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Targeting PTEN may prevent skin cancer

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Scientists believe they have identified a role for PTEN, a known tumor suppressor, in removing DNA damage derived from UVB radiation, a known risk factor for non-melanoma skin cancer, according to a study published in *Cancer Research*.

Yu-Ying He, Ph.D., an assistant professor of medicine at the University of Chicago, found that laboratory mice with reduced levels of PTEN were more likely to have UVB-induced skin cancers.

"This was an unexpected finding and definitely provides a new approach for chemoprevention strategies," she said. "It's possible that if we can increase PTEN activity through nutritional supplements or some sort of pharmaceutical intervention, we may be able to prevent this common cancer."

Non-melanoma skin cancer is the most common cancer in the United States. The 1 million cases diagnosed last year accounted for 40 percent of all new diagnosed cancers. Scientists know that the major risk factor for this type of skin cancer is UVB radiation from sunlight, which leads to DNA damage.

PTEN, which was first identified in 1997, promotes genomic stability and cellular repair and can lead to a reduction in the molecular misfiring that leads to cancer and tumor progression.

In the current study, He and colleagues exposed skin cells to UVB radiation and examined the rates of DNA repair. Those with lower

PTEN levels had slower rates of DNA repair, because of loss of the key DNA repair protein xeroderma pigmentosum C (XPC). Importantly, if the scientists restored the levels of XPC, then the rates of DNA repair went up as well.

"Cells without appropriate levels of PTEN were not able to repair sufficiently," said He.

He called the idea of a chemoprevention trial "promising," and said that her lab plans to assess the chemopreventive potential of restoring PTEN function.

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