PURDUE INNOVATES | Office of Technology Commercialization

Microfluid Platform to Screen Cancer Drug for Delivery

A benchtop microfluidic platform simulates complex tumor transport processes to increase the speed and repeatability of cancer drug testing while lowering costs and reducing the need for animal use.

Developing and testing cancer drugs is an expensive process that requires, among other things, exhaustive in vivo animal experiments. One purpose of preclinical animal studies is to analyze how effectively a drug is transported and delivered to its target in a tumor mass. However, animal testing can be an expensive, slow process.

Researchers at Purdue University have developed a microfluidic platform to simulate a 3D tumor vasculature system. This innovative platform can mimic the complex transport processes inside a tumor, such as transvascular transport, interstitial transport, and transmembrane transport. These processes are all simulated on a single benchtop device, thus improving the repeatability and speed of testing, while reducing the cost and use of animals in drug discovery.

Advantages:

-Mimics multiple transport processes

-Increased repeatability and speed for drug testing

-Low cost

Potential Applications:

-Medical/Health

-Pharmaceutical industry

-Drug development

-Research labs

Technology ID

66164

Category

Pharmaceuticals/Drug Discovery & Development
Biotechnology & Life Sciences/Analytical & Diagnostic Instrumentation

Authors

Bumsoo Han
Bongseop Kwak
Kinam Park
Crystal Shin

Further information

Clayton Houck
CJHouck@prf.org

View online

Related Publications:

Bumsoo Han. Physics-inspired micro/nanotherapeutics: Same problem, different approaches. Molecular Pharmaceutics, July 5, 2016, Vol. 13 (7), pp. 2141-2142. DOI: 10.1021/acs.molpharmaceut.6b00482.

TRL: 2

Intellectual Property:

Provisional-Patent, 2012-05-03, United States | Provisional-Patent, 2013-03-15, United States | Utility Patent, 2013-05-03, United States

Keywords: microfluidic platform, 3D tumor vasculature system, cancer drug testing, preclinical animal studies alternative, transvascular transport simulation, interstitial transport simulation, transmembrane transport simulation, benchtop drug discovery device, reduced animal testing, pharmaceutical industry technology