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Telomere analysis centre to advance cancer research

By Life Scientist Staff | Posted in Cancer on 25 May, 2015

Westmead's Children's Medical Research Institute (CMRI) has become home to the Australian Cancer Research Foundation Telomere Analysis Centre (ATAC). The centre's opening coincides with recent CMRI research that illustrates why studying telomeres may lead to treatments for some of the most aggressive cancers.

Telomeres are structures that cap the ends of chromosomes. In normal cells, telomeres shorten gradually as part of normal ageing, but cancer cells develop methods to stop their telomeres shortening so they can keep multiplying relentlessly. One of these methods, called ALT, is often used by bone cancers, brain cancers and other aggressive cancers that are currently difficult to treat.

CMRI researchers previously discovered that normal cells have a 'lock' mechanism that prevents ALT getting out of control. Research teams have previously reported that ALT cancers often have damage in a specific gene called ATRX, leading to speculation that ATRX might be the elusive ALT controller. CMRI's recent research has now proven that ATRX is indeed the missing ALT lock.

"We think that losing this lock makes cancer cells vulnerable to treatments that normal cells are protected against," said CMRI Director Professor Roger Reddel. "So we may have found an Achilles heel for ALT cancers."

With the availability of the ATAC facility, the CMRI team said their research will be propelled to a new level. According to team leader Dr Christine Napier, "We can greatly accelerate the next phase of this work, which I expect will lead to significant advances in treatment of some very aggressive cancers."

ATAC's laboratories were custom designed to accommodate state-of-the-art microscopes and analysis stations that will allow researchers to adopt the latest research methods. The centre will focus on four key components of telomere-related research:

- Telomere length analysis
- Automated metaphase chromosome scanning
- High-resolution fluorescence microscopy
- Live cell imaging

The Australian Cancer Research Foundation (ACRF) donated $2 million towards the development of the facility, while The Ian Potter Foundation contributed $100,000. ACRF Chief Executive Professor Ian Brown noted, "The ACRF's Medical Research Advisory Committee - led by Professor Ian Frazer AC

- assessed this research initiative as both nationally groundbreaking and internationally competitive."

ATAC forms part of a multimillion-dollar redevelopment of CMRI and the Westmead precinct to create a world-leading centre for health and medical research. Donations towards the redevelopment of CMRI can be made by visiting www.cmri.org.au/redevelopment.

- See more at: http://www.lifescientist.com.au/content/health-medical/news/telomere-analysis-centre-to-advance-cancer-research-942602381#sthash.5sHPtZWK.dpuf