HPV strains may impact cervical cancer prognosis

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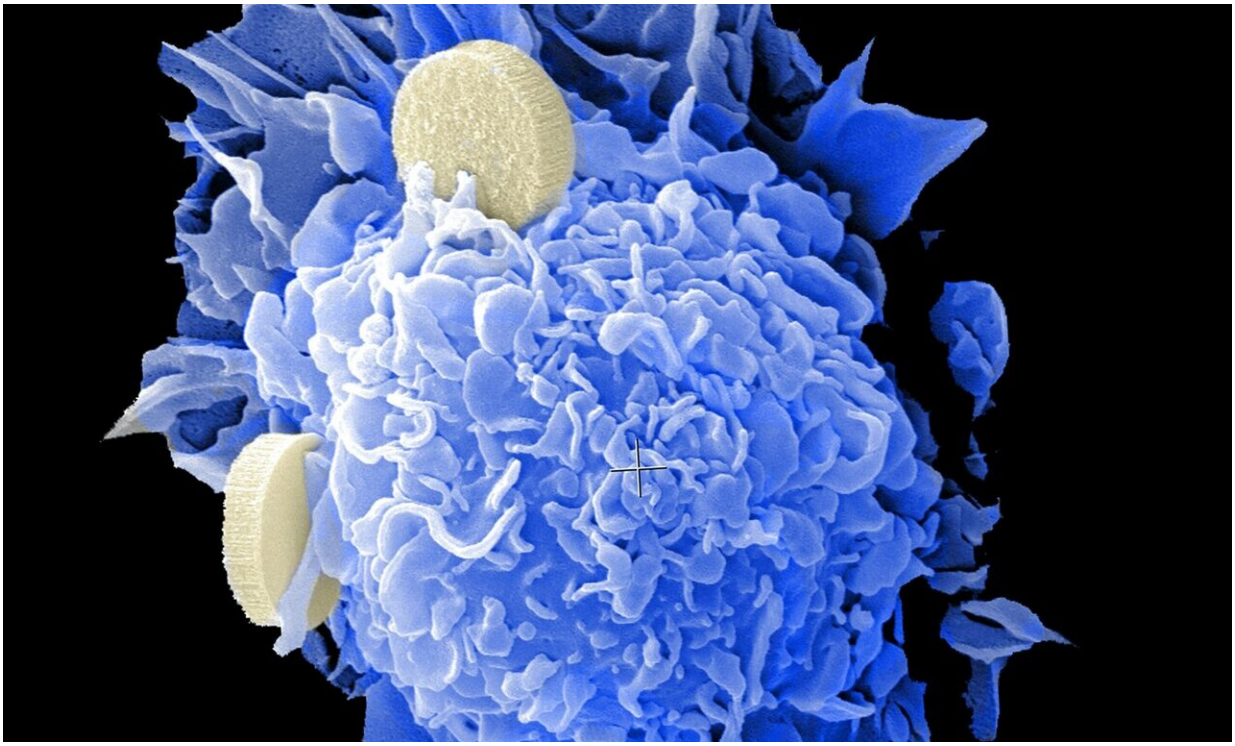

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An analysis of cervical cancers in Ugandan women has uncovered significant genomic differences between tumors caused by different strains of human papillomavirus (HPV), signifying HPV type may impact cervical cancer characteristics and prognosis.

The study—recently published in *Nature Genetics*—was led by a team of researchers, including scientists at the University of British Columbia and Canada's Michael Smith Genome Sciences Centre (GSC) at BC Cancer, and represents the first comprehensive analysis of molecular characteristics of cervical cancers in an African population.

The researchers compared cervical cancer samples infected by different evolutionary related groups of HPV types, known as clades. They identified previously unknown differences in how HPV clades impact the human genome. HPV-16 and HPV-18, belonging to clades A9 and A7, respectively, are the most common causes of cervical cancer detected in at least 70 percent of cases. Although both are considered high-risk, HPV-18 was associated with more clinically aggressive cancers.

"We are very grateful to have had the opportunity to engage in a wonderful collaboration, involving teams of researchers from different countries and continents, to use genome science to analyze these very precious samples from Ugandan patients," says Dr. Marco Marra, Director of the GSC and head of UBC's department of medical genetics in the faculty of medicine. "This opportunity speaks to the foresight of those who collaborated with the Uganda Cancer Institute in Kampala to perform sample collection, and the study funders that made it possible. We are especially grateful to the support of the patients, without whom this work could not have happened."

HPV infection is a leading cause of cervical cancer. In B.C., cervical cancer incidence has been decreasing due to HPV vaccination and regular screening. However, cervical cancer is the fourth most common cancer worldwide and is the most common form of cancer-related mortality in sub-Saharan African women, with researchers predicting a 50 percent increase in cervical cancer mortality by 2040.

It is critically important to study cervical cancer in African populations, and to compare the results obtained to other HPV-associated cancers, such as head and neck cancers, which are being observed with increasing frequency in western populations.

More information: Alessia Gagliardi et al, Analysis of Ugandan cervical carcinomas identifies human papillomavirus clade–specific epigenome and transcriptome landscapes, *Nature Genetics* (2020). DOI: 10.1038/s41588-020-0673-7

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