Breast cancer: A new treatment avenue identified

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Canadian researchers at the CHUM Research Centre (CRCHUM) and the Peter MacCallum Cancer Centre in Australia have identified a new avenue for treating breast cancer.

In 20 to 30% of breast cancer patients, the over-expression of a particular protein (human epidermal growth factor-2) is the main cause of the proliferation of cancer cells. Over the past few years Herceptin® (trastuzumab) has become the standard treatment for this kind of cancer. While it is known that it blocks the activity of this protein, its exact mechanism of action has remained a mystery.

Professor John Stagg, a CRCHUM researcher, Professor Mark J. Smyth, with the Peter MacCallum Cancer Centre in Australia, and their colleagues* have discovered that in addition to blocking cell proliferation, Herceptin also stimulates the production of interferons, which in turn activate immune cells called lymphocytes.

This study further supports the view that the presence of lymphocytes in tumours enhances treatment success. In addition to revealing the precise workings of Herceptin, this study also showed that combining Herceptin with a therapy that stimulates lymphocytes greatly increases its efficacy in animals.

"These findings open another avenue for breast cancer treatment for nearly a third of all women who are affected," notes Professor Stagg, who is also affiliated with the Faculty of Pharmacy at the University of

Montreal and with the Institut du Cancer de Montréal. Clinical trials could get underway in the near future and pave the way for more targeted therapies.

More information: Anti-ErbB-2 mAb therapy requires type I and II interferons and synergizes with anti-PD-1 or anti-CD137 mAb therapy. John Stagg, Sheren Loi, Upulie Divisekera, Shin Foong Ngiow, Hélène Duret, Hideo Yagita, Michele W. Teng, Mark J. Smyth. Early on-line edition of the *Proceedings of the National Academy of Sciences* www.pnas.org/cgi/doi/10.1073/pnas.1016569108

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