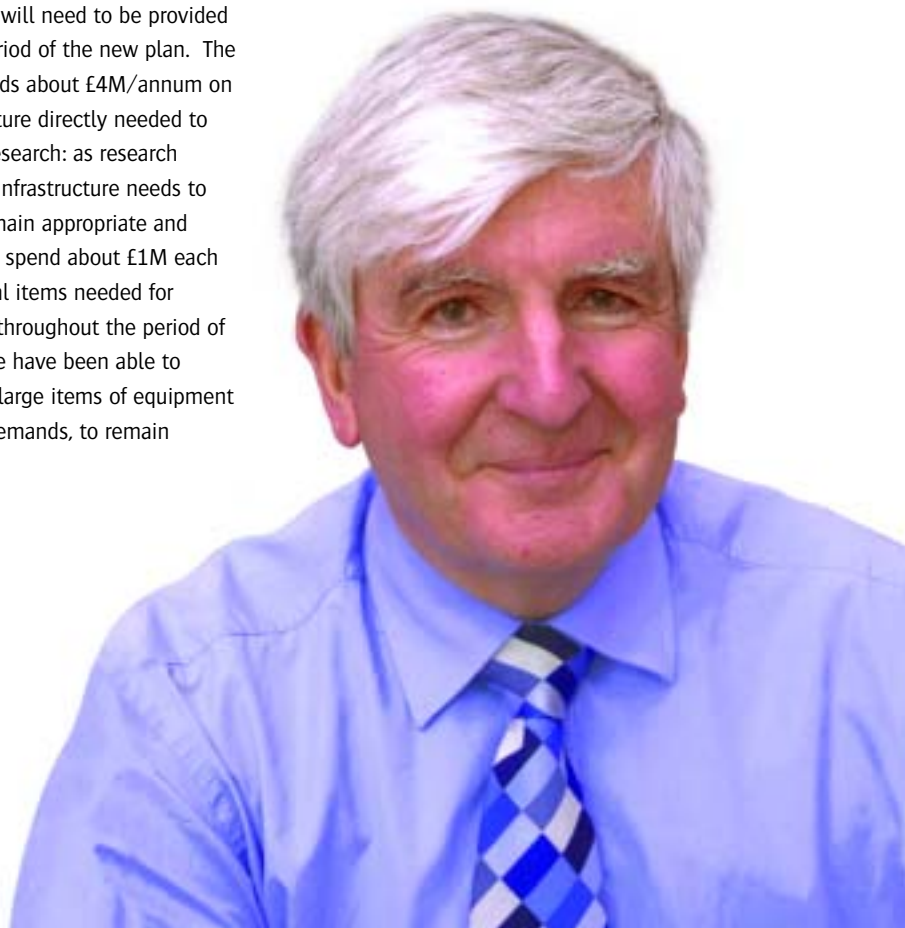
Second, there has been tangible progress in increasing the interactions between Institute scientists and the staff in BioIncubator companies that are located on site. BBT Ltd has taken the lead role in this area and in the development of BioConcepts. This is a vehicle for shaping laboratory based ideas into commercial ventures and, through staff employed in BioConcepts, is able to take science and turn discovery into technology. The East of England Development Agency is providing substantial funding to support BioConcepts.

The Institute and BBT Ltd are located on a delightful parkland setting on the edge of Cambridge. A consequence of the location is that any development of the campus is effectively on a 'green field site'. During the period 2001 – 2005 we have significantly strengthened the infrastructure that lies beneath the soil. In 2004, BBT Ltd completed a new bioincubator building under budget and on time.

However, with ambitious plans for the further development of the campus, additional infrastructure will need to be provided during the period of the new plan. The Institute spends about £4M/annum on the infrastructure directly needed to support our research: as research changes, the infrastructure needs to change to remain appropriate and effective. We spend about £1M each year on capital items needed for research and throughout the period of this Report we have been able to purchase the large items of equipment our science demands, to remain

internationally competitive. We have performed well, but as the competitiveness of our research increases, the need to manage provision of infrastructure effectively will both increase and become more challenging.

Overall, in the period 2001 – 2005 the Babraham Institute and BBT Ltd have advanced to a very strong position. There are many achievements which are too numerous to list here but are described later in the report. I should like to record my thanks to all the staff, students and visiting scientists who have made Babraham the leading Institute it is today. Please also see the companion volume to this Report, our Corporate Plan 2005 – 2010, for how we seek to improve and innovate yet further.



Selected recent publications in 'high impact' journals

- Constancia M, Hemberger M, Hughes J, Dean WL, Ferguson-Smith AC, Fundele R, Stewart F, Kelsey GD, Fowden AL, Sibley C, Reik W** (2002) Placental-specific IGF-II is a major modulator of placental and fetal growth. *Nature* **417** 945-948
- Reik W, Walter J** (2001) Evolution of imprinting mechanisms: the battle of the sexes begins in the zygote. *Nature Genetics* **27** 255-256
- Bolland DJ, Wood AL, Johnston CM, Bunting SF, Morgan G, Chakalova L, Fraser P, Corcoran AE** (2004) Antisense intergenic transcription in V(D)J recombination. *Nature Immunology* **5** 630-637
- Kendrick KM, Da Costa APC, Leigh AE, Hinton MR, Peirce JW** (2001) Sheep don't forget a face. *Nature* **414** 165-166
- Isles AR, Baum MJ, Ma D, Keverne EB, Allen ND** (2001) Urinary odour preferences in mice. *Nature* **409** 783-784
- Colucci F, Schweighoffer E, Tomasello E, Turner M, Ortaldo JR, Vivier E, Tybulewicz VLJ, Di Santo JP** (2002) Natural cytotoxicity uncoupled from the Syk and ZAP-70 intracellular kinases. *Nature Immunology* **3** 288-294
- Welch HCE, Coadwell WJ, Ellson CD, Ferguson GJ, Andrews SR, Erdjument-Bromage H, Tempst P, Hawkins PT, Stephens LR** (2002) P-Rex1, a PtdIns(3,4,5)P₃- and Gβγ-regulated guanine-nucleotide exchange factor for Rac. *Cell* **108** 809-821
- Carter D, Chakalova L, Osborne CS, Dai Y-F, Fraser P** (2002) Long-range chromatin regulatory interactions *in vivo*. *Nature Genetics* **32** 623-626
- Plagge A, Gordon E, Dean WL, Boiani R, Cinti S, Peters J, Kelsey GD** (2004) The imprinted signalling protein XLα5 is required for postnatal adaptation to feeding. *Nature Genetics* **36** 818-826
- Osborne CS, Chakalova L, Brown KE, Carter D, Horton A, Debrand E, Goyenechea B, Mitchell JA, Lopes S, Reik W, Fraser P** (2004) Active genes dynamically co-localise to shared sites of ongoing transcription. *Nature Genetics* **36** 1065-1071
- Murrell A, Heeson S, Reik W** (2004) Interaction between differentially methylated regions partitions the imprinted genes *Igf2* and *H19* into parent-specific chromatin loops. *Nature Genetics* **36** 889-893
- Lewis AJ, Mitsuya K, Umlauf D, Smith P, Dean WL, Walter J, Higgins M, Feil R, Reik W** (2004) Imprinting on distal chromosome 7 in the placenta involves repressive histone methylation independent of DNA methylation. *Nature Genetics* **36** 1291-1295
- Zhao R, Yang FT, Alexander DR** (2004) An oncogenic tyrosine kinase inhibits DNA repair and DNA-damage-induced Bcl-x_L deamidation in T cell transformation. *Cancer Cell* **5** 37-49
- Tkachev D, Mimmack ML, Ryan MM, Wayland M, Freeman T, Jones PB, Starkey M, Webster MJ, Yolken RH, Bahn S** (2003) Oligodendrocyte dysfunction in schizophrenia and bipolar disorder. *Lancet* **362** 798-805
- Doody GM, Bell SE, Vigorito E, Clayton E, McAdam S, Tooze R, Fernandez C, Lee JJ, Turner M** (2001) Signal transduction through Vav-2 participates in humoral immune responses and B cell maturation. *Nature Immunology* **2** 542-547
- Krugmann S, Anderson KE, Ridley SH, Risso N, McGregor AH, Coadwell WJ, Davidson K, Eguinoa A, Ellson CD, Lipp P, Manifava M, Ktistakis NT, Painter G, Thuring JW, Cooper MA, Lim Z-Y, Holmes AB, Dove SK, Michell RH, Grewal A, Nazarian A, Erdjument-Bromage H, Tempst P, Stephens LR, Hawkins PT** (2002) Identification of ARAP3, a novel PI3K effector regulating both Arf and Rho GTPases, by selective capture on phosphoinositide affinity matrices. *Molecular Cell* **9** 95-108
- Clayton E, Bardi G, Bell SE, Chantry D, Downes CP, Gray A, Humphries LA, Rawlings D, Reynolds H, Vigorito E, Turner M** (2002) A crucial role for the p110δ subunit of phosphatidylinositol 3-kinase in B cell development and activation. *Journal of Experimental Medicine* **196** 753-763
- Bahn S, Mimmack ML, Ryan MM, Caldwell MA, Jauniaux E, Starkey M, Svendsen CN, Emson PC** (2002) Neuronal target genes of the neuron-restrictive silencer factor in neurospheres derived from fetuses with Down's syndrome: a gene expression study. *Lancet* **359** 310-315
- Mundt CA, Licence ST, Shimizu T, Melchers F, Martensson I-L** (2001) Loss of precursor B cell expansion but not allelic exclusion in VpreB1/VpreB2 double-deficient mice. *Journal of Experimental Medicine* **193** 435-445
- Colucci F, Rosmaraki E, Bregenholt S, Samson SI, Di Bartolo V, Turner M, Vanes L, Tybulewicz VLJ, Di Santo JP** (2001) Functional dichotomy in natural killer cell signaling: Vav1-dependent and -independent mechanisms. *Journal of Experimental Medicine* **193** 1413-1424
- Ellson CD, Gobert-Gosse S, Anderson KE, Davidson K, Erdjument-Bromage H, Tempst P, Thuring JW, Cooper MA, Lim Z-Y, Holmes AB, Gaffney PRJ, Coadwell WJ, Chilvers ER, Hawkins PT, Stephens LR** (2001) PtdIns(3)P regulates the neutrophil oxidase complex by binding to the PX domain of p40^{phox}. *Nature Cell Biology* **3** 679-682
- Ma D, Shield JPH, Dean WL, Leclerc I, Knauf C, Burcelin R, Rutter GA, Kelsey GD** (2004) Impaired glucose homeostasis in transgenic mice expressing the human transient neonatal diabetes mellitus locus, *TNDM*. *Journal of Clinical Investigation* **114** 339-348
- Suire S, Coadwell WJ, Ferguson GJ, Davidson K, Hawkins PT, Stephens LR** (2005) p84, a new Gβγ-activated regulatory subunit of the type IB phosphoinositide 3-kinase p110γ. *Current Biology* **15** 566-570
- Santos F, Zakhartchenko V, Stojkovic M, Peters A, Jenuwein T, Wolf E, Reik W, Dean WL** (2003) Epigenetic marking correlates with developmental potential in cloned bovine preimplantation embryos. *Current Biology* **13** 1116-1121
- Krugmann S, Williams R, Stephens LR, Hawkins PT** (2004) ARAP3 is a PI3K- and Rap-regulated GAP for RhoA. *Current Biology* **14** 1380-1384
- Dean WL, Santos F, Stojkovic M, Zakhartchenko V, Walter J, Wolf E, Reik W** (2001) Conservation of methylation reprogramming in mammalian development: aberrant reprogramming in cloned embryos. *Proceedings of the National Academy of Sciences of the United States of America* **98** 13734-13738
- Mimmack ML, Ryan MM, Baba H, Navarro-Ruiz J, Iritani S, Faull RLM, McKenna PJ, Jones PB, Arai H, Starkey M, Emson PC, Bahn S** (2002) Gene expression analysis in schizophrenia: reproducible up-regulation of several members of the apolipoprotein L family located in a high-susceptibility locus for schizophrenia on chromosome 22. *Proceedings of the National Academy of Sciences of the United States of America* **99** 4680-4685
- Collins TJ, Berridge MJ, Lipp P, Bootman MD** (2002) Mitochondria are morphologically and functionally heterogeneous within cells. *EMBO Journal* **21** 1616-1627
- Kasri NN, Holmes AM, Bultynck G, Parys JB, Bootman MD, Rietdorf K, Missiaen L, McDonald F, De Smedt H, Conway SJ, Holmes AB, Berridge MJ, Roderick HL** (2004) Regulation of InsP₃ receptor activity by neuronal Ca²⁺-binding proteins. *EMBO Journal* **23** 312-321
- Sibley CP, Coan PM, Ferguson-Smith AC, Dean WL, Hughes J, Smith P, Reik W, Burton GJ, Fowden AL, Constancia M** (2004) Placental-specific insulin-like growth factor 2 (*Igf2*) regulates the diffusional exchange characteristics of the mouse placenta. *Proceedings of the National Academy of Sciences of the United States of America* **101** 8204-8208
- Salih DAM, Tripathi G, Holding C, Szeszak TAM, Gonzalez MI, Carter EJ, Cobb LJ, Eisemann JE, Pell JM** (2004) *Insulin-like growth factor-binding protein 5 (Igfbp5)* compromises survival, growth, muscle development, and fertility in mice. *Proceedings of the National Academy of Sciences of the United States of America* **101** 4314-4319
- Chakalova L, Osborne CS, Dai Y-F, Goyenechea B, Metaxotou-Mavromati A, Kattamis A, Kattamis C, Fraser P** (2005) The Corfu δβ thalassemia deletion disrupts γ-globin gene silencing and reveals post-transcriptional regulation of HbF expression. *Blood* **105** 2154-2160
- Mooslehner KA, Chan PM, Xu W, Liu L, Smadja C, Humby T, Allen ND, Wilkinson LS, Emson PC** (2001) Mice with very low expression of the vesicular monoamine transporter 2 gene survive into adulthood: potential mouse model for Parkinsonism. *Molecular and Cellular Biology* **21** 5321-5331
- Gregory RI, Randall TE, Johnson CA, Khosla S, Hatada I, O'Neill LP, Turner BM, Feil R** (2001) DNA methylation is linked to deacetylation of histone H3, but not H4, on the imprinted genes *Snrpn* and *U2af1-rs1*. *Molecular and Cellular Biology* **21** 5426-5436
- Smith RJ, Dean WL, Konfortova G, Kelsey GD** (2003) Identification of novel imprinted genes in a genome-wide screen for maternal methylation. *Genome Research* **13** 558-569
- White P, Burton KA, Fowden AL, Dauncey MJ** (2001) Developmental expression analysis of thyroid hormone receptor isoforms reveals new insights into their essential functions in cardiac and skeletal muscles. *FASEB Journal* **15** 1367-1379
- Mårtensson I-L, Rolink A, Melchers F, Mundt CA, Licence ST, Shimizu T** (2002) The pre-B cell receptor and its role in proliferation and Ig heavy chain allelic exclusion. *Seminars in Immunology* **14** 335-342

Selected recent publications in 'high impact' journals *continued*

- Murrell A, Heeson S, Cooper WN, Douglas E, Apostolidou S, Moore GE, Maher ER, Reik W** (2004) An association between variants in the *IGF2* gene and Beckwith-Wiedemann syndrome: interaction between genotype and epigenotype. *Human Molecular Genetics* **13** 247-255
- Lopes S, Lewis AJ, Hajkova P, Dean WL, Oswald J, Forne T, Murrell A, Constanica M, Bartolomei M, Walter J, Reik W** (2003) Epigenetic modifications in an imprinting cluster are controlled by a hierarchy of DMRs suggesting long-range chromatin interactions. *Human Molecular Genetics* **12** 295-305
- Isles AR, Davies W, Burmann D, Burgoyne PS, Wilkinson LS** (2004) Effects on fear reactivity in XO mice are due to haploinsufficiency of a non-PAR X gene: implications for emotional function in Turner's syndrome. *Human Molecular Genetics* **13** 1849-1855
- Cerrato F, Sparago A, Di Matteo I, Zou X, Dean WL, Sasaki H, Smith P, Genesio R, Brüggemann M, Reik W, Riccio A** (2005) The two-domain hypothesis in Beckwith-Wiedemann syndrome: autonomous imprinting of the telomeric domain of the distal chromosome 7 cluster. *Human Molecular Genetics* **14** 503-511
- Cerrato F, Dean WL, Davies K, Kagotani K, Mitsuya K, Okumura K, Riccio A, Reik W** (2003) Paternal imprints can be established on the maternal *Igf-H19* locus without altering replication timing of DNA. *Human Molecular Genetics* **12** 3123-3132
- Arnaud P, Monk D, Hitchins MP, Gordon E, Dean WL, Beechey CV, Peters J, Craigen W, Preece MA, Stanier P, Moore GE, Kelsey GD** (2003) Conserved methylation imprints in the human and mouse *GRB10* genes with divergent allelic expression suggests differential reading of the same mark. *Human Molecular Genetics* **12** 1005-1019
- Gamble JA, Karunadasa DK, Pape J-R, Skynner MJ, Todman MG, Bicknell RJ, Allen JP, Herbison AE** (2005) Disruption of ephrin signaling associates with disordered axophilic migration of the gonadotropin-releasing hormone neurons. *Journal of Neuroscience* **25** 3142-3150
- Cicolini F, Collins TJ, Sudhoelter J, Lipp P, Berridge MJ, Bootman MD** (2003) Local and global spontaneous calcium events regulate neurite outgrowth and onset of GABAergic phenotype during neural precursor differentiation. *Journal of Neuroscience* **23** 103-111
- Abraham IM, Han S-K, Todman MG, Korach KS, Herbison AE** (2003) Estrogen receptor β mediates rapid estrogen actions on gonadotropin-releasing hormone neurons *in vivo*. *Journal of Neuroscience* **23** 5771-5777
- Simonian SX, Herbison AE** (2001) Differing, spatially restricted roles of ionotropic glutamate receptors in regulating the migration of GnRH neurons during embryogenesis. *Journal of Neuroscience* **21** 934-943
- Sim JA, Skynner MJ, Herbison AE** (2001) Heterogeneity in the basic membrane properties of postnatal GnRH neurons in the mouse. *Journal of Neuroscience* **21** 1067-1075
- Vigorito E, Bell S, Hebeis BJ, Reynolds H, McAdam S, Emson PC, McKenzie A, Turner M** (2004) Immunological function in mice lacking the Rac-related GTPase RhoG. *Molecular and Cellular Biology* **24** 719-729
- Plagge A, Isles AR, Gordon E, Humby T, Dean WL, Gritsch S, Fischer-Colbrie R, Wilkinson LS, Kelsey GD** (2005) Imprinted *Nesp55* influences behavioral reactivity to novel environments. *Molecular and Cellular Biology* **25** 3019-3026
- Lewis AJ, Mitsuya K, Constanica M, Reik W** (2004) Tandem repeat hypothesis in imprinting: deletion of a conserved direct repeat element upstream of *H19* has no effect on imprinting in the *Igf2-H19* region. *Molecular and Cellular Biology* **24** 5650-5656
- Lambourne SL, Sellers LA, Bush TG, Choudhury SK, Emson PC, Suh Y-H, Wilkinson LS** (2005) Increased tau phosphorylation on mitogen-activated protein kinase consensus sites and cognitive decline in transgenic models for Alzheimer's disease and FTDP-17: evidence for distinct molecular processes underlying tau abnormalities. *Molecular and Cellular Biology* **25** 278-293
- Gonzalez I, Tripathi G, Carter EJ, Cobb LJ, Salih DAM, Lovett FA, Holding C, Pell JM** (2004) Akt2: a novel functional link between p38 mitogen-activated protein kinase and phosphatidylinositol 3-kinase pathways in myogenesis. *Molecular and Cellular Biology* **24** 3607-3622
- Coombes C, Arnaud P, Gordon E, Dean WL, Coar EA, Williamson CM, Feil R, Peters J, Kelsey GD** (2003) Epigenetic properties and identification of an imprint mark in the *Nesp-Gnasxl* domain of the mouse *Gnas* imprinted locus. *Molecular and Cellular Biology* **23** 5475-5488
- Balmanno K, Millar T, McMahon M, Cook SJ** (2003) Δ Raf-1:ER⁺ bypasses the cyclic AMP block of extracellular signal-regulated kinase 1 and 2 activation but not CDK2 activation or cell cycle reentry. *Molecular and Cellular Biology* **23** 9303-9317
- Mi W, Beirowski B, Gillingwater TH, Adalbert R, Wagner D, Grumme D, Osaka H, Conforti L, Arnhoff S, Addicks K, Wada K, Ribchester RR, Coleman MP (2005) The slow Wallerian degeneration gene, *Wlzf*, inhibits axonal spheroid pathology in gracile axonal dystrophy mice. *Brain* **128** 405-416
- Davies K, Bowden L, Smith P, Dean WL, Hill D, Furuumi H, Sasaki H, Cattanach B, Reik W** (2002) Disruption of mesodermal enhancers for *Igf2* in the minute mutant. *Development* **129** 1657-1668
- Chandran S, Kato H, Gerreli D, Compston A, Svendsen CN, Allen ND (2003) FGF-dependent generation of oligodendrocytes by a hedgehog-independent pathway. *Development* **130** 6599-6609
- Ellson CD, Anderson KE, Morgan G, Chilvers ER, Lipp P, Stephens LR, Hawkins PT** (2001) Phosphatidylinositol 3-phosphate is generated in phagosomal membranes. *Current Biology* **11** 1631-1635
- Stephens LR, Anderson KE, Hawkins PT** (2001) Src-family kinases mediate receptor-stimulated, phosphoinositide 3-kinase-dependent, tyrosine phosphorylation of dual adaptor for phosphotyrosine and 3-phosphoinositides-1 in endothelial and B-cell lines. *Journal of Biological Chemistry* **276** 42767-42773
- Manifava M, Thuring JWJF, Lim Z-Y, Packman L, Holmes AB, Ktistakis NT** (2001) Differential binding of traffic-related proteins to phosphatidic acid- or phosphatidylinositol (4,5)-bisphosphate-coupled affinity reagents. *Journal of Biological Chemistry* **276** 8987-8994
- Corps EM, Carter C, Karecla PI, Ahrens T, Evans PC, Kilshaw PJ** (2001) Recognition of E-cadherin by integrin $\alpha_6\beta_7$: requirement for cadherin dimerization and implications for cadherin and integrin function. *Journal of Biological Chemistry* **276** 30862-30870
- Collins TJ, Lipp P, Berridge MJ, Bootman MD** (2001) Mitochondrial Ca^{2+} uptake depends on the spatial and temporal profile of cytosolic Ca^{2+} signals. *Journal of Biological Chemistry* **276** 26411-26420
- Bootman MD, Collins TJ, Mackenzie L, Roderick HL, Berridge MJ, Peppiatt CM** (2002) 2-Aminoethoxydiphenyl borate (2-APB) is a reliable blocker of store-operated Ca^{2+} entry but an inconsistent inhibitor of $InsP_3$ -induced Ca^{2+} release. *FASEB Journal* **16** 1145-1150
- Mackenzie L, Roderick HL, Berridge MJ, Conway SJ, Bootman MD** (2004) The spatial pattern of atrial cardiomyocyte calcium signalling modulates contraction. *Journal of Cell Science* **117** 6327-6337
- James PS, Hennessy C, Berge T, Jones R** (2004) Compartmentalisation of the sperm plasma membrane: a FRAP, FLIP and SPFI analysis of putative diffusion barriers on the sperm head. *Journal of Cell Science* **117** 6485-6495
- Harrison OJ, Corps EM, Berge T, Kilshaw PJ** (2005) The mechanism of cell adhesion by classical cadherins: the role of domain 1. *Journal of Cell Science* **118** 711-721
- Georgiev P, Garcia-Murillas I, Ulahannan D, Hardie RC, Padinjat R** (2005) Functional INAD complexes are required to mediate degeneration in photoreceptors of the *Drosophila rdgA* mutant. *Journal of Cell Science* **118** 1373-1384
- Cobb LJ, Salih DAM, Gonzalez I, Tripathi G, Carter EJ, Lovett FA, Holding C, Pell JM** (2004) Partitioning of IGFBP-5 actions in myogenesis: IGF-independent anti-apoptotic function. *Journal of Cell Science* **117** 1737-1746
- Mundt CA, Nicholson IC, Zou X, Popov AV, Ayling C, Brüggemann M** (2001) Novel control motif cluster in the IgH δ - γ 3 interval exhibits B cell-specific enhancer function in early development. *Journal of Immunology* **166** 3315-3323
- Shimizu T, Mundt CA, Licence ST, Melchers F, Mårtensson I-L (2002) VpreB1/VpreB2/ λ 5 triple-deficient mice show impaired B cell development but functional allelic exclusion of the *IgH* locus. *Journal of Immunology* **168** 6286-6293
- Harding S, Lipp P, Alexander DR** (2002) A therapeutic CD4 monoclonal antibody inhibits TCR- ζ chain phosphorylation, ζ -associated protein of 70-kDa Tyr²¹⁹ phosphorylation, and TCR internalization in primary human T cells. *Journal of Immunology* **169** 230-238
- Guntermann C, Alexander DR** (2002) CTLA-4 suppresses proximal TCR signaling in resting human CD4⁺ T cells by inhibiting ZAP-70 Tyr²¹⁹ phosphorylation: a potential role for tyrosine phosphatases. *Journal of Immunology* **168** 4420-4429
- Suire S, Hawkins PT, Stephens LR** (2002) Activation of phosphoinositide 3-kinase γ by Ras. *Current Biology* **12** 1068-1075

Names in bold are Babraham staff. Bold italics indicates subsequently a Babraham project leader

Infrastructure for science

Infrastructure for the direct support of our Laboratories is a major area of investment and amounted to over £3M recurrent spend annually during 2001-2005, representing more than 15% of the Institute's total annual expenditure. Science Support Services are organised into three groupings: Technical Services, Animal Services and Corporate Services. Each service within these groupings has a Head/budget holder and a senior line-manager. The larger Services also have User Groups to set policy and recommend initiatives and investment; each of these is chaired by a senior scientist. To ensure efficiency, the Technical Services Manager works with the Technical Co-ordinators based in each of our two main laboratory buildings as a Technical Liaison Committee whose remit includes reviewing all scientific maintenance equipment contracts and bids for new scientific equipment.

Where there is capacity, the Science Support Services have generated external income by providing services for BioIncubator and off-site companies; Babraham Technix is the 'badged'



BBT gateway for these services, and income generated during 2001-2005 averaged around £220K annually. A proportion of this Technix income is pooled and reserved as a fund against which the Science Support Services can bid for additional items during the year. Our target to further market Technix services has been mainly superseded by the

outsourcing initiatives described below and the near complete uptake of the capacity of our services by Institute scientists. Our new approaches to Technix service provision for the Babraham Research Campus are outlined in the accompanying Corporate Plan.

Technical Services

In line with our stated target, during 2001-2005 the Institute's in-house Technical Services were comprehensively reviewed in the light of our developing scientific needs and the extensive and increasing scientific service offerings by companies, particularly in the Cambridge region. As a result we moved to outsource the following services at highly preferential rates negotiated for the Institute: DNA sequencing; DNA oligo synthesis; si-RNA oligo synthesis; peptide synthesis; custom polyclonal antibodies; scientific instrumentation. In some cases the preferential rates extend to our BioIncubator companies, *i.e.* provision for the entire Babraham Research Campus. In all decisions on outsourcing, quality, reliability and convenience to our

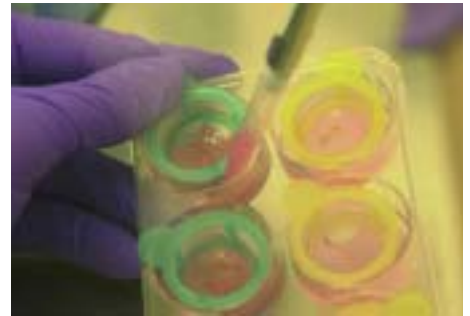
scientists have been major considerations. Savings in recurrent costs by closing in-house services and outsourcing have been re-invested in improved and major new in-house services as indicated in the sections below. In addition, the Institute invested over £500K per year in new equipment, prioritising large items. We maintain

a list on the Intranet of specialist scientific equipment available across the site; for example, in 2004 we purchased a new Caesium source irradiator at a cost of £120K.

Proteomics Facility

Dr David Oxley, an experienced protein chemist, joined the Institute in 2002 as Head of a new Proteomics Facility within our Protein Technologies Laboratory. Coincident with his appointment, the Institute purchased a Q-Star ESI Quadrupole-TOF at a cost of £350K to

extend our mass spectrometry capabilities to analysis of complex mixtures and sequencing. The further appointment of Dr Trevor Smith as a Senior Research Associate has secured the future of our Protein Expression and Structure Unit and additional investment in AKTA HPLC and 2D-gel chromatography equipment means



that the Facility now offers an extensive range of services and expertise. Several of our Project Leader groups are currently working with the Proteomics Facility. As an adjunct, we have continued to provide an in-house custom monoclonal antibody service.

Imaging Facility

Prior to 2004, the imaging systems within the Laboratory of Molecular Signalling were available to other users on-site with a necessarily restricted availability. The Institute has now purchased a Zeiss LSM 510 META confocal microscope (£200K) and established three of the imaging systems as a Facility run by an experienced postdoctoral scientist, Dr Simon Walker. The Zeiss instrument offers multiple laser lines which will excite a broad spectrum of fluorophores and, uniquely, the META detector can discriminate between fluorophores with overlapping emission spectra so that, for example, GFP and YFP can be used to label different targets within the same cell. Our two PerkinElmer UltraVIEW confocals are ideally suited to live cell imaging, utilising Nipkow spinning disk technology to give image capture at high frame rates. The Facility is widely used, with the Zeiss typically fully booked a week in advance. In its first six months of operation there have been 45 different users from the research groups of 22 of our Project Leaders and the advanced features have enabled initiation of several new projects.

continued over

Infrastructure for science *continued*

Fluorescence Activated Cell Sorting (FACS)

The Institute has greatly enhanced the cell sorting capability in this heavily used service through the recent purchase of a FACS DiVa upgrade (£50K) and a new Becton Dickinson FACSAria system (£210K) capable of sorting 18,000 cells per second. The flow cell design and optics of this instrument have enabled new work with complex five and six colour analysis and sorting of B-lymphocyte populations. The Facility also offers flow cytometry analysis of cell suspensions on two FACSCalibur instruments. In 2004 the Facility had 64 different users from the research groups of 19 Project Leaders.

Bioinformatics Group

A third core-funded bioinformatician post has been established in the Group which is centrally located and operates on an 'open-door' basis. Two grant award funded bioinformatician/statisticians are based in the Laboratories but also have space within the Bioinformatics Group. A highly successful innovation has been the establishment of in-house training courses run by the group such as 'Exploring the Ensembl genome databases' and 'A quick introduction to the Staden package'; all courses are bookable online and many have been oversubscribed and offered again. The Group maintains a suite of bioinformatics desktop packages for PC users and this facility has recently been extended to cover Mac users. A new central Linux facility has been implemented by Computing providing both a general and Bioinformatics application service.

Animal Services

Small Animal Facility

25 Project Leaders currently use our Small Animal Facilities. Over 350 rodent lines are housed in our 2000m² Small Animal Barrier Unit (SABU) which had a recurrent budget of £1.75M in 2004-05; external income from bioincubator companies and the Medical Research Council who share the building

amounted to £0.7M. It has proved essential that space in our animal facilities is strictly allocated annually by a high-level committee based on a scientific justification, previous successful outputs and a usage audit. Preservation of mouse lines by embryo freezing has been provided at no charge to reduce animal numbers and encourage effective use of space (currently 60% of lines are cryopreserved – our target to cryopreserve all lines has not yet been met principally due to the rate of production of new lines). Our scientists have been required to provide genotyping results within three weeks to increase efficiency of space and animal utilisation.

Major new areas of investment during 2001-2005 were made to:

- Maintain the increasing number of immunocompromised mouse lines (30% of total, 30% of Project Leaders involved). Despite continuing high health status in SABU this was insufficient for many of these lines which have required an intensive rederivation programme into a super-clean isolator based area within SABU, increased staffing levels and purchase of a total of 20 isolators at £10K each. This has been highly successful with rederived strains having screened completely negative for all organisms, zero signs of clinical infections and lines breeding successfully that were unable to do so in open racks;
- Provide a Category 2 facility for functional work requiring controlled administration of infectious organisms to both normal and immunocompromised mice;
- The establishment of an on-site composting facility for small animal bedding waste.

The Small Animal Facility offers many experimental procedures and techniques to the laboratories on site by having a comprehensive in-house training programme. Babraham's staff have also continued their excellent record of achievement in the IAT exams, often achieving top marks. Animal technicians are part of the Ethical Review Process with

NACWOs meeting regularly with the Certificate Holder and attending AWEEC (Animal Welfare, Experimentation and Ethics Committee).

Gene Targeting Facility

The Facility has successfully produced over 70 transgenic mouse lines through its embryonic stem cell and blastocyst and pronuclear injection services during 2001-05, carrying out



30-40 pronuclear injection or targeting projects each year for the research groups of 17 Project Leaders. The Facility has also progressed several technologies during this period including successful PAC injections, Cre/lox and Frt/Flpe targeting. To cover for expanding usage a fourth staff post in the Facility was added in 2005. Highlight achievements include:

- Targeted clones from 74 constructs resulted in a 90% success rate;
- Germline transmission was achieved with a success rate of 86% from 76 targeted clones injected. (3 are still on going);
- Transgenics were achieved with a success rate of 87% from 63 constructs injected. (2 are on going);
- Non targeted derived cell line made in the facility transmits at a higher frequency than the commercially available line;
- Rederivation of immunocompromised lines into the facility and successful training of staff in the technique;
- IVF with frozen and fresh sperm achieved to varying degree, being strain dependant.

Corporate Services

Computing

In 2001, the Computing section relocated to a new building in order to accommodate necessary expansion. Besides the move of all central hardware and wide area network connections it also involved the complete restructuring of Institute Fibre Optic local area network to both meet relocation requirements and to establish the structure for future developments across the campus. All was achieved with almost no interruption to normal computing facilities and service provision to the Institute. The period of this Report has seen a rapid development in Babraham's IT infrastructure. The key developments are:

- Development and implementation of new email structure including anti-spam measures;
- Development of central file store and establishment of storage facilities and practices including provision of specific areas for all project groups and sections. This consists of disk storage providing 10 Terabytes (from 40,000 Mbytes in 2000) of available storage and a separately located tape storage library to provide automated backup facilities for all network stored data;
- Development of LAN to provide gigabit connectivity and flood wiring of buildings. The local area network (LAN) infrastructure was extended and upgraded to provide high speed (Gigabit) connectivity between all buildings. The infrastructure within the buildings was also extended and upgraded to enable 100Mbit connectivity to be provided all areas as required. In part this was achieved with funding won from the Government's E-Science initiative;
- Establishment and implementation of new domain structure along with development of standard institute desktop, migration to Windows XP and establishment and provision of common applications;

- The wide area network (WAN) connectivity was enhanced in stages from 512K to the current 8Mb bandwidth. With a view to potential future requirements the hardware installed will now facilitate provision of connection up to 45Mb;
- Establishment of Wireless Internet facility in Conference centre offering Internet connectivity for visitors whilst ensuring security of Institute LAN;
- The provision of facilities and support to commercial companies has continued to expand. We have continued to develop the structure of services to these groups and enhance interaction and support. As part of this all companies now take security updates from Babraham as a component of their established services.

Library

Since 2001 the world of scientific publishing has moved strongly from print-based to electronic-based subscriptions. The Babraham



Library has kept pace with this revolution and 2005 will be the last print-based year. The growth has been dramatic: in 2001 there were 60 journals available via links on Library's EJ pages and in 2005 there are 379 journals available (which includes 111 subscriptions, 33 free/open access and 235 key titles from 'big deals'). There are now only two journals of interest to Babraham that are not yet published in electronic format.

Development of joint purchasing, at both BBSRC and Research Council level, has enabled the Library to maximise purchasing power by participating in several consortia deals including: American Chemical Society – 33 titles; Blackwell's Synergy 350+ titles; Elsevier ScienceDirect 1,800+ titles and Wiley Interscience 400+ titles.

Fotografix

Paralleling the move to e-publishing described by the Library, photography at Babraham has moved from being a 'wet' service to almost entirely computer-based graphics. Journals now almost exclusively require high resolution digital files instead of high quality prints and during the period of the Report the nature of the work undertaken by the Fotografix group has changed substantially. The group also supports the communications work of the Institute by building and maintaining both intranet and internet websites for the Institute and progress on completely

rebuilding the sites is reported under the Science and Society section.

The objective to re-equip all the meeting rooms was achieved, including introducing plasma screen technology and video-conferencing.

Operations and Efficiency

Corporate governance

As a charity and company limited by guarantee, the Institute is governed by a Board of Trustees. Babraham Bioscience Technologies Ltd (BBT) has a separate Board consisting of a mixture of non-executive and executive Directors. Together the two companies are known as 'Babraham Group'. The Boards have two joint sub-committees – the Audit Committee and the Property Committee. The latter is newly constituted (in 2005) as an evolution of the BBT Property subcommittee, to ensure that developments on the Babraham Research Campus are overseen by one body, mirroring the single coherent Babraham Group executive structure for managing the estate strategy. The Audit Committee was constituted as a joint committee in 2003, replacing the Institute's Finance and General Purposes committee, again to ensure that Babraham Group issues are looked at holistically.

Community partnerships

The Institute and BBT are particularly aware of their responsibilities to ensure that the Campus is a 'good neighbour' to the small village of Babraham in which the Campus is situated. We seek at all times to maintain an open and constructive dialogue about our activities and their potential impact on the village and its residents – which of course include some of our own staff. Recent initiatives include:

- Agreement to lease the land on which the village playground sits to the Parish Council to enable it to apply for grant help to upgrade the playground;
- Decision to bring forward (to early 2006 from a time dictated by the scale of development which is not yet reached) constructing the new entrance to the Campus, from the A1307 and thus avoiding the main village;
- Constructing and using a temporary construction traffic entrance away from the village for specified large projects;
- Help to maintain the village cricket/football ground and churchyard wall;

- Holding an open evening for all village residents to enable them to see recent developments, hear about Babraham science and raise any issues.

Regional partnerships

We also value greatly our working relationships with local research organisations, such as the MRC Laboratory of Molecular Biology and the Hinxton Genome Campus, as well as numerous interactions with the regional biotech community including, naturally, the tenant companies on the Campus. In particular we have:

- Hosted several Eastern Region Biotechnology Initiative (ERBI) events and joined various 'best practice' initiatives in, for example, procurement;
- Joined the Board of the Cambridge Network;
- Maintained Board membership of the University Challenge Fund;
- Shared technical facilities with the MRC and local biotech companies;
- Developed scientific links with tenant companies.

Risk management

Both the Institute and BBT maintain a risk register structure which is formally presented to the Boards at least annually and discussed in detail by the Audit Committee. This top-line document details the gross risks affecting key business objectives, the risk management strategy and responsibilities for delivering it, and then an assessment of net risk. The Institute's Quality, Risk and Crisis Management Committee (QuaRC) has taken forward a number of actions to ensure that supporting the risk register there are appropriate operating procedures, to implement best practice across all sections and the Committee membership has sought to embed a risk management culture throughout the Institute. BBT's risk matters are the responsibility of the BBT Executive Committee. Particular projects in the period of this plan have been:

- Flood prevention and management;
- Animal disease;
- Emergency evacuation procedures;
- Scientific data storage;
- Embedding a risk management approach to problem-solving.

Business systems

Since 2001 we have:

- Established new server systems for Administration and implemented new business system applications for Finance and Personnel;
- Enabled budget holders to view financial information online in real time;
- Developed more sophisticated integrated management reporting packages;
- Completed a three year investment in high-volume data storage capacity, with assistance from a grant for the OST's Escience fund.



Environmental impact awareness

Although Babraham does not seek to operate formally under ISO14001 we aim to achieve the same standards. Particular recent initiatives include:

- Exemption certificate from the Environment Agency to enable us to compost waste from the small animal facility, instead of incinerating the waste;
- Removal of old wooden fencing within the Parkland to help to recreate the nineteenth century setting for the Hall;
- Expanding the planted areas around Campus buildings to create outdoor 'working spaces' and a pleasant local environment;
- Completion of the restoration of principal rooms in Babraham Hall (listed Grade II) and renewal of the roof including the decorative lead covering to the stair tower;
- Increase in waste recycling, particularly paper;
- Introduction of an environmentally friendly procurement policy.

Green Transport Plan

As part of the developments on the Campus, Babraham is committed to running a Green Transport Plan (GTP) to help reduce the environmental impact of the Campus with particular reference to travel to work and business travel. To date we have:

- Established the role of Green Transport Coordinator;
- Established a Video Conferencing facility especially to reduce the need for travelling between BBSRC Swindon and collaborating research organisations;
- Established remote working facilities with emphasis on secure connectivity to enable staff to work from home on occasions where appropriate;
- Installed more bicycle shelters on the Campus;
- Surveyed staff attitudes to green transport issues;
- Established a baseline of the environmental impact of Babraham's business travel against which to measure progress in the future;
- Joined the Cambridgeshire Travel for Work Partnership coordinated by the County Council.

Housing

The Institute has a number of three- and four-bedroomed houses available for staff to rent, together with a few two and one-bedroomed properties. There are also six houses which have been converted into 'hostel' accommodation arranged as individual bedsits with communal cooking and washing facilities. In the last four years we have:

- Overhauled the charging algorithm to achieve a more equitable rental structure;
- Begun a further upgrading programme for the houses including installation of more energy efficient heating;
- Taken various initiatives to help improve the visual amenity of The Close, including 'skip weekend' to assist tenants in removing unwanted objects;
- Removed the full cleaning service to all but one Hostel, enabling most Hostels to be let on an analogous basis to a 'shared house' in the private rental sector rather than as a self-catering 'hotel', giving tenants reduced rents,

more freedom and more privacy – in return for responsibility to keep their own living quarters clean;

- Achieved full practical occupancy of the housing accommodation.

Conferencing

Having appointed an Operations and Conferencing manager and using developments in our Catering section, Babraham has grown able to offer a comprehensive meeting room and conferencing service for the Institute, BBT, Campus tenants and partner organisations. All meeting room facilities have been refurbished in the last four years, including making available a formal Board Room and usage has significantly increased.

Security

The aim of the Security team is to provide a safe and secure environment from which the Institute and its tenants can operate from. Since 2001 we have improved our service as follows:

- Increased staff levels;
- Upgraded the software for monitoring building fire alarm systems;
- Upgraded security communication system;
- Installed beam detectors at key control points;
- Fire Alarm Tests/Drills: Security took over the tasks of carrying out fire alarm test and drills, tests are now done daily;
- Access Control: upgrade of site access control to proximity/smart cards which are also used for the institute's cashless internal purchasing system (e.g. for use in the Refectory).



Health and Safety

Whilst it is a statutory requirement to provide Health and Safety cover, we also aim to provide an added-value, supportive, service for staff, students and visitors, rather than simply act as an in-house enforcement agency. To achieve this, in the past four years we have:

- Appointed an assistant to the health and safety manager trained to N.E.B.O.S.H. certificate level;
- Trained senior management in fundamental managerial H&S responsibilities;
- Trained H&S Assistants in risk assessment;
- Purchased seven Automatic External Defibrillators (A.E.D.'s) and trained 27 staff in their use;
- Introduced Topic Based Audits (TBA's) to emulate the Health and Safety Executive's new inspection methods;
- Re-designed the health and safety pages of the intranet to increase ease of use and increase the information available.

Nursery

The aim of the Nursery is to provide high quality care and a stimulating early learning environment for the children of staff, in order to help members of the Institute balance the demands of both working and family life.

Since 2001 we have:

- Continued to provide quality care for both Nursery and Playscheme children which was affirmed with the achievement of consistently good Ofsted reports and quality assurance awards from the out of school care organisation – 4Children and the National Day Nurseries Association;
- Developed outdoor play areas to include a dedicated climbing frame and swing area;
- Reviewed the Nursery menus to encompass the 'five a day' fruit and vegetable initiative and to provide healthy, nutritious meals for the children.

Staffing and Human Resources

The Babraham Institute is sponsored by the BBSRC and all staff have contracts with terms and conditions of employment negotiated centrally by this Research Council. However, many scientific staff are funded by external grants or fellowships competitively gained from research councils, charities and industry. The introduction of the Fixed Term Employee Regulations 2002, although seen as positive legislation in that it promotes fair and equal treatment, has created significant additional costs for BBSRC Institutes due to the Research Council's generous redundancy terms.

Redeployment is offered whenever possible, but many scientists are reluctant to move to a different area of science within the Institute.

The Decade of Retirement introduced by BBSRC in 2004 has given staff the option of working to 65 and the possibility of more flexible working hours up to their retirement date. A programme of individual staff interviews for those over 55 has been launched to ascertain their wishes for their future employment. From this information a strategy for training and succession planning can be formed to ensure that the work of the Institute is maintained and taken forward efficiently and effectively.

New policies and procedures have been introduced for staff in Babraham Bioscience Technologies (BBT). Grading, pay and job evaluation structures have been devised together with probation and appraisal systems and procedures to evaluate and reward performance. A contributory pension scheme has also been introduced.

Although the Cambridge area is still a highly competitive recruitment market, the Institute's reputation together with good use of the internet and creative advertising has, with a few exceptions, increased the number of applicants applying for posts at Babraham. The apprenticeship scheme introduced in 2001 has been successful with apprenticeships having been taken up in the carpentry, electrical and plumbing areas.

Training

Individuals come to Babraham at different stages of their careers and they each have a vastly different range and level of experience and skills. Much of the training and development provided is therefore designed in modular form to enable individuals to choose the courses which are most appropriate to their needs. A range of available courses can be found in the Training & Development brochure or on the Training & Development website on the intranet.

The training courses and programmes offered to staff are constantly reviewed. New courses which have been introduced over the last five years include: Harassment Awareness; Manual Handling and DSE equipment; Report Writing; Applying for Fellowships; Refereeing Papers. Existing training courses which have been revamped include: Induction; Fire Training; Equal Opportunities; Appraisal; Retirement.

As well as there being between 34 - 38 Project Leaders at any one time, there are approximately 80 Postdoctoral Research Scientists and Senior Postdoctoral Research Scientists posts at Babraham. Many of these posts are funded by external grants or fellowships, with the post holders on limited term contracts. It is therefore important for the Institute to have a comprehensive career progression scheme from first postdoctoral position to Project Leader status. In 2001 two initiatives promoting postdoctoral research careers at the Babraham Institute were launched.

Senior postdoctoral scientists who wish to progress towards a Project Leader career can apply to become a Career Progression Fellow (CPF). Applicants need to demonstrate their ability to conceive and deliver science independently. In return the fellowship provides a salary and some research funds for up to two years whilst the CPF seeks an externally funded senior fellowship and/or a research grant award. The scheme has proved valuable and successful; to date, 6 CPFs have been awarded, three of them to women scientists. All three of our CPFs appointed in years 1 and 2 of the scheme have been awarded externally funded senior fellowships. Fellows receive ongoing mentoring from the

Babraham Executive Committee which provides appropriate guidance and feedback throughout their Fellowship.

Alternatively, the Senior Research Associate (SRA) route is specifically for those senior postdocs who do not wish to become independent Project Leaders but who are exceptional individuals possessing a high level of generic skills desirable for the Institute's science, who are skilled at training others and who will sustain a strong professional reputation through publications and other external recognition. The cohort of seven SRAs is seen as very important to the strategic scientific direction of the Institute and, to date, all have received indefinite contracts on appointment, in line with recommendations of the Roberts review.

All postdocs have access to a Postdoc Mentoring Panel for confidential career advice. In addition, the Institute provides dedicated Postdoc Intranet web pages with news, career information links, training and development courses, and the Institute's International Conference Travel Fund details.

A substantial menu of training and personal development courses for postdocs has been created during the last five years. Uptake and investment in training courses for postdocs has risen year-on-year and amounted to £88.2K in 2003-04. This investment in training by the Institute equates to £1278 per postdoctoral scientist in 2003-04 and exceeds the RCUK recommendations.

The 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. 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 not to stay at the bench can instead use their skills productively.



The Babraham Institute has the status of a recognised postgraduate institution within the University of Cambridge. All our students are registered with the Faculty of Biology, our staff are full University supervisors and the Director is a 'Head of Department'. We now ensure that all of our new Supervisors, and those new to Babraham, undergo supervisory training through the University of Cambridge.

Babraham has full representation on the supervising committee of the Graduate School of Biological, Medical and Veterinary Sciences and played a proactive role in setting up the new School in the last four years. The aims of the School are to coordinate and provide training, networking and career support for all postgraduate students in the biological sciences in Cambridge and to develop guidelines (in addition to those stipulated by the University) for all aspects of supervision. At Babraham, we find the standards we had in place exceed the guidelines issued by the School. The Institute continues to expand its range of compulsory and optional skills training courses to ensure that we provide our students with a continuously updated but flexible comprehensive programme to meet the Joint Research Councils' Skills Training Requirements and the level of Training recommended by the Roberts' Review. Thus, in the last four years we have introduced new courses on: Poster presentation, Statistics, Extra Bioinformatics courses, Writing Successful Grants, Project Management, Writing CVs/Interview Techniques, Introductory courses to Bioincubator/Patent Lawyers and Specialist training and coaching in technical skills with Senior Research Associates. All training activities must be recorded in the recently introduced 'Student Log' which is monitored by the students individual Personal Committee consisting of:

supervisor, with whom the student should have day to day contact; **mentor**, who is usually a scientist actively involved in benchwork who can provide both practical and intellectual advice; and **assessor**, from a different Laboratory, who can independently monitor progress. This team guides but does not dictate the student's research and training and meets with the student to discuss their 2 month and 8 month reports as well as their 24 month Thesis Plan.

The Graduate Programme is managed by the Graduate Committee which consists of the Graduate Studies Tutor (chair), Project Leaders representing the different broad areas of the Institute's science, students from each of these areas and senior managers. It meets formally once a month, with the aim of evolving the Graduate Programme and dealing with operational matters. The student representatives ensure that there is a direct route for representing student concerns to Institute management. However the staff members meet privately to consider matters concerning individual students or supervisors – for example failure to progress or disputes. Over the last four years the Graduate Committee has continuously reviewed and streamlined the Programme. We have introduced a number of additional activities and publications to help both students and their supervisors. These include: Graduate Student and Supervisor Reference Guides; a new and revised Training Brochure; a useful definitions and principles Catalogue; meetings with students at end of first year to evaluate training received and their future development; exit interviews with students to gain feedback; termly self assessment for both students and supervisors; graduate student selection for presentation at the Annual Laboratory Talks – eligible for consideration (along with post docs) for The Sir Michael Berridge Prize Lecture.

The Babraham Institute fully supports the introduction of funding for 4 year PhD studentships since it recognises that currently, for good scientific reasons, most graduate students are taking more than three years to complete. The Institute was pleased to have been selected to run its own BBSRC

Departmental Training Award (DTA) Grant from October 2004 with funding available for all studentships at the 4 year level provided that the nominated students meet the BBSRC eligibility criteria. Our first cohort of 4 year students is now in post and we have modified our monitoring and assessment procedures to ensure that all these students submit their theses before the end of their fourth years.

The main criterion for acceptance on our Graduate Programme is student excellence. The Babraham Institute Open Day is now established on the postgraduate 'milkround'. A full day's programme, including a formal interview is undertaken. The final selection of students is made by the Graduate Committee with reference to student preferences and scores for the laboratory visits and formal interview. The numbers of students applying to attend the Open Day has remained constant over the last few years; in a climate where it may be difficult to attract students into academic research, Babraham is maintaining, and even improving, admission in terms of degree class obtained and quality of first degree university. Over the last four years we have admitted between 15-19 new graduate students each year. They are primarily funded by the BBSRC and the MRC but also include a number of prestigious competitive studentships, including two Dorothy Hodgkin Award Studentships and two Gates Cambridge Trust Studentships. In particular in the last four years we have achieved a significant increase in the number of CASE awards hosted at the Institute and an increasing proportion of our students now leave to take a position in industry (circa 30%) (see page 20).

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. In 2001 and 2004, we have again achieved excellent ratings in recent independent evaluations of our programme and Babraham is committed to continue the evolution of our Graduate Programme to still yet higher standards of excellence.

Estate Strategy

During the period of this Report, Babraham has continued a programme of planned and preventative maintenance, small and minor works. Particular highlights are listed below.

Babraham Hall and Conservation Works

- Completion of phase III of the renovation of the roof to Babraham Hall (Grade II listed) together with other external works including fabric cleaning and brickwork re-pointing;
- Internal works to the Hall included extensive refurbishment of the old accounts offices to create a Board Room restored to its full oak-panelled grandeur; extensive re-decoration of many areas including refurbishment of the main, back and top floor staircases; upgrading the hospitality kitchen; partial re-wiring; and upgrades to fire detection/alarm systems;
- The Campus contains and is bounded by listed flint walls. In the review period we have replaced over 100 metres of wall, in particular immediately adjacent to the River Granta to reduce risk of flooding to site. We have also carried out a systematic programme of maintenance and restoration of the boundary walls, especially within Babraham village;
- The corridor linking the main Hall, via the colonnade, and the conference centre balcony was refurbished externally to reveal original brickwork features facing the back lawns, replace obscured windows with plain glass and to improve structural integrity. Internally, the Polish Corridor (see footnote) has been furnished to provide both storage space for the Library and quiet working spaces.

Scientific and Technical Facilities

- The Computing Section, including the main machine room providing all server support to the campus, was relocated from the Forum to building 502 to provide additional office space, an integrated computer training room and upgraded machine room facilities;

- Major plant replacements/upgrades were carried out to support our small animal facilities including installing new steam generators and improving ventilation. We also converted one boiler which supplies heating to SABU to dual fuel to reduce risks associated with dependence on one fuel only;
- New Small Animal Procedure Room provided to comply with current Home Office and Health & Safety regulations;
- Seminar room in building 540 (our main new Laboratory block) was converted to provide much needed additional laboratory and write up space;
- Increasingly unreliable low temperature storage facility in building 540 was replaced with new insulated lining and dual refrigeration plant;
- Additional cooling provided to ultra low temperature cabinet storage room in building 540 to deal with the increased number of units now located within this room;
- Refurbished rooms/labs for newly created proteomics facility;
- Refurbished space within Bioinformatics to create additional desk space for new staff, visitors and students.

Biodevelopment

- Construction of the Minerva building, including roads, paving and external civil engineering features;
- Construction of building 650 by a major regional company;
- Construction of a dedicated contractor haul road off the main A1307 and reduction of construction traffic through the Babraham village;
- Creation within an existing Institute building of a replacement security dog kennel facility including internal and external comfort and care facilities;
- Archaeological investigation local to the site of the Minerva building and discovery of a Saxon brooch and settlement features plus later formal garden indicators.



Landscaping

- Demolition of redundant buildings to a total area of 2162 m². This included, in order to complete the landscaping plans around the Forum, relocation of the Instrumentation workshops to improved facilities and demolition of the vacated building;
- Two new areas of garden landscaping have been introduced. The first is adjacent to Parish Church in one of the old walled gardens to create a wild flower meadow with seating. At the back of our major laboratory block we have created another walled garden planted with shrubs and trees;
- Enhancement and safeguarding of the previously haphazard and undisciplined area of paving local to the conference centre and visitor parking by placement of flower planters and new road markings;
- Reconstruction of tennis court and provision of a high standard facility.



Infrastructure and Utilities

- The central spine road through the laboratory areas of the site has been relaid in block paving. All main services lie beneath this road and thus this type of surface was chosen in order to allow easier access for remedial works when necessary;
- A significant programme to remove asbestos-containing material from attic pipe insulation was completed on The Close, the Institute's housing for staff;
- A variety of energy saving measures have been introduced including: sequence controls installed on steam raising plant to reduce gas consumption; sequence controls installed on three chiller units to reduce electricity costs; motor speed inverters fitted to all units in main energy centre; new thermostatic valves fitted on radiators in the older laboratory block; increased roof insulation has been added to houses on The Close when they have fallen temporarily vacant between tenants;
- Installation of additional gas supply to service the development needs planned for the south corner of the site, capacity 14,200 cubic feet per hour;
- Installation in partnership with the Authority of a high voltage power supply into the west corner of the site suitably sized to accommodate the master plan needs. Secured availability of 4.5MVa;
- Procurement and commissioning of chilled water plant substantiating the core supply capacity and supporting development and diversity of the central biological support units;
- Extensive works to the foul drainage system have been carried out, replacing failed soakaways and leaking pipes. This includes construction local to building 650 of a principal foul drainage pump station and connection to the main system to effect a by pass route around the central site. Approximately 700 metres each for four pipes;

- Consolidation of record information from numerous survey and specialist investigations *i.e.* topographical, geotechnical, system capacities and condition (sewage works).

Note: the 'Polish Corridor' name for the Library corridor running between the Hall and Conference Centre has mystified generations of scientists at Babraham. Apparently the corridor was originally intended to link the Hall with a Laboratory block and the then Director drew an analogy with the strip of German territory awarded to newly independent Poland by the Treaty of Versailles in 1919. This strip, 20 to 70 miles wide, gave Poland access to the Baltic Sea, a vital link. The name stuck.

Knowledge Transfer

In order to deliver the Babraham Institute's Knowledge Transfer (KT) remit 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 to build an holistic approach to KT. By coalescing scientific, technological and commercial excellence on a knowledge-driven campus we are delivering the Babraham Institute's KT policies through the wider landscape of the Babraham Research Campus.

Since 2001, BBT has developed significantly as a KT company and through the Bioincubator and Babraham BioConcepts has created a level of expertise and experience that can now be used to transfer and sustain the development of new technologies and services deriving from the Institute and attracted to the Babraham Research Campus from the greater Cambridgeshire region and beyond. In this way BBT is building a critical mass of biomedically related academic and commercial R&D that will further the international reputation of the Babraham Group.

BBT's portfolio of activities has been:

- Promoting awareness in Babraham Institute scientists of KT policies and objectives;
- Actively managing and exploiting the patent portfolio;

- 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.

The Babraham Research Campus creates a culture and environment that encourages and stimulates effective commercialisation by sustaining the KT process. This is expressed on the Babraham Research Campus as a biomedically- orientated KT continuum, from science to technology to products. 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, and an out-reach activity that helps to ensure the Babraham Group proactively engages with its user communities.

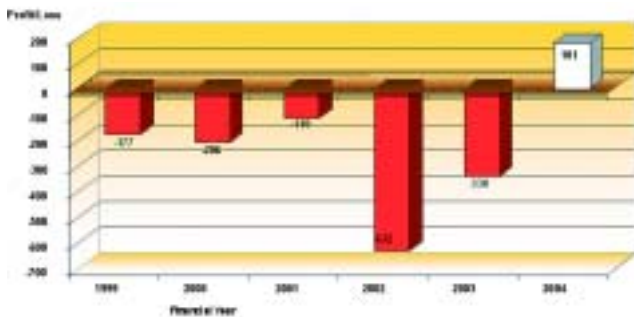
In this way the Babraham Research Campus is a true science park bringing together fundamental, applied science and commercial R&D. This creates an interactive, supportive environment to maximise the prospects of success of the curiosity-driven science and the transfer and exploitation of knowledge into biomedical products and services.

IP portfolio and management strategy:

BBT policy is to work to develop a portfolio of inter-related patents, rather than a disparate set of protected technologies, to enable it to offer depth to its commercial opportunities platform. A portfolio approach is also necessary to address our need to protect IP that often covers concepts that are far from market and often based on incomplete pictures of the scope of the opportunity. Our objective is to maintain the portfolio as a vibrant source of opportunities for exploitation and this approach was commended as being 'well matched to its situation, as holder of a relatively small portfolio' in the NAO Report 'Delivering the Commercialisation of Public Sector Science' February 2002.

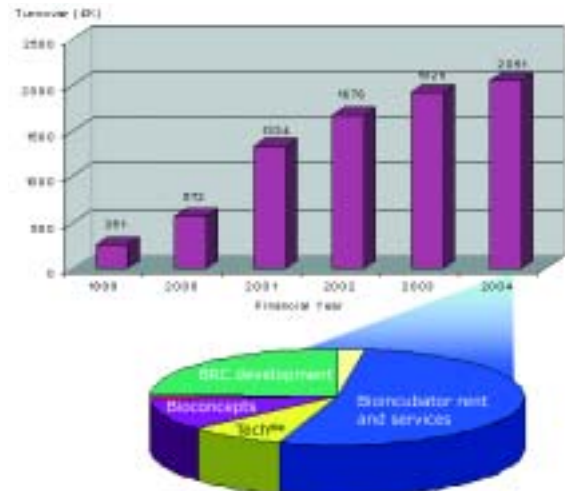
During the four-year period we have filed 28 patent applications and we currently manage 31 patent families. Expenditure on IP (direct patent, legal fees and KT staff costs) has been £590,083. Our licensing income was £799,544; together with the equity funds raised to establish Discerna Ltd means that BBT has achieved an income:expenditure ratio of 2.86 over the last four years.

Babraham Bioscience Technologies Profit/Loss



- 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;

BBT income 2004/05 by activity



Collaborative Research: The financial climate for investment has been austere during this period and there has been a reduction in income for collaborative research, currently representing 5.06% of the Institute’s annual income. Several collaborations have been renewed and extended and we have an increasing number of collaborative interactions with early-stage bioventures, both with companies in the Babraham Bioincubator and external to the campus. Industry days, when individual companies are invited to the Institute for a day to hear about specific elements of the science that are relevant to their interests, has generated interest in the Institute’s science and as a consequence there has been an improved uptake of CASE Awards. We have now adopted a different strategy described in the Corporate Plan 2005 – 2010 which we hope will enhance the commercial income.

Babraham Bioincubator has remained fully occupied since 2001: 21 companies currently occupy space in the main facility and four in the Babraham BioConcepts space. In total these companies currently employ 150 staff on the Babraham Research Campus. Six companies have successfully graduated from the bioincubator and since 1999 companies supported on the Babraham Research Campus have secured in excess of £100M private capital.

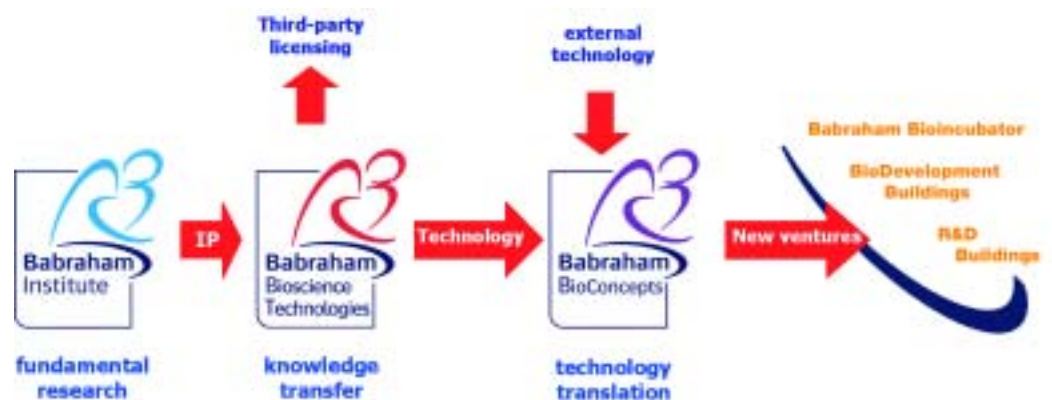


The 'Minerva' building.

In April 2003 BBT received a £700K grant from the East of England Development Agency (EEDA) to help finance **Babraham BioConcepts** and in November 2004 EEDA asked BBT to manage a new grant of £450K for an out-reach activity to provide advisory services in funding and regulatory matters. BioConcepts supports the translation of technologies into investment ready bioventures.

The first new commercial building on the Babraham Research Campus, funded by BBT through a commercial loan facility is now in operation. **'Minerva'** is the first of three facilities offering grow-on accommodation to expanding bioventures.

The Babraham Research Campus is being developed as a true science park, with research and development focused on biomedical science and technologies. We have fostered a culture and environment that promotes interaction and two-way knowledge-flow from fundamental research to technology translation and on to near-market product development. We have created the opportunity for commercial science to stimulate curiosity driven research to the benefit of the Babraham Institute’s user communities. All these achievements directly meet Governmental, regional and science sector targets.



Science and Society

Babraham Institute scientists, staff and PhD students are encouraged and supported in actively engaging with the public to discuss their research, the scientific advances they make and the implications these advances have for human health. The Babraham Institute aims to engage the public in dialogue about its science, to create a better understanding and appreciation of the Institute's research and its potential applications and implications.

Our communications objectives have been to:

- 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;
- Liaise with local schools and colleges, to enthuse young people about science and encourage them to follow careers in science;
- Establish links with local community groups and organisations;
- Support and encourage Institute scientists to participate in events that enhance public knowledge of their science;
- 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 publics.

Case Study: response to cloning claims
Dr Wolf Reik worked closely with the Science Media Centre in January 2004 when news of Dr Panos Zavos' human cloning research hit the headlines. Wolf was quoted in a number of news sources following the issue of an Open Letter to Britain's news editors, requesting that they reconsider the prominence given to stories about human cloning. The Open Letter and quotes from experts in the field enabled a balanced of scientific opinions to be presented to the public.

Since 2001, through the energetic work of new appointments in the Corporate Affairs office and the commitment of several scientists, Babraham has developed a more comprehensive communications strategy and both higher quality and a greater quantity of interactions with schools. Our relationships with the media have also become more professional and substantial.

Media training

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. In December 2003, four such scientists attended a course at the Institute, a new Project Leader went to a course in London in 2004, and two post-doctoral scientists took part in training in April 2005.

Responding to media enquiries

Scientists from the Institute are contacted through the press office or independently to contribute to news and articles in the print and broadcast media. For example, Dr Peter Fraser and Dr Denis Alexander have spoken about gene therapy, cloning and genetic engineering on radio; Professor Keith Kendrick has described his work on face recognition for news features on local and national television and radio channels. The case study below (left) describes a topic that was covered by the international media.

Currently three of the Institute's Project Leaders (Professor Keith Kendrick, Dr Denis Alexander and Dr Wolf Reik) are named on the Science Media Centre's list of 'technical experts', available to provide comment or opinion on issues of public interest. These three scientists are highly-regarded spokespeople and are regularly contacted by the press.

Issuing press releases

We systematically review drafts of our scientists' written publications, to identify those that may be of interest to the general public and press. When the Corporate Affairs Office has been fully staffed, we have achieved our aim to highlight the advances we are making in bioscience research by releasing an average of one new story per month.

Press releases are sent to journalists at the regional and national newspapers, trade and business press. We also add the news to our own website and the Cambridge Network website, and submit the press releases to AlphaGalileo for distribution to their scientific and media contacts. In 2005 we subscribed to Mediadisk, a communications tool for tracking contacts in the media, to ensure that we always send our news to the most appropriate people, and in those journalists' preferred format.

Case Study: primary school teachers' visit

There is often an overlap of audiences from different elements of the Science and Society programme. For example, an open evening was held for primary school teachers in March 2005, during which we learnt how we could develop science resources for their schools. An additional goal for the evening was to inform the visitors about the Institute's research programme: this was achieved by including an overview of the science that we carry out, a tour of our laboratories, and a presentation by Dr Simon Cook about his work on Ras signalling and cancer.

Public events

Institute scientists have been invited to speak at national and international public lectures: examples include the National Institutes of Health, Washington in a symposium on the 'Science of Attraction' in 2003, and a conference at the University of Debrecen, Hungary, to mark the 50th anniversary of DNA, sponsored by the British Council. Keith Kendrick was appointed a professor of Gresham College, and subsequently has also been extended in that appointment. Gresham College is an independent foundation based in the City of London which has sponsored free public lectures for 400 years.

Professor Kendrick's group has contributed to public exhibitions and shows including the Cheltenham Science Festival, the Royal Show and the BA festival. His group's work was also used in a Science Museum exhibition funded by the Wellcome Trust – 'Future Face' – which ran from October 2004 to February 2005.

Open days for the local community

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 Babraham Research Campus, and responding to requests and enquiries.

A science open evening was held in July 2004 for residents of Babraham village. The event included a tour of the grounds, new buildings, and laboratories, presentations from Institute scientists and the opportunity to talk with Institute staff during a buffet supper. Babraham residents were also invited to view the new Bioincubator building when it was handed over to BBT in December 2004.

Lectures and visits

Local organisations and groups have visited the Institute for talks and presentations about the science: for example Rotary Club (2001); Cambridge & Europe Technology Club (2003); Eversheds students summer scheme (2003 and 2004).

Professor Kendrick presents lectures on wider aspects of his work in behavioural neuroscience for non-science staff of the Institute, teachers and pupils from our linked secondary and sixth form schools. He has also repeated some of his 'hot topic' lectures for non-scientific staff at the Institute.

Involvement in school science programmes

A strong focus of the Institute's Science and Society programme over the last few years has been to develop information and resources that help to enhance school science. The number of Institute scientists and PhD students working with secondary and sixth-form teachers has increased threefold since 2003. Additionally, the success of visits to three local primary schools in 2004 and early 2005 has encouraged us to introduce a similar programme at the primary school level.



Babraham's programme continues to be supported by the BBSRC's Local Schools Co-ordinator scheme. Since 2001 we have developed active links with 16 secondary schools and sixth form colleges, arranging talks, practical demonstrations and seminars by scientists, and visits to the Institute.

Examples of school projects:

- A two-day practical project on bacterial transformation;
- A presentation and exercise on the theoretical and practical aspects of PCR;
- A seminar in which pupils use the web to carry out BLAST searches and make protein sequence comparisons;
- A presentation on the use of Green Fluorescent Protein as a marker in cell biology research;



- Sponsorship of science prizes for school science competitions;
- A lecture on animal ethics, and the use of animals in research;
- 'Visiting scientist' with a Theatre Company.

Every year since 1994, during National Science Week, we have run Schools' Day - a hands-on science event for around 150 local school pupils in years 10 and 11. The pupils take part in practical science projects in the Institute's laboratories, supervised by Institute researchers and PhD students. A lunchtime activity complements the practicals: in 2004 we ran a quiz that tested the pupils' knowledge of Institute science relating to the National Curriculum, and in 2005, Babraham Bioscience Technologies Ltd hosted a session on biotechnology entrepreneurship. The 2005 Schools' Day was supported by a BBSRC award.

A similar day for exceptionally gifted pupils was organised for the first time in 2005, in conjunction with the National Academy for Gifted and Talented Youth.

A new Primary School Programme was initiated in 2004, fuelled by the success of scientists' talks and practical demonstrations at three local primary schools. Five of our PhD students and post-doctoral scientists are members of the Researcher in Residence placement programme, run by the Wellcome Trust and Research Councils UK. The programme encourages science, technology, engineering and maths researchers (PhD and post doctoral) to spend some time in a secondary school, so that pupils, teachers and researchers can all benefit from working in collaboration. Four of our scientists are linked with local schools, and one is acting as a 'Virtual Researcher', available online for pupils' questions.

A number of groups have hosted pupils on work experience placements, including Dr Roy Jones (Molecular Signalling), Mr John Coadwell

(Bioinformatics) Dr Lill Mårtensson-Bopp (Lymphocyte Signalling and Development), Dr Trevor Smith (Protein Technologies) and Dr Raghu Padinjat (Inositolide).

Use of the Institute website to engage with the public

The style and content of the Institute website was renovated in December 2003, and the site is regularly updated with information about all areas of our research, as well as the latest news and details of events.

A section entitled 'science4all' was updated and contains information for a non-scientific audience including straight-forward descriptions of our research, 'frequently asked questions' about our science and the Institute as a whole, and links to useful websites. The 'news and events' section carries copies of press releases, public statements, recent achievements and highlights of articles that have appeared in the media.

Mechanisms for responding to issues of public concern

- The Institute has created and maintains a micro-site on www.epolitix.com - a website dedicated to providing policymakers and journalists with relevant information;
- Scientists are now available for interview independently and through the Science Media Centre when issues appear in the press;
- The Institute's website has been developed as a notice board for statements about the Institute's position on topical issues, for example primate research, cloning, farm animal research;
- Locally, the Institute has developed more regular contact with members of the Parish Council.

Summary

In the period 2001-2005 we have achieved all the objectives we set ourselves and contributed to the BBSRC and national targets in science communication. A particular highlight has been the commitment and enthusiasm of both the scientists - often young postdocs - and the school students, particularly at the primary level.

Financial Summary

The figures following this narrative relate to the financial year ended 31st March 2004 with comparative figures for 2003. Copies of the published accounts may be obtained from Companies House.

The Competitive Strategic Grant from the BBSRC continues to provide the bedrock of funding essential for the charity to deliver its objectives. The BBSRC is a Non-Departmental Public Body, sponsored by the Office of Science and Technology within the Department of Trade and Industry, and contributes about 60% of the Institute's recurrent income. Other major sources of income are obtained from the Medical Research Council, UK Medical Charities and the Commercial sector.

Babraham Bioscience Technologies Limited (BBT) is the Institute's wholly owned trading subsidiary and has responsibility for protection and exploitation of intellectual property arising from research at Babraham. BBT also has responsibility for exploiting the outline planning permission for 26,000 m² of new building on the campus. The Board of BBT decided to raise the necessary funds to commence building a new 2,000 m² BioIncubator for early stage companies. This decision was endorsed by the Board of Babraham Institute. The new building was scheduled for completion in early 2005. It is noteworthy that there has never been vacant space in the current BioIncubator since its inception in 1998.

We are pleased to be able to report that the new BioIncubator building ('Minerva') was completed on schedule and within budget. BBT are now actively engaged in negotiations with prospective clients and are confident that the building will be fully occupied within the near future.

BBT has also continued to develop its technology accelerator, Babraham BioConcepts, which has been recognised as a Business Enterprise Hub by the East of England Development Agency (EEDA). BioConcepts' mission is to nurture life science innovations in order to generate viable investment propositions. Its strategy is to respond to the needs of the investment climate, working to mature opportunities which will enhance investors' portfolios and thus catalyse the development of new bioventures. As part of this activity the company will take founding equity positions in the ventures established through the BioConcepts offering. Three companies have been established to date and two other opportunities are under consideration.

Balance sheet

at 31 March 2004

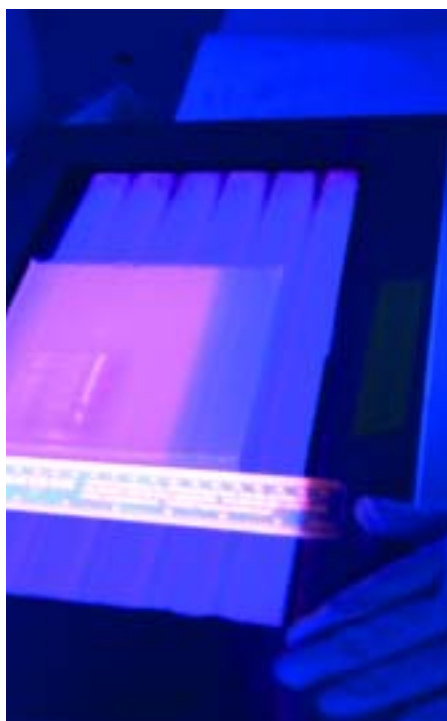
	2004	2003
	£'000	£'000
Fixed assets		
Intangible assets	76	49
Tangible assets	45,199	38,942
Investments	5	5
	45,280	38,996
Current assets		
Stocks	66	77
Debtors -		
due within one year	2,749	2,702
due after more than one year	-	-
Cash at bank and in hand	4,253	2,938
	7,068	5,717
Creditors: amounts falling due within one year	(5,511)	(4,430)
	1,557	1,287
Total assets less current liabilities	46,837	40,283
Creditors: amounts falling due After more than one year	(2,894)	(774)
Net assets	43,943	39,509
Funds		
Restricted revenue fund	-	-
Restricted capital fund	37,364	34,249
Unrestricted funds	6,579	5,260
	43,943	39,509

Consolidated financial statement

Consolidated Statement of Financial

Activities for the year ended 31 March 2004

	2004	2003
	Total funds	Total funds
	£'000	£'000
Incoming resources		
Grants receivable	15,521	13,339
Other income	3,581	3,541
Total incoming resources	19,102	16,880
Resources expended		
Direct charitable expenditure	(15,485)	(14,075)
Corporate relations	(74)	(68)
Trading activities	(1,082)	(1,456)
Management and administration	(2,835)	(1,967)
Total resources expended	(19,476)	(17,566)
Net incoming (outgoing) resources before transfers	(374)	(686)
Revaluation	4,808	3,360
Net Movement in funds	4,434	2,674
Balances brought forward at 31 March 2003	39,509	36,835
Balances carried forward at 31 March 2004	43,943	39,509



Metrics

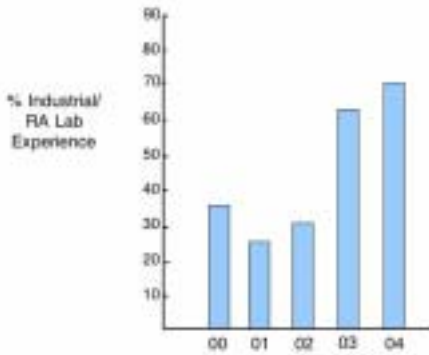
Citation and impact factor data

Periodically the Institute obtains citation data from Thomson (formerly the Institute for Scientific Information, Philadelphia) on the relative standing of Babraham compared to other UK Institutions and world comparators. Taking only the fields in which we actively publish, and applying a cut-off of 100 papers/institution in the period 2000-2004 (inclusive) Babraham has improved its performance. The average number of citations

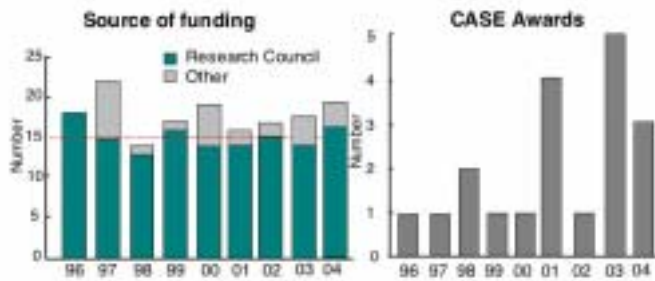
per paper is now 15.17, placing Babraham fourth in the current UK Indicators database (although MRC LMB is not part of this database this year so it is probable that we actually remain in the top five in the UK). Whilst very closely placed to the three institutions ranked directly above the Institute, there is a clear 1.53 cites/paper gap between Babraham and the next placed institution. Looking at individual fields we have a top ranking for Cell and Developmental Biology

and high rankings in other fields. Overall approximately 83% of Babraham papers in the review period have been cited with a trend towards rapid citation following publication, in recent years. Unsurprisingly, this improvement in citation data is paralleled by an increase in the number of Institute papers accepted into high impact factor-rated journals. In 2004 over a fifth were published in journals with an impact factor rating of more than 10.

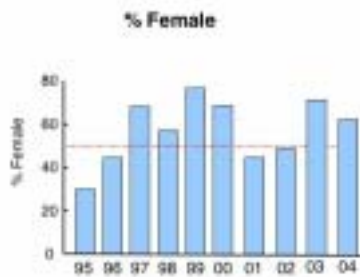
Student Background



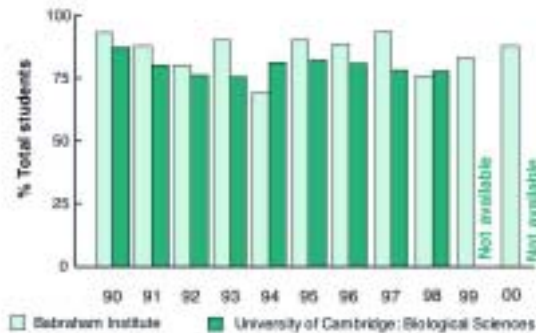
Student Numbers



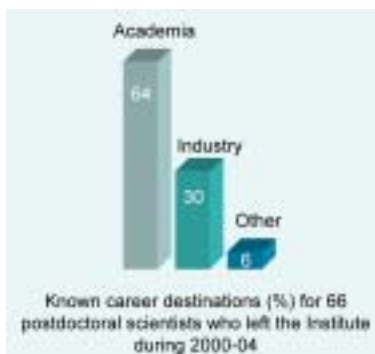
Student Gender Demographics



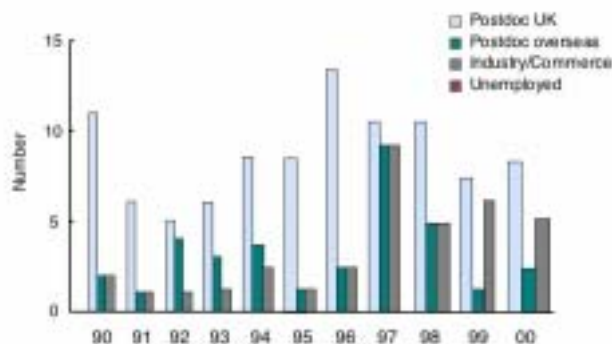
Thesis Submission within 4 years



First Destination After Postdoc



First Destination After Ph.D.



Contacts



Director and Chief Executive

Dr Richard Dyer
Tel: +44 (0)1223 496202
Fax: +44 (0)1223 496021
Email: richard.dyer@bbsrc.ac.uk



Associate Director, Research Management

Dr John Bicknell
Tel: +44 (0)1223 496527
Fax: +44 (0)1223 496022
Email: john.bicknell@bbsrc.ac.uk



Associate Director, Research Strategy

Dr Wolf Reik
Tel: +44 (0)1223 496336
Fax: +44 (0)1223 496015
Email: wolf.reik@bbsrc.ac.uk



Graduate Studies Tutor

Dr Peter Evans
Tel: +44 (0)1223 496406
Fax: +44 (0)1223 496509
Email: peter.evans@bbsrc.ac.uk



Head, Corporate Affairs and Company Secretary

Dr Caroline Edmonds
Tel: +44 (0)1223 496207
Fax: +44 (0)1223 496002
Email: caroline.edmonds@bbsrc.ac.uk



Group Finance Director

Mr Bob Williams
Tel: +44 (0)1223 496203
Fax: +44 (0)1223 496024
Email: bob.williams@bbsrc.ac.uk



Head, Personnel

Mrs Jill Skinner
Tel: +44 (0)1223 496313
Fax: +44 (0)1223 496002
Email: jill.skinner@bbsrc.ac.uk



Head, Estate & Facilities

Mr Ted Deverson
Tel: +44 (0)1223 496550
Fax: +44 (0)1223 496043
Email: ted.deverson@bbsrc.ac.uk



Chief Executive Officer, BBT Ltd

Dr David Hardman
Tel: +44 (0)1223 496205
Fax: +44 (0)1223 496020
Email: dj.hardman@babraham.co.uk

