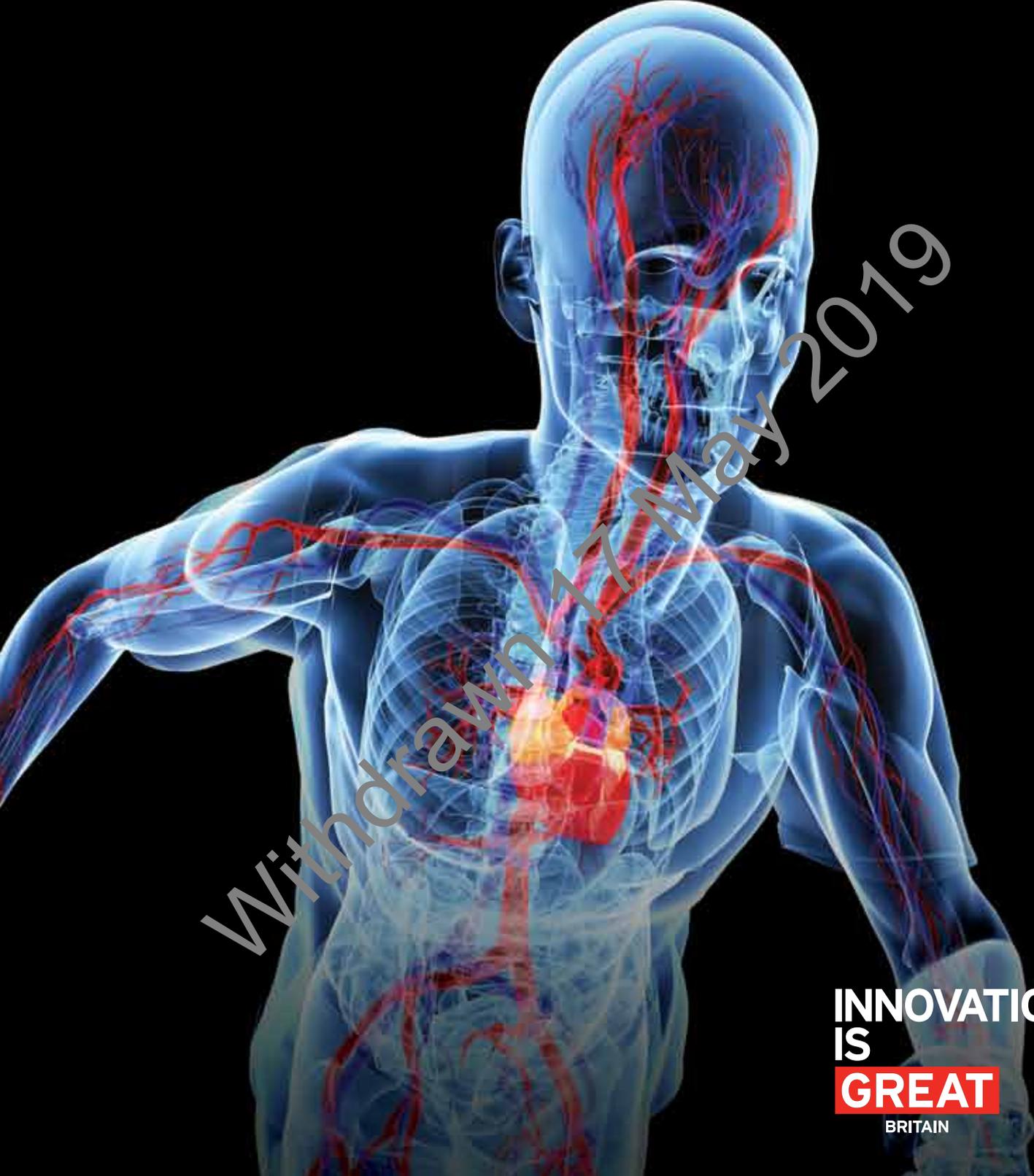


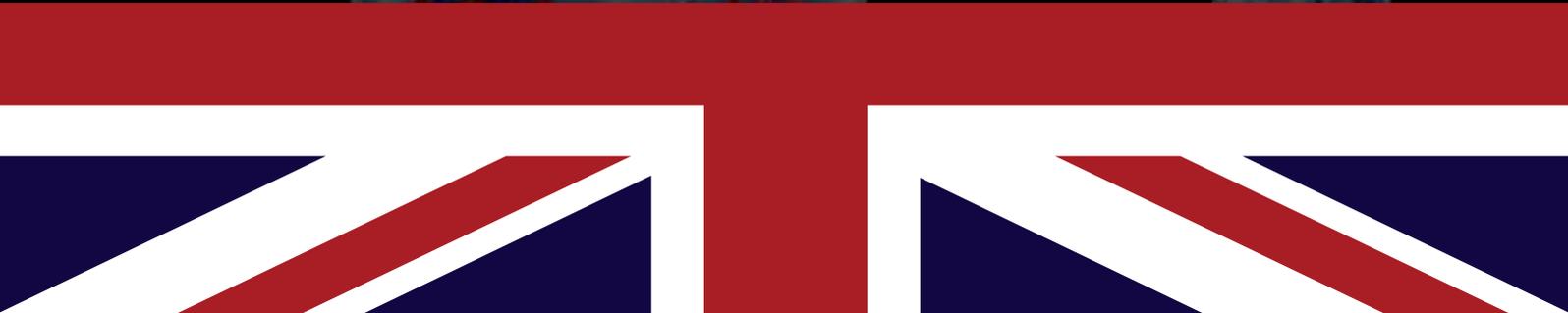
Unlock Your Global Business Potential

The New UK Life Science Prospectus



Withdrawn 11 May 2019

**INNOVATION
IS
GREAT**
BRITAIN



Foreword

In December 2011 I made a firm commitment to re-establish the UK's global leadership in the life science sector, announcing the Government's ten-year Strategy for UK Life Sciences.

Today, the sector accounts for 165,000 UK jobs and over £50 billion in turnover, and is a major contributor to both patient benefit and our economy. But I believe that the sector has an even brighter future.

To prepare for this future, we need to make the most of the key elements of UK life sciences: basic science in universities, clinical research, industry and the National Health Service (NHS). By more closely integrating the UK's unique strengths, I believe that we can improve healthcare for patients, attract new investment to the UK, and create new jobs and business opportunities in an increasingly competitive and international industry.

Since the launch of the Strategy for UK Life Sciences, we have made great progress in building a better life sciences ecosystem, attracting and rewarding talent, and overcoming barriers to investment.

We have also made excellent progress on our commitment to opening up NHS data to researchers. The NHS is one of our greatest assets, and its standardised system of data collection has the potential to help transform healthcare and support new discoveries and clinical research. We are committed to making even more of this data available in a secure and anonymised way.

The offer for industry to invest in and partner with the UK is based on excellence in basic research, clinical translation and commercialisation. We will continue to refresh and improve this offer to create the right business environment for investment, and ensure that the UK becomes the global location of choice for life science innovation.

This UK Life Science Prospectus is a call to action for industry to work with us on this vision to win the global race for life science investment and innovation.



A handwritten signature in black ink that reads "David Cameron".

David Cameron
Prime Minister



Strategy for UK
Life Sciences

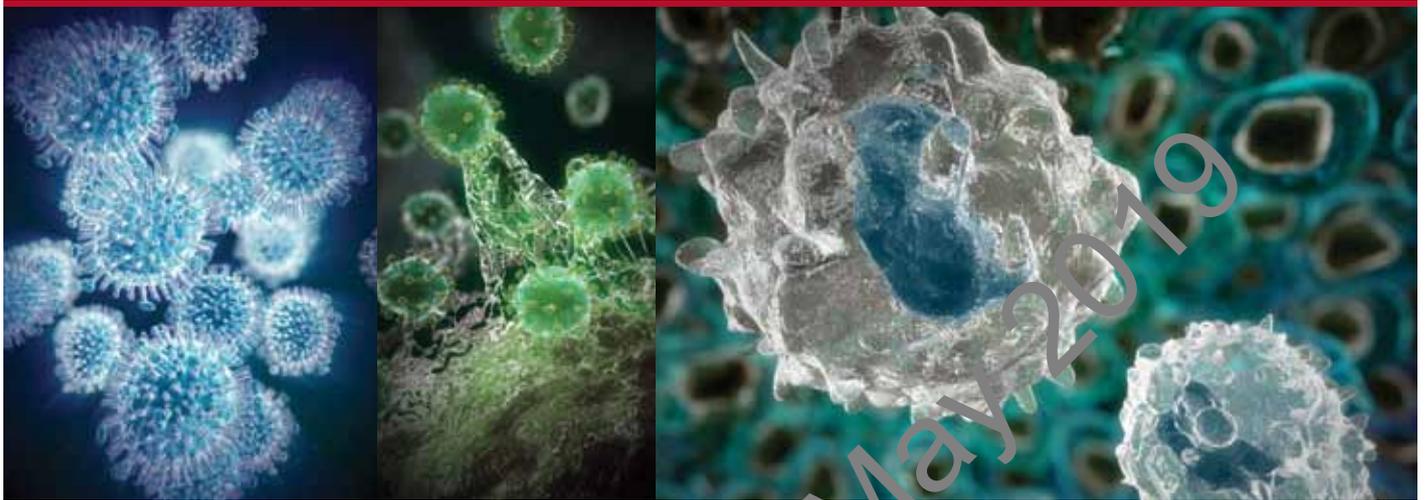
**INNOVATION
HEALTH
AND WEALTH**

INNOVATION, HEALTH AND WEALTH: A STRATEGY FOR THE UK

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Our Commitment to Business



The life science industry faces increasing challenges, from the rising costs and increasing complexity of research and development to marketplaces that are evolving in response to ageing populations, the prevalence of chronic diseases and escalating healthcare costs. The UK's commitment to addressing these challenges was documented in the *Strategy for UK Life Sciences*, launched in December 2011.

The commitments made in the *Strategy for UK Life Sciences* document, and the progress made to date, focus on **improving the efficiency of the translation of scientific discoveries into innovative products and services**, making that process **smarter, better, and faster**, and leading to **bigger returns for patients, businesses, and investors**. To see a full list of actions outlined in the Strategy and to get an update on progress, read *The Strategy for UK Life Sciences: One Year On* which can be downloaded from: www.bis.gov.uk/ols

To help achieve these commitments and to signal the importance of the life science sector to the UK economy, UK Trade and Investment (UKTI) has established a dedicated unit to support overseas investment into the UK, from the earliest R&D collaborations through to clinical trials, commercial operations and partnerships. The team in the **UKTI Life Science Investment Organisation (LSIO)** is here to help your business navigate the opportunity to partner with and invest in the UK, and to connect you to the wider UK life Science community.

This new Prospectus reiterates:

- the commitment the UK is making to improve the UK's life science ecosystem, benefiting both businesses and patients, and
- the commitment the UK is making to industry to be the preferred partner for your business in discovering, developing, and commercialising innovative life science products and services.

We recognise the need to support every component of the pathway. From bench to bedside, we are making it easier to discover, develop and deliver healthcare innovation in the UK.

For further information on the UK life science offer or the latest success stories visit www.ukti.gov.uk/lifesciences

As a business operating in the UK, regardless of size, your business will benefit from a range of funding. For example, larger companies through to global enterprises can benefit from the Government's Regional Growth Fund (RGF). Whilst small and medium-sized enterprises (SMEs) can benefit from the Biomedical Catalyst Fund and Invention for Innovation (i4i), as well as the range of RGF programmes being run by intermediaries such as Local Enterprise Partnerships.

Your business will benefit from the support and investment we provide to protect the UK's vibrant research base and create the right environment for experimental medicine, clinical translation and commercialisation.

Your business will also benefit from the opportunity to use the UK as a launch pad to other international markets, whether in Europe or beyond. The UK's excellent reputation in research, clinical development, health regulation, and health economics combined with UKTI's own global connectivity mean that the UK can help your business maximise the export potential of your health technologies or services.

Improving the Business Environment for Life Sciences

With the increasing cost, risk and complexity of research and development, it has become increasingly challenging for life science companies to commercialise medical innovations.

To address this challenge, the UK Government is introducing a suite of fiscal measures including: targeted investment, funding initiatives and tax incentives to stimulate innovation and growth for start-ups and small and medium sized enterprises (SMEs) through to large global enterprises. By locating in the UK, your business also becomes eligible for funding initiatives from the European Commission.



SUPPORT AND INVESTMENT

Rewarding Innovation: Patent Box

From April 2013, the UK Government will introduce the Patent Box, which allows companies to elect to apply a 10% rate of corporation tax on all profits attributable to qualifying patents, whether paid separately as royalties or embedded in the sales price of products.

Making the R&D spend of your business go further: R&D tax credits

The single biggest UK Government support for business investment in R&D are tax credits.

The scheme for small and medium sized enterprises (SMEs) is amongst the most generous in the world. The SME scheme provides relief worth approximately 25p on every £1 of qualifying expenditure. Companies claiming under the SME scheme can also claim relief for R&D subcontracted to other enterprises. Large companies applying to the scheme receive relief worth approximately 7p on every £1 of qualifying expenditure.

From April 2013, large companies will be able to claim an 'Above the Line' Credit for their qualifying R&D expenditure. This is designed to increase the visibility and certainty of R&D relief and provide greater financial and cash flow support to companies with no corporation tax liability.

Accessing private investment: Growth in UK venture capital

New life science venture capital funds have formed, in the UK, providing additional early-stage investment. This increase of funds will help both start-ups and companies in developing commercial opportunities. An example of two new funds are The Wellcome Trust's Synovis Fund and Index Ventures.

Ensuring a business friendly landscape: Regional Growth Fund (RGF)

The Government's RGF is a £2.4 billion fund operating across England from 2011 to 2015. It supports projects and programmes that also lever private sector investment to create economic growth and sustainable employment, ensuring that your company can thrive in a business-friendly environment.

Bringing innovation to the patient: Invention for Innovation

A research award from the National Institute for Health Research (NIHR), Invention for Innovation aims to support and advance the development of innovative medical technologies, and their translation into the clinical environment for the benefit of patients in the NHS in England and Wales. It is a patient-focused source of early or late-stage product development funding for R&D collaborations between UK healthcare academics, clinicians and industry.

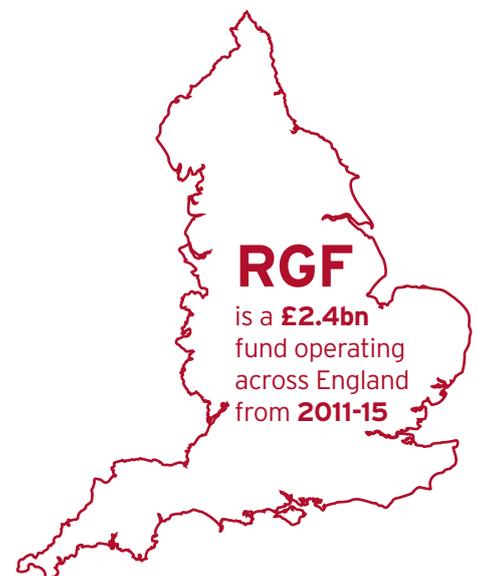
The Facts

10%

rate of corporation tax on all profits attributable to qualifying patents



The SME scheme provides relief worth approximately **25p** on every **£1** of qualifying expenditure



£300 million

from UK RPIF to stimulate R&D collaborations between universities, businesses and charities

In 2012 the MRC and the TSB committed

£180m

over three years to the Biomedical Catalyst

The Welsh life science sector

employs

15,000 people

contributing around

£1.3 billion



£100 million

fund for the life science sector

Incentivising partnership working: UK Research Partnership Investment Fund (UK RPIF)

The £300 million UK RPIF, managed by the Higher Education Funding Council for England, will lever more than double this from private investment into higher education research facilities and stimulate strategic research partnerships between university, businesses and charities. Several projects relevant to life science were announced in 2012, securing £146.5 million from the fund.

Bridging the gap: Biomedical Catalyst

A £180 million programme of public funding designed to deliver growth to the UK life science sector. Delivered jointly by the Medical Research Council and the Technology Strategy Board, the Biomedical Catalyst provides responsive and effective support for the best life science opportunities arising in the UK and seeks to support opportunities that demonstrate the highest scientific and commercial potential, irrespective of medical area.

Building the Scottish life science sector: Scottish Enterprise

Providing grants for investment projects via the Regional Selective Assistance funds, Scottish Enterprise also has grants to support commercially viable translational research projects (up to and including early phase clinical trials) led by both research organisations and companies.

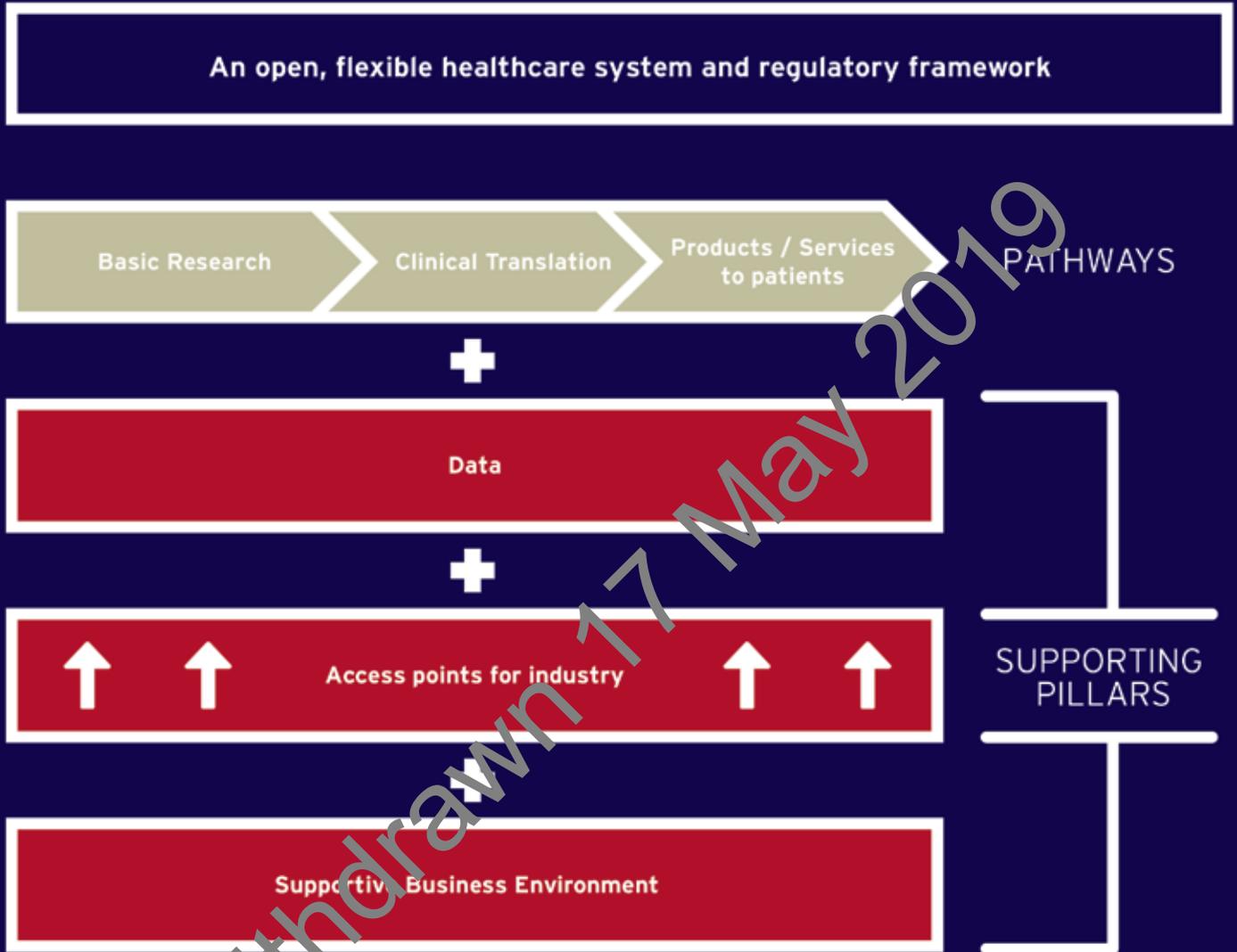
Building the Northern Irish life science sector: Invest Northern Ireland

Offering some of the most attractive incentive packages in Europe, Invest Northern Ireland provides financial support to help set up, along with comprehensive advice to facilitate the investment process. Invest Northern Ireland also supports commercial clinical trials that benefit from the Health & Social R&D clinical research infrastructure.

Building the Welsh life science sector: Life Sciences Investment Fund

A £100 million fund created for the life science sector in Wales. The new fund will contribute to an already well-established Welsh life science sector that employs over 15,000 people in more than 300 businesses, contributing around £1.3 billion to the economy annually.

From bench to bedside



To see a full list of actions outlined in the Strategy and get an update on progress to date, read *The Strategy for UK Life Sciences: One Year On*, which can be downloaded from: www.bis.gov.uk/ols

Supporting the UK's Vibrant Research Base

The UK has a rich heritage of life science discovery that has transformed scientific knowledge and continues to unlock clinical and commercial opportunities. From the building blocks of the new genomic age, to the secrets of cells, and the physics that makes magnetic resonance imaging (MRI) possible, UK science is world-class, offering industry an opportunity to partner with globally recognised pioneers and innovators.

The Medical Research Council (MRC), which celebrates its centenary year in 2013, is just one example of this heritage. The MRC's research institutes include the Laboratory of Molecular Biology where Watson and Crick uncovered the structure of DNA. Due to open in 2015, the Francis Crick Institute is a partnership between the MRC, Cancer Research UK, the Wellcome Trust, University College London, King's College London, and Imperial College London. It will be one of the most significant developments in UK biomedical science for a generation. By fostering collaboration with other centres of excellence, The Institute will harness the full capacity of this country's brightest and best researchers for the benefit of patients and the economy.

“

The UK currently has 77 Nobel Prizes for contributions to biomedical science.”



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The UK Government has protected the UK's science budget and is committed to supporting core science funding. The UK is also making major investment in genomics, informatics and synthetic biology.”

Enabling an era of genomic medicine

The Wellcome Trust Sanger Institute is one of the world's leading genome centres. With its support from the Wellcome Trust and its ability to conduct research at scale, it engages in bold and long-term exploratory projects that are designed to influence and empower medical science globally. Global leadership roles include a Human Genome Project, 1000 Genomes Project, International Cancer Genome Consortium Institute, International Knockout Mouse Consortium and MalariaGEN. Research findings from the Institute's own research programmes and through participation in national and international consortia are being used to develop new diagnostics and treatments for human disease.

Cloning frogs and Nobel Prizes

In 1962, John Gurdon discovered that the specialisation of cells is reversible, by replacing the immature cell nucleus in an egg cell of a frog with the nucleus from a mature intestinal cell. This work paved the way for Shinya Yamanaka, in 2006, who discovered how intact mature cells in mice could be reprogrammed to become immature stem cells. This work won Gurdon and Yamanaka the 2012 Nobel Prize for Physiology or Medicine. By reprogramming human cells, scientists have created new opportunities to study diseases and develop methods for diagnosis and therapy.

The UK continues to take the lead in stem cell science and regenerative medicine, to invest in capabilities to help grow the industry in the UK and facilitate the commercialisation of stem cell and regenerative medicine technologies.

Within this, the recently established **Cell Therapy Catapult** will grow the life science industry in the UK by:

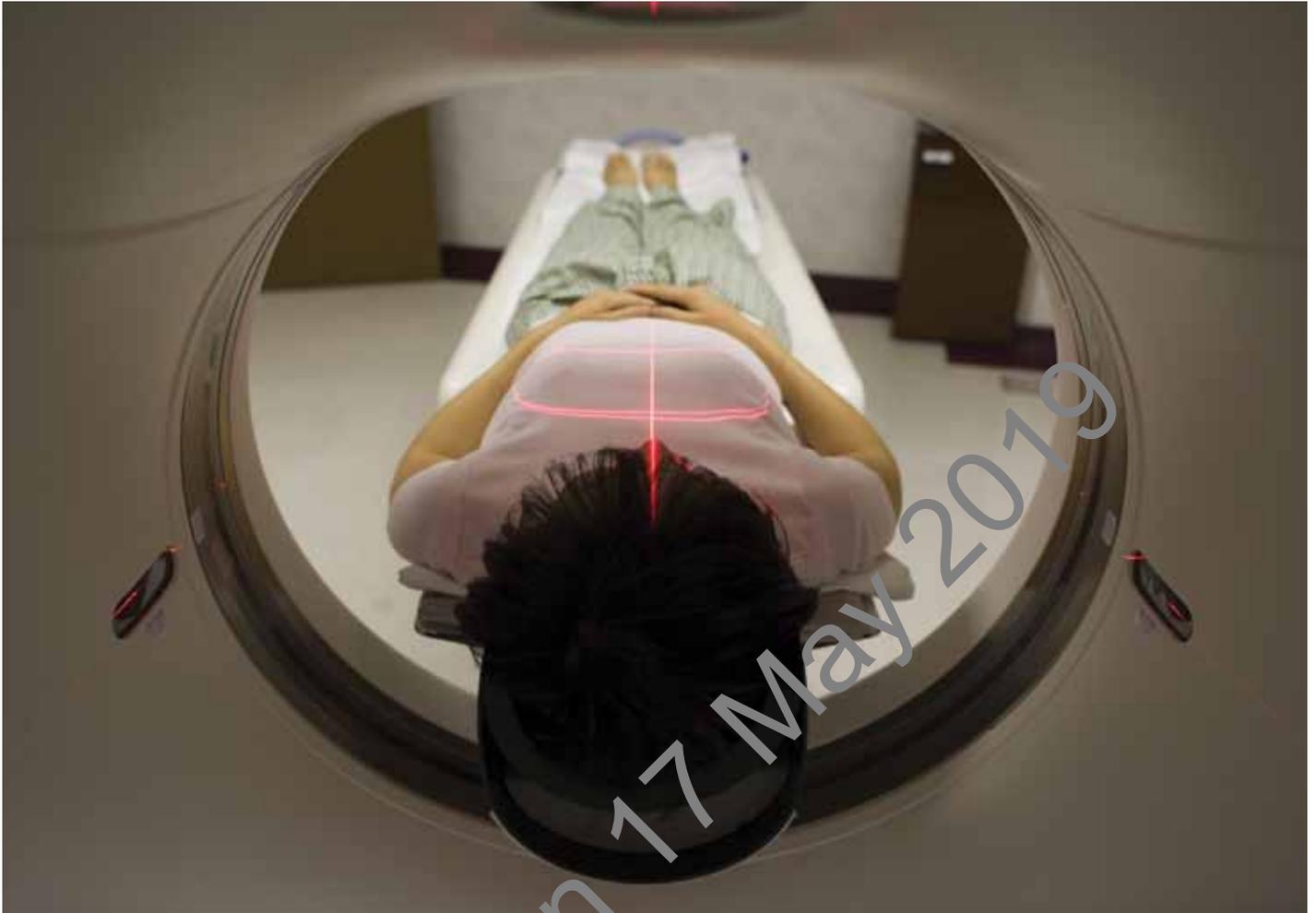
- Taking products into clinical trials, de-risking them for further investment
- Providing clinical expertise and access to NHS clinical partners
- Providing technical expertise and infrastructure to ensure products can be made to Good Manufacturing Practice (GMP) and are delivered cost effectively
- Providing regulatory expertise to ensure that products can get to the clinic safely in the shortest time
- Providing opportunities for collaboration, nationally and globally
- Providing access to business expertise, grants and investment finance so that commercially viable products are progressed and investable propositions generated.

Additionally, several of the Research Councils have committed to invest £25 million over five years to address key barriers to progress, of which £20 million will fund a **UK Regenerative Medicine Platform**, with up to five interdisciplinary research hubs.

These will have the expertise and critical mass to address the key technical and scientific challenges associated with translating promising scientific discoveries. Up to £5 million will be invested in disease-focused programmes, working in collaboration with charities and other funding partners to address specific areas. To further support the UK Regenerative Medicine Platform, £20 million of new funding has now been allocated to allow for a top-up fund to provide imaging and cell manufacture technologies.

Magnetic gradients and medical imaging

The UK has played a key role in the advancement of magnetic resonance imaging (MRI) technology and the widening of its application to deliver greater medical benefit in a number of research and clinical settings. The 2003 Nobel Prize in Physiology or Medicine was awarded to Paul Lauterbur and Peter Mansfield for their discoveries concerning magnetic resonance imaging. Peter Mansfield developed the utilisation of gradients in the magnetic field to enable a useful imaging technique. Today, the UK has academic and industry excellence in the extension of the applications of MRI, improvement of the technology and supporting algorithms, a tool for diagnosis and the prediction of response to treatment.



Research Partnerships

In the UK, partners work together to support a research and innovation culture that spans sectors and geographies, and supports the creation of a fully integrated life science and healthcare ecosystem that places the patient at the heart of the system.

Building a collaborative research ecosystem

In England, the success of the five Academic Health Science Centres, continues to develop as the NHS opens up to work in research partnerships with industry. The role of the Academic Health Science Centre is to develop and take the discoveries made through research partnerships and translate them into new therapies and techniques, and promote their application in the NHS

in as fast a timeframe as possible. This dissemination of technology will be further supported by the newly emerging Academic Health Science Networks, here industry will have the opportunity to connect with the NHS in a unique knowledge exchange network that encourages diffusion of products and services to patients.

In Scotland, the Scottish Academic Health Sciences Collaboration harnesses Scotland's research power by facilitating collaborations between Scottish universities and health boards. This offers industry a coordinated system to contract and cost research studies across Scotland.

In Wales, the National Institute for Social Care and Health Research Academic Health Science Collaboration maximises collaborations between health boards, trusts, universities and industry to facilitate high quality research to create world leading improvements in healthcare.

In Northern Ireland, Northern Ireland's Connected Health and Prosperity Action Plan ensures cross-sectorial support for health & social care R&D, innovation and widespread deployment of healthcare technologies.

Success stories

University of Warwick and Bosch Healthcare launch research facility

The Institute of Digital Healthcare (IDH) in Warwick Manufacturing Group (WMG) at the University of Warwick and Bosch Healthcare have launched a major research facility for developing digital healthcare technologies for people with life-threatening and chronic illnesses. WMG at the University of Warwick is working with Bosch Healthcare, Warwick Medical School and other partners on selected healthcare activities. A new IDH Learning Lab will design and trial novel digital healthcare technologies and will aim to understand and evaluate the effectiveness of digital programmes in the health service.

“This approach is at the very heart of our healthcare products, which connect patients to services and assist them in having more control over their own wellbeing. It is therefore, very exciting for Bosch to be a founding partner of the IDH Learning Lab, which will enable new technology to be developed and tested and we look forward to the results it will produce.”

Peter Fouquet, President of Bosch, UK

DePuy Synthes Centre of Excellence for New Product Development

DePuy Synthes: A Centre of Excellence for New Product Development in Leeds will provide a facility for industry-leading research, design, development, and testing of innovative solutions for the orthopaedics health care market. The investment will build upon the rich heritage in Leeds and long established collaboration with universities and teaching hospitals. DePuy Synthes employs over 600 people and supports a further 1900 indirect jobs in Leeds.

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MRC and NIHR Phenome Centre open for collaboration

The MRC-NIHR Phenome Centre, which will analyse thousands of samples of blood, urine and tissue to discover how our genes interact with our environment to cause and affect the course of disease, will open at Imperial College London in 2013. The Centre is a

partnership between the Medical Research Council, the National Institute for Health Research, analytical technology companies Bruker and Waters, and academic institutions King's College London and Imperial College London.

Structural Genomics Consortium and University of Oxford creating cluster of biotech

The Structural Genomics Consortium (SGC) at the University of Oxford has since 2011 attracted £21 million worth of inward private and industrial investment from eight partners for drug discovery in the UK (Pfizer, Eli Lilly, Novartis, GlaxoSmithKlin, Abbott, Takeda, and two leading global pharmaceutical companies). Two of the pharmaceutical companies joined in October 2012, each to contribute £2.6 million. Currently the SGC is in conversations with several other private foreign organisations interested in joining the consortium. Additionally the SGC is also in discussion with venture capitalists, the Technology Strategy Board, and the Department for Business Innovation and Skills, with plans to create a cluster of local biotech on the basis of SGC's extensive portfolio of innovative scientific and technological outputs.



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PARTNERSHIPS IN ACTION

EXAMPLES ACROSS THE UK

Johnson & Johnson Global Innovation Centre

Johnson & Johnson is establishing one of its four regional innovation centres in London. Targeted to open in some of the world's leading innovation hotspots, the centre will serve as a regional hub focused on identifying early-stage innovations, and establishing novel collaborations to invest in and speed development of those innovations to solve unmet needs in patients.

"The innovation centres will help to deepen our relationships with the communities in key innovation hotspots and better support local entrepreneurs. Ultimately, they will serve to help us more quickly identify and tap into technological advancements that have the potential to benefit the health of people in the future."

Patrick Verheyen, Head of the London Innovation Centre, Johnson & Johnson

Almac Group and Queen's University Belfast strategic alliance

The strategic alliance between Almac Group and Queen's University, Belfast with £4.4 million support from Almac, Invest Northern Ireland and the McClay Trust, combines industrial and academic expertise with state of the art technology and access to patient samples through the Northern Ireland Biobank. Since 2011, a test has been developed and commercialised to predict patients with colon cancer who need chemotherapy, a test to predict the risk of dying from prostate cancer is undergoing validation and novel drug targets for breast and ovarian cancer have been identified.

Pfizer partnership with the Cardiovascular Epidemiology Unit

Pfizer is partnering with the Cardiovascular Epidemiology Unit (CEU) at the University of Cambridge to combine population and laboratory science approaches to accelerate development of new medicines.

The CEU's data and expertise includes: population-based epidemiological studies with extensive lifestyle, biomarker, other phenotypic information, and stored DNA on more than 50,000 cardiovascular disease cases and 50,000 controls; access to recall-by-genotype and recall-by-phenotype resources; and expertise in therapeutics development.

"This collaboration with one of Europe's top academic departments of population health sciences furthers Pfizer's strategy to tap into some of the leading scientific minds and resources in academia."

Rod MacKenzie, Group Senior Vice President and Head of PharmaTherapeutics R&D, Pfizer

Babraham Research Campus commitment to open innovation with industry

The Babraham Research Campus in Cambridge, home to the world-renowned Babraham Institute, has, in partnership with Neusentis (a division of Pfizer) and MedImmune (the biologics arm of AstraZeneca) committed to open innovation at the heart of the Cambridge Bioscience cluster. The aims of the partnership are to increase the flow of knowledge, to identify opportunities and to reduce barriers to early-stage discussions.

The new collaboration will identify new therapeutic treatments, with the premise that early-stage collaboration can maximise success.

"One of the great advantages of being in a biotech hub like Cambridge is that we can work closely with some of the most innovative groups in the world. I am looking forward to greater interaction with the scientists and companies at the Babraham Campus."

Dr Ruth McKernan, Senior Vice President of Pfizer and Chief Scientific Officer at Pfizer's Cambridge Research Unit, Neusentis

Healthbox Europe supports entrepreneurs

Founded by US incubator and venture capital firm Sandbox Industries, Healthbox supports healthcare entrepreneurs by providing early stage businesses with seed capital, business coaching and connections to organisations and individuals from across the healthcare spectrum, including private and public providers, investors, retailers, business experts and national health stakeholders. Sandbox Industries recently launched Healthbox Europe, which invested £50,000 in seven selected healthcare start-ups who moved from across Europe to London to participate in the programme. The first group of Healthbox Europe companies was announced in October 2012, including UK companies: Desktop Genetics (developing a DNA printer device), HomeTouch (introducing a multi-platform technology for older people and their carers to promote engagement and monitor activity), and Medopad (a mobile health platform that securely delivers patient information to physicians).

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London was the obvious place for us to launch our first Healthbox programme outside of the United States given the world-renowned academic institutions, focus on improving health and growing technology community.”

Nina Nashif, CEO, Healthbox

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PARTNERSHIPS IN ACTION CONTINUED

Eli Lilly UK investment bringing together consortium of academics

Over the last decade Eli Lilly has invested more than £100 million in its Surrey research centre, home to much of the company's neuroscience research. In 2012, Eli Lilly invested £5.4 million in new early stage facilities at the site, which houses 130 clinical development scientists working across disciplines such as clinical pharmacology, pharmacokinetics, pharmacodynamics, statistics and data sciences.

Eli Lilly has invested in the UK due to the UK's academic strength in neuroscience, and the ability to collaborate with academic institutions. In 2010, Eli Lilly established the Centre for Cognitive Neuroscience which brings together a consortium of scientists from Eli Lilly with world leading academics from six British universities and aims to improve the probability of clinical success for molecules targeting the symptoms of cognitive decline in schizophrenia, Alzheimer's and Parkinson's disease.

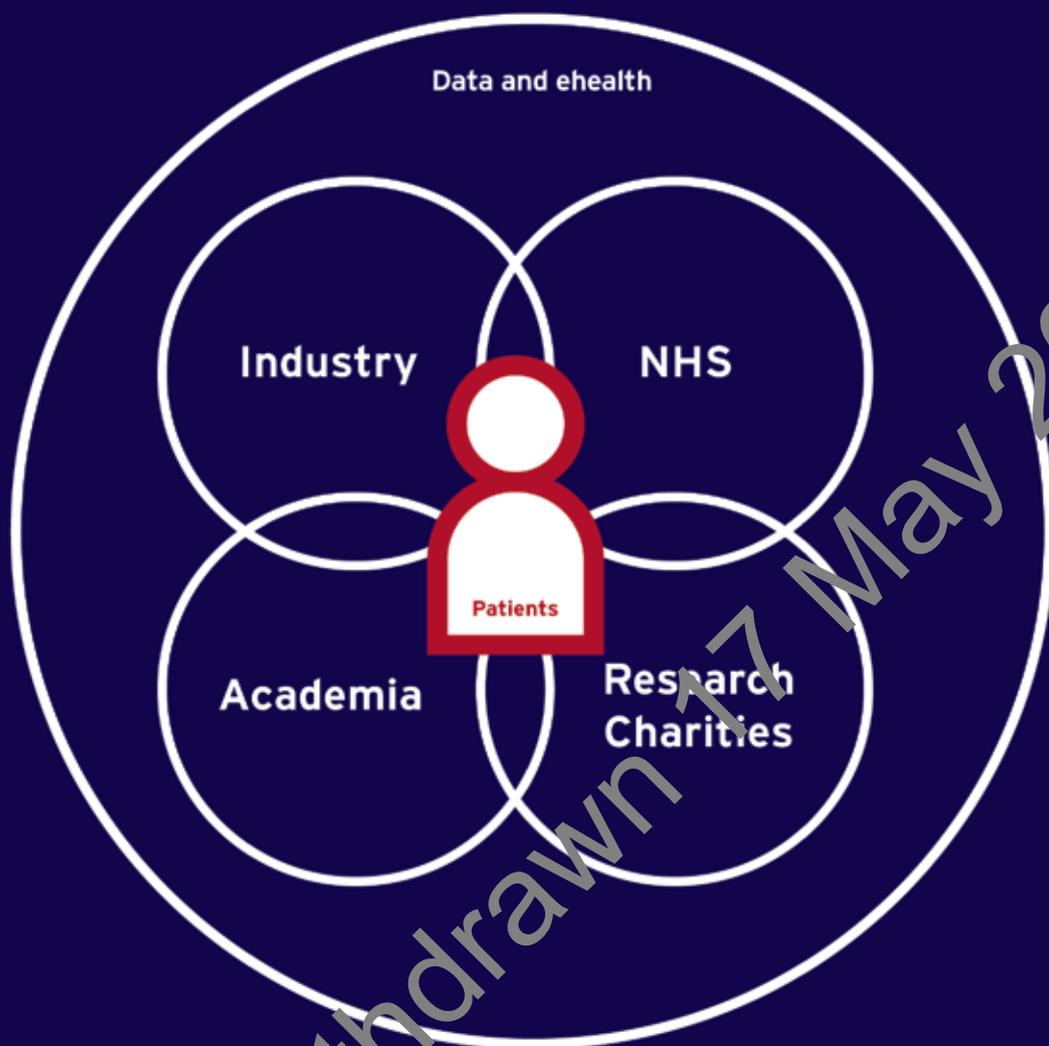
Clinical Development Partnerships, Cancer Research UK (CRUK) and Cancer Research Technology (CRT)

Clinical Development Partnerships (CDP) is a joint initiative between CRUK and CRT. Targeting leading biotechnology and pharmaceutical companies with large pipelines that are forced to prioritise the agents taken into clinical development; its sole purpose is to bring life to de-prioritised cancer agents. It offers early clinical development with no upfront cost to the company and projects are undertaken on a shared-risk basis. CDP will fund each study through early stage development with the company being given the first option to take forward and commercialise the drug in exchange for future royalty payments to CRT. If the company elects not to progress the project, all rights will be given to CRT to secure an alternative development partner, thus ensuring the programme has every possible chance of reaching patients. Since its formation, eight agents have been adopted under this initiative's innovative business model including AstraZeneca, Astex Therapeutics, GlaxoSmithKline, Merck Serono, Immutics and Lorus Therapeutics with four projects now in Phase I and a further two due to enter the clinic in 2013. The CDP team is actively seeking new agents to bring into the portfolio with a focus on small molecules and monoclonal antibodies.

Division of Signal Transduction Therapy in alliance with major pharmaceutical companies

In 2012, six leading pharmaceutical companies committed over £14 million in new funding to the Division of Signal Transduction Therapy (DSTT) at the University of Dundee, which will secure 50 posts at the University for the next four years. The DSTT is a unique collaboration between scientists in the MRC Protein Phosphorylation Unit and the College of Life Sciences at the University of Dundee and six of the world's leading pharmaceutical companies, namely AstraZeneca, Boehringer Ingelheim, GlaxoSmithKline, Janssen Pharmaceutica, Merck-Serono (Merck KGaA) and Pfizer. Since it was set up in 1998, the DSTT has attracted £50 million in funding from the pharmaceutical industry to accelerate the development of specific inhibitors of kinases and phosphatases for the treatment of disease, as well as for the study of cell signalling. It is widely regarded as a model for effective academic-industry collaboration.

An Integrated Healthcare Environment



The UK has a uniquely powerful combination of:

- World-leading universities, science, facilities, and principal investigators
- Established industrial R&D, manufacturing and supply chain
- Translational research infrastructure and clinical network supported by key opinion leaders
- Globally renowned research charities
- A National Health Service with 60+ million patients and access to unrivalled, clinically coded, granular health data that tracks patients throughout care pathways
- A firm commitment to partner with industry and establish access points for industry to the UK life science base
- A great place to undertake quality, efficient R&D and validate new products

Improving The Quality and Efficiency of Clinical Translation

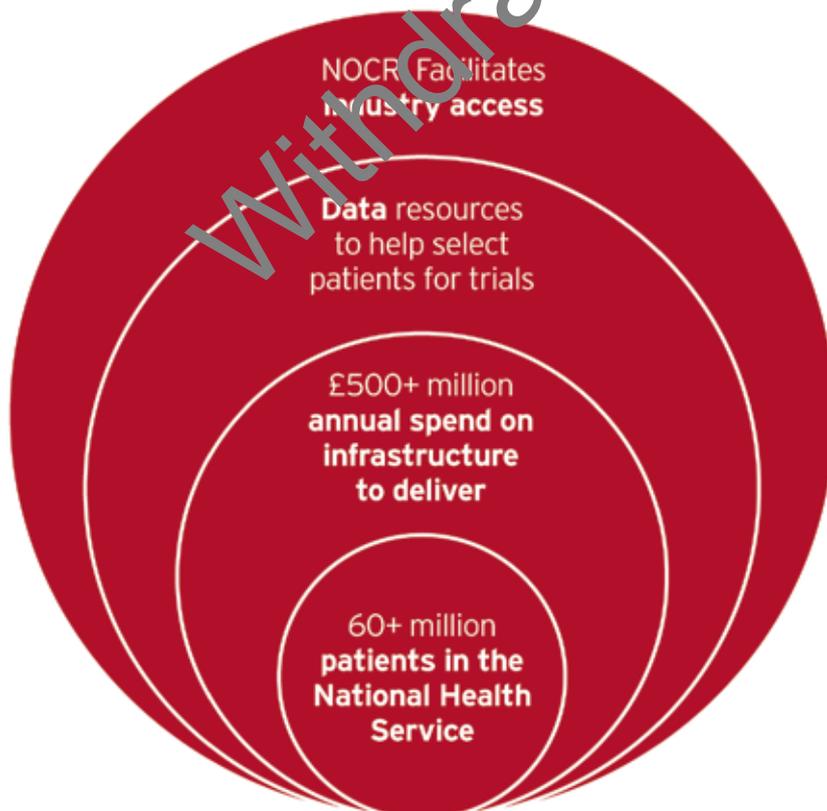
The UK is committed to making clinical study start-up more efficient by investing in health research infrastructure, encouraging patient participation in research studies, measuring this through performance metrics, introducing the health research authority to streamline approvals for clinical research, unlocking data and bioresources and simplifying access for industry.

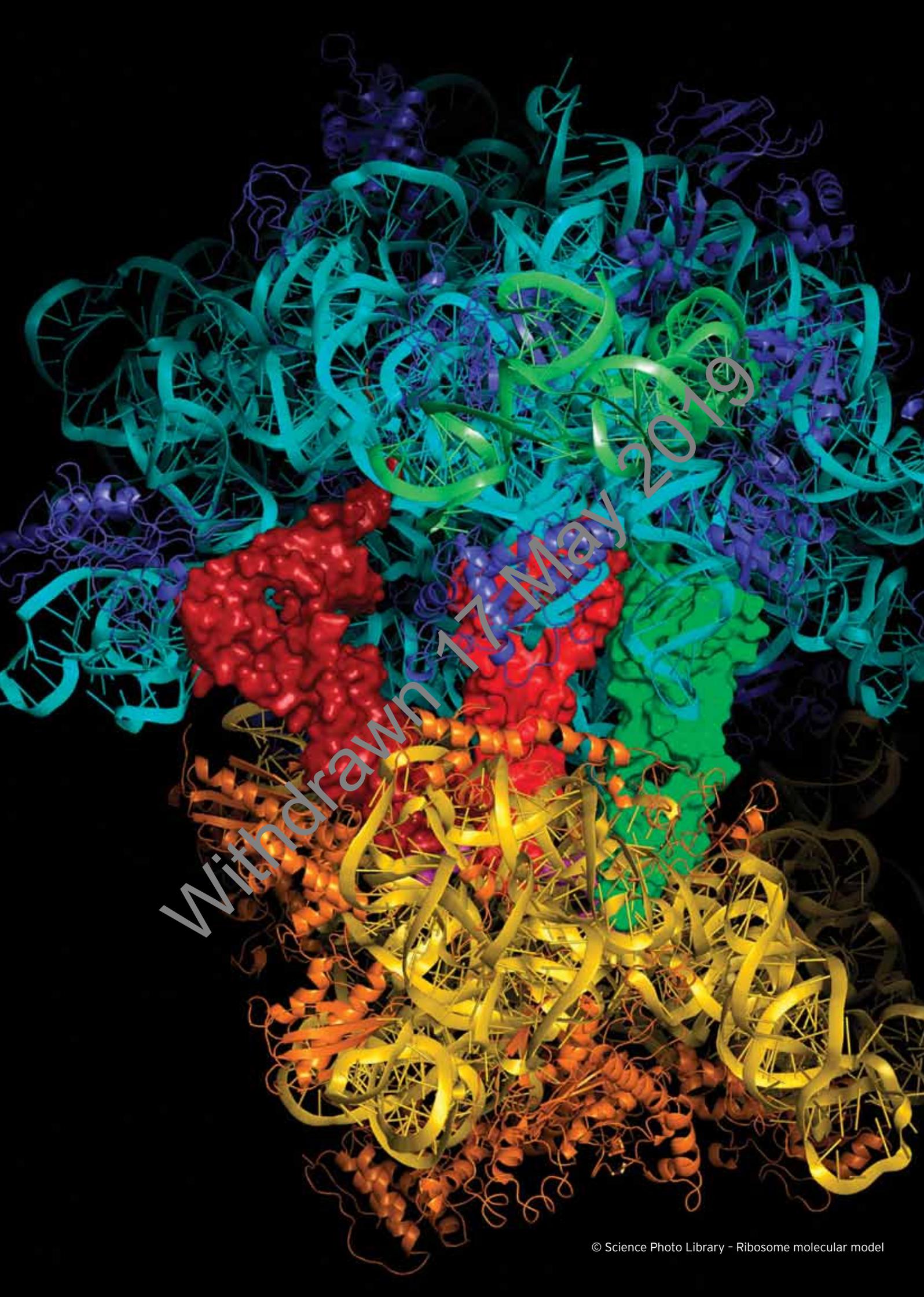
In the future, the National Institute for Health Research (NIHR) funding for providers of NHS services undertaking clinical trials will be introducing a benchmark of 70 days or less from receipt of a valid research application to recruitment of the first participant.

The UK is also committed to enabling every willing patient to be a research patient and embedding this commitment in the NHS Constitution. Through organisations like the UK Clinical Research Collaboration and the revamped UK Clinical Trials Gateway, the UK is encouraging more patients to participate in clinical research.

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The UK is an attractive location to initiate pivotal clinical studies and is a gateway to enter other European markets.”





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NHS Research Infrastructure Support

The UK spends more than £500 million annually on the National Institute for Health Research (NIHR) infrastructure to support experimental medicine research and clinical trials in the NHS.

The **NIHR Office For Clinical Research Infrastructure (NOCRI)** facilitates industry access to the UK's clinical research infrastructure, from early-stage collaborative research through to contract clinical trials. NOCRI can help your business access world-leading science and clinical expertise, world-class facilities, and well-characterised and diverse patient cohorts drawn from the 60 million people who use the National Health Service in the UK. NOCRI provides a managed process for collaborative research, has developed model partnership and contracting agreements for industry, and has set up and administers two NIHR Translational Research Partnerships in Joint and Respiratory Inflammatory Diseases and a new Translational Research Collaboration for Dementia Research.

NOCRI can also help your business access the following capabilities:

- The **NIHR Clinical Research Network** is helping the life science industry deliver leading-edge research within the NHS. The Network provides a range of tools and services designed to improve the performance of research and help you deliver studies on time and to target.
- **NIHR Biomedical Research Centres and Units** are based within the most outstanding NHS and university partnerships in the country and are early adopters of new insights in technologies, techniques and treatments for improving health. NIHR Biomedical Research Centres and Units drive translation of fundamental biomedical research into clinical research that benefits patients. The UK is expanding the number of NIHR Biomedical Research Centres and Units, with an additional investment of £800 million over five years from 2012.
- **NIHR BioResource** provides a national cohort of healthy volunteers, patients and their relatives who wish to participate in experimental medicine research, and are willing to provide clinical information and samples that will enable them to be recruited for specific studies according to their physical characteristics and genetic makeup. The NIHR BioResource will support companies and researchers in recruitment into studies that will have the potential to rapidly advance the understanding of disease mechanisms, identify potential drug targets, and improve insight into the therapeutic potential and limitations of existing and emerging therapies.
- **NIHR Clinical Research Facilities** develop new treatments to benefit thousands of patients, over £100 million is being invested in 19 clinical research facilities around the country. Clinical Research Facilities are purpose-built, cutting-edge facilities, with specialist clinical, research and support staff, in locations where universities and NHS Trusts work together on dedicated programmes of patient-orientated experimental medicine research.
- **Experimental Cancer Medicine Centres (ECMCs):** NIHR is working in partnership with Cancer Research UK and other health departments to fund ECMCs by jointly investing £35 million in funding over the next five years. ECMCs play a leading role in speeding up the process of cancer drug development and the search for cancer biomarkers (molecules present in blood or tissue) that can be used to diagnose cancer, predict the aggressiveness of the disease, or show whether a drug will be effective in a specific patient and at what dose. The ECMC network also includes Scotland, Wales and Northern Ireland through local partnership funding with Cancer Research UK.

The Devolved Administrations also have the capability to deliver well supported clinical trials.

In Scotland: The Chief Scientist Office supports and promotes high quality research aimed at improving the quality and cost effectiveness of services offered by NHS Scotland.

In Wales: The National Institute for Social Care and Health Research has been developed to extend and maintain an R&D infrastructure to support health and social care research in Wales.

In Northern Ireland: Health and Social Care Research and Development, funds the Northern Ireland clinical research network to support high quality clinical trials, promote research, develop partnerships and ensure that targets are achieved and maintained.

Success stories

Trials Acceleration Programme improves patient access to trials

The Trials Acceleration Programme (TAP) led by Leukaemia & Lymphoma Research is designed to give haematological oncology patients in the UK accelerated and wider access to early stage trials. Working within the existing NIHR Cancer Clinical Research Network, TAP's dedicated centralised management at the University of Birmingham minimises the 'red tape' to establish trials and deliver accelerated results via disseminated patient recruitment across 13 UK centres. Early results from Novartis Pharmaceuticals UK Ltd show a 50 per cent reduction in set-up time and significant reduction in costs per patient. Importantly, for the first time ever in its Oncology Unit, Novartis UK managed to secure the first visit by the first patient enrolled in the trial ahead of all centres participating globally, a fact that is likely to have a positive impact on future trial placement decisions. In its initial year of operation TAP has ratified nine new trials that would not otherwise have taken place in the UK including collaborations with eight pharmaceutical companies.



NIHR's Biomedical Research Centre at Cambridge

A potential new therapy in Parkinson's disease called ProSavin, developed by Oxford Biomedica (Oxford, UK), is being tested in an early stage international study with the NIHR's Biomedical Research Centre at Cambridge and the Henri Mondor Hospital in Paris.

Image: © Science Photo Library - Lung cancer cells

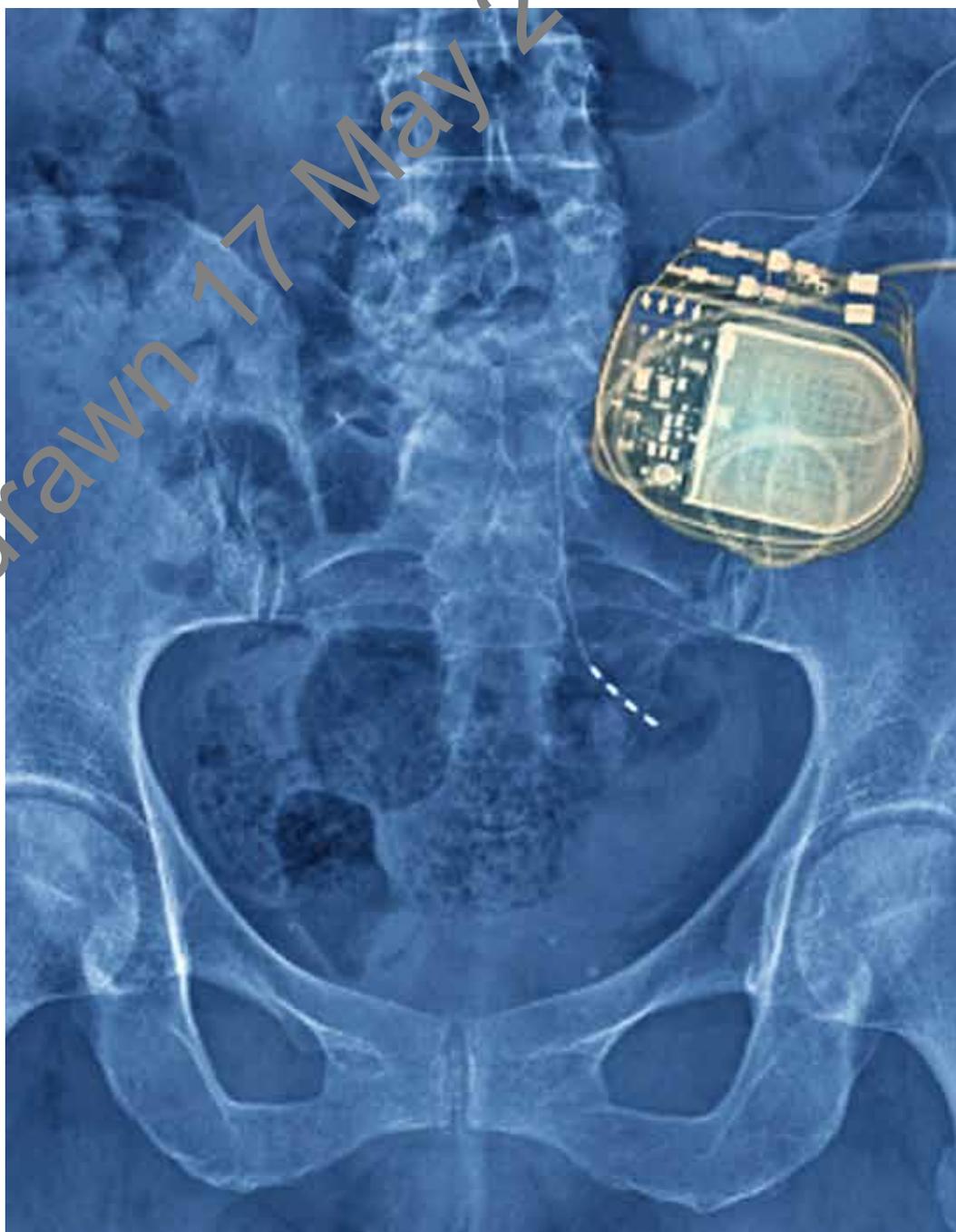


Providing Access to Drive Healthcare Innovation

Demands on health and social care systems continue to rise as demographics change and the ever-increasing expectations from the public it serves. Add to this an increase in capability within the life science sector, fuelled by advances in knowledge, science, technology and the development of new pharmaceutical treatments, diagnostics and devices. Innovation is the answer.

By basing your business in the UK, you gain access to the largest national healthcare system in the world.

Launched in December 2011, alongside the *Strategy for UK Life Sciences*, *Innovation Health and Wealth* set out a delivery agenda to embed and spread innovation at pace and scale throughout the NHS. The delivery agenda includes a number of ambitious actions that will deliver game-changing improvements in the quality and value of care delivered in the NHS. The actions are designed as an integrated set of measures that together will support the NHS in achieving a systematic change in the way it operates, delivering high quality care, value for money and driving economic growth.



World Leading Health Technology Assessment

The UK is a world leader in health technology assessment and home to the National Institute for Health and Clinical Excellence (NICE). With an increasing focus on clinical and cost-effectiveness globally, and the need to demonstrate value to the patient and to health systems, industry can leverage the UK's expertise to develop an evidence base to support market access, uptake and diffusion. Through NICE International, its non-profit fee-for-service consultancy arm, NICE works with governments and other organisations from around the world to promote efficiency and quality in healthcare systems.

Procurement; Raising Our Game

Procurement plays a valuable role in driving growth and improving quality and value in the NHS. In May 2012, the Department of Health published *NHS Procurement 'Raising Our Game'* which sets out the immediate steps that NHS organisations can take now to realise the efficiencies needed from procurement. This has been a good start, but we need to go further and be more ambitious, to take advantage of the enormous buying potential of the NHS, to ensure value for money for taxpayers, more productive relationships with industry, and better patient access to the very best services, technologies, devices and medicines.

Since May 2012, there has been an open engagement process with the NHS, industry and a range of stakeholders to move towards a modernised procurement function for the NHS that is as good as any internationally.

This will result in:

- Procurement based on outcome rather than cost
- Having better access to data and to share this
- Putting clinicians at the heart of the procurement process, and
- Working together to harness the enormous buying power of the NHS

The NHS Procurement Report will be published in 2013 to inform the strategic approach to modernise procurement in the NHS.

Academic Health Science Networks

The creation of Academic Health Science Networks (AHSN) will facilitate access into the NHS and a unique opportunity to align education, clinical research, informatics, innovation, training and healthcare delivery. The ambition is that AHSNs will cover the breadth of England, providing a network aimed at facilitating the adoption and dissemination of innovative technologies and to improve patient and population health outcomes by translating research into practice, developing, and implementing integrated healthcare services.

AHSNs represent a unique opportunity for industry to engage with a joined-up clinical ecosystem, enabling companies to better understand the needs and requirements of the national healthcare system. The AHSNs will provide the opportunity for forming mutually collaborative partnerships which will help embed a culture of innovation in the NHS. In particular, each AHSN will set out in its application what they will do in their first 100 days to support the Comply or Explain regime, work with small and medium sized enterprises on medical technology projects and what involvement they will have locally in research.

NIHR Collaborations for Leadership in Applied Health Research and Care (CLAHRCs)

Setup to undertake high-quality applied health research, CLAHRCs focused on the needs of patients and support the translation of research evidence into practice in the NHS.

CLAHRCs are collaborative partnerships between a university and the surrounding NHS organisations, focused on improving patient outcomes through the conduct and application of applied health research. They create and embed approaches to research and its dissemination that are specifically designed to take account of the way that healthcare is increasingly delivered across sectors and a wide geographical area.



Health boards in Scotland, Wales and Northern Ireland

The Devolved Administrations of Scotland, Wales, and Northern Ireland all provide central access points for industry to their respective populations. This ensures faster access to the right contacts, key opinion leaders, and patient cohorts to accelerate the development of your technology. With well characterised populations and integrated research and market access opportunities, the devolved administrations can be a great launch pad for market access and adoption of your technology in Europe, and beyond.

In Scotland: The Scottish Government's Health and Social Care Department is responsible for NHS Scotland and oversees the 14 NHS health boards, seven special health boards and one Public Health Body in Scotland.

Health services in Scotland are delivered through the 14 NHS health boards. These boards provide strategic leadership and performance management for the entire local NHS system in their areas. The seven special health boards include: Scottish Ambulance Service, NHS 24, State Hospitals Board for Scotland, NHS Health Scotland, NHS National Services Scotland, The National Waiting Times Centre Board, and NHS Education for Scotland. NHS Healthcare Improvement Scotland is a Public Health Body.

In Wales: The Welsh Government is responsible for the NHS in Wales and oversees seven Local Health Boards and three national NHS trusts in Wales, consisting of the Welsh Ambulance Services Trust, Velindre NHS Trust and Public Health Wales NHS Trust.

In Northern Ireland: The Department of Health, Social Services and Public Health in Northern Ireland oversees the Health and Social Care Board, Public Health Agency and the five regional Health & Social Care Trusts in Northern Ireland as well as the Northern Ireland Ambulance Service.

Success stories

GlaxoSmithKline tests the effectiveness of pre-license medicine using real world data in Manchester

The study is a collaboration between GlaxoSmithKline, North West e-Health (NWeH), The University of Manchester, Salford Royal NHS Foundation Trust, NHS Salford's local general practitioners, and local community pharmacists. Collectively these organisations' involvement in the project has been unique and is a recognised world first for the use of such data.

The purpose of the Salford Lung Study is to test the safety and effectiveness of a new treatment for asthma and COPD, compared with standard medications used for these conditions. The study is sponsored by GlaxoSmithKline (GSK).

The initiative draws on Salford's e-Health records infrastructure, a clinical information system that provides a single, integrated electronic patient record across primary and secondary care. This will ensure patients are closely monitored over the course of the study, yet with minimal intrusion into their everyday lives.

Professor Martin Gibson, associate director of industry at the National Institute for Health Research Comprehensive Research Network, described the Salford Lung Study as "a major advance in the way we do clinical trials".

“

This study is a first in the world, testing a pre-license medicine in a real world setting and is a tribute to the partnerships we've created together, our collaborators and the health care professionals and people of Salford.”

Dr David Leather, Medical Director of GSK's respiratory Centre of Excellence



Unlocking Data to Drive Innovation

UK life science is informed by real world data and information, from bioresources to anonymised patient records, clinical practice, and outcomes data. Enabled by the National Health System and anonymised electronic patient records, your business will have access to unrivalled, clinically-coded health data, including linked datasets offering a unique opportunity to understand care pathways.

The NHS's rich output of data can help drive innovation of your business' technology and services by monitoring effectiveness, performance and value of the product from primary, secondary and tertiary care in routine clinical practice. This enables your business to create

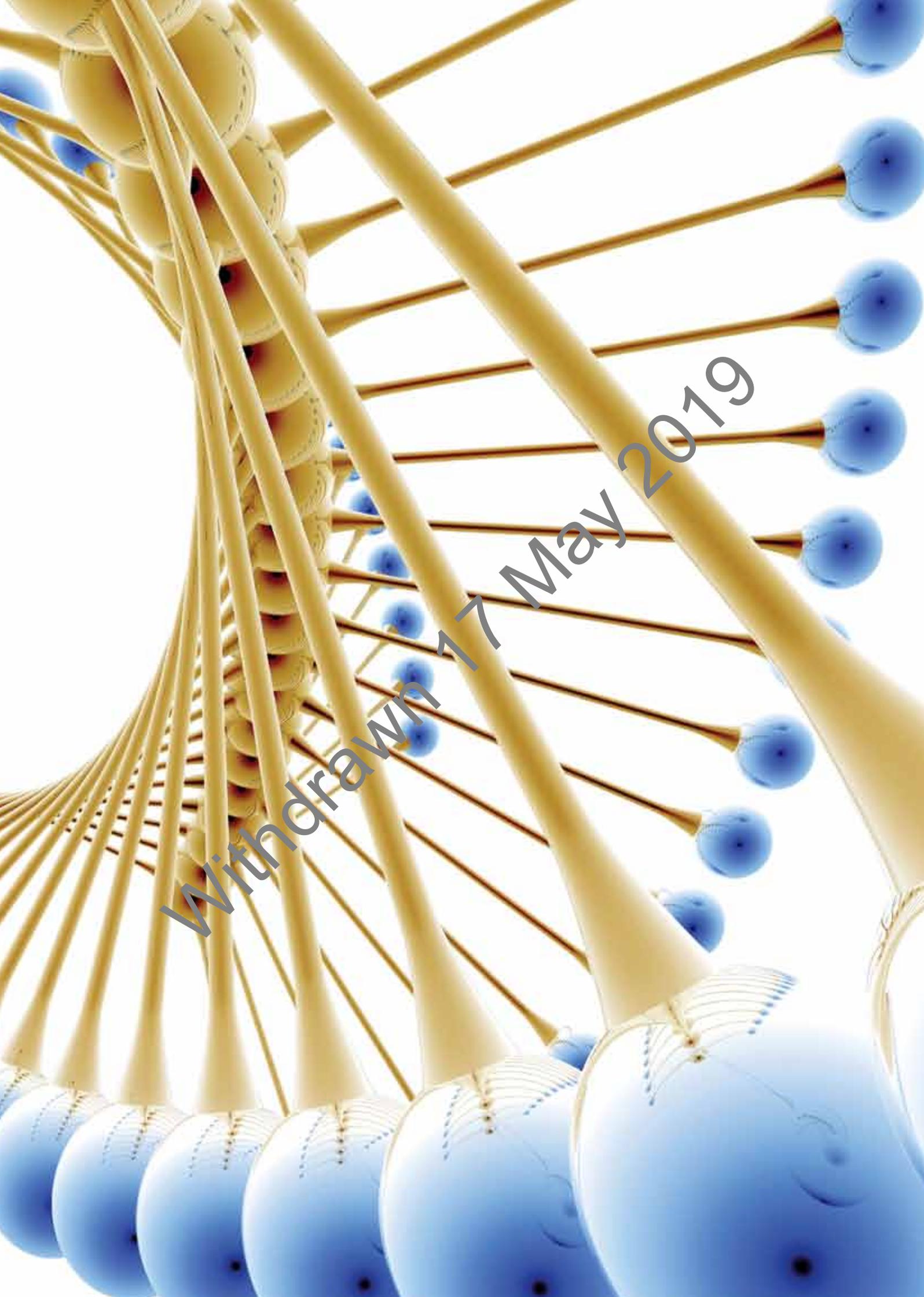
clearer pricing and market access planning strategies and to undertake the required post launch benefit, risk requirements. The UK continues to improve the access and use of data as it establishes an integrated healthcare economy.

Withdrawn 17 May 2019

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The NHS is one of our greatest assets and its standardised system of data collection has the potential to help transform healthcare and support new discoveries and clinical research.”

David Cameron, Prime Minister



Withdrawn 17 May 2019

The UK Biobank A unique resource of data and samples linked to health records from half a million participants that will help researchers to determine the role of nature and nurture in health and disease. The UK Biobank can be used by researchers in academia and industry from anywhere in the world, working on health related research in the public interest. The UK Biobank is funded by the Medical Research Council, the Wellcome Trust, the Department of Health, the Scottish and Welsh Governments and the British Heart Foundation. It is being used by scientists to examine the complex interaction of genes, lifestyle and other environmental factors in causing a wide range of painful, life-threatening and debilitating diseases.

Clinical Practice Research

Datalink (CPRD) The English NHS observational data and interventional research service, supporting research, clinical trial feasibility and protocol optimisation. The CPRD provides data and interventional research services to commercial organisations, academics and other research funders delivering research outputs beneficial to improving and safeguarding patient and public health.

CPRD also has access to data from Scotland, Wales and Northern Ireland for studies requiring larger population coverage.

CPRD maximises the utility of anonymised NHS clinical data, and also works with the Health and Social Care Information Centre's secure data linkage service when additional data linkages are required for specific research projects.

CPRD also has access and permission to link many healthcare related NHS datasets. Key data covers primary and secondary care and includes GP and hospital drug data, many of the 40+ national audit datasets, excellent demographic data and full central mortality data. CPRD will negotiate access to other important datasets, such as social care data and other areas where such data facilitates important research.

Health and Social Care Information Centre England's central, authoritative source of health and social care information for frontline decision makers. The information centre provides healthcare information to enable the improvement of healthcare decision making, patient outcomes and the identification of efficiency savings.

Hospital Episode Statistics (HES)

The national statistical data warehouse for England of the care provided by NHS hospitals and for NHS hospital patients treated elsewhere. HES is a unique data source, whose strength lies in the richness of detail at patient level.



HES includes data on hospital admissions, outpatient appointments and A&E attendances for all NHS trusts in England. They cover activity at acute hospitals, primary care trusts and mental health trusts. HES also includes information about private patients treated in NHS hospitals, patients who were resident outside of England and care delivered by treatment centres (including those in the independent sector) funded by the NHS.

This data is collected during a patient's time being cared for in hospital and is collected and submitted to enable hospitals to be paid for the care they deliver. HES data is created to enable secondary use of this administrative data.

HES is the data source for a wide range of healthcare analysis used by a wide variety of people including the NHS, government, regulators, academic researchers, the media and members of the public.

Success stories

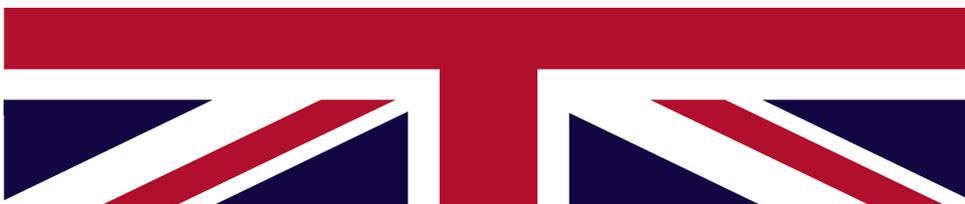
National Centre for Mental Health in Wales partners with IDBS

The National Centre for Mental Health in Wales has partnered with UK-based company IDBS to create a data management platform that will be used to improve the understanding of mental health genetics and treatment. The centre, hosted by Cardiff University, has established the Wales Mental Health Network that is recruiting 6,000 volunteers over the next two years and will capture more than 300 clinical attributes for each person, including their medical history, family history, medication and therapy.

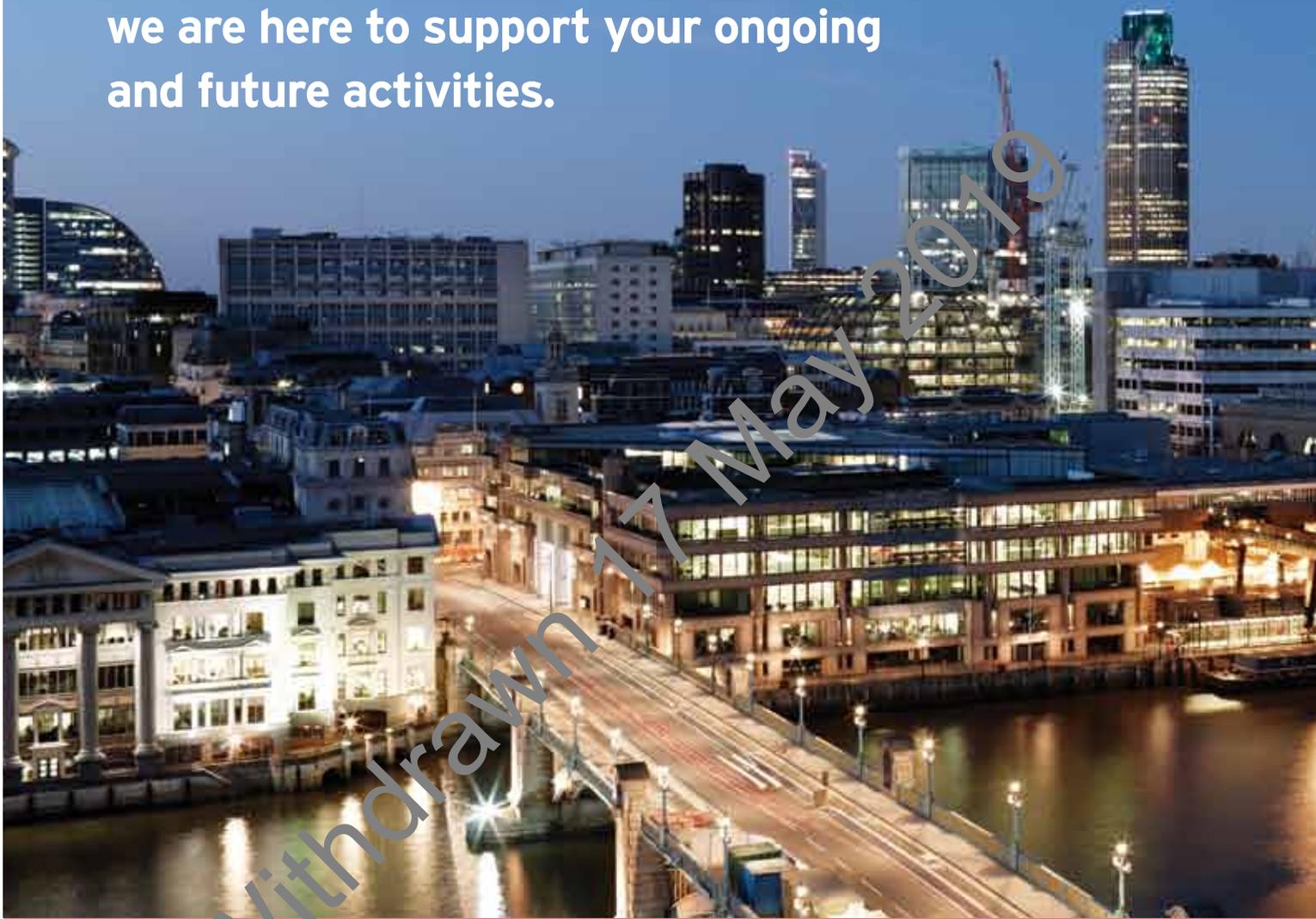
The installation of IDBS' platform will integrate clinical, biobanking and genetic data, providing a data management and analytics system for this and future studies. The platform will unify patient, sample and genetic results ensuring consistent analysis across the varied and complex data sets involved.

Medical Research Council leads on awarding funds to E-health Research Centres

A consortium of 10 UK government and charity research funders led by the Medical Research Council has awarded £19 million to four E-health Research Centres based in London, Manchester, Dundee and Swansea. The aim is to develop more effective treatments, improve drug safety, identify risks to public health and gain insight into the cause and development of diseases by linking anonymised patient records and health research data. In addition the centres will train the next generation of researchers to have the skills to analyse and link large and complex data. The Centres will work together as a network, collaborating with pharma and IT industries to ensure the UK remains at the forefront of global medical research.

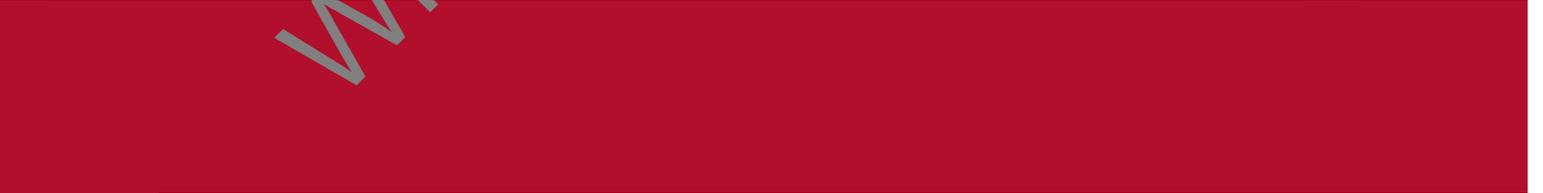


Your business' journey is important to us, from when your business is first considering making an investment in the UK to once it is well established - we are here to support your ongoing and future activities.





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Creating an Open and Flexible Regulatory Framework

The UK Government is committed to ensuring there is a step-change in the research activities and adoption of new products into the NHS. The UK is also home to two internationally respected health regulators, the Medicines and Healthcare Product Regulatory Agency at the UK level and the European Medicines Agency at the European level.

Our ambition is that if successful, your technology is adopted into a healthcare system that is open to innovation, with access to real world data that can be tracked across care pathways to ensure robust appraisal of your business' product or service.

Our commitments:

- the NHS is open to collaborate with your business on research
- your business' products and services are critically appraised to the highest standard

The NHS is a repository of innovative ideas based on unmet clinical need gained from the daily interactions NHS clinicians have with patients through all stages of the care pathway.

The Government is harnessing this unique position by investing and incentivising NHS organisations to research and collaborate with industry, in an aim to create innovative services and technologies that deliver greater benefit to patients.

Respected Regulatory Framework

The UK is home to two globally-respected health regulators, the Medicines and Healthcare products Regulatory Agency (MHRA) and the European Medicines Agency. The MHRA is an Executive Agency of the Department of Health and has UK-wide responsibility for the regulation of medicines and Clinical Trials and is the Competent Authority in regulating medical devices in the UK. The European Medicines Agency, headquartered in London, conducts scientific evaluation of medicines for use across the European Union, harmonising existing national medicines regulatory bodies across Europe. By undertaking health research in the UK and being assessed by rigorous and globally renowned health regulators your business can ensure better portability and prestige of your product(s) across the rest of the world.

Early Access Scheme

The UK wants to ensure patients have earlier access to medicines, and work is currently underway to develop an Early Access Scheme, to facilitate access of breakthrough products to the UK before other markets.

Regulatory Innovation

The UK is removing regulatory barriers, and pushing for a more efficient and innovative regulatory environment. In addition to streamlining approvals for health research, the UK has committed to adopt innovative manufacturing technology, and is undertaking quarterly cross-stakeholder meetings to consider the cutting edge of regulation and a framework for the future. This demonstrates that the UK is keen to ensure that the most innovative products get to the right patients quickly.

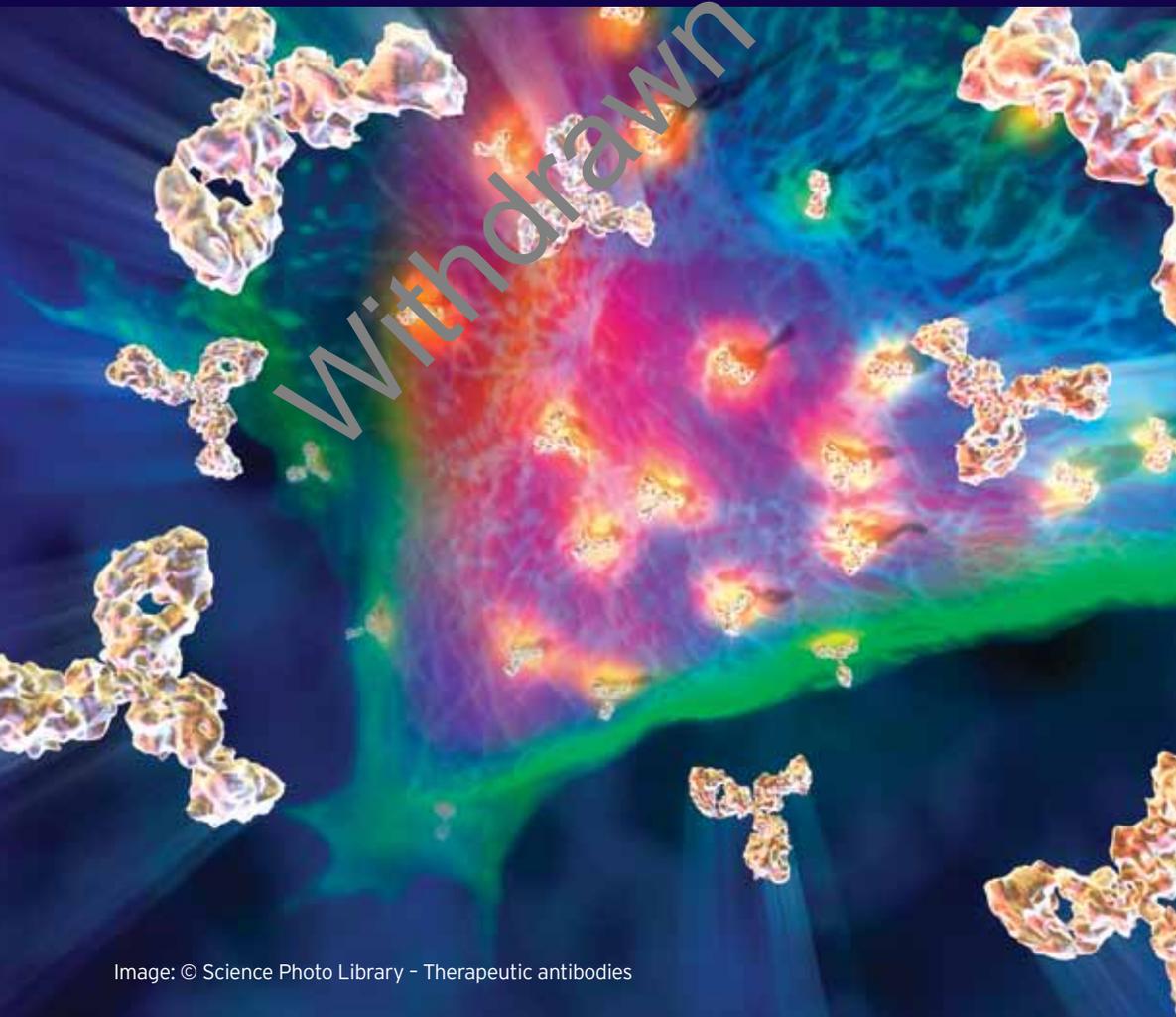
The Health Research Authority

From April 2013 the Health Research Authority will provide transparent expert advice to support decisions on access to personal health information, as well as continuing to streamline the research approvals process, encouraging investment in research. The recently published draft Care and Support Bill contains clauses to establish the Health research Authority as an executive non-Departmental public body to promote and protect the interests of patients and the public in health research, with the National Research Ethics Service at its core.

“

The most crucial, the most fundamental thing we're doing is opening up the NHS to new ideas because time and again we've heard the same thing from industry. We've got the treatments that work, we've proved they're safe, they've been approved but we cannot get them into the NHS.”

David Cameron, Prime Minister.



Success stories

Eisai continues its UK expansion

Eisai, one of the world's leading research based pharmaceutical companies, has increased its presence in the UK during 2012. In March the company announced that it was expanding the geographical reach of its UK headquarters and in September they opened a new solid dose global manufacturing line.

Eisai's European Knowledge Centre (EKC) in Hatfield represents one of Eisai's biggest ever single capital projects. The £100 million facility was opened in 2009 and integrates production, discovery and clinical research, and marketing functions on a single site. In 2012 its role has expanded to support the company's growing European, Middle Eastern and African (EMEA) business and opened a global manufacturing line for the company's new anti-epileptic agent Fycompa.

The new EMEA expansion is part of the company's plan to have a presence in the top 20 pharmaceutical market regions by 2015. The expansion of the EKC illustrates the critical role the UK plays in Eisai's growth and the importance the company attaches to its investments in the UK with great potential for future growth.

Eisai is committed to the UK as an investment location as it offers a stable market, with high quality manufacturing and Government support.

"Eisai are actively pursuing Open Innovation partnership projects with academic and public research bodies as well as other research opportunities such as the EU Innovative Medicines Initiative (IMI) programme and UK based granting programmes such as the Wellcome. Eisai are very active in dementia research in the UK and one of our biggest recent announcements was that one of our potential discoveries here in the UK, with our partners in Japan, a disease modifying compound has just entered 'First in Man' trials, so it is a new hope for the disease and a great example of bridging the translational medicine bridge that has been identified as a major barrier to getting new medical innovations to people."

Dr David Jefferys, Senior Vice President, Global Regulatory, Government Relations & Public Affairs and Product Safety, EMEA and Russia.



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UK Food and Environment Research Agency partnering with Waters Corporation

The UK Food and Environment Research Agency (Fera) and Waters Corporation, through its local subsidiary, are partnering to open the Fera IFSTL, a new laboratory-based food safety training facility near York.

The new venture combines their respective regulatory, scientific and industry expertise to address food safety issues associated with EU imports. Experts from Fera will lead intensive programs that teach best practice methods for detecting possible contaminants in food using state-of-the-art, high-quality technology and equipment. The facility is scheduled to open in January 2013.

Astellas Pharma Europe Ltd (APEL), the European headquarters of Japanese company

Astellas Pharma Europe Ltd. (APEL), the European headquarters (EHQ) of Japanese company Astellas Pharma Inc, has chosen Chertsey in Surrey as the new location for itself and the Company's UK affiliate to accommodate future growth. In Europe, Astellas' core expertise and strategic focus are in its key disease areas of Urology, Transplantation and more recently Oncology.

APEL coordinates Astellas' presence in 35 countries, with responsibility for approximately 4,300 employees, including those of Astellas Pharma Ltd, its UK affiliate. The company has no less than 15 on-going late phase studies (Phase III/IV) being conducted across four therapeutic areas which involve 60 trial centres in the UK.

Astellas has experienced continued growth in the EMEA region, with further growth expected as APEL launches new treatments in the coming years. To further support Astellas' plans, in the Netherlands, where Astellas has a strong R&D presence, the Company has invested in, and opened, new office and laboratory facilities.



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How UK Trade & Investment Can Help Your Business

UK Trade and Investment (UKTI) can provide further information in a range of areas such as market opportunities, local skills and expertise, industry clusters, universities, incentives and funding support.

Our Network

UKTI combines the expertise of professional trade and industry advisers in the UK alongside a global network of experts based in British diplomatic offices overseas, giving your business access to a well-connected presence on the ground at home and in the UK.

Your business' journey is important to us, from when your business is first considering making an investment in the UK to once it is well established - **we are here to support your business' ongoing and future activities.**

"UKTI connects your business to subject matter and experts across the life science and healthcare sector in the UK."

UKTI Life Science Investment Organisation

UKTI has established a dedicated unit focused on UK life science. The UKTI Life Science Investment Organisation (LSIO) is your partner acting as a simple interface to the UK life science sector. The LSIO is your guide to identifying research, development and delivery partners and will support you through every step of investing in and working in the UK.

Dr Mark Treherne, CEO of the UKTI LSIO and his team work closely with you to understand your needs and requirements, partnering you with the right people in the UK, to further develop your business.

Our Services

Our practical help and advice for inward investment is free and confidential. We work closely with other government departments and the wider UK Life Science community to provide excellent service and present the best UK offer.

Once your business has a presence in the UK, we consider it a UK company and open up UKTI's global trade services to help your business to launch in other international markets.

For further information please contact UK Trade & Investment at
T +44 (0)20 7215 5000
enquiries@ukti-invest.com
www.ukti.gov.uk/lifesciences

“

Having worked in a multi-national pharmaceutical company and SMEs around the World, I have found the UK to be a prime location to commercialise Life Sciences. The UK's supportive business environment thrives on the appetite for researchers and charities to partner with industry and the National Health Service (NHS). One of the most exciting developments is the access the NHS provides to anonymised patient data.”

Dr Mark Treherne, Life Science Investment Organisation, UKTI

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