

Media Release

InSphero Publishes 3D Tumor-Stroma Model for Non-Small Cell Lung Cancer

Schlieren, Switzerland, April 24, 2014 – PLOS One article delivers promising co-culture method to mimic tumor microenvironment, demonstrating potential for biomarker and drug discovery.

InSphero AG, working with researchers at the Medical University Innsbruck (Tyrol, Austria), has published a study highlighting development of a novel 3D cell culture model for non-small cell lung cancer (NSCLC), one of the leading causes of cancer deaths in men and women worldwide. The findings, published March 24 in PLOS One, used InSphero's [GravityPLUS™ hanging drop platform](#) to form 3D tumor spheroid co-cultures comprised of a NSCLC tumor cell line and lung-derived fibroblasts. The results showed how both lung cancer cells and stromal cells (lung fibroblasts) behave differently when grown together in 3D than when grown alone.

The study was initiated in response to the recent failure of several targeted therapies for NSCLC in clinical trials, therapies which were supported by promising *in vitro* data. To achieve a better *in vitro* model, researchers used the NSCLC cell lines A549 or Colo699 to create 3D tumors in hanging drops, with or without the lung fibroblast cell line SV80. The tumors were then analyzed for viability, morphology, and expression of different phenotypic markers using immunohistochemistry (IHC) and other methods. Most notable were changes in the tumor cells during co-culture that indicated an epithelial to mesenchymal transition (EMT), as evidenced by an increase in vimentin protein expression, and a decrease in the epithelial cell adhesion protein E-cadherin. Also of interest was the expression of alpha smooth muscle actin (α -SMA), a marker of cancer-associated fibroblasts, in the SV80 fibroblasts only when co-cultured with A549 cells.

Dr. Jens Kelm, Chief Scientific Officer and co-founder of InSphero AG was co-author on the manuscript. He states the 3D co-culture model should improve drug efficacy testing by removing some of the bias inherent in current 2D *in vitro* models used to screen anti-cancer drugs. "What this 3D lung cancer co-culture model confirmed for us is that tumor cells are phenotypically different in terms of their viability, activity, and morphology when they grow in the presence of fibroblasts. Likewise, the stromal cells associated with tumors also behave differently in co-culture than they do alone, becoming more like myofibroblasts, cells that are known to assist tumor growth, invasion, and metastasis. This model creates an even more native *in vitro* tumor environment to more easily assess tumor growth, pathobiology, and drug efficacy."

Using InSphero's automation-compatible, high-throughput platform, the authors plan to conduct advanced screens for improved anti-cancer drugs and to identify novel NSCLC biomarkers.

To find out more about InSphero visit www.insphero.com.

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About InSphero

InSphero is a leading supplier of organotypic, biological in vitro 3D microtissues for highly predictive drug testing. The company, headquartered in Zurich, Switzerland, with subsidiaries in the USA and in Germany, currently counts all of the top ten global pharmaceutical and cosmetics companies as customers. InSphero 3D Insight™ Microtissues enable more biologically relevant in vitro applications in efficacy and toxicology. The spin-off company of the Swiss Federal Institute of Technology (ETH) Zurich and the University Zurich has been recognized for its scientific and commercial achievements with a number of national and international awards and is also certified to the ISO 9001:2008 standard for its Quality Management System.

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