

Researchers discover cellular signals between pancreatic cancer tumors and saliva

October 9 2013

(Phys.org) —Pancreatic cancer is one of the deadliest forms of cancer. Most of those with the disease will die within the first year of diagnosis, and just 6 percent will survive five years.

The disease is typically diagnosed through an invasive and complicated biopsy. But a discovery by researchers at the UCLA School of Dentistry may be one major step toward creating a noninvasive tool that would enable clinicians and oncologists to detect [pancreatic cancer](#) through a simple risk assessment test using [saliva](#).

In a study on a tumor-ridden mouse model, the UCLA researchers were able to definitively validate that pancreatic cancer biomarkers reside in saliva. The team was led by Dr. David Wong, the dentistry school's associate dean of research and the Felix and Mildred Yip Endowed Professor in Dentistry.

The findings are published in a recent issue of the peer-reviewed *Journal of Biological Chemistry*.

To date, salivary biomarker panels have been successfully developed for cancers of the breast, ovaries, lungs and pancreas. However, researchers in the field of salivary diagnostics are still attempting to understand how biomarkers produced by other parts of the body ultimately appear in the mouth. Scientists have surmised that RNA molecules—which translate genetic code from DNA to make protein—are secreted into extracellular spaces and act as an information signal system, representing an

innovative model in intercellular signaling.

With this understanding, Wong's research team was able to demonstrate that tumor-derived extracellular RNA molecules are transported through organelles called exosome vesicles that originate at the source of the tumor and are re-processed into saliva as biomarkers. To prove it, the researchers examined mice models with pancreatic cancer whose saliva showed evidence of biomarkers for pancreatic cancer. When they inhibited the production of exosomes at the source of the tumor, the researchers found that the pancreatic cancer biomarkers no longer appeared in the mouse's saliva.

Their discovery supports their claim that tumor-derived exosomes provide a mechanism in the development of disease-specific biomarkers in saliva.

"This paper is significant because it provides credibility to the mechanism of systemic disease detection in saliva," said Wong. "We have been able to substantiate the biological connection between systemic disease and the oral cavity."

The team's findings come on the heels of a \$5 million award that Dr. Wong recently received from the National Institutes for Health's Common Fund, a strong statement that saliva is proving to be scientifically credible for the detection of systemic disease and is advancing toward clinical maturation.

"Dr. Wong and his team have provided verifiable evidence to fully explore the use of salivary [biomarkers](#) for the detection of life threatening disease in a way that is noninvasive and doesn't cause pain for the patient," said Dr. No-Hee Park, dean of the School of Dentistry. "This new paper truly confirms a mechanistic tie between systemic diseases and their oral manifestations."

More information: www.jbc.org/content/288/37/26888.full

Provided by University of California, Los Angeles

Citation: Researchers discover cellular signals between pancreatic cancer tumors and saliva (2013, October 9) retrieved 23 April 2024 from <https://phys.org/news/2013-10-cellular-pancreatic-cancer-tumors-saliva.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.