cambridge enterprise

commercialising University science

Annual Review

1st August 2007 – 31st July 2008

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Chief Executive's Message

The Work of Cambridge Enterprise is Integral to the University's Research Mission

Fundamental Research for Positive Impact in the Long-Term

We believe that the most profound economic and societal impact results from investment in fundamental research. As we enter the University of Cambridge's 800th year, we are reminded of important past discoveries and current achievements which together will have a positive impact on the future. The University leads the world in transformative research and Cambridge Enterprise is in place to support the long-term development and impact of discoveries where commercial channels and investment are needed to take ideas forward. Cambridge Enterprise exemplifies this through its consultancy, technology transfer and seed fund services, and leaves a legacy for the future through these commercialisation processes. The lead into our Annual Review this year illustrates these paths as we plot the 20 year course of Plastic Logic and Smart Holograms, just two of many significant and mature companies in our portfolio.

Supporting New Discoveries for Future Impact

Expanding our activities with University departments through Enterprise Champions is one means to better identify commercially relevant discoveries. Strategic investment of patent, proof of concept and seed resources in these ideas allows us to support research council and other funder mandates in ensuring that important discoveries have a positive impact. This year considerable effort has been focused in finding additional resources for patent, proof of concept, pre-seed and related funding to provide this support to our University academics and meet the technology transfer requirements of the University's funders.



Senior Management Team Left to right: Geraldine Rodgers, Iain Thomas, Malcolm Grimshaw, Nicola Anson, Richard Jennings, Teri Willey, Shirley Jamieson

Transactions and Post-Deal Management for Results Now and in the Future

It has been a record-breaking year, both in terms of the number of deals completed and in terms of income, which exceeded £10 million from licensing, consultancy and equity realisations. Importantly, over £8 million represents distributions to departments and academics whose ideas and expertise are the basis of successful products. The remainder was reinvested into patents, proof of concept, pre-seed opportunities and to support services to University academics, research council and other third stream mandates.

Thank you to the team at Cambridge Enterprise for their effective management of a growing portfolio of discoveries and deals, and to all who have supported us in our mission this year in bringing important basic research discoveries to the public through commercial channels.

Ju J. Willey

Teri Willey Chief Executive

Case Study

Evolution of Plastic Logic

Plastic Logic (www.plasticlogic.com) has launched a revolutionary flexible readable display which can store thousands of pages of text and graphics. The product is the size of foolscap paper, is durable and yet it is thinner than a pad of paper, lighter than many business periodicals, and offers a high-quality reading experience. Plastic Logic is regarded as the outstanding leader in plastic electronics manufacturing, a revolutionary technology for printing electronic devices. To address the market opportunity for flexible active-matrix displays, Plastic Logic has developed the first process for printing electronic circuits on plastic substrates to be rampedup to an industrial scale. Not only is the process capable of making incredibly thin, light and robust displays, it is also considerably simpler than conventional amorphous silicon-based processes. Even though electronic paper is typically thin and flexible, a rigid display results when it is combined with a glass-based amorphous silicon backplane. Plastic Logic's flexible backplane technology enables the display, and therefore the reader device itself, to become flexible, thin, light and robust, so that it feels much more like a sheet of paper.

Timeline

1986-2000

Fundamental Engineering & Physical Sciences Research Council funded research on the physics of semiconducting polymers for transistor applications in the laboratories of Professors Richard Friend and Henning Sirringhaus, Cavendish Laboratory, Department of Physics.

1998	2000	January 2000	April 2002	November 2005
Demonstration of organic transistor with performance comparable to that of thin film silicon.	Demonstration of fully printed organic transistors.	Company formed and first licence transferred from University to the company. The University Venture Fund invested in Cambridge Research and Innovation Limited (CRIL) which in turn provided seed funding for Plastic Logic.	\$18 million funding round.	\$25 million funding round.
December 2006	May 2007	August 2008	September 2008	2009
\$115 million funding round.	Building begins on factory located in Dresden, Germany.	Headquarters moved to Mountain View, California; R&D in Cambridge, UK.	Product demonstrated at DEMOfall 08 in the United States and awarded the DEMOgod People's Choice.	Trials and pilots with key partners and customers will be completed in 2009 and commercial availability will be early 2010.

Investors/Shareholders

- Amadeus Capital Partners Limited
- BASF Venture Capital
- Bank of America
- Cambridge Enterprise Limited
- Dow Chemical

- Intel Capital
- Merifin Capital
- Morningside
- Nanotech Partners
- Oak Investment Partners

- PolyTechnos Venture-Partner
- Siemens
- Tudor Investment Corporation
- University Venture Fund
- Yasuda Enterprise Development

Case Study

Evolution of Smart Holograms

Smart Holograms (www.smartholograms.com) has pioneered unique sensor technology in the form of physically, chemically or biologically responsive holographic images. The sensor hologram is embedded in a thin polymer film which is chemically primed. The holograms can then be used in a variety of ways and integrated into any number of formats. When exposed to stimuli such as body fluids, gases or water in petrochemicals, the holograms will react and change their appearance. It is these changes that are unique to Smart Holograms' highly versatile technology which provide end users with a range of uses from verifying a product's authenticity to making a medical diagnosis.

Crucially, sensor holograms offer many advantages to companies currently using conventional holograms in

security and authenticity applications. Conventional holograms are not designed to react to stimuli. They have become generic, so are relatively easy to copy with the appropriate skills and equipment. Advantages of the Smart Holograms technology include:

- they can be configured to respond to a variety of physical, chemical and biological stimuli in a variety of formats
- the results are fast and responses are obtained in real-time
- they do not require a power source and are size scalable and multiplexable
- they are virtually impossible to reverse engineer or replicate

Timeline

Early 1980s	Mid 1980s	2001	2001	2002
First technical breakthrough – new technology for fabricating holograms in polymeric materials.	New research began on investigating new inexpensive approaches to optical biosensors using conventional gelatine holograms in the laboratories of Professor Chris Lowe, Institute of Biotechnology with Biotechnology & Biological Sciences Research Council funding.	Smart Holograms Ltd founded.	£10k Pathfinder award from University of Cambridge Challenge Fund to audit the IP and explore potential markets for the technology.	£35k proof of concept funding from University of Cambridge Challenge Fund to prepare a full business plan, file additional patent applications and cover legal costs relating to assignment and licensing of IP.
2002	2003	2004	2009	2009
£205k investment from University of Cambridge Challenge Fund.	Government grants (Biotechnology & Biological Sciences Research Council Small Business Research Initiative, Department of Trade & Industry, Home Office) and industrial	Venture capital funding from Circus Capital (now Porton Capital) and Partnerships UK.	First product – a moisture-sensitive sensor called H2No – developed in conjunction with a global fuel supplier.	Development of a blood-glucose monitor to help diabetic patients monitor their glucose levels.

Investors/Shareholders

- Partnerships UK
- Porton Capital Limited (formerly Circus Capital)

contracts (US-based blue-chip company).

• University of Cambridge Challenge Fund

Cambridge Enterprise Group Overview

Cambridge Enterprise delivers its mandate through three overlapping business units:

1. Technology Transfer Services

Services include invention disclosure management; patent strategy, filing and maintenance; proof of concept funding; research reagents transfer; intellectual property licensing and contract management; income distribution and bespoke marketing.

2. Consultancy Services

Services include support for University staff and research groups wishing to provide expert advice or facilities to public and private sector organisations worldwide. This includes negotiation of contract terms, assistance with costing and pricing, formal arrangements for use of University facilities, invoicing, debt collection and income distribution. In addition, academics may benefit from the University's Professional Indemnity and Public Liability insurance policies.

3. Seed Fund Venture Services

Services include access to capital and expertise via Cambridge Enterprise Seed Funds and Investment Committee, angel and early stage investors through Cambridge Enterprise Venture Partners, equity portfolio management; business planning, mentoring, Surgeries; bespoke marketing and related programmes.

Finance & Operations and Marketing teams provide support to all three business units.



Key Performance Indicators

Knowledge and Technology Transfer is a Long-Term Endeavour

Our performance indicators reflect technology transfer as a long-term effort – ideas considered this year for commercialisation and intellectual property (IP) protection represent potential products and revenue streams in 5–15 years time. Achieving the right balance between building for the future and managing current assets is critical to the support we provide to the University. For example, the signing of a consultancy contract is indicative of the need for the transfer of knowledge to the contracting company, and the receipt of fees is confirmation that the transfer has taken place. In building the portfolio for the future, the signing of a licensing agreement or securing equity indicates success in finding a partner to commercialise the idea and represents a commitment on behalf of that partner to take the idea forward through commercial channels. In managing the current portfolio, receipt of inventionrelated income in the form of royalties is indicative not only of good post-deal management but also, importantly, that products and services are reaching the public and addressing previously unmet needs.

116 new invention/innovation disclosures received

83 patent applications filed

80 IP transactions signed: 47 for commercial purposes and 33 research licences

459 active IP and licence agreements under management including 130 research licences

15 proof of concept projects supported: 12 projects awarded funds totalling £430k

124 consultancy disclosures received

89 consultancy agreements signed

5 companies invested in representing £373k seed investment

68 companies in which Cambridge Enterprise holds equity

£1.7 million received **from equity realisations in 5 companies** comprising £841k received from seed investments and £809k from licensing transactions

£8.8 million income received from consultancy fees, licensing fees and royalties, excluding licensing equity realisations, of which **82%** was returned to academics and University departments and a further **7%** invested in patent assets





Performance & Activity Indicators



Consultancy Sharing Cambridge Knowledge with the World

Cambridge Enterprise provides a service to academics enabling them, if they choose, to channel any consultancy projects they propose to undertake through Cambridge University Technical Services Limited (CUTS), a wholly owned subsidiary of Cambridge Enterprise Limited. The Consultancy team at Cambridge Enterprise takes great care in seeking to understand and assist both the academics who are undertaking the consulting project and the client organisations, so that the aims and expectations of any project are aligned and understood by all.

This year has been one of expansion. The number of new projects taken on has increased by approximately 25%, building upon an already high number of active projects and resulting in the recruitment of an additional member of the Consultancy team, Amanda Zeffman. The international nature of the work continues, and whilst European projects dominate (83%), significant work was carried out in the USA, Asia and Australia. Repeat business from both clients and academic consultants forms an important part of the business and is a real endorsement of the nature and the quality of the services offered.

Given the high volume of consultancy projects, the need for effective and efficient management information systems and financial support is paramount to enable effective management of the projects from beginning to end. Having access to the improved management and financial systems has been crucial in supporting the growth of the consultancy services offered to members of the University.

The focus of the business has traditionally been based on the provision of expert advice by individual consultants to external clients. Now, the nature of the consultancy services is more varied. They include not only expert witness work in high profile patent litigation cases, scientific advisory board work for large, small and start-up companies and advisory work for private sector organisations and national and local government departments, but also a number of projects involving more tangible deliverables than expert advice. These new types of projects have included the production of specialist spreadsheets which embody the know-how of the relevant consultant to enable a client company to use them for their own proprietary uses, and the fabrication of unique prototype nano-devices for companies through facilitating access to the University's particular expertise and equipment in this area.

Highlights

- 124 new consultancy disclosures received
- 89 consultancy agreements signed
- £3.2 million consultancy income earned
- 92% of consultancy income returned to academics and departments

On the supply side, the expertise being offered continues to come from across the University and has involved academics from all six of the University's Schools, namely Technology, Physical Sciences, Biological Sciences, Clinical Medicine, Humanities & Social Sciences and Arts & Humanities.The Departments of Engineering, Chemical Engineering, Chemistry and Psychiatry have been significant contributors this year, and the diversity of work demonstrates the important contribution that consultancy continues to make to the dissemination of knowledge for the benefit of society.



Consultancy leam Left to right: Amanda Zeffman, Richard Jennings, Jonathan Bailey

Technology Transfer: Intellectual Property

Building Partnerships to Commercialise Important Discoveries

Effective distribution of the results of research and scholarly activities for public benefit is a traditional academic mission. For some ideas, commercial channels may be the best means to achieve this. Cambridge Enterprise is able to use the licensing of patents to companies as a key tool in supporting this mission.

The Technology Transfer team at Cambridge Enterprise works closely with University academics to evaluate the commercial potential of their research results, to deploy patent and proof of concept resources, and to structure appropriate agreements to put the most promising ideas in the best position for commercialisation.

Cambridge Enterprise works primarily with technology for which patent protection is necessary to encourage commercialisation. Sometimes a new company is the most appropriate licensee. As a result, many of our licensees are small companies and some are spin-outs that Cambridge Enterprise has helped to create.

During 2007/08:

- 80 IP transactions were added to the portfolio: 47 for commercial purposes and 33 research licences, bringing the total to 459 active agreements.
- A third of the commercial licences in the portfolio generate royalty streams, of which eight have each generated income over £100k during 2007/08.
- Royalties on sales of Campath-1 have generated income in excess of £1 million during 2007/08, and exciting new results indicate that Campath may have therapeutic value in the treatment of early remitting multiple sclerosis.

- **£5.5 million income** from licensing fees and royalties, excluding licensing equity realisations, was earned, of which 81% was returned to academics and departments under one of the most generous distribution policies in the world and a further 11% invested patent assets.
- Licence income includes fees, milestone payments and reimbursement of patent costs.
- Licence income can also include realisations from equity acquired under the terms of the licence. In addition to the licence income above,
 £809k was received in licence-related equity realisations in 2007/08.
- 12 proof of concept projects were awarded funding totalling £430k from Cambridge Enterprise, East of England Development Agency, Engineering & Physical Sciences Research Council, Biotechnology & Biological Sciences Research Council, Wellcome Trust and other proof of concept funding sources, as the Cambridge Enterprise team continues to work hard to support academics in their efforts to secure funds to advance their technologies en route to commercialisation.

Licences are important performance indicators as they reflect market interest in an idea or invention. Licensing arrangements are as unique as the idea itself, but they all share some common characteristics. For example, the products being developed under a licence are usually high risk and may take several years from the time the idea is licensed until it is embodied in a product.

Cambridge Enterprise – 7 Principles

- 1. Accept into the portfolio those cases that have the strongest potential to make a significant positive impact and where using commercial channels is the most reasonable means to carry the idea forward
- 2. Take the course of action that supports commercialisation of the technology and work creatively to add value (or to de-risk) the technology through the use of patent, proof of concept and evaluation and assessment resources
- 3. Work effectively with the inventor(s) to support their aspirations, manage conflicts and encourage synergy with the mission of the University
- 4. Find the best partner (licensee or start-up senior management and investors) to take the idea forward
- 5. Negotiate fair and reasonable terms that reflect the contribution of the assets and expertise being transferred
- 6. Negotiate and close the greatest number of the best possible deals
- 7. Look after the deals once they are closed to encourage commercialisation and optimise returns

Technology Transfer: Life Sciences Starting Earlier, Going Further

Business Activity

This year we signed off 36 IP agreements covering a range of technology areas. Highlights include licences for a potential new treatment for schizophrenia to Cypress Bioscience, a biomarker for age-related macular degeneration to ArcticDx Inc. (see case study), technology for gene therapy to Lentigen Corporation, computer controlled laboratory testing systems for work on models of behaviour to Campden Instruments Ltd, and technology for the purification of bio-molecules to PALL Corporation.

Our reagents business continues to provide a simple way for researchers to have their reagents distributed and has generated good business through deals concluded with BioLegend, Santa Cruz Biotechnology Inc. and the Foundation for Innovative and New Diagnostics.

Changing Technology and Demand

The trend of technology coming out of physical science disciplines but having biological applications shows no sign of slowing, and presents us with exciting new business opportunities and challenges.

New technology has always been a vital contributor to success for life science based companies; however, companies and investors are ever more demanding of the quality, validation and development stage of the technologies they take on. These issues have been a significant focus for the Life Sciences team this year, and will continue to be for the foreseeable future. In the coming years we are aiming to commission more targeted proof of concept development projects.

Positioning Technology for Exploitation

We have been working with academics and external experts to understand the technology markets and commercial opportunities in fields of emerging commercial interest, for example stem cells, bio-fuels and micro-droplets. This work is enabling Cambridge academics to better position their research and inventions for commercial exploitation where this is their interest or goal.

Greater Understanding of Customer Needs

The Life Sciences team has recently engaged with Eli Lilly's Entrepreneurs in Residence (EIR) programme, whereby the Lilly EIRs donate their time for the benefit of the University and Cambridge Enterprise. The two experienced pharmaceutical executives have been providing independent advice to academics on proposed directions for their research as well as providing guidance on specific projects that show commercial potential. This advice is provided on a confidential basis to promote clear and open discussion and without any preferential access for Lilly to IP.

We continue to develop our relationships with potential customers in the life science industries through attendance at partnering conferences, where we promote Cambridge's latest innovations for commercial use.



Life Sciences Team Left to right: Boris Bouqueniaux, Iain Thomas, Rachel Atfield, Maher Khaled, Emma Barker, Andrew Walsh

Case Study

ArcticDx

Six years of research by a team of scientists and ophthalmologists led by Professor John Yates has resulted in the identification of a variant of the complement C3 gene that is associated with an increased risk of developing age-related macular degeneration (AMD), the commonest cause of blindness in Western countries. Research sponsored by the Medical Research Council and undertaken at the Cambridge Institute for Medical Research examined 13 variants, or single nucleotide polymorphisms (SNPs), in the complement genes of over 800 patients and 700 unaffected people. Conducting such a large study was necessary for researchers to be confident of identifying relationships between AMD and SNP variants.

The researchers found that people with two copies of the high risk 'F' variant in the C3 gene were more than twice as likely to develop AMD. Meanwhile, other researchers in Europe and North America were discovering variants in other genes that also influence susceptibility to AMD, opening up the possibility of identifying individuals who have a substantially increased risk of developing AMD because of their genetic makeup.

ArcticDx Inc. (www.arcticdx.com) became aware of the progress in this field and identified the opportunity to collate the findings from several research groups into an accurate diagnostic test. Coupled with its expertise acquired from developing a genetic test for colorectal cancer, the ArcticDx team, led by CEO Greg Hines, has licensed the patented rights to a number of the SNPs and their association with AMD. This includes a licence from Cambridge Enterprise for the SNP discovered by Professor Yates. There will be a royalty on sales for each test performed, providing a modest income stream back to the University.

ArcticDx is currently developing the MaculaRisk® test and is initially aiming to launch the product locally in Ontario, Canada in early 2009. MaculaRisk® is due to be available in Europe in mid 2009.



Professor John Yates

Technology Transfer: Physical Sciences Delivering Breadth of Innovation to Society

Business Activity

This year we signed off 44 IP agreements in the Physical Sciences area – 11 licences for commercial purposes and 33 research licences. The Physical Sciences team is involved with a wide range of technologies, reflecting the diversity of expertise in the Schools of Physical Sciences and Technology at the University. Two of the agreements completed during the year illustrate the range: the inerter, a mechanical device used in vehicle suspensions; and a licence to a leading oil exploration company for data arising from the work of Professor Robert White in the Department of Earth Sciences. Other technologies currently being managed by the team include displays and sensors to meet emerging applications; advanced telecommunication devices; materials processing methods and materials technologies ranging from novel nanotubes and magnetic structures to superhydrophobic surfaces and materials with 'flexible colour'.

Changing Technology and Demand

Environmental issues are a particular focus, and this year we helped to negotiate the terms of a partnership with the Carbon Trust, TTP plc and the Cavendish Laboratory in the University, for a programme to accelerate the deployment of largescale, cost-effective applications of advanced organic photovoltaic materials. We also commissioned a study of the technical and market potential of a more environmentally friendly method for recycling lead battery paste. This study led to the formation of a new company, GreenPb, to develop this technology.

Positioning Technology for Exploitation

A key role of the Physical Sciences team is fostering relationships with major commercialisation partners. In particular, we work with the strategic partners to manage the intellectual property arising from the Centre for Advanced Photonics and Electronics (CAPE), and have this year concluded a new partnership contract with Cambridge Display Technology Ltd, following their acquisition by Sumitomo Chemical Company.

Greater Understanding of Customer Needs

We are working to develop our expertise and this year welcomed Dermot Leonard as a Technology Associate to help us in our search to identify commercial partners for University technologies.



Physical Sciences Team Left to right: Robert Fender, Zlatka Stoeva, Malcolm Grimshaw, Margaret Wilkinson, Dermot Leonard

Case Study

The Inerter

Improvements to vehicle road handling and safety are critical to Formula 1 teams to ensure greater and safer performance against other teams in a fiercely competitive sport. The same improvements are of equal importance to car manufacturers and the public, in the hope that these developments will also benefit road vehicles.

The inerter is a vehicle suspension component that has been successfully used in Formula 1 to improve traction and is now being extended to applications in other areas.

The idea began with fundamental theoretical work in the area of control systems by Professor Malcolm Smith in the University's Department of Engineering. Historically, passive mechanical suspension systems contain only two components: a spring and a shock absorber (damper). Professor Smith realised that to achieve greater performance a third component was needed and so he invented what is now referred to as the inerter. Broadly, inerters offer greater flexibility in the design of a vehicle's suspension system.

The patent for the device was filed by Cambridge Enterprise in 2001 and was licensed exclusively to McLaren for use in Formula 1, enabling the inerter to be rapidly developed into a robust device. In 2005, the device was raced for the first time in Formula 1 by McLaren, when Kimi Raikkonen achieved a victory for the team at the Spanish Grand Prix. Confidentiality restrictions associated with the licence have now been lifted and Cambridge Enterprise has entered into a licensing arrangement with Penske Racing Shocks to provide inerters to other teams in Formula 1.

Professor Smith is working to bring to fruition applications in vehicle suspensions for conventional road vehicles and potentially in other applications, many of which are still being explored. Modelling has shown that the inerter will also provide improved control of motorcycle steering oscillations, and Cambridge Enterprise is now looking to develop partnerships with motorcycle manufacturers.



Professor Malcolm Smith Department of Engineering, University of Cambridge

Seed Funds Investing for the Public Benefit

The University has a history of investing in Cambridge high-tech innovations.

During the period 1995 to year ending 31 July 2007:

- The University funds have made **46 investments**, of which 43 were in new technology companies and 3 were in other early stage technology funds
- Portfolio companies have raised £390 million in follow-on funding, plus £12 million in grant awards, representing a leverage of 45 times the University investment
- 18 of the 43 companies have made product sales demonstrable transfer of technology from the University to public or business use
- Portfolio companies* collectively employ around 1,700 people

This investment activity is now consolidated into the Cambridge Enterprise Seed Funds, which manages two investment pools and plans to manage a third, the University of Cambridge Discovery Fund, over the coming year.

* University funds and portfolio companies refer to investments for the University Venture Fund and Challenge Fund Trading Company Limited only and not the investment of technology transfer intellectual property for equity.

The past year has seen exciting changes in Cambridge Enterprise Seed Funds, which are designed to ensure continued alignment of investment activity with the University's mission. We have also seen some valuable returns from the realisation of early investment risks, which will be put to good use supporting new Cambridge ventures.

Investment Committee

We have taken on increased responsibility for the management of the entire Cambridge Enterprise Group portfolio comprising 68 companies as at 31 July 2008. The Investment Committee has been restructured and strengthened by some redoubtable names in the fields of investment, product development and entrepreneurship. Its remit has been expanded to include both reviewing and approving new investment proposals and managing the wider group portfolio by applying key performance indicators in order to create value in the portfolio, optimise equity sales, and inform follow-on and new investments.

Highlights

Highlights from the past year include the sale of Cambridge FPD Limited in August to Microsoft, netting £164k for the Vice-Chancellor's Strategic Fund. This was followed by the sale of Genapta at a 20% IRR from which all University stakeholders benefited.The culmination of investment activity in such healthy realisations is one of the most exciting aspects of our work, and we have high hopes for companies such as Psynova Neurotech, which completed a commercialisation and funding deal with Rules Based Medicine this year, Horizon Discovery, which is set to exceed forecast sales targets for the year, and Sentinel Oncology, the subject of this year's case study. In addition to the life science portfolio, we have a growing cluster of cleantech companies set to deliver benefits in the form of solar power (Enecsys), novel gas-free refrigeration technology (Camfridge) and



Seed Funds Team Back row, left to right: Rachel Moss, Nick Slaymaker, Jodie Todd Front row, left to right: Geraldine Rodgers, Julie Grange, Anne Dobrée

Seed Funds

waste recycling (Enval). They are all doing well and attracting the attention of funding organisations and potential commercial partners.

On a personal note, we were sad to say *au revoir* to Bill Matthews and Peter Luebcke. Bill retired in August last year but we are delighted to have persuaded him to stay on as a Consultant to the Fund; we continue to enjoy his great experience and wisdom. Peter moved on to 'walk the talk' and run his own healthcare company, Sonovia Ltd. We wish him every success with the new venture.

We welcomed Anne Dobrée last March as Business Development Manager for Life Sciences. Anne has taken a pivotal role in establishing the University of Cambridge Discovery Fund.

During 2007/08:

- 42 new business ideas reviewed
- **5 Pathfinder awards** totalling **£21k** to support the development of new business ideas
- New and follow-on investments made in 5 companies totalling £373k
- Realisations of £841k were achieved from the sale of 4 companies. £164k was reinvested in the Vice-Chancellor's Strategic Fund and the remainder returned to the evergreen seed fund pools for reinvestments

The University of Cambridge Discovery Fund Supporting the 800th Anniversary Campaign – Our Freedom to Discover

Efforts during 2007/08 led to the establishment of the University of Cambridge Discovery Fund. This is a philanthropic opportunity for alumni and friends to support the University in transforming our world. The Discovery Fund is an evergreen fund, providing a critical resource for proof of concept, pre-licence, pre-seed and seed investments, enabling the transfer of University related technologies for the benefit of society.

The Discovery Fund is a unique renewable resource that offers donors the opportunity to support the University many times over. A gift to the Discovery Fund:

- will be put to work right away to support a promising innovation
- will have an impact that goes well beyond the initial gift as realisations will be returned to the fund to support future innovations
- can be followed as it works, by tracking innovations launched as a result of a gift
- is a wonderful way of supporting innovation and smoothing the path for future entrepreneurs.

For further information please visit www.enterprise.cam.ac.uk

Information on the 800th Anniversary Campaign can be found at www.foundation.cam.ac.uk/800-home.php



Support for New Ventures

In addition to seed investing, nurturing our young companies and monitoring the more mature businesses, we continue to encourage the creation and development of new ventures and help University staff and students in several ways:

- Seed Funds staff contributed to the student organised £5k and £1k business plan challenges by reviewing plans, participating in the judging panels and providing valuable feedback to the aspiring student entrepreneurs
- Specialist Surgeries are available to University members where their specific information needs can be matched with professional expertise provided free of charge on a oneto-one basis by local firms including patent attorneys and lawyers
- During the period November 2007 to March 2008, 18 Surgeries were held and attended by a total of 69 people. Professional advice has been given on IP protection, business planning, partnership arrangements, negotiation of finance, market feasibility and setting up overseas operations

- Mentors, typically with 20–30 years of relevant industry experience, provide advice directly to individuals and small companies, and often stay involved if there is a match of interest and personalities
- Mentoring Breakfasts provide an opportunity to stimulate debate about the best course of development for new technology. Scientific innovations are reviewed in a non-threatening atmosphere by seasoned entrepreneurs who provide a variety of viewpoints to help formulate the best commercialisation strategy
- Short-term lets are available for companies founded by University members and are colocated with Cambridge Enterprise Seed Funds at the William Gates Building. In 2007/08 there were six tenants, including Cronto, Reaction Engineering Solutions, Inkski and Imense

Seed Funds

Case Study

Sentinel Oncology

Sentinel Oncology (www.sentineloncology.com) is a small molecule drug discovery company focusing on the discovery of new chemical entities to create better treatments for cancer. The company's vision is to develop drugs in oncology that are void of the systemic toxicities often associated with chemotherapeutics.

Sentinel Oncology brings together a management team with over 70 years' experience in the pharmaceutical and biotech sectors and a highly experienced and respected scientific advisory board. Together the team has built a pipeline of small molecules designed to target hallmarks of solid tumours. In particular, Sentinel Oncology is developing small molecule inhibitors that are activated selectively under tumour hypoxia, exploiting the low-oxygen micro-environment found in all solid tumours to activate two synergistic effects within a single compound in order to specifically deliver more potent anti-cancer treatments. This approach, dubbed 'Target Synergy', will damage the DNA of the tumour cells and at the same time inhibit critical DNA repair pathways while remaining inherently safe within normal, non-cancerous tissues.

The company was founded with seed funding from Cambridge Enterprise Seed Funds in 2005, and has since raised more than £2 million, including £1.3 million received in May 2007 under the Wellcome Trust's Seed Drug Discovery Initiative. The company operates a virtual model, outsourcing many of its projects to collaborators in China and India. Sentinel Oncology is initially focusing on the development of compounds for the treatment of glioblastoma, a tumour that currently responds poorly to traditional chemotherapy and radiotherapy.



Sentinel Oncology Left to right: Stuart Travers, Bob Boyle

Seed Funds

Case Study

CamSemi

CamSemi (www.camsemi.com) is far from a new venture but demonstrates how early stage funding support from Cambridge Enterprise can help lay critical foundations to a new business, which have led to the semiconductor company celebrating the shipment of 10 million chips from its first product family, the C2470 RDFC controller series, in October 2008.

CamSemi is a spin-out from the University of Cambridge, founded by Professor Gehan Amaratunga and Dr Florin Udrea at the Department of Engineering, and is now the emerging leader in power management integrated circuits (ICs) for optimised energy-efficient offline power conversion. The company's unique solutions and approach can help consumer electronics manufacturers develop smaller, lighter and more energy-efficient power conversion products – such as power supplies and lighting – while also reducing their design timescales and system costs.

CamSemi was founded to bring to market a new generation of sophisticated power management ICs that help manufacturers more easily meet the world's increasing demand to save energy but with simpler and cheaper solutions than have previously been possible. The company's first products were launched in late 2007 and have now been designed into power supplies for high volume products such as cordless phones, wireless access points, modems and audio systems. A second wave of innovative products was introduced in 2008. Following an initial Pathfinder award to evaluate the likely strength of the founding patents, Cambridge Enterprise Seed Funds invested seed capital of approximately £450k in two tranches. This investment was soon followed by investment from a syndicate of venture capitalists led by 3i and including Scottish Equity Partners (SEP) and TTP Ventures. More than £30 million has now been raised, with Denmark's BankInvest Group and Carbon Trust Investments in the UK both joining as new investors at the latest round. These two clean technology funds together invested £6 million in a 'C' funding round that raised a total of £17 million to help accelerate CamSemi's product developments and to strengthen the company's global sales and customer support operation.



Carnserni Left to right: David Baillie, Gehan Amaratunga, Florin Udrea

Marketing

Connecting with the Right People at the Right Time

The role of marketing at Cambridge Enterprise is to help connect the right people at the right time to commercial opportunities that are in the form of patents, licences or company spin-outs. Additionally, the team helps Cambridge Enterprise to liaise with University academics and researchers who produce ideas that may be commercialised through licences and new company creation, and those who undertake work for third parties through consultancy.

The Marketing team supports Cambridge Enterprise's activities in many different ways. This year saw the relaunch of the Cambridge Enterprise website (www.enterprise.cam.ac.uk) which contains a wealth of information on how Cambridge Enterprise interacts with industry and the University community. As well as press releases, 'success stories' are regularly posted on the website that focus on either a portfolio company or a licence agreement and explain the importance of long-term basic research in producing breakthrough technology.

Press stories reach audiences around the world through a number of communications channels, including international press, television and radio coverage and industry publications. International coverage this year has included the AUTM Better World Report 2008 (Campath), BBC website articles (the development of an extremely strong nanotube carbon fibre, developed by Professor Alan Windle, Department of Materials Science & Metallurgy, which can be used for such items as high-tech 'smart' clothing, bombproof bins and flexible solar panels) and BBC television and radio coverage (ArcticDx licence).

Collaboration with the University's Research Services Division continues to be an important means of linking with both academic and industry communities. Cambridge Enterprise is pleased to support the Horizon seminar series for the sixth year, showcasing the excellence and breadth of cuttingedge research from the University. Cambridge Enterprise has also held a second series of briefings on the University's Intellectual Property Rights Policy in conjunction with Research Services Division and the Pro-Vice-Chancellor for Research.



Marketing Team Left to right: Shirley Jamieson, Libby Howard, Joanna Tramontin

Enterprise Champions

An Essential Communication Channel between University Departments and Cambridge Enterprise

Enterprise Champions offer an alternative first point of contact to Cambridge Enterprise for University members seeking advice on commercialisation routes. Being based in the departments, Enterprise Champions are in a good position to provide advice to academics and researchers in their department seeking informal information on how to develop their ideas for commercialisation purposes. It is sometimes the informal chance meeting over morning coffee or in the hallway that can lead to discussions on what steps the individual should take to protect and commercialise their technology.

Enterprise Champions have a wide range of backgrounds. In addition to their research and teaching expertise, their experience ranges from undertaking collaborative research with companies to commercialising new technology, starting companies, fundraising and balancing the demands of academic research and business. This wealth of experience and the multifaceted roles that they undertake within their departments and the University make Enterprise Champions the ideal people to help their colleagues to make the most of what Cambridge Enterprise has to offer.

Cambridge Enterprise continues to work with the Enterprise Champions on raising awareness of Cambridge Enterprise services within the University and on new ways in which Cambridge Enterprise can support University departments and academics. Joining the Enterprise Champions during the year 2007/08 were Michael Ramage, Beatrix Schlarb-Ridley and Paula Buttery.

The role of the Enterprise Champion is critical, providing an invaluable link between Cambridge Enterprise and University departments. Cambridge Enterprise welcomes and encourages suggestions from departments to nominate Enterprise Champions.

⁶⁶Champions form an essential interface between the departmental 'coal-face' and the University's routes to commercial exploitation via Cambridge Enterprise. They are crucial to ensure two-way flow of information and maximise the chances of success.⁹⁹

Professor Chris Lowe

Department of Chemical Engineering & Biotechnology

Enterprise Champions



Mr Michael Ramage Architecture



Professor Peter Leadlay Biochemistry



Dr Beatrix Schlarb-Ridley Biochemistry



Professor David Rubinsztein Cambridge Institute for Medical Research



Dr Shai Vyakarnam Centre fo Entrepreneurial Learning



Mr David Carter Chemical Engineering & Biotechnology



Professor Chris Lowe Chemical Engineering & Biotechnology



Professor Stephen Elliott* Chemistry



Dr Anthony Davenport Clinical Pharmacology



Professor Ted Briscoe¹ Computer Laboratory



Mr Philip Guildford Engineering



Dr John Archer Genetics



Dr Tim Minshall² Institute for Manufacturing



Dr Rachel Hobson Materials Science & Metallurgy



Mr Michael Simmons Mathematics



Dr Tai-Ping Fan Pharmacology



Professor Mike Payne



Physics



Physiology, Development & Neuroscience



Dr Alex Webb⁴ Plant Sciences



Dr Paula Buttery Research Centre for English & Applied Linguistics



Professor Duncan Maskell Veterinary Medicine



Professor Steve Jackson⁵ Zoology



*Photographer: Nathan Pitt.

Finance & Operations Investing for Continuous Improvement

This year the Finance & Operations team has built upon the foundations laid down in 2006/07 for the provision of excellent support services to the Cambridge Enterprise Group. Investment in people, governance, software, systems, IT and our working environment is transforming the way we work to deliver improvements in our efficiency and effectiveness.

Investment in People

 A new appraisal scheme was developed and professional training provided, in line with the recommendations of an independent HR audit, to support University and Cambridge Enterprise Group goals

Improvements in Corporate Governance

- A three year business plan was produced and granted University Finance Committee approval
- The Cambridge Enterprise Board established an audit subcommittee in respect of the financial audit of Cambridge Enterprise and Cambridge University Technical Services
- The Cambridge Enterprise Board commissioned IT and HR audits during the year, resulting in very positive reports
- The University Registrary was appointed Company Secretary for all three Cambridge Enterprise companies and duties delegated to the Cambridge Enterprise Finance & Operations Director

Investment in New Software and Systems

- A new knowledge management system was implemented to provide a central repository for all technology transfer and consultancy case management information and improve the quality of data held
- A new financial system was specified and purchased to facilitate the efficient recording and retrieval of financial information

 Dealing software was introduced to facilitate the effectiveness of funds placed on deposit. Online banking and treasury was extended to all three Cambridge Enterprise Group companies

Investment in IT Infrastructure and Support

- A new website for Cambridge Enterprise was launched in February 2008 to provide a more comprehensive online interface. The project was undertaken in conjunction with the Marketing team, with special attention being paid by both teams to ensure clarity, consistency and ease of navigation
- Migration of IT infrastructure from Research Services Division to Cambridge Enterprise.
 Cambridge Enterprise's IT infrastructure works in synergy with the University in accordance with the agreements between Cambridge Enterprise and the University. A helpdesk function for the Cambridge Enterprise Group has been implemented to provide a single point of contact for all systems, facilities and administration queries

Improvements in our Environment

 Planning for the internal specifications of the Hauser Forum has been carried out with the Marketing team in co-operation with the University's Estate Management and Building Service, West Cambridge site and architects



Finance & Operations Team Left to right: Michael Yardley, Robert Ellis, Caroline Knightley, Elizabeth Bone, Gillian Hannon, Nicola Anson, Fiona Sanders-Hewett, Lisa Wood, Barry Thompson, Carmen Smith

Governance & Structure

Commercial Activities in Step with the University's mission

Cambridge Enterprise is governed and structured to support and work in synergy with the University in third stream activities and support research initiatives as they relate to consultancy, licensing of intellectual property and equity transactions. The relationship between the University and Cambridge Enterprise is defined by a series of agreements between them including a Memorandum of Understanding, a Services Agreement and an Administrative Services Agreement.

The Cambridge Enterprise Board of Directors has a fiduciary responsibility to the University as shareholder and reports to the University through the University

Finance Committee. Cambridge Enterprise also reports to the Research Policy Committee of the University and the Planning & Resources Committee. The Board members are appointed by the University and include three members external to the University, three members internal to the University and three members of Cambridge Enterprise Limited (including the Chief Executive and Finance & Operations Director). The Director of Finance for the University is the shareholder's representative and observer to the Board. The University Registrary is the Company Secretary.

The members of the Cambridge Enterprise Board of Directors are:

- Lord Freeman Chairman
- Professor Chris Abell, Professor in Biological Chemistry, University of Cambridge
- Mr Charles Cotton, an investor in and adviser to venture capital firms with a background in technology innovation
- **Professor Sir Richard Friend**, *Cavendish Professor* of *Physics*, University of Cambridge
- **Professor Ian Leslie**, *Pro-Vice-Chancellor for Research*, University of Cambridge
- Dr J Nicola Nicholls, a former scientist with a background in private equity
- Ms Nicola Anson, Finance & Operations Director, Cambridge Enterprise Limited
- Dr Richard Jennings, Director of Technology Transfer & Consultancy Services, Cambridge Enterprise Limited
- Ms Teri Willey, Chief Executive, Cambridge Enterprise Limited



Lord Freeman



Professor Sir Richard Friend



Ms Nicola Anson



Professor Chris Abell

Dr Richard Jennings



Mr Charles Cotton



Dr J Nicola Nicholls



Ms Teri Willey





Finance & Performance Investing for Long-Term Impact

Cambridge Enterprise has had a very successful year. Total group income from licensing, consultancy and equity realisations exceeded £10 million¹ for the first time, a 42% increase on 2006/07. A further £628k was retained for patent assets, £677k was returned to seed funds to support new opportunities and £164k was provided to the Vice-Chancellor's Strategic Fund to back new initiatives. The remainder was used to support University academics in commercialising their ideas, services carried out on behalf of the University in implementing the University's regulations on intellectual property rights and to support government-mandated third stream initiatives. This saw a positive variance of 24% in terms of income in relation to the business plan approved by the University Finance Committee in May 2008, and operating costs were within normal variance.

Amounts distributed to academics were from consultancy (including private practice²) and licensing income. The distribution to departments includes amounts donated to departments (academic consultants regularly donate their fees to the department) under consultancy arrangements and the department share of licence income.



² Private practice billing represents the income Cambridge Enterprise collects from patients who are provided with services from University clinical staff's private practices, as set out in the recommendation of the General Board of 12 July 2000 and Grace of 10 November 2000.





Finance & Performance



Group Income & Expenditure Summary

	2007/08 £′000	2006/07 £'000
Income Generated from Activities ¹	9,521	6,396
Operating Costs ²	(2,478)	(1,287)
Other Operating Income ³	1,177	588
Interest	265	143
Net Income (after Operating Costs)	8,485	5,840
Investment in Patent Assets	(628)	(540)
Distributions to Academics ⁴	(6,676)	(4,038)
Distributions to Departments ⁵	(1,455)	(1,279)
Total Investments & Distributions	8,759	5,857
Net Profit for the Year	(274)	(17)

Group Accounts

The Group Income & Expenditure summary comprises consolidated results for Cambridge Enterprise Limited and its wholly owned subsidiary company, Cambridge University Technical Services Limited presented in a management accounts format.

Audited statutory accounts for Cambridge Enterprise Limited, Cambridge University Technical Services Limited and Challenge Fund Trading Company Ltd can be found at Companies House.

¹ Includes income from consultancy and technology transfer activities, including net equity realisations from licensing and patent reimbursements.

² Operating costs for year ending 31 July 2007 are based on eight months following the transfer of trade and staff from the University of Cambridge to Cambridge Enterprise Limited on 1 December 2006.

³ Includes income from HEIF, CHEST and Wolfson grants (year ending 31 July 2007 for an eight month period).

⁴ Includes distributions to academics for consultancy and technology transfer activities as well as reimbursements to departments for certain consultancy costs and £600k of deferred income.

⁵ The distribution to departments includes amounts donated to departments (academic consultants regularly donate their fees to the department) under consultancy agreements and the department share of licence income.

	Cambridge Enterprise Limited ¹	Challenge Fund Trading Company Limited ²	University Venture Fund ³	Total
	(£′000),	(£′000)	(£′000)	(£′000)
Investment Valuation as at 31 July 2008 ⁴	8,081	2,325	2,177	12,583
Investment Valuation as at 31 July 2007 ⁴	8,227	2,640	2,163	13,030
Equity Realisations for the year to 31 July 2008 ⁵	809	424	417	1,650

¹ Cambridge Enterprise Limited is a wholly owned subsidiary of the University of Cambridge.

² The Challenge Fund Trading Company Limited is a wholly owned subsidiary of the University of Cambridge, managed by Cambridge Enterprise.

³ The University Venture Fund is held by the University of Cambridge, managed by Cambridge Enterprise.

⁴ Investments are recorded at Valuation as set out in the International Private Equity and Venture Capital Guidelines (October 2006).

⁵ Equity realisations represent proceeds received on shares sold during the year to 31 July 2008.

Overheads are incurred in managing both seed funds. These costs are recovered in part from the Challenge Fund and from 1 February 2008 are also recovered in part from the University Venture Fund.

Equity Portfolio As at 31 July 2008

Cambridge Enterprise Limited

Challenge Fund Trading Limited

Biotica Technology Ltd	iLexIR Ltd	Cambridge Lab on Chip Ltd	BlueGnome Ltd
British Titanium plc*	Illumina Inc	Camfridge Ltd	British Stem Cell Registry Ltd
Cambridge Biotransforms Ltd	lonscope Ltd	Vivamer Ltd	Enval Ltd
Cambridge Flow Solutions Ltd	Light Blue Optics Ltd		Lumora Ltd
Cambridge Innovision Ltd	Metris Therapeutics Ltd		
Cambridge Superconductors Ltd	Microbial Technics Ltd		
Cambridge Theranostics Ltd	Orthomimetics Ltd		
Cavendish Kinetics Inc	Polatis Ltd	Akubio Ltd*	Ampika Ltd
CEDAR Audio Ltd	Procognia Ltd	Cambridge Semiconductor Ltd	Enecsys Ltd
Chroma Therapeutics Ltd	Pronostics Ltd	Genapta Ltd [†]	Horizon Discovery Ltd
Clinical and Biomedical	Q-Flo Ltd	Metalysis Ltd	Inotec AMD Ltd
Computing Ltd	Raindance Technologies Ltd	Psynova Neurotech Ltd	Optisynx
Diagnostics for the Real World Ltd	RevelationBio Ltd		Sentinel Oncology Ltd
E-Stack Ltd	Smart Holograms Ltd		Summit plc
Expedeon Protein Solutions Ltd	WAX Info Ltd		
(formerly Novexin Ltd)	XenSource Ltd (now Citrix)	Astex Therapeutics Ltd	Avlar BioVentures Ltd
Funxional Therapeutics Ltd	Zinwave Ltd	Cambridge Bioclinical Ltd	Cambridge FPD Ltd ⁺
Galapagos (Biofocus plc)		Cambridge Display	Endocrine
Granta Design Associates Ltd		Technology Ltd ⁺	Hypertag Ltd
		Cambridge Mechatronics Ltd (formerly 1 Ltd)	Phico Therapeutics Ltd
		CellCentric Ltd	Spirogen Ltd
		De Novo Pharmaceuticals Ltd	York Pharma plc
		Plastic Logic Ltd	
		Teraview Ltd	

University Venture Fund

* In Liquidation † Sold During 2007/08

Looking Ahead

During 2007/08 we have built upon the secure foundations laid down in the previous year as a wholly owned subsidiary of the University of Cambridge. Our existing systems and processes are stronger and more efficient and we will continue to grow and improve our services to academics and to ensure our reputation for excellence.

We look forward to further advancements during 2008/09. The launch of the University of Cambridge Discovery Fund on 1 September 2008 is the embodiment of our efforts to widen access to resources for proof of concept and seed fund investment in co-operation with the University, supporting the University of Cambridge 800th Anniversary campaign and our Freedom to Discover. The Discovery Fund is an evergreen fund that will provide a critical financial resource to develop new technologies and discoveries to transform our world. The coming year will also see the construction of our new home, the Hauser Forum, which also features a seminar centre and a café/atrium. Thanks to a very generous gift to the University of Cambridge 800th Anniversary campaign by the Hauser-Raspe Foundation, Cambridge Enterprise will be moving to its inspiring new location on the West Cambridge site in 2009/10. The Hauser Forum will act as a focus for activities including engagement with multinationals, start-ups, investors, and academics in networking and training, and business start-up assistance. This interaction will help to strengthen Cambridge's position as one of Europe's leading centres for science-based businesses, and Cambridge Enterprise is proud to be a part of this important initiative.

Lord Freeman

Chairman



The Hauser Forum, showing the Centre for Entrepreneurship to the right.

Image: Wilkinson Eyre Architects

Company Information

Cambridge Enterprise Limited

University of Cambridge 10 Trumpington Street, Cambridge CB2 1QA UK

Company Number: 1069886 Registered in England and Wales. Registered Office: The Old Schools, Trinity Lane, Cambridge CB2 1TN

Cambridge University Technical Services Limited

Company Number: 5749230 Registered in England and Wales. Registered Office: The Old Schools, Trinity Lane, Cambridge CB2 1TS

The Challenge Fund Trading Company Limited trading as Cambridge Enterprise Seed Funds

Company Number: 3878072 Registered in England and Wales. Registered Office: The Old Schools, Trinity Lane, Cambridge CB2 1TS