

## New 3-D tumor model: Step toward speeding cancer drug research

June 8 2011

A team of scientists has developed a way to coax tumor cells in the lab to grow into 3-D spheres. Their discovery takes advantage of an earlier technique of producing spherical cavities in a common polymer and promises more accurate tests of new cancer therapies.

As team leader Michael R. King, Ph.D., of Cornell University explains, "Sometimes engineering research tends to be a case of a hammer looking for a nail. We knew our previous discovery was new and it was cool. And now we know it's useful."

Three years ago, the team -- in collaboration with Lisa DeLouise, Ph.D., MPD, of Rochester, N.Y. -- perfected a low-cost, easy <u>fabrication</u> <u>technique</u> to make spherical cavities in PDMS (polydimethylsiloxane), a widely used silicon <u>organic polymer</u>. More recently, the Cornell team discovered that these <u>cavities</u> could be used as a scaffolding to grow numerous tumor spheroids, which could serve as realistic models for cancer cells. The Cornell team's work appears in the current issue of Biomicrofluidics, a publication of the American Institute of Physics.

The three-dimensional spheroids hold the potential to speed cancer drug discovery by providing a realistic and easily accessible substrate on which to test drugs. Their 3-D nature is an asset because in the body, <u>tumor cells</u> grow in 3-D—yet most laboratory studies of cancer have been done in 2-D, with a single layer of <u>cancer cells</u> grown on the bottom of a petri dish. Too often a promising 2-D drug candidate fails when it enters the 3-D stage of animal testing. The new 3-D tumor



spheroids may help eliminate that problem. They also offer a realistic tumor oxygen environment that cues the blood vessel growth that nourishes tumors—an appealing target for anti-cancer drug design.

"Basically, any laboratory that works with cells could adopt our new spherical microcavity system to do their own 3-D experiments or drug screening on hundreds or even thousands of little tumor spheroids," said King.

**More information:** The article, "Continuously perfused microbubble array for 3D tumor spheroid model" by Michael R. King, Sivaprakash Agastin, Ut-Binh T. Giang, Yue Geng, and Lisa A. DeLouise appears in the journal *Biomicrofluidics*.

Provided by American Institute of Physics

Citation: New 3-D tumor model: Step toward speeding cancer drug research (2011, June 8) retrieved 6 May 2024 from <u>https://medicalxpress.com/news/2011-06-d-tumor-cancer-drug.html</u>

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.