Making discoveries. Driving progress. Bringing hope.

Our strategy

CANCER RESEARCH UK

Together we will beat cancer


CANCER
RESEARCH

Contents

To read our research strategy,
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Making discoveries. Driving progress. Bringing hope.

A summary of our strategy

Cancer is one of the world's greatest health challenges. In the UK, 1 in 2 people will get cancer in their lifetime,* along with millions more around the world, causing huge amounts of suffering and cutting many lives short.

At Cancer Research UK, we exist to beat cancer. But the disease is so complex that it is unlikely there will ever be a single cure. 'Beating' cancer involves discovering how and why it develops and evolves, then using that knowledge to find ways to prevent people developing it, detect it earlier when they do and develop new cutting-edge treatments. It also means finding ways to minimise the impact cancer has on those who live with it by discovering kinder, less disruptive treatments. This is how cancer will be beaten – by many brilliant people working together to make important discoveries and driving these discoveries forward into tangible progress that will mean everybody lives longer, better lives.

We are beating cancer every day. But we need to go much further and much faster – and research offers hope. We stand on the brink of a revolution in our understanding of cancer and our ability to tackle it. New technologies, big data and multidisciplinary science are allowing us to do things that even five years ago would have been impossible. By seizing these opportunities, we can make more discoveries, drive progress further and faster, and save and improve countless lives.

*Ahmad AS et al. British Journal of Cancer, 2015

Harnessing the power of discovery

Every new discovery we make about cancer brings us closer to beating it. That's why we fund exceptional people to carry out research into the disease that will unlock new ways to prevent, diagnose and treat it. And because some of the most exciting discoveries come from the interface between different research fields, we break down the silos between disciplines, encourage our researchers to collaborate widely and seek out discoveries in everything we do.

Accelerating progress for everyone

Despite advances in research, improvements in cancer outcomes are still unacceptably slow. We need to drive progress much faster, propelling more of the discoveries we make into interventions that can lead to longer, better lives for everyone. That's why we work with partners in industry, research and healthcare to find faster routes to new prevention measures, tests and treatments. And we use our influence and expertise, and work with people affected by cancer, to make sure the benefits of research are shared by everyone.

Working together to bring hope

As the world's largest charitable funder of cancer research, we are at the forefront of the global fight against the disease, bringing together millions of people who share our determination to beat it. We draw on the strength of our network and collaborate with partners in the UK and around the world to save and improve many more lives than we could alone, bringing hope to people affected by cancer everywhere.

Our vision for a better future

We know that it's unlikely there will ever be a single cure for cancer, but we also know that it can be beaten, and that research holds the key. We asked people affected by cancer, researchers, clinicians, supporters and staff what beating cancer means to them. They told us that it's a world where everybody lives longer, better lives, free from the fear of cancer. A world where:

- Some types of cancer are effectively eliminated
- Many more cancers are prevented from developing in the first place
- People who do develop cancer are diagnosed at the earliest possible stage so they can be successfully treated
- Treatments are more effective, kinder and more targeted, so people can lead better, more fulfilling lives
- Everyone shares in this progress equally, regardless of who they are, where they're from or what type of cancer they have

This strategy offers the one thing we all seek: hope

A message from our patient representatives

It has been fantastic to be involved in the consultation around this strategy and to see Cancer Research UK continue to put people affected by cancer at the heart of their strategic development.

Much has changed since Cancer Research UK last published a strategy in 2014. There has been amazing progress in some areas – for example, in genomics, biological therapies and the development of large-scale databases – all of which points to the continued potential for rapid progress.

We are particularly excited by the commitment to discovering innovative new approaches to prevention, diagnosis and treatment, and the razor-sharp focus on translating this into benefits for people affected by cancer and wider society. Cancer Research UK's re-stated commitment towards discovery means thinking beyond previous success stories and focusing on the challenges that still need innovation, funding and long-term research.

But alongside this reinvigorated focus on discovery and translation, what is even more welcome is the new emphasis on treating cancer as a 'whole-system' disease. This is a timely change to seeing beating cancer as not only about cures, but about providing opportunities for people to have a good quality of life, grow up, have a family and be part of society. This is what really matters to people affected by cancer.

We also want to acknowledge the emphasis on reducing the inequalities that all too often lead to higher rates of cancer and poorer outcomes. As well as driving forward life-saving research, we're confident that, through this strategy, Cancer Research UK will make huge efforts to reduce inequalities and champion this issue.

Above all, this strategy offers the one thing we all seek: hope. Hope that the more we discover about the causes of cancer, the more this can be used to prevent it. Hope that discoveries will also lead to a better understanding of how cancer affects our bodies, leading to a better quality of life. Hope that more people will be able to live well with the disease where a cure is not yet an option. Most importantly, it gives us hope that these discoveries will lead to more options for more of us.

Ally Boyle, Patrick McGuire,
Angela Polanco and Claire James

We are at a moment of huge opportunity

Foreword from our Chief Executive and Chair

Michelle Mitchell OBE
Chief Executive

Professor Sir Leszek Borysiewicz
Chair

Over the past 120 years, we've made discoveries that have saved countless lives and benefitted millions around the world each year – from proving the link between tobacco and cancer, to research contributing to more than 50 cancer drugs currently in use.

But despite this, we're still deeply dissatisfied with the picture for people affected by cancer today. The number of cases is rising, treatments can take a huge toll on patients and too many lives are still lost to this disease. There are forms of cancer, including some that affect children and young people, where improvements have been much slower and options for patients are limited. There are stark inequalities in who cancer affects most

harshly, which have been exacerbated by the COVID-19 pandemic. Outcomes for people with some cancers are significantly worse in the UK than in comparable countries. Health systems in all four UK nations do not implement and roll out new treatments and prevention measures as successfully as other developed countries.

What's more, the pandemic continues to have a devastating impact on people affected by cancer, delaying tests and treatments, and setting back research. However, we're proud of how our researchers, scientists and clinicians adapted, and how as an organisation we showed resilience and continued pursuing our mission.

We're optimistic as we look to the next chapter for Cancer Research UK. We recognise that we are at a moment of huge opportunity in terms of our ability to understand cancer and find ways to beat it. New ways of thinking about cancer, new technologies and growing global networks have transformed what's possible. The pandemic has shown the value of investing in research, how global collaboration can radically accelerate progress and how quickly innovations can be adopted by health systems when there's real focus.

We have always believed in the transformative power of discovery – as our Chief Scientist and Chief Clinician discuss on the next page. But we also know that making discoveries alone is not enough. We want many more discoveries to be turned into tests, treatments and prevention measures that can save and improve lives around the world, and for these to be implemented across the UK as quickly and successfully as they are in other developed nations. We have driven progress in this area already, but in this strategy we go further – because we won't be satisfied until we see world-leading cancer outcomes for the UK.

We know that we can't beat cancer alone. That's why we'll inspire millions of people in the UK and around the world to join with us. We are the largest charitable funder of cancer research in the world, supporting around half of all publicly funded research into the disease here in the UK. However, we can't fund every world-class research proposal we receive, so we owe it to people affected by cancer and the public to find ways to grow the amount we can fund. As a leading organisation in the global fight against cancer, we'll also draw on our network of supporters, researchers and partners, and forge new partnerships and collaborations, so that we can have the biggest possible impact.

We also know that beating cancer is a long game, so we'll take steps now so that we're ready for whatever opportunities and challenges come along. This means investing in our people, data, reputation and financial resilience so we remain sustainable in the long term and can keep beating cancer in the years and decades ahead. It means putting in place measures so that we become a truly environmentally sustainable organisation, and a more diverse and inclusive one. And it means being ready to adapt and respond to advances in data and digital technologies that are rapidly changing everything from the way that research is conducted to the ways that people interact with us.

Achieving all this will not be easy, but we're ready for the challenge. If we seize this moment, we can bring about a future where everybody lives longer, better lives, free from the fear of cancer.

> "If we seize this moment, we can bring about a future where everybody lives longer, better lives, free from the fear of cancer"

Putting discovery at the heart of everything we do

Statement from our Chief Scientist and Chief Clinician

The power of scientific discovery is awesome. The tools we have at our disposal to unravel cancer's secrets, and to diagnose and treat those affected by it, were unimaginable just a few years ago.

Cancer Research UK's 120-year heritage is one of translating scientific discoveries into ways to save and improve lives for people all over the world. Discovery has underpinned everything we have been about – from Sir Alexander Haddow's observation that early nitrogen mustard chemotherapies weld DNA's double-helix together, which paved the way for more effective chemotherapies, to Sir Paul Nurse and Sir Tim Hunt's Nobel Prize-winning studies of dividing yeast and sea urchin cells, which opened the door to modern precision drugs targeting the cell cycle.

And yet, despite all this progress, too many people die prematurely from cancer. The disease isn't picked up early enough in many people, resistance develops to the most sophisticated therapies and we know too little about how cancer evolves to subvert the body's systems. As a result, living with cancer can be fraught and unpredictable. Because, despite everything we know about the disease – from its chaotic DNA to its subversion of normal biology – there is still so much about it that is shrouded in mystery and too many unanswered questions.

To unravel cancer's secrets and drive progress for patients, we must refocus our efforts on scientific discovery. Recent history has shown how understanding the biology of diverse and seemingly irrelevant organisms like yeast and flies can bring fresh insight into understanding cancer. So we must fund a wide portfolio

“To unravel cancer's secrets and drive progress for patients, we must refocus our efforts on scientific discovery”

of discovery research – also known as fundamental research or basic laboratory studies – and make the best use of the tools we have available, as well as developing more sophisticated ones. We need to probe deeper into the very nature of life itself to find answers to longstanding biological mysteries that could yield new ways to improve human health and, of course, beat cancer. Simultaneously, we also need to redouble our efforts to understand what is happening in people who develop cancer by putting the patient at the heart of discovery research.

This isn't just about laboratory research – although that's vital. It's about making sure that all research, clinical or otherwise, results in new biological insights that form the basis of practical improvements for people affected by cancer. In fact, we believe that the distinction between 'discovery research' and 'clinical research' is holding us back. We will continue to fund clinical research with the aim of improving our understanding of cancer biology, helped by the phenomenal discovery research tools now available. We want to remove the barriers between these disciplines, with more clinicians working in academic research labs, more basic scientists embedded within clinical teams and training programmes that nurture future research leaders.

It's also increasingly important that we 'zoom out' from the tumour-centric view of cancer and turn our attention to cancer as a whole-system condition. What is the role of exercise, ageing and other conditions, such as diabetes? Can we better manage side effects through understanding their biological roots? Can dietary changes help to improve the effectiveness of therapies?

Just as we will bring a discovery approach to the prevention and detection of cancer, our approach to drug discovery also needs to evolve, building on the promise of biotherapeutic and new drug discovery technologies. We need smarter trials to understand how best to use these and develop efficient, effective therapies that can control and even cure cancers. We need to redouble our efforts to make sure discoveries are quickly translated into new prevention measures, tests and treatments by working closely with our partners across healthcare, policy and industry, and challenging existing barriers to progress. Discovery is vital, but so too is smart, swift translation into improved clinical practice, and – ultimately – longer, better lives for everyone.

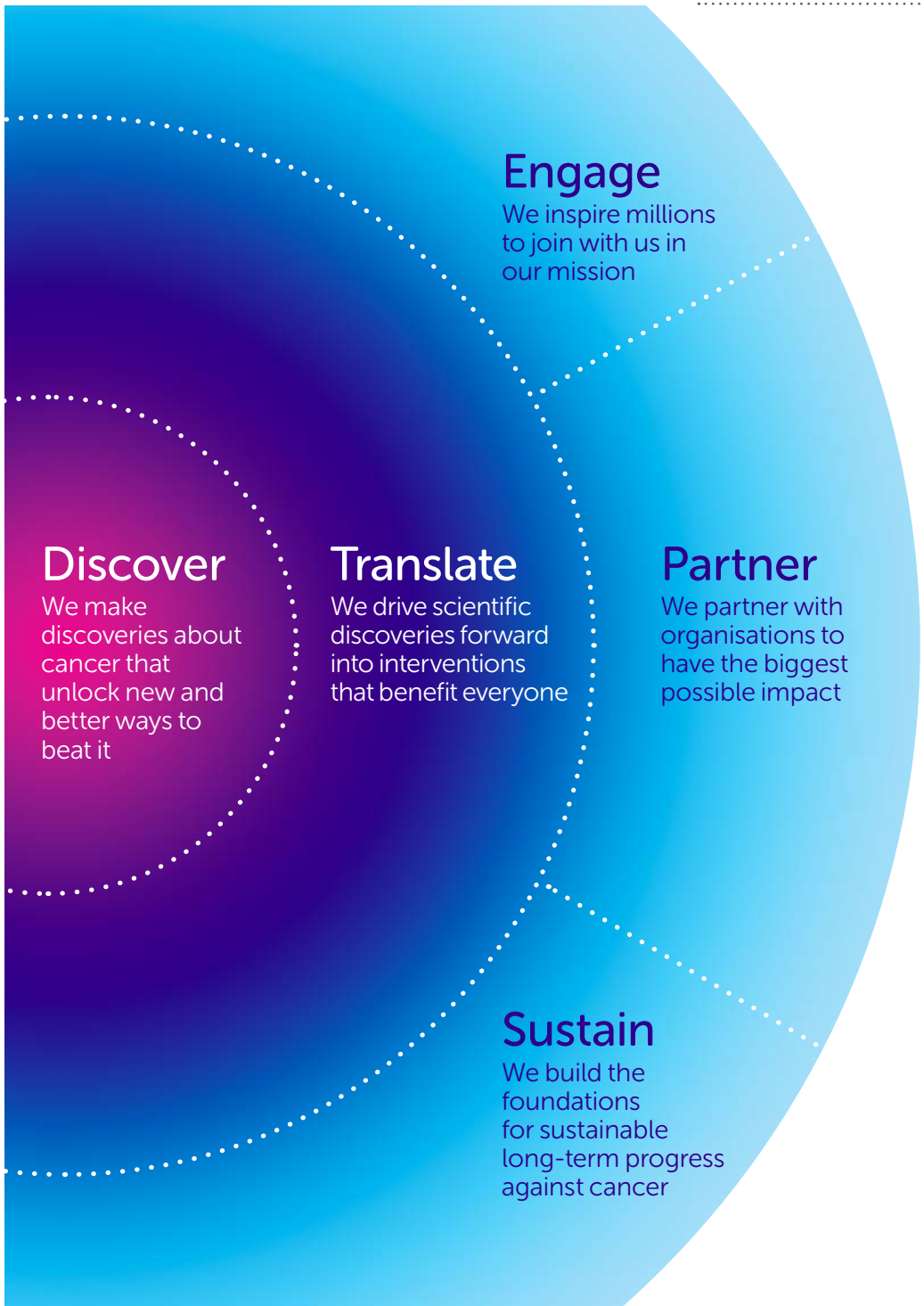
History suggests that cancer's unanswered questions can be answered by bringing together the brightest minds to work together and push the boundaries of scientific understanding. Cancer Research UK is uniquely poised to do this and help lead the next phase in humanity's mission to beat cancer. Through this strategy – by working with people affected by cancer, putting discovery at the heart of everything we do, and driving continued progress in survival and quality of life for people affected by cancer – we can bring about longer, better lives for everybody.

Professor Charles Swanton
Chief Clinician

Professor Karen Vousden CBE
Chief Scientist

Our objectives

Our strategy sets out five overarching objectives and how we will achieve them



Our vision for the future:

longer, better lives, free from the fear of cancer

Objective: Discover

We make discoveries about cancer that unlock new and better ways to beat it

Discovering more about why cancer starts and how it develops is the key to beating it. Even small steps forward in our understanding can lead to improved treatments or new ways to detect the disease earlier, which have the power to save and improve thousands of lives. Each step also opens the door to further discoveries, which over time add up to immense progress.

We have always believed in the power of discovery, supporting the individuals and teams who can push the boundaries of our understanding today and developing the next generation who can continue making discoveries in the years ahead.

We will continue to invest in cutting-edge discovery research as we always have. We will seek discoveries across all types of research, regardless of whether we are looking at cells or models in the lab, studying groups of patients on clinical trials or interrogating vast datasets. We will encourage greater collaboration across disciplines – bringing in researchers from related fields, such as immunology, endocrinology and developmental biology. And we will exploit new technologies – particularly big data and artificial intelligence – to generate new insights.

It's vital that the discoveries we make are relevant to everyone. So we want to see a more diverse and inclusive community of researchers, wider representation from all population groups in research samples and clinical trials, and more research that sets out to understand cancer inequalities.

Our objectives

1. Drive discovery with purpose, making meaningful discoveries about the underlying biology of cancer that open up new ways to prevent, diagnose and treat it
2. Pioneer new ideas, creative approaches and new ways of thinking about cancer, particularly regarding how it affects the person as a whole
3. Solve the most complex challenges in cancer research by establishing international, multidisciplinary collaborations to tackle them
4. Maximise what we learn from every patient on a clinical trial to advance our understanding of cancer
5. Strengthen the UK's position as a world-leading destination for life sciences, and cancer research and innovation

We will

Support world-leading research and teams

- Support outstanding and creative researchers to undertake the highest quality discovery research and bring in new disciplines and novel thinking
- Continue our flagship investments in our institutes by working with universities and partners to support vibrant, multidisciplinary communities of world-leading researchers at scale
- Grow and evolve Cancer Grand Challenges as a platform for taking on cancer's biggest challenges and making breakthroughs that advance the field

Accelerate priority areas

- Make sure that the research we fund is relevant to everyone and improve our understanding of cancer inequalities – for example, why some groups are more likely to develop or die from cancer than others
- Continue to prioritise research into children and young people's cancers, and cancers where outcomes are poorest (cancers of unmet need), including brain, lung, pancreatic, oesophageal, liver and stomach cancer
- Fund cutting-edge research into data science, maximise the value of the datasets we create through research and improve access to data for research
- Implement a new prevention research strategy that uses biological insights to find new ways to prevent cancer and reduce risk
- Focus our funding on clinical studies that improve our understanding of cancer by capturing more biological data from each patient
- Continue to build a strong evidence base in behavioural and implementation science

Strengthen our workforce, culture and environment

- Support an exceptional, diverse and collaborative research workforce by continuing to prioritise training, career development and retention for our whole community, with a particular focus on improving diversity and training the next generation of clinician scientists
- Advocate for greater and more productive investment into UK cancer research and innovation (in line with the UK Government's Life Sciences Vision) and for a diverse and inclusive research culture

Bowel tissue viewed with a high-resolution microscope. Researchers can now label the different types of cell that make up the tissue, including different immune cells.

Image: Professor Francesca Ciccarelli, Group Leader, Francis Crick Institute

Our impact: Life-saving discoveries in unlikely places

In October 2001, Sir Paul Nurse – a researcher at the Imperial Cancer Research Fund's (ICRF) London Research Institute – received a phone call telling him that he'd won the Nobel Prize in Physiology or Medicine. It was the culmination of a remarkable journey for a scientist who had built his reputation through studying a particular form of yeast.

Nurse's prize was jointly awarded to his ICRF colleague Sir Tim Hunt and US researcher Leland Hartwell. Together, they helped unravel the process that controls the growth and division of cells in living organisms, known as the cell cycle. A key insight was the discovery of a set of proteins known as cyclin-dependent kinases (CDKs). These proteins, present in all cells, help govern precisely when cells divide – and when they shouldn't. And before long, they were found to play a central role in cancer. This work has since given rise to three drugs approved to treat cancer by precisely targeting CDKs.

Fran was diagnosed with metastatic breast cancer in 2020 when she was just 25. She is now taking one of these drugs – abemaciclib – to hold the disease at bay. "When you're sat in that room and hear the words 'you have cancer', you feel completely lost, particularly when it's stage 4," she says. "I wouldn't be alive today if I hadn't gone onto abemaciclib. I think it's truly remarkable that such a life-saving drug can come from research into yeast cells."

Fran's story is proof of how vital discovery research is. "It shows how a laboratory discovery can turn into something practical," says Nurse, who went on to become Cancer Research UK's first chief executive, and then director of the Francis Crick Institute. "This kind of discovery research can have huge implications. To make a major impact, you need to discover new things."

> "I think it's truly remarkable that such a life-saving drug can come from research into yeast cells"
>
> Fran, 27,
> living with breast cancer

In focus:
A home for world-leading research

Our institutes in Cambridge, Manchester, Glasgow (Beatson) and London (Francis Crick) provide an exceptional environment for discovery research.

They are home to more than 120 research groups who are supported by state-of-the-art facilities. Our institutes have an outstanding track record of producing world-class research across the breadth of cancer science, including being home to four Nobel Prize-winners.

These institutes will remain our flagship investment in long-term discovery research. To gain the most value from them, we will make sure that their work is world-leading and aligned with our strategic priorities, with each location making its distinctive contribution.

They are also an important training ground for the cancer research leaders of the future, so we will continue to prioritise their role in training. And given their scale, concentrated expertise and integration with wider research infrastructure, they are also well-placed to support the translation of discoveries into new prevention measures, tests and treatments, so we will encourage them to do more in this area.

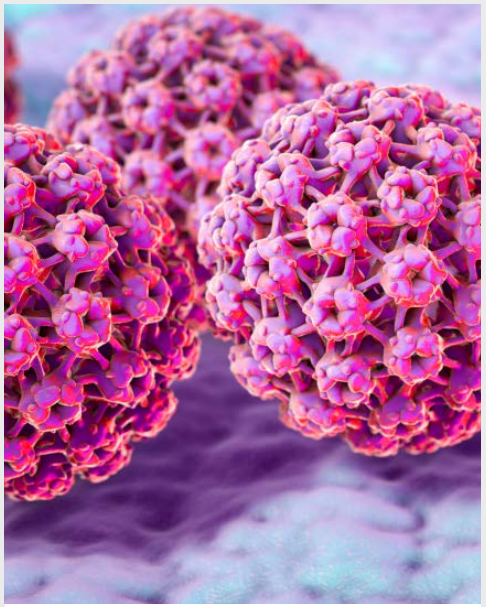
In focus:
A new ambition for prevention research

As cancer incidence continues to increase in the UK and around the world, research into preventing the disease is becoming ever more critical as a route to saving lives.

We have a strong track record of supporting epidemiological and behavioural research that has transformed our understanding of risk factors and how to modify these to prevent cancer.

Researchers currently believe that around 4 in 10 cancers could be prevented every year in the UK through behavioural and environmental changes, such as reducing tobacco exposure and maintaining a healthy weight. However, by understanding more about the causes of cancer, we can make it possible to prevent many more cases. This means deepening our understanding of cancer risk and discovering more about how cancer starts and develops, which we can harness to develop new interventions – for example, preventative drugs or changes to diet precisely targeted to individuals at higher risk. It also means better understanding the impact of health inequalities on cancer risk to reduce cancer incidence equitably across society.

Our new prevention research strategy sets out an ambitious agenda focused on high impact areas, including tobacco, obesity, infection and inflammation, and the role of ageing. We want to attract new researchers to bring in new ideas and forge collaborations across disciplines so that we can make greater progress in preventing cancer.



The human papillomavirus (HPV) which causes of nearly all cases of cervical cancer. Research on HPV has led to effective vaccines that can prevent cervical cancer. This illustrates the immense potential of future research looking at the role of infection in cancer development.

Objective:
Translate

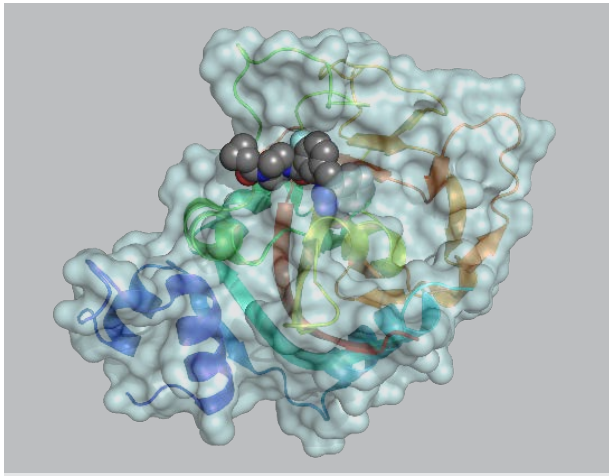
We drive scientific discoveries forward into interventions that benefit everyone

Scientific discoveries about cancer alone will not lead to improved outcomes. They need to be translated into new prevention measures, tests and treatments that can save and improve lives around the world.

We have a proven track record of driving discoveries forward into interventions that can have an impact for people affected by cancer, working closely with our strong network of partners. But we will do more to support and incentivise researchers to engage in translation, address funding and capability gaps, and find and progress new insights to the point that businesses and health systems can take them forward towards the clinic.

The problem of translation is particularly acute in the UK. Despite being a world leader in research, outcomes for some cancers in the UK are significantly worse than in comparable countries. We want to see 3 in 4 people in the UK surviving their cancer for 10 years or more by 2034. To achieve this, we will support UK health systems to transform into learning systems, with greater integration of research and clinical practice, and greater ability to adopt and implement innovation more quickly and equitably.

We must also capitalise on new technologies and uses of data. With its health system and flourishing tech industry, the UK has the potential to lead the world in pioneering new tools and technologies that help us beat cancer.



Olaparib - the first of a new class of drugs called PARP inhibitors that kill cancer cells by undermining their ability to repair DNA damage – shown here in dark grey. Cancer Research UK funded much of the research underpinning this drug and helped set up a business to develop it.

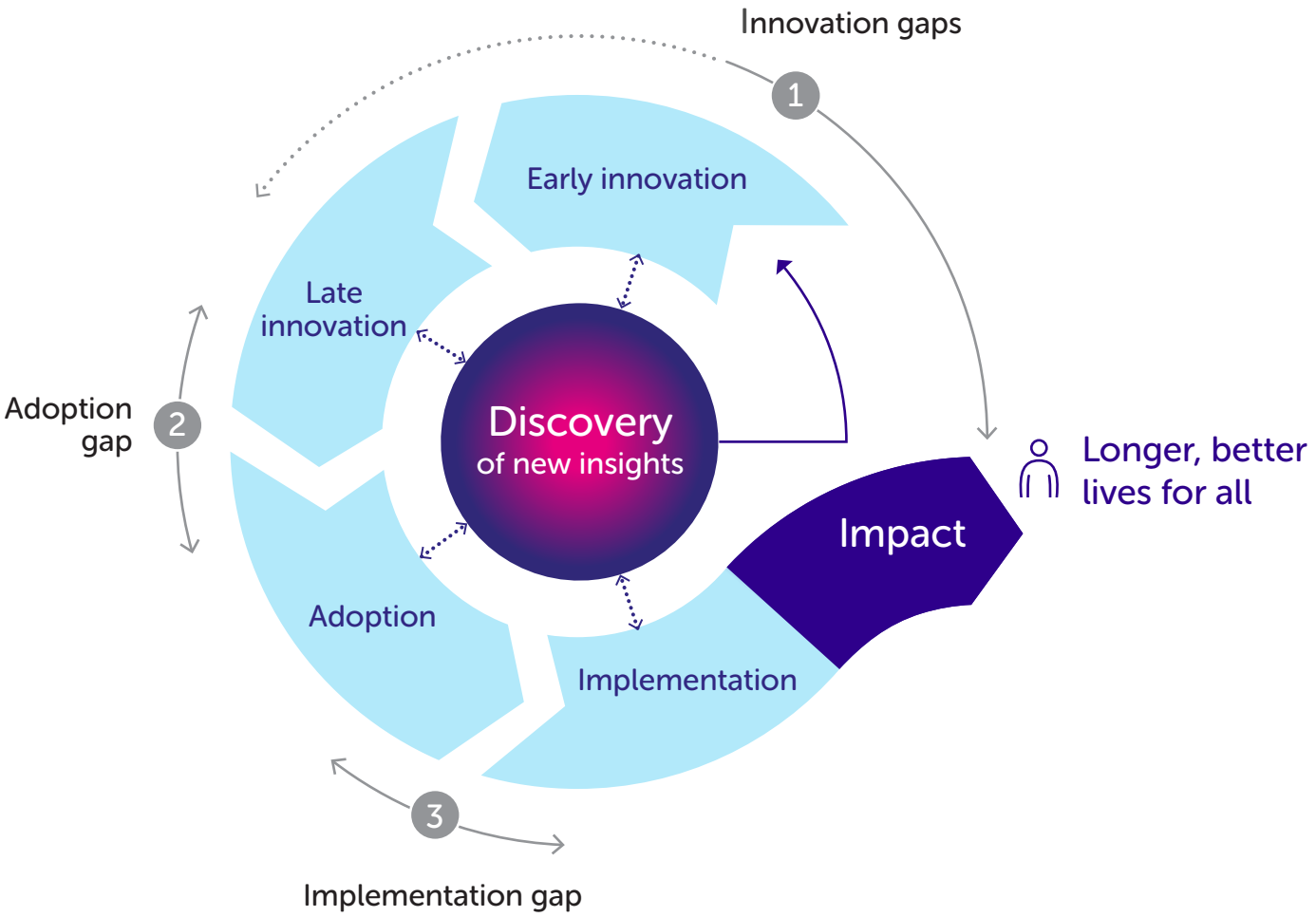
Addressing the challenges of translation

Our strategy focuses on bridging specific gaps where we can make the biggest difference:

1. **Innovation gaps**
   We will make sure that more ideas from the lab start out on the road to becoming effective diagnostics and treatments, bringing together researchers and businesses, and addressing specific gaps in funding and capabilities for high-risk ideas that can't yet attract commercial investment.

2. **Adoption gap**
   We will encourage the rapid adoption of proven treatments, diagnostics and other interventions/approaches into UK health systems so they can be made available to everyone as quickly as possible. We'll focus on innovations that are progressing slowest today, including those developed through non-commercial routes (such as new care pathways or screening programmes).

3. **Implementation gap**
   We will work with health systems to make sure that best practice is rolled out consistently, effectively and equitably across health systems to benefit everyone.



Translation is not a straight line from new discoveries to impact. As ideas progress, they often generate new questions or spark new ideas. For example, in drug development we might need new biological insights to understand why a drug has failed in a clinical trial and how this could be resolved. This is why we will always approach translation with a discovery mindset.

Our objectives

1. Quickly and effectively progress more insights from the laboratory into new prevention measures, tests and treatments that can make the biggest difference for patients
2. Work with partners towards world-leading cancer prevention, control and care in all four UK nations
3. Identify and reduce the barriers that are stopping new innovations in cancer prevention, diagnosis and care from being made available and used
4. Reduce the inequalities in access to proven cancer interventions
5. Contribute to the improvement of global cancer outcomes

We will

Promote innovation and translation

- Promote an entrepreneurial culture and support researchers to translate their findings – including through the provision of training programmes and partnering with the UK's leading business accelerators
- Bring together our drug discovery and commercial activities into a single organisation (Cancer Research Horizons) that's focused on turning insights from research into new cancer drugs
- Broaden the range of cancer innovations we support as new ideas emerge from our research portfolio, including cell and immune therapies and diagnostics
- Continue to support high-quality research into surgery and radiotherapy to make treatment more effective and minimise long-term side effects
- Create investment funds that address gaps in translational funding so that research discoveries can progress rapidly towards the clinic. This will include a new seed-fund to support early-stage innovations and a new impact fund for therapeutics
- Support the formation and development of spin-out companies to commercialise Cancer Research UK-funded science

Drive adoption and implementation

- Continue to build our intelligence capabilities, bringing together scientific and real-world evidence to inform cancer policy
- Use our national policy expertise to make sure England, Wales, Scotland and Northern Ireland all develop transformational cancer plans that improve outcomes for people affected by the disease, and hold health systems accountable for delivering change
- Develop new tools, methods and datasets to understand and address inequalities in local practice
- Conduct 'test, evidence, transition' programmes to identify how best to implement innovations and provide the resulting evidence base to decision-makers in health systems

Build thought leadership

- Build on the success of our Roadmap for the Early Detection and Diagnosis of Cancer by developing roadmaps that lay out the routes from discovery to impact, and lay the foundations for public, private and charity sectors to collaborate on shared goals
- Improve access to and use of health data in cancer research, including advocating for the responsible and safe use of patient data (eg protecting confidentiality) with our community of patients and supporters
- Continue to work in focused areas of global health where we have the understanding, evidence, expertise and networks to make the biggest difference, such as tobacco control

Our world-leading translational network

Our network of centres and units has the potential to support every element of the translational journey:

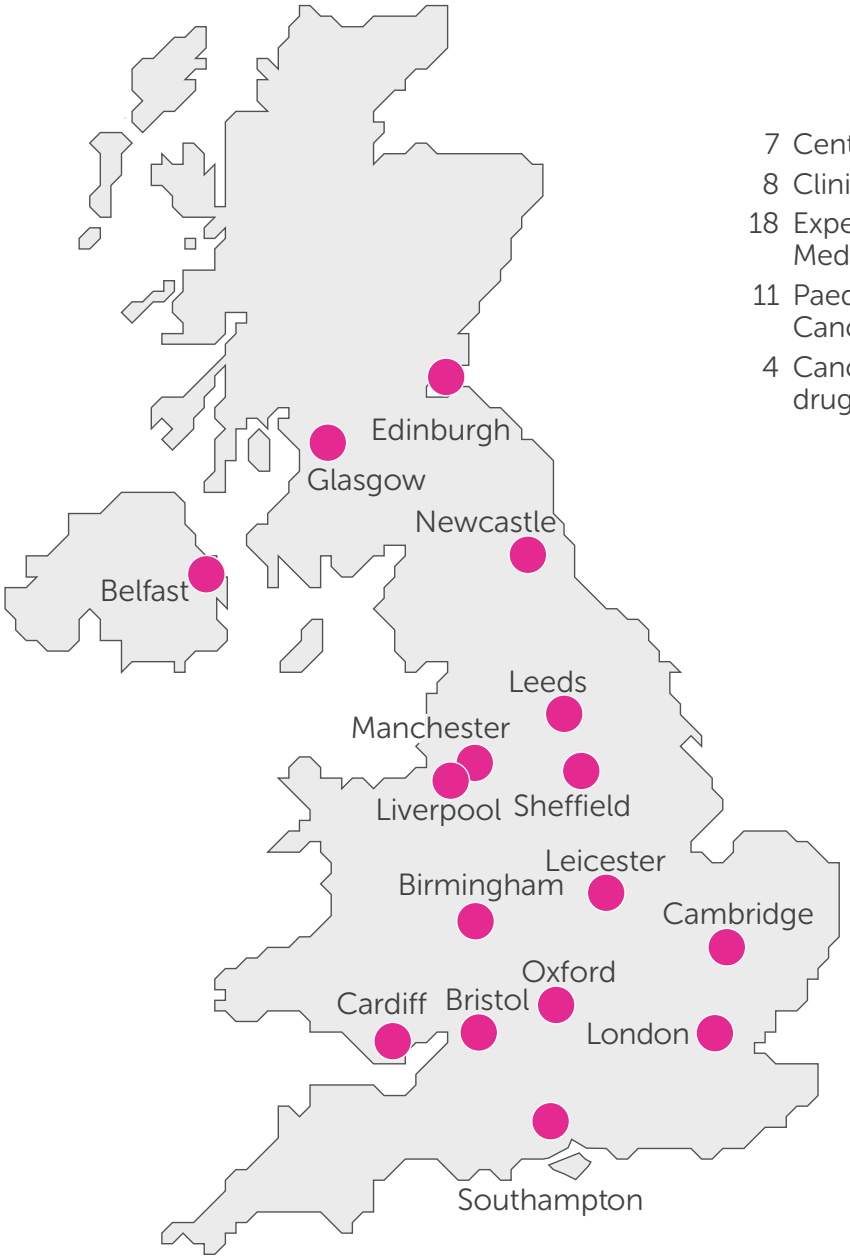
Translational centres drive local collaborations between universities, NHS hospitals and other research organisations to accelerate progress from the lab to the clinic.

Therapeutic innovation centres of excellence discover medicines and develop new treatment approaches in areas such as radiotherapy.

Experimental Cancer Medicine Centres bring together lab-based scientists and clinical researchers to push forward early-phase clinical trials of new cancer treatments.

Clinical Trials Units act as a hub of trial expertise and support patients to participate in research.

This network enables our researchers and partners to carry out world-leading translational and clinical research, including our portfolio of clinical trials. Every year, many thousands of patients are recruited to our clinical trials, accessing potentially life-saving treatments that would not otherwise have been available to them.



7 Centres
8 Clinical Trials Units
18 Experimental Cancer Medicine Centres
11 Paediatric Experimental Cancer Medicine Centres
4 Cancer Research Horizons drug discovery facilities

Locations where we support translational research infrastructure as of April 2022

In focus:
Further, faster, together

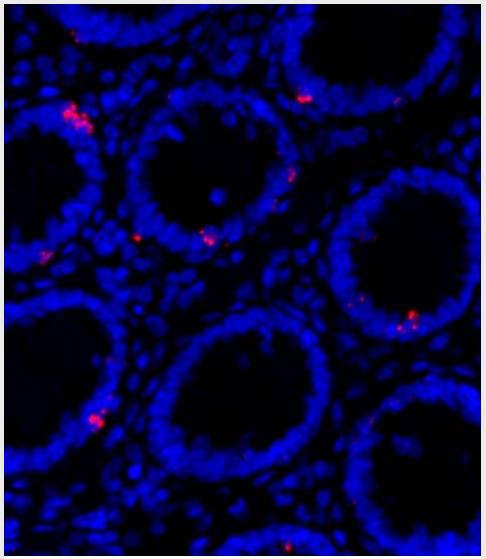
Cancer Research Horizons is the part of Cancer Research UK that takes the latest advances from academia and matches them with the commercial, technical and investment expertise needed to progress them towards the clinic. Horizons uses our unique access to a pipeline of world-leading cancer research to find the most promising ideas and turn them into effective prevention measures, tests and treatments. Because it's not a commercial investor, Horizons can make a contribution that others can't – investing in high-risk ideas that have the potential to make the biggest difference to people affected by cancer.

We're proud to have supported the formation of more than 60 spin-out companies (which have gone on to raise £2.3bn in investment) and played an instrumental role in bringing 11 new cancer drugs to market. All the returns we make are invested back into funding more world-leading cancer research and form an important additional source of financing.

We have ambitious plans to grow our impact. A major new initiative is the formation of Cancer Research Horizons Therapeutic Innovation – a new division within Horizons that brings together our drug discovery and investment capabilities. Its goal is to create a high-impact pipeline of breakthrough drugs to treat people affected by cancer. Ultimately, we'll measure its success by whether these drugs help people live longer, better lives.

Through Cancer Research Horizons Therapeutic Innovation, we'll have the potential to harness the full extent of the UK's world-leading life science ecosystem to solve the biggest challenges in developing cancer drugs. We'll work with our extensive network of UK and world-leading academics, hospitals and institutions to find the most promising new insights and innovations, then match them with the right drug development expertise, project support and financing. And we'll work to find a coalition of like-minded organisations and individuals to support us, aiming to bring in £2 of additional funding for every £1 we spend.

We're not beholden to investors, governments or shareholders, so we can take the long view, trying bold approaches that others won't. We'll focus on tougher, more profound ideas and we'll embrace and learn from failure as a sign that we are making a unique contribution to beating cancer.



Specialised immune cells called gamma delta T cells within the gut (shown in pink/red), well-placed to protect body from disease.

Image: Adrian Hayday, Group Leader, Immunosurveillance Laboratory, Francis Crick Institute

Cytosponge - the "sponge on a string" test developed with funding from CRUK and the MRC – can be used to detect oesophageal cancer earlier.

In focus:
A paradigm shift in early detection and diagnosis

Early detection and diagnosis is arguably the single most important way we can beat cancer.

People diagnosed at an early stage have the best chance of successful treatment and long-term survival. However, too few cancers are currently detected early (at stages 1 and 2) – only 54% in England in 2018 (of cancers with a known stage).

Our vision – as outlined in our influential Roadmap for the Early Detection and Diagnosis of Cancer – is a future where the early detection and diagnosis of cancer is prioritised, incentivised and routinely embedded in research, development and health systems. We want to see a thriving research ecosystem, the development of new tests and tools that are cost-effective, less invasive and more acceptable to the public, and state-of-the-art evaluation, regulation and uptake. Crucially, we also want people affected by cancer and the public to be actively engaged in shaping the future of early detection and diagnosis.

Over the coming years, we will focus on the priorities identified in the Roadmap, including how big data and artificial intelligence can be used to deliver precision early detection, and we will continue to grow research capacity in the UK. We will build on current initiatives, such as the Alliance for Cancer Early Detection, our £55m transatlantic research partnership, and we will continue to monitor and influence cancer services, influence national cancer plans, share good practice and inform decision-makers of key developments.

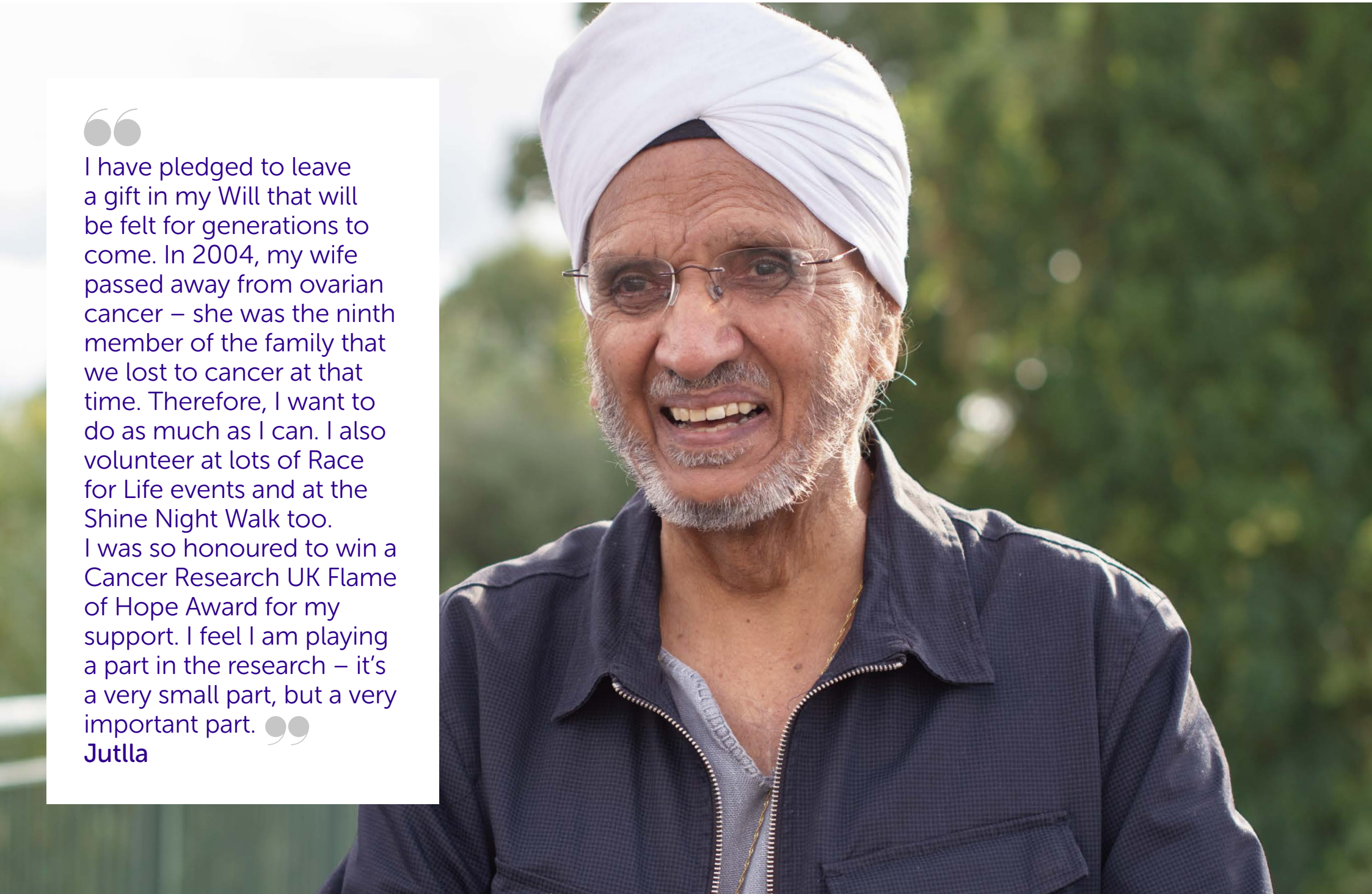
Our impact: Making the case for tobacco control

Tobacco is now widely accepted as the leading preventable cause of cancer deaths worldwide, but this hasn't always been the case. Ever since British researchers Sir Richard Doll and Sir Austin Bradford Hill first discovered the link between tobacco and lung cancer in the 1950s, we have steadily built the case against tobacco – from laboratory studies that helped unravel how tobacco chemicals damage DNA, to population-based analyses confirming its devastating impact on society.

We've also pushed for action, with our researchers' findings forming the cornerstone of our campaigning efforts to reduce the impact of tobacco. In collaboration with other charities, we've taken findings to the heart of government, amplifying our influence in the fight against the tobacco industry and making sure the research we fund has a wider impact and saves and improves lives.

Our coalition has successfully pushed for a ban on tobacco advertising, restricted vending machines and point-of-sale displays and – after years of campaigning – governments in every UK nation introduced bans on smoking in public places. Several years later, we successfully pressed for standardised cigarette packaging to be rolled out across the country.

We've had global impact too, sharing expertise and experience from the UK and funding important research around the world. However, our work is not done. Tobacco continues to be a leading cause of death in the UK and worldwide, so we continue to collaborate with partners to improve tobacco control.



I have pledged to leave a gift in my Will that will be felt for generations to come. In 2004, my wife passed away from ovarian cancer – she was the ninth member of the family that we lost to cancer at that time. Therefore, I want to do as much as I can. I also volunteer at lots of Race for Life events and at the Shine Night Walk too.
I was so honoured to win a Cancer Research UK Flame of Hope Award for my support. I feel I am playing a part in the research – it's a very small part, but a very important part.

Jutlla

Objective: Engage

We inspire millions to join with us in our mission

We're proud of how many people choose to support our mission. In 2020/21, almost a million people gave us a regular donation and around 35,000 volunteered their time, with many more choosing to support us in other ways, such as through our involvement network. Our online cancer information is one of the most widely trusted sources in the UK, with more than 30 million people accessing it each year, while our helpline and Cancer Chat provide a much-needed service for people affected by cancer.

However, to achieve our mission and grow our funding, we must build even greater momentum and urgency around our cause, and engage people in much deeper, more meaningful ways. We need to deliver seamless online and offline interactions, and a service that is personal to them. Technology gives us the opportunity to do this and we have already started work on delivering better digital experiences. We've also seen success with digitally led fundraising models. However, we have much further to go.

Our objectives

1. Build meaningful long-term relationships with people by better meeting their needs and offering them rewarding, personalised experiences with Cancer Research UK
2. Put people affected by cancer at the heart of what we do and involve them in shaping our work as partners
3. Create a step change in our fundraising so that we can increase the funding available to beat cancer
4. Improve everyone's understanding of cancer, including positive action they can take to help prevent it or detect it earlier
5. Increase the breadth and diversity of people who volunteer with us, improve their experiences of volunteering and support them to add value to our work
6. Make Cancer Research UK the go-to organisation for everyone who wants to beat cancer through research

Cancer has consistently been the British public's top charity cause for over a decade*

*Source: nfpResearch, Charity Awareness Monitor, Dec 2021

We will

Strengthen our relationships

- Communicate more compellingly about what we do and why, and better tell the story of how our research leads to improvements in people's lives to connect more people with our mission
- Continue to provide high-quality cancer information to millions of people in the UK and around the world
- Encourage more people to act as advocates for our cause and grow the public's support for cancer research

Offer rewarding and personalised experiences

- Continue to build the technology and tools needed to offer people better and more personalised experiences with Cancer Research UK, and make it easier for people to help beat cancer
- Grow the capabilities and skills needed to make use of the new technologies and tools at our disposal
- Find new, rewarding and exciting ways for people to raise funds to beat cancer
- Offer better experiences and new opportunities for people to volunteer in meaningful ways that suit them

I went through the heartbreak of losing my beautiful wife and soulmate Cazi to breast cancer in 2013. She was so determined to live to the fullest and not let her illness stop her enjoying life. She had a bright, bubbly personality and always helped others. Since losing Cazi, I have dedicated myself to supporting Cancer Research UK so others don't have to face the journey my Cazi did. I feel valued and absolutely love volunteering and know I am helping to make a difference.

Mike

My motivation is still as high as the day I started volunteering, if not higher, and I can't see that changing anytime soon. To me, volunteering means opportunity. It gives me a sense of reward and the chance to meet fantastic people. I'm able to be myself around my colleagues and this is very liberating.

Brett

After I had lost my stepmum to breast cancer and my sister had just been diagnosed with bowel cancer, I strongly felt it was time to lend my voice and time to helping others be diagnosed early and save families from the stress of losing loved ones to the disease.

Effie

Our impact: Paving the way for the elimination of cervical cancer

In 2021, a long-awaited study by Cancer Research UK scientists was published in *The Lancet*. It proved what many had hoped: that vaccines against certain strains of the human papillomavirus (HPV) effectively prevent cervical cancer. This marked the culmination of a global scientific journey that began in the early 1980s, crossed sectors and national boundaries, and in which discoveries made by our researchers feature prominently.

The key observation that HPV caused cervical cancer was made by German virologist Professor Harald zur Hausen in 1983. This prompted researchers at our Beatson Institute in Glasgow to begin the search for a vaccine. In 1993, their proof-of-concept vaccine was shown to be effective against papillomavirus infection in cows.

Then, in 1999, analysis by Cancer Research UK researchers, led by Professor Julian Peto, revealed the link between HPV and cancer was much stronger than expected. They showed that the virus accounted for almost all cases of the disease, bolstering the case for a vaccination programme. Ultimately, it was work by Australian and US researchers, together with partners in industry, that resulted in the first vaccines approved for use. But again, our researchers played a role by helping to run the UK arms of pivotal vaccine trials and contributing to the scientific understanding of the HPV virus itself.

The effectiveness of vaccines together with national screening programmes, which have also had an enormous impact, now allow us to plan towards the global elimination of cervical cancer as a public health problem – the first cancer for which this is possible. The World Health Organization estimates that over 60 million deaths could be averted during the next century as a result. This is a landmark achievement and a testament to the power of science and global collaboration.

> “My cancer was diagnosed through the screening programme and I needed a hysterectomy. I think the HPV vaccine is an amazing advance and I wish I’d had the chance to be vaccinated to save this happening to me”
>
> Justine, 34, cervical cancer survivor

Objective: Partner

We partner with organisations to have the biggest possible impact

Many organisations share our mission of beating cancer, and we already work with more than 120 partners and philanthropists in the UK and around the world.

We partner with international research organisations to support collaboration and help drive a shared cancer research agenda. We also partner with industry and health systems to translate discoveries into the impact we want to see for people with cancer and the public. And we continue to pull together with other cancer charities to speak to UK governments and the NHS with One Cancer Voice.

However, there is scope for much broader and deeper collaboration. Working more closely with partners – including philanthropists, governments, businesses and other not-for-profit organisations – means we can pool resources, skills and knowledge, and make every pound we spend go further.

We can't wait for others to lead the way. We are perfectly placed to bring different organisations together around our mission so that we can save and improve lives for decades to come.

Our objectives

1. Increase the scale, breadth and impact of our partnerships in the UK and globally, amplifying the resources and expertise we can collectively bring to beating cancer
2. Partner with other charitable and research organisations to share resources and expertise, and reduce duplication
3. Work with our partners to make sure that there is sustainable and appropriate support for UK cancer research and infrastructure
4. Partner with philanthropists in the UK and globally to expand the scope of research that we can support, pursue new questions and approaches, and grow our shared impact

We work with more than 120 partners and philanthropists around the world

We will

- Build on our transformative partnerships with the US National Cancer Institute and other global cancer funders to drive a shared global cancer research agenda
- Continue to scale Cancer Grand Challenges as a global platform to tackle the biggest challenges in cancer research, bringing in a greater diversity of partners to secure long-term impact, and exploring further opportunities to stimulate global team science
- Form new cross-sector consortia – of researchers, research institutes, health systems, businesses, people with cancer and the public – to drive shared strategic priorities, such as the early detection and diagnosis of cancer and the availability of health data for research
- Continue to partner with organisations working on other diseases with common risk factors or mechanisms (such as obesity), and with other charities and cancer coalitions in England, Scotland and Wales
- Work with businesses from a range of sectors, including the pharma, medtech and technology sectors, to help turn research findings into interventions that can benefit people more effectively and quickly
- Work with UK funders (particularly the Medical Research Council and National Institute for Health Research) and university partners to secure sustainable research environments and maximise the impact of our funding
- Partner more closely with philanthropists around the world to build transformative new approaches to cancer research

> Since establishing The Mark Foundation for Cancer Research, we have striven to fund and support bold, pioneering research across the globe with the potential to transform the next generation of treatments and diagnostics for cancer patients. Partnering with Cancer Research UK has been especially rewarding and has helped us to accelerate progress towards achieving our philanthropic mission. Cancer Research UK is an organisation that thinks globally, works collaboratively and seeks to achieve transformational impact. Working together allows us to accelerate our shared vision and we look forward to continued cooperation.

Alex Knaster
Founder, The Mark Foundation for Cancer Research

In focus:
Team science on a global scale

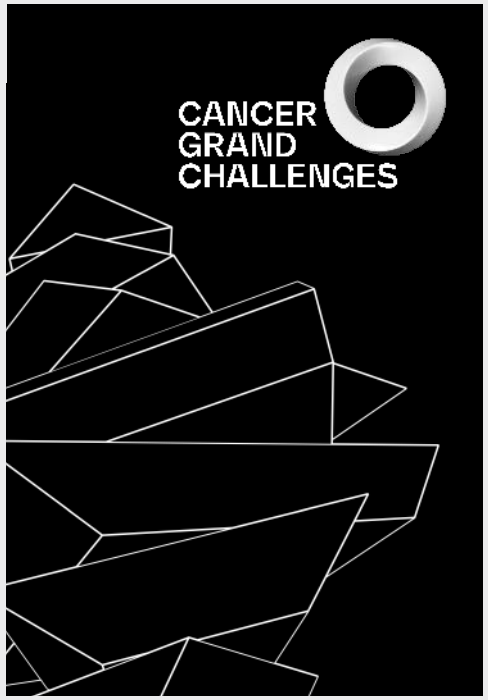
Science is inherently global, and to make rapid progress for people affected by cancer in the UK and beyond, we need multinational collaborations more than ever. In 2020, we joined forces with the US National Cancer Institute to found Cancer Grand Challenges, a global initiative that supports diverse teams of researchers from around the world to come together, rise above the traditional boundaries of geography and discipline, and take on some of cancer's toughest challenges.

"The Cancer Grand Challenges approach – its size, its scope, its tolerance of risk – lets us expand our mindset beyond the confines of traditional boundaries, turbocharging our ability to answer important questions," says Professor Thea Tlsty from the University of California San Francisco, the principal investigator of the Cancer Grand Challenges STORMing Cancer team.

Another team of more than 60 investigators, led by Professor Sir Mike Stratton from the Wellcome Sanger Institute in Cambridge, is exploring how different causes of cancer leave unique patterns of damage on our DNA, with the hope of understanding why the incidence of certain cancer types varies so dramatically around the world. A global approach is needed to crack this challenge, so the Cancer Grand Challenges Mutographs team is working with collaborators across 26 countries.

Among other important findings, this collaboration has unearthed new information which could be key to finding new ways to prevent cancer. "The structure, scale and international scope of our programme has, to our knowledge, never previously been attempted," says Stratton. "Bringing this together has required team-working across the globe that is unparalleled in our experience and all enabled by the ambition, structure and flexibility of Cancer Grand Challenges funding."

Through Cancer Grand Challenges, we currently fund a growing community of more than 600 people across nine countries. Over the next decade, we want to go even further, supporting more teams to take on some of the toughest challenges in cancer, and continuing to grow one of the most important initiatives in global cancer research.



Professor Sir Mike Stratton
Principle Investigator of the Mutograph team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Objective: Sustain

We build the foundations for sustainable long-term progress against cancer

Beating cancer is a long game. That's why we must make choices now that will give us the platform from which to make progress in the years and decades ahead. We must become a truly sustainable organisation – environmentally, inclusively, financially and operationally – if we are to achieve our mission. This means considering the sustainability of our operations, research, fundraising activities, supply chains, investments, products and partnerships. And it means being a diverse and inclusive organisation, bringing in the best ideas and being reflective of the people and communities we serve.

Climate change, environmental sustainability and social inequality are critical challenges of our time. We must play our part in tackling them, particularly where they intersect with our mission of beating cancer. We will show leadership in areas where we can make the biggest difference – for example, by focusing on identifying more sustainable ways to undertake research, understanding the impact of environmental factors on cancer, tackling cancer inequalities and leading the way on fundraising that has a positive impact on our communities and the environment.

We will invest in our brilliant people – including our staff, researchers and volunteers – giving them the skills and capabilities they need, and creating an environment where people feel like they belong and can do their best work. We also need to invest in new technologies, so we can adapt to the huge changes they will bring to everything we do.

Our research requires long-term, sustainable financing. We are committing to spend at least £1.5bn on research over the next five years and are confident that we can achieve this. However, we know there is more world-leading research we could support, so our ambition is to grow our financing well beyond this.

In England, the mortality rate for all cancers combined is 53% higher in the most deprived populations compared to the least deprived*

*Source: Cancer in the UK 2020: Socio-economic deprivation (Cancer Research UK report)

Our objectives

1. Create a charity where everyone feels like they belong and participates in and benefits from the work we do, so that together we realise the vision laid out in our Equality, Diversity and Inclusion (EDI) strategy
2. Make sure all our people have the skills, capabilities and ways of working they need to succeed in a changing and more technologically enabled world
3. Embed environmental sustainability in all that we do, and influence our partners to do the same
4. Build diverse and sustainable sources of financing for cancer research over the long term
5. Improve the agility, efficiency and cost-effectiveness of our operations, using technology and data to enable significant improvements
6. Be a great organisation to work for and one that our people are proud to be part of

We will

- Continue to take action on our EDI strategy, including reducing inequalities, developing a diverse and inclusive research workforce and culture, and engaging with people in ways that are inclusive and accessible
- Take the long-term view of both our research and fundraising investments, making sure that we can sustain our research commitments and give comfort to our research community
- Continue to explore new ways of financing our work
- Develop and implement an ambitious roadmap to improve our environmental sustainability and reduce our carbon footprint, including working with the institutions that we fund
- Better understand the links between climate, health and cancer, for example in areas such as air pollution, and build the evidence base to inspire change
- Develop a focused approach to reducing cancer inequalities
- Deliver fundraising and trading initiatives that are environmentally and socially sustainable
- Make sure that our staff and volunteers are inspired and supported, and have the tools and skills they need to do their best work in a flexible and effective environment
- Make improvements to our processes, tools, ways of working and governance so that we are as cost-effective and well-run as we can be

In focus:
Beating cancer for everyone

In 2020, we launched our Equality, Diversity and Inclusion strategy. In it, we commit to a number of things, including:

- Becoming a more diverse and inclusive workplace for all our researchers, staff and people who volunteer with us, so that everyone feels like they can succeed and belong at Cancer Research UK
- Using our influence to tackle the inequalities in cancer provision and outcomes, because beating cancer means beating it for everyone
- Making sure the information we provide is accessible to all
- Addressing underrepresentation in our clinical trials

Delivering on these commitments will make us a better organisation and have a positive impact on our ability to beat cancer.

Since the strategy launched, we have:

- Challenged inequalities through our influencing work – for example, with the publication of our tobacco and inequalities report, 'Making Conversations Count for All', and through our health community engagement targeted to areas of high deprivation
- Demonstrated our commitment to an equal, diverse and inclusive research workforce and environment in our EDI in Research Action Plan (including publishing our diversity data for the first time)
- Prioritised work to help all our people feel that they belong at Cancer Research UK, including providing new learning resources, broadening our employee networks, and better understanding the views and needs of staff and people who volunteer
- Reviewed our recruitment practices, including introducing anonymous CVs, inclusive recruitment training and relaunching a more inclusive early careers programme

We are proud of the progress we've made, though we recognise this is just the start. We need to keep building on our commitments and make meaningful progress towards meeting them.

Evaluating our progress

To make sure we deliver against the objectives laid out in this strategy, we will evaluate our progress as we go and use the findings to learn and re-evaluate our approach.

As well as measuring ourselves against a framework at regular intervals, we will also carry out an in-depth assessment in three years' time.

We will use a variety of quantitative and qualitative measures that are appropriate to the change we're attempting to evaluate. For example, we will use short-term indicators to chart progress where our ultimate objectives could take a long time to realise. Where possible, we will look to isolate our contribution from other external factors to get a true picture of our impact.

Objective	Examples of how we'll measure our progress
Discover: We make discoveries about cancer that unlock new and better ways to beat it	• Quality of our research portfolio (eg citation index, expert review) • Health of the UK's cancer research and development ecosystem (eg funding available)
Translate: We drive scientific discoveries forward into interventions that benefit everyone	• Researcher engagement with translational activity • The quantity and progression of discoveries • Policy recommendations adopted by governments in all four UK nations
Engage: We inspire millions to join with us in our mission	• The number of people that we engage with and quality of their experience • The positive action we inspire in support of our mission
Partner: We partner with organisations to have the biggest possible impact	• Impact of partnership initiatives • Strength and breadth of relationships with philanthropic partners • Additional leveraged funds towards our mission
Sustain: We build the foundations for sustainable long-term progress against cancer	• Our environmental footprint • Delivery against our EDI commitments • Staff engagement • Organisational efficiency and pace of delivery • Balance of income streams in our financial portfolio

Acknowledgements

We're hugely grateful to everyone who helped us develop this strategy, including members of the research community, key opinion leaders, and our staff, Advisory Boards, Members and Trustees. Their breadth of views and depth of insight proved invaluable.

We are particularly indebted to the more than 60 people affected by cancer – from within our Patient Involvement Network and from diverse and underrepresented backgrounds – who gave up their time to talk about their experience and share their views. As an organisation that exists to beat cancer and bring hope to people affected by it, it's critical that our strategy reflects their needs. We remain committed to inclusive public involvement and make sure that people's lived experiences of cancer guide, shape and inform everything we do.

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Together we will beat cancer