

# REVIEW OF 2006

## From the Chairmen and Chief Executives



**Lord Ryder**  
Chairman  
The Institute of Cancer  
Research

We are delighted to present our Annual Research Report for 2006, which records another year of significant achievements and progress in cancer research. It contains in-depth reviews of several areas in which there have been exciting developments.

The Institute of Cancer Research and The Royal Marsden NHS Foundation Trust together form the largest Comprehensive Cancer Centre in Europe, and one of the largest in the world, with an outstanding national and international reputation. Our mission, "to relieve human suffering by pursuing excellence in the fight against cancer", is carried out within a framework of activities in research and development, education and training, and the treatment and care of people affected by cancer.



**Peter Rigby**  
Chief Executive  
The Institute of Cancer  
Research

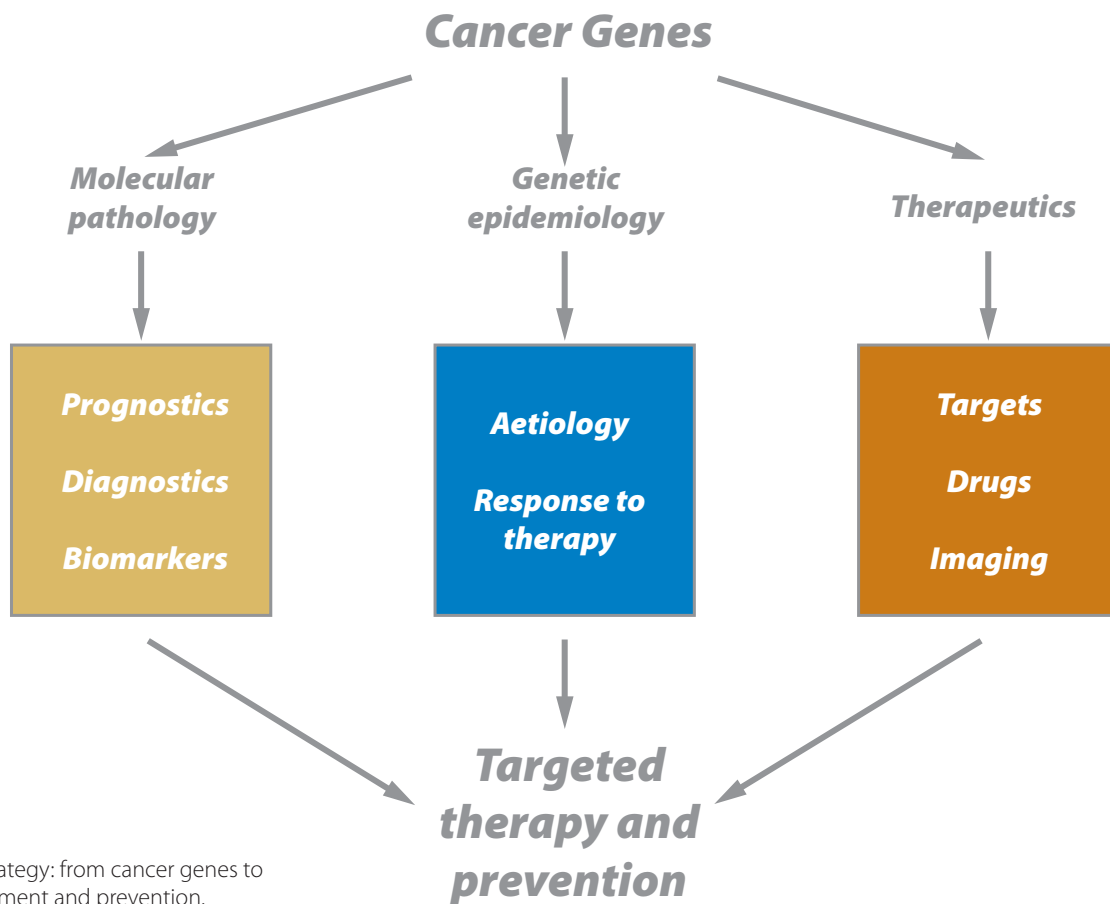
The year has seen the first steps in the implementation of 'Best Research for Best Health', the new NHS Research and Development (R&D) Strategy. In the year 2006-2007 The Royal Marsden received £23 million in NHS R&D monies and it is of the greatest importance that this funding stream continues in the future. A major plank of the new strategy is the establishment of a number of National Institute for Health Research Biomedical Research Centres, some comprehensive, some specialist, which will support the leading edge research undertaken in the NHS. The Royal Marsden and The Institute applied to become a Specialist Centre, and we were delighted that our bid was very well received and funded in full (see NIHR Biomedical Research Centre article, p.53-54). We are extremely grateful to Dr Stephen Johnston, the Director of Clinical Research and Development, who led the bid, and to Dr Keith Snell, the then Joint Scientific Secretary, and to Ms Jane Lawrence, the Clinical Research and Development Manager, for all of their hard work in preparing the application. The Biomedical Research Centre, the only one in the country dedicated to cancer, will provide £10 million per annum when the new system is fully operational. In addition, we were awarded £6.3 million towards a new building in Chelsea which will provide state-of-the-art accommodation for all of our service and research activities in pathology, and in the new area of molecular pathology, which forms a key part of our Scientific Strategy. This support from NHS R&D is greatly appreciated, and we await with interest details of the other new funding streams under Best Research for Best Health.



**Tessa Green**  
Chairman  
The Royal Marsden NHS  
Foundation Trust



**Cally Palmer**  
Chief Executive  
The Royal Marsden NHS  
Foundation Trust



Scientific Strategy: from cancer genes to patient treatment and prevention.



The Institute has for many years been the world leader in cancer genetics and its scientists continue to make major contributions. During 2006 Professor Nazneen Rahman and her colleagues in the Section of Cancer Genetics identified three new genes, *ATM*, *BRIP1* and *PALB2*, mutations in which predispose women to breast cancer.

We are now at the beginning of a new era in human genetics. Whole genome association studies use the latest high throughput technologies to compare the genomes of large numbers of people with a particular disease to those of unaffected controls. Professors Nazneen Rahman and

Mike Stratton of the Section of Cancer Genetics, Professor Julian Peto of the Cancer Research UK Epidemiology Unit and Dr Olivia Fletcher of the Breakthrough Toby Robins Breast Cancer Research Centre, participated in the first of these to look specifically at cancer. Led by colleagues in Cambridge, the Cancer Research UK-funded study analysed some 25,000 cases of breast cancer and a similar number of controls and identified four new susceptibility genes. Professors Rahman and Stratton also participated in the Wellcome Trust Case Control Consortium, the largest study of this sort so far. Professors Richard Houlston and Stratton, and Dr Ros Eeles, all of the Section of Cancer Genetics, are currently involved in further work of this type analysing colorectal, prostate and testicular cancers (see article by Professor Houlston, p.50-52). By the time that the 2007 Report is written, we should have a greatly increased understanding of the genetic basis of the disease.

Another major strength of The Institute and The Royal Marsden is in the development of new anticancer drugs. Last year, we reported the extraordinary achievement of the licensing of three new drugs to major pharmaceutical companies. Their development continues apace and Novartis expect to begin clinical trials of one of our HSP90 inhibitors before the end of 2007. During 2006 a fourth licensing agreement was concluded, with GlaxoSmithKline, for work on inhibitors of BRAF, which Institute scientists have previously shown to be a key

driver of malignant melanoma. This agreement is of particular significance because GlaxoSmithKline have made available to Institute scientists, for further development, BRAF inhibitors that they made for other purposes. This is an interesting inversion of the normal relationship between academia and industry.

Abiraterone is a drug which was developed in the 1990s by Mike Jarman, then The Institute's Professor of Chemistry, and his colleagues in the Cancer Research UK Centre for Cancer Therapeutics. It acts to inhibit the synthesis of the male sex hormone testosterone, on which prostate cancer cells are known to depend in the initial phases of the disease. Phase I clinical trials, led by Dr Johann de Bono of The Institute's Section of Medicine and The Royal Marsden's Drug Development Unit, have shown the drug is in fact active in men who have what has been called hormone refractory prostate cancer (see article by Dr de Bono, p.22-25). The results so far are enormously encouraging and much larger trials are being planned in collaboration with Cougar Biotechnology, who hold the licence to the drug.

In addition, results from the Drug Development Unit have demonstrated for the first time the potential for a class of drug called PARP inhibitors, particularly in patients with BRCA-associated cancer (ie, those with an inherited genetic predisposition to the disease, related specifically to a defect in DNA repair pathways). The drug is given orally and is well tolerated, and while clinical research is at a preliminary stage, there is an early indication that this form of treatment could make a significant impact in inherited breast and ovarian cancer.



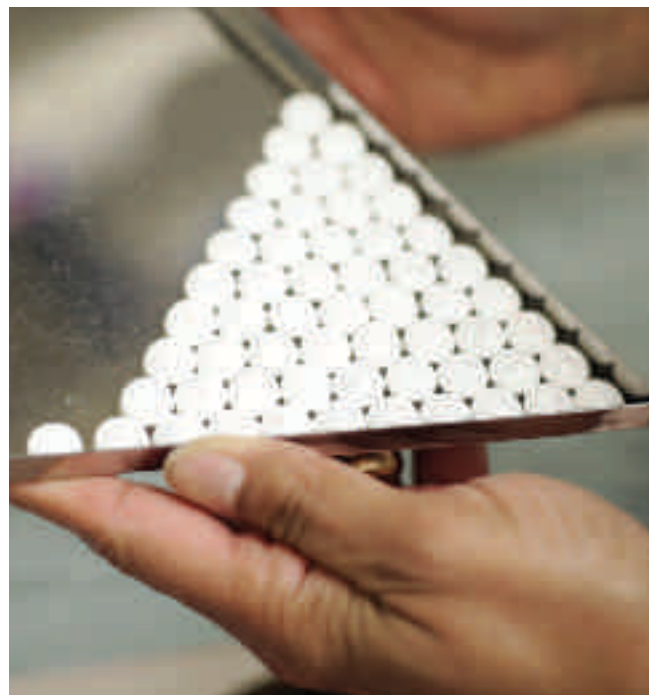
New results published during 2006 from clinical research conducted at The Royal Marsden and The Institute have continued to demonstrate our leading role in shaping treatment of national/international standards for various solid tumours (see article by Professors Cunningham and Sir Ara Darzi p.26-29). Professor David Cunningham, Head of the Gastrointestinal Unit at The Royal Marsden, was Chief Investigator of the MAGIC trial of peri-operative chemotherapy in resectable gastric cancer. This study was run by the MRC Clinical Trials Unit for the National Cancer Research Network Upper GI Clinical Studies Group, with the participation of sites around the UK as well as the Netherlands. The Royal Marsden recruited the largest number of patients to this study. The results of MAGIC have established peri-operative chemotherapy as a standard treatment option for these patients. Professor Cunningham is also Chief Investigator of the GEM-CAP trial in advanced pancreatic cancer which was run by the trials unit at the University of Liverpool. The interim results of this trial have shown a survival benefit for the use of a gemcitabine-capecitabine combination compared to gemcitabine alone for the treatment of these patients. As a result gemcitabine-capecitabine has become the preferred palliative regimen for this disease indication at The Royal Marsden, and is likely to become a standard treatment option internationally.

During 2006, two key international studies in early breast cancer conducted and/or led by The Royal Marsden/The Institute of Cancer Research demonstrated for the first time important improvements in survival by utilising new systemic drug treatment interventions. Professor Ian Smith, Head of the Breast Unit at The Royal Marsden, reported that in the HERA trial adjuvant trastuzumab (Herceptin) not only prevented recurrence of disease, but also significantly improved survival of women with HER2-positive breast cancer. Following endorsement by the National Institute for Clinical Excellence (NICE), one year of adjuvant Herceptin has now become standard of care throughout the UK for these patients. Professor Judith Bliss, Head of the Section of Clinical Trials at The Institute of Cancer Research, reported survival results from the IES study in postmenopausal women with oestrogen receptor positive (ER-positive) breast cancer. After two years of tamoxifen, switching to the aromatase inactivator exemestane for three years as opposed to continuing tamoxifen for five years significantly improved survival – this was the first stand-alone study to report a survival advantage for this switch strategy, and again within the UK this approach has now received NICE endorsement.

In terms of preventing breast cancer in women deemed to be at increased risk, mature results from a 20-year trial led by The Royal Marsden revealed that the anti-oestrogen tamoxifen can reduce the risk of women developing ER-

positive breast cancer. This finding emerged in the second decade of the long-running Royal Marsden TAMOPLAC cancer prevention study which involved 2,471 healthy women at high risk of developing breast cancer. The women were enrolled on the trial in 1986, and were randomly chosen to take either 20mg a day of tamoxifen or a placebo daily for eight years. The results, based on a median follow-up of 13 years, show that overall invasive breast cancer rates were not statistically different between the two groups of women. But when researchers looked specifically at ER-positive breast cancer, the results were markedly different. They revealed that in the group being given tamoxifen, the drug reduced the overall risk of ER-positive breast cancer by 39 per cent. This occurred for the most part in the post-treatment period with a 51 per cent reduction in risk, indicating that a period of tamoxifen treatment can truly prevent breast cancer occurring for a number of years following cessation of therapy. This may have significant implications for future cancer prevention strategies.

The appropriate assessment and follow up of patients with early stage localised prostate cancer has been an area of active research within the Urology Unit. A prospective cohort study of active surveillance led by The Royal Marsden/The Institute of Cancer Research has now recruited over 380 patients, making it the largest study of its kind. Dr Chris Parker has reported the initial outcomes that demonstrate the feasibility and short-term safety of active surveillance. Data from the British



Association of Urological Surgeons cancer registry, based on 60% of all prostate cancers diagnosed in the UK, has shown a dramatic rise in the use of active surveillance nationally in the last few years.

Imaging research has also yielded important new results during 2006. The technique of high resolution magnetic resonance imaging (MRI) was developed and promoted through research conducted and led by The Royal Marsden and The Institute of Cancer Research. The success of a large international, multicentre trial has defined the technique as a standard for staging and management of colorectal cancer, and is now a new standard for the assessment of primary rectal cancer (see article by Dr Brown, p.42-45). Widespread adoption of this technique is leading to measurable reductions in local recurrence and improvements in survival. The MERCURY study group published their findings during 2006, establishing MRI as the standard for predicting curative surgery in patients with rectal cancer.

### News of our staff and their achievements

We offer our warmest congratulations to Janet Husband, Professor of Diagnostic Radiology at The Royal Marsden and The Institute of Cancer Research, who was appointed Dame Commander of the Most Excellent Order of the British Empire in this year's Queen's Birthday Honours. This is an enormously well-deserved recognition of her pioneering clinical research in cancer imaging over the past 30 years. As the first woman President of The Royal College of Radiologists, Dame Janet has led the two specialties of Clinical Radiology and Clinical Oncology since September 2004.



Professor Dame Janet Husband

Dame Janet has been and still is an inspirational leader in her field in the finest traditions of British medicine. She was Medical Director from 2003 to 2006 and in this role provided clinical leadership in The Royal Marsden's successful application for Foundation Status, co-ordinating a strategy for clinical research and a vision for the future of cancer services. Dame Janet is also a Vice Chairman of the Academy of Medical Royal Colleges.

Professor Laurence Pearl, Co-Chairman of the Section of Structural Biology, has been elected to the Fellowship of the Academy of Medical Sciences in recognition of his many major contributions to our knowledge of the structures of proteins involved in the development of cancer.

### Financial facts and figures

The principal sources of income and the expenditure of our joint institutions are summarised in the Facts and Figures 2006 illustration on p.10. Full and detailed statements of the financial accounts of The Institute of Cancer Research (for the year ended 31 July 2006) and The Royal Marsden NHS Foundation Trust (for the year ended 31 March 2007, to be published in September 2007) and

The Royal Marsden Hospital Charity and The Royal Marsden Cancer Campaign (for the year ended 31 March 2007, to be published September 2007) are separately recorded in our respective Annual Reports and Accounts. In the financial year ending on 31 March 2007, the Trust met its key financial objectives. In the year ended 31 July 2006, The Institute made a deficit on its income and expenditure account of £2.2 million as a result of its investment in new scientific initiatives, and spent £6.1 million on capital expenditure.

Overall, the combined annual turnover of our organisations was £237.8 million, with 91% of this total being devoted to research activities and patient care services.

Government funding for our joint research activities contributes 41% of the total resources for research. Our success rate in competing for research funding from external sources continues to be outstanding, at 73% of all applications for peer-reviewed grants to medical charities and government funding agencies. The Institute is particularly indebted to its major funding partners: Cancer Research UK, Breakthrough Breast Cancer, Leukaemia Research Fund, the Wellcome Trust, the Medical Research Council, the Department of Health, and many other medical research sponsors.



Professor Laurence Pearl

Commercial partners collaborating with The Institute and supporting clinical trials at The Royal Marsden during 2006 included Novartis, Pfizer, GlaxoSmithKline, Sareum, Bayer, Cougar, Elekta and Synarc.

Many organisations also contribute support by providing funds for studentships at The Institute and clinical fellowships at the hospital. The Royal Marsden and The Institute are grateful to all the numerous organisations and supporters who have made investments in our research activities.

## Fundraising

The Institute is extremely grateful to all its supporters for joining us in the fight against cancer. It is only with this support that we can hope to achieve our objective that one day people will be able to live their lives free from the fear of cancer as a life threatening disease. The Everyman Male Cancer Campaign continues to gain momentum through the media as well as through our wide range of corporate partnerships. In addition our SAFE (Skin Awareness for Everyone) Campaign, raising awareness and funds for skin cancer had a successful first year especially due to our partnership with Superdrug. Other high profile supporters included ASDA, Topman, Virgin Money, Cosmopolitan Magazine, The Football Association and The Professional Footballers' Association, plus we have seen continued success with our annual fundraising initiative TacheBack, now in its fourth year. The number of individuals who choose to walk, run and cycle in our name continues to grow. The London Marathon and other running events brought in £160,000, and we successfully established our own 5km run for men in June 2006. We would like to thank all those who have contributed to our continuing success, including Rotary International in Great Britain and Ireland, The Grand Charity of Freemasons, The Clothworkers' Foundation, Will for Free law firms and the many friends and individuals who have supported our work through donations, the organisation of events, or attendance at fundraising occasions. We continue to be one of the most cost-effective cancer research organisations in the world with over 95% of our total income going directly into research.

The Royal Marsden Cancer Campaign raises millions of pounds each year to support The Royal Marsden's work and vision. Its fundraising enables the hospital to go that extra mile, helping to pay for new equipment, research facilities and to maintaining high standards of care. Over the past few years The Royal Marsden Cancer Campaign has funded exciting new projects such as the pioneering PET/CT scanner and the Oak Foundation Drug Development Unit, rated 'Doubly Outstanding' by Cancer Research UK. A new operating theatre has been completed at Sutton and additional theatres are under



construction at the Chelsea site. Work is also starting on a new Diagnostic Centre at Chelsea. The Cancer Campaign is now raising money to transform the Medical Day Unit at Chelsea and the Haemato-oncology Unit at Sutton. These state-of-the-art facilities will help the hospital to treat more patients, more quickly and more effectively. In 2006 The Royal Marsden Cancer Campaign beat its fundraising target and raised more than £5 million for the hospital. The Cancer Campaign Team ran, trekked and cycled over 10,500 miles, while marathons proved once again to be popular, competitors raising £190,000. Walking and cycling proved to be just as enticing, with 62 people taking part in overseas challenges around the world. Some trekked the Inca Trail, while others cycled through Cuba and Vietnam – raising an impressive £176,000. Many generous gifts from major benefactors, trusts and companies were augmented by the efforts of volunteer fundraisers and the families and friends of patients and their well-wishers, as well as the hospital's staff and the general public. We are immensely grateful to all those who have contributed to the success of the Make Our Day appeal. Support for the general charitable funds of the hospital, including the purposes of research, and staff and patient amenities, continues to be actively sought and carefully distributed.

It is a great pleasure to present this, our joint Annual Research Report for 2006. We pay tribute to everyone who has contributed to our achievements this year, not least our outstanding scientists and clinicians whose excellence and dedication keep The Royal Marsden NHS Foundation Trust and The Institute of Cancer Research at the forefront of world-class cancer research.

**Tessa Green**  
Chairman

**Lord Ryder**  
Chairman

**Cally Palmer**  
Chief Executive

**Peter Rigby**  
Chief Executive

The Royal Marsden  
NHS Foundation Trust

The Institute of  
Cancer Research