Media release

New pathway to fight most aggressive prostate cancer

In a breakthrough for the treatment of prostate cancer, researchers at Peter MacCallum Cancer Centre in collaboration with researchers at Monash University and Australian National University have identified a drug combination which shows potential as an entirely new therapy for incurable, end-stage disease.

Around 18,000 Australian men are diagnosed with prostate cancer and some 4,000 will die from the disease each year.

The research, published overnight in the journal Clinical Cancer Research, has shown that targeting the ability of cancer cells to make protein with a combination of two drugs provides remarkable anti-cancer potential in pre-clinical models of metastatic castrate-resistant prostate cancer.

The drug combination is a completely different approach to conventional prostate cancer treatments which rely on starving the cancer of the hormone, testosterone.

“What we’ve demonstrated in pre-clinical models is a powerful new way to inhibit this most aggressive form of the cancer by targeting and blocking the activity of a cancer causing gene, known as the MYC oncogene. MYC drives cancer cells’ ability to make the protein they need to grow,” says Dr Luc Furic, recently recruited from Monash University to Peter Mac’s Prostate Cancer Program.

“Our approach uses two compounds, CX-5461 and CX-6258, which work in tandem to block the MYC oncogene’s ability to stimulate cancer cells to make ribosomes, the cellular machines that make protein. Without the ability to make ribosomes, growth of even the most aggressive cancers that are resistant to conventional therapy is potently inhibited.”

Dr Furic says the therapeutic potential of targeting the MYC oncogene had been known for some time but, until recently, there have been no targeted therapies available. Research led at Peter Mac by Dr Furic and Professors Ross Hannan and Rick Pearson has - for the first time - confirmed the effectiveness of targeting MYC-driven ribosome synthesis to treat solid cancer.

Strikingly, while CX-6258 showed limited potency alone, its combination with CX-5461 was able to kill off prostate cancer cells in several verified models of aggressive prostate cancer, both *in vitro* experiments and mouse models of the disease. The next step is to see if these results can be replicated in prostate cancer patients.

“This discovery provides a pathway to potentially develop a new class of drug specifically for people with incurable prostate cancer,” Dr Furic says.
The compound CX-5461 has been developed through collaboration between Peter Mac and Senhwa Biosciences and has already shown potential as a treatment in blood cancers, with a Phase I clinical trial underway at Peter Mac. A Phase I/II trial of the drug for solid tumours has recently commenced in Canada focused on breast cancer.

Professor Pearson said it was exciting to see the potential of CX-5461 expand to include prostate cancer, and the most aggressive form of this disease where there was an urgent need for new therapeutic options.

“Our hope is to accelerate the development of new stand-alone treatments for the most advanced form of prostate cancer, but there is also the potential to use these compounds in combination with conventional therapies to improve outcomes across the spectrum of prostate cancer patients,” Prof Pearson says.

“We hope to progress to clinical trials of CX-5461 for Australian Prostate Cancer patients in the next 12 months.”

Professor Hannan said the research highlighted the benefits of collaboration across institutions.

“The expertise from the three institutions is a great example of how we can work together to develop new therapies which have the potential to make a meaningful difference to patients,” according to Prof Hannan.

Peter Mac’s specialist prostate cancer clinicians welcome the new research.

Associate Professor Declan Murphy, Urologist & Director of Genitourinary Oncology said: “Advanced prostate cancer typically requires castration-type therapy to control the progression of the disease, and resistance to this strategy is inevitable.

“This new work heralds a totally different approach by targeting the cancer cells directly at a molecular level. We are excited to see how this translates into our patients with advanced prostate cancer”.

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Contacts:
For more information or to arrange an interview with please contact the Peter Mac Communications team on 0417 123 048.

Prostate Cancer in Australia
Prostate Cancer is the most commonly diagnosed cancer in Australia. One in six Australian men will be diagnosed with prostate cancer before their 85th birthday. More than 18,000 Australian men will be diagnosed with prostate cancer in 2016, and there will be an estimated 3,398 deaths.
About Peter Mac
Peter MacCallum Cancer Centre is one of the world’s leading cancer research, education and treatment centres globally and is Australia’s only public hospital solely dedicated to caring for people affected by cancer. We have over 2,500 staff, including more than 580 laboratory and clinical researchers, all focused on providing better treatments, better care and potential cures for cancer.