

Researchers take step toward eliminating cancer recurrence

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Scientists from the United States have made an important step toward eliminating cancer recurrence by combining immunotherapy with chemotherapy. Specifically, they found that chemotherapy alone leads to two types of dormant cancer cells that are not killed outright and become resistant to additional chemotherapy, but when combined with immunotherapy, a majority of dormant cells also is destroyed. The report appears in the September 2016 issue of the *Journal of Leukocyte Biology*.

"Immunotherapy is all about timing," said Masoud H. Manjili, a researcher involved in the work from the Department of Microbiology and Immunology, VCU School of Medicine, Richmond, Virginia. "The best way to apply [immunotherapy](#) as cancer prevention is during tumor dormancy to prevent advanced stage disease."

To make this discovery, researchers treated breast [cancer cells](#) with a common chemotherapeutic agent. Nearly all of the cancer cells died as a result, but a residual population of [tumor cells](#) survived and became dormant. By measuring for the presence of a molecule associated with cell division, the scientists determined that this residual population of [dormant cancer cells](#) consisted of an indolent as well as a quiescent population. Then, they treated the dormant cells with a product of the immune system, they found that dormant cells were susceptible to immunotherapy, and that quiescent, but not indolent cancer cells, could not escape from immunotherapy.

"Immunotherapy has become a paradigm shift in medical treatment of disease. Now, instead of our drugs targeting only diseased cells, we can target the immune system and provoke cells of the immune system to do the job for us," said E. John Wherry, Ph.D., Deputy Editor of the *Journal of Leukocyte Biology*. "This new study demonstrates the importance of this concept of exploiting the immune system in cancer to target residual

disease that our cancer drugs miss."

More information: K. K. Payne et al, Tumor-reactive immune cells protect against metastatic tumor and induce immunoeediting of indolent but not quiescent tumor cells, *Journal of Leukocyte Biology* (2016). [DOI: 10.1189/jlb.5A1215-580R](https://doi.org/10.1189/jlb.5A1215-580R)

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