

In Vitro Imaging Service



Oncology & Immunology Unit, WuXi Biology, WuXi AppTec



2023.02

OncoWuXi Newsletter

Image-based profiling is a maturing strategy by which the rich information present in biological images is reduced to a multidimensional profile, a collection of extracted image-based features. These profiles can be mined for relevant patterns, revealing unexpected biological activity that is useful for many steps in the drug discovery process. Such applications include identifying disease-associated screenable phenotypes, understanding disease mechanisms and predicting a drug's activity, toxicity or mechanism of action.

Nat Rev Drug Discov 20, 145–159 (2021). <https://doi.org/10.1038/s41573-020-00117-w>

We offer a series of *in vitro* imaging-based assays that are ideal for testing compounds for cancer, inflammation and autoimmune diseases. Our services include:

- **Assays for Cell Proliferation & Cell Cycle & Cell Apoptosis**
- **Cellular Function Assays**
 - Immune cell killing & Antibody internalization
 - Live cell immunocytochemistry
 - Phagocytosis & Necrosis
- **Cell Movement & Morphology Monitoring**
- **Assay for 3D Cell Models**
 - Spheroid growth/Invasion
 - Spheroid immune cell killing

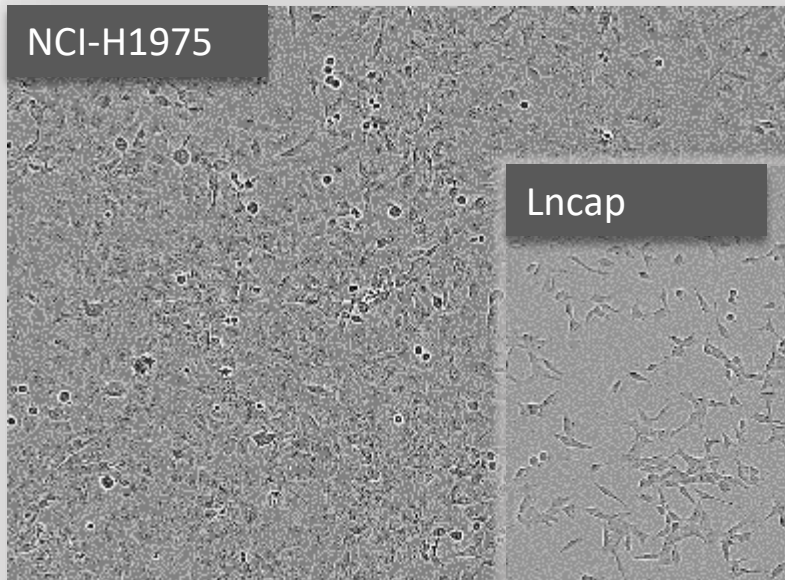


■ Technical indicators

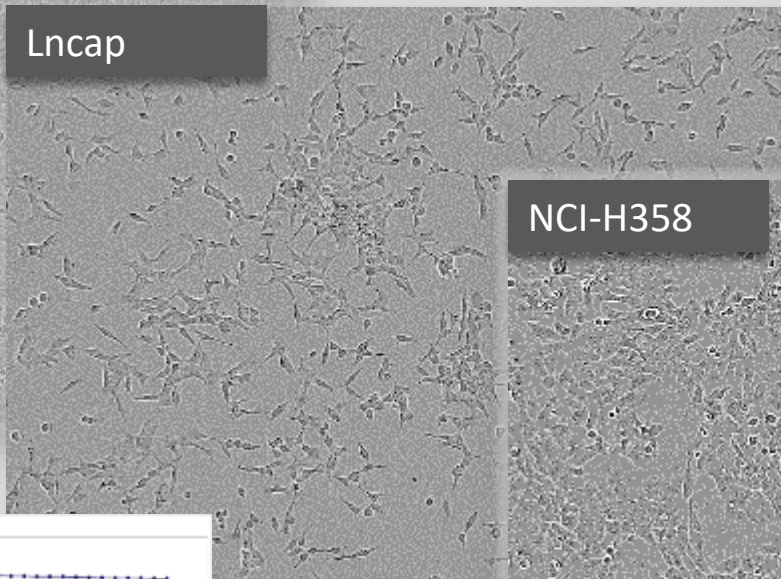
- High definition (HD) phase, green, red, orange, and near-infrared fluorescence automatic imaging
- Image processing software supports integrated processing of three-channel imaging
- High-throughput automated imaging and analysis
- Assay for 3D cell models

Cell growth curve analysis by Incucyte

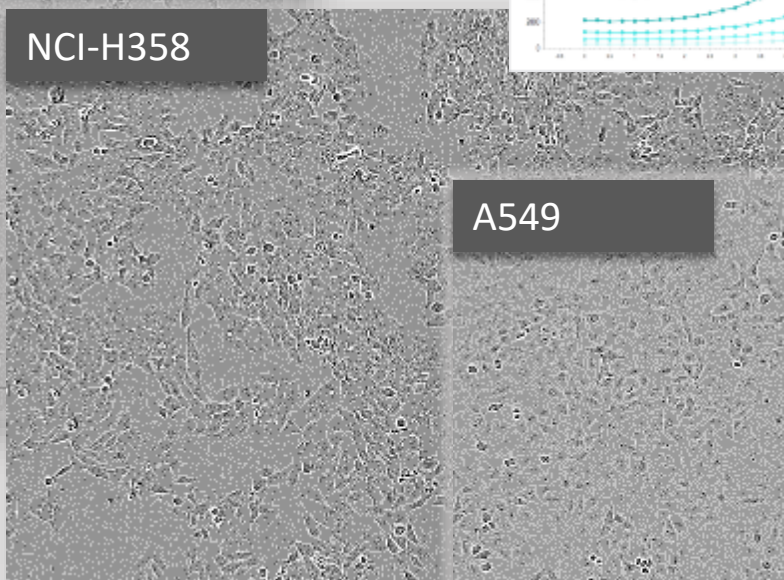
NCI-H1975



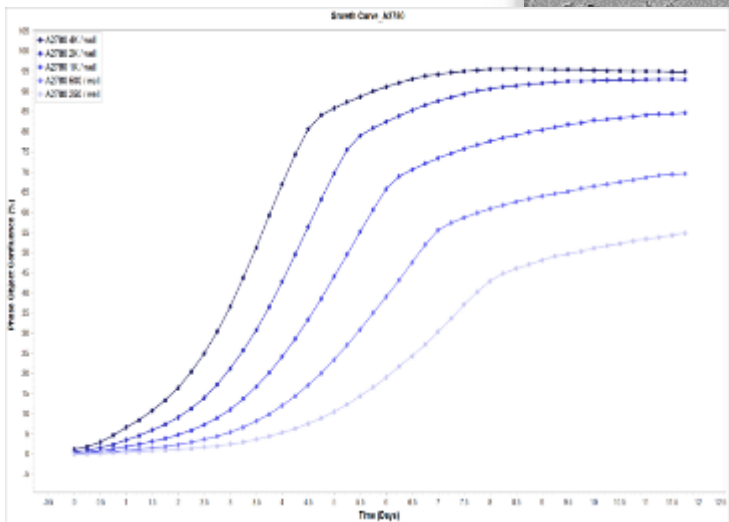
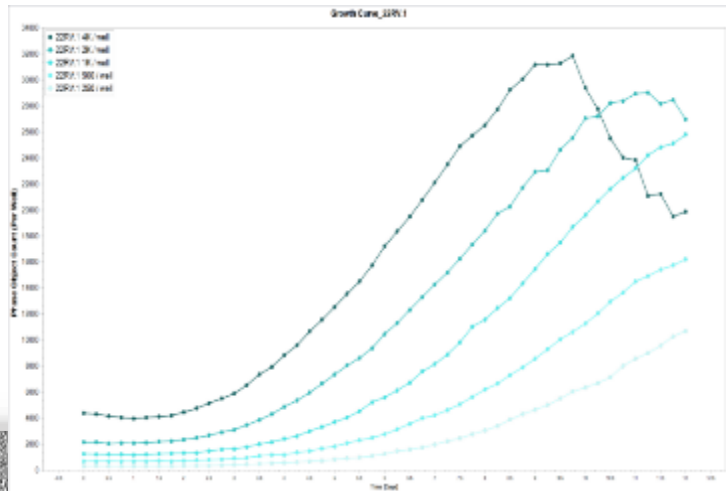
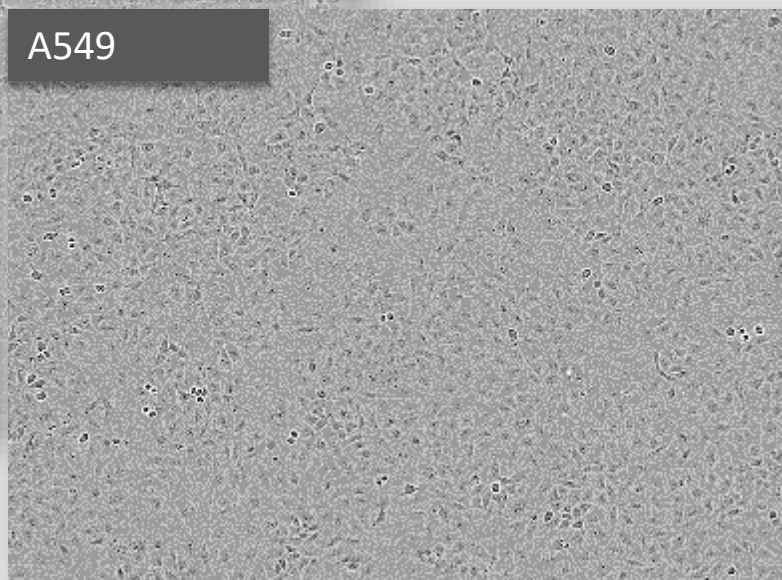
Lncap

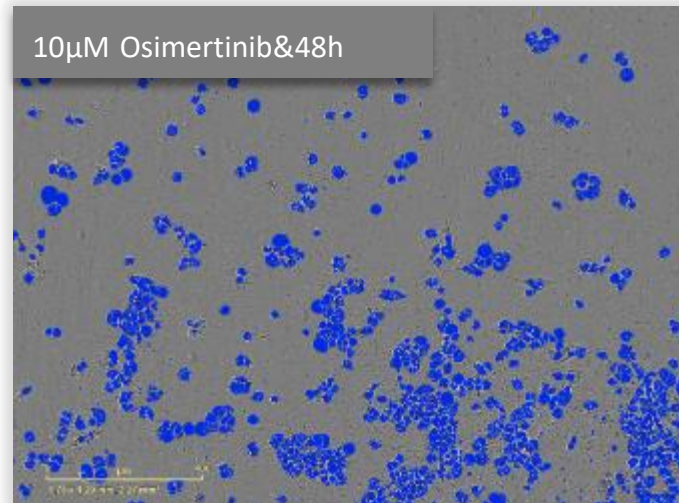
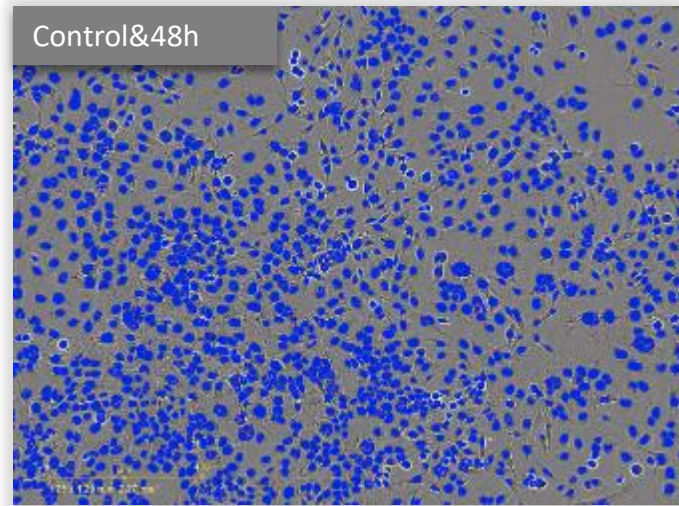


NCI-H358



A549

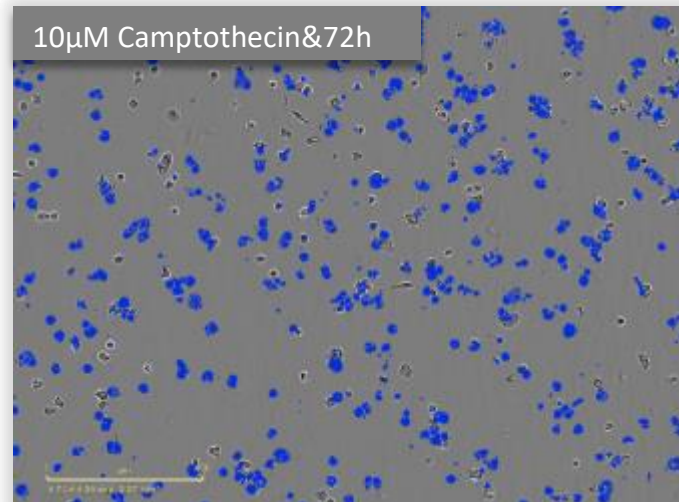
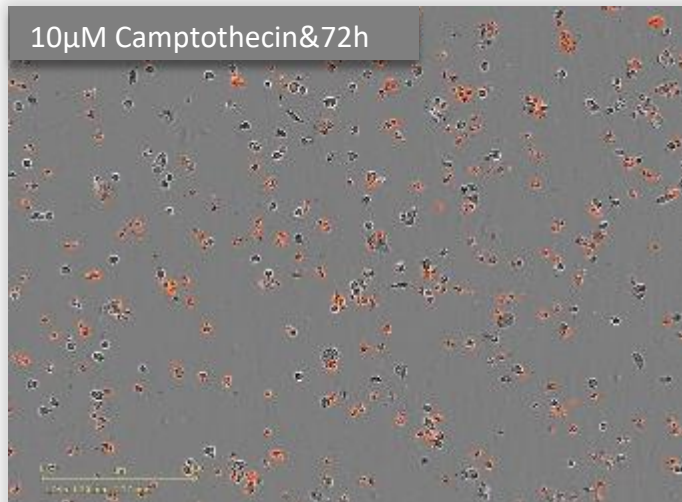
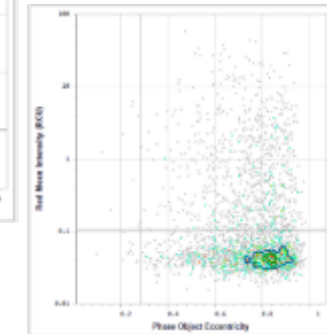
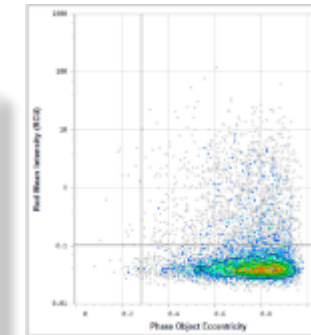
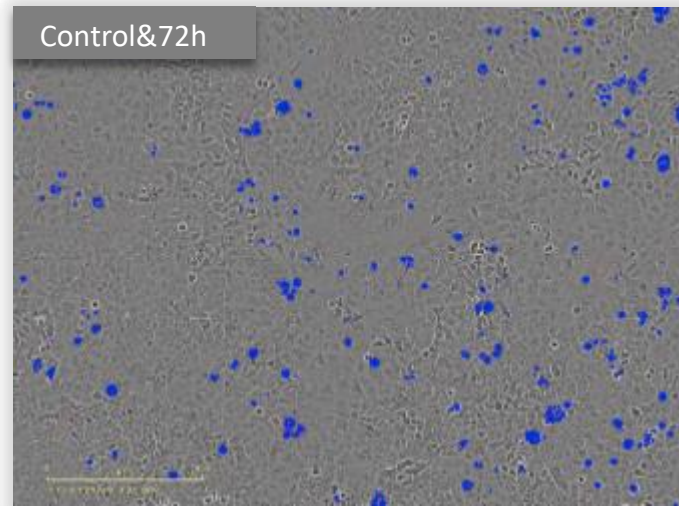




Red+Mask
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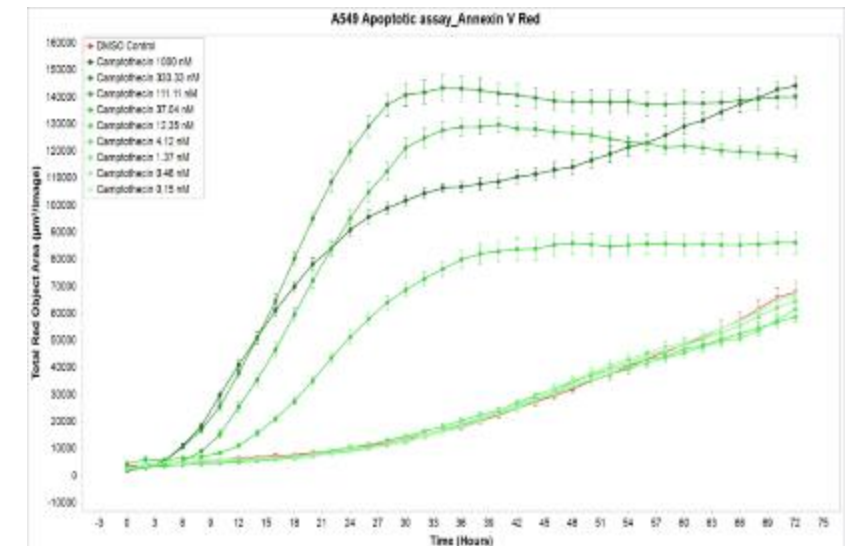
Cell apoptosis analysis by Incucyte

Cell by cell analysis_Annexin V red



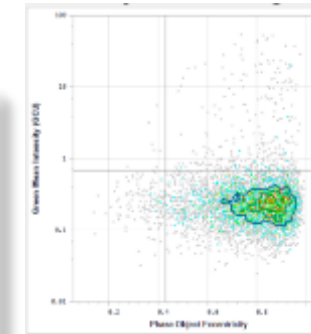
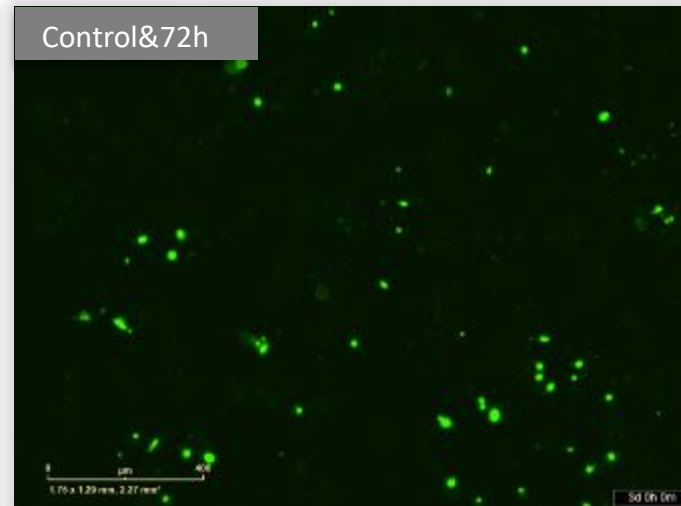
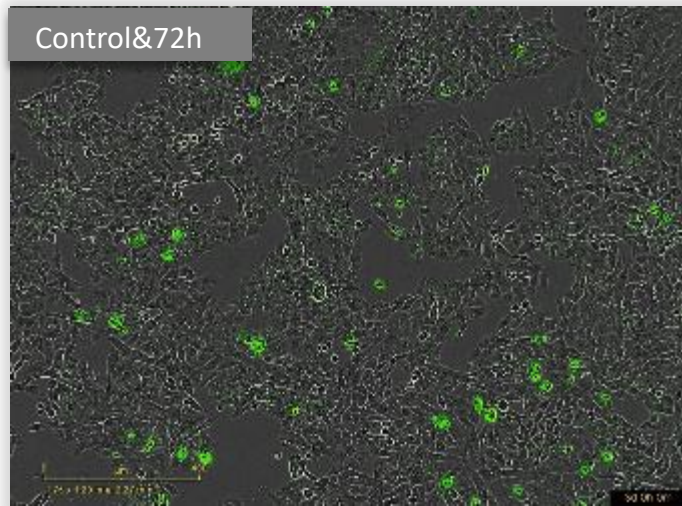
Red

Red+Mask
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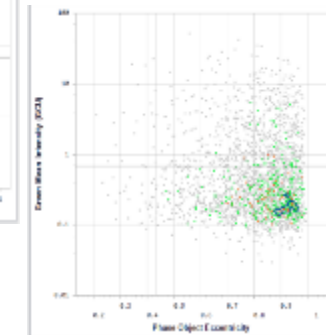


Cell apoptosis analysis by Incucyte

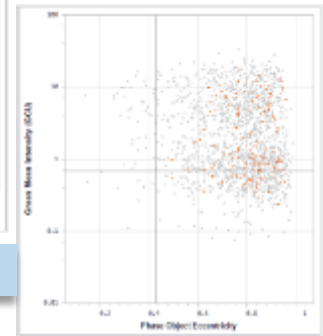
Cell by cell analysis_Caspase 3/7 green



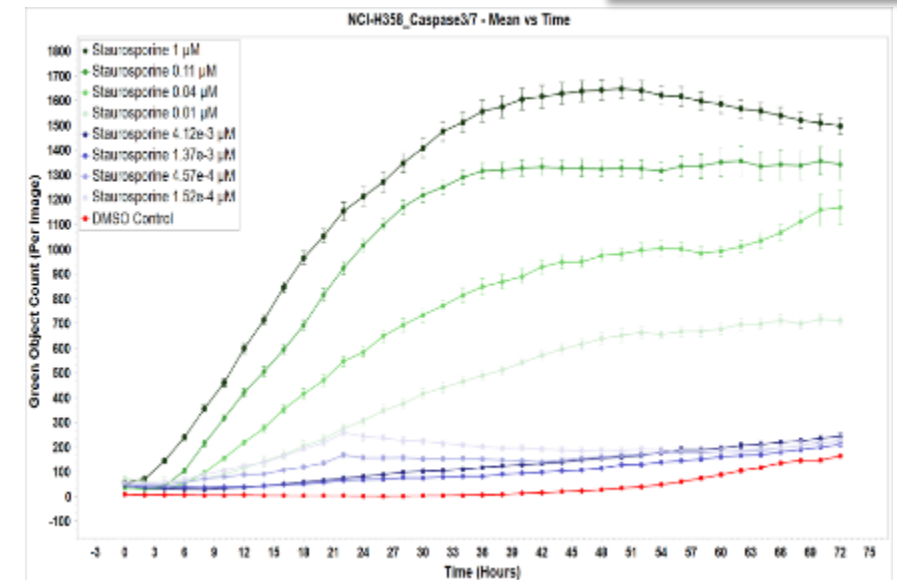
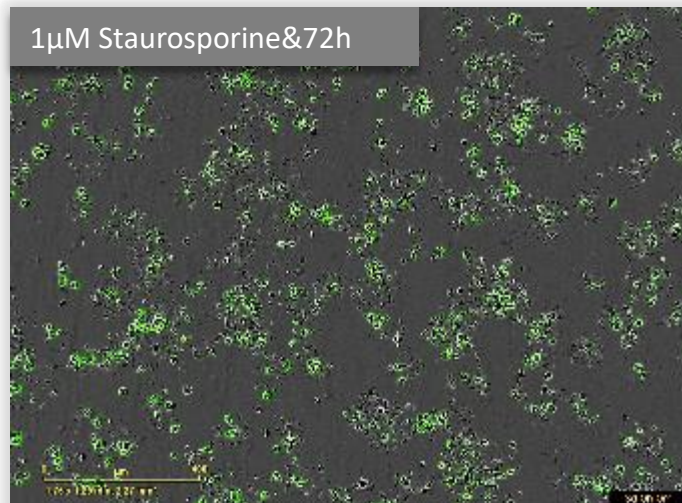
Control&72h



0.01uM Staurosporine&72h



1uM Staurosporine&72h



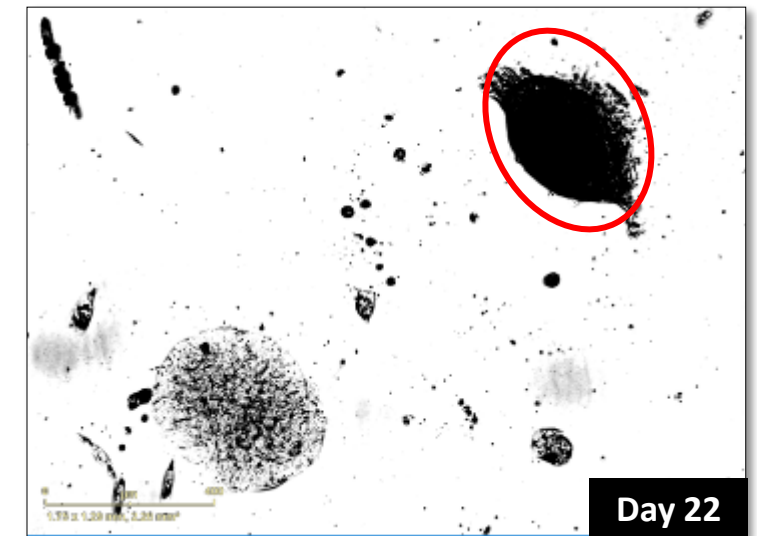
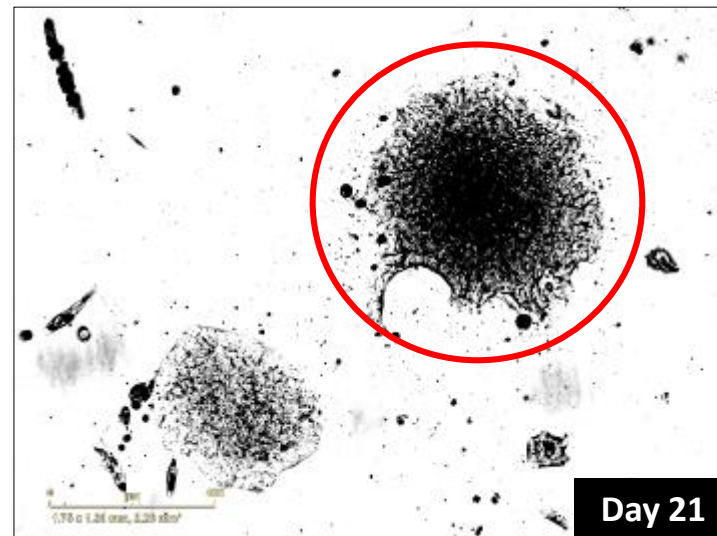
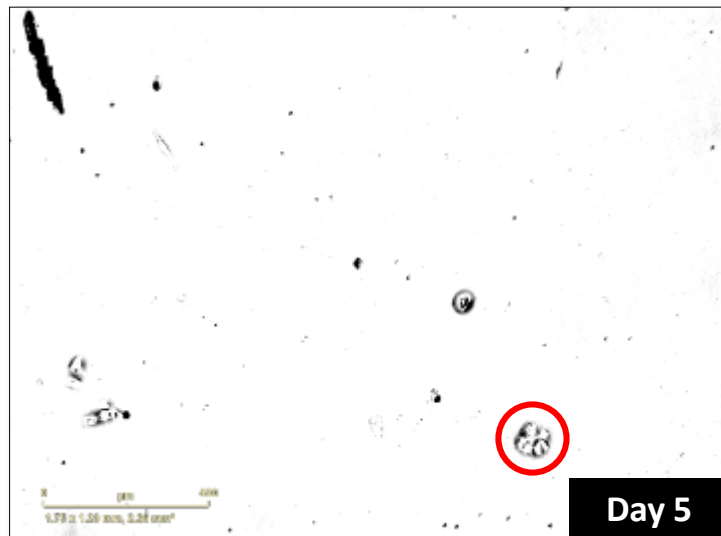
Cell co-culture assay by Incucyte

Fibroblasts and tumor cell co-culture

- The microenvironment of the tumor plays a key role on cancer development and progression in a variety of tumors.
- Cancer-associated fibroblasts (CAFs) are one of the most important cell components in the tumor microenvironment of most solid tumors.



VitroGel® Hydrogel Matrix - 3D Cell Culture

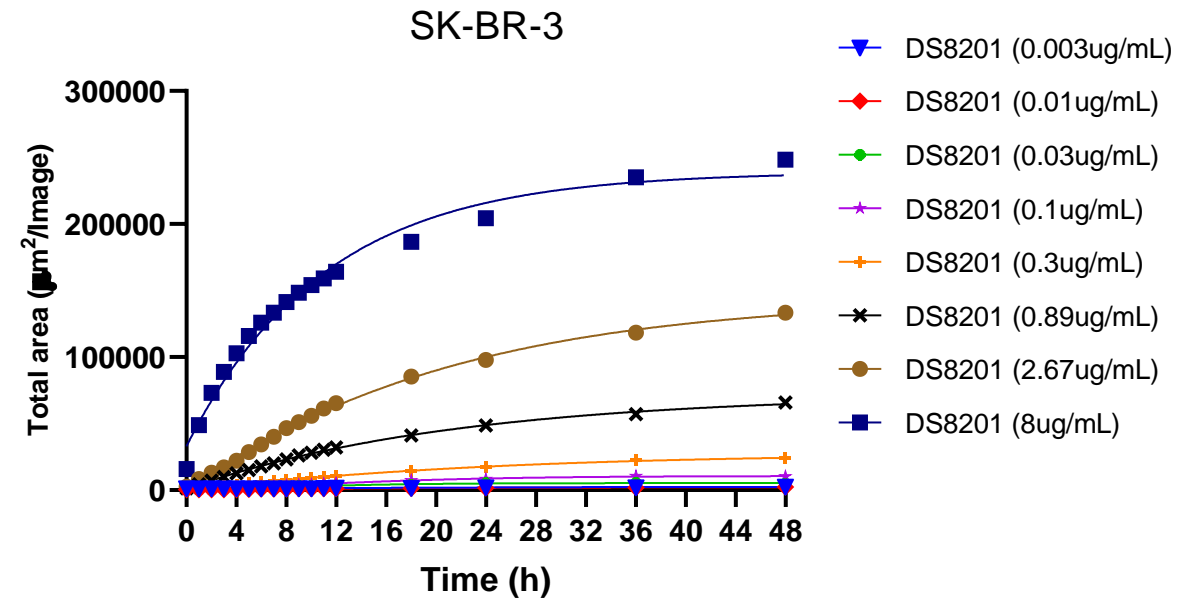
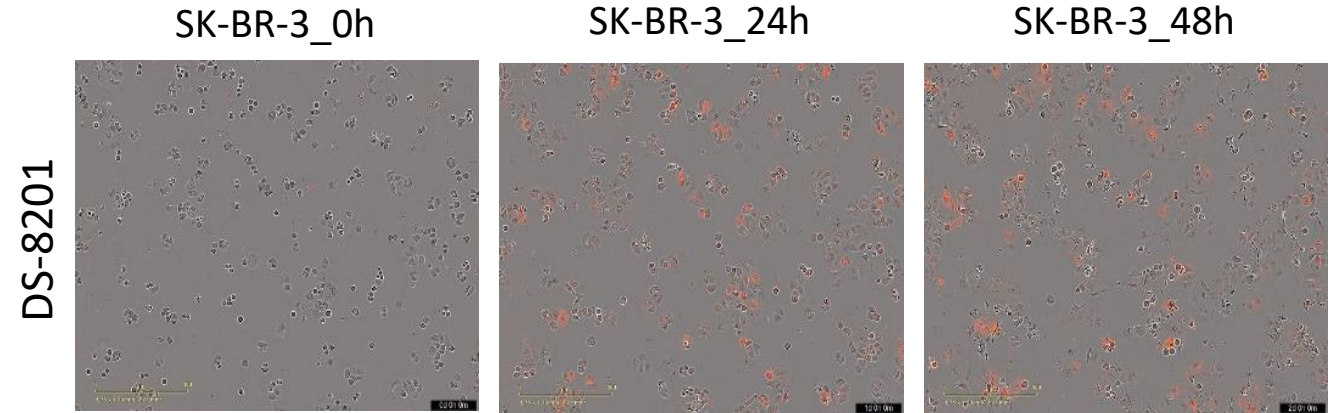
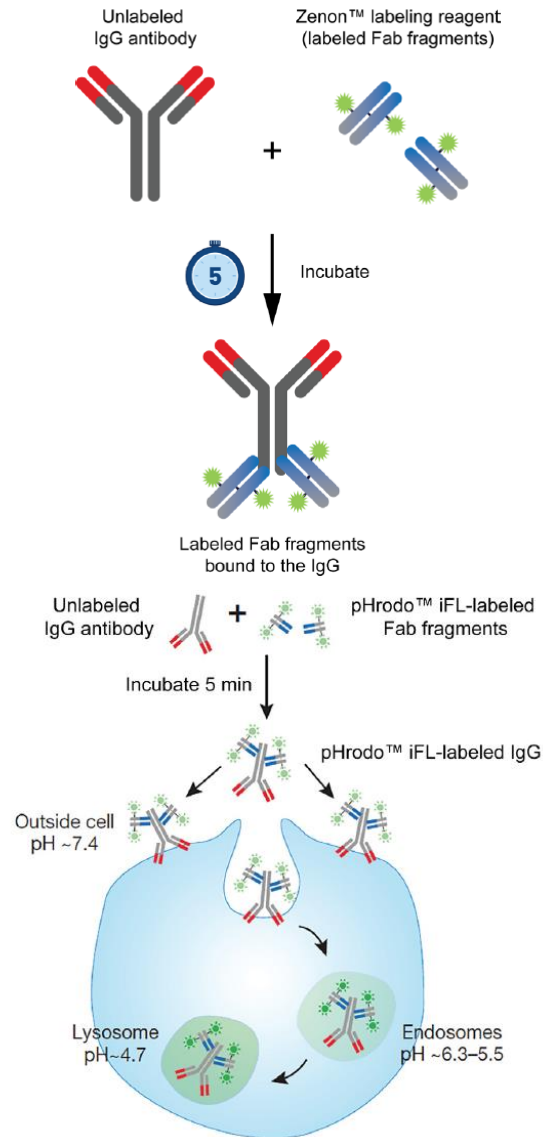


Co-culture of human lung cancer cells (NCI-H358) and normal human fetal lung fibroblasts (HFL1) by Incucyte

The images above show the cells at different stages of the long-term culture on days 5, 21 and 22. The formation of the lumen structures were observed by day 5. By day 22, cellular polarity loss gave rise to spheroid structures.

Antibody internalization assay by Incucyte

Internalization of DS8201 in SK-BR-3 cell



Confocal microscope

Leica TCS SP8 confocal laser scanning microscope

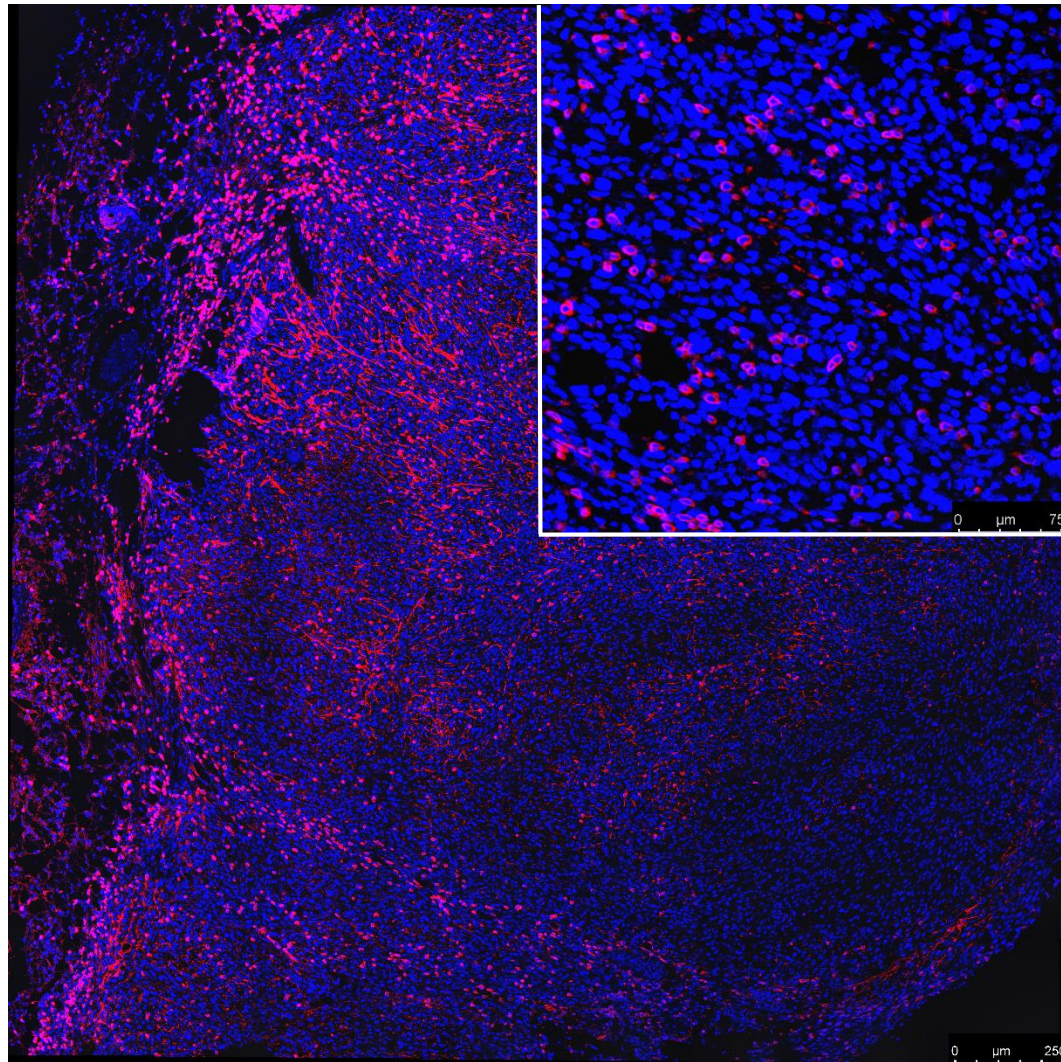


■ Technical indicators

- 10x, 20x, 40x objectives and 63x long working distance objectives
- Four lasers (405 nm, 488 nm, 552 nm and 638 nm)
- Live cell imaging system
- Tile scanning mode
- Image 3D cell models

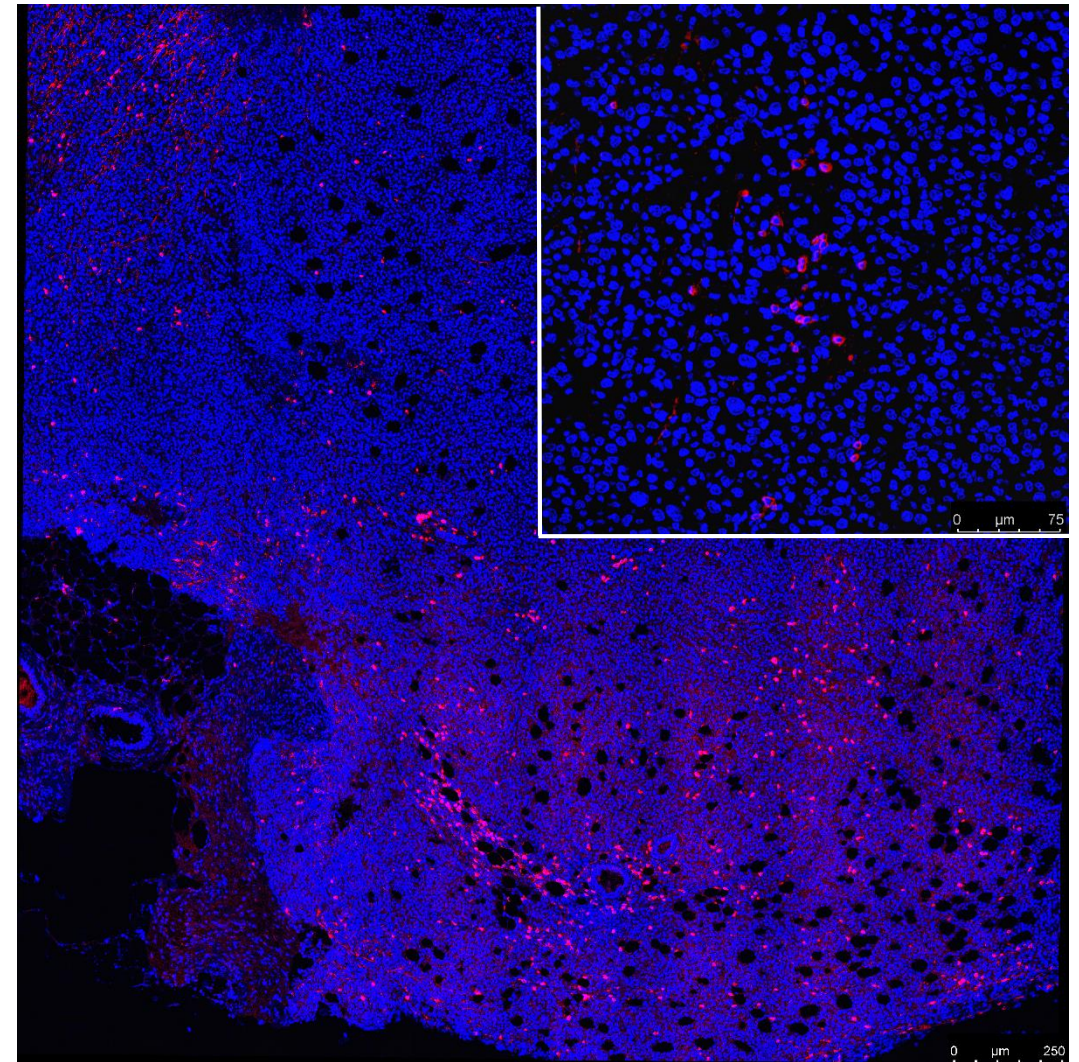
Expression detection of target protein by SP8

CD3 expression in murine syngeneic tumor models (Tile scanning)



CD3 DAPI

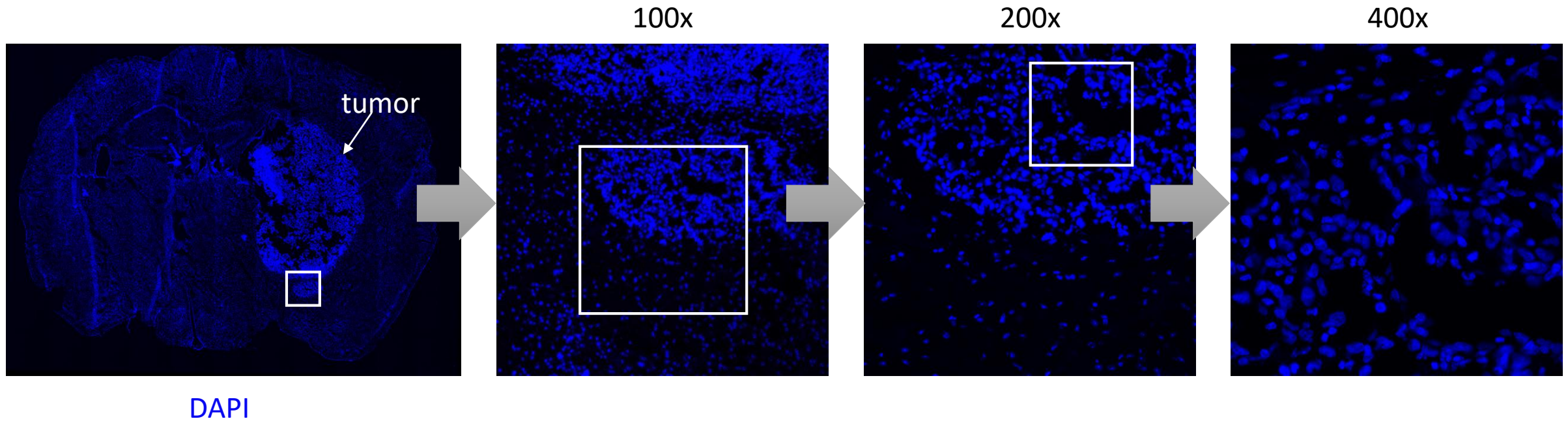
3LL model



H22 model

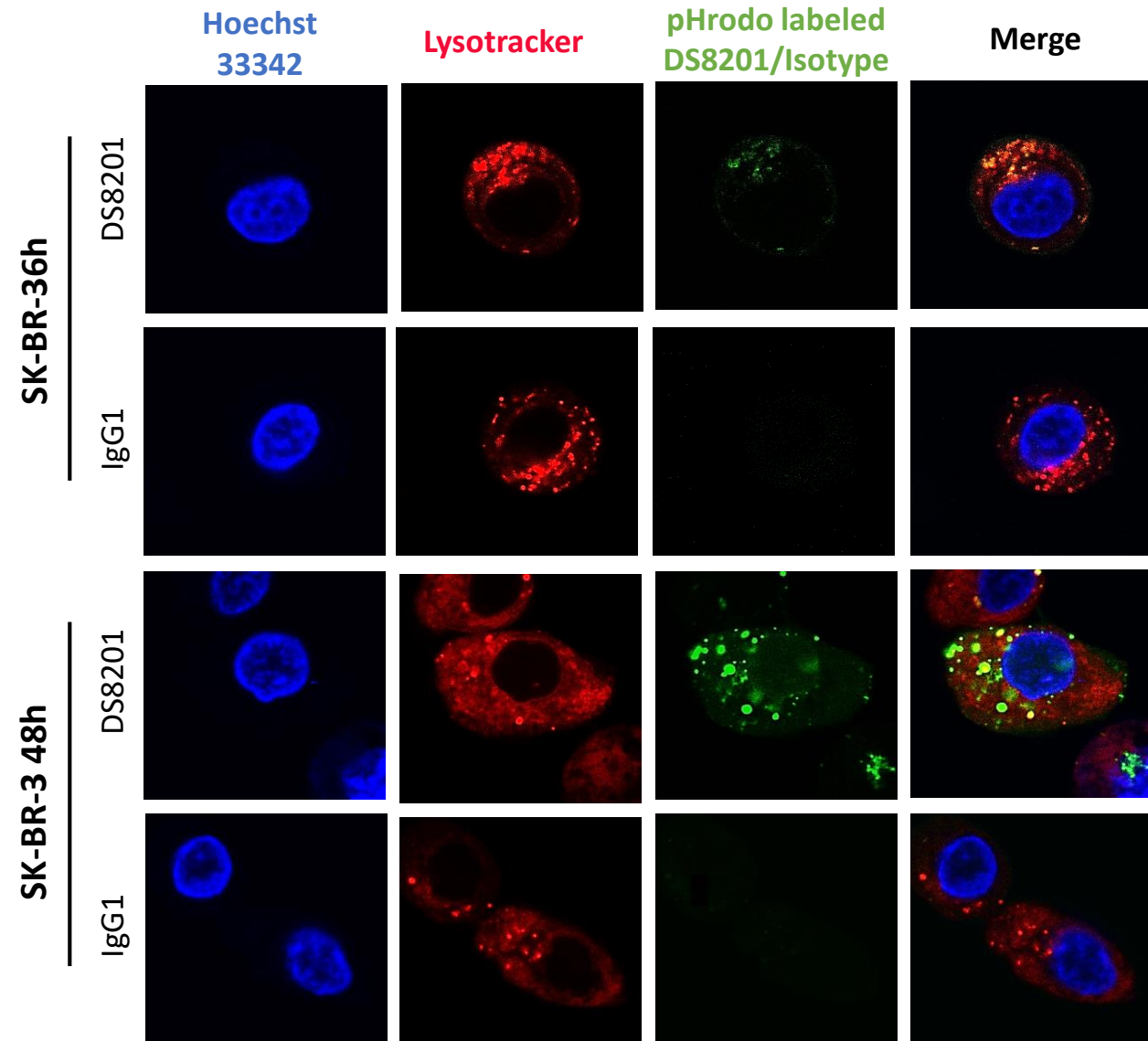
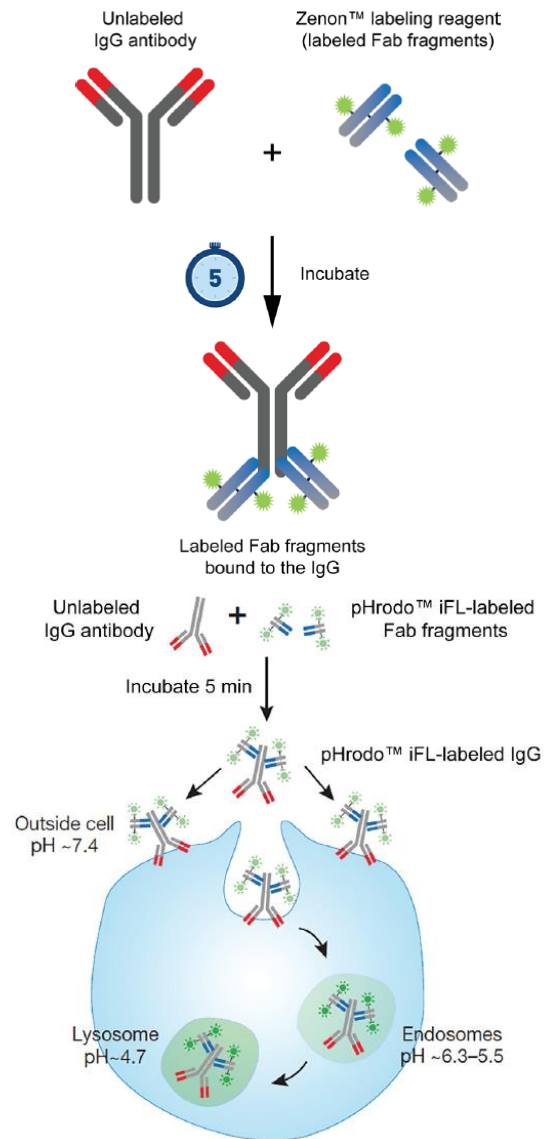
Imaging of large-size samples by SP8

Frozen section of brain (Continuous zoom)



Antibody internalization assay by SP8

Internalization of DS8201 in SK-BR-3 cell



High-Content Analysis

Operetta® CLS™ high content analysis system



■ Technical indicators

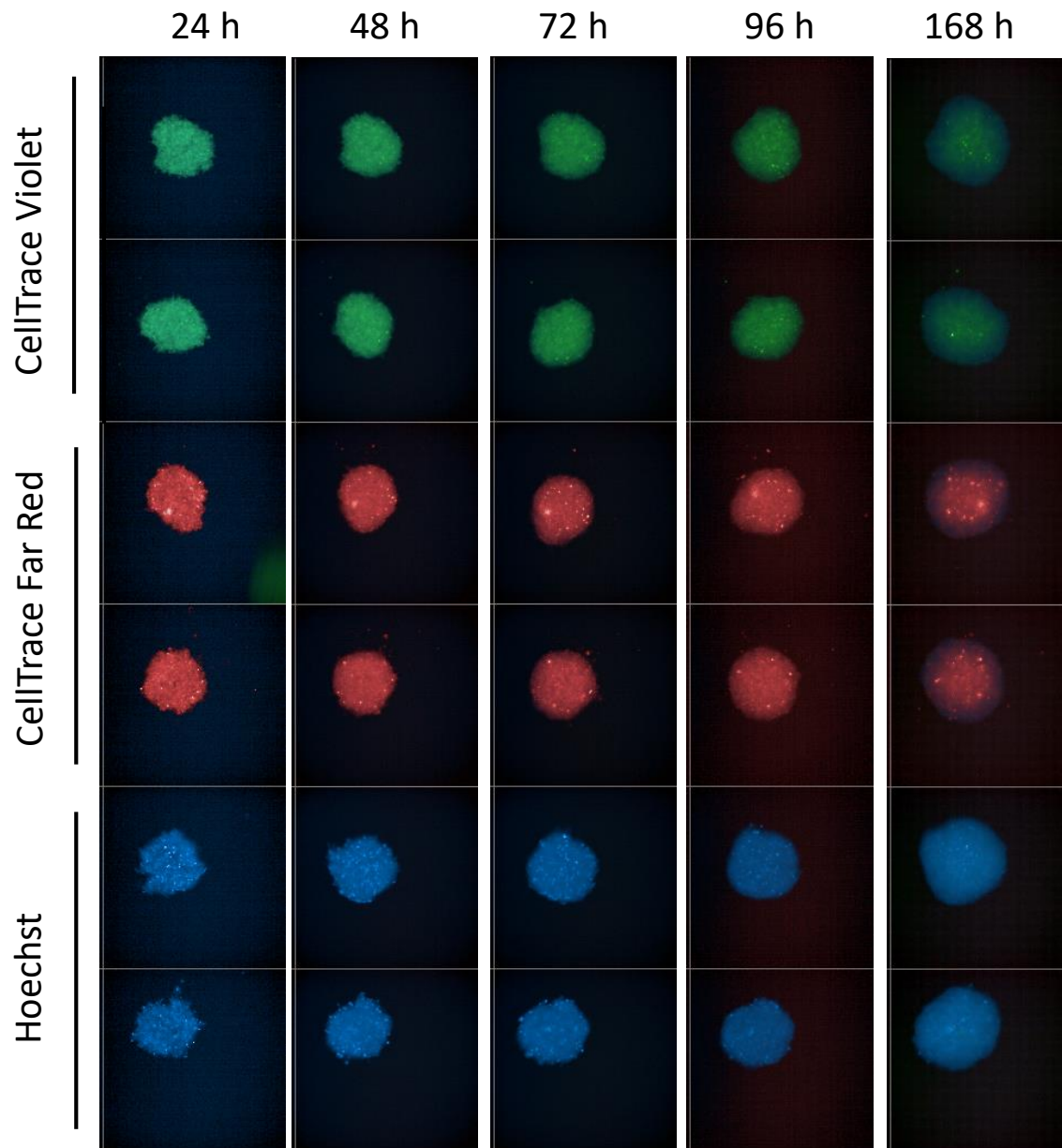
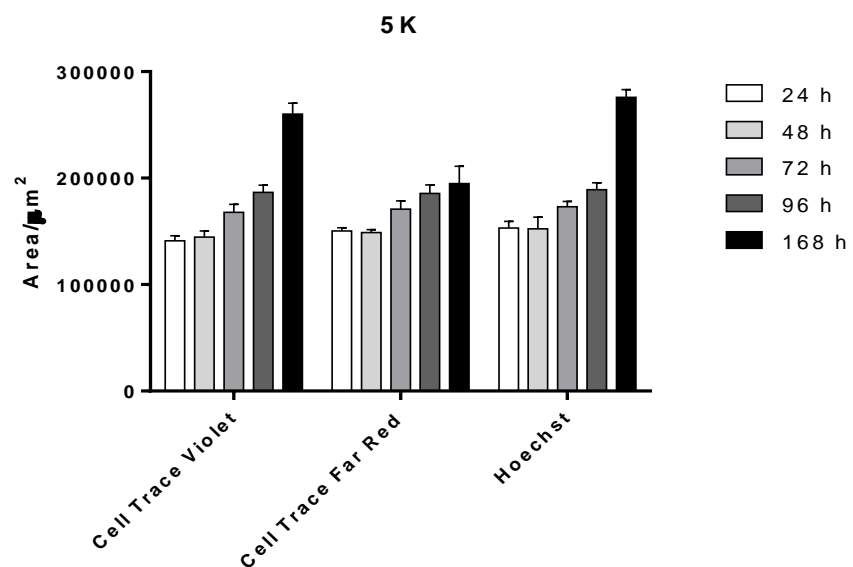
- Air (5x, 10x, 20x, 40x) and Water (20x, 40x, 63x) long working distance objectives
- Eight excitation and eight emission filters
- Confocal, wide-field fluorescence, bright field and digital fluorescence imaging modes can be switched freely
- High-throughput automated imaging and analysis
- Provide a live cell chamber that includes temperature and CO₂ control
- Visualize cell models in a 3D- and an XYZ-viewer

Imaging of 3D cell model by HCS

Seed A549 cells into Ultra Low attachment 96-well plate

Incubate at 37°C 5% CO₂

3D photography was carried out by HCS everyday





OUR COMMITMENT

Improving Health. Making a Difference.

For questions and requests, please email to info_onco@wuxiapptec.com



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