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Cell biologists identify new tumor suppressor for lung cancer

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Cancer and cell biology experts at the University of Cincinnati (UC) have identified a new tumor suppressor that may help scientists develop more targeted drug therapies to combat lung cancer.

The study, led by Jorge Moscat, PhD, appears in the January 2009 issue of *Molecular and Cellular Biology*.

Proto-oncogenes are genes that play a role in normal cell growth (turnover of cells and tissue) but, when genetically modified, can cause the out-of-control cell division that leads to cancer. Previous research had established that Ras, a proto-oncogene, is abnormally expressed in up to 25 percent of human lung cancers; however, researchers did not understand the specific cellular events by which abnormal Ras expression leads to transformation.

UC researchers sought to define the interim steps that occur in Ras-induced tumor development to better understand the underlying biological mechanisms leading to cancer.

"These interim steps are critical because they help us determine how best to intervene and stop cancer growth along the way," explains Moscat, corresponding author of the study and chair of UC's cancer and cell biology department. "Right now, cancer therapy is delivered with a sledgehammer and it needs to be more like a scalpel so we avoid unnecessary harm to the body."

Using a genetically modified mouse model, the UC team found that animals who didn't express a certain gene (protein kinase C (PKC)-zeta) developed more Ras-induced lung cancer, suggesting a new role for the gene as a tumor suppressor.

"PKC-zeta would normally slow down Ras transformation and put the brakes on tumor development, but when PKC-zeta is missing or inactive as a result of genetic alterations, tumor growth actually accelerates," explains Moscat. "Until now, we did not know the specific chain of events that led to Ras-induced lung cancer. Our study fills in important missing information that will enhance our overall understanding of how lung cancer tumors grow and spread."

Source: University of Cincinnati