

# 3D InSight™ Tumor Microtissues

Versatile 3D Tumor Models for Small-Molecule and Biologicals Research

- **100's of models available based on widely used cell lines**
- **Various co-culture options using mouse or human stromal cells**
- **3D InSight™ Microtissues for in-house use and fee-for-service offers available**
- **Customer-specific model development with turnaround times of 6 weeks**

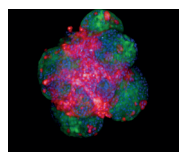
## **Biomimetic 3D tumor models – more biological relevance, same work flow**

InSphero's assay-ready 3D InSight™ Tumor Microtissues maintain a tissue-specific phenotype over long periods in culture. In addition, co-culture models including connective tissue components help recreating the important tumor micro-environment in vitro. These are the key reasons why 3D InSight™ Microtissues represent one of the most powerful in vitro systems for predictive testing of compound efficacy in oncology.

Delivered in a convenient 96-well format, 3D Microtissues can be integrated into your laboratory workflow instantaneously.

## **Applications**

- Efficacy testing for drug discovery
- Target validation (e.g. siRNA knock down)
- Antibody penetration studies
- Immunomodulatory antibody testing
- Compound de-risking prior to animal tests



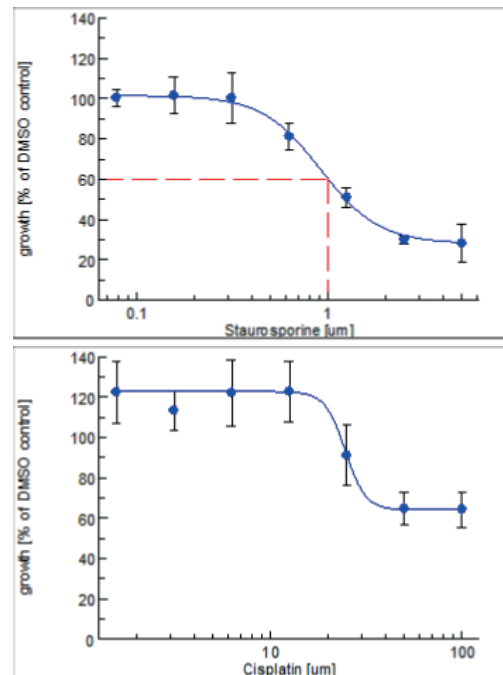
Co-culture 3D microtissue model comprising colon cancer epithelial cells and stromal fibroblasts. Both cell populations harbor internal reporter systems which allow for either

fluorescent or luminescent read outs (nanoLuc, Promega Ltd. Madison, WI). Fluorescent image taken by Karin Boettcher and Stafan Letzsch, Perkin Elmer, Hamburg, Germany.

## Drug discovery

### Increase translational predictive value

Accelerate and increase your chances of discovering novel compounds using 3D InSight™ organotypic multicellular tumor microtissues. Tumor microtissues delivered assay ready in a 96-well automation-compatible format can be easily implemented into your liquid handling system. The spherical shape of tumor microtissues allows for straightforward acquisition of phenotypic readouts (e.g. volume changes) in combination with mechanistic information. 3D InSight™ Tumor Microtissues can be grown over extended time periods, a major advantage over 2D culture since long-term effects of compounds can be assessed including combinatorial drug treatment regimes. InSphero's proprietary production technology is amenable to almost all cancer cell types derived from solid tumors.

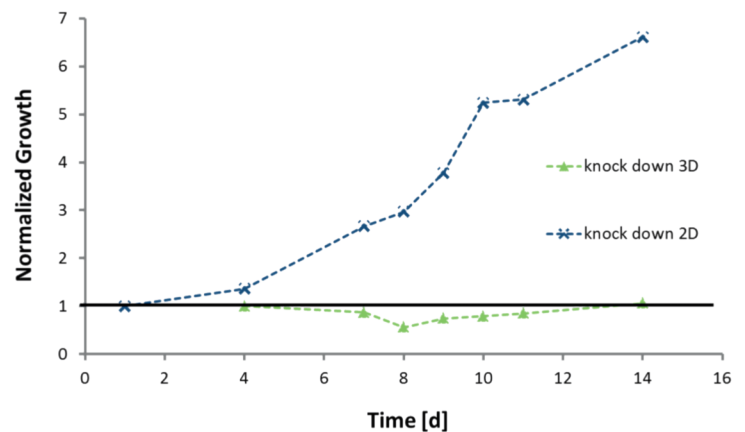


IC-50 dose-response curves obtained using 3D InSight™ Co-Culture Tumor Microtissues exposed to staurosporine and cisplatin.

## Target Validation

### Optimize Target Selection

The decision to develop a drug against a specific target is a substantial financial commitment for any organization. This means that the rapid and precise identification of drug targets and their related mechanisms is a key determinant of success. Short interfering siRNAs have been shown to help to identify the physiological role of potential targets and 3D InSight™ microtissues enable discovery/validation of novel targets in a much more organotypic environment



Short interfering RNA knock down in cancer cells grown in monolayer (2D) and microtissue format (3D) results in a completely opposite biological response. Whereas the knock down in 2D has no impact on growth, switching off the gene in 3D inhibits proliferation.

## Testing antibody penetration

### Assess AB penetration kinetics in 3D

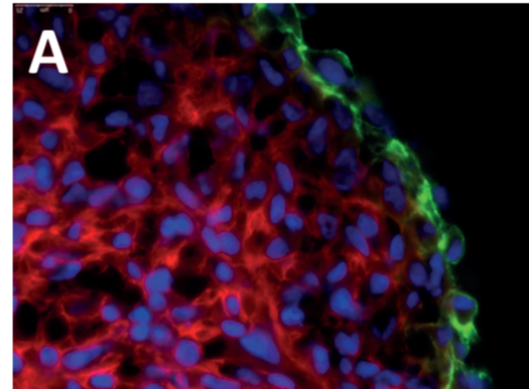
Antibodies are one of the most promising therapeutics for cancer treatment. However, heterogeneous distribution of therapeutic antibodies in tumors results in large regions of untargeted cells which can escape and potentially result in more resistant tumors. The distribution of any new antibody will depend on a variety of factors, such as tissue density, AB affinity, antigens per cell and physico-chemical properties. Tumor-dependent antibody penetration kinetics and related cell killing efficacy cannot be assessed in classical monolayer cell cultures and require 3-dimensional in vitro tumor models. The spherical shape of 3D InSight™ Microtissues makes them an ideal tool to assess AB velocity with an in vitro model that closely reflects the in vivo tissue environment.

#### Fee-for-Service Offers

3D InSight™ Tumor Microtissues are very easy to use and can be quickly and seamlessly integrated into existing work flows in your laboratory. Sometimes, it might be more efficient though to choose 3D InSight™ Services from InSphero. These fast, reliable and resource-efficient fee-for-service offers let you tap into InSphero's market-leading experience in 3D cell-based assays to obtain the results you are looking for.

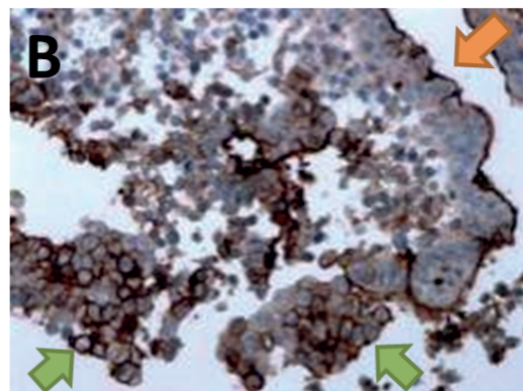
Please inquire for an individual quotation.

#### Homogenous infiltration



Different penetration patterns in colon cancer microtissues. (A) Homogenous penetration of an integrin targeted antibody into the tissue (cyan: DAPI, green: beta 1-Integrin, red: F-Actin). (B) Heterogenic distribution of an cancer targeted antibody into the colon cancer microtissue. Colon cancer displays a different degree of differentiation which determines the penetration capacity of the antibody. Areas with a high degree towards the epithelial phenotype did not allow the antibody to penetrate (arrow, orange) whereas regions with low differentiation permits in depth infiltration (arrow, green).

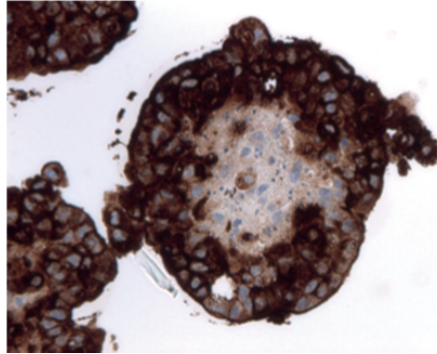
#### Heterogeneous infiltration



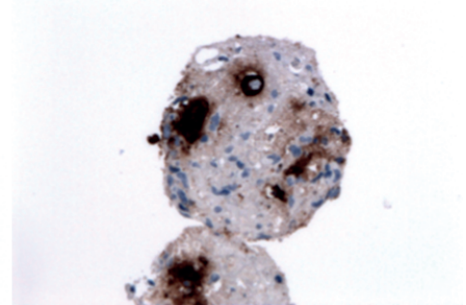
## Testing efficacy of immunomodulatory antibodies

Innovative anti-cancer therapies that selectively guide effector cells toward the tumor are currently under development. This includes the use of immunomodulatory agents to activate immune effector cells at the tumor site thereby promoting an effective elimination of cancer cells. 3D InSight™ Co-Culture Microtissues readily provide valuable information about antibody-mediated immune cell infiltration, cell-mediated elimination of tumor cells and size profiling over time (analogous to the size of solid tumors after treatment). Conveniently provided in multiwell plate format this cost-effective model is ideal for testing the activity and efficacy of novel immunomodulatory agents in the drive to develop more efficacious cancer therapies.

Control



Co-culture with PBMCs in combination with AB treatment



Colon cancer microtissues composed of tumor cells (peripheral layers, in brown) and stroma fibroblasts (core region) treated with immunomodulatory antibodies causing immune cell mediated cell death. Cell killing is tumor specific as shown by removal of the outer cancer cell population (shown in brown). The stroma core region is not affected.

## Ordering information

InSphero offers a large portfolio of single-cell-type and multi-cell-type co-culture 3D tumor microtissues in a convenient assay-ready format. For optimum culture conditions for in-house use, please select InSphero's specially formulated 3D InSight™ Maintenance Media.

Please check the up-to-date product listing on our web site at [www.insphero.com/tumor](http://www.insphero.com/tumor) for catalog numbers and delivery times.

**For more details, please visit us at [www.insphero.com/tumor](http://www.insphero.com/tumor) or contact one of our customer representatives in the US or Switzerland**



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