Beating cancer with immune cells

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The fight against cancer has received a significant boost with a medical breakthrough by researchers at The Australian National University.

Professor Chris Parish and Dr. Ben Quah from The John Curtin School of Medical Research have discovered that immune cells responding to a foreign substance, or pathogen, are able to rapidly transfer their ability to recognise the invader to other immune cells.

Professor Parish said that harnessing this process may lead to new ways to treat cancerous tumours as well as strengthen immunity in patients with weaker immune systems.

“Our discovery revolutionises our understanding of how the immune system works,” said Professor Parish.

“It indicates that there is much more communication and sharing of information between cells of the immune system than was previously thought.

“These findings can potentially be harnessed to expand immunity against pathogens and cancer. In the case of cancer the number of immune cells in a patient that can recognise and eliminate the cancer could be dramatically expanded.

“Another obvious application of our discovery is in patients with decreased immunity. Again this form of cell to cell communication could be used to expand the number of immune cells in these individuals

that can combat opportunistic infections," he said.

Professor Parish added that he started research on this phenomenon in the immune system over 10 years ago.

"Although at the time we regarded the work as extremely heretical," said Professor Parish.

"It took many years for us to obtain sufficient data to convince ourselves that the phenomenon was genuine. Now there is no doubt that the sharing of information and abilities between cells of the immune system is genuine.

"Understanding when, why and how it occurs and whether it can be harnessed to combat cancer and infections is the challenge for the future," he said.

The researchers' innovative work on immune cells has landed them the inaugural Marshall and Warren Award from the National Health and Medical Research Council (NHMRC).

Named after Physiology and Medicine Nobel prize-winners Barry Marshall and Robin Warren, the award aims to help Australian scientists respond to the nation's future health needs.

Professor Parish's and Dr. Quah's breakthrough was selected as the most potentially transformative research from over 3,600 project grant applications to the NHMRC. The researchers will now receive $521,706 over three years to continue their work.

Professor Parish and Dr. Quah were presented with their award in a ceremony at University House, ANU, overnight.

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