

Study discovers means to free immune system to destroy cancer

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Research led by Paulo Rodriguez, PhD, an assistant research professor of Microbiology, Immunology & Parasitology at LSU Health New Orleans' Stanley S. Scott Cancer Center, has identified the crucial role an inflammatory protein known as Chop plays in the body's ability to fight cancer. Results demonstrate, for the first time, that Chop regulates the activity and accumulation of cells that suppress the body's immune response against tumors. The LSU Health New Orleans research team showed that when they removed Chop, the T-cells of the immune system mounted an effective attack on the cancer cells. These findings reveal Chop as a target for the development of new immunotherapies to treat cancer. The research is described in a paper published online September 18, 2014, in *Immunity*, a Cell Press journal.

Myeloid-derived suppressor cells (MDSCs) are involved in [cancer](#), inflammation and infection. MDSCs not only inhibit the immune response that destroys cancer cells, but they also promote the growth of new blood vessels that feed tumors, as well as the spread of cancer.

"Although we know what MDSCs do, very little has been known about what governs how they function," notes Dr. Paulo Rodriguez, assistant research professor of Microbiology, Immunology & Parasitology at LSU Health New Orleans' Stanley S. Scott Cancer Center. "This has limited the development of strategies to block the harmful activity of MDSCs."

The LSU Health research team discovered that the stress sensor C/EBP-homologous protein (Chop) regulates the function of MDSCs. They

learned how Chop is distributed within the tumor environment in different types of cancer. They also determined how Chop controls tumor growth. The team confirmed their findings by deleting Chop and studying the effect. They found that the absence of Chop not only reduced the ability of MDSCs to inhibit T-cells and suppress [immune response](#), but also boosted the effectiveness of treatment.

"Our data demonstrate the central role of Chop in MDSCs' suppressive activity and suggest the feasibility of overcoming it by blocking Chop," concludes Dr. Rodriguez.

According to the American Cancer Society, about 1,665,540 new cancer cases are expected to be diagnosed in 2014. This year, about 585,720 Americans are expected to die of cancer, almost 1,600 people per day. Cancer is the second most common cause of death in the US, exceeded only by heart disease, accounting for nearly 1 of every 4 deaths.

Provided by Louisiana State University

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