

Engineered virus is effective against triple negative breast cancer cells

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Scientists have discovered a potential cure for one of the most aggressive and least treatable forms of breast cancer called "triple negative breast cancer." In laboratory experiments involving human cancer cells, scientists used a virus similar to the one that helped eradicate smallpox to coax cancer cells to produce a protein which makes them susceptible to radioactive iodine. This discovery was published in the February 2014 issue of *The FASEB Journal*. Please note that human clinical trials are necessary before any definitive claims of a cure can be made and treatments can be made available.

"We hope that the recent advances in virology, genetic engineering and targeted radiotherapy will soon translate into an entire class of novel oncolytic, virotherapies for the treatment of deadly cancers," said Yuman Fong, M.D., a researcher involved in the work from the Department of Surgery at Memorial Sloan-Kettering Cancer Center in New York, NY.

To make this discovery, Fong and colleagues successfully infected and killed TNBC cells using a vaccinia virus. In addition, the researchers were also able to use the virus to cause infected cancer cells produce a [cell surface protein](#) called hNIS that normally is used to concentrate iodine in thyroid cells. The hNIS protein, expressed in thyroid cancer, is why most thyroid cancers can be cured or successfully treated with a small dose of [radioactive iodine](#) (which kills thyroid [cancer cells](#) expressing hNIS). Armed with the ability to force TNBC cells to produce this protein, researchers now have a way to deliver anticancer

therapies to this deadly and resistant form of cancer.

"This is an important and significant discovery that basically combines proven cures for two other diseases," said Gerald Weissmann, M.D., Editor-in-Chief of *The FASEB Journal*. "Even more exciting is that the effects of this virus and radioactive iodine are well known in people, hopefully reducing the amount of time it will take for it to reach the clinic."

More information: Sepideh Gholami, Chun-Hao Chen, Emil Lou, Laurence J. Belin, Sho Fujisawa, Valerie A. Longo, Nanhai G. Chen, Mithat Gönen, Pat B. Zanzonico, Aladar A. Szalay, and Yuman Fong. Vaccinia virus GLV-1h153 in combination with ¹³¹I shows increased efficiency in treating triple-negative breast cancer. *FASEB J.* February 2014 28:676-682; [DOI: 10.1096/fj.13-237222](https://doi.org/10.1096/fj.13-237222)

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