Neutrophil and cancer cell 'crosstalk' underlies oral cancer metastasis

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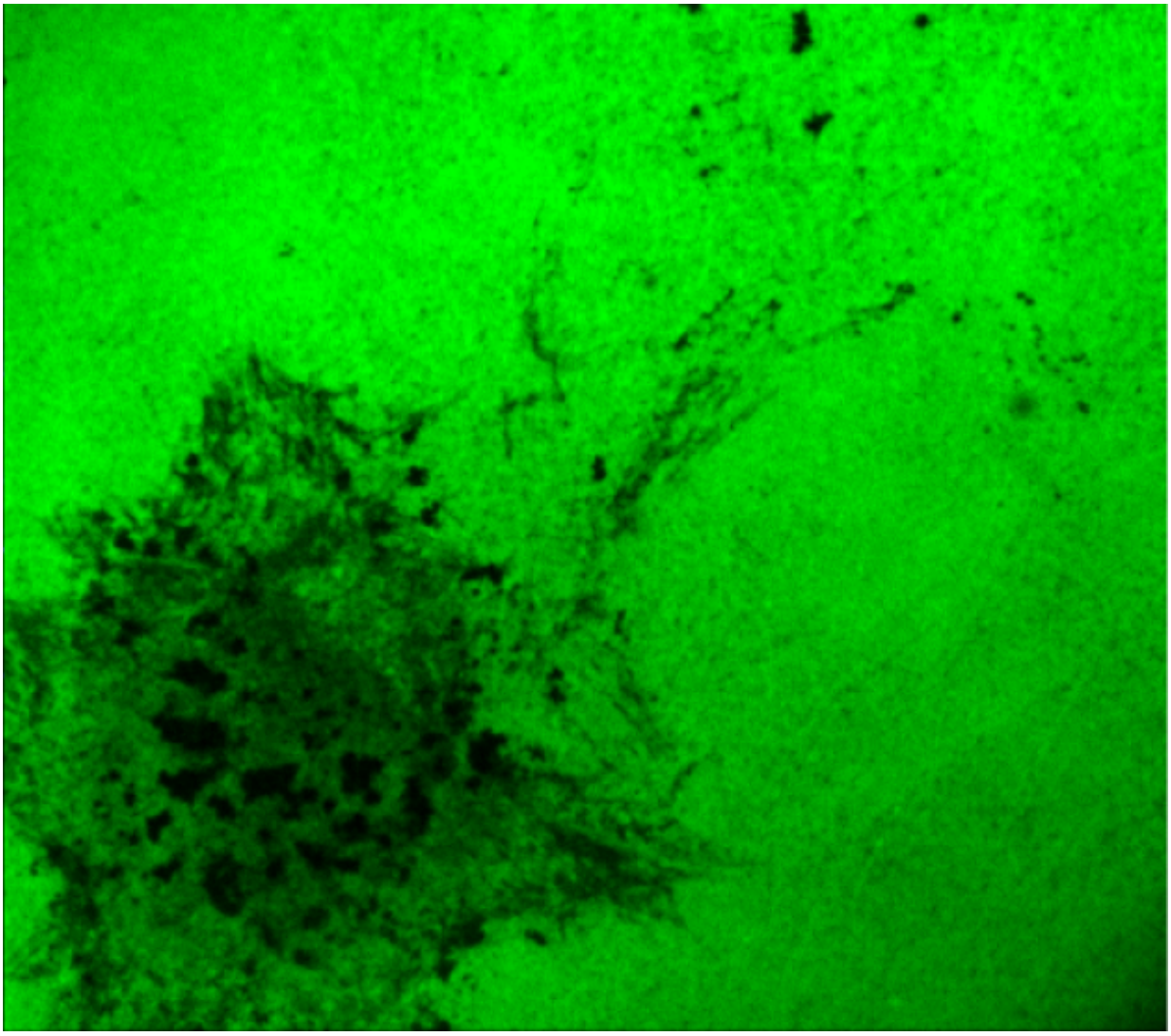

Oral squamous cell invading the extracellular matrix of a healthy cell. Credit: Marco Magalhaes

An abnormal immune response or "feedback loop" could very well be the underlying cause of metastases in oral cancers, according to Dr. Marco Magalhaes, Assistant Professor at the University of Toronto's Faculty of Dentistry and lead researcher in a study published in the journal *Cancer Immunology Research*. Magalhaes has unearthed a significant connection between the inflammatory response of a very specific form of immune cells, neutrophils, and the spread of this deadly disease.

"There's a unique inflammatory response with oral cancers," explains Magalhaes, citing the growing body of evidence between cellular inflammation and cancer, "because the oral cavity is quite unique in the body. A great many things are happening at the same time."

Magalhaes focused attention on neutrophils, immune cells commonly found in saliva and the oral cavity but not widely researched in relation to oral cancer. Like other immune cells, neutrophils secrete a group of molecules, including TNFa that regulates how the body responds to inflammation.

The study noted that oral cancer cells secreted IL8, another inflammatory mediator, which activates neutrophils, effectively establishing a massive immune-response build up or "feedback loop."

Ultimately, the researchers found, the immune-response loop resulted in increased invasive structures known as "invadapodia," used by the cancer cells to invade and metastasize.

"If we understand how the immune system interacts with the cancer we can modulate the immune response to acquire an anti-cancer response instead of a pro-tumor response," Magalhaes argues.

While the study points to the possibility of one day creating targeted, personalized immunotherapies for patients with oral cancer that could effectively shut down the abnormal immune response, the team is currently expanding upon their study of inflammation and oral cancer.

Approximately 3,600 cases of oral cancer are diagnosed in Canada every year, yet the survival rates - approximately 50 - 60% over five years - has remained stagnant for decades while other cancer survival rates have dramatically improved.

More information: *Cancer Immunology Research*, cancerimmunolres.aacrjournals. … CIR-15-0017.abstract

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