

Professor Roger Reddel – 2011 Outstanding Researcher of the Year



Over the past two decades Professor Roger Reddel, Director of the Children's Medical Research Institute (CMRI) has been leading his team towards significant breakthroughs in cancer molecular genetics. His research has been recognized at the recent Premier's Awards where he received a \$50,000 prize and was named Outstanding Researcher of the Year.

After studying both science and medicine Roger began working in adult oncology. During this time he found that the plight of incurable patients affected him profoundly, especially young adults who should otherwise have had the prospect of long and fulfilling lives ahead of them. "... ultimately I knew that [palliative care] wasn't what I wanted to do. What I really wanted to do was work on strategies to cure people who at that time could not be cured." Says Roger

The research that Roger and his colleagues are involved with today holds out truly thrilling possibilities. They are analysing the molecular mechanisms that make cancer cells immortal – which he refers to as "one of the key pillars of the cancer phenomenon." This is laying the basis for development of drugs targeting the mechanisms upon which 98% of all human cancers depend for their continued growth.

Does that mean a potential cure?

"I hesitate to say it, because if you say you're working on a cure for cancer, people say, 'Right!' but in fact that is *exactly* the prize we're going after," Roger says with a laugh. "And I'll be disappointed if it doesn't happen within my working lifetime."

A key part of Roger's research is the study of telomeres (ATL), tiny structures at the ends of chromosomes. In normal cells, telomeres shorten each time the cell divides until they send a signal to it that it cannot reproduce any more. For reasons that have not been understood, most cancers escape from this "proliferation limit" and become immortal by activating mechanisms that maintain the length of the telomeres.

Roger and his group discovered alternative lengthening of telomeres in human cells and that it is present in human tumours. They also discovered about the ALT mechanism which has led to a blood test for the presence of ALT-positive tumours and as a screen for ALT inhibitors. Roger and his team gained most recognition for discovering that 10% to 15% of cancers depend on ALT. "We've done a lot of work trying to understand the mechanism, working steadily towards the aim of knowing enough to come up with an anti-cancer drug that targets it," he explains.

In a major contribution to the field, his team has also purified active human telomerase for the first time and analysed its molecular constituents. It is now clear, Roger says, that 85% of all cancers rely on telomerase to continue growing, which presents a "close to universal target" for cancer treatments.

Roger is currently the Chair of the Cure Cancer Australia Foundation Research Committee and contributes to the rigorous selection process of our Young Research grant program.