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**CENTRE/GROUP/NETWORK
DIRECTOR'S
ANNUAL REPORT FORM**

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CENTRE/GROUP/NETWORK DIRECTOR'S ANNUAL REPORT 2006

(This page must be completed by the Case Officer before forwarding to the Director)

Reporting period : from 1 May 2005 to 31 December 2006

Name of Centre/Group/Network : ESRC Centre for Social and Economic Research
on Innovation in Genomics

Director's name : Professor Joyce Tait

Start and End Dates : 1 October 2002 to 30 September 2007

Year of Operation : 4th and 5th

Total budget from ESRC : £2,137,830.57

The Director's Annual Report should be completed in accordance with the attached guidelines. It should be sent to the relevant ESRC Case Officer by **31 March 2007** by **email** and in **hardcopy** (original plus three copies, with signed cover letter).

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1. Executive summary

Innogen's research programme contributes to the development of well founded social science research, engaging critically with the substance of developments in life sciences and we have continued to enhance our international reputation as leading exponents of interdisciplinary research approaches. Integrating a range of different approaches and perspectives enables us to provide more useful advice to a wider range of stakeholders, as evidenced by the increasing number of engagement opportunities offered to us.

In addition to the seven projects funded through the Innogen programme, we have raised funding for 27 additional projects in total, 18 of which were active in 2006. These projects are spread across our three main themes:

- Theme 1: Science, Innovation and Knowledge Management;
- Theme 2: Risk, Governance and Regulation; and
- Theme 3: Identity, Culture and Everyday Life.

The most important event in 2006 was the award of funding from ESRC for the Innogen Centre from 2007-2012. In 2006 we have thus been engaged in completion and dissemination of the results from Phase 1 core-funded projects and in parallel the planning of projects to be started in October 2007.

This year's research and dissemination highlights are drawn from the projects where fellows have been working full time and which started in October 2002 – *Innovation trajectories in life science industries* and *Public-private partnerships and capacity building*. In both cases significant contributions are being made to the development of theory in specific disciplines, to interdisciplinary outcomes and to engagement with stakeholders, particularly those in industry and policy communities.

We have continued to attract considerable numbers of excellent PhD students, both in Edinburgh and at the Open University, with 23 currently active, and many are now nearing submission of their theses. We would particularly like to acknowledge the generosity of the Open University in funding many of these studentships.

In 2006 we were awarded a RCUK Fellowship in Translational Medicine which will add considerable weight to our expertise in this area. We have also been working in 2006 on two new masters courses to be initiated in the University of Edinburgh in 2007.

We have achieved an excellent publication record throughout the year, with contributions fairly evenly distributed across research fellows and academic staff. The balance has shifted towards refereed journal articles and away from book chapters, working papers and other non-refereed publications as a reflection of pressures from the RAE. We had 34 journal articles published and in press in 2006, and 30 articles submitted, and four books published or in press.

However, these publication efforts have not distracted us from our engagement-related activities which have been substantial across all areas of our activity, for example developing joint events and collaborations with DFID, OECD, IRGC, OSI, and the African Union, among many others as outlined in Section 9. In particular, long-term presence of our staff on over 20 advisory and policy bodies provides us with a major ability to influence policy and practice and also provides us with excellent intelligence of emerging issues in life sciences. However, merely counting the numbers does not do justice to the general overall range, high status and extent of influence of this strand of our activity.

We have also continued to add to indicators of external esteem of our staff, most notably the award of Fellowships of the Royal Society of Edinburgh to three members of staff, Joyce Tait, Harry Campbell and Janet Carsten. Also, Donald MacKenzie received The Chancellor's Award of the University from HRH Prince Philip, the Duke of Edinburgh.

2. Introduction and objectives

The Innogen Centre (Centre for Social and Economic Research on Innovation in Genomics) has the following overall mission:

to build an internationally respected Centre to enable social scientists and ESRC to take a leading role in policy, public and innovation-related debates on life science issues, and to contribute to the shaping of the biotechnology trajectory along with other research councils, from a well informed, evidence-based position.

Our research covers the complex interactions among: public and stakeholder perspectives on genomics-related issues; the science and innovation developments underlying these issues; the policy and regulatory challenges arising from new genomics-based knowledge; and the emerging strategies of the genomics-based industry sectors. It thus contributes to the development of well founded social science research, engaging critically and incisively with the substance of developments in these areas.

We are continuing to enhance our international reputation as leading exponents of interdisciplinary research approaches. Integrating a range of different approaches and perspectives enables us to provide more useful advice to a wider range of stakeholders, as evidenced by the ever increasing number of engagement opportunities offered to us.

The Innogen Centre's objectives are:

- To conduct a strong, innovative programme of fundamental and applied social science research
- To engage proactively with the scientific community and with stakeholders
- To contribute to shaping the socio-technical development of the life science trajectory

Our research programme is based on these objectives and has three primary themes:

Theme 1: Science, Innovation and Knowledge Management;
Theme 2: Risk, Governance and Regulation; and
Theme 3: Identity, Culture and Everyday Life.

Integrative themes applied to the programme are 'Globalisation and governance' and 'Public and stakeholder engagement'.

This report covers the fourth year of Innogen's research programme, with total ESRC funding for the year being £455,203, plus additional co-funding of £406,664 (excluding host institution contributions).

One Innogen Research Fellow (Dr. Catherine Lyall) has moved to a new post (see Section 5) and a new member of staff (Dr. Jane Calvert) was appointed in 2006 and will take up her post as RCUK Research Fellow in Translational Medicine in 2007. Dr. Alessandro Rosiello, Scottish Enterprise Funded Fellow in the Innogen Centre, moved to a Fellowship at the Genomics Forum to develop international collaborations with eminent researchers working on Genomics and Innovation Systems with emphasis on the performance of different models of agglomeration and the impact of regional and innovation policy.

3. Main outcomes of the year and progress towards objectives

Innogen Projects in 2006

The five core Innogen programme funded projects that were still active in 2006 have all continued to deliver an impressive array of outputs as described in Section 5 and Appendix 2. We also had six continuing externally-funded research projects and eight additional projects which started in 2006, covering all three themes in our research programme, as outlined in the box below. In many cases these additional research projects are a reflection of our excellent reputation as researchers and increasingly also as policy advisers, particularly in the two areas selected for highlights in this section.

Continuing Research Projects Funded Outwith the Innogen Programme:

- Issues involved in Diffusion of Knowledge through Migration of Scientific Labour in India (Theme 1).
- Co-operative Management of Intellectual Property Rights (Theme 1);
- Regulatory Practices and Challenges of the African Crop Biotechnology Sector (Theme 2);
- Generation Scotland (Theme 3);
- Farmers' Understandings of GM Crops within Local Communities (Theme 3);
- Social Dynamics of Public Engagement in Stem Cell Research(Theme 3);

Additional Research Projects Funded Outwith the Innogen Programme:

- 'Adoption of Modern Biotechnologies and Its Consequences, Opportunities and Challenges' (Bio4EU), reporting to the European Commission and Parliament (Theme 1);
- Research Councils UK Fellowship in Translational Medicine (Theme 1);
- Second phase of the EC PRIME Network of Excellence project, on 'The Role of Venture Capital in Promoting High Tech and Science-Based Growth' (Theme 1);
- Case study on 'Public-Private Partnerships in Translational Medicine: Scotland's Translational Medicine Research Collaboration (TMRC)' for the OECD Working Party on Biotechnology initiative on 'Emerging Research Models for the Delivery of Health Innovation' (Theme 1)
- Consultancy for the Science Council of the Consultative Group on International Agricultural Research on 'Partnerships between Civil Society Organisations and CG Centres' (Theme 1);
- Two commissioned background studies on Health Innovations and Health Innovation Systems for the African Union/NEPAD Ministerial meeting on Science and Technology (Theme 1);
- Case study on 'Biotechnology: Governance of the development and application of stem cell based products and therapies', EC Riskbridge Co-ordination Action (Building Robust Integrative Interdisciplinary Governance Models for Emerging and Existing Risks) (Theme 2);
- Academic Adviser for the ESRC ERA-SAGE project (all Themes).

Research and dissemination highlights

Innovation trajectories in life science industries – research highlight

James Mittra, Catherine Lyall, Joanna Chataway, David Wield and Joyce Tait, along with visiting Fellows Professor Luigi Orsenigo and Dr. Christopher Milne, have developed an approach to innovation-related research that is interdisciplinary and is generating valuable insights into the challenges facing companies in life sciences and related sectors. It links academic theory on sectoral systems of innovation with political science insights on new modes of governance and the nature and impact of regulatory systems. In 2006 it has focused on the reasons for the long term sectoral dominance of multinational pharmaceutical companies and their blockbuster innovation model. Since the early 1990s analysts have been claiming that, despite a series of life science-based innovations, the overall drug discovery and development model of the pharmaceutical industry sector is fundamentally unsustainable. Our explanation for the remarkable robustness of this model so far and our recognition that disruptive change is becoming increasingly inevitable focuses on the circumstances likely to lead to path-breaking disruption for particular companies and links this to the impact of novel regulatory initiatives being developed for innovative technologies. Case studies on pesticides, GM crops, pharmacogenetics and stem cell therapies have been developed to illustrate these points.

Innovation trajectories in life science industries: dissemination highlights

In the context of the above research highlight, we have been carefully building our visibility, credibility and reputation as a group that understands the issues faced by life science based businesses and can contribute usefully to their needs. We have organised conferences and workshops, given presentations at conferences attended mainly by industry managers and demonstrated that we have something of value to offer industry and policy makers through our analysis.

- We are contributing to new approaches to the governance of innovative technology being developed by the International Risk Governance Council.
- We presented a case study for the OECD initiative on 'Global Challenges in Drug Discovery and Development' at a meeting in Paris.
- Our research insights are contributing to a masters programme in Translational Medicine in Edinburgh University, involving the Colleges of Science and Engineering and of Medicine and Veterinary Medicine, for scientists, medical practitioners and policy makers.
- Innogen organised a workshop on 'Global Challenges in Drug Discovery and Development' jointly with the Association of British Pharmaceutical Industries (ABPI) and the Scottish Translational Medicine Research Collaboration (involving the multinational pharmaceutical company Wyeth).
- We are developing an Executive Development Short Course for pharmaceutical industry managers and policy makers.

Public-private partnerships (PPPs), governance and capacity building: research highlights

Joanna Chataway and James Smith, along with doctoral students Adele Langlois, Rebecca Hanlin, Ann Kingiri, Maija Hirvonen, Matthew Harsh and Julius Mugwagwa, have developed a major body of research on PPPs, governance and capacity building. Theoretical foci are: global knowledge and technology flows; how globalisation shapes and is shaped by science and technology; and global governance systems that transcend 'state' and 'market'. The team has completed collaborative empirical studies, in India, China, Brazil, Kenya, South Africa and two other African countries, of a range of public-private partnerships, in particular those producing vaccines against AIDS, bovine trypanosomiasis and theirleriosis.

The Innogen team has been the first to research PPPs as systems of global governance integrating health systems with innovation systems. The research shows that the global innovation geographies around life sciences do not reflect a simple north-south divide but

complex shifts where some developing countries, like India and China play an increasing role whilst others struggle for inclusion in global research and innovation systems. We also found that the International Aids Vaccine Initiative (IAVI) had made a major contribution to capacity-building in many developing countries, helping Rwanda, Kenya and Uganda to develop potential centres of excellence in vaccine clinical trials. More generally, we found that global health PPPs contribute to science and technology capacity building, including crucially in ways that help pull together innovation with fragile health systems. Particularly in Africa, these new hybrid institutional forms play an important role in the informal governance of biotechnology.

PPPs, governance and capacity building: dissemination highlights

The 2006 Innogen Conference, titled *Genomics for development?: The life sciences and poverty reduction*, included keynote papers by senior staff from CG centres, World Bank, IAVI, Gates Foundation and the Global Forum for Health Research. Attendees included researchers and users from all continents and media coverage included a programme on the BBC World service and articles for Britain Today and Open Eye (published by the Independent with the Open University).

Chataway led a team that produced two major reports on health innovations and health innovation systems for the African Union/NEPAD Ministerial meeting on Science and Technology, to be held in January 2007. Chataway and Smith undertook a major commissioned study for the Science Council of the Consultative Group on International Agricultural Research (CGIAR) on partnerships between CGIAR Centres and Civil Society Organisations (CSOs).

Wield was invited to give a plenary talk on capacity building at the Royal Society South Africa day, attended by ministers and senior science advisors. The team has also contributed to major policy initiatives, such as the International Assessment on Agricultural Science, Technology and Development

This research team has also produced a significant number of journal articles, including some in top journals such as *World Development* and *Nature Biotechnology*, and given plenary and other talks at international conferences.

Targets achieved

Many important performance targets were achieved or exceeded, including additional research funding, publications in refereed journal articles and the appointment of a new RCUK Fellow in Translational Medicine. Also three members of Innogen staff were awarded Fellowships of the Royal Society of Edinburgh. Less than expected numbers of publications in some other areas reflects in part our concentration on refereed journal articles with the RAE in mind.

Significant publications

Particularly significant publications include the book by Mazzucato and Dosi, published by Cambridge University Press which arose from Innogen's first workshop in 2003; the papers by Ayele et al. in *Nature Biotechnology*, by Chataway and Smith in *World Development*, and by Williams in *Science as Culture*

Other significant outcomes

Perhaps the most significant outcome during 2006 was the completion of the Mid-Term Review process and the award by ESRC of funding for the Centre from 2007-2012. The AHRC Centre for Intellectual Property and Technology Law, which includes key Innogen collaborator, Graeme Laurie was also selected for Phase 2 funding in 2006, enabling us to carry forward collaborations between social sciences and law in joint areas of interest. In addition, we should also point to the significant number of national and international advisory bodies to which Innogen staff are contributing.

4. Main issues, problems and actions taken

Catherine Lyall left her post as Innogen Research Fellow in November 2005 to take up the post of Research Development Officer in the Edinburgh University Institute for the Study of Science, Technology and Innovation (ISSTI) where she continues to support the development of Innogen and related research with special attention to research funding and engagement.

Catherine was the research fellow appointed (on a 0.4FT basis) to work on Innogen Project 6, 'The National and International Policy Environment for Genomics'. By the time she left this post, she had built a very strong foundation for Innogen's research on governance and regulation and we are using the salary savings for this post, in 2006 and 2007 to bring senior researchers to Innogen for short periods of collaborative research. (We thought it was unlikely that we would be able to make a useful appointment from the point of view of our research programme by advertising a 40% post for such a short period.)

Dr. Christopher Paul Milne from the Tufts Centre for Drug Development (TCDD) (Tufts University, Boston, USA) had a 2-month visiting Fellowship at the Innogen Centre during 2006. We are also funding visits, and a short-term appointment to the Open University, for Professor Luigi Orsenigo, a prominent European economist with interests in pharmaceutical innovation strategies and the impacts of regulation on company decision making.

We will also be using some of the salary savings in 2007 to fund Innogen Research Fellow James Mitra for 3 months – his contract on Innogen Phase 1 finished in February 2007.

5. Brief reports on research

The following progress reports relate to the ESRC-Innogen Centre funded projects only. We have not included detailed progress reports for the other fourteen projects that are on-going on newly-funded in 2006, as outlined in Section 3.

Projects 3 and 4 in the Innogen Programme were completed in 2005.

Projects 2 and 5 were begun in 2005.

Theme 1: Science, innovation and knowledge management

Innogen project 1 – Innovation processes in life science industries; James Mittra

Throughout 2006 project 1 continued to investigate the impact of the life sciences on the evolution and dynamics of the pharmaceutical industry, and also began to explore the development of emerging issues related to therapeutic innovation, such as translational medicine and public-private partnerships in research and development.

Highlights over the past year include:

- 2 peer reviewed journal articles in *Technology Analysis and Strategic Management*, one published and one in press, and 2 policy/briefing papers.
- Special issue of *Technology Analysis and Strategic Management* (edited by J. Mittra and R. Williams) due to be published in May, 2007. The title of this special issue is 'Evolution of the Life Science Industries', which emerged from Innogen's 2005 International conference and findings from Innogen project 1.
- 2 short case studies (one on the reorganisation of R&D at GSK and another on the politics of the Herceptin controversy), based on research findings of project 1, prepared for Innogen's forthcoming Executive Development course.
- Development of an OECD commissioned case study on Scotland's recently established Translational Medicine Research Collaboration (TMRC), involving the pharmaceutical company, Wyeth, Scottish Enterprise and 4 Scottish universities. This case study was presented at an OECD expert workshop in November, 2006 and will be included in an official OECD publication in 2007.
- Research findings from project 1 are currently being used in the development of Innogen's contribution to a new Edinburgh University Certificate in Translational Medicine, an online course due to start in September, 2007, being developed in collaboration with the College of Science and Engineering and College of Medicine and Veterinary Medicine.

Innogen project 2 – Public private collaboration in genomics and biotechnology; Theo Papaioannou

Throughout 2006 project 2 continued to explore the complex relationships between public policy, public research and private firms in genomics and biotechnology in the UK in order to reveal their role in building firm-based and policy-making capabilities. Additionally, research is being carried out in ethics and politics of Intellectual Property Rights with focus on human gene patents.

Highlights over the past year include:

- Paper entitled 'Knowledge Ecology and Innovation System? The Case of Public-Private Interrelations of Biotech Innovation in Cambridge' has been prepared for *The 6th International Triple Helix Conference on University-Government-Industry Relations* (Singapore 2007) and *Regional Studies Association Conference* (Lisbon, 2007).
- Paper in preparation on 'Public-Private Collaboration in Genomics and Biotechnology' for publication in a peer reviewed international journal.
- 2 papers on 'Human Gene Patents' presented at two international conferences on *Intellectual Property Rights* at Birkbeck College, University of London, organised by the EC DIME Network of Excellence.
- 2 working papers published on the ESRC Innogen Website.

- 2 peer reviewed journal articles published in *Science and Public Policy* and *Journal of Global Ethics*.
- Invited as a discussant in 2 Expert Workshops on *Life Sciences* organised by the ESRC Genomics Research and Policy Forum in Edinburgh.
- Findings from project 2 and related research have contributed to an Innogen book proposal on 'The Limits to Governance: the Challenge of Policy-Making for the Life Sciences' submitted by Dr Catherine Lyall (University of Edinburgh) to Ashgate Press.
- Research findings and contacts from project 2 are being used in the development of an Innogen research proposal to the EU 7FP Capacities Programme, focusing on 'Regional Policy Instruments for Bringing the Research Benefits of New Converging Technologies to SMEs'

Theme 2: Risk, governance and regulation

Innogen project 5 – Legal and bioethical regulatory mechanisms; Shawn Harmon

Throughout 2006 Project 5 continued to analyse the embodiment of social/moral values (as defined in the 2005 Innogen Working Paper No. 40) in regulatory instruments relevant to various aspects of genetic research. Indeed, in 2006, the focus of Project 5 was narrowed to considering values and legal developments in stem cell research in both Europe and the developing world.

Highlights of 2006 include:

- 4 peer-reviewed journal articles in *Intellectual Property Quarterly*, *European Law Review*, *Health Care Analysis* and *Medical Law International*.
- 1 editor-reviewed article the *European Journal of Health Law*.
- 1 collaborative article (with R. Gertz, G. Laurie, G. Pradella) in the *European Journal of Health Law*.
- 1 book review in the *European Journal of Health Law*.
- Attendance at workshops and conferences, including international conferences in Vienna and Montreal (a poster relating to Project 5 was presented at the latter).
- Development of a number of external relations, both within the Genomics Network and outwith, which may lead to collaborative work in future
- Tutored on the AHRC Centre's 10-week "Law and Medical Ethics" e-CPD program, leading largely practitioner discussion groups.

Innogen project 6 – The national and international policy environment for genomics; Catherine Lyall (40%)

Catherine Lyall left this post, which had been intended to continue till September 2007, during November 2005 to take up the post of Research Development Officer in the Edinburgh University Institute for the Study of Science, Technology and Innovation (ISSTI). Her research up till that time had delivered significant outcomes for the Innogen Centre as outlined in previous Annual Reports and in our Mid-term Review Report. Also, as indicated in Annex 2, she has continued to contribute from this research base to Innogen's publications.

The salary savings from this post are being used to bring senior researchers to Innogen for short periods of collaborative research relevant to this component of our research programme. In particular, Dr. Christopher Paul Milne from the Tufts Centre for Drug Development (TCDD) (Tufts University, Boston, USA) spent two months working in the Innogen Centre working on a joint paper with Joyce Tait. This paper is using the very extensive database on drug development held at TCDD to explore in more detail than we were able to do previously the relationship between regulatory innovations like the US FDA Orphan Drugs Act and the Fast Track System and the nature of the new pharmaceutical products emerging to the market place. We have also funded several shorter visits from Professor Luigi Orsenigo, a prominent European economist with interests in pharmaceutical innovation strategies and the impacts of regulation on company decision making.

Theme 3: Identity, culture and everyday life

Innogen project 7 – Interests and values in risk-related stakeholder interactions; Ann Bruce (40% FTE = 4.8 months)

Throughout 2006 project 7 continued with the analysis of stakeholder interactions with a particular focus on analysing interview data collected on issues around stem cell research. Additionally, cross-cutting analysis is being developed across the range of applications that have been considered during the project: biobanks, GM and cloned animals, stem cells research and GM crops. Much of the focus on the past year has also been on ensuring publication of research to-date.

Outputs over the past year include:

- Paper accepted for publication in *Nature Biotechnology* on commercial and regulatory trends in cloned livestock in collaboration with staff at Genomics Forum, the AHRC Centre for Studies in Intellectual Property and Technology Law and Roslin Institute, among others.
- Invited chapter for a book on the Many Faces of the Public Domain edited by the AHRC Centre for Studies in Intellectual Property and Technology Law, to be published by Macmillan.
- Invited paper being prepared on cloned and GM animals for a special issue of *Genomics, Society and Policy* following from an expert workshop organised by the Genomics Forum on animal genomes in science, social science and culture.
- Case study on the commercial adoption of marker-assisted selection in pigs for a large study (Bio4EU) for the European Commission's Institute for Prospective Technological Studies.
- Joined the advisory committee for ESRC-funded project 'The Social Dynamics of Public Engagement' PI Sarah Parry, University of Edinburgh.

6. Dissemination and engagement strategy

A clear dissemination and engagement strategy lies at the heart of Innogen's commitment to communicating the outputs of our research to academic and non-academic audiences. This is a challenging goal, cutting across many of the established fora. In implementing this effectively, Innogen's approach to communications continues to be responsible, evidence-based, innovative, proactive and opportunistic.

The Innogen brand and quality of outputs are now recognisable and distinct, nationally and internationally, within the academic community as evidenced by 32 invited presentations at major conferences and workshops in 2006. Raising the profile of Innogen and engaging with academic and non-academic audiences is a continuing process. Innogen's commitment to driving these processes was evidenced by 16 offered presentations, 45 conferences/meetings attended and 47 examples of participation in policy, advisory and stakeholder groups in 2006.

The Innogen website continues to be a major communication medium. Our website was redeveloped in 2005 and continues to evolve in 2006 and beyond to improve accessibility, navigation and usability.

Innogen, together with the other centres of the EGN produced two EGN Network Newsletters. These publications are an important medium for dissemination of activities and research, and engagement with a non-academic audience. The EGN communication team have regular meetings and consult on event and media strategies and other communications issues.

Communication/dissemination highlights of 2006

- The Innogen Annual Conference 2006 was held in London and brought together over 100 delegates from the UK, Europe and Africa. Speakers included Chrispin Kambili, Senior Director (Medical Affairs) of IAVI Africa, John Mugabe, advisor on science and technology to the New Partnership for Africa's Development (NEPAD) and Simon Best, founder of Ardana Bioscience and Chair of the Board of ICRISAT. Communication highlights from this conference included:
 - An article in Research Africa by the editor, Linda Nordling, giving an insight into the issues of regulation and utilisation of biotechnology in Africa and how the Innogen conference would put these observations in context, investigate the success of existing initiatives and ask: what works? Linda hoped that many of the findings presented at the conference will feed into the agenda-setting for the 2007 summit of African heads of state.
 - An article on Professor Julian Ma, a speaker at the conference, and his research that aims to produce a new cheap anti-HIV drug using genetically modified tobacco plants
- In April 2006, Innogen, the Centre of African Studies and the Royal Zoological Society of Scotland co-convened a conference examining science, technology and development in Africa. The conference, hosted by Edinburgh Zoo and the University of Edinburgh attracted 90 delegates including around ten from Africa. Topics covered ranged from histories of colonial science in Africa, contemporary capacity building for African research to sustainable forestry management. Several of the papers will be published in forthcoming editions of the International Journal of Technology Management and Sustainable Development.
- The "Talking About Stem Cells: The Social Dynamics of Public Engagement in Stem Cell Research" team from Innogen held a public debate in November 2006 attended by over 90 people. The event was prompted by the Human Fertilisation and Embryology Authority's public consultation about women's eggs in research. Four panellists, Diane Beeson, Sociologist and Women's Health Activist, Daniel Brison, Scientific Director at Regional IVF Unit; Donna Dickenson, Medical Ethicist, Academic and Activist and Harry Griffin, Director of Roslin Institute helped to facilitate the debate, which focused on the issues raised by the two possible sources of donated eggs for research.

7. Capacity building and research environment

Capacity building

Innogen continues to build capacity by seeking funding for new projects and posts beyond the ESRC award, and also accepting offers of collaboration with other research centres and units in both natural and social sciences, thus adding to the range of research skills and areas of interest represented. However, we are doing this in a highly targeted manner, based on the Innogen Integrated Policy and Governance Approach, to gather data from each of our major constituencies (science/industry innovation communities; policy makers and regulators; stakeholders and public groups) and to develop an integrated analysis of the interactions among these groups as they respond to new knowledge in life sciences and the innovation opportunities that arise from this knowledge.

Research environment

Research fellows are provided with a supportive environment with ready access to all senior staff involved in the Centre. They are encouraged to develop new skills and given training where necessary. They are also encouraged to expand their horizons by mutual interactions and discussions on research issues. The following activities have contributed to capacity building in this sense:

- three day 'retreat'-type residential meetings are held at intervals of six months where all staff involved in Innogen (including visiting fellows) meet to discuss their research projects, how they are evolving, how they fit into the overall Innogen programme, how they contribute to Cross-Cutting Themes, and how the capacity of the Innogen programme as a whole is being developed
- regular research seminars take place at approximately monthly intervals in Edinburgh or the Open University – these are open meetings and bring in other interested researchers from across the host university and beyond
- the three directors meet at approximately monthly intervals to discuss issues related to management of the Centre and of its research programme, and in addition regular conference telephone calls are held
- research fellows are contributing to teaching on the masters programme
- research fellows and PhD students attend a range of one-day training courses provided by The University of Edinburgh, eg project management for researchers, career development for contract researchers.
- training workshops were also provided for research fellows, one on presentation skills and one on media training
- regular 'learning lunches' are provided by Edinburgh University covering topics of particular interest to research fellows, eg., publications strategies, grant applications, etc.
- support for research development, including training sessions for junior staff to help them understand research funders' procedures were provided in-house by Williams and Lyall to supplement offerings from the University of Edinburgh.

8. Key performance indicators

Research projects

- Two of Innogen's core projects (Projects 3 and 4) that had been amalgamated under one title, Exploring the Power of Knowledge and Technology Flows in Developing Countries, finished at the end of 2005.
- Dr Catherine Lyall, research fellow from Project 6, The National and International Policy Environment, left her position in Innogen to take up the position of Research Development Manager within the Edinburgh University Institute for the Study of Science, Technology and Innovation (ISSTI). This project had been intended to run until September 2007 and salary savings from this post are being used to bring senior researchers to Innogen for short periods of relevant collaborative research.
- Excellent progress has been made on the remaining projects funded from other sources.
- Innogen has continued to attract a significant amount of additional funding - £406,644 in 2006 – from a range of organisations including Science Council of the Consultative Group on International Agricultural Research, African Union/NEPAD, PRIME, EC, RISKBRIDGE, OECD, RCUK and DFID, which considerably exceeding the volume of funding proposed as a target for 2006.

Teaching and studentships

- Funding for one additional Fellowship in Translational Medicine was awarded from the RCUK Fellowship Programme. This is a permanent post at the University and will revert to a teaching post at the end of the RCUK funding period. The post was awarded in 2006 to Dr. Jane Calvert, currently at Egenis and she will take up the post in July 2007.
- As Innogen has become more widely known we have found it much easier to attract graduate students and numbers are expanding rapidly.

Management, administration and staff

- Innogen continues to have a very good relationship with the Advisory Committee and our bi-annual meetings provide an opportunity for them to contribute significantly to the outputs, impact and direction of Innogen.
- Actual dedicated research staff is lower than target due to Dr James Smith and Dr Catherine Lyall obtaining new posts within the University.

Publications and external relations

- The total number of refereed journal articles and our invited presentations at major conferences and workshops exceeded target and provides strong evidence of the quality of our academic research base.
- Remaining publications and external relations indicators were slightly less than target. More emphasis will be given to producing these in 2007 and ensuring that our targets are met next year.

Innogen events

- The highlight of the Innogen events is the Innogen Annual Conference. This year, the conference focussed on Genomics and Development and attracted over 100 delegates and speakers from the UK, Europe and Africa.
- Innogen held three major workshops in 2006.
- The monthly seminar series (at both Edinburgh and the Open Universities) is very popular and an integral part of the Innogen events calendar.
- Innogen co-sponsored a major international conference in December 2006 on 'Policy implications of recent advances in the Economics of Innovation and Industrial Dynamics', organised by Prof. Mariana Mazzucato and Dr. Roberto Simonetti. Speakers included Richard Nelson, Giovanni Dose, Luigi Orsenigo, Franco Malerba, and Nicki Price (Chief Economic Adviser and DG at the UK DTI).

9. Scientific representation

The externally-appreciated value of Innogen's research, nationally and internationally, is demonstrated by the number of occasions on which our directors and research fellows are invited to lead or take part in important events. These include major academic events, many of which are primarily directed to the scientific community, and also participation in policy and advisory bodies, many of which also include members of business communities and industry.

These include contributions to the following bodies or events, to give just a few examples:

- The International Assessment of Agricultural Science and Technology for Development (IAASTD), for the World Bank
- South African Health and Biotechnology Working Group
- African Union/NEPAD Ministerial summit on science and technology
- Science Council of the Consultative Group on International Agricultural Research
- International Livestock Research Institute
- DFID-funded "Research into Use Programme", NR International
- Millennium Development Goals (MDG) Task Force Team 10 on Science, Technology and Innovation
- International Working Group on Ethics, Governance and Public Engagement: Public Population Project in Genomics (P3G) consortium
- Lothian Research Ethics Committee
- International Risk Governance Council, Scientific and Technical Council
- Scottish Science Advisory Committee and its 'R&D in Industry' Sub-group
- Awards Committee, BBSRC Crop Science Initiative
- Roslin Institute Governing Council
- UNESCO Forum on Higher Education, Knowledge and Research, UNESCO, Paris.
- Swedish Sida Research Division UNESCO Forum on Higher Education, Knowledge and Research, in Paris on 6-7 April 2006
- External Assessor for the Development Studies Institute (DESTIN), London School of Economics
- OECD, including chairing of a workshop on drug development and lead speaker at World Knowledge Forum, South Korea.
- Participant in US/EC Transatlantic Dialogue on Synthetic Genomics
- Joint lead role in launch of OSI/DTI Foresight Project on Detection and Identification of Infectious Diseases.

Also, Joyce Tait, Janet Carsten and Harry Campbell were elected to Fellowships of the Royal Society of Edinburgh.

10. Forward look

2007 will be our transition year from the first to the second phase of funding for the Innogen Centre. We will therefore be completing our Phase 1 research projects, ensuring effective dissemination of the outputs and continuing to build up our range of stakeholders with an active interest in our results.

Norman Clark and Luigi Orsenigo will be joining the staff of the Open University in April 2007. We will also be building our links with the Genomics Network as a whole, particularly in developing a joint portal for the website and a new set of images for the network. Most important, we will also be collaborating with other Network members in the October 2007 Conference which will be presenting the main outcomes of all three Centres at the end of Phase 1 funding.

For the Phase 2 research programme, all the current research fellows will be continuing as active researchers on our research programme. Unlike Phase 1 where the seven core-funded projects were specified at the beginning of the programme, in Phase 2, the research fellows will be actively involved in specifying the details of the research to be carried out under the main headings in the Table below. They are also being encouraged to work jointly on some projects, in interdisciplinary teams.

1. The new life-science economy

- 1.1 The changing roles and strategies of companies in driving life-science innovation
- 1.2 New dynamics of public and private applications of the life sciences
- 1.3 Knowledge and application convergences and divergences and their implications for the evolution of the life-science industries
- 1.4 Globalisation, access and inclusion – global flows of genomics knowledge and global pathways of dissemination and exploitation
- 1.5 Human capacities and innovation capabilities

2. Governance of innovation in life sciences

- 2.1 Multi-level governance and its limitations
- 2.2 Evolution of regulatory systems for life sciences
- 2.3 Levels of engagement in life sciences – the ‘Compressed Foresight’ approach, and beyond
- 2.4 Styles of engagement in life sciences

Activities in 2007 will include:

- January: Pharmaceutical industry workshop organised with ABPI
- April: Edinburgh International Science Festival Event, Dr. Allen Roses, Senior Vice President, Pharmacogenetics, GSK, co-sponsored by ITI Life Sciences.
- April: Innogen Executive Development Course presented in collaboration with Tufts Centre for Drug Development
- June: Innogen Phase 2 projects fully specified for years 1 and 2
- September/October: First delivery of 2 new courses at Edinburgh University - Masters in Translational Medicine and Masters in Science and Technology Policy.
- October: Genomics Network Conference, London.

11. Major budget issues

Budget summary

Budget summary for the year, from 1 January to 31 December 2006, is as follows:

Total budget for 2006	£455,273
Total expenditure for 2006	£417,650
Surplus/(deficit)	£37,552
% underspend	8.2%

Budget summary for the project, from 1 October 2002 to 31 December 2006, is as follows:

Total budget 2002 to 2006	£1,807,966
Total expenditure 2002 to 2006	£1,846,008
Surplus/(deficit)	(£38,042)
% overspend	2.0%

Catherine Lyall left her post as Innogen Research Fellow in November 2005 to take up the post of Research Development Officer in the Edinburgh University Institute for the Study of Science, Technology and Innovation (ISSTI). Her Innogen fellowship had been intended to run until September 2007 and the salary underspend as a result of this move accounts for approximately £26,500 of the £37,552 surplus in 2006. If this salary underspend is excluded, the resulting surplus is reduced to £11,052 – 2.6% of the expenditure.

The surplus from salary savings from this post are being used in 2006 and 2007 to bring senior researchers to Innogen for short periods of collaborative research. Dr. Christopher Paul Milne from the Tufts Centre for Drug Development (TCDD) (Tufts University, Boston, USA) visited Innogen for two months in 2006 and we are also funding visits from Professor Luigi Orsenigo, a prominent European economist with interests in pharmaceutical innovation strategies and the impacts of regulation on company decision making. We will also be utilising some of this surplus to fund Innogen Research Fellow James Mittra for 3 months in 2007.

Although Innogen was slightly underspent in 2006, we were slightly overspent to 2005. Looking at the project as a whole from October 2002 to December 2006 indicates that we are currently £38,042 overspent, ie 2% of budget.

Appendix 1

Innogen staff details

Director

Professor Joyce Tait	ESRC Innogen	80%
	University of Edinburgh	20%

Co-directors

Professor Robin Williams	University of Edinburgh	40%
Professor David Wield	Open University	40%

Academic staff

Dr Sarah Parry	University of Edinburgh	40%
Dr James Smith	University of Edinburgh	30%
Dr Peter Robbins	Open University	15%
Dr Sarah Cunningham-Burley	University of Edinburgh	12.5%
Dr Wendy Faulkner	University of Edinburgh	12.5%
Professor Graeme Laurie	University of Edinburgh	20%
Professor Donald MacKenzie	University of Edinburgh	15%
Dr Steve Sturdy	University of Edinburgh	5%
Dr Harry Campbell	University of Edinburgh	5%
Dr Charlotte Waelde	University of Edinburgh	5%
Professor Janet Carsten	University of Edinburgh	5%
Dr Shona Kerr	University of Edinburgh	10%
Professor Joanna Chataway	Open University	30%
Dr Roberto Simonetti	Open University	15%
Professor Mariana Mazzucato	Open University	10%
Dr Xiaobai Shen	University of Edinburgh	10%
Professor Veronica van Heyningen	University of Edinburgh	3%

Research fellows

Ann Bruce	ESRC Innogen	40%
Dr James Mittra	ESRC Innogen	100%
Shawn Harmon	ESRC Innogen	100%
Dr. Theo Papaioannou	ESRC Innogen	100%
Dr Gill Haddow	SHEFC	100%
Dr. Seife Ayele	Science in Society	100%
Dr. Susan Oreszczyn	Science in Society	100%
Dr Dinar Kale	Science in Society	100%

Support team

Project Manager		
Julie Hamilton	ESRC Innogen	80%
Administrator and PA		
Angela McEwan	ESRC Innogen	100%
Secretary (Open University)		
Marlene Gordon	ESRC Innogen	50%
Transcription Support		
Eileen Mothersole	ESRC Innogen	10%

Post graduate students

Sian Beynon-Jones
 Ann Bruce
 Joseph Bradley
 Rampaul Chamba
 Andrew Clements
 Pelin Demirel
 Jacqui Ehrlich
 Rebecca Hanlin
 Matthew Harsh
 Maija Hirvonen
 Farah Huzair
 Lillian Jensen
 Ann Kingiri
 Adele Langlois
 Nicola Marks
 Julius Mugwagwa
 Najib Murad
 Stuart Parris
 Gethin Rees
 Tamar Shengelia
 Jonathan Suk
 Cailean Todd
 Mary Upton

Funding

ESRC 1+3
 Self-funded (part time)
 Self-funded (part time)
 The Open University
 ESRC 1+3
 The Open University
 The Open University
 ESRC 1+3
 UK Government (Marshall Scholarship)
 College Studentship
 ESRC 1+3
 ESRC 1+3
 The Open University
 The Wellcome Trust
 MRC
 The Open University
 ESRC at University of Strathclyde
 ESRC 1+3
 ESRC 1+3
 The Open University
 Self-funded
 ESRC 1+3
 The Open University

Appendix 2

Publications from ESRC-funded activity throughout the year

Refereed journal articles (published or in press)

- Ayele, S., Chataway, J. and Wield, D. (2006) Partnerships in African Crop Biotech, *Nature Biotechnology*, **24**, 619-621.
- Bompani, B. and Smith, J. (In press) Churches, modernity and technology in Kenya, *Development and Change*.
- Bower, J. and Sulej, J. (In press) Social and intellectual capital formation in leading Indian pharmaceutical companies, *International Journal of Innovation Management*.
- Chataway, J., Hanlin, R., Orsenigo, L. and Cacciatori, E. (In press) The changing landscape of vaccine development: PPPs between brokerage and knowledge of integration, *European Journal of Development Research*.
- Chataway, J. and Smith, J. (2006) The International Aids Vaccine Initiative (IAVI): Is it getting new science and technology to the world's neglected majority?, *World Development*, **34**, 16-30.
- Chataway, J., Smith, J. and Wield, D. (2006) Science and technology partnerships and poverty alleviation in Africa, *International Journal of Technology Management and Sustainable Development*, **5**, 103-123.
- Chataway, J., Tait, J. and Wield, D. V. (2006) The governance of agro- and pharmaceutical biotechnology: public policy and industry strategy, *Technology Analysis and Strategic Management*, **18**, 169-185.
- Chaturvedi, K. and Chataway, J. (2006) Strategic integration of knowledge in Indian pharmaceutical firms: creating competencies for innovation, *International Journal of Business Innovation and Research*, **1**, 27-50.
- Clark, N. (In press) Re-visiting agricultural science for development: A conceptual exploration, *International Journal of Technology Management and Sustainable Development*.
- Cook, G., Robbins, P. T. and Elisa, P. (2006) 'Words of mass destruction': British newspaper coverage of the genetically modified food debate, expert and non-expert reactions, *Public Understanding of Science*, **15**, 5-29.
- Cunningham-Burley, S. (In press) Public understanding and public trust, *Community Genetics*.
- Haddow, G., Cunningham-Burley, S., Bruce, A. and Parry, S. (In press) Do population genetic databases require an early consultative ear and a strong legislative arm, *Critical Public Health*.
- Hanlin, R., Chataway, J. and Smith, J. (In press) Global health public-private partnerships: IAVI, partnerships and capacity building, *African Journal of Medicine and Medical Science*.
- Harmon, S. (In press) A penny for your thoughts, a pound for your flesh: Implications of recognizing property in human body parts, *Medical Law International*.
- Harsh, M. and Smith, J. (In press) Technology, governance and place: Situating biotechnology in sub-Saharan Africa, *Science and Public Policy*, **34**.

- Kale, D. (In press) From imitation to innovation: The evolution of innovative R&D capabilities in the Indian pharmaceutical industry, *Technology Analysis and Strategic Management*
- Kerr, A., Cunningham-Burley, S. and Tutton, R. (In press) Shifting subject positions: Experts and lay people in public dialogue, *Social Studies of Science*.
- Laurie, G. and Gertz, R. (2006) When worlds collide: What are the obligations of the NHS at the interface between data protection and freedom of information regimes, *Edinburgh Law Review*, **10**, 151-155.
- Mazzucato, M. and Tancioni, M. (In press) Indices that capture creative destruction: Questions and implications, *Revue d'Economie Industrielle*.
- Mittra, J. (2006) Genetic exceptionalism and precautionary politics: Regulating for uncertainty in Britain's genetics and insurance policy process', *Science and Public Policy*, **33**, 585-600.
- Mittra, J. (2006) The socio-political economy of pharmaceutical mergers: a case study of Sanofi and Aventis, *Technology Analysis and Strategic Management*, **18**, 473-496.
- Papaioannou, T. (2006) Research, Quality and Competitiveness: European Union Technology Policy for the Information Society by Attilio Stajano' (Review Essay) *Science and Public Policy*, **33**, 541-544.
- Papaioannou, T. (2006) Towards a critique of the moral foundations of intellectual property rights, *Journal of Global Ethics*, **2**, 67-90.
- Papaioannou, T., Rush, H. and Bessant, J. (2006) Benchmarking as a Policy-Making Tool: From the Private Sector to the Public Sector, *Science and Public Policy*, **33**, 91-102.
- Parry, S. (2006) (Re)Constructing embryos in stem cell research: Exploring the meaning of embryos for people involved in fertility treatments, *Social Science & Medicine*, **62**, 2349-2359.
- Rosiello, A. (In press) At the interfaces of governance and competence perspectives: discussing organisational choices in the Scottish biotechnology cluster, *Technology Analysis and Strategic Management*.
- Rosiello, A. (In press) The geography of knowledge and technology transfer: the case of the Scottish biotechnology cluster, *Journal of European Planning Studies*.
- Rosiello, A. and Smith, J. (2006) A sociological economy of vaccine partnerships in Africa and India, *Current Sociology*.
- Rosiello, A. and Smith, J. (In press) A sociological economy of HIV/Aids vaccine partnerships: the case of IAVI, *European Journal of Sociology*.
- Rosiello, A., Smith, J. and Chataway, J. (In press) The case of the International Aids Vaccine Initiative: a sociological economy of vaccine partnerships in Africa and India, *Technology Analysis and Strategic Management*.
- Smith, B., Campbell, H., Blackwood, D., Connell, J., Connor, M., Deary, I., Dominiczak, A., Fitzpatrick, B., Ford, I., Jackson, C., Haddow, G., Kerr, S., Lindsay, R., McGilchrist, M., Morton, R., Murray, G., Palmer, C., Pell, J., Ralston, S., St Clair, D., Sullivan, F., Watt, G., Wolf, R., Wright, A., Porteous, D. and Morris, A. (2006) Generation Scotland: the Scottish Family Health Study: A new resource for researching genes and heritability. , *BMC Medical Genetics*, **7**, 74.

Smith, J. (In press) Joined-up innovation: the development of the East Coast Fever vaccine in Kenya, *International Journal of Technology Management and Sustainable Development*.

Tait, J. and Chataway, J. (In press) 'The Governance of corporations, technological change and risk: Examining industrial perspectives on the development of genetically modified crops, *Environment and Planning C*.

Williams, R. (2006) Compressed foresight and narrative bias: Pitfalls in assessing high technology futures, *Science as Culture*, **15**, 327-348.

Refereed journal articles (submitted)

Ayele, S. (Submitted) The Legitimation of GMO Governance in Africa, *Science and Public Policy*.

Bower, D.J. and Sulej, J (Submitted) 'The Indian Challenge: The evolution of a successful new global strategy in the pharmaceutical industry', *Technology Analysis and Strategic Management*.

Chataway, J., Smith, J. and Wield, D. (Submitted) Shaping scientific excellence in agricultural research, *Journal of International Biotechnology*.

Chaturvedi, K., Chataway, J. and Wield, D (Submitted) 'Policy, Market and Strategic synergies in Indian Pharmaceuticals', *Technology Analysis and Strategic Management*.

Chataway, J. Tait, J and Wield, D (Submitted) 'Policy frameworks for pharmaceutical innovation in developing countries' *Technology Analysis and Strategic Management*.

Clark, N., Smith, J. and Hirvonen, M. (Submitted) Livestock R&D in East and Southern Africa: An innovation systems perspective with special reference to the International Livestock Research Institute (ILRI), *International Journal of Technology Management and Sustainable Development*.

Haddow, G., Laurie, G., Cunningham-Burley, S. and Hunter, K. (Submitted) Tackling community concerns about commercialisation and genetic research: A modest interdisciplinary proposal, *Social Science and Medicine*.

Hanlin, R. (Submitted) Increasing knowledge flow by linking innovation and health – the case of SAAVI, *Genomics, Policy and Society*.

Harmon, S. (Submitted) Solidarity: A (new) ethic for global health policy, *Health Care Analysis*.

Harsh, M. (Submitted) Mafias and mutuality: Governance of biotechnology in Kenya and Uganda, *International Journal of Technology Management and Sustainable Development*.

Kale, D. (Submitted) A theoretical framework for exploring innovative capability development in high-technology firms in India *Technovation*.

Kale, D. and Athreye, S. (Submitted) Experimenting with strategy on the Indian pharmaceutical sector *Industrial and Corporate Change*.

Kale, D. and Wield, D. (Submitted) Exploitative and explorative learning as a response to the TRIPS agreement in Indian Pharmaceutical firms: some implications for other developing countries, *Industry and Innovation*.

- Kalra, D., Gertz, R., Singleton, P. and Inskip, H. (Submitted) The confidentiality of personal health information used for medical research, *British Medical Journal*.
- Lyall, C. (Submitted) Concurrent power. The role of policy networks in the multi-level governance of science and innovation in Scotland, *Science and Public Policy*.
- Lyall, C. (Submitted) Governing genomics: New governance tools for new technologies?, *Technology Analysis and Strategic Management*.
- Mittra, J. (Submitted) Life science innovation and the re-structuring of the pharmaceutical sector: Mergers, acquisitions and strategic alliances, *Technology Analysis and Strategic Management*.
- Mittra, J. (Submitted) Marginalising eugenic anxiety through a rhetoric of liberal choice: A critique of the House of Commons Select Committee Report on Reproductive Technologies, *New Genetics and Society*.
- Mittra, J. (Submitted) Predictive genetic information and access to life assurance: the poverty of 'genetic exceptionalism', *Science, Technology and Human Values*.
- Papaioannou, T. (Submitted) Policy benchmarking: A tool of democracy or a tool of authoritarianism, *Benchmarking: An International Journal*.
- Papaioannou, T. (Submitted) The formation of the right-based dimension of Nozick's political theory, *The Journal of Social Science Information*.
- Papaioannou, T. (Submitted) Governance and co-ordination: The case of European innovation policy, *Journal of European Integration*.
- Parry, S. (Submitted) Three processes of boundary work in stem cell research: scientisation, expulsion and enrollment - scientists' perspectives, *Science Studies*.
- Robbins, P. T. (Submitted) The reflexive engineer: perceptions of integrated development, *Journal of International Development*, **19**, 99-100.
- Robbins, P. T. and Crow, B. (Submitted) Engineering and development: interrogating concepts and practices, *Journal of International Development*.
- Robbins, P. T. (Submitted) The social construction of GM safety scientists' research: Narratives and boundaries, *Science as Culture*.
- Rosiello, A. (Submitted) Examining Scottish Enterprise's framework for action in life sciences, *International Journal of Biotechnology*.
- Simonetti, R and kale, D. (Submitted) 'The dynamics of pharmaceutical patenting in India, Evidence from USPTO data', *Technology Analysis and Strategic Management*.
- Spiers, J. (Submitted) Professional principles versus patient choice, *Human Fertility*, **9**.
- Suk, J. (Submitted) Dolly for dinner? Assessing commercial and regulatory trends in cloned livestock, *Nature Biotechnology*.

Books

- Carsten, J. (In press) *Ghosts of memory: Essays on remembrance and relatedness*, Blackwell.
- Clark, N., Mugabe, J. and Smith, J. (In press) *Science and governance of modern biotechnology in Saharan Africa*, UNU Press.

Laurie, G. (In press) *Genetic property: law's response to commercialisation of the human genome*, Cambridge University Press.

Mazzucato, M. and Dosi, G. (2006) *Knowledge accumulation and industry evolution: the case of pharma-biotech*, Cambridge University Press, Cambridge.

Book chapters

Carsten, J. (In press) Connections and disconnections of memory and kinship in narratives of adoption reunions, In *Ghosts of memory: Essays on remembrance and relatedness* (Ed, Carsten, J.) Blackwell.

Carsten, J. (In press) Introduction: Ghosts of memory, In *Ghosts of memory: Essays on remembrance and relatedness* (Ed, Carsten, J.) Blackwell.

Carsten, J. (In press) Kinship, In *Critical Terms for the Study of Gender* (Eds, Herdt, G. and Stimpson, C.) Chicago University Press.

Chataway, J., Tait, J. and Wield, D. (2006) Understanding company R&D strategies in agro-biotechnology: Trajectories and Blindspots, In *The Economics of Biotechnology* (Eds, McKelvie, M. and Orsenigo, L.) Edward Elgar Publishing Ltd, Cheltenham, Glos, pp. 378-401. Reprint of Chataway, J., Tait, J. and Wield, D. (2004) Understanding company R&D strategies in agro-biotechnology: Trajectories and Blindspots. *Research Policy*, 33/6-7, 1041-1057.

Laurie, G. (2006) The autonomy of others: reflections on the rise and rise of patient choice in contemporary medical law, In *First Do No Harm: A Festschrift in Honour of JK Mason* Ashgate, pp. 131-150.

Laurie, G. (2006) Patents, patients and consent: Exploring the interface between regulation and innovation regimes, In *Regulating Biotechnology* (Ed, Hanson, J.) Edward Elgar Publishing, pp. 214-237.

Nemes, G., High, C. and Huzair, F. (2006) Reflexive agency and multi-level governance: Mediating integrated rural development in South Transdanubia In *International Rural Governance: International Perspectives* (Eds, Cheshire, L., Higgins, V. and Lawrence, G.) Routledge, pp. 98-115.

Smith, J. (2006) Globalising vulnerability: Impacts of subsidies and unfair trade on developing country agriculture, In *Modern agricultural practices: Their environmental, social and public health impacts* (Ed, Hester, R.) Royal Society of Chemistry Press, York, pp. 81-102.

Tait, J., Chataway, J., Lyall, C. and Wield, D. V. (2006) Governance, policy and industry strategies: Pharmaceuticals and agro-biotechnology, In *Knowledge accumulation and industry evolution* (Eds, Mazzucato, M. and Dosi, G.) Cambridge University Press, Cambridge, pp. 378-401.

Working papers

Chataway, J., Smith, J. and Wield, D. (2006) Changing notions of scientific excellence: Agricultural research and the cases of trypanosomiasis and theileriosis vaccine research in East Africa.

Chataway, J., Smith, J. and Wield, D. (2006) Science and technology partnerships for poverty alleviation in Africa.

Hanlin, R. (2006) Implications for sustainable health systems of PPPs at the interface of science and technology and public health fields.

Hanlin, R. (2006) SAAVI case study and the 3 'C's (collaboration, capacity and capabilities): Linking innovation systems and health systems in development.

Papaioannou, T. (2006) Human gene patents and the question of liberal morality.

Papaioannou, T. (2006) Public-private collaboration in genomics and biotechnology: a scoping paper.

Conference Report

Innogen Annual Conference 2006: Genomics for Development: the Life Sciences and Poverty Reduction held on 5-6 September 2006, London.

Newsletters

Genomics Network Newsletter Issue 3, March 2006

Genomics Network Newsletter Issue 4, October 2006

Other non-academic publications

Chataway, J., Smith, J. and Wield, D. (2006) Framing 'excellence', institutions and innovation in Africa, *Genomics Network Newsletter, Issue 3, March 2006*, 10-11.

Cunningham-Burley, S, Haddow, G. and Parry, P. (2006) Perspectives on public engagement, *Genomics Network Newsletter Issue 4, October 2006*, pp 12-19.

Lyall, C. (2006) Submission to the House of Commons Select Committee on Science and Technology: Scientific Advice, Risk and Evidence: How Government Handles Them.

Lyall, C., Tait, J., Williams, R. and Wield, D. (2006) On a roll, without a role?, *Research Fortnight*, 18-23.

Mitra, J. (2006) OECD Case Study: Emerging Research Models for the Delivery of Health Innovation.

Suk, J. (2006) Reconstructing the 1918 Flu Virus, *Genomics Network Newsletter Issue 4, October 2006*, pp 4-5.

Tait, J. (in press) Risk Regulation and the Shaping of Biotechnology for Agriculture. Report: International Assessment of Agricultural Science and Technology for Development (IAASTD).

Tait, J., Meagher, L., Lyall, C. and Suk, J. (2006) Foresight. Infectious Diseases: Preparing for the Future. Risk Analysis. Office of Science and Innovation, London, pp 47.

Appendix 3

Training and career development

Off the job training for contract research staff in:

Research skills	3 courses
Transferable skills	6 courses

Next known employment destination of leavers:

Research	0
University teaching and research	1 (Catherine Lyall)
Other public sector	0
Private sector	0

No of research students 20

Appendix 4

Summary of key performance indicators

		Target 2006	Actual 2006	Target 2007
Group 1:	<i>Research projects</i>			
1.1	Research projects commenced	0	0	?
1.2	ESRC core funding	£455,203	£417,650	£450,000
1.3	Additional funding obtained	£200,000	£406,644	£200,000
1.4-5	Proposals under evaluation/in preparation	£200,000	£229,126	£200,000
1.6	Research collaborations	12	4	8
Group 2:	<i>Teaching and studentships</i>			
2.1	Lectureships	0	1	0
2.2	Courses set up and running	0	0	2
2.3	Innogen staff involved in teaching	6	8	8
2.4	Research students	20	25	25
2.5	In-service training for policy makers and managers	1	0	1
Group 3:	<i>Management, administration and staff</i>			
3.1	Advisory bodies set up and running	NA	NA	NA
3.2	Management meetings	12	12	12
3.3	Advisory committee meetings	2	2	2
3.3	Dedicated research staff	4.8 FTE	3.4 FTE	3.8 FTE
3.4	Associated research staff	5.0 FTE	4.0 FTE	4.0 FTE
3.5	Support staff	2.9 FTE	2.4 FTE	2.4 FTE
3.6a	UK and EU Visiting fellows	4	7	4
3.6b	International Visiting fellows	4	4	4
3.7	Edinburgh and Open University staff contributing time to Innogen	3.3 FTE	3.4 FTE	3.3 FTE
3.8	Innogen retreats	2	2	2
3.9	Staff development workshops attended	6	10	6
Group 4:	<i>Publications</i>			
4.1	Refereed journal articles published and in press	20	34	20
4.2	Refereed journal articles submitted	40	30	20
4.3	Books	5	4	3
4.4	Book chapters published or in press	15	9	10
4.5	Working papers	12	6	12
4.6	Conference report	1	1	0
4.7	Newsletter	2	2	2
4.8	Other non-academic publications	15	9	10

Group 5:	<i>External relations</i>			
5.1	Invited presentations at major conferences or workshops	25	32	30
5.2	Offered presentations	25	16	20
5.3	Participation in policy, advisory and stakeholder groups, policy briefs submitted	50	47	40
5.4	Conferences/meetings attended	30	45	25
5.5	Website developed and updated regularly	NA	NA	1
5.6	Website redeveloped	NA	NA	1
5.7	Number registered on website	1000	NA	NA
5.8	Prizes/honours	0	3	0
Group 6:	<i>Innogen events</i>			
6.1	Innogen Launch	NA	NA	NA
6.2	Conferences	2	2	0
6.3	Workshops	6	3	3
6.4	Seminars (at Edinburgh and the Open University)	12	18	15

Appendix 5

Budget Information

Total budget for 2006	£455,203
Total expenditure for 2006	£417,650
Surplus/(deficit)	£37,552
% underspend	8.2%

Total expenditure for the year, split by budget header, was as follows:

	Jan-Dec 2006 (£)
Research Staff	196,103.38
Other staff	31,621.67
Indirect Costs	104,032.66
Travel (UK)	33,978.77
Travel (Overseas)	20,362.76
Consumables	7,453.13
Exceptional Items	24,052.36
Equipment	45.26
TOTAL	417,649.99

Research contracts involving other Research Councils and other non-social science funders:

Science Council of the Consultative Group on International Agricultural Research	\$74,000 (ca £37,781)
African Union/NEPAD	\$75,000 (ca £38,292)
PRIME Knowledge Transfer Grant	£8,065
PRIME Venture Capital 2	£17,718
ETEPS	£50,992
RISKBRIDGE	£57,112
OECD	£2,000
RCUK	£125,000
DFID	£1,700
Total	£338,660

Research contracts from ESRC and other social science funders:

Science in Society	£7,000
The Swedish Agency for International Development Cooperation (SIDA)	£7,000
ERA-Sage	£53,984
Total	£67,984

Appendix 6

External engagement and exploitation

Level of usage of any research resources generated:

As indicated in Section 9 and in Appendix 4, the resources we are generating, in terms of our knowledge and its widespread dissemination, are leading directly to numerous invitations to give keynote and other presentations at major conferences, and to take part in a range of capacities in external committees and advisory bodies, many of them involving scientists, medical practitioners, government policy makers and industry representatives.

Level of co-funding by business and government:

Science Council of the Consultative Group on International Agricultural Research	£37,781
African Union/NEPAD	£38,292
ETEPS	£50,992
OECD	£2,000
DFID	£1,700
The Swedish Agency for International Development Cooperation (SIDA)	£7,000
Total	£137,765

Number of interactions/events focused on public participation and engagement:

The "Talking About Stem Cells: The Social Dynamics of Public Engagement in Stem Cell Research" team from Innogen held a public debate in November 2006 attended by over 90 people. The event was prompted by the Human Fertilisation and Embryology Authority's public consultation about the possible use of women's eggs in research. Four panellists, Diane Beeson, Sociologist and Women's Health Activist, Daniel Brison, Scientific Director at Regional IVF Unit; Donna Dickenson, Medical Ethicist: Academic and Activist and Harry Griffin, Director of Roslin Institute helped to facilitate the debate and the focus was on the issues raised by the two possible sources of donated eggs for research.

Appendix 7

Policy/process issues

December 2006 saw the almost-completion of the mid-term review process for the Innogen Centre, a process which began in March 2005. As we indicated in our recent Troika meeting, we believe that this process was excessively time consuming, both for the Centres and for ESRC staff. Our scientific colleagues in Edinburgh University who head major centres funded by other research councils have expressed the view that, with considerably greater sums of money at stake, they are subject to a much lighter-touch evaluation process.

The effort involved in Innogen for Directors and staff represented a considerable opportunity cost.

I believe ESRC is aware of this impact and is changing its procedures for future evaluations of Centres.