Cancer treatment discovery opens tumours to immune cells

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(Medical Xpress) -- Scientists at the Western Australian Institute for Medical Research (WAIMR) have made exciting progress in their quest to help patients fight cancer using the body's own immune system.The Perth-based team - led by internationally renowned cancer researcher Professor Ruth Ganss - has published a paper on their discoveries in the US scientific journal *Proceedings of the National Academy of Sciences*.

"Until now, immunotherapy has not been very successful in treating cancer because tumours are very resistant to immune cells," said Dr Anna Johansson, from The University of Western Australia, which is affiliated with WAIMR.

"As a cancerous tumour grows, it forms a solid ball which is difficult for immune cells to get into and even if they can penetrate the tumour, the environment inside it either kills the cells or makes it difficult for them to function.

"We engineered a protein called TNF-Alpha so that it went straight to a pancreatic tumour and stayed there without toxic side effects outside the tumour.

"TNF-Alpha affected the blood vessels in the tumour in a surprising way which opened the solid ball so that immune cells could get inside.

"We thought it might damage the blood vessels because TNF-Alpha can be very toxic, but in low doses it actually improved them and increased healthy blood flow, helping immune cells to get inside the cancer."

TNF-Alpha has been shown to enhance the tumour's response to chemotherapy but until now scientists did not understand why. This study provides insights on how low-dose TNF-Alpha works in tumour and also shows for the first time that it can be combined with immunotherapy.

Provided by University of Western Australia