ICR The Institute of Cancer Research

Our research to help more people survive blood cancer

Help us stay one step ahead of blood cancer

Dr Alex Radzisheuskaya and team

More than 40,000 people in the UK are diagnosed with blood cancer each year – that's 110 every day. It is the fifth most common cancer in the UK – and also the most common type of childhood cancer, affecting more than 500 young lives annually.

Blood cancer begins when changes in blood cells cause them to grow uncontrollably. These abnormal cells may not work properly, crowding out healthy blood cells and making it harder for the body to fight infections or heal wounds. The disease falls into three main groups – leukaemia, lymphoma and myeloma – which start in different types of blood cells.

7 **out of 10 people now live for five years or more after their diagnosis.**

At the forefront of progress

Over the past few decades, there have been significant strides in understanding, diagnosing and treating blood cancer – leading to rapid improvements in survival rates. In the UK, around seven out of ten people now live for five years or more after their diagnosis.

At The Institute of Cancer Research, London, we're proud to have been at the forefront of this progress. Our world-class scientists have uncovered vital insights into the biology of these cancers, identified genetic variants that influence risk, and led pioneering clinical trials to develop more effective treatments used today.

But we must stay one step ahead. Blood cancer is still the UK's third biggest cancer killer, claiming around 16,000 lives every year. While overall survival rates are improving, some types of blood cancer remain very hard to treat. For example, only one in seven people with acute myeloid leukaemia (AML) will survive beyond five years.

A new generation of treatments

Blood cancers can also evolve to evade treatment, meaning that while some patients initially respond well, their cancer may return, more resistant and aggressive than before.

We need a new generation of smart and targeted cancer treatments so that all types of blood cancer can be controlled and effectively cured – so more people can live longer, better lives.

Developing new treatments to outsmart myeloma

Our scientists are leading laboratory research and clinical trials into smarter, kinder treatments for myeloma, a type of blood cancer that develops in the bone marrow. Thanks to advances in treatment, more people are now living well with myeloma. However, the disease remains incurable, which means patients need ongoing treatment to control their cancer.

A major challenge is that treatments don't work the same way for everyone – some patients may not respond at all, while others may find it becomes less effective over time and their disease returns. That's why developing new, effective and long-lasting treatment options is crucial.

Investigating myeloma

Dr Charlotte Pawlyn is investigating how myeloma develops resistance to immunomodulatory drugs, which work by targeting myeloma cells and boosting the body's immune response against the cancer.

Her team recently identified genetic changes in myeloma cells linked to resistance, offering a potential way to predict how patients may respond to these drugs. They are now exploring strategies to 'reverse resistance' and investigating combination therapies that could give more people the hope of long-lasting treatment.

Tailoring treatment

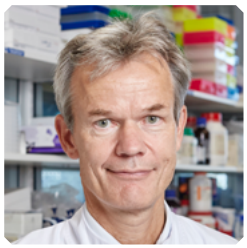
Professor Martin Kaiser is at the forefront of developing kinder, tailored treatments for people with myeloma.

His team recently led a groundbreaking clinical trial for patients with the most aggressive form of myeloma, translating laboratory discoveries into real-world treatments. It showed that combining five existing drugs with a stem cell transplant helped patients to live longer before their disease progressed, compared to standard treatment.

This study has uncovered a new and more effective treatment option – and demonstrated the benefits of combining drugs that work in different ways to combat cancer's ability to evolve and resist treatment.

Smarter, kinder treatments for acute myeloid leukaemia (AML)

We're searching for new ways to target AML, an aggressive blood cancer that usually affects older adults but also occurs in children and young people.



Professor Kristian Helin (pictured left) and Dr Alex Radzisheuskaya are carrying out laboratory research to unravel the biology of AML and find new ways to target it.

AML is particularly challenging to treat because of its complexity, rapid progression and resistance to existing treatments like chemotherapy and bone marrow transplants.

Their research found a key weakness in AML, offering a promising new strategy to delay its progression. They have identified an alternative version of a protein complex called the NURF complex, which promotes the survival of leukaemia cells.

Developing drugs that target this protein complex has the potential to destroy cancer cells while leaving healthy ones unharmed, reducing side effects for patients.

A promising new treatment

Professor Kamil Kranc is at the forefront of research to understand the biology of cancer stem cells and find ways to eliminate them, paving the way to more effective and longer-lasting treatments for AML.

His team recently identified a promising new treatment strategy for AML by targeting enzymes called PHDs, which help cells sense and adapt to changing oxygen levels. These enzymes can already be safely blocked using existing anaemia drugs, offering hope for rapidly translating this discovery into benefits for AML patients.

Building on this work, his team has collaborated with chemists to develop a new compound called IOX5 that targets these enzymes more precisely, bringing the promise of a new treatment option with fewer side effects for AML patients.

Julius's story

"I wake up every morning feeling grateful to be here."

Julius Manyoni, 66, is a Black Belt sixth Dan karate instructor. Having been fit and healthy all his life, he was shocked to be diagnosed with stage 3 myeloma in September 2019.

"I didn't drink or smoke, had never taken drugs, ate the right foods and exercised regularly. I was the last person you'd expect to receive a cancer diagnosis. But in July 2019, I felt as if my heartbeat was irregular. I was breathless going up stairs. Scans showed my heart was strong, but I was sent for urgent blood tests. I needed a biopsy to check for blood cancer. But I was certain there had been a mistake and I'd get the all-clear.

I wasn't prepared for the results: a myeloma diagnosis. It was not curable, but I was reassured to hear it was treatable. I started chemotherapy, followed by a stem cell transplant, hoping this would give me a longer remission period.

However, it did not work. I was devastated and took the news hard. Then I was offered the drug lenalidomide and I've been taking it ever since. It's really working for me. I'm in remission and feel good.

I wake up every morning grateful to see the sun and breathe fresh air. I'm indebted to the scientists who've made these drugs possible. Better research is the only way to treat cancer. Thanks to scientific progress, future generations will have better treatments and more options to tackle this disease."

Karin's story

"When I was diagnosed with acute myeloid leukaemia, I never thought I would still be here."

Karin Manchester, 65, was told she had a week to live after being diagnosed with acute myeloid leukaemia (AML) in 2004. Thanks to treatment and a clinical trial, she has been in remission for 20 years.

"My husband and I were celebrating our 25th wedding anniversary with a trip to Tunisia. But what should have been a fantastic holiday became two weeks of hell.

I thought I was coming down with flu. I kept falling asleep, was shivery, had a sore throat and a strange rash that spread all over my body. I was covered in bruises, noticed blood in my urine and was struggling to breathe. As a nurse, I self-diagnosed pneumonia and spent the whole trip in bed.

Back home, blood tests revealed my haemoglobin levels were rock bottom. I was given an immediate blood transfusion and diagnosed with acute myeloid leukaemia (AML). As a nurse, I'd seen people with AML before, but had never seen anyone survive. Without treatment, I only had a week to live.

I spent six months in hospital, kept alive with antibiotics, blood and platelet transfusions, followed by four rounds of chemo. I then had two years on a maintenance drug called ATRA (all-trans retinoic acid) as part of a clinical trial.

I'm glad to still be here. Without cancer research, I wouldn't be alive. I never thought I'd reach old age - now I have a chance of making it to 70!"

Help us stay one step ahead of cancer with a new generation of smart and targeted treatments – so that more people will survive blood cancer.

Donate monthly to sustain our research for longer and to save more lives: ICR.ac.uk/GiftingResearch