

## ▶ 3D spheroid invasion assay

보다 완전하고 생리적으로 예측 가능한 cancer invasion model의 필요성이 증가함에 따라 R&D systems의 96-well 3D Spheroid invasion assay kit을 소개합니다. Tumor cell aggregates or spheroids가 체내 종양을 평가하는데 적합하다는 증거가 증가하고 있으며, 이 cell들은 형태학적 유사성, 세포간 결합, 증식률 감소, 세포 생존율 증가, cancer dormancy, hypoxic core 등을 포함한 몇 가지 생리학적 특성을 보입니다. 이 모델을 3D culture invasion assay에 적용하면 cancer invasion을 평가하기 위한 생리학적 접근법으로 **이미지 분석을 통해 정량화할 수 있는 data**를 도출할 수 있습니다.

## ▶ Procedure

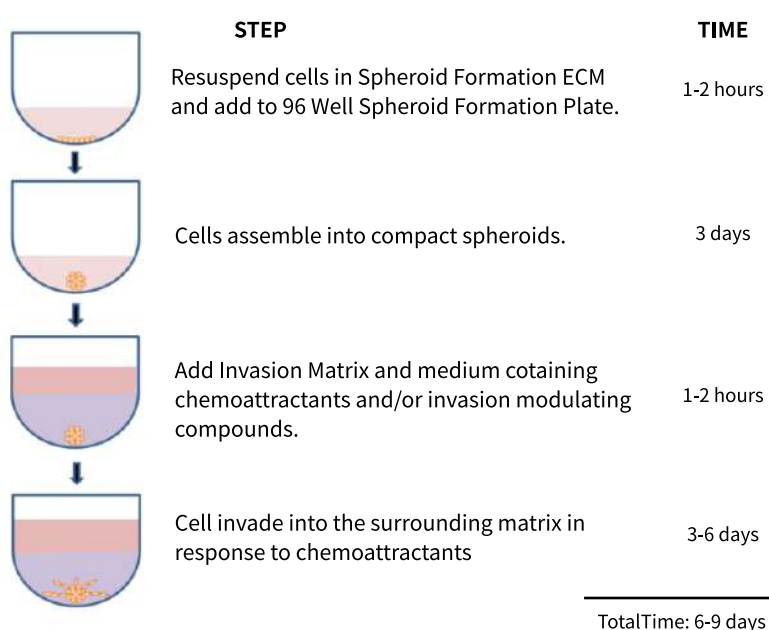


Figure 1. Steps comprising the 96 Well 3D Spheroid BME Cell Invasion Assay.

## ▶ Results

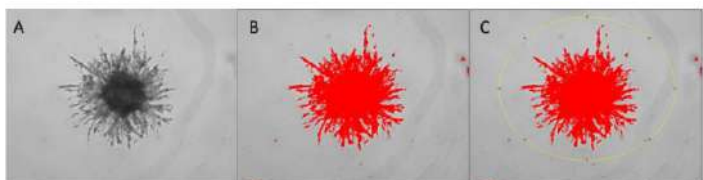


Figure 2. Process for analysis of 3D invasion. A) Capture image and convert to 8 bit; B) set threshold to capture the total structure; and C) select structure to calculate total area.

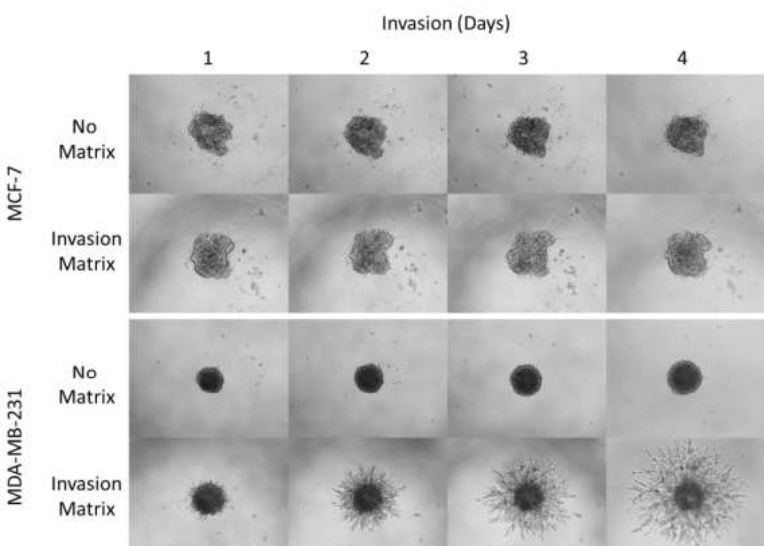
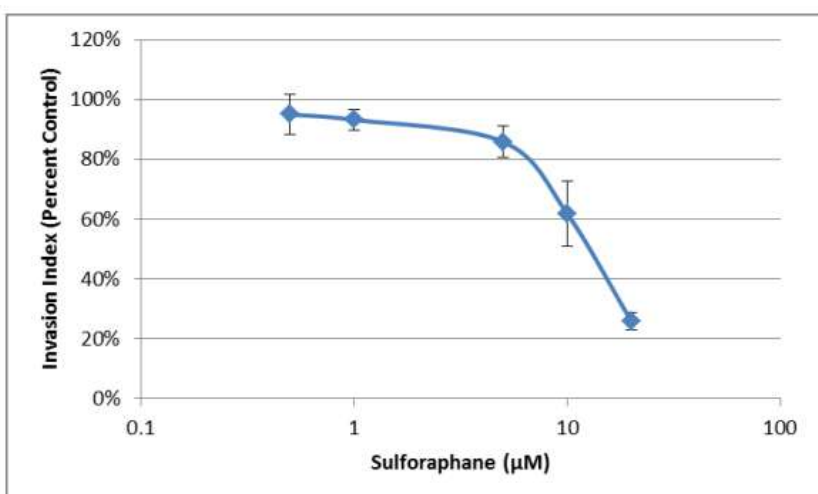
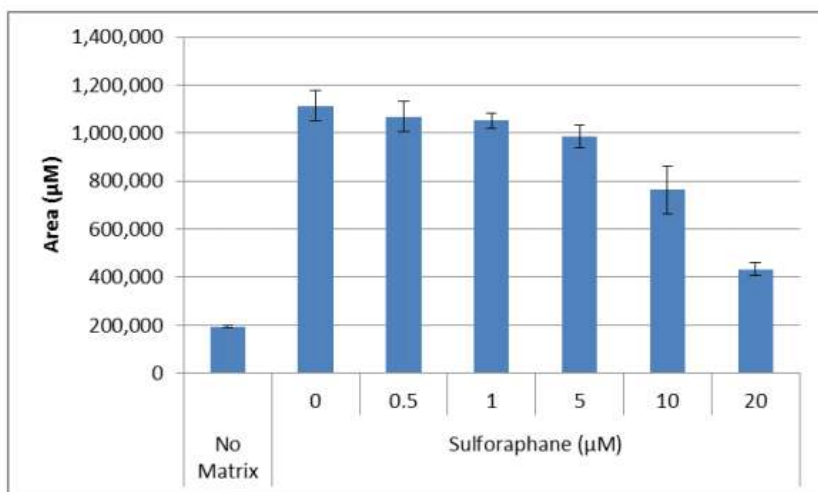


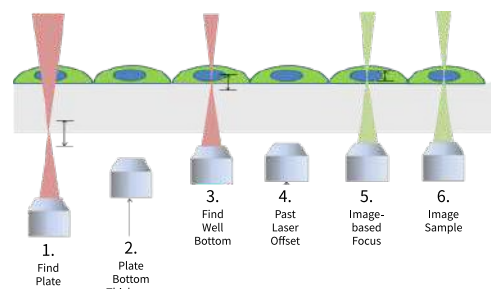
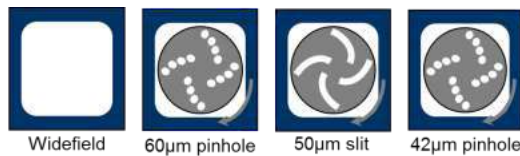
Figure 3. Morphology of 3D cell invasion over a four day period. Non-invasive cells (MCF-7) remain as cell aggregates and do not invade into the surrounding invasion matrix; whereas, invasive cells (MDA-MB-231) invade into the surrounding invasion matrix as spindle-like protrusions.



## ▶ High-Contents Screening (HCS) System



### ImageXpress Micro Confocal High-Content Imaging System



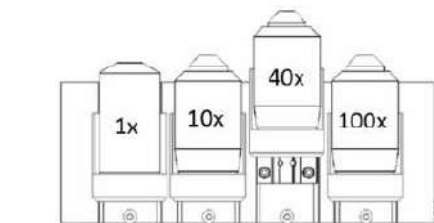
#### Hardware Options:

- Environmental Control (Temperature, Humidity, CO2)
- Transmitted Light with Phase Contrast (PhL, Ph1, Ph2)
- Fluidics for online pipetting with disposable pipette tips

#### Confocal Modes:

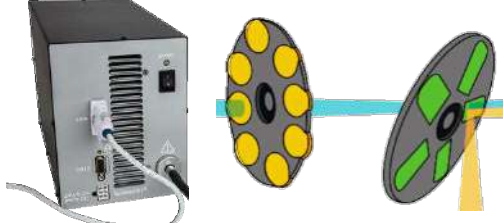
- 50µm slit (most HTS applications)
- 60µm pinhole (most research applications)
- 42µm pinhole (special research applications)

- #### Laser and Image-based Autofocus:
- Ultra-fast laser autofocus that adapts to any plate type, slide, or dish
  - Image-based focus for adjustments of variant distances from the well bottom to the sample.



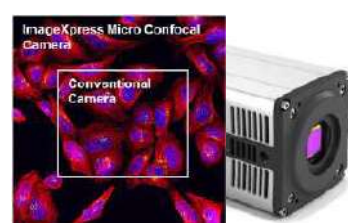
#### Objectives:

Wide selection of ELWD and SWD objectives (air and oil, phase contrast) from 1x to 100x magnification with high numerical apertures (user changeable).



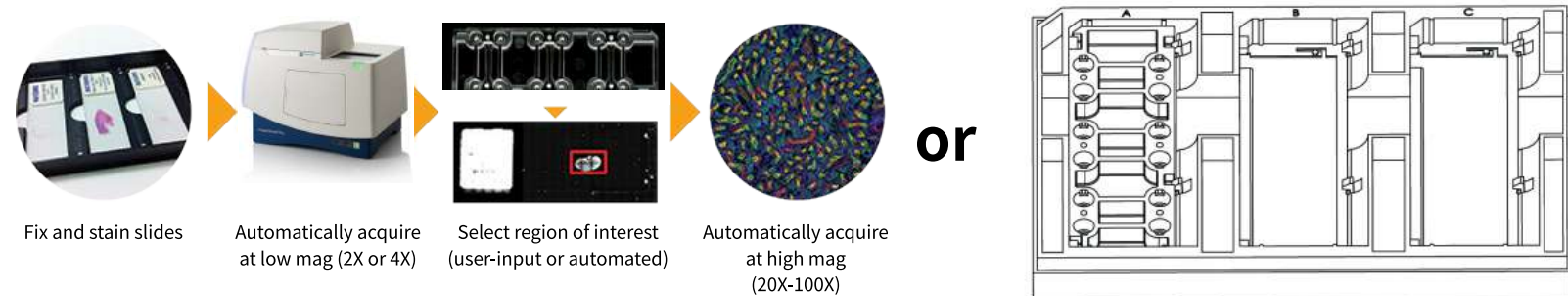
#### Light Source and Filters:

Super-bright fibre-coupled solid state light engine (long life >20000h). High quality filters (user changeable) in 8-position emission wheel and 5-position dichroic wheel.



#### Camera:

4.2 megapixel sCMOS camera with 82% peak quantum efficiency covering more than 3 times the area of a conventional camera. This increases throughput and often eliminates the need for images stitching. Images are saved in 16-bit Tiff format.



Molecular Devices의 ImageXpress는 high-contents imaging system으로 software를 이용하여 실험실 밖에서도 full-automation으로 사용할 수 있는 장비입니다. MD만의 **Laser and image-based dual-autofocus**로 사용하시던 culture plate도 바로 적용이 가능하며, 분석 전용 software인 MetaXpress를 통해 자동으로 data를 분석합니다. MD의 **ImageXpress**를 이용하여, R&D systems의 **3D spheroid invasion assay**를 imaging과 동시에 분석해보세요.

