WINTER 2026

HUDSON **NEWS**

Your gift, their breakthrough

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Power life changing research with your gift today.

Director's message

Professor Elizabeth Hartland AM

Across our laboratories at Hudson Institute, new ideas are taking shape and breakthroughs are within reach.

Our discoveries, and your generosity, are creating real momentum for families facing some of the most challenging health conditions, including inflammatory bowel disease (IBD).

In this edition of Hudson News, you'll meet two children whose lives have been profoundly affected by IBD. Their stories remind us why research is paramount to patients and families faced with the burden of these debilitating conditions.

Noah is just eleven years old, but he has already spent more time with doctors and hospitals than most of us will in a lifetime. He says the pain of IBD is "10 times worse than a bone breaking". His smile hides the profound impact that living with IBD has on anyone, let alone someone so young. So far, the best he can hope for is to have the condition contained, but he, and our researchers, are aiming for something better.

Charlotte is a little older – just entering her teens – but her life has been anything but carefree since IBD struck her at the age of 9. Some nights she would need to go to the toilet up to 20 times, with her parents unsure if she should ride it out or head to hospital. From weight loss to internal bleeding and worse, IBD has been a life-changing illness.

Cutting-edge research happening at Hudson Institute offers hope for more patients like Noah and Charlotte affected by IBD. Professor Sam Forster, a world leader in microbiome research, and his team continue to investigate the complex ecosystem within the gut that plays such a powerful role in exacerbating the symptoms of IBD and potentially curing it.

In partnership with Dr Ed Giles, who is also a paediatric gastroenterologist at Monash Children's Hospital, Prof Forster and his team aim to build off previous discoveries to develop new therapeutic approaches for IBD that will target particular species of bacteria and could one day transform treatment for IBD patients.

Our researchers are also making important strides in childhood cancer and RNA therapies, which you'll also read about in this edition of Hudson News.

These milestones in microbiome science, childhood cancer research and beyond, reflect our commitment to advancing knowledge and translating it into better outcomes for people at every stage of life.

Your support is central to this progress. At a time when medical research funding has never been harder to come by, I invite you to continue supporting our vital work with a donation this end of financial year. Your gift is their breakthrough.

With warm regards,

Professor Elizabeth Hartland AM
Director and CEO

Support our life saving research now with a tax deductible gift before 30 June 2026

Cover image: Professor Samuel Forster, Hudson Institute researcher in IBD

In this issue

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SCAN ME

Noah, 11-year-old IBD patient

A world inside each of us

There are only a few good reasons why a child might be seen in a Hudson Institute lab.

Work experience might explain it, or perhaps a researcher briefly juggling parenting duties during school holidays, but the most likely explanation is a much more sobering one.

Usually, the child paying a visit has a life-altering, possibly fatal disease, and he or she has come to meet the people working to change that situation.

Charlotte and Noah fit into the latter category; they both have Ulcerative Colitis, a form of Inflammatory Bowel Disease (IBD) that is incurable, painful and disruptive, often requiring hospitalisation and surgery.

In rare cases, it can be life threatening.

13-year-old Charlotte and 11-year-old Noah already know more about IBD than most people, but few people anywhere in the world know as much about it as Professor Sam Forster.

His research combines expertise in microbiology, immunology and computational biology to understand the function of the microbiome – the microbial communities that exist inside every human gut – and its role in IBD, among other diseases.

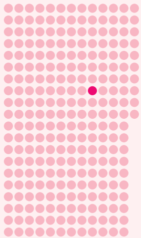
"In every one of us, the gut is home to a unique assortment of microbes," he says. "Like a rainforest or coral reef, these microbes form complex ecosystems that perform critical functions, including ensuring our health."

What is IBD?

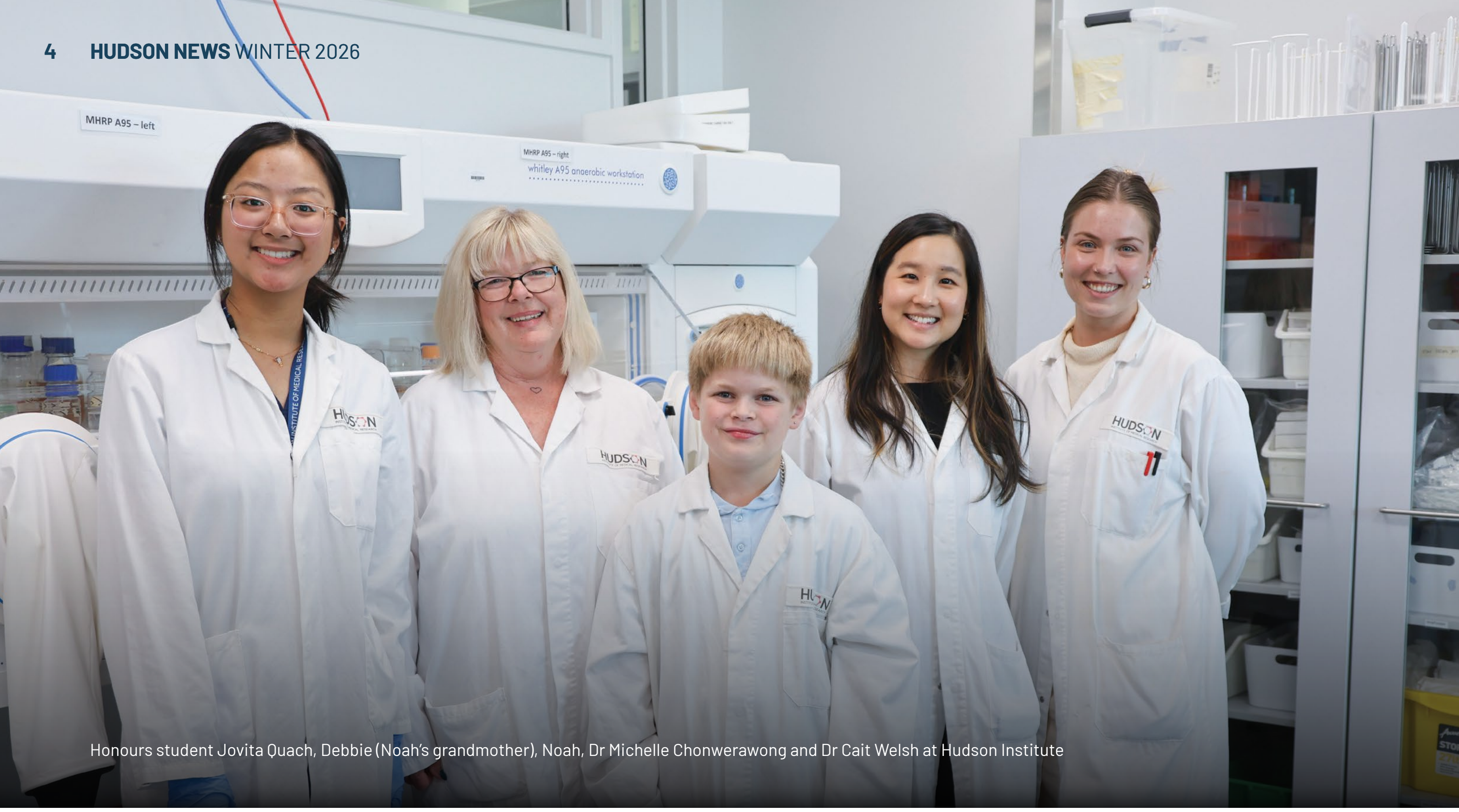
IBD is an overarching term for a group of chronic intestinal conditions that cause inflammation in the digestive tract including the mouth, oesophagus, stomach and the small and large intestine.

The exact cause of IBD is unknown and there is no cure.

Current treatments include drugs that suppress the immune system, but these become less effective over time and can have significant side effects including leaving patients with an increased risk of cancers, particularly lymphoma.



IBD affects **one in every 250** Australians aged **between five and forty**, including **thousands of children**.



Honours student Jovita Quach, Debbie (Noah's grandmother), Noah, Dr Michelle Chonwerawong and Dr Cait Welsh at Hudson Institute

Noah, 11-year old IBD patient

Noahs' story

It's only been two years since Noah was diagnosed with Ulcerative Colitis (a form of IBD), but when you're just 11, that's a very long time. At the moment, with few effective treatments available, Noah is staring down the barrel of many more years of debilitating symptoms – extreme pain, bleeding from the bowel, and worse.

Noah knows that medical research is his best chance of living a healthy, normal life. What he really wants is a cure, and that is exactly what Hudson Institute researchers are working hard to develop, and funding is the key to making it happen, for kids like Noah and people living with IBD everywhere.

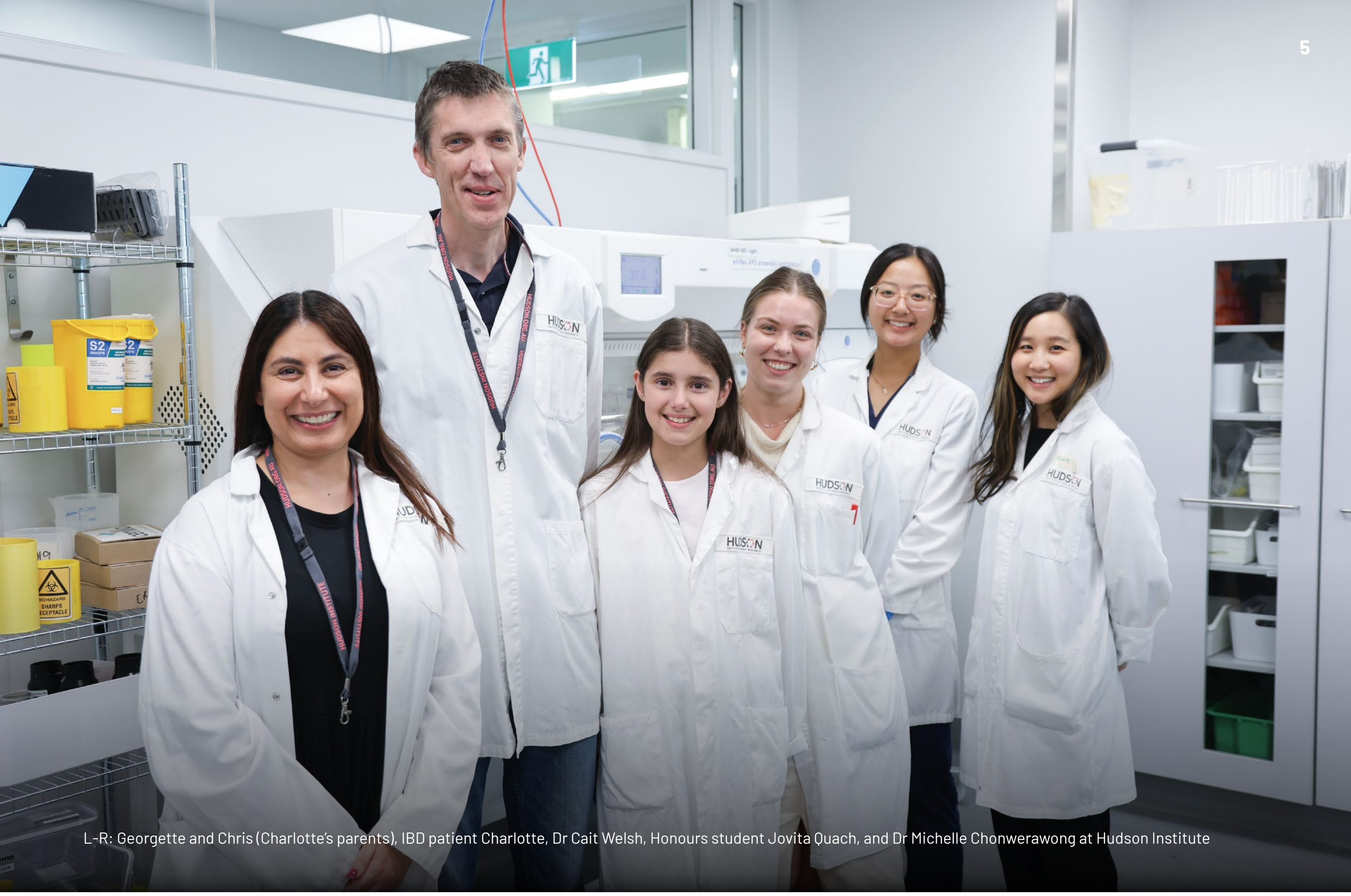
"Thanks to modern practices like over-use of antibiotics, both in humans and agriculture, many of these microbes are disappearing before we even know what they do. "Prof Forster says.

With his team at Hudson Institute, the focus is on understanding the forgotten friendly microbes: what they are, what they do, and how their absence can weaken communities and invite disease.

For people living with IBD, like Charlotte and Noah, the ultimate aim is to prevent inflammation from happening rather than pursing treatments that try to control it after it already exists.

> **"There is an urgent need to understand this amazing system because it's a rapidly closing window that could hold the clue to any number of health conditions."**
>
> **Prof Sam Forster**

L-R: Professor Samuel Forster and Dr Ed Giles



L-R: Georgette and Chris (Charlotte's parents), IBD patient Charlotte, Dr Cait Welsh, Honours student Jovita Quach, and Dr Michelle Chonwerawong at Hudson Institute

As well as his lab-based work, Prof Forster has the advantage of colleagues like Dr Ed Giles, a Paediatric Gastroenterologist at Monash Health, who coincidentally, is Charlotte's doctor.

They work together to develop and test new techniques and theories for fighting IBD, without ever losing sight of the people – even very young ones – who will benefit from their efforts.

Their aim is to build off previous discoveries to develop new therapeutic approaches for IBD that will target particular species of bacteria and could one day transform treatment for IBD patients.

But it is work that needs funding, not just for Noah and Charlotte's sakes, but to keep Australia at the forefront of this vital, time-sensitive area of medical research.

25% of IBD suffers are **diagnosed before the age of twenty**, meaning they can face a **lifetime** living with this **painful and unpredictable** disease.

Charlotte, 13-year old IBD patient

Charlottes' story

Charlotte was just 9 years old when she began experiencing unusual gastro-like symptoms that wouldn't go away. As doctors looked for the cause the symptoms worsened; she experienced pain and discomfort, weight loss and too many visits to the toilet. Everyday activities became precarious - she was terrified to go to school, not knowing if her condition would strike at the worst possible moment.

When a colonoscopy established that Charlotte had IBD it was only the start, with hospital stays, frequent infusions, special diets and more turning her carefree young life into something regimented yet unpredictable.

L-R: Professor Michael Gantier and Dr Sunil Sapkota at Hudson Institute

Tiny RNA fragments offer a giant opportunity for autoimmune diseases

Tiny fragments of RNA, once thought to be molecular waste, could spawn a new class of treatments for debilitating autoimmune and auto-inflammatory diseases.

This discovery, the culmination of eight years of research by Hudson Institute's Professor Michael Gantier, could improve the lives of people with lupus, psoriasis, rheumatoid arthritis and other common conditions.

The key lies in very short RNA fragments (as small as 1-3 bases) generated during RNA recycling, which have important anti-inflammatory functions no-one suspected.

To put this in context, these are the shortest class of RNAs ever reported to have a biological function - around 6 times shorter than Nobel Prize winning microRNAs!

Blocking immune activation

Prof Gantier screened hundreds of synthetic RNA molecules and found these very short RNA fragments could bind to sensors of our immune system and block their activation.

His collaboration with other institutions offers insights into the design of targeted inhibitors that replicate nature's own blueprint to control excessive immune activation.

The research, published in *Nature Immunology*, didn't just identify RNA fragments binding to immune sensors; it also revealed for the first time that they play crucial roles in controlling dangerous inflammation, especially in autoimmune conditions.

One of the world's foremost experts on oligonucleotides and the immune system, Professor Arthur Krieg, from UMass Chan Medical School RNA Therapeutics Institute (USA), called it a "tour de force" which has transformed our understanding of how immune sensors for viral infections are normally blocked to prevent autoimmunity.

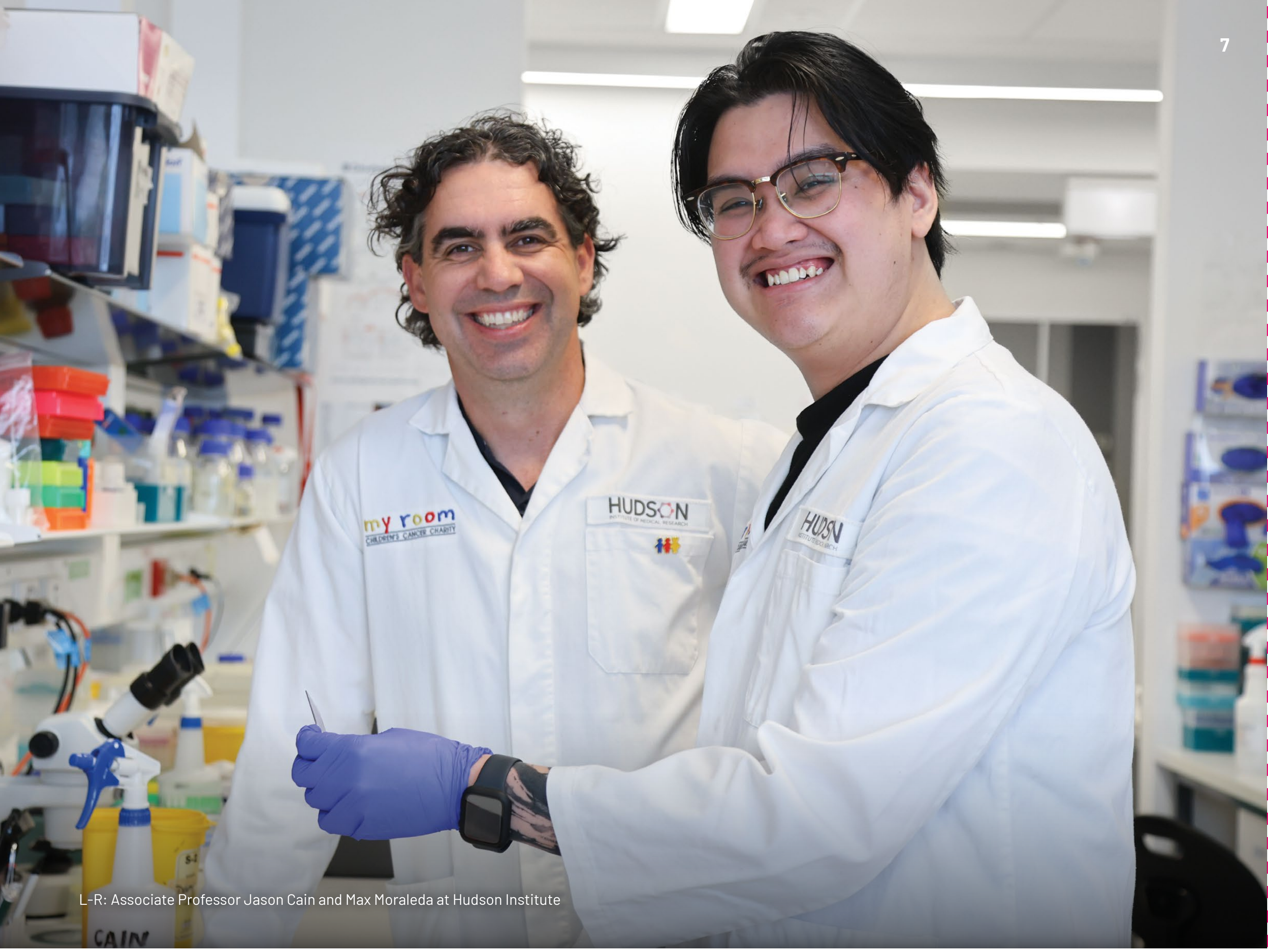
Important anti-inflammatory functions

These findings change the way we understand the initiation and maintenance of chronic inflammation driven by these receptors, and the impact of these findings will only grow as they are further explored.

"They illustrate a mechanism which was entirely unknown - these receptors are constantly blocked by short RNA fragments and this is essential to maintain health," Prof Gantier said.

Prof Gantier's findings have recently progressed through their first clinical trial, thanks to Australian-based biotechnology company Noxopharm, whose topical cream has passed successfully through clinical safety trials.

> **"Our discovery shows that selected RNA fragments of only 1-3 bases help protect our bodies against misfiring of the immune system which mistakenly attacks the body - leading to autoimmunity."**
>
> **Prof Michael Gantier**



L-R: Associate Professor Jason Cain and Max Moraleda at Hudson Institute

Testing the latest models in childhood cancer

> **"Many childhood cancers are so rare that researchers simply don't have precise models to study them. Renewable patient-derived tumour models change that. They allow research teams around the world to test new therapies on a variety of childhood cancers, paving the way for more effective, targeted and less toxic treatments."**
>
> **A/Prof Jason Cain, Hudson Institute Living Biobank's Lead Investigator**

How can you cure something you can't see or touch? It's a problem that has bedevilled medical researchers for centuries and, even in the modern day, it has been a particular problem for rare childhood cancers.

It's an area where Hudson Institute is a world leader – collecting, cataloguing, propagating and testing actual tissue from rare childhood cancers, enabling our researchers and others worldwide, to test new theories and treatments, often for the first time.

When it launched in 2023 the Children's Cancer Model Atlas, or CCMA, broke new ground as the world's largest collection of paediatric cancer cell lines.

It gave researchers the chance to test and analyse potential treatments using cutting-edge AI techniques, and its open-source architecture – thanks to collaborations with 34 cancer research institutes, universities and academic medical centres - gave every paediatric oncologist and childhood cancer researcher worldwide new opportunities.

But unlike some medical samples, the CCMA does not exist in a vacuum; we also have Hudson Institute's Living Biobank, using state-of-the-art technology to collect, process, store and distribute biological samples such as tumour tissue, blood and bone marrow, alongside clinical data.

It is a specialised repository that serves as vital research infrastructure, providing scientists with the high-quality materials needed to study disease, test new discoveries, guide treatments for current patients, and advance precision medicine.

Unlike traditional biobanks, which store non-renewable, fixed or frozen samples that offer only a single point-in-time analysis and can be quickly depleted, Hudson Institute's Living Biobank uses 'living' models which can be expanded indefinitely, enabling ongoing advanced studies and global sharing to drive novel discoveries and better outcomes for children with cancer.

Both facilities directly benefit children with limited treatment choices and poor prognoses, helping to accelerate the discovery of safer, more effective therapies that improve survival rates and enhance the quality and years of life for children diagnosed with cancer.

Thank you! Your gift is their breakthrough.

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IBD patient Charlotte

“I hope one day we find a cure so people like me can finally live without the struggles of IBD. Research is the only way things are going to get better for people like me.”

Charlotte, aged 13, IBD patient

Your gift, their breakthrough.

Please support our life saving research now with a tax deductible gift before 30 June 2026.

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Wheels within wheels – helping fund life changing research

There is a paradox in the funding of Hudson Institute's newborn health research. Rather than curing existing diseases, the success of this research is seen in the absence of illness.

It's something the members of Inner Wheel are familiar with, but they are looking for results, not recognition.

Take our umbilical cord blood (UCB) research, for example. Children born prematurely who previously may have endured life-long neurodevelopmental disorders such as cerebral palsy (CP), now have a better chance of living healthy, productive lives, thanks to the treatments they received shortly after birth.

Research, testing and development

Those treatments are the result of exhaustive research, testing and development by scientists like Dr Tegan White.

Dr White is a member of the Neurodevelopment and Neuroprotection Research group in The Ritchie Centre, working on better, faster ways to identify conditions that could compromise a baby's health, and treatments to counteract them.

It is vital research, and that is where the paradox comes in; the more successful Dr White and her colleagues are, the fewer babies will grow up with life-limiting health conditions like CP, and the less visible the problem will be.

But this crucial work is far from cheap. Government funding for medical research has never been more difficult to come by, so donations like those from Inner Wheel literally make the difference between employing researchers or not.

Inner Wheel's national fundraising effort

As Dianne Barlow, National Project Coordinator for Inner Wheel Club of Narre Warren says, "I grew up with the word 'volunteer' as a powerful word in my family. My mother and father inspired me to follow this course throughout my life."

With events like their "Two for Ten" Walk and International Women's Day fundraising luncheon (not to mention the garage sales, stalls, sales of homemade items, etc.), the Narre Warren Club of Inner Wheel is part of a national effort to raise enough money for a research grant to employ one more full-time researcher. And due to the tireless efforts of dedicated volunteers like Dianne, the Narre Warren Club has raised over $10,000 in the last two years alone. Dr White is thankful for more than just the funding they provide.

> **"It is incredibly rewarding to be reminded that people care about our research, and are so passionate about it themselves."**
>
> **Dr Tegan White**

This collaboration shows what one small group can do, and future generations of healthy Australians will be living proof of the difference one Hudson Institute lab has made… whether that difference is visible, or not.

Preterm Birth Facts

- A preterm baby is born before 37 weeks and can develop normally but may be at increased risk of developmental problems.
- Globally about 15 million babies – up to one in ten – are born preterm each year and this rate is increasing.

Inner Wheel Member Ann McGill (AM) and Researchers from Hudson Institute
Back Row, L-R: Dr Tayla Penny, Dahyun Kang (PHD Student), Dr Emily Camm.
Middle Row, L-R: Prof Suzie Miller, A/Prof Courtney McDonald, Dr Ilias Nitsos,
Dr Amy Sutherland, Dr Indya Davis. Front Row, Inner Wheel Member, Masters Students
Shreyaa Nair and Nikita Mangoba, Inner Wheel Member Dianne Barlow and Dr Tegan White

Write the next breakthrough into your Will. Leave a legacy that saves lives.

Your legacy can power our brilliant researchers to find new and innovative treatments and cures for current and future generations.

Our team is here to help with any queries.

Please contact Connie Honaker at:
t: +61 3 8572 2700
e: connie.honaker@hudson.org.au

L-R: Jessica Collins and Elias, born after just 22 weeks' gestation