

Scientists find molecule in immune system that could help treat dangerous skin cancer

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Researchers from Brigham and Women's Hospital (BWH) have made a groundbreaking discovery that will shape the future of melanoma therapy. The team, led by Thomas S. Kupper, MD, chair of the BWH Department of Dermatology, and Rahul Purwar, PhD, found that high expression of a cell-signaling molecule, known as interleukin-9, in immune cells inhibits melanoma growth.

Their findings will be published online in the July 8, 2012 issue of *Nature Medicine*.

After observing mice without genes responsible for development of an immune cell called T helper cell 17 (TH17), researchers found that these mice had significant resistance to melanoma tumor growth, suggesting that blockade of the TH17 [cell pathway](#) favored tumor inhibition. The researchers also noticed that the mice expressed high amounts of interleukin-9.

"These were unexpected results, which led us to examine a possible contribution of interleukin-9 to [cancer growth](#) suppression." said Purwar.

The researchers next treated melanoma-bearing mice with T helper cell 9 (TH9), an immune cell that produces interleukin-9. They saw that these mice also had a profound resistance to melanoma growth. This is the first reported finding showing an anti-tumor effect of TH9 cells.

Moreover, the researchers were able to detect TH9 cells in both normal

human blood and skin, specifically in skin-resident memory [T cells](#) and memory T cells in [peripheral blood mononuclear cells](#). In contrast, TH9 cells were either absent or present at very low levels in human melanoma. This new finding paves the way for future studies that will assess the role of interleukin-9 and TH9 cells in [human cancer](#) therapy.

"Immunotherapy of cancer is coming of age, and there have been exciting recent results in patients with melanoma treated with drugs that stimulate the immune system," said Kupper. "We hope that our results will also translate to the treatment of melanoma patients, but much work still needs to be done."

According to the researchers, other cell-signaling molecules have been used in treating melanoma; however, this study is the first to investigate the role of interleukin-9 in melanoma tumor immunity.

Melanoma is the most dangerous form of skin cancer. The National Cancer Institute estimates that in 2012, there will be more than 76,000 new cases of melanoma in the United States and 9,180 deaths. Melanoma is curable if recognized and treated early.

Provided by Brigham and Women's Hospital

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