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Scientists discover new drugs with potential to treat stubborn cancers

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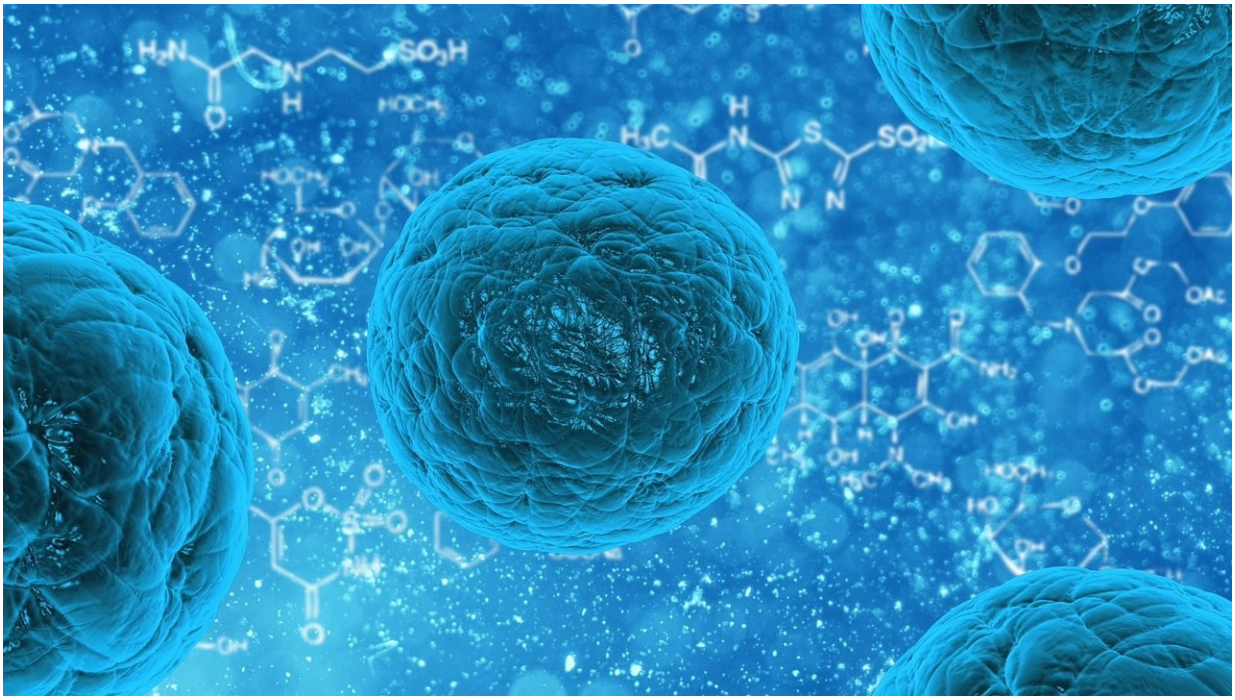

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Researchers at the University of Alberta have discovered a new class of drugs with the potential to make cancer treatment safer and more effective by preventing cancer cells from repairing themselves.

"For patients with resistant cancer, these drugs could rescue them by rendering their cancer once again treatable," said U of A chemist Fred

West, co-director of the Cancer Research Institute of Northern Alberta (CRINA).

"For patients who have not developed resistance, they could permit the use of lower, safer doses of chemotherapy, which would greatly reduce the serious side-effects that accompany many types of chemotherapy treatment," West added.

The drugs work by preventing cancer cells from repairing their own DNA, which is damaged through the traditional treatments of radiation therapy and chemotherapy. The newly discovered compounds inhibit the interaction of a protein pair called ERCC1-XPF that is responsible for repairing DNA within cancer cells.

Initially, the research team is focusing on colorectal and lung cancer, two of the most common types. Eventually, the researchers hope to apply the drugs to many different forms.

"First we need to test the compounds on model organisms to validate that the effects we have observed so far in cells still happen in a living organism, which is a much more complex situation," said West. "Then we'll work on developing a potent oral drug and aim to partner with a major pharmaceutical company to conduct first-in-human clinical trials."

The research team has already filed a provisional patent application and is working toward preclinical studies as soon as next year.

The study, "Targeting DNA Repair in Tumor Cells via Inhibition of ERCC1-XPF," was published in the *Journal of Medicinal Chemistry*.

More information: Ahmed H. Elmenoufy et al. Targeting DNA Repair in Tumor Cells via Inhibition of ERCC1–XPF, *Journal of Medicinal Chemistry* (2019). DOI: 10.1021/acs.jmedchem.9b00326

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