Study Cancer with the CellASIC® ONIX Microfluidic Platform.

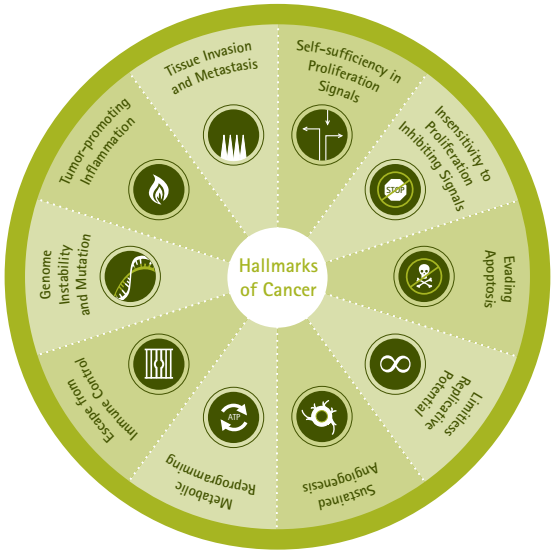
Cancer cells can change rapidly. Are you prepared to study them dynamically?

Cancer cell transformation represents the epitome of dynamic cell behavior. Unprecedented genomic changes, metabolic reprogramming, microenvironment alterations, unchecked replication, and amazing feats of transmigration accomplished by a once mundane quiescent cell.

The need for controlled dynamic cell analysis has never been greater.

The 10 Cancer hallmarks studied dynamically

Study proliferation, motility, differentiation, or viability circuits by taking control of your cancer cell microenvironment. Add growth factors, inhibitors or mimetics. Alter the hypoxic environment. Observe autophagic, apoptotic or transmigration events. The CellASIC® platform is the only system that enables monitoring of dynamic cellular processes from start to finish. And the cell culture environment is never disrupted to change experimental conditions.



Microscope based

See how critical cancer cell behaviors like nuclear translocation, autophagy and invasion can be studied dynamically.

Take control and turn the page.

EMD Millipore Corp. is a subsidiary of Merck KGaA, Darmstadt, Germany

Take microfluidic control of your cancer microenvironment and visualize the effect on transcription factor translocation.

Live cell analysis using the CellASIC® ONIX microfluidic platform creates a dynamic assay that not only has the potential to simultaneously monitor multiple intracellular components throughout the entire protein translocation process without disruption, but also allows the precise manipulation of culture parameters like media flow, inducer/ inhibitor concentration, and gas content.

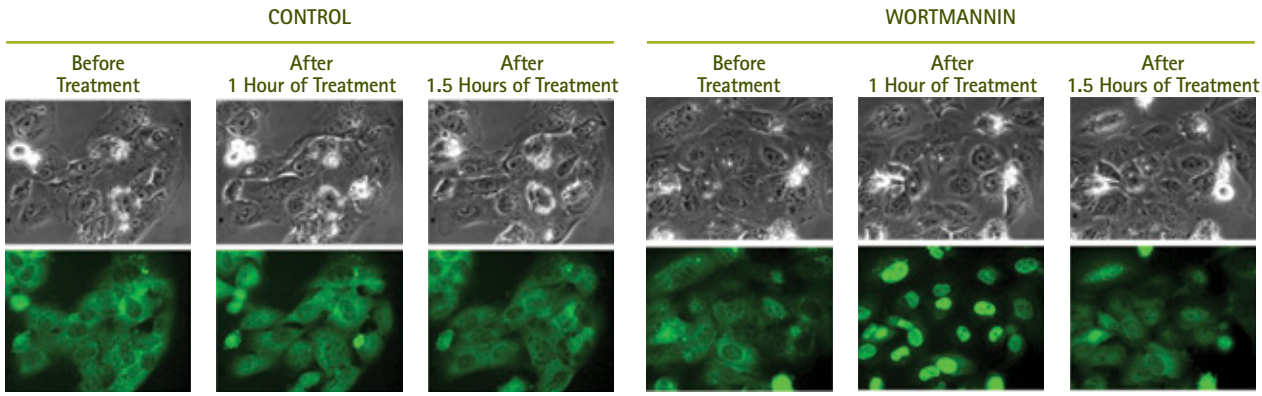
Microfluidic culture chambers

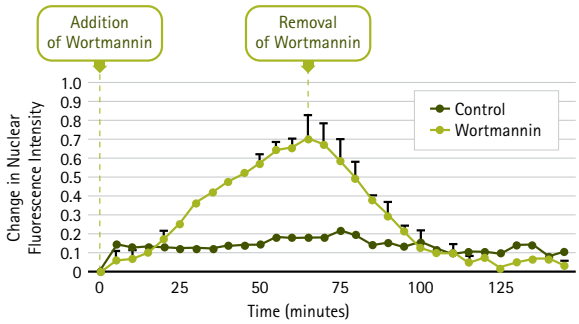
- Discover translocation mechanisms not resolvable by end-point assays
- Simulate conditions of pulse exposure to drug compounds
- Quantify the rate of protein translocation
- Provide key parameter values for therapeutic compound profiling

Forkhead transcription factors are altered in several types of cancers, interacting with an array of downstream targets and partners that are involved in the regulation of the PI3L-Akt pathway, leading to cell survival or cell death. Here changes in nuclear translocation were observed and measured in reporter cells cultured, wortmannin treated, and flushed all within the controlled microenvironment created and maintained by the CellASIC® ONIX system while continuously sitting on a standard inverted fluorescent microscope stage.

Read this and other application papers at:
www.emdmillipore.com/CellASIC

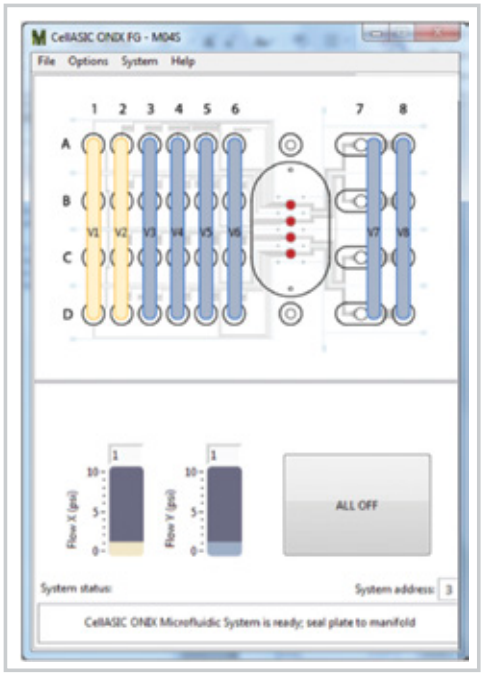
Live cell images of FOXO4 translocation



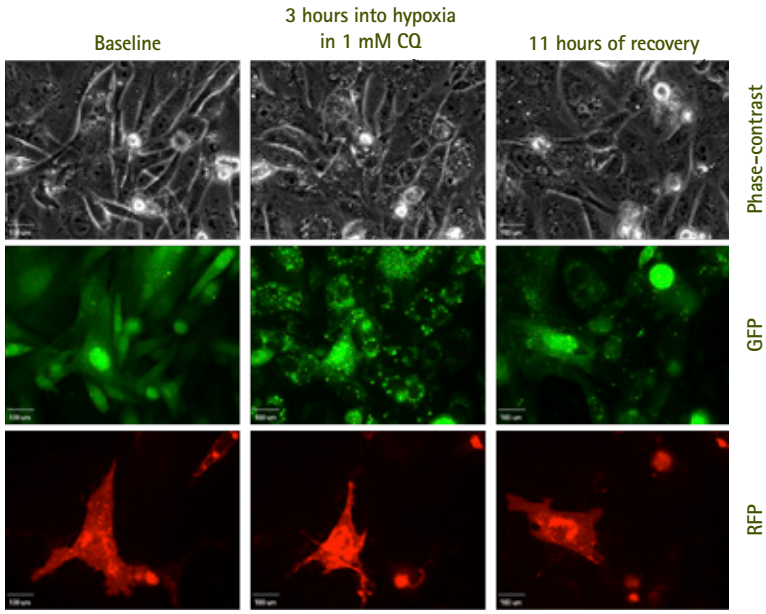


Manipulate nutrients and gas composition while visualizing **autophagy** in real time.

Experimental manipulation of the cellular microenvironment is important when studying cancer cell behavior under stressed conditions, such as nutrient deprivation, hypoxia or drug exposure. The CellASIC® ONIX microfluidics allows control and measurement precision in autophagy assays.



Easy programming interface



- Tightly control nutrient composition and delivery
- Program automated changes in gas mixtures
- Visualize real time autophagic changes in undisturbed cultures

Tumor cells may use the autophagic pathway to promote survival. Here a live cell imaging assay was used to monitor both the rate of autophagosome formation and changes in lysosomal degradative processes during autophagy. Cell lines stably expressing fluorescently-tagged markers specific for autophagosomes (LC3-GFP), were used in combination with microfluidic control of media and gas exchange to create starvation or hypoxia. Changes in LC3 levels (as measured by autophagosome counts) were monitored and quantified throughout culture duration by fluorescence microscopy.

Read this and other application papers at:
www.emdmillipore.com/CellASIC

Study **cell migration and chemotaxis** in a controlled but more realistic culture microenvironment.

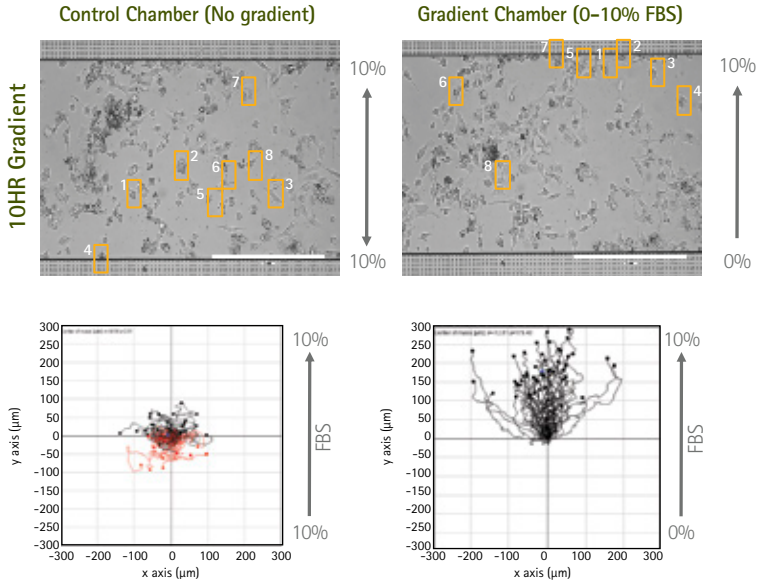
Microfluidic control of chemical gradients by the CellASIC® ONIX platform allows precision manipulation of classical chemotaxic/migration assays.

- Create defined diffusion gradients
- Control stability, direction, and composition
- Do multi-day observations without moving culture
- Interrogate cells with anti-migration compounds
- Measure induced morphology and protein changes

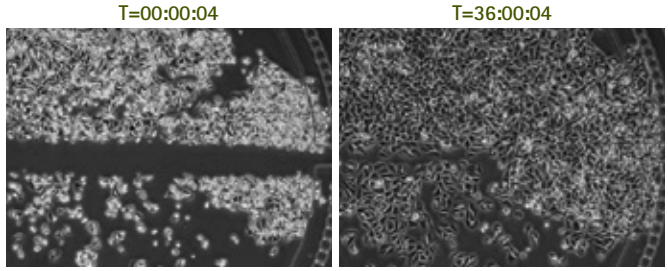
Migration dynamics is critical to understanding tumor metastasis and evasion behavior. Here, microfluidics was used to create a defined, stable, and controllable chemoattractant gradient. Migratory behavior of MDA-MB-231 human breast cancer cells in response to FBS was measured in Real-time and time-lapse imaging.

Read this and other application papers at:
www.emdmillipore.com/CellASIC

Chemotaxis Assay



Cell migration in scratch assay



The CellASIC® ONIX microfluidic platform can also be used to create scratches and monitor cell migration response in a dynamic scratch assay.

Cancer is dynamic. Why study it statically?

Find out how the dynamic cell culture CellASIC® ONIX can revolutionize your cancer study and reveal more of cancer's complexities.

www.emdmillipore.com/CellASIC

To place an order or receive technical assistance

In the U.S. and Canada, call toll-free
1-800-645-5476

For other countries across Europe and the world, please visit: **www.emdmillipore.com/offices**

For Technical Service, please visit:
www.emdmillipore.com/techservice

EMD MILLIPORE