

Researchers discover protein that may control the spread of cancer

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Researchers at the University of Hawai'i Cancer Center have uncovered a novel mechanism that may lead to more selective ways to stop cancer cells from spreading. Associate Professor Joe W. Ramos PhD, a cancer biologist at the UH Cancer Center and his team have identified the role of the protein RSK2 in cancer cell migration, part of the process of cancer metastasis.

Cancer becomes metastatic when cells break away from the primary tumor and spread to other parts of the body. Metastatic cancer is much more difficult to treat and patients with metastatic cancer have a generally worse prognosis. "The cancers that kill are those that spread to other parts of the body or disseminate within the organ," said Ramos. "If we could keep [cancer cells](#) confined to the primary tumor mass, we could remove it with less risk of metastasis and later recurrence."

The Ramos team reports that RSK2 significantly increases [cell migration](#) in part by reducing integrin activation. Integrins play an important role in cell adhesion to their surrounding tissue and the migration of [tumor cells](#) to new locations in the body. RSK is active in both breast and [prostate tumors](#), and promotes proliferation in these cells. It can also promote [cell invasion](#) and metastasis in head and neck cancers in addition to lung cancer and neuroblastoma.

"We focused on understanding the process of cell adhesion," said Ramos. "Integrins help the cell move by grabbing onto proteins and cells in their surroundings, pulling, then releasing and grabbing on again."

Blocking a cancer cell's ability to adhere and move can control further dissemination of some metastasis. There are drugs that kill cancer cells and there are drugs that stop the division of cancer cells, but there are far fewer drugs that specifically stop the movement of cancer cells. Our work suggests that drugs that interfere with RSKs may help control or prevent metastasis."

The discovery may lead to selective ways to inhibit metastasis of a subset of tumors.

More information: The study: "RSK2 Protein Suppresses Integrin Activation and Fibronectin Matrix Assembly and Promotes Cell Migration" is published in the December 21, 2012 edition of *The Journal of Biological Chemistry*.

www.ncbi.nlm.nih.gov/pmc/articles/PMC3527930/

Provided by University of Hawaii Cancer Center

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