

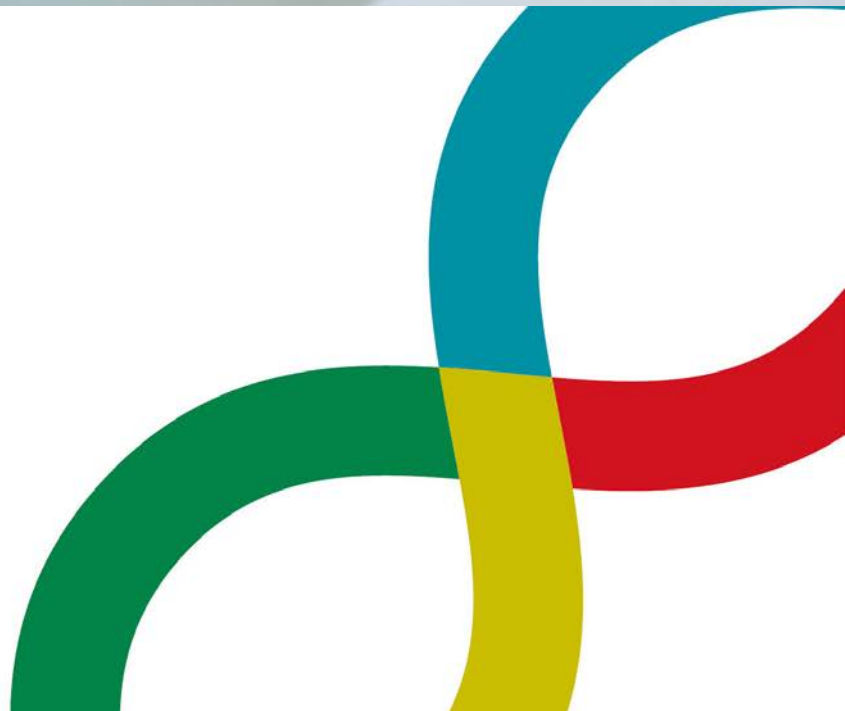
Canolfan Ymchwil Canser Cymru  
Wales Cancer Research Centre



Ymchwil Iechyd  
a Gofal Cymru  
Health and Care  
Research Wales



# 2021 - 2022 Annual report





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**The Wales Cancer Research Centre is funded by Welsh Government through Health and Care Research Wales.**

**This report has been compiled with input from our public and patient involvement group.**

# INTRODUCTION



***“Our vision is to work with cancer patients and other partners to develop and deliver research excellence that benefits the health and welfare of people in Wales and beyond.”***

The Wales Cancer Research Centre (WCRC) is funded by the Welsh Government and is a key part of Health and Care Research Wales’ infrastructure.

We perform and support cancer research of the highest quality, which builds on Wales’ international research reputation and has a clear focus on collaboration, innovation and improved patient outcomes.

Our vision is to work with cancer patients and other partners to develop and deliver research excellence that benefits the health and welfare of people in Wales and beyond.

We fund 33 full and part-time posts and aim to improve collaboration by bringing cancer researchers together across Wales.

Our researchers fulfill a broad range of roles; academic researchers such as laboratory scientists, data scientists and behavioural scientists, and clinical researchers including research nurses and clinical research fellows.

The Centre funds researchers across four work streams:

- ◆ personalised prevention
- ◆ enhanced diagnosis
- ◆ improving patient outcomes
- ◆ optimised patient experience.

These work streams are set to change to six new priority research themes with the launch of the Wales Cancer Research Strategy in 2022.



**Above: locations of our staff across Wales**

## OUR PARTNERS



# FOREWORD



Welcome to the Wales Cancer Research Centre (WCRC) stakeholder report for 2021-22, which has been a year of significant change and transition for the Centre.

Our hub team has been bolstered by the appointment of a new Communications and Engagement Officer (Betti Hunter) and Executive Officer (Zoe Evans) who, along with the rest of the team, are committed to brokering collaborative and integrated working across the cancer research community and delivering project work that enables research activity in Wales.

I was honoured to become the WCRC's new Director in November 2021, and have taken great pleasure in looking back at the achievements of our funded researchers over the last year. We are now looking forward to a new era for cancer research in Wales, coinciding with the launch of a new Wales Cancer Research Strategy.

The WCRC's seven Multidisciplinary Research Groups (MDRGs) are a proven model that have continued to connect pre-clinical and clinical cancer researchers from across Wales and from across a wide range of disciplines over the last year. The Advanced Therapeutics MDRG held a special symposium in February 2022, attended by over 100 delegates who heard academic and industry leaders from across

the UK talking about the ways in which novel discoveries made in Wales could be accelerated through to the clinic for patient benefit.

The WCRC's researchers have made great strides to overcome the challenges posed to clinical and pre-clinical research by the COVID-19 pandemic.

Our behavioural science researchers have studied how to encourage people living in areas of high deprivation to present to community-based rapid diagnostic services in order to promote earlier cancer diagnosis, an issue that is more important than ever after the pandemic. They have also studied the impact of embedding smoking cessation into lung cancer screening programmes, reducing the risk of future cancers.

Our laboratory scientists have developed a unique test that can diagnose a rare but important set of diseases that affect our chromosomes called telomere biology disorders. As a result, NHS clinicians from centres across the UK and Ireland are now sending patient samples to Cardiff for testing by TeloNostiX Ltd, a Cardiff University spin-out company. The test can also predict the likelihood of response to different treatments in patients with a certain type of leukaemia, and ongoing work is investigating whether it can also be used as a biomarker of outcome in some cancers.

Researchers in Cardiff contributed to widely publicised research findings, showing that the small but real increased risk of clotting associated with the COVID-19 Oxford AstraZeneca vaccine is the result of a misplaced immune response. This work, fed back to the UK Vaccines Task Force, has influenced UK and Welsh Government vaccine policy. Ongoing work by the group

is focused on the development of novel cancer vaccines, based on genetically engineered viruses that can specifically infect and destroy cancer cells in the body.

Our palliative and supportive care researchers studied bereaved people's experiences during the COVID-19 pandemic, and the bereavement services supporting them. This produced outputs that influenced the UK Government's Bereavement Policy in addressing gaps in support for grieving families.

The WCRC has also worked closely with the NHS and with the Experimental Cancer Medicine Centre (ECMC) in Cardiff, supporting nurses and doctors to deliver studies of novel treatments that offer hope for cancer patients when conventional treatments may no longer be working.

The Centre has played an important role in developing proposals for a tripartite Cancer Research Hub, a partnership between Velindre University NHS Trust, Cardiff and Vale University Health Board and Cardiff University, based at the University Hospital of Wales. The tripartite hub will enable the delivery of novel treatments to patients from across Wales, and strengthen links between the partners for translational (bench to bedside) research and for growing the next generation of cancer researchers in Wales.

There are many other successes too, but we are aware that there is still a great deal to be done to make Wales' cancer research as competitive on a UK and global stage as it can be. That will be our challenge for the future.

A handwritten signature in black ink, appearing to read 'M Evans'.

**Prof. Mererid Evans, Director**



# OUR RESEARCH IN NUMBERS

## Core Metrics

Reporting period: 2021/2022



**Health and Care Research Wales infrastructure award to the group**



Direct funding awarded  
**£975k**

Jobs created through direct funding



### Grants won during reporting period

Grants won	Led by group	Group collaborating
Number	<b>25</b>	<b>2</b>
Value	<b>£2.8m</b>	<b>£2.3m</b>
Funding to Wales	<b>£1.9m</b>	<b>£315000</b>
Funding to group	<b>£1.9m</b>	<b>£315000</b>
Additional jobs created for Wales	<b>11</b>	<b>4</b>
Additional jobs created for group	<b>11</b>	<b>0</b>



Number of publications



Number of public engagement events



Number of public involvement opportunities

# LAY SUMMARY

Cancer continues to be a huge challenge to both the population of Wales and to the researchers at the Wales Cancer Research Centre (WCRC) who are striving to improve treatments, clinical decision-making and quality of life for patients.

Over the last two years, COVID-19 has put great pressure on screening and services for cancer patients. In 2021, a WCRC-supported study showed that this has led to many members of the public delaying coming forward with potential cancer symptoms. This will lead to an increased number of people being diagnosed with later stage cancers than in previous years, which could put even more pressure on an already stretched NHS.

In addition to treating the backlog of cancer patients that the COVID-19 pandemic has created, it is equally important that we in Wales renew our focus on research into the prevention, earlier diagnosis and treatment of cancer. This is the only way to improve life expectancy and quality of life for those who develop the disease in the future.

Researchers supported by the WCRC continue to conduct research across prevention, diagnosis and treatment in these fields, and their work spans from understanding the scientific basis of cancer in the laboratory to developing personalised, more effective and kinder treatments for patients in the clinic. Scientists, nurses, doctors and other health care professionals are all involved in research, which also needs willing patients to act as participants for trials of new treatments in order to prove their effectiveness, before they can be rolled out into standard of care.

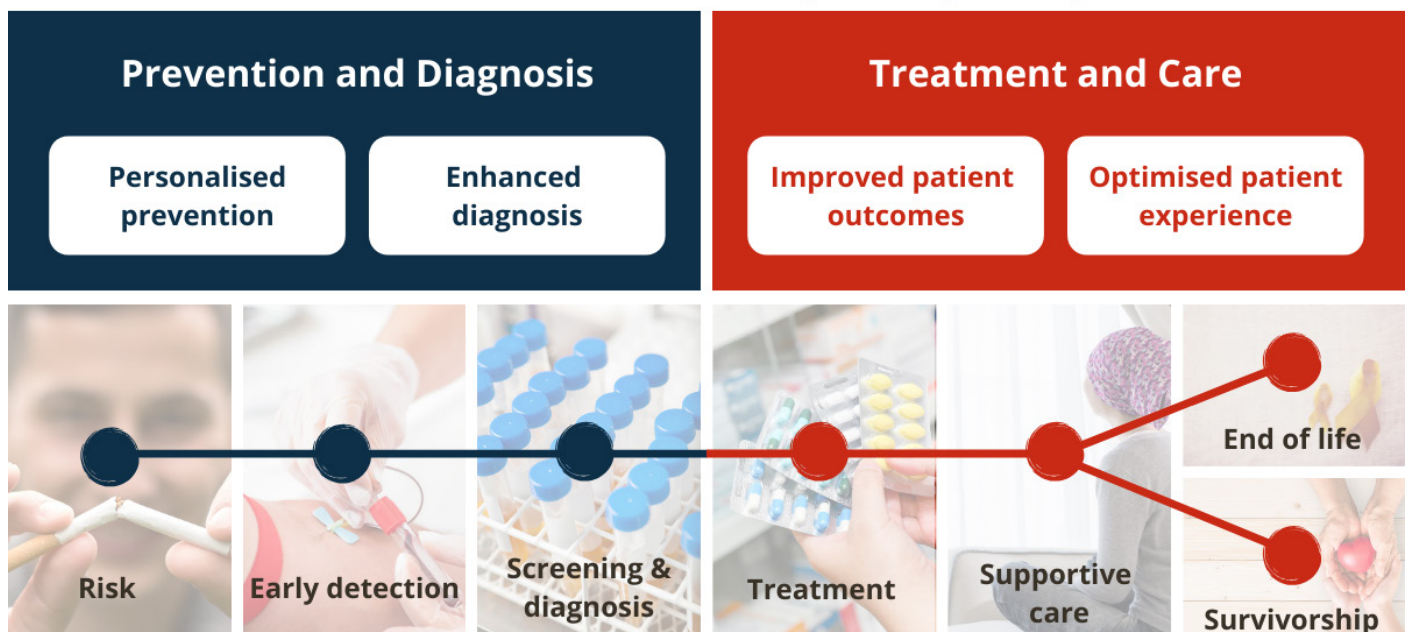
During the last year we have been working on finalising the new Cancer Research Strategy for Wales (CRSt), which will launch in 2022. This will provide a clear direction for future cancer research in Wales, focusing on existing strengths and building teams of researchers who will work together with partner organisations in these research areas.

Patients, carers and the public can also help research by becoming involved in planning and managing research. In this way they can offer a patient perspective at all stages and help to maintain a clear focus on patient benefit at all times. WCRC is supported at a strategic level by a group of experienced research partners; patient and public representatives who, for the last seven years, have worked with research staff across the Centre.

Public engagement is a valued activity for us; it helps to encourage young people to study science and increases the public's awareness of new treatments, opportunities to take part in clinical trials, and tissue donation. Before COVID, we regularly hosted public engagement events at museums, festivals and busy public spaces. This helped to raise awareness of the importance of cancer research, and let people know about the many ways it is conducted in Wales. These face-to-face events weren't possible during the pandemic, but we look forward to planning new engagement events with our partners in the coming months.

**If you are a member of the public who is interested in getting involved in our research, please email us at [WCRC@cardiff.ac.uk](mailto:WCRC@cardiff.ac.uk).**

## Research that follows the patient journey



# OUR WORKSTREAMS

## Personalised prevention

Screening, prevention and early diagnosis research is key to reducing the burden of cancer on the people of Wales and beyond.

The earlier we can detect cancer the more likely it is that treatment will be successful. Preventing it from developing in the first place is the ultimate goal.

This year we have focused on:

- ◆ Patient and population behaviour in cancers of unmet need, including lung, with a focus on reducing inequalities
- ◆ Assessing equitable uptake and impact of new approaches to cancer prevention and diagnosis
- ◆ Assessing attitudes to cancer during the COVID-19 pandemic
- ◆ Testing the feasibility of a 'vague cancer symptoms' awareness campaign
- ◆ Implementing and evaluating the new Targeted Lung Health Check pilot programme
- ◆ Developing the technical aspects of integrating multi-modal data in the Future of Real Time Endoscopy Artificial Intelligence (FORE AI) study
- ◆ Linking with an AI Taskforce group to review ethics and governance when analysing large datasets.

## Enhanced diagnosis

We focus on inter-disciplinary working to evaluate technologies that can improve the diagnosis of cancer, predict the likelihood of response to different treatments and give information about prognosis.

This includes developing new technologies or tests and finding ways to improve processes and pathways to make sure tests are done to a consistently high quality.

Highlights of our work this year include:

- ◆ Use of high-resolution telomere analysis to
  - diagnose patients with telomere biology disorders. NHS clinicians from centres across the UK and Ireland now send their samples to Cardiff to be tested
  - analyse patients with chronic lymphocytic leukaemia (CLL) recruited to three clinical trials
  - analyse tumours from patients with a form of brain cancer to explore whether telomere length can be used as a biomarker of outcome
- ◆ Developing assay systems to measure extracellular vesicles (EVs) in biological fluids, which can give information about the nature of prostate cancer
- ◆ Working with the All Wales Medical Genomics Service (AWMGS) on validating a next generation sequencing (NGS) circulating tumour DNA (ctDNA) assay.





## Improved patient outcomes

We are always trying to improve the outcomes from existing treatments by understanding how and for whom they work, as well as exploring potential new treatments.

Our Multi-Disciplinary Research Groups (MDRGs) help this process by bringing laboratory scientists and clinical researchers together to develop new, improved therapies for patients.

This year, our work has included:

- ◆ Producing a bank of colorectal cancer organoids grown from the biopsies of patients
- ◆ Developing novel Antibody Drug Conjugates (ADCs) for therapeutic uses in cancer – particularly ovarian and prostate
- ◆ Assisting with novel COVID-19 vaccine development and investigating whether COVID immunity could be used to fight cancer
- ◆ Developing new viral platforms that could become the ‘cancer vaccines’ of the future
- ◆ Supporting research nurses and Clinical Research Fellows to run trials of novel therapies in Wales
- ◆ Opening the first CAR-T cell therapy trial in Wales, a communal effort by UHW’s clinical and regulatory teams that paves the way for future trials
- ◆ Taking part in an NHS-academic collaborative study to assess the impact of stereotactic ablative radiotherapy (SABR) on cancer-specific immune responses in patients with a range of cancer types
- ◆ Supporting Clinical Research Fellows and Radiotherapy MDRG members to lead and recruit patients to clinical trials that seek to improve radiotherapy treatment
- ◆ Setting up the Gatekeeper pilot study in North Wales, which aims to use technology to improve patient experience and quality of care.



## Optimised patient experience

This workstream focuses on research that helps us to put patients’ personal values and preferences at the centre of their personalised cancer treatment plans.

Some of our highlights in this area include:

- ◆ Supporting shared decision-making approaches and studying their influence on treatment decisions for cancer patients in palliative care
- ◆ Identifying physiological and functional predictors of patient resilience to anti-cancer treatment, specifically in the PETROS study (PrEdicting Treatment Resilience in Oesophago-gastric cancer patients receiving Systemic treatment)
- ◆ Conducting qualitative interviews with participants recruited to clinical trials that are led from Wales and their recruiting clinicians
- ◆ Contributing to the ‘BeCOVID: Supporting people bereaved during COVID-19’ study
- ◆ Supporting the PACERS systematic palliative care review service
- ◆ Involvement in COBra: Patient-Reported Core Outcomes in Brain Tumour Trials collaborative study.



# WCRC ORGANOGRAM 2



**John Jones**  
Director of Operations



**Prof Me**  
WCR



**Prof Sunil Dolwani**  
Associate Director  
Domain lead: Prevention  
and diagnosis



**Prof Du**  
Associ  
Domain  
and know

**Workstream 1**  
Personalised Prevention

**Workstream 2**  
Enhanced Diagnosis

**Personalised Prevention**  
Dr Lee Parry  
Dr Stephanie Smits

**Enhanced Diagnosis**  
Dr Kevin Bradley  
Dr Lee Parry

**Targeted  
Therapies**  
Prof Alan

**Biobanking**  
(Ex-Officio, WCB Director)  
Dr Richard Clarkson

**Multi-Disciplinary  
Research Groups**  
Dr Paul Shaw

**Trials and Dev**  
Prof Richard

**Clinical Research  
Portfolio**  
(Ex-Officio, HCRW  
Specialty Lead)  
Dr Rob Jones

**Innovation and Industry**  
Prof Steve Conlan

**Non-Medical  
Research**  
Dr Nicholas  
Prof Jane Ho

# 2021 - 2022

**Mererid Evans**  
VCRC Director



**Julie Hepburn**  
Lead Lay Research  
Partner

**Duncan Baird**  
Associate Director  
Domain lead: Impact  
Knowledge transfer



**Prof Steve Knapper**  
Associate Director  
Domain lead: Treatment  
and Care

**Workstream 3**  
Improved Patient Outcomes

**Workstream 4**  
Optimised Patient Experience

**Targeted  
Therapeutics**  
An Parker

**Early Phase Trials**  
Dr Rob Jones  
Prof Steve Knapper

**Physiological  
Assessment**  
Prof Anthony Byrne

**Development**  
ard Adams

**Radiotherapy**  
Dr Sarah Gwynne

**Personalised  
Experience**  
Prof Annmarie Nelson

**Clinical Clinical  
Researchers**  
ola Gale  
Hopkinson

## **Regional Champions**

North Wales - Dr Pasquale Innominato and Prof Stephen Hughes

South Wales - Dr Mark Davies and Prof Deya Gonzalez

# KEY ACHIEVEMENTS

## Scientists investigating whether COVID immunity could be used to treat cancer

A team of Cardiff University researchers are exploring whether T-cell responses to COVID-19 infection and vaccination could be used to fight cancer.

Prof Alan Parker and his team work with adenoviruses, similar to the common cold, that can be reprogrammed as viral vectors to target and kill cancer.

In 2020, the team switched their focus from cancer research to help develop a vaccine against coronavirus. As vaccination programmes were rolled out worldwide in 2021, the team returned to cancer research with an additional focus.

Since most people in Western nations have either contracted COVID-19 or been vaccinated, most of the public will now have strong T-cell responses against the SARS-CoV-2 spike protein that will remain stable for a long period of time.

Prof Parker, Dr Carly Bliss and WCRC/ECMC-funded researcher Dr Mahulena Maruskova are now investigating whether this immunity can be redirected to help fight

cancer by using technologies to force cancer cells to present the SARS-CoV2 spike protein on their surface. This presentation will direct the T-cells, induced by vaccination to protect us against SARS-CoV2 infection, to recognise and destroy cancer cells.

The spike protein is what SARS-CoV2 uses to infect cells, and is widely used in current COVID-19 vaccines. These vaccines cause our cells to produce this protein, allowing the immune system to generate both antibodies and T-cells that recognise SARS-CoV2 and protect us against infection.

“For the past ten years we have been developing viruses in our lab that are trained to recognise and only infect tumour cells. Once infected, the virus then forces infected cells to produce either something that is directly toxic to cancer cells, or produce a protein that signals to the immune system to come and attack the tumour,” said Prof Parker.

“We’re now seeking to investigate whether we can harness anti-spike immunity to treat cancer. Rather than using spike proteins to induce

a response against coronavirus, the idea is that the virus will deliver the spike proteins to the surface of tumour cells.

“Cancer cells arise in us daily, but our immune system recognises and destroys them. When cancer takes hold, it is because the cancer finds ways of hiding from the immune system. By using our virus to infect tumour cells and present spike protein on the surface, our T-cell responses then see this as a virally infected cell and try to get rid of it. The immune response is directed against that spike protein, which is only on those tumour cells, thus helping the immune system to ‘see’ the cancer as foreign and kill those tumour cells.

“We’ve shown that we can direct an immune response through T-cells to those cells that have been infected by our virus. And that is really powerful, it’s a very promising approach.”

The team’s research is still in its infancy. Preliminary co-culture experiments have been conducted and work will continue throughout 2022.



# New phase of treatment research offers hope to incurable breast cancer patients

A Wales-led research partnership has discovered that patients with incurable breast cancer could benefit more from a combined therapy than initial research suggested.

The FAKTION trial is a partnership between Velindre University NHS Trust, AstraZeneca and Cardiff University over a period of 10 years.

The trial was led by Professor Rob Jones from Velindre Cancer Centre and Cardiff University, with Dr Sacha Howell from Manchester University, along with the Centre for Trials Research at Cardiff University. Velindre University NHS Trust acted as the trial sponsor.

The trial was based on the use of the Capiasertib breast cancer drug developed by Astra Zeneca. It is a targeted therapy which neutralises a cellular protein (called AKT) that has been shown to cause resistance to hormone therapy in patients with breast cancer. In the Faktion trial, Capiasertib was combined with fulvestrant, a hormone therapy

which is used to treat metastatic breast cancer.

Initial research presented in 2019 suggested that, by combining investigational therapy with a standard treatment, patients may expect their cancer to be controlled for more than 10 months rather than under 5 months with standard care.

The new data from the FAKTION trial allowed the research team to investigate Capiasertib's impact on how long people with metastatic hormone receptor positive breast cancer can expect to live.

It also explored in more depth whether it was possible to pick out patients who are particularly likely to benefit from this drug by looking at mutations which occur in each patient's cancer specimen that would be expected to activate the AKT protein.

The evidence suggests that the patients who had an 'activating' mutation (around 55% of all

patients) lived for around 39 months if given hormone treatment with Capiasertib, compared to 20 months if given the hormone and a placebo. This new data shows that taking the Capiasertib treatment can help these patients live significantly longer than initially expected.

Professor Rob Jones, the Assistant Medical Director for Research at Velindre and Professor of Medical Oncology at Cardiff University, said:

"The new data is very exciting. Not only have we shown that Capiasertib can give patients a very significant extension in their lifespan, but we can also select out those patients who are most likely to benefit by carrying out genetic tests on their cancer tissue. We are now very keen to see if this is confirmed in a larger Phase 3 trial which has already completed recruitment."

The trial was supported by a variety of funding streams including an educational grant from Astra Zeneca and CRUK.



*Patients may expect their cancer to be controlled for more than 10 months*



## Cardiff scientists awarded £230K grant to help unlock immunotherapy for men with prostate cancer

A research team at Cardiff University, led by Professor Aled Clayton, received a grant worth over £230,000 in July 2021 to help them pinpoint which men could benefit from powerful new immunotherapy treatments. The grant is part of £1.7m awarded by Prostate Cancer UK to five projects across the UK.

Immunotherapies have been very effective in treating other forms of cancer, but to date have had limited success in men with prostate cancer.

To overcome this, Professor Aled Clayton and his team are using state-of-the-art technology to map out the immune cells present in prostate cancer tumours and identify molecules released by the cancer that can stop these immune cells from working.

By studying samples from different stages of the disease, the researchers hope to understand how prostate cancer affects the immune system over time, so they can find better ways of predicting and monitoring men's response to immunotherapy.

Professor Clayton, based at Cardiff University's School of Medicine and the Wales Cancer Research Centre, said: "Prostate cancer cells release small packages of molecules into the blood which can block immune cells from attacking them. We aim to develop new methods to identify these packages, so we can gain a clearer understanding of why some prostate cancers respond to immunotherapy and some do not.

"In the future, we hope this could lead to blood tests which could check whether a particular form of immunotherapy is likely to work or not. This would help to ensure men are receiving the best possible treatment for their cancer."

Prostate cancer is the most common cancer in men and kills one man every 45 minutes in the UK.

Simon Grieveson, Head of Research at Prostate Cancer UK, said: "Immunotherapy has revolutionised the treatment of many types of cancer, but so far this approach has only been successful in small numbers of men with prostate

cancer. That's why we're investing over £1.7 million in research to accelerate progress in this field and help develop more effective treatments for men diagnosed with prostate cancer.

"Funding innovative studies that tackle prostate cancer from new angles is vital to stop so many men dying from the disease. We look forward to seeing how Professor Clayton's project progresses over the next few years and the difference it will make to men's lives."

The research team received a further £10,000 in funding from Prostate Cymru in December 2021, which will support the work of a technical specialist who is currently funded by the Wales Cancer Research Centre.

Tina Tew, CEO of Prostate Cymru, said: "We are delighted to be supporting Professor Clayton and his team with their important work. As a charity, one of our key aims is to help fund innovation across Wales, and we look forward to seeing the outcome of their research."

# Organoids can help us to understand links between the immune system and cancer

Patients play a vital role at all stages of cancer research in Wales. Their contributions to laboratory science are not always obvious, but they often form the foundation of exciting new studies.

Dr Stephanie Burnell is a WCRC-funded researcher focused on colorectal cancer at the University Hospital of Wales and Cardiff University. She is working with clinicians and patients in South Wales to collect cancer samples, which she then develops into organoids.

Cancer organoids are 3D 'mini' cancers that are made by growing stem cells in the lab. They can be used to study how normal tissues and cancers form, and to test new drugs and other kinds of treatment. They can also be grown from normal tissue to create 'healthy' organoids.

Dr Burnell, supervised by Prof Awen Gallimore, is creating these organoids to understand interactions between the immune system and cancer. Their aim is to explore how the immune system might recognise, isolate and kill a cancer organoid, while leaving a healthy organoid alone.

"This provides us with a set of tools that we can use to interrogate

immune function," said Prof Gallimore. "Dr Burnell can then experiment by adding different drugs and antibodies to these co-cultures to find out what improves the performance of the immune system.

"What we really want to do is understand the rules of immune - cancer cell engagement," she continued. "By seeing those rules at play with our own eyes under a microscope, we can start to work out how to improve the strength of immune recognition and the ability of immune cells to kill the cancer."

Dr Burnell has produced resources to demonstrate her work, including a lay-friendly flipbook to explain the development and use of organoids in cancer research.

Organoids developed by Dr Burnell can also be used in many different contexts and have already been shared with other cancer researchers in Wales.

"Immune cells have 'stop' and 'go' signals on their surface," said Prof Gallimore. "We know that cancers try to trick the immune cells into believing that they are just like normal cells and so encourage them to 'stop' rather than 'go'. We want to alter that balance between

the stop and go signals on the surface of the immune cells using tricks like biotherapeutics which alter the balance in favour of the go signals."

Dr Burnell's work is part of a wider range of projects in Prof Gallimore's lab that explore the relationship between cancer and immune cells. The development of cancer organoids has exciting potential to reveal important new biology, said Prof Gallimore.



## BeCOVID study influences UK Government bereavement policy

COVID-19 impacted people across the UK in many different ways, but those who experienced bereavement during this time have faced exceptional challenges.

Researchers and staff from Cardiff University and the University of Bristol collaborated on the 'BeCOVID: Supporting people bereaved during COVID-19' study of bereaved people's experiences and the services supporting them.

The research was carried out via

an online survey completed by 711 people who were bereaved between March 2020 and January 2021. The study found that lockdown restrictions increased anxiety for people who lost loved ones during this period.

Palliative Care Evidence Review Service (PaCERS) lead Mala Mann led a rapid review, published in Palliative Medicine, that partially underpinned the BeCOVID grant application. This in turn influenced UK Government bereavement

policy in addressing gaps in support for grieving families.

The study was presented at the launch of the UK Commission on Bereavement and included a public statement by the Minister of Mental Health.

PaCERS is co-funded by the WCRC and Marie Curie. Marie Curie has awarded a grant to conduct a fourth survey round with the participant cohort, which will run until January 2023.

# SABR\_IT study explores impact of radiotherapy on immune system

Velindre Cancer Centre and Cardiff University are collaborating on a study to assess the way radiotherapy affects how cancers are seen by the immune system.

It is not currently understood whether radiotherapy makes it easier for the immune system to recognise cancer cells; it could potentially make this more difficult if the cancer responds to radiotherapy by turning the immune system off.

Dr Hannah Reed, WCRC Radiotherapy Clinical Research Fellow, is assessing the impact of stereotactic ablative radiotherapy (SABR) on antigen-specific T-cell responses in patients at Velindre with a range of cancers.

SABR differs from normal

radiotherapy because it delivers very intense doses of extremely targeted therapy.

“How SABR affects the immune system is not well understood,” said Prof Awen Gallimore, supervising Dr Reed. “We want to know if this high dose of radiation causes the immune response to rise or fall, and what changes happen to the immune cells as a result.”

Dr Reed is measuring immune responses in the blood of patients undergoing radiotherapy and has collected data from nearly 20 patients since April 2021.

“The problem is that all patients respond slightly differently – they have different cancers and levels of immune health, so we will need to

look at quite a lot of people before we see any meaningful patterns emerging,” said Prof Gallimore.

“But we think it’s very possible that radiotherapy would work better if combined with immunotherapy. We are now looking for these emerging patterns, vulnerabilities, and significant timepoints that may be exploited for immune intervention.”

Recruitment to the study is ongoing, and the team hopes to design a clinical study based on the findings by the end of 2023.

Prof Gallimore explained that next steps involve providing a rationale for new early phase clinical trial studies where patients can receive both SABR and immunotherapy as part of a combination package.



## Nurse and Allied Health Professional Conference



The fourth annual nurse and AHP conference was hosted online again this year.

Almost 40 cancer nurse and AHP professionals attended from across Wales, reiterating last year’s evaluation that online participation was preferred to in-person events.

It has been decided that future WAHPN conferences will take place online, which will allow people from across Wales to easily attend.

This year’s keynote speech was delivered by Dr Gillian Prue, Physiotherapist and Reader at Queen’s College Belfast.

Other sessions included research tasters from regional representatives, Lay Research Partner Jim Elliot and group discussions

The conference was recorded and all talks were made available as a [Youtube playlist](#).



# RAGE ADC effective in fight against ovarian and prostate cancer

Researchers at Swansea University have shown that a novel antibody drug conjugate (ADC) is highly effective in two cancers with clinical unmet need.

Professor Steve Conlan and WCRC-funded researcher Dr Claire Donnelly are developing an ADC against the RAGE protein, which is significantly expressed on the surface of ovarian cancer cells.

They are developing a pipeline of antibodies against different cancer targets and exploring the potential of using drugs that can modify cellular response, rather than killing healthy cells

Ovarian cancer has notably poor outcome and survival rates, mainly because the symptoms are very difficult to spot and it is often diagnosed at a late stage. ADCs are a promising avenue for targeted therapeutics due to their potential to specifically target ovarian cancer cells.

"It is considered a cancer of unmet need," said Prof Conlan. "The first line of therapy for patients is standard platinum-based chemotherapy and then a different round of standard chemo. There are no targeted drugs for ovarian

cancer, and we wanted to try and address that need.

"If ADC works against RAGE then it could become a first-line drug that could replace chemotherapy currently used in systemic treatment.

"Antibody drug conjugates are the most exciting class of drugs in development today," he continued.

"Our work in Swansea, funded by the WCRC and the Welsh Government Smart Expertise programme, is pioneering new ADC-based treatments for multiple cancers. This will ultimately benefit patients in Wales."

The RAGE protein is expressed in a number of other cancers, including breast, prostate and pancreatic. Prof Conlan and Dr Donnelly have been collaborating with researchers in Cardiff who are working with prostate models. They will continue to explore the potential of RAGE ADC in prostate in 2022 and beyond.

"We are really pushing this pre-clinical acceleration. We've got great confidence in RAGE as a target, and we're developing an advanced pre-clinical package that we would like to explore commercially," said Prof Conlan.

"Because the drug payloads used in ADCs are tried and tested, it limits the complexity of developing a clinical trial. In a way it's a plug and play modality and the innovation space is there. Hopefully with us we will run a clinical trial in Wales, with an ADC that is manufactured here too."



## Redefining the Wales Cancer Partnership

Since its inception in 2015, the Wales Cancer Partnership (WCP) has brought together cancer research voices from across the nation. Successful events and campaigns have engaged people of all ages, showcasing the work of researchers and exciting new developments.

The pandemic halted events for two years. This has been a hindrance but has also given the WCP a chance to regroup. Members of the Partnership have been working together to redefine the WCP's role, with a view to reinstating in-person events in 2022 and beyond



# INDUSTRY UPDATE

## New partnerships could offer more equitable access to clinical trials for patients in Wales

The Industry and Innovation arm of the WCRC began its work in May 2020. It has dedicated significant time and resources into scoping out the cancer landscape of Wales.

The Industry and Innovation arm has patient care at its heart and aims to deliver research that empowers patients through improving patient diagnosis, treatment and quality of life.

In the past year we have developed partnerships with industry across the health and life science sector including diagnostics and therapeutic industry leaders, clinical trial organisations, and digital transformation businesses.

We aim to help progress novel cancer therapies, diagnostics and technologies through to clinical application by investment, consultation, management and service provision. The WCRC has made significant progress to date, with the highlight mentioned below.

We are now working closely with ALLYFE, an AI company that offers a patient facing clinical trials recruitment platform that gives patients more access to trials and empowers them to make more informed decisions.

The platform allows e-consent, making clinical trials more accessible to rural areas of Wales.

The WCRC has also been working closely with a Contract Research Organization (CRO) called Oncacare to increase the delivery of oncology clinical trials across Wales.

This collaboration has resulted in three new oncology clinical trials that will open in Wales during 2022 and support for new NHS research delivery staff in Wales, who will have a direct impact on patient care.

The WCRC's Senior Professional Specialist for Innovation and Business Development, Dr Ellie Rad, will continue to lead on these exciting collaborations.



# MEET OUR NEW DIRECTOR

## We are delighted to introduce you to the Wales Cancer Research Centre's new Director, Prof Mererid Evans

Prof Evans brings a wealth of experience to the role and is already working closely with the many talented researchers and innovators across Wales to lead and deliver cancer research excellence. She answered a few questions about her hopes for cancer research in Wales and the direction of the WCRC over the coming years.

### **What are your career highlights to date?**

I am proud to be a cancer doctor, and my career highlight has to be becoming a consultant oncologist at Velindre hospital in 2007, where I specialise in the management of patients with head and neck cancer.

Since then, I have set up research within the NHS in Wales aiming to develop kinder treatments for patients with head and neck cancer. One of my studies, PATHOS, is now open in three continents - Europe, America and Australia - and could change treatment protocols for patients across the world.

I have worked nationally as Deputy Chair of the National Cancer Research Institute (NCRI) radiotherapy research group (CTRad), leading and coordinating radiotherapy research across the UK and have made important links across the UK in this role.

More locally, I have been Associate Medical Director for research at Velindre. I've been working with a brilliant team of research leads and patient and public representatives to develop the Trusts' ambitions for cancer research from 2021 to 2031.

These ambitions include setting up a new research hub in South East Wales, in partnership with our NHS and University colleagues.

I am excited about this hub and believe it will offer Welsh patients more access to experimental and advanced therapies, along with better access to cutting edge scientific research carried out by our University partners.

### **What most excites you about stepping into the Director role at WCRC?**

I am excited to work with cancer researchers in different institutions across Wales, as well as with policy makers and government representatives.

I am aware from talking to many researchers who are involved with the WCRC that it is very highly regarded by the cancer research community and has brought that community together since it was set up in 2015. I very much want to keep that sense of inclusivity and community.

I think one of our greatest challenges will be to provide a clear focus for cancer research in Wales. My aim is to bring the research community, Government, third sector and the Welsh public together, united in a single vision for cancer research in Wales. By doing this I believe that we can attract new investment and talent into Wales and can ensure that cancer research in Wales thrives in the future.

### **What three key developments do you hope to see happen within cancer research in Wales over the next quinquennium?**

I'd like to see increased investment, from both internal and external sources, into cancer research in Wales, which we as a community must focus in areas of research where Wales can make a real impact on an international level.

I believe we need to build our cancer research workforce, inspiring the research leaders of the future and developing academic and clinical career pathways to keep them in Wales.

We also need to bring NHS and academic organisations together to work more closely to translate scientific discoveries made in Wales into the clinic to benefit Welsh patients. The hub that I mentioned above will be one way of doing this.

### **How do you see WCRC fitting into the wider cancer landscape in Wales over the coming years?**

I believe the WCRC can and should play a central role in coordinating Welsh Government investment into cancer research. It should also bring the research community together to make Wales a country which has a reputation for excellence in cancer research.

The Wales Cancer Research Strategy (CRest) will be published in the next few months. The WCRC should have a central role in bringing the community together to help deliver CRest for the benefit of cancer patients in Wales and beyond.



# Cardiff researchers offer cutting edge service to clinicians across the UK

NHS clinicians from across the UK and Ireland are using an innovative Wales-based service to detect a range of rare genetic conditions.

Researchers at the University Hospital of Wales have developed a method of high-resolution telomere analysis to diagnose patients with telomere biology disorders, called telomeropathies.

Telomeropathies are caused by premature shortening of the tips of chromosomes, the DNA molecules which contain our genetic information.

Professor Duncan Baird and his team at UHW developed a rapid laboratory test for diagnosing patients showing the many different types of symptoms that can arise from telomeropathies.

The test measures telomere length via patient blood samples. If the telomeres have shortened prematurely, it will change the kind of treatment the patient receives.

The team has shown that testing can help with the diagnosing people with bone marrow failure and other suspected telomere biology disorders.

This analysis has now been applied as a rapid diagnostic tool, and as a predictive and prognostic biomarker, by WCRC-funded researcher Dr Kevin Norris. They provide the test to NHS clinicians via spin-out company TeloNostiX and hope to expand their reach to Europe in the coming years.

Prof Baird said: "We are already seeing the tangible real-world impact of this service. 15 centres from the UK and Ireland now send their samples to us for analysis. Previously the only option was to send samples to Vancouver, and results would take about three months to come back.

"We can send highly accurate results back to clinicians within a week. This makes a huge difference

to immunocompromised patients, many of whom are children, teenagers and babies. The speed and accuracy of this technology is changing lives, benefitting patients in Wales and beyond."

Dr Norris is also using high-resolution telomere analysis to assess patients with chronic lymphocytic leukaemia (CLL). This could provide a predictive algorithm to identify patients that will benefit from either chemotherapy-based treatment or targeted agents.

Further, the technology is being used to analyse tumours from patients with a form of brain cancer (glioblastoma multiforme) to explore whether telomere length can be used as a biomarker of outcome.

The work was funded by the Medical Research Council, the Wales Cancer Research Centre, Cancer Research UK and the Welsh Clinical Academic Training (WCAT) programme.



# TIC-TOC study: Raising awareness of vague cancer symptoms in Cwm Taf Morgannwg



*"The trial has already supported people to enter into these new diagnostic pathways"*

Spotting the signs of cancer isn't always easy. Vague symptoms like unexplained tiredness and weight loss are often not thought of as a cause for concern.

However, they can be a serious sign of cancer. That's why researchers in Cardiff are collaborating with the NHS and Public Health Wales on a study called TIC-TOC, which is testing the acceptability and feasibility of running and evaluating a vague cancer symptom awareness campaign in an area of high socioeconomic deprivation.

Funded by Cancer Research Wales, the study launched in 2020 with a multifaceted campaign running in Cwm Taf Morgannwg between July 2021-March 2022. The campaign included posters, pharmacy bags, radio adverts and targeted Facebook posts alongside the introduction of TIC-TOC cancer champions; members of the local community who are trained to offer support and share campaign resources.

"TIC-TOC was designed to let people know that these lesser-known vague symptoms could be serious, and to encourage people experiencing these symptoms to go to their GP.

We also wanted to send a positive message that finding cancer early can improve outcomes," said WCRC-funded researcher Dr Grace McCutchan.

"The Rapid Diagnostic Clinic is a new cancer referral pathway that has been set up in Cwm Taf Morgannwg to accelerate diagnosis of cancer among people presenting with vague cancer symptoms. The TIC-TOC campaign aimed to get people into these Rapid Diagnostic Clinics sooner, to diagnose the cancer in its earlier, more treatable stages. We designed the TIC-TOC campaign to address what we know from our research about why people living in deprived areas might put off going to see their GP with cancer symptoms."

Cwm Taf Morgannwg was chosen as the study site because rates of cancer are often higher in areas of deprivation. People living in these areas also tend to take longer between noticing a symptom and visiting their doctor, increasing their likelihood of being diagnosed with advanced stage cancer.

The area is home to one of Wales' first Rapid Diagnosis Clinics,

making it an ideal location for the study. Researchers are comparing data from Cwm Taf Morgannwg against data from a comparator site, Swansea Bay, which also has a Rapid Diagnostic Clinic but will not be targeted by the campaign.

"With the TIC-TOC study, we're testing whether we can deliver and evaluate the campaign. We are collecting data to look at things like whether the campaign is acceptable to the public, if the role of the cancer champion is acceptable/feasible, and if it's possible to collect data to assess whether the campaign works," said Dr McCutchan.

The TIC-TOC campaign came to an end in April 2022. The team are now analysing the study data and considering their next steps.

"We launched this study during the COVID-19 pandemic, which brought many challenges," said Dr McCutchan. "The success of this study was partly due to excellent collaboration between NHS Wales, Public Health Wales, Health Boards and Universities, and it has already supported people to enter into these new diagnostic pathways."

# Spotlight on our public & patient involvement group

Our public and patient involvement group is central to everything we do. They work with our researchers to ensure that the work we do is relevant and valuable. We would not be the organisation we are without them.



**Alisha Newman**  
Academic Lead



**Julie Hepburn**  
Lay Lead



**Mark Edwards**  
Research Partner



**Sue Campbell**  
Research Partner



**Bob McAlister**  
Research Partner



**Jim Elliot**  
Research Partner



**Sarah Peddle**  
Research Partner



**Kathy Seddon**  
Research Partner



**Zoe Evans**  
Project Officer

## Life as a Research Partner

**Bob McAlister gives us an insight into his passion for public involvement.**

I am often asked about what my Research Partner (RP) role involves and why I find it so interesting.

To answer that 'why', I should start by saying that I lost both my parents to cancer, so the disease has featured prominently in my life. Thus trying in some small way to 'do something about it' is a huge motivation.

By channelling my efforts into research, I feel that I am assisting with future-proofing future generations. Any advances that are made may benefit my younger family members and others. New treatments, new drugs, equipment upgrades, better training for clinicians and others - every change can play a part.

As an RP, I am called upon to comment on research proposals, to proofread public facing information and to sometimes be part of trial management groups. During this

work I interact with researchers, clinicians and the wider research Centre teams.

I find all of this to be very stimulating. There are some very talented and dedicated people involved in the work and I am often filled with wonder at what they are trying to achieve through research-led change. I did not follow a science pathway during or after school so this has been a new world for me, and it is one that I am thoroughly impressed by. Whilst I cannot pretend to understand all that I hear or read, I do always have a view on whether the end will justify the investment in any particular means.

I am keenly interested in viewing the progression of young researchers through the lab pathways of a research career. In my working life I spent some time in career development. Whilst the detail of any study usually takes some unravelling, I am far more at home with viewing the career pathways that young or advancing researchers

follow. A career in research, though, is an area that I see as being something of an unenviable lottery - particularly in times of challenge regarding funding.

As a young researcher you have to 'future-proof' your research speciality choice and then initially head the way of a research leader or team who attract funding to ensure continuity. Also, you will encounter the reality of research efforts being spread across the NHS and academia. Different employers, budget holders and varying priorities - how does all that co-align with consistently funding your lifestyle of choice?

Factoring in this adversity for these bright young things only increases my admiration for them. On a positive note, via the new All Wales Cancer Research Strategy and Health and Care Wales Faculty, things should improve over time for those that I have come to admire.

# A year in the life of our public and patient involvement group

**Julie Hepburn, our Lay Lead for patient and public involvement, shares her thoughts on the past year.**

The second year of our current five year term has seen further progress towards delivering our Action Plan, together with some interesting one-off developments.

Ongoing COVID restrictions have meant online meetings. Whilst we have become quite adept at these, it would be nice to see real people for a change, though in future we may go for a mixed approach with some face to face and some online meetings – particularly when we look at the wide geographical spread of our Research Partner team.

Our Rapid Response Group has been used by researchers looking for public involvement with funding bids five times in the last year. We will continue to publicise this service and are currently undertaking a review from public members of the group and researchers who have applied for help to see what improvements can be made.

The Public Involvement Impact Planning and Tracking pack, designed to help both researchers and public contributors to plan and reflect on public involvement and track the difference that public

contribution has made, has received keen interest from the research community. We have made great progress with pack development this year. Three Cardiff University-led studies are currently piloting the pack. Their feedback will inform a wider second pilot this year with support from Health and Care Research Wales and NIHR to publicise and evaluate. Once finalised, the pack will be made widely available for research use throughout the UK and beyond.

Steps to develop good PPI information sources for both the involved public and researchers are also currently in progress. We are working together with other PPI groups within the infrastructure to avoid duplication of effort on areas of mutual interest.

The new organogram for WCRC has proved a challenge for us in building new relationships with researchers and members of our team whom we have not yet met face to face. We have undertaken a review of our working practices and identified ways we can improve our links and the service we provide to researchers.

A new development this year has been providing a Research Partner for every Multi-Disciplinary Research Group, which will help

to improve our reach into the research community. Our links with researchers could well change in the coming months as the CReSt strategic plan is introduced across WCRC. We see this as an opportunity to develop new links with researchers and to strengthen any existing links going forward.

Some new strategic opportunities which have presented themselves this year include:

- Contributing to the new Cancer Strategy for Wales and providing a Lay member for the CReSt Management Board
- Providing a lay member for the All Wales Nurse & Allied Health Professionals Nurse & Cancer Research Network
- Speaking to a Cross Party Senedd Group on Medical Research Priorities from a public point of view in Wales
- Membership of the leadership group and providing a focus group for a Life Sciences Hub Project on 'Cancer Early Detection and Diagnosis Innovation in Wales'.

We look forward to continuing the provision of a helpful and effective public involvement service to researchers in the WCRC during the remainder of this funding period as we start to return to a pre-pandemic way of working.



# LOOKING FORWARD

## An exciting time of opportunity, growth and new focus for cancer research in Wales

Looking forward, 2022-23 promises to be a year of significant change and opportunity for the Centre.

Our senior researchers have worked with Health and Care Research Wales, the Wales Cancer Network and stakeholders from across Wales to develop a new Wales Cancer Research Strategy (CReSt).

The launch of the strategy will, for the first time, provide a clear national direction for all organisations involved in cancer research in Wales, with an emphasis on establishing depth rather than breadth of research in six priority research themes. This will be achieved by building the critical mass of researchers within these themes, and by bringing partner organisations into closer alignment.

The WCRC will lead the implementation of the strategy, requiring the Centre to intensify its role as a coordinator and broker

of collaboration and integrated working.

A CReSt Head of Strategy and Implementation (Jenni Macdougall) was recruited in March 2022 to lead CReSt implementation together with the CReSt Leadership Group, comprised of senior research leaders representing each theme and a Lay Research Partner.

Our aims in the WCRC will be to:

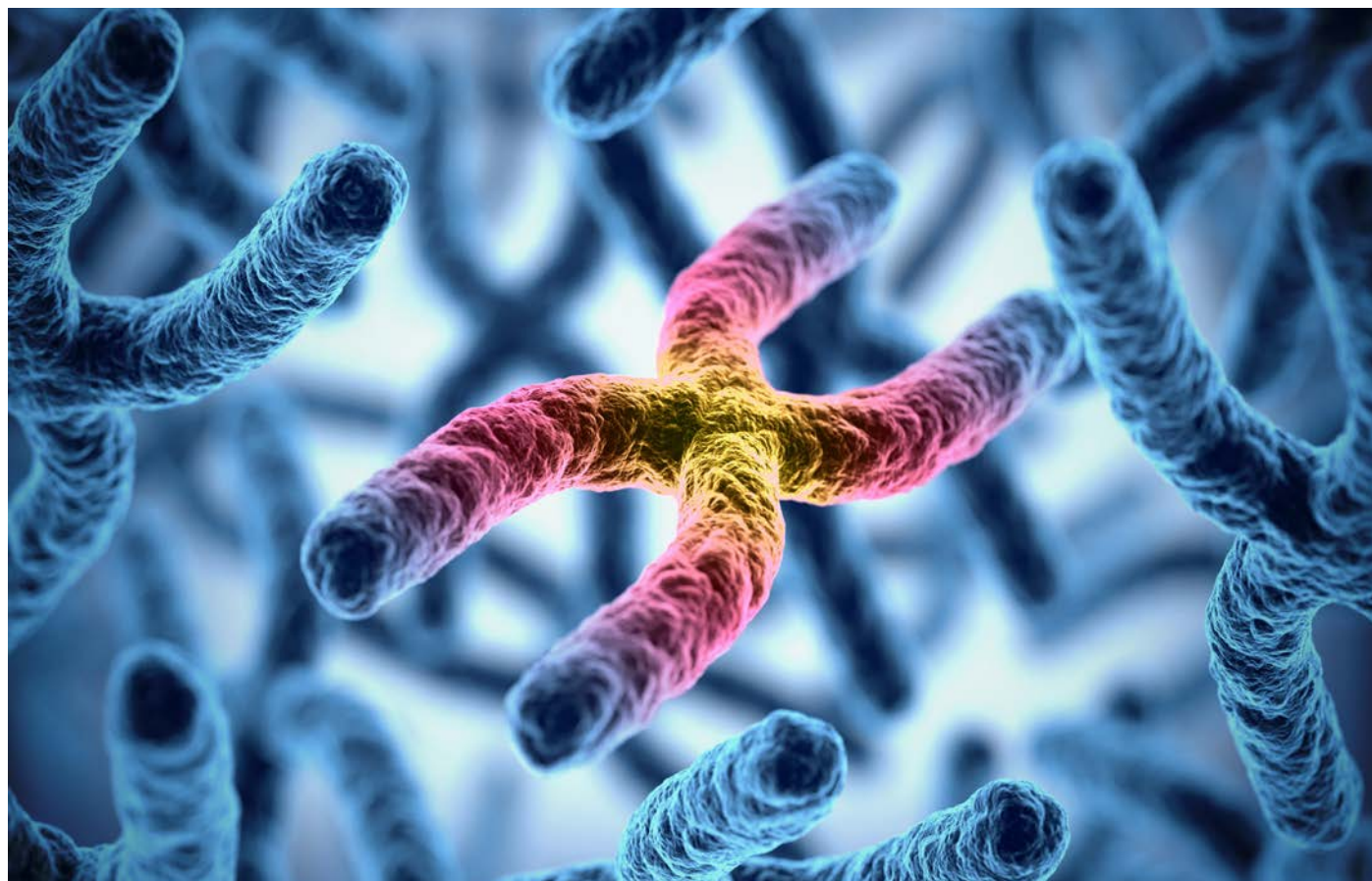
- Engage with the cancer research community and stakeholders across the whole of Wales
- Identify and nurture future Welsh cancer research leaders
- Attract investment into cancer research in Wales from multiple funding sectors.
- Work in synergy with other parts of the Welsh and UK research infrastructure
- Ensure that patients across Wales

and beyond benefit from, and know about, our research.

I would like to thank our funded researchers, group leads, hub team, and patient and public representatives for their dedication and hard work over the last twelve months. Thanks in particular to our WCRC Communications and Engagement Officer Betti Hunter for producing this fabulous stakeholder report for 2021-22.

I would also like to thank Velindre University NHS Trust and Cardiff University for the support I have personally received from both organisations in my new role at the WCRC. I look forward to continuing to engage with NHS and academic institutions from across Wales to implement the cancer research strategy.

**- Prof Mererid Evans, Director**







[www.walescancerresearchcentre.org](http://www.walescancerresearchcentre.org)  
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