News Release

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University of Hawaii Cancer Center Researchers Make Significant Discovery of Cancer Protein
RSK2 protein discovery may lead to selective ways to inhibit metastasis

HONOLULU, HI - University of Hawai‘i Cancer Center researchers have uncovered a novel mechanism that may lead to more selective ways to stop cancer cells from spreading. Associate Professor of Cancer Biology, Joe W. Ramos and his team have identified the role of the protein RSK2 in cancer cell migration more commonly referred to as 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 can keep cancer cells confined to the primary tumor mass, we can 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. RSK2 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 and how 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 RSK2 may help control or prevent metastasis,” said Ramos.