

Researchers investigate stress and breast cancer

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It's a common belief that there's a link between chronic stress and an increased risk of cancer. In new research published online by the *International Journal of Cancer*, scientists at The University of Western Ontario have taken a step toward confirming that belief.

Research led by Dwayne Jackson of the Departments of Medical biophysics and Biomedical Engineering has identified a particular neurotransmitter released in response to stress, that stimulates both [cancer cell growth](#) and migration in breast cancer.

Working with Ph.D candidate Philip Medeiros, Jackson looked at a branch of the nervous system called the [sympathetic nervous system](#), and how it "talks" to cells in various organs throughout the body. When the sympathetic nervous system is activated, like it is during stress, it communicates with receptors on cells through the release of neurotransmitters called [norepinephrine](#) and neuropeptide Y or NPY. This is a normal response that prepares the body for "fight or flight".

"We have all heard anecdotally that stress causes cancer. Our lab is particularly interested in how [chronic stress](#) may cause increases in the release of NPY and whether that may contribute to the progression of breast cancer," explains Jackson, an Assistant Professor at Western's Schulich School of Medicine & Dentistry. "It has been shown that women with a familial history of breast cancer exhibit greater physiological stress responses to normal everyday stressors. Since there is a very dense supply of sympathetic nerves in the female breast, it

would be reasonable to suspect that NPY may be released in greater amounts in the breasts of those at risk for breast cancer. Thus, we postulated if cancer cells are present and they respond to NPY, then this neuropeptide and its receptors would form a functional link between stress and breast cancer progression."

"Once we had established that [breast cancer](#) cells express the receptors for NPY, then we went through a set of experiments that looked at the functional consequences of activating them. We found NPY greatly accelerates cell growth as well as cell migration and these are two important steps in primary tumour growth, as well as in metastasis," concludes Medeiros.

Provided by University of Western Ontario

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