



# Research

We live in an unprecedented time for cancer research. The sequencing of the human genome and other major advances in our understanding of biology at a molecular level has led to a transformation in the science and medicine relating to cancer.

Technological breakthroughs have played a key role and continue to accelerate the pace at which discoveries can be made. We are now in an era where the large investments made in basic biology over the last several decades have led to an array of discoveries that can be translated into clinical practice to benefit the public. As a result, the way cancer is managed is increasingly tailored to the individual.

Over the next five years, we believe that we can make the greatest impact on cancer by ensuring that research discoveries are translated into advances in prevention, detection and treatment for cancer. Our strategy will lead us into important new areas such as early detection, while building on our current strengths in epidemiology, basic science, drug discovery and clinical research. We also aim to address key areas of unmet medical and research needs.

By developing an overarching research strategy for our five Institutes, together with more strategic and coordinated research funding in universities and hospitals through our Cancer Research UK Centres, we will be in a position to take on tougher scientific challenges and to develop world-class cancer researchers for the future.

Our research strategy has three themes: focusing our research on scientific quality and clinical impact, creating the right environment for research and providing the right people for research.





### Focusing our research – scientific quality and clinical impact

One of Cancer Research UK's great strengths is in understanding cancer biology. But we also need to take the lead in areas that are less well explored. We will enhance our programmes in early detection, screening and prevention as few other research organisations, at least in the UK, are playing a substantial role in this area.

The UK already has considerable strengths in the area of basic science. We have a responsibility to ensure that the highest quality basic research in this country continues to provide the foundation for advances in the prevention, detection and treatment of cancer.

Surgery, radiotherapy and chemotherapy continue to be the most important approaches to treatment. The discovery and development of cancer drugs is a traditional strength for Cancer Research UK, which we will develop further. In contrast, research into radiotherapy and surgery has declined significantly in the UK in recent years. Over the next five years we will take steps to correct this. We will also invest more in areas with the highest levels of medical need, such as lung, oesophageal and pancreatic cancers, high incidence cancer types where patients have the poorest outcomes.

Cancer Research UK has been the leading funder of large-scale clinical trials over the last five years, working closely with the [NHS](#) to drive the UK to a world-leading position in the scope of and accrual to cancer clinical trials.

During the years 2009-2014, our strategy is to:

- **Enhance research programmes in early diagnosis, screening and prevention**
  - Continue to fund research into behavioural change relating to tobacco control and sun awareness
  - Increase our investment in symptom awareness and early diagnosis and lead the [NCRI](#) initiative in this area
  - Develop our activity in medical cancer prevention
  - Work in partnership with others through the National Prevention Research Initiative and UK Clinical Research Collaboration to develop and test effective ways of bringing about behavioural changes which may reduce the risk of cancer
- **Maintain and, where possible, strengthen a broad and balanced portfolio of world-class research in the UK, directed at understanding the biology and causes of cancer**
  - Maintain a strong portfolio of basic biology research as an essential part of Cancer Research UK's remit and demonstrate the impact of this research by showing how it ultimately links to clinical practice
  - Continue to raise the quality of our basic research in our Institute and grant-funded research
  - Invest further and increase capacity in imaging research and in more sophisticated in silico and mouse models of disease



- **Promote clinical and translational research which will maximise cancer survival**
  - Continue to grow and reshape our drug-discovery and drug-development operations, maximising the opportunities for clinical uptake
  - Revitalise radiobiology and radiotherapy research by supporting the new [Institute in Oxford](#) and strengthening activity in other places
  - Reinvigorate surgical research through establishing a clear focus for this area in a few Cancer Research UK Centres
  - Maintain a best-in-class technology transfer and commercialisation arm to ensure that patients benefit from publicly-funded cancer research
  - Continue our investment in the highest quality clinical trials from first-in-man new drug studies to large randomised studies, including more sophisticated treatment combinations
  - Through pre-clinical and clinical studies, develop biomarkers and practice-changing strategies for tailoring of treatment to the individual patient
  
- **Promote research in areas with the highest levels of unmet medical need**
  - Foster research in pancreatic cancer through our Cancer Research UK Centres initiative
  - Fund at least one major new initiative in oesophageal cancer, preferably in partnership with others
  - Consult the research community to develop strategic recommendations for further increasing our investment in lung cancer research

## Creating the right environment for research

We support more than 4,500 scientists, doctors and nurses throughout the UK. We fund research carried out in our own Institutes, as well as awarding grants to researchers based in universities and hospitals. We are also establishing up to 20 world-leading Cancer Research UK Centres across the country.

The Centres will bring proximity and relevance to patients by systematically linking our research activities with patient care and public engagement. This in turn will help to improve cancer outcomes, engage the broader public and increase the knowledge flow from laboratories to patients and vice versa. Each Centre will work with Cancer Research UK to develop its research strategy and all Centres will be encouraged to develop key areas of focus (e.g. tumour types, treatment modalities, research areas) in which they can be world-class. Each Centre will also provide a 'shop-window' for clinical research careers.

Our five Institutes in [Cambridge](#), [Glasgow](#), [London](#), [Manchester](#) and [Oxford](#) play a key role by enabling us to tackle important problems through highly competitive, innovative and inter-disciplinary research. They provide a high-quality training ground for the scientists of the future and enable us to attract the very best scientists from around the world.



Our [Cambridge Research Institute \(CRI\)](#) and the [Gray Institute for Radiation Oncology & Biology](#) in Oxford are now up and running and already delivering significant outputs. We have also decided to relocate our [London Research Institute \(LRI\)](#) together with the [MRC's National Institute of Medical Research](#) and research groups from [University College London \(UCL\)](#) and the [Wellcome Trust](#) into the [UK Centre for Medical Research and Innovation \(UK-CMRI\)](#) at St Pancras in central London.

The UK-CMRI provides a once-in-a-generation opportunity to advance the UK's position as a world leader in scientific research and innovation. Detailed design of the new building has now begun and we expect to be able to move in by 2014.

The aim is for the UK-CMRI to be among the very best of the world's biomedical research centres. It will carry out the highest quality multi-disciplinary research that will lead to a better understanding of life for the benefit of human health. It will provide training for the next generation of biomedical research scientists and serve a national role in supporting biomedical research throughout the UK.

During the years 2009-2014, our strategy is to:

- **Continue to maintain a balanced portfolio of research in different venues, including our five core-funded Institutes**
  - Ensure the development and implementation of well-defined strategies for each of our Institutes that will be distinct but coordinated with each other, particularly in terms of technologies and areas of world-class speciality
  - Develop Institutes that are basic and translational in focus, to complement the clinical focus provided through Centres
  - Work with the [MRC](#), [UCL](#) and the [Wellcome Trust](#) to establish the [UK-CMRI](#), incorporating our [London Research Institute](#)

- **Establish a UK-wide network of up to 20 Cancer Research UK Centres which will benefit from sustained infrastructure and training support in order to:**
  - Enhance the quality of research undertaken and build cross-disciplinary working
  - Ensure that cancer research feeds through to improved patient benefit and public health
  - Train the clinical and non-clinical research workforce of the future
  - Ensure a broad research coverage across the UK (geography, cancer types, radiotherapy, surgery, research areas)
  - Expand public engagement and information provision
  - Be the first port of call for new developments and strategic initiatives
  - Offer an opportunity to develop new partnerships, for example to work with disease-specific charities
- **Create space for bold initiatives so that we have the flexibility to respond to exciting new developments in research whenever they happen**
- **Continuously review whether we have the right governance and funding streams to meet the needs of our research strategy, particularly in terms of encouraging autonomy and innovation and reducing bureaucracy**
- **Streamline our application process and award management systems**
- **Identify and provide access to new reagents, data, technologies and infrastructure that are needed to make the fastest progress in cancer research**

## Providing the right people for research

To achieve our goals, we need the best biomedical scientists, the best clinical researchers and the best research leaders.

Moreover, we must promote cross-disciplinary research with physicists, chemists, engineers and mathematicians who can provide new insights into our understanding of cancer at a systems level and enable us to develop novel approaches to treatment.

We must ensure that we are training the workforce we will need up to and beyond 2020. This means encouraging the best scientific researchers to focus on cancer research and also making strategic recruitments in areas where we have identified gaps. In addition, we need to recruit, mentor and develop the next generation of scientists. We need to develop excellent schemes for training and career development, particularly in new and emerging areas of research.

We have played a key role in training most of the medical oncologists practising in the UK. We will build on this to address the current deficit in clinician scientists working at the translational interface and in cancer surgery and pathology. Our Centres and Institutes will play a key role in this training, balancing the experience that accompanies stability with the fresh ideas brought about by the next generation of scientists.

With an increasing move towards large-scale science and ever more tailored treatments, it is more important than ever to invest in and foster collaborations in the UK and across the world. Partnerships will allow us to fund the type of science that would otherwise be beyond the scope of Cancer Research UK, or even the UK.

We will explore how we can develop further international relationships and evolve our existing relationships with organisations in the United States, Europe and around the world.

The pharmaceutical, biotechnology and medical diagnostics industries play a key role in the improvement of cancer care. We will continue to consider where there is greatest potential in working with industry and what the implications of such relationships might be for the Charity as a whole.

During the years 2009-2014, our strategy is to:

- **Increase the number of international leaders in cancer research working in the UK**
  - Attract world-class young people with potential, as well as established leaders in new fields of science to work in cancer research in the UK
  - Make strategic recruitments from overseas in specific science areas
  - Make strategic recruitments to drive clinical and translational research, to address the lack of suitably qualified clinical and translational academics in the UK
- **Continue to develop and maintain schemes for training and career development to ensure that the UK is developing a cancer research workforce for the future, pioneering the development and provision of relevant training in our Institutes and Centres and working in partnership where possible**
  - Maintain our current investment in training schemes while modifying the existing portfolio where necessary
  - Establish targeted fixed-term initiatives to stimulate specific research areas where there are gaps
  - Develop mechanisms for senior or retiring researchers to provide mentorship for junior group leaders in Institutes and Centres
- **Continue to invest in and foster national and international collaborations to deliver the best research**
  - Consider current and potential connections with the pharmaceutical and biotechnology industries and develop relationships as appropriate
  - Continue to invest in all collaborations that help us work towards our goals
  - Examine the potential for broader international partnerships, including securing funding from the EU Innovative Medicines Initiative

### Local Engagement and Development

Our Local Engagement and Development initiative will foster relationships between Cancer Research UK, our Centres and local cancer communities – including patients, researchers, the NHS clinical groupings, universities and our supporters.

We want people to feel more closely connected to Cancer Research UK through knowing more about the work of their local Cancer Research UK Centre and by coming into contact with our health information and campaigning activities in a way that is relevant to them.

We will make it easier for people to see the relevance of Cancer Research UK to their lives and those affected by cancer; thereby hopefully engendering greater support for us to invest in research.





### Cancer Research Technology

Cancer Research Technology (CRT), which is wholly owned by Cancer Research UK, will support us in our efforts to achieve our 2020 goals. Over the last 20 years, CRT has established itself as one of the most successful technology transfer organisations in the world and has, more recently, added early drug discovery capabilities to its core competencies.

CRT has been self-financing through drug royalties and returns from the many new biotech companies it has helped to spin out. It has generated considerable profits that have been passed back to Cancer Research UK for further investment in research. Over the next five years, as royalties from the drug temozolomide decline, CRT will be partially funded for its drug discovery work by Cancer Research UK.

Over the next five years, CRT will concentrate on increasing its pipeline of molecules for clinical development. It will complete the expansion of its Discovery Laboratories in order to maximise the chances of commercialising new opportunities via in-house development. It will consolidate its operations in the US and Australia and clarify the proportion of time dedicated to third party business (developing cancer opportunities derived from non-Cancer Research UK funding sources).

CRT will become even better integrated into our strategy through the alignment of Institute-based business teams and by helping Cancer Research UK to determine its approach to biomarker development. CRT will also be at the centre of developing broader strategic alliances with industry.