

Researchers discover possible trigger for spread of head and neck cancer cells

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(Medical Xpress)—Very little has been known about the epigenetic events—developmental and environmental factors affecting genes—that occur prior to the invasive growth of head and neck squamous cell carcinomas and their spread to other parts of the body, or metastasis.

However, researchers from the UCLA School of Dentistry discovered what could be a crucial step toward understanding the process that activates the [cancer cells](#). Squamous cell carcinoma is known for being one of the most deadly and debilitating types of tumors.

Led by Dr. Cun-Yu Wang, a UCLA School of Dentistry professor and leading cancer scientist, the group identified the key epigenetic factor KDM4A, which modifies the molecular activation process of protein AP-1. AP-1 is known to regulate gene expression and promote metastasis of squamous cell carcinoma. Their findings show that squamous cell carcinoma's invasive growth could potentially be repressed by targeting KDM4A.

The research team compared two groups of mice with squamous cell carcinoma—one with low levels of KDM4A and one with higher levels of the enzyme. They found that the depletion of KDM4A significantly inhibited squamous cell carcinoma from invading and spreading into the mice's lymph nodes.

By understanding the mechanics behind the [gene activation](#) process of the AP-1 protein, the team was able to isolate the KDM4A enzyme. The

team discovered that the enzyme is required for turning on the genes that promote the activation of AP-1, which is responsible for the growth of the squamous cell carcinoma tumors.

Human squamous cell carcinoma is highly invasive and frequently spreads to cervical lymph nodes. Understanding the molecular and [epigenetic mechanisms](#) that control the metastasis of [squamous cell carcinoma](#) in humans will help scientists develop new therapies for treating cancer.

Wang's new research is published in *Science Signaling*.

More information: [stke.sciencemag.org/cgi/content/.../abstract/6/273/ra28](http://stke.sciencemag.org/cgi/content/full/6/273/ra28)

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