

AT THE BLEEDING EDGE OF IMMUNOTHERAPY RESEARCH



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Most people are aware of how cancer works. Little tumours develop in the body on a regular basis but our immune system is able to fight them off before they impact health. It is only when the tumour “escapes” or “hides” from the immune system that malignant cells begin to grow and spread throughout the body. Cancer is the second leading cause of death worldwide and the number one biological cause of death in Qatar, accounting for almost 10% of deaths in the country according to a 2011 report by the Supreme Council of Health. Biological can mean treatable and we should never give up an opportunity to advance an individual’s quality of life. Researchers are investigating the way the body’s immune system fights tumours in a bid to unlock the body’s innate potential to fight cancer.

Think about it this way. The body has an army of cells that make up the immune system that targets tumours. There are several stages of attack: elimination, equilibrium and escape. Elimination involves the body’s immune system recognising the tumour’s presence and stimulating the immune response. Cells are called to the scene to kill and digest the tumour cells. Some tumour cells are able to survive the elimination phase and enter the equilibrium phase and then the escape phase. In the escape phase, tumour cells continue to grow and expand in an uncontrolled manner and may eventually lead to malignant growths.

Researchers are looking into how tumour cells manage to escape the immune system. Two prevailing hypotheses have emerged, further research into which will lead to novel ways of fighting and preventing cancer. The first hypothesis suggests that the immune system is being actively suppressed and so will not initiate its fighting mechanism to kill tumour cells, while the second option is that the tumour is resistant to the immune system from the beginning.

New treatments are in development that re-educate the body’s defences to recognise

cancer cells as a threat, or stop the cancer cells from restricting our own immunity. The body’s cells could be trained to “remember” the cancer and protect the body long after treatment has stopped.

Of course, clinical outcome varies widely among patients in the same cancer stage. Understanding why some people are able to defend against cancer for longer is key to tackling the disease. Two factors will indicate the body’s potential to “fight or defeat” a tumour: the strength of the immune response, and the mechanisms adopted by tumours to escape recognition.

Addressing the first factor, researchers led by Dr Jerome Galon, Research Director and Head of the Laboratory of Integrative Cancer Immunology in Paris, have developed the “Immunoscore” to predict the ability of a person’s immune system to fight tumour cells, and defined characteristics of the immune reaction associated with prolonged survival of the patients. Using the Immunoscore as part of routine diagnostic and prognostic assessment may provide crucial novel prognostic information and facilitate clinical decision-making (including guiding treatment decisions).

In parallel, research conducted by the Society for Immunotherapy of Cancer (SITC) has independently identified characteristics of tumours likely to respond to immunotherapy. The group observed that these characteristics are similar to those displayed by tumours in patients with good prognosis as described by Dr Galon’s group. The realisation that these phenomena are based on similar mechanisms may lead to the identification of therapeutic strategies that can integrate information from a range of research fields. This would provide treatments tailored for individual diseases that take into account the repercussions that each treatment may have on other conditions.

The research team being assembled at Sidra Medical and Research Centre will build on this research with the development of the first reprogrammable gene therapy facility in the region ■