

Scientists find molecule to starve lung cancer and improve ventilator recovery

July 6 2012

A new research report published online in the *FASEB Journal* reveals a connection among sugar, cancer, and dependence on breathing machines--microRNA-320a. In the report, Stanford scientists show that the molecule microRNA-320a is responsible for helping control glycolysis. Glycolysis is the process of converting sugar into energy, which fuels the growth of some cancers, and contributes to the wasting of unused muscles such as the diaphragm when people are using ventilators. Identifying ways to use microRNA-320a to starve tumors and keep unused muscles strong would represent a significant therapeutic leap for numerous diseases and health conditions.

"We hope that this discovery will yield a new avenue of molecular treatment for cancers, particularly [lung cancer](#), which is the number one cause of cancer deaths worldwide," said Joseph B. Shrager, M.D., a researcher involved in the work who is a Professor of Cardiothoracic Surgery, and Chief of the Division of Thoracic Surgery at Stanford University School of Medicine, and VA Palo Alto Healthcare System in California. "We also hope it can lead to a treatment to be given to [intensive care unit](#) patients who require the breathing machine, reducing the length of time they require the machine, and thereby reducing complications and deaths."

To make this discovery, Shrager and colleagues studied lung [cancer tissues](#) from patients and tissue from the diaphragm (the primary muscle used for breathing) from patients who had been on a [breathing machine](#) for more than a few hours. They found that both types of tissue had

increases in glycolysis, as well as reductions in a molecule that controls glycolysis—microRNA-320a. Test tube experiments then showed that microRNA-320a definitely controls how much energy these two very different tissues have available to them.

"Just as the discovery of angiogenesis opened new doors to find ways to stop cancers and to help the body heal itself," said Gerald Weissmann, M.D., Editor-in-Chief of the [FASEB Journal](#), "this discovery, on a smaller scale, does the same by identifying an important molecule that may help starve tumors and help the body recover."

More information: Huibin Tang, Myung Lee, Orr Sharpe, Louis Salamone, Emily J. Noonan, Chuong D. Hoang, Sanford Levine, William H. Robinson, and Joseph B. Shrager. Oxidative stress-responsive microRNA-320 regulates glycolysis in diverse biological systems. *FASEB J.* doi:10.1096/fj.11-197467

Provided by Federation of American Societies for Experimental Biology

Citation: Scientists find molecule to starve lung cancer and improve ventilator recovery (2012, July 6) retrieved 18 April 2024 from <https://medicalxpress.com/news/2012-07-scientists-molecule-starve-lung-cancer.html>

<p>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.</p>
--