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Genes that suppress tumors are vital to regulating blood precursor cells

September 6, 2012. Tags: [Stem cells](#)

UCLA finding could lead to better treatment of cancers and blood disorders.



Julian A. Martinez-Agosto,
UCLA

UCLA stem cell scientists have found that two common tumor-suppressor genes — TSC and PTEN — are vital to regulating the stem cell-like precursor cells that create the blood supply in *Drosophila*, the common fruit fly.

“We wondered how an organism knows how many blood cells to make and when to make them in the context of injury and repair to tissue,” said UCLA’s Dr. Julian A. Martinez-Agosto, the senior author of the study. “In particular, we wondered how the blood progenitor cells sense that change and know when it’s time to make more blood cells.”

To answer this question, Martinez-Agosto, an assistant professor of human genetics and pediatrics and a researcher with the Eli and Edythe Broad Center of Regenerative Medicine and Stem Cell Research at UCLA, and his colleagues examined a signaling pathway called TOR that the cells use to gauge nutrition levels and stress.

“We found that the TOR pathway uses these two genes to regulate its function and, when activated, it expands or increases the number of blood progenitor cells in the fly’s blood,” Martinez-Agosto said.

The study was published Wednesday (Sept. 5) in the advance online issue of the peer-reviewed journal *Development*.

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