ICR The Institute of Cancer Research

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"I promised I wouldn't stop until she was saving lives."
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Our mission is to make the discoveries that defeat cancer.

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Editorial

While so many are focusing on tackling coronavirus, we cannot take one eye off cancer, and risk cancer patients being left behind.

Last year a survey of our scientists revealed their fears that the pandemic has delayed advances in cancer research by almost 18 months. It highlighted the urgent need for us to keep our labs open, to prevent further disruption and to make up for lost time. So I am pleased to tell you that through the latest lockdowns, our vital research has been able to continue. We are having to work in different and often complex ways, with safety measures and site restrictions in place to keep our staff and students safe – but with your support, we have been able to push on with our work.

Despite the challenges posed by the coronavirus, we are still making major strides in our mission to make the discoveries that defeat cancer – and these discoveries are helping more patients to live well with their disease. On pages 14-15 you can read about how we're using computational analysis of pancreatic cancers to select patients for more effective, personalised therapies and improve stubbornly low survival rates. And as Dr Matthew Blackledge explains on pages 10-11, we can also use these innovative AI technologies to better assess how treatment is going.

While uncertainty and keeping physically distanced from one another may have become the norm, it is my hope that we can all come together to support research that will improve the lives of people with cancer and ensure they are able to have as much time as possible with loved ones.

Your support is more important than ever, so thank you again.

Lara Jukes
Director of Development
The Institute of Cancer Research

Blood tests could match women with breast cancer to precision treatments

In a major clinical trial led by researchers at the ICR and The Royal Marsden, we found that a blood test can identify mutations in advanced breast cancer and match women to precision therapies.

The plasmaMATCH trial tested more than 1,000 women with advanced breast cancer. It provides the strongest evidence yet that simple blood tests can track breast cancer as it evolves, and direct women to the most effective treatments.

The team, led by Professors Nick Turner and Judith Bliss, showed that the blood test is reliable enough to be offered to patients on the NHS. These results could lay the foundation for liquid biopsies to become a standard part of care for patients with breast cancer, and speed up access to the latest drugs.

Professor Judith Bliss

New experimental cancer drug could help treat deadly childhood cancer

Our scientists have found that a new cancer drug that has passed safety tests in adults could help treat the childhood cancer neuroblastoma.

The drug fadraciclib targets a gene which can be mutated in children with high-risk neuroblastoma, an aggressive cancer that requires intensive treatment.

The researchers, led by Professor Louis Chesler, showed that fadraciclib was effective at killing neuroblastoma cells in the lab and successfully blocked the cancer's growth in mouse models. When used together with chemotherapy, the drugs shrank the tumours to the point of virtually eradicating them.

Clinical trials for fadraciclib will next be carried out as part of an international clinical trial designed to radically widen the scope of treatments available for children.

Study sheds light on genetic basis of Black men's higher prostate cancer risk

Our researchers have led work as part of an international team to uncover a range of genetic changes that increase the risk of Black men developing prostate cancer, compared with White or Asian men.

The study, which was the largest and most ethnically diverse genetic analysis of men with prostate cancer, revealed a set of 86 changes in DNA that influence the risk of developing the disease.

Black men are known to be at an increased risk from prostate cancer, and there is an urgent need to understand their risk profile to detect the disease earlier.

Study co-leader Professor Ros Eeles said: "Our findings could help guide and transform screening strategies, so that prostate cancer in men at high risk can be caught as early as possible."

86

The number of newly identified DNA changes that influence the risk of developing prostate cancer

Professor Udai Banerji

Cancer drug for difficult target shows potential against a range of cancers

A clinical trial led by a team at the ICR and The Royal Marsden has shown a drug designed to counter the effects of an important cancer mutation, which is hard to target, could be effective against a range of tumours.

The drug targets tumours with mutations to the gene KRAS, one of the most commonly mutated genes in cancer.

For the study, patients took the drug twice a week. There were promising responses in over a quarter of those with highly advanced, incurable cancers, including lung cancer and multiple myeloma.

Professor Udai Banerji, Deputy Director of Drug Development at the ICR and The Royal Marsden, said: "We are conducting further studies combining this drug with other novel treatments, and hope we can open the door to new options for patients with a hard-to-treat group of cancers."

Alice's Arc pledges more funds to childhood cancer research

Alice's Arc is a children's cancer charity set up by Sara and David Wakeling following their daughter Alice's diagnosis with stage four rhabdomyosarcoma. Alice was three when she was diagnosed and died two weeks before her 8th birthday in 2019.

The charity is dedicated to funding research to find a cure and kinder treatments for rhabdomyosarcoma, the most common type of sarcoma found in the soft tissues of children.

We are delighted that Alice's Arc has chosen to support us for a further three years with a pledge of more than £600,000.

Alice's Arc has already been a big supporter of our research projects. It has for instance funded Dr Olivia Ruhen's research to develop a blood test for children with rhabdomyosarcoma, to monitor the progression and recurrence of their disease. The charity's new pledge will support three projects, and will enable Olivia's work to continue.

Alice Wakeling

> "Cancer is a devastating disease for anyone to have to experience, but it seems particularly unfair that children, who ought to be able to grow up happy and carefree, should have to endure such a cruel burden. I am determined to do whatever I can to help alleviate that burden. I am incredibly proud and grateful to have the continued support of Alice's Arc.
>
> **Dr Olivia Ruhen**

Christmas appeal raises £150,000

We are hugely grateful to all of you who kindly supported our Christmas appeal. So far an incredible £150,000 has been donated to help get Dr Alejandra Bruna's research into childhood cancers up and running.

Dr Bruna is a new Team Leader, based in our Centre for Cancer Drug Discovery. Her team use cutting-edge 'avatars' to replicate a child's cancer in the lab. These avatars, which are at the frontline of personalised cancer medicine, will help them to understand how childhood cancers adapt and become resistant to treatments.

With major fundraising events cancelled and cuts to our research grants as a result of the pandemic, your support is more important than ever to make sure that cancer patients don't get left behind.

There is still time to donate to our childhood cancer appeal. Visit www.icr.ac.uk/hopeforchildren

Your Marathon, your way: How the London Marathon went virtual in 2020

The coronavirus pandemic has affected all of our lives and led to many key events being cancelled. But that hasn't stopped our supporters.

Though last year's London Marathon became a race for elite runners only, many of our #teamICR runners worldwide joined in the virtual race instead. On 4 October they ran their 26.2 marathon miles in their local areas – some as far away as Australia.

Mark Gray ran the London Marathon for us in 2019, and was due to run again in 2020. Instead he took part in the virtual marathon, running 13 laps of his local park, joined by members of his running club, with his friends and family cheering him on. Mark's efforts were all the more impressive because he spent time in hospital with coronavirus earlier in 2020.

Thank you to all those who continued to fundraise for us, despite the pandemic.

Mark Gray at the finish line

Actor Eddie Redmayne guest stars in virtual Carols from Chelsea service

For the past 17 years, our flagship annual fundraising event, Carols from Chelsea, has been held in the Wren Chapel of The Royal Hospital Chelsea. That wasn't possible last Christmas, because of the coronavirus pandemic – so instead, we recorded a virtual concert to share with supporters, who generously donated £60,000 in response.

The recording featured Oscar-winning actor Eddie Redmayne giving a special video performance of Alan Titchmarsh's poem, 'A New Nativity', alongside a moving tribute to Abbie Shaw, who lost her life to cancer aged just five. The service also included beautiful carols and music directed by award-winning British conductor and pianist Will Vann.

Lara Jukes, Director of Development, said: "Although we weren't able to come together in the usual way this year, we were delighted that our recording of Carols from Chelsea brought joy at a difficult time. Our service reminds me of the great importance of cancer research and how it makes a real difference to patients' lives."

Our staff go the extra mile

Our staff and students are no strangers to a fundraising challenge, and many of them have joined #teamICR over the years. With the coronavirus pandemic bringing most fundraising events to a halt, we have seen varied and creative fundraising efforts from our colleagues. Here are just a few examples:

Dr Vivian Dimou is a Postdoctoral Training Fellow in the Cancer Immunotherapy Team. She taught herself to crochet during the first lockdown, and wasted no time putting her new skills to use. Vivian created fantastic science-themed crochet characters including a microscope, flasks and pipettes, and sold them on eBay – raising £219 for our kick-start appeal. And she didn't stop there – for our Christmas appeal, she created a range of crocheted festive friends, featuring a poinsettia, a reindeer, a polar bear and more, this time raising over £400.

Dr Roxanne Smith is a Postdoctoral Training Fellow in the Cancer Therapeutics Unit – and she's also a very talented paper crafter. Roxanne created a beautiful scrapbook picture frame and cards to support our appeal, and raised more than £300 in donations.

Team members from our Division of Cancer Therapeutics (CTU) took part in a 15K run in November to support our kick-start appeal, raising £2,000. The team had originally hoped to run together, but the second lockdown meant they ran separately, staying local, and encouraging each other via WhatsApp instead.

We are very proud of our colleagues for their fundraising efforts. Their spirit, drive and determination to succeed in improving cancer patients' lives and desire to make a difference does not stop when they leave the lab.

"After running the Royal Parks half marathon in 2019 and raising funds for the ICR, I wanted to organise something to keep spirits high, do something as a unit and raise money for the kick-start appeal. I love a challenge, and I am so proud to have been part of the CTU running team!"
Selina Mote, CTU

Bob Champion Cancer Trust launches 40for40 campaign

Bob Champion was diagnosed with testicular cancer at the height of his racing career. The dream that kept him going, through the long months of chemotherapy, was that one day he might win the Grand National on Aldaniti – who had sustained a serious leg injury.

Bob Champion at an ICR event

Against all the odds, in 1981 his dream came true. Described as 'racing's greatest fairy-tale', Bob claimed victory riding Aldaniti after his full recovery from cancer. The Bob Champion Cancer Trust was later created and to date has raised more than £15 million towards cancer research.

Now, 40 years since that memorable day at Aintree, the Trust has launched the 40for40 campaign. It celebrates the major research discoveries the Trust has helped to make possible and encourages people to take up sponsored challenges which involve the number 40.

The Trust has been funding male cancer research at the ICR, and our hospital partner The Royal Marsden, for many years – with a focus on understanding cancer risk and, more recently, predicting the evolution of a patient's cancer. Here are a few of the major milestones along the way:

- In 1989, clinical trial results confirmed the impact of both treatment intensification and less-toxic carboplatin chemotherapy in testicular cancer.
- In 2000, the first research facility in Europe dedicated to male cancers opened on our Sutton site.
- In 2012, preliminary results from the CHHiP trial demonstrated the safety of high-dose short-course IMRT radiotherapy in prostate cancer. Just a few years later this changed clinical practice in the NHS, with 20 sessions of radiotherapy recommended instead of 37.
- In 2013 we discovered that the measurement of genetic fingerprints in blood can predict the outcome in metastatic prostate cancer.

For more on the 40for40 campaign, visit www.bobchampion.org.uk

"I am very proud of the advancements the Trust has made with the ICR and look forward to the future."
Bob Champion CBE

Events calendar

People of all ages have been discovering the joys of running or walking to keep fit and healthy during lockdown, and sporting events like the London Marathon are increasingly accessible and inclusive. It's now possible for people of all abilities to fulfil a lifelong sporting ambition, while staying in their local area.

Not only are we recruiting runners for the Virtual Virgin London Marathon this year, registration for the 2022 London Marathon next April has also opened. For shorter distances, or if you're looking for a more leisurely pace, the UK Terry Fox Run and the Royal Parks Half Marathon are taking place this October.

Upcoming events

Virgin London Marathon
Sunday 4 October 2021

UK Terry Fox Run
Sunday 4 October 2021

Royal Parks Half Marathon
Sunday 10 October 2021

Virgin London Marathon
Sunday 24 April 2022

For more information visit icr.ac.uk/sports

Dr Matthew Blackledge

Dr Matthew Blackledge leads the Computational Imaging Team in the ICR's Division of Radiotherapy and Imaging. His research is using artificial intelligence (AI) to interpret medical imaging and take faster MRI scans of patients with cancer.

Joined the ICR
October 2007

Specialist subject
Using artificial intelligence to improve cancer treatment and assessment

Interests
Matthew is a keen runner who has run half-marathons. He also plays for our softball team in the summer with colleagues.

> “When people go for whole-body MRI scans, it can take about an hour for each patient, which is uncomfortable for patients and puts pressure on radiology departments. So we’ve focused on AI applications that can accelerate imaging.

Dr Matthew Blackledge and his team are using sophisticated computing technology to better plan and assess cancer treatment. He joined the ICR as a PhD student in 2007, after doing a degree in physics at Imperial College London and a master’s degree in medical physics at the University of Surrey.

Medical imaging is being used more and more by the NHS, and techniques like AI are helping to explore the vast quantity of data produced.

Using AI and machine learning, researchers can probe medical imaging in interesting new ways, to assist radiologists and clinical oncologists when personalising patient treatments including radiotherapy.

Dr Blackledge is investigating ways to monitor prostate cancer that has spread to patients’ bones using a type of medical imaging called whole-body MRI, which takes head-to-toe scans of a patient’s body to measure tumours in their skeleton.

He uses a specific type of MRI that uses electromagnets to tune in to water molecules in the body. It’s highly effective, as water makes up 65% of all our cells.

Whole-body MRI can tell doctors a lot about tumours and if treatments are working. But scans can take a long time, which not all hospitals can manage.

Dr Blackledge said: “When we carry out whole-body MRI scans, it can take about an hour for each patient, which is uncomfortable for patients and puts pressure on radiology departments. So we’ve focused on AI applications that can accelerate imaging.”

This whole-body MRI technique normally uses results averaged from several scans to build a useable image of the skeleton. Dr Blackledge and his team have shown that AI can mimic the averaging process, producing a clinically acceptable image from just one scan.

With the support of AI, they can measure tumours in the skeleton more quickly, to see if radiotherapy is proving effective or if there are tumour cells that are resistant to it. That can help doctors to make faster, better decisions about treatment.

Professor Axel Behrens

Professor Axel Behrens joined us in 2020 as Team Leader in Cancer Stem Cell Biology. His research focuses on a small subset of cells in tumours called cancer stem cells. Professor Behrens also heads up the Cancer Research UK Convergence Science Centre, a major strategic collaboration between the ICR and Imperial College London.

Joined the ICR
2020

Specialist subject
How identifying and killing cancer stem cells could help make therapies more effective.

Interests
Professor Behrens is an enthusiastic squash player and is looking forward to playing again once the pandemic has subsided.

> “Professor Behrens and his team have already uncovered a group of cancer stem cells in pancreatic ductal adenocarcinoma – a highly aggressive cancer that has seen virtually no improvement in patients’ survival for more than 40 years.

Just as our bodies have healthy stem cells that can specialise into different cell types and repair damaged tissue, cancers have similarly functioning cells capable of maintaining tumour growth and survival, even after chemotherapy.

These long-lived stem cells are crucial to regenerating tumours, allowing them to evade or become resistant to current treatments. They are also thought to play an important role in cancer’s spread to other parts of the body.

The main goal of Professor Behrens’ personal research is to identify stem cell populations in different types of cancer, including pancreatic and breast cancers, so they can be targeted by novel drugs and therapies. By collecting and studying cancer stem cells to find out what they are vulnerable to, we can devise ways of killing them to ensure that tumours won’t grow back.

Professor Behrens and his team have already uncovered a group of cancer stem cells in pancreatic ductal adenocarcinoma – a highly aggressive cancer that has seen virtually no improvement in patients’ survival for more than 40 years. The team is now leading work to create new treatments targeting these stem cells, providing hope for patients with pancreatic cancers that they will be able to live much longer with the disease before it returns.

His work to create highly personalised cancer treatments involves culturing mini tumours in the lab that are derived from patients’ own tumours, and so possess the same key characteristics. Professor Behrens has also helped to develop a pioneering technology that allows whole tumours to be imaged in 3D to provide unprecedented insight into their structure.

It is because of his expertise in interdisciplinary research like this that Professor Behrens has been recruited to lead the new Convergence Science Centre. The Centre is dedicated to improving our understanding of cancer by bringing together researchers from traditionally separate and distinct disciplines – for example physics and engineering together with biology and drug discovery – to work together as collaborative, integrated research teams and shed new light on unresolved problems in cancer research.

Photo Credit: Dave Guttridge, The Francis Crick

Taking a personalised approach to aggressive pancreatic cancers

Pancreatic cancer is notorious for being highly aggressive and difficult to treat. Only one patient in four in England survives more than one year from diagnosis and just seven per cent are still alive after five years. Survival rates for this disease have barely improved at all in the last three decades.

More than 90 per cent of cases of pancreatic cancer are pancreatic ductal adenocarcinoma – a disease that starts in the exocrine cells of the pancreas where digestive enzymes are produced. Pancreatic tumours can often grow and spread unnoticed by the immune system and cause few symptoms, so that by the time they are diagnosed it may be too late to treat the disease effectively.

But now our scientists are beginning to make progress in finding new, more personalised approaches to treating pancreatic cancer. This will offer some hope of a longer and better quality of life for patients and their families – people like Roy Bowdery, who was diagnosed with pancreatic ductal adenocarcinoma in 2014.

Roy recollects: "When I got the diagnosis, my wife and I burst into tears. Pancreatic cancer is the most fatal of all common cancers – it's really brutal. I've been cancer-free for six years, and now my aim is to get into the five per cent who survive 10 years. The figures haven't really improved in the last 40 years. There needs to be research, so more people will survive and get a chance at life."

Roy Bowdery with his daughters

Understanding the immune landscape

To improve the odds against this disease, we are using computational analysis of pancreatic cancers to find ways to select patients for more effective, personalised therapies. Dr Anguraj Sadanandam, Team Leader in Systems and Precision Cancer Medicine, is combining use of artificial intelligence (AI) with experimental and clinical studies. He aims to shed light on the different subtypes of pancreatic cancer and the best therapies for patients with each one.

The team is particularly interested in using AI to select those patients who are most likely to respond to immunotherapy – a breakthrough type of treatment which directs the body's own immune system against cancer cells. As pancreatic cancer often evades the immune system, many patients do not respond to immunotherapy, but there are some patients who could significantly benefit from it.

Dr Anguraj Sadanandam

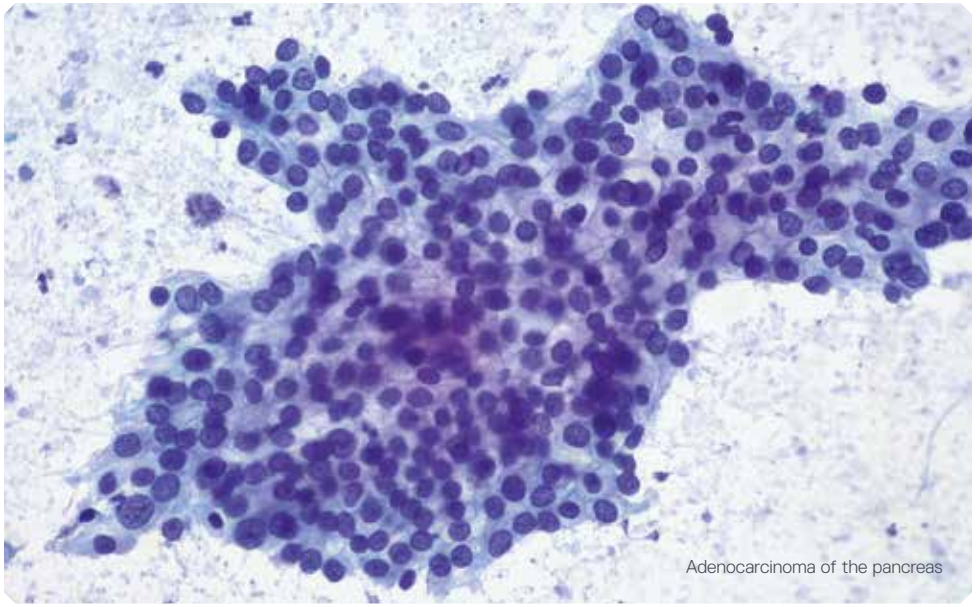
Uncovering potential targets

Dr Sadanandam said: "Unlike other cancers – for example breast cancer, where huge advances have been made using machine learning approaches – no major developments have been made for pancreatic cancer in decades. Computationally, it's very important to understand the immune landscape of pancreatic cancer, to help us to develop therapeutics and diagnostics that could lead to personalised treatment."

AI has allowed researchers to analyse hundreds of patient tumour samples at a time and to spot patterns within that data. Last year a global team led by Dr Sadanandam used AI to analyse the immune response in a rare type of pancreatic tumour called pancreatic neuroendocrine cancer. The researchers were able to pinpoint tumours that hijacked the immune system, and uncover potential targets for immunotherapy to prevent tumours from evading the body's defences.

Dr Sadanandam's multidisciplinary approach has also included a first-of-its-kind study that classified pancreatic ductal adenocarcinoma tumours into various subtypes and described the different ways each type responds to treatment. This work has in turn spurred the discovery of further tumour groups by other research teams. His team is now validating these findings, with the goal of eventually offering tailored medicine to individual patients.

Taking a personalised, multi-faceted approach will be essential to overcome such a complex and aggressive disease as pancreatic cancer, and to improve prospects for patients like Roy. Dr Sadanandam and his team are helping to lead the way – addressing a cancer where patients' needs have been unmet for too long.



Adenocarcinoma of the pancreas

A historic moment: **25 years since BRCA2 discovery transformed cancer care**

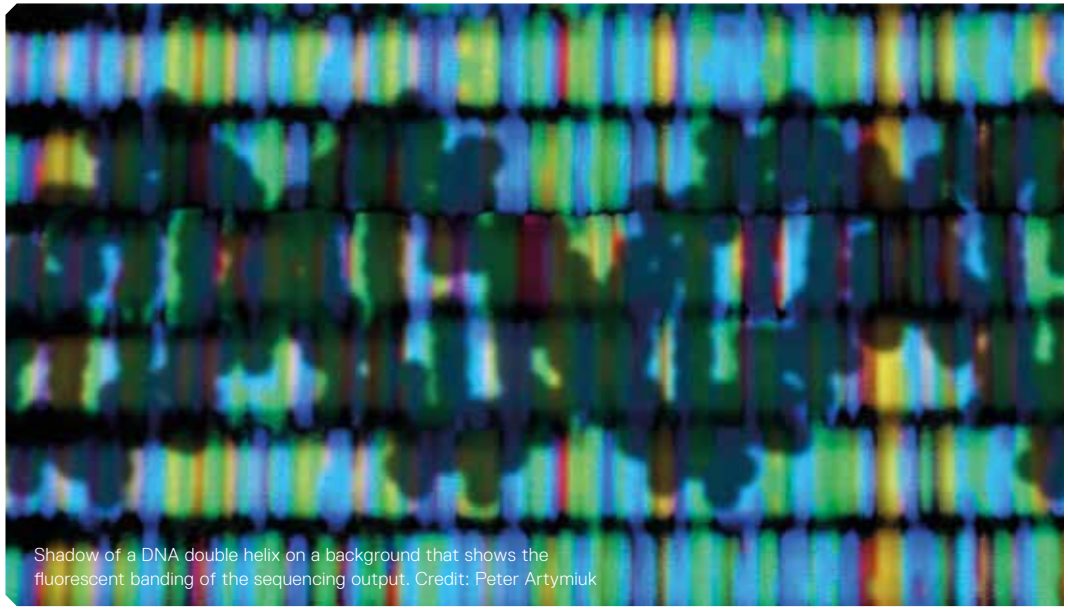
In December 1995, a research team led by our scientists identified the second breast cancer susceptibility gene, BRCA2. The discovery – published in Nature – was a global sensation, and has gone on to transform genetic testing for people with cancer and their families, and open up exciting new forms of cancer treatment.

Back in the early 1990s, researchers around the world were engaged in a race to identify genes helping to determine breast cancer risk. Researchers in the US first identified the BRCA1 gene in 1994 – but while this explained many inherited cases of breast cancer, scientists were sure that there was another important gene out there.

In 1994, a research team led by our scientists, in a huge international collaborative effort, was able to map the BRCA2 gene to part of chromosome 13. The following year they detected the first potentially disease-causing mutation. Studying the gene where it was located, they found six mutations that could be passed on by parents and were seen in families with a history of cancer.

The 1995 paper's conclusions were clear: 'This is the BRCA2 gene.'

BRCA1 and BRCA2 are genes that we all carry. These genes normally protect us against cancer. But if you inherit mutations of these genes – 'faulty' versions that don't work as they should – this increases your risk of developing cancers including breast, ovarian and prostate cancer.



Shadow of a DNA double helix on a background that shows the fluorescent banding of the sequencing output. Credit: Peter Artymiuk

The BRCA2 discovery has had a huge impact on progress in understanding and tackling cancer worldwide – both for cancer prevention and treatment. Widespread BRCA testing has enabled families to be assessed for their cancer risk, saving countless lives.

Discovery of the BRCA genes has also led to the development of better, targeted treatments. These include a new class of drugs known as PARP inhibitors, such as olaparib, which exploit a weakness in cancer cells caused by mutations in BRCA genes.

Olaparib is today used to treat ovarian and breast cancers in women with inherited BRCA mutations. Our research, which underpinned the drug's development, has also led to it becoming the first genetically targeted medicine to show benefits in prostate cancer.

Professor Ros Eeles, Professor of Oncogenetics, said: "It was an honour to be part of the team behind the BRCA2 discovery. It has played a pivotal role in advancing research on breast, ovarian and prostate cancer over the years and continues to have a lasting impact. The discovery has been life-changing, and life-saving."

> "The BRCA2 discovery has had a huge impact on progress in understanding and tackling cancer worldwide.

Tony Herbert and his wife Brenda

"Knowing I had the BRCA2 mutation saved my life"

"When I was 68, I was diagnosed with stage 3 male breast cancer. It was recommended I go for genetic testing because my sister had also had breast cancer, and it was then discovered I had the BRCA2 gene mutation.

Having this mutation meant I was at an increased risk of developing prostate cancer, so my consultant encouraged me to join the IMPACT study, led by the ICR, which involved regular screening of men with high-risk gene mutations.

I've been going for annual blood tests since joining the study and, two years ago, it was discovered that my PSA levels had risen. Although the result wasn't that high, I was referred straightaway as I was known to be at higher risk, and I was then diagnosed with prostate cancer.

I've had 37 sessions of radiotherapy and am now taking a hormone therapy which I'll have for three years.

Knowing I had the BRCA2 mutation effectively saved my life. Thanks to this discovery, my prostate cancer was caught early, and I was able to receive the treatment I needed and get straight back to normal life. Now my wife and I are planning our next adventures together. I'm looking forward to carrying on living the life I want with her by my side."

What Covid-19 can tell us about the causes of cancer

Professor Sir Mel Greaves ponders if the traumatic Covid-19 experience could have one unexpected benefit – by telling us about the causes of childhood cancer

The Covid-19 pandemic is a dramatic and traumatic example of the impact of a new viral infection let loose on a host population that is highly social and mobile. But at the same time it provides opportunities. It is in essence a giant experiment of nature – and I believe it can give us valuable clues about the causes of childhood cancer.

Experiments of nature are events that arise naturally, by accident or sometimes as a result of human behaviour, and which to shrewd observers can reveal something about the world which up to now has been cryptic.

We have been learning about the causes of cancer from experiments of nature for many years. It's been recognised for centuries that nuns in convents have relatively high rates of breast cancer and vanishingly low rates of cervical cancer. This observation offers valuable clues to their causes. We now know that not having children increases the risk of breast cancer and that sexually transmitted human papillomavirus causes cervical cancer.

Natural experiments have also provided vital clues aiding our attempts here at the ICR to unravel the cause of childhood leukaemia. In 2003 the SARS epidemic led to Hong Kong closing all its schools for a year. That social change removed major, contact-based sources of common childhood infections. The consequence was a significant drop in infectious diseases such as measles during that year. And there was also a decline in cases of childhood leukaemia.

That specific drop in the incidence of leukaemia, and not of other cancers, is something that my team's model of the causes of the disease predicts. We believe that childhood leukaemia is triggered in certain susceptible children by a range of infections.

Professor Sir Mel Greaves

Now we have the chance once again to test our theory through the social restrictions that are occurring during the Covid-19 pandemic. We will be assessing incidence rates of childhood leukaemia over this past year to see if the Hong Kong experience is repeated.

If we can obtain further evidence that common infections trigger leukaemia, this will consolidate our strategy to develop preventative measures that boost the immune systems of infants.

The Covid-19 pandemic has cost many lives and had a massive impact on our society. It is perhaps of some comfort that this vast experiment of nature could have an unexpected upside – by helping us to protect children from cancer.

Read more on our website:
www.icr.ac.uk/experimentsofnature

"I promised I wouldn't stop until she was saving lives"

After Aoife Flanagan died of germ cell cancer at the age of three, her mum, Eilish, set up a charity to change the future for other children with cancer

In June 2019, Eilish Flanagan took her daughter to the doctor after the three-year-old started to experience pain in her stomach. After several trips to the doctor, Aoife was eventually diagnosed with germ cell cancer – a rare childhood tumour that usually develops in the ovaries or testes. Five days later, she died.

Eilish was determined to use what had happened as a driving force for change and set up Aoife's Bubbles – named after Aoife's beloved Shetland pony, Bubbles – which is the UK's only registered childhood germ cell cancer charity.

Aoife's Bubbles has now partnered with us to support the work of Professor Louis Chesler and his team on the ITCC-eSMART trial.

Eilish said: "I wanted to fund research because time is going past and children are still getting sick. It's time to do something.

"We want to give families the chance to make as many memories as possible. Aoife was the kindest little person you could ever wish to meet, and I'm sure her mission was to help others."

The eSMART trial is designed to deliver the best possible treatment pathways for children with aggressive solid tumour types, including germ cell cancers.

Professor Chesler explained: "This trial will help us match children with the latest targeted drugs, and bring genomic testing into clinical practice for children. We want to improve the outlook for every child diagnosed with cancer and help them get the best treatments, as swiftly as possible."

Eilish said: "After Aoife passed away, I made a promise that I wouldn't stop until she was saving lives.

"Every child facing cancer deserves a chance – they deserve the quickest diagnosis, the best treatment options and the best possible outcome.

"I am so proud this is the legacy Aoife has left and is still creating."

Aoife Flanagan and her Shetland pony, Bubbles

> "Every child facing cancer deserves a chance – they deserve the quickest diagnosis, the best treatment options and the best possible outcome.
> **Eilish Flanagan**

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