Scientists at QIMR Berghofer have used an antibody to slow the growth and spread of common cancers.

During laboratory tests, the antibody inhibited the spread of melanoma, lung, breast and prostate cancer cells.

The head of the Immunology Department at QIMR Berghofer, Professor Mark Smyth, said the antibody worked by helping to activate immune cells known as Natural Killer (NK) cells.

“We’ve previously found that these Natural Killer cells have a protein on them called CD96,” said Professor Smyth.

“This protein stops the NK cells from recognising the cancer cells, essentially allowing the cancer to hide from the immune system.

“Now we’ve shown that we can block the protein with an antibody, which helps to activate the Natural Killer cells and allows them to detect and destroy the cancer cells.

“This is a very significant and exciting finding.”

The finding paves the way for new immunotherapy treatments to fight cancer. Immunotherapy is a fast-developing field that is revolutionising the treatment of cancer. It uses a patient’s own immune system to fight the disease.

Professor Smyth and his team found the antibody they tested was even more effective when it was used together with existing immunotherapy treatments.

“We think that in future a human version of this antibody will be used in combination with existing immunotherapy treatments,” said Professor Smyth.

“We hope that by activating the immune cells, we may be able to stop the spread of cancers before they become aggressively metastatic.”
From the Director and CEO

It is with pleasure that we once again update you on some of the crucial research we’re doing at QIMR Berghofer.

The areas we research are as diverse as they are important: a wide range of cancers including skin, breast and lung cancers; mental health conditions like depression and Alzheimer’s disease; infectious diseases like Zika virus and malaria; and a range of other chronic disorders including asthma, inflammatory bowel disease and cirrhosis of the liver. What all of our research has in common is its goal to improve human health.

On behalf of the whole Institute, I sincerely thank you for your ongoing support, whether it be financial or moral.

Melanoma declining in Australia

Researchers at QIMR Berghofer have found that Australia no longer has the highest rates of melanoma in the world, after being overtaken by New Zealand.

Professor David Whiteman and his colleagues found that Australia’s melanoma rates peaked at nearly 49 cases per 100 000 people in 2005 and declined to about 48 cases per 100 000 people by 2011. New Zealand’s rates reached about 50 cases per 100 000 people in 2011.

“We think the main reason for this decline is that Australia has put a huge effort into primary prevention campaigns since the 1980s,” said Professor Whiteman.

“Australians have become more ‘sun smart’ as they have become more aware of the dangers of melanoma and other skin cancers.”

But the news isn’t as good for Australians aged 50 and over, with melanoma rates still rising in that age group.

“We think rates are still going up in the over 50s because many people in this age group had already sustained sun damage before the sun safety campaigns were introduced,” Professor Whiteman explained.

“Those melanomas are only appearing now, many decades after the cancer-causing exposure to sunlight occurred.”

Professor Whiteman and his colleagues have also developed an online tool to predict the risk for people aged 40 and over of developing a basal or squamous cell carcinoma within three years. It’s available at the website. http://qskin.qimrberghofer.edu.au
Scientists piece together endometrial cancer puzzle

Scientists at QIMR Berghofer, the University of Cambridge and Oxford University have discovered five new gene regions that increase a woman’s risk of developing endometrial cancer.

Endometrial cancer affects the lining of the uterus. It is the sixth most commonly diagnosed cancer in Australian women.

Associate Professor Amanda Spurdle, who led the study, said the findings significantly increased the knowledge of the genetic drivers of endometrial cancer.

“As we develop a more comprehensive view of the genetic risk factors for endometrial cancer, we can start to work out which genes could potentially be targeted with new treatments down the track,” she said.

“In particular, we can start looking into whether there are drugs that are already approved and available for use that can be used to target those genes.”

Our people:

Dr Nic Waddell, head of the Medical Genomics Laboratory

**What is medical genomics?**

Medical genomics is the study of a patient’s genome and how we can use that information to help guide a patient’s treatment.

**What do you love about the field?**

Genomics is starting to make its way from research into patient care, so this is an exciting time to be involved. We also deal with lots of “big data” so most of our work is computational and involves working with high performance computers.

**What drives and inspires you?**

People who show acts of kindness, dedication and passion in what they do. This includes all people, whether it’s others at QIMR Berghofer, collaborators, patients enrolled in our studies, family, or strangers.

**What’s a project you’re working on at the moment?**

We are exploring the genomics of mesothelioma and trying to find potential new ways of treating it. Currently there is no cure for patients with mesothelioma.

**What has been one of your career highlights so far?**

Taking part in the International Cancer Genome Consortium project which was an international effort to characterise the genomics of a variety of different cancer types (icgc.org). Our Australian projects focus on pancreatic and ovarian cancer and melanoma.
Gordon and Jessie Gilmour were committed to Leukaemia Research since the early 1970s. After losing their beloved five-year-old granddaughter to the disease, it’s understandable that they would feel the need to act.

Gordon and Jessie were community-minded throughout their lives, always striving to help others, whether it was by quietly donating to charity or giving of their time and energy through service organisations.

The Gordon and Jessie Gilmour Trust was established through their Will and together, Rae Peacock and her brothers Ian and Grahame, decided to continue their parents’ legacy and invest in the science of medical research, feeling that this was a great way to touch as many people as possible.

Associate Professor Steven Lane heads up the Gordon and Jessie Gilmour Leukaemia Research Laboratory here at QIMR Berghofer. The Gilmour’s ongoing commitment to find a cure for leukaemia is possible through their legacy.

The Gordon and Jessie Gilmour Leukaemia Research Laboratory researches very aggressive blood cancers that are among the most common types of cancer affecting Australians.

Dr Lane and his team are concentrating on generating robust models of leukaemia and dissecting the pathways of self-renewal in leukaemia stem cells and normal blood cells.

Their work is assisted by the generosity of the Gilmour family. For that, we thank you.