

# Incucyte®

Reagents, Consumables and Software

Simplifying Progress

SARTURIUS

# Incucyte® Reagents, Consumables and Software

Sartorius offers a range of reagents, consumables and software specifically designed around your application needs to enable long-term, kinetic live-cell imaging and analysis. Obtain specific and robust measurements

of cell health, movement and function with optimized, turnkey solutions allowing you to connect phenotype and function with pathological processes. Getting biologically relevant information has never been easier!

Find Your Solution to Meet Your Application Needs:

Cell Health

**Cell Function** 

Cell Movement and Morphology

Assays for 3D Models

### Key Advantages

- Derive meaningful data with sensitive, non-perturbing reagents for long term, live-cell studies.
- Unlock your productivity with lab-tested protocols and purpose-built, intuitive software.
- Generate data rich information within every sample with fluorescent reagent combinations.
- Support visualization and automation of cell movement studies with Incucyte<sup>®</sup> consumables.

# Incucyte® Reagents At-a-Glance

Application	Reagent	Consumable	Software Module		Compatil	ole Instrument	
				SX5	S3	S3 for Neuro	SX1
Cell Health							
Proliferation:							
Label-free, Confluence						•	
Label-free, Cell Counting							
Fluorescent Labeling, Cell Counting						•	
Viability	•					•	
Cell Cycle							
Apoptosis				•		•	
Cytotoxicity						•	
Mitochondrial Membrane Potential						•	
ATP Metabolism	•						
Advanced Label-Free Classification Analysis						•	
Cell Function							
mmune Cell Killing	•			•		•	
Antibody Internalization	•						
Live-Cell Immunocytochemistry	•						
Phagocytosis	•					•	
NETosis							
Kinase Activity							
Neuronal Activity						•	
Cell Movement and Morphology							
Chemotaxis Migration and Invasion	-	•		•	•	•	
Scratch Wound Migration and Invasion							
Immune Cell Activation and Proliferation							
Neurite Outgrowth						•	
Advanced Label-Free Classification Analysis						•	
Assays for 3D Models							
Spheroid Growth (Single and Multi-Spheroid)	-		•	•	•		
Spheroid Invasion (Single Spheroid)	-				•	•	
Spheroid Immune Cell Killing	-				•	•	
Organoid Culture QC			•			•	
Organoid Assay							

# Proliferation, Cell Counting, Viability and Cell Cycle

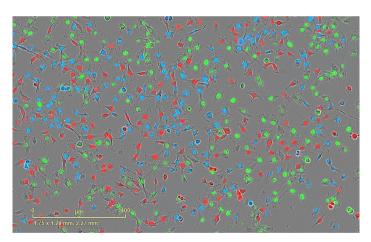
Incucyte® live-cell labeling reagents and purposebuilt software enable long-term (> 48 h) analysis of cell proliferation, viability and cell cycle state.

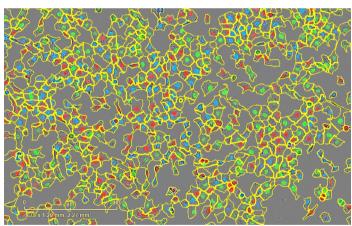
- Minimize experimental artifacts using non-perturbing, live-cell reagents—preservative free, sterile, or concentrated formulations to protect cell health
- Quantify cell proliferation kinetically using label or labelfree strategies in adherent or non-adherent cell cultures
- Investigate a range of cell models (mono-, co- or tri-culture) to answer relevant scientific questions
- Maximize each sample with multiplexed readouts of proliferation, cell cycle or cell health that are easily validated by eye

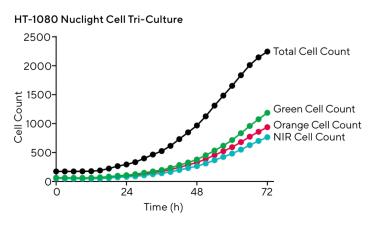
### Application Spotlight: Incucyte® Live-Cell Proliferation Assays

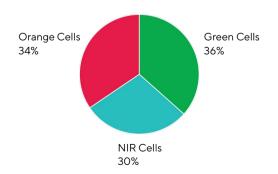
Perform long-term, kinetic measurements of proliferation, with or without labels. Incucyte® Nuclight Reagents homogenously label a variety of cell types for non-

perturbing, continuous analysis of the same population of cells. The Incucyte® Cell-by-Cell Analysis Software Module enables label-free cell identification and counting.





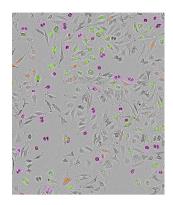


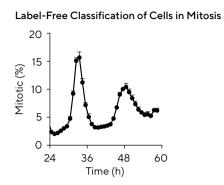


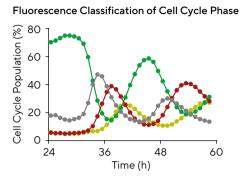
HT-1080 fibrosarcoma cells stably expressing Nuclight Green, Orange, or NIR were monitored for 72 hours. Representative images taken at 48 hours, with and without the label-free Cell-by-Cell Analysis mask, automatically identify the entire population of cells and quantify percentages of green, orange or NIR expressing cells.

### Application Spotlight: Incucyte® Cell Cycle Assay

Continuously quantify treatment effects on cell cycle progression of the same population of cells over multiple cell divisions using Incucyte® Cell Cycle Lentivirus Reagents. Gain deeper insight by multiplexing with Incucyte® Annexin V NIR Dye on the Incucyte® SX5.







	Product	Description	Cat. No.	Instrument Compatibility			
Software	Perform label-free cell counts and subsequent cell-by-cell classification based on shape, size or fluorescence intensity to quantify dynamic changes in cell subsets within heterogeneous living cell cultures with Cell-by-Cell Analysis Software Module. Perform counts and track changes in adherent cell morphology via label-free image segmentation and multivariate analysis of cell shape. Classifier is trained using control wells. Advanced Label-Free Classification Software Module an addon and requires Incucyte® Cell-by-Cell Analysis Software Module (Cat. No. 9600-0031).						
	Incucyte® Cell-by-Cell Analysis Software Module	1 module	9600-0031	SX5, S3, S3 for Neuroscience, SX1			
	<b>New!</b> Incucyte® Advanced Label-Free Classification Analysis Software Module	1 module	BA-04867	SX5, S3, S3 for Neuroscience, SX1			
Nuclear Dye Labeling Reagents	Cell-permeable DNA stains that specifically labe quantification of cell proliferation and viability.	el nuclei in cells and	d are ideally suite	ed for mix-and-read, live-cell			
	Incucyte® Nuclight Rapid Red Dye	One vial: 50 μL	4717	SX5 (configured with Green/Red Optical Module), S3, SX1			
	Incucyte® Nuclight Rapid NIR Dye	One vial: 50 μL	4804	SX5, S3 for Neuroscience			
*Nuclear Lentivirus Labeling Reagents	Lentivirus reagents provide homogenous expression of a nuclear-restricted fluorescent protein without altering cell function for live-cell quantification of cell proliferation and viability.						
	Incucyte® Nuclight Green Lentivirus (puro)	0.2 mL	4624	SX5, S3, SX1			
		0.6 mL	4475	SX5, S3, SX1			
	Incucyte® Nuclight Red Lentivirus (puro)	0.2 mL	4625	SX5 (configured with Green/Red			
		0.6 mL	4476	Optical Module), S3, SX1			
	Incucyte® Nuclight Green Lentivirus (bleo)	0.2 mL	4626	SX5, S3, SX1			
		0.6 mL	4477	SX5, S3, SX1			
	Incucyte® Nuclight Red Lentivirus (bleo)	0.2 mL	4627	SX5 (configured with Green/Red			
		0.6 mL	4478	Optical Module), S3, SX1			
	Incucyte® Nuclight Orange Lentivirus (puro)	0.2 mL	4771	SX5, S3 for Neuroscience			
	Incucyte® Nuclight NIR Lentivirus (puro)	0.2 mL	4805	SX5, S3 for Neuroscience			
Cell Cycle Lentivirus Reagents	Fluorescent ubiquitination-based cell cycle indiffuorescent proteins to distinguish between cells						
	Incucyte® Cell Cycle Green/Red Lentivirus (puro)	0.2 mL	4779	SX5 (configured with Green/Red Optical Module), S3, SX1			
	Incucyte® Cell Cycle Green/Orange Lentivirus (puro)	0.2 mL	4809	SX5			

<sup>\*</sup> Pre-labeled Nuclight cell lines are also available for purchase. Please visit www.sartorius.com/shop for more information.

# Apoptosis, Cytotoxicity, Mitochondrial Membrane Potential and ATP Metabolism

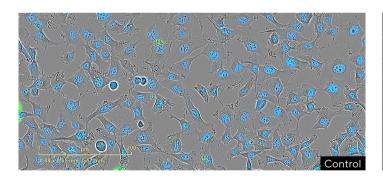
Incucyte® non-perturbing cell health reagents allow for kinetic readouts over multiple days for the evaluation of time-dependent and cell-specific responses to treatments.

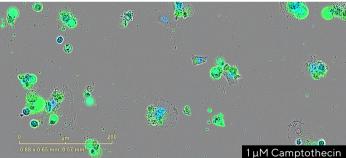
- Preserve cell health using non-perturbing, live-cell reagents to track true, artifact-free biological responses
- Reduce loss of precious or compromised cells with mixand-read or novel genetically encoded reagents and optimized protocols
- Perform multi-parametric analysis using cell health reagent combinations within a single well to generate data rich information
- Validate results and confirm changes in cell morphology with high density (HD) phase images at every time point

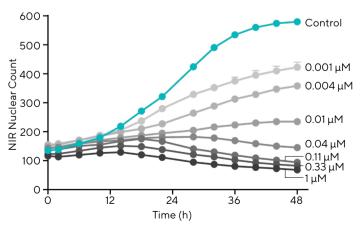
# Application Spotlight: Incucyte® Apoptosis Assay

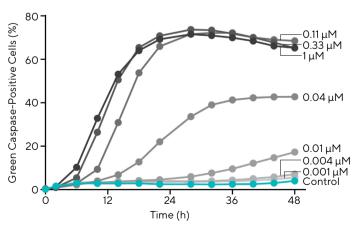
Evaluate cell death with two unique assays for apoptotic pathway analysis using specifically formulated reagents. Utilize Incucyte® Caspase-3/7 Dyes to allow direct detection of caspase-3/7 activation or Incucyte®

Annexin V Dyes to measure exposed phosphatidylserine in apoptotic cells. Enhance your insight with multiplexed measurements of nuclear counts of cell death.









HT-1080 fibrosarcoma cells stably expressing Nuclight NIR Lentivirus (pseudo-colored blue) were treated with decreasing concentrations of camptothecin in the presence of Incucyte® Caspase-3/7 Green Dye (pseudo-colored green). Representative images validate kinetic data of both cell viability and apoptotic death.

	Product	Description	Cat. No.	Instrument Compatibility			
Software	Perform label-free cell counts and subsequent cell-by-cell classification based on shape, size or fluorescence intensity to quantify dynamic changes in cell subsets within heterogeneous living cell cultures with Cell-by-Cell Analysis Software Module. Perform counts and track changes in adherent cell morphology via label-free image segmentation and multivariate analysis of cell shape. Classifier is trained using control wells. Advanced Label-Free Classification Software Module an addon and requires Incucyte® Cell-by-Cell Analysis Software Module (Cat. No. 9600-0031).						
	Incucyte® Cell-by-Cell Analysis Software Module	1 module	9600-0031	SX5, S3, S3 for Neuroscience, SX1			
	Incucyte® Advanced Label-Free Classification Analysis Software Module	1 module	BA-04867	SX5, S3, S3 for Neuroscience, SX1			
Caspase Activity Reagents	Inert, non-fluorescent (DEVD) substrates the caspase-3/7 to release a DNA-binding fluor		mbrane where t	hey can be cleaved by activated			
	Incucyte® Caspase-3/7 Green Dye	One vial: 20 μL (100–200 tests)	4440	SX5, S3, SX1			
	Incucyte® Caspase-3/7 Red Dye	One vial: 20 μL (100–200 tests)	4704	SX5 (configured with Green/Red Optical Module), S3, SX1			
	Incucyte® Caspase-3/7 Dye for Metabolism	One vial: 20 μL (100-200 tests)	4776	SX5 (configured with SX5 Metabolism Optical Module)			
Apoptosis Plasma Membrane Integrity	Membrane impermeable, highly-selective phosphatidylserine (PS) cyanine fluorescent dyes label PS exposure on the extracellular surface of cells undergoing apoptosis.						
Reagents	Incucyte® Annexin V Green Dye	One vial: 100-200 tests	4642	SX5, S3, SX1			
	Incucyte® Annexin V Red Dye	One vial: 100-200 tests	4641	SX5 (configured with Green/Red Optical Module), S3, SX1			
	Incucyte® Annexin V Orange Dye	One vial: 100-200 tests	4759	SX5, S3 for Neuroscience			
	Incucyte® Annexin V NIR Dye	One vial: 100-200 tests	4768	SX5, S3 for Neuroscience			
Cytotoxicity Reagents	Highly sensitive cyanine-based dyes that do not enter living cells. When the cell membrane is compromised, it enters the cell, binds to DNA, and becomes fluorescent. Dye does not enter cells with intact cell membranes.						
	Incucyte® Cytotox Green Dye	Five vials: 5 μL (100 tests each)	4633	SX5, S3, SX1			
	Incucyte® Cytotox Red Dye	Five vials: 5 μL (100 tests each)	4632	SX5 (configured with Green/Red Optical Module), S3, SX1			
	Incucyte® Cytotox NIR Dye	One vial: 100 uL (500-100 tests)	4846	SX5, S3 for Neuroscience			
New! Mitochondrial Membrane Potential	Fluorescent dye that diffuses across the intermembrane space and accumulates in proportion to the MMP. Shifts in fluorescent intensity denote mitochondrial membrane potential state. Requires Incucyte® Cell-by-Cell Analysis Software Module for analysis.						
(MMP)	New! Incucyte® MMP Orange Reagent Kit:	One kit	4775	SX5, S3 for Neuroscience			
	MMP Orange Dye	One vial: 30 µL (200 tests)	_				
	• FCCP	One vial: 10 µL (16 tests)					
	Oligomycin A	One vial: 10 µL (16 tests)					
New! ATP Metabolism	Direct, kinetic measurement of ATP to analy	ze changes of cancer cell	metabolism in a	dvanced cell models.			
Software	Enables analysis of ATP dynamics by captur cell morphology in each well of a 96- or 384		ile qualitatively	monitoring associated changes in			
	New! Incucyte® ATP Analysis Software Module	1 module	9600-0033	SX5 (configured with SX5 Metabolism Optical Module)			
Metabolism	Genetically-encoded fluorescent ATP indi	cator for direct measurem	ents of cytosol	ic ATP in living cells.			
Reagent	New! Incucyte® CytoATP Lentivirus (puro)	One vial: 0.2 mL	4772	SX5 (configured with SX5 Metabolism Optical Module)			

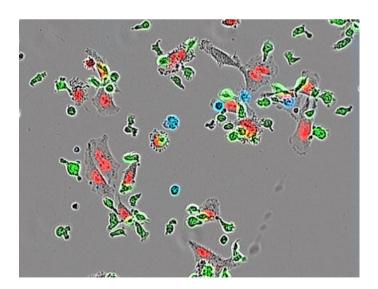
# Immune Cell Activation, Killing and NETosis

Incucyte® Immune Cell Assays are an integrated solution for real-time visualization and automated analysis of a range of immune cell functions from T cell activation and killing to programmed neutrophil cell death.

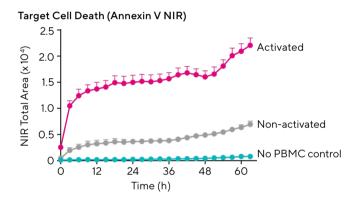
- Derive meaningful data with sensitive, non-perturbing reagents and HD phase images
- Make multiplexed measurements of death, viability and proliferation in 2D or 3D in vitro assay models
- Visualize and quantify dynamic cell interactions overtime in complex co-cultures

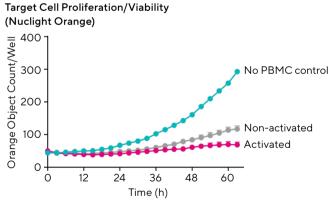
# Application Spotlight: Incucyte® Immune Cell Killing

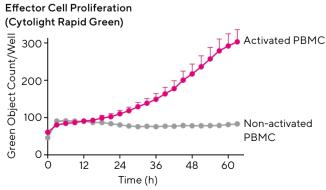
Capture, visualize and automatically quantify dynamic biological changes and cellular interactions of immune cell-mediated killing of tumor cells. With Incucyte® cell health and proliferation reagents you can make multiplexed measurements of tumor cell death (Annexin V NIR Dye), tumor cell proliferation/viability (Incucyte® Nuclight Orange Lentivirus) and immune cell health (Incucyte® Cytolight Rapid Green Dye) in the same population of cells over time.



MDA-MB-231 adenocarcinoma cells transduced with Incucyte® Nuclight Orange co-cultured with Incucyte® Cytolight Rapid Green labeled activated or non-activated PBMCs in the presence of Incucyte® Annexin V NIR. Quantification of NIR (pseudo-colored blue) fluorescence area indicates target cell death and object count of orange (pseudo-colored red) fluorescence, target cell proliferation/viability (pseudo-colored green). Effector cell proliferation was quantified based on green object count over the course of the experiment.







	Product	Description	Cat. No.	Instrument Compatibility			
Software	Perform label-free cell counts and subseque and cell surface protein expression for evalu subsets of cells in complex immune-cell killing	ation of immune cell activa	ation and prolifer	ation in mono-cultures or track			
	track changes in adherent cell morphology of Classifier is trained using control wells. Adva Incucyte® Cell-by-Cell Analysis Software More and Control wells.	via label-free image segme nced Label-Free Classifica	ntation and mult ation Software M	ivariate analysis of cell shape.			
	Incucyte® Cell-by-Cell Analysis Software Module	1 module	9600-0031	SX5, S3, S3 for Neuroscience, SX			
	New! Incucyte® Advanced Label-Free Classification Analysis Software Module	1 module	BA-04867	SX5, S3, S3 for Neuroscience, SX			
Nuclear Lentivirus abeling Reagents	Lentivirus reagents provide homogenous excell function for live-cell quantification of ce			t protein without altering			
	Incucyte® Nuclight Green	0.2 mL	4624	SX5, S3, SX1			
	Lentivirus (puro)	0.6 mL	4475	SX5, S3, SX1			
	Incucyte® Nuclight Red	0.2 mL	4625	SX5 (configured with Green/Red			
	Lentivirus (puro)	0.6 mL	4476	Optical Module), S3, SX1			
	Incucyte® Nuclight Green	0.2 mL	4626	SX5, S3, SX1			
	Lentivirus (bleo)	0.6 mL	4477	SX5, S3, SX1			
	Incucyte® Nuclight Red	0.2 mL	4627	SX5 (configured with Green/Rec			
	Lentivirus (bleo)	0.6 mL	4478	Optical Module), S3, SX1			
	Incucyte® Nuclight Orange Lentivirus (puro)		4771	SX5, S3 for Neuroscience			
	Incucyte® Nuclight NIR Lentivirus (puro)	0.2 mL	4805	SX5, S3 for Neuroscience			
abeling Reagents.	into a cell membrane-impermeant form, pro or effector cells.  Incucyte® Cytolight Rapid Green Dye	One vial: 15 µg	4705	SX5, S3, SX1			
	Incucyte® Cytolight Rapid Red Dye	Five vials: 50 μg	4706	SX5 (configured with Green/Red Optical Module), S3, SX1			
	Incucyte® Cytolight Rapid Orange Dye	One vial: 1 mg	4839	SX5, S3 for Neuroscience			
Caspase Activity Reagents	Inert, non-fluorescent (DEVD) substrates that freely cross the cell membrane where they can be cleaved by activated caspase-3/7 to release a DNA-binding fluorescent label. Recommended for quantifying apoptosis in adherent target cells.						
	Incucyte® Caspase-3/7 Green Dye	One vial: 20 μL (100-200 tests)	4440	SX5, S3, SX1			
	Incucyte® Caspase-3/7 Red Dye	One vial: 20 μL (100-200 tests)	4704	SX5 (configured with Green/Red Optical Module), S3, SX1			
Apoptosis Plasma Membrane Integrity	Membrane impermeable, highly-selective pertracellular surface of cells undergoing apo						
Reagents	Incucyte® Annexin V Green Dye	One vial: 100-200 tests	4642	SX5, S3, SX1			
	Incucyte® Annexin V Red Dye	One vial: 100-200 tests	4641	SX5 (configured with Green/Red Optical Module), S3, SX1			
	Incucyte® Annexin V Orange Dye	One vial: 100-200 tests	4759	SX5, S3 for Neuroscience			
	Incucyte® Annexin V NIR Dye	One vial: 100-200 tests	4768	SX5, S3 for Neuroscience			
Cytotoxicity	Highly sensitive cyanine-based dyes enter the						
Reagents	binding to DNA. Dye does not enter cells wit of NETosis as extracellular DNA is released a	th intact cell membranes. A	Allows for rapid vi	sualization and quantification			
	Incucyte® Cytotox Green Dye	Five vials: 5 μL (100 tests each)	4633	SX5, S3, SX1			
	Incucyte® Cytotox Red Dye	Five vials: 5 μL (100 tests each)	4632	SX5 (configured with Green/Red Optical Module), S3, SX1			
	Incucyte® Cytotox NIR Dye	One vial: 100 uL (500-100 tests)	4846	SX5, S3 for Neuroscience			

<sup>\*</sup> Pre-labeled Nuclight cell lines are also available for purchase. Please visit **www.sartorius.com/shop** for more information.

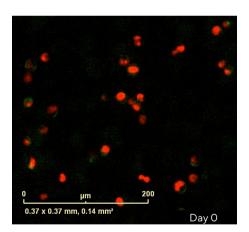
# Antibody Internalization and Immunocytochemistry

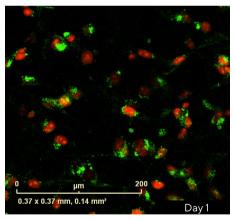
Incucyte® antibody labeling reagents are novel fluorescently labeled Fabs that can be mixed with Fc-containing antibodies and applied directly to living cells for long-term monitoring of spatial and temporal protein dynamics.

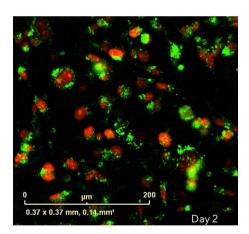
- Increase productivity with rapid single-step labeling paired with mix-and-read protocols for efficient testing of antibody panels
- Associate changes in surface protein expression or antibody internalization with cell function and morphology over time
- Combine sensitive, kinetic fluorescent measurement of protein dynamics with images and movies for visual confirmation of biology in every well

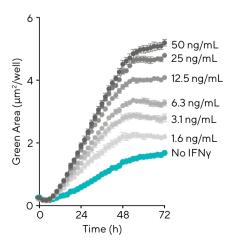
# Application Spotlight: Monitoring Dynamic Cell Surface Protein Expression

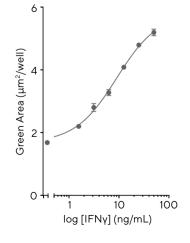
Quantify cell surface protein expression and distribution in live cells to study long-term protein dynamics and their relationship to function and morphology using Incucyte® Fabfluor-488 or Fabfluor-594 Antibody Labeling Reagents.









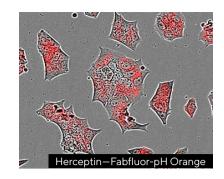


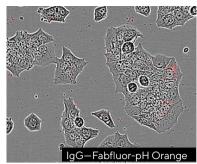
Incucyte® Fabfluor-488 was conjugated to anti-PD-L1 Ab (BioLegend) and added to Nuclight Red MDA-MB-231 breast cancer cells in the absence and presence of IFNγ (+ Incucyte® Opti-Green background suppressor). Quantification of the green fluorescent area shows that IFNγ induces a time- and concentration-dependent increase in PD-L1 expression.

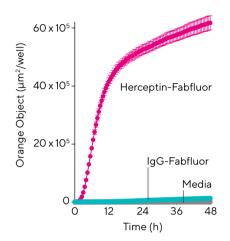
### Application Spotlight: Antibody Internalization

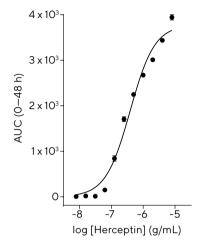
Efficiently evaluate the full time course of antibody internalization for real-time analysis of internalization rates under physiological conditions using Incucyte® Fabfluor-pH Antibody Labeling Reagents.

HD phase and orange fluorescence images (10X) show HER-2 positive BT-474 cells treated with Incucyte® Fabfluor-pH Orange labeled Herceptin display orange (pseudo-colored red), cytosolic fluorescence while cells treated with an isotype control display no cellular fluorescence. Time-course data shows a rapid increase in orange object area over time in cells treated with labeled Herceptin, but not with IgG1 isotype control.









	Product	Description	Cat. No.	Instrument Compatibility		
Software	Perform label-free cell counts and subseque quantify dynamic changes in cell subsets wit	•				
	Incucyte® Cell-by-Cell Analysis Software Module	1 module	9600-0031	SX5, S3, S3 for Neuroscience, SX1		
abfluor-pH Antibody Labeling	Novel pH-sensitive Fc-targeting antibody frantibody internalization.	agment, fluorescen	tly label your an	tibody of choice for real-time analysis of		
Reagents	Incucyte® Human Fabfluor-pH Orange Antibody Labeling Dye	One vial: 50 μg	4812	SX5, S3 for Neuroscience		
	Incucyte® Human Fabfluor-pH Red Antibody Labeling Dye	One vial: 50 μg	4722	SX5 (configured with Green/Red Optical Module), S3, SX1		
	Incucyte® Mouse IgG1 Fabfluor-pH Red Antibody Labeling Dye	One vial: 50 μg	4723	SX5 (configured with Green/Red Optical Module), S3, SX1		
	Incucyte® Mouse IgG2a Fabfluor-pH Red Antibody Labeling Dye	One vial: 50 μg	4750	SX5 (configured with Green/Red Optical Module), S3, SX1		
	Incucyte® Mouse IgG2b Fabfluor-pH Red Antibody Labeling Dye	One vial: 50 μg	4751	SX5 (configured with Green/Red Optical Module), S3, SX1		
	Incucyte® Rat Fabfluor-pH Red Antibody Labeling Dye	One vial: 50 μg	4737	SX5 (configured with Green/Red Optical Module), S3, SX1		
abfluor Live-Cell	Novel fluorescently tagged Fc-targeting Fab fragments label your antibody of choice for cell surface protein expression.					
mmunocytochemistry _abeling Reagents	Incucyte® Mouse IgG2a Fabfluor-488 Antibody Labeling Dye	One vial: 50 μg	4743	SX5, S3, SX1		
	Incucyte® Mouse IgG2b Fabfluor-488 Antibody Labeling Dye	One vial: 50 μg	4744	SX5, S3, SX1		
	Incucyte® Mouse IgG1 Fabfluor-488 Antibody Labeling Dye	One vial: 50 μg	4745	SX5, S3, SX1		
	Incucyte® Mouse IgG1 Fabfluor-594 Antibody Labeling Dye	One vial: 50 μg	4844	SX5 (configured with a Green/Red Optical Module), S3, SX1		
	Incucyte® Mouse IgG2a Fabfluor-594 Antibody Labeling Dye	One vial: 50 μg	BA-04863	SX5 (configured with a Green/Red Optical Module), S3, SX1		

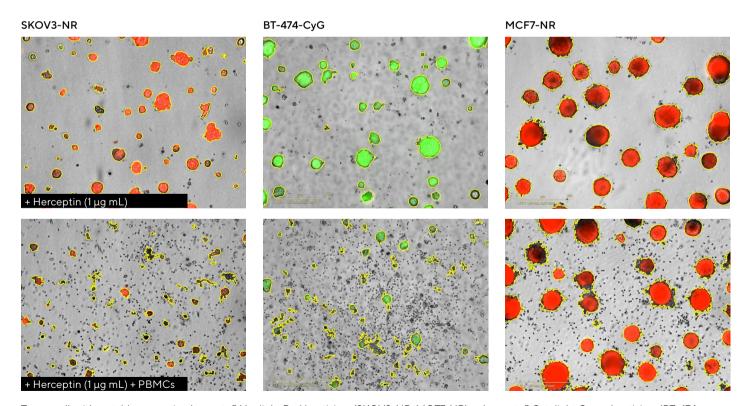
# Spheroid Growth, Invasion and Immune Cell Killing

The Incucyte® Spheroid Analysis Software Module is designed to acquire and analyze label or label-free spheroids to automatically monitor and quantify the formation, growth, shrinkage and invasive properties of advanced cell models in real time inside your tissue culture incubator.

- Flexible acquisition mode to enable studies of both single and multi-spheroid assays
- Enable long-term imaging with enhanced depth of focus brightfield (DF® Brightfield) image acquisition
- Analyze relevant spheroid metrics using intuitive Incucyte® processing definitions

# Application Spotlight: 3D Immune Cell Killing

Quantify and visualize immune cell-mediated killing of solid tumors in real time using non-perturbing reagents and purpose-built, integrated Incucyte® Spheroid Analysis Software Module.



Tumor cells either stably expressing Incucyte® Nuclight Red Lentivirus (SKOV3-NR, MCF7-NR) or Incucyte® Cytolight Green Lentivirus (BT-474-CyG) were seeded on a bed of Matrigel® in flat bottom 96-well plates. Multi-spheroids were allowed to form (3 d) prior to addition of freshly isolated PBMCs (E:T, 5:1) and Herceptin. Incucyte® BF and fluorescence images (7 d; SKOV3-NR, MCF7-NR or 10 d; BT-474-CyG) compare the effect of Herceptin on spheroid proliferation in absence (top panel) and presence (bottom panel) of PBMCs (BF outline mask shown in yellow).

	Product	Description	Cat. No.	Instrument Compatibility			
Spheroid Software	Analyze growth, viability and invasion of si spheroids in flat bottom plates to detect of			-well formats or measure multiple			
	Incucyte® Spheroid Analysis Software Module	1 module	9600-0019	SX5, S3, S3 for Neuroscience, SX1			
Nuclear Lentivirus Labeling Reagents	Lentivirus reagents provide homogenous function for live-cell quantification of cell			rescent protein without altering cell			
	Incucyte® Nuclight Green Lentivirus	0.2 mL	4624	SX5, S3, SX1			
	(puro)	0.6 mL	4475	SX5, S3, SX1			
	Incucyte® Nuclight Red Lentivirus	0.2 mL	4625	SX5 (configured with Green/Red			
	(puro)	0.6 mL	4476	Optical Module), S3, SX1			
	Incucyte® Nuclight Green Lentivirus	0.2 mL	4626	SX5, S3, SX1			
	(bleo)	0.6 mL	4477	SX5, S3, SX1			
	Incucyte® Nuclight Red Lentivirus	0.2 mL	4627	SX5 (configured with Green/Red			
	(bleo)	0.6 mL	4478	Optical Module), S3, SX1			
	Incucyte® Nuclight Orange Lentivirus (puro)	0.2 mL	4771	SX5, S3 for Neuroscience			
	Incucyte® Nuclight NIR Lentivirus Reagent (puro)	0.2 mL	4805	SX5, S3 for Neuroscience			
Apoptosis Plasma Membrane Integrity	Membrane impermeable, highly-selective phosphatidylserine (PS) cyanine fluorescent dyes label PS exposed on the extracellular surface of cells undergoing apoptosis.						
Reagents	Incucyte® Annexin V Green Dye	One vial: 100- 200 tests	4642	SX5, S3, SX1			
	Incucyte® Annexin V Red Dye	One vial: 100- 200 tests	4641	SX5 (configured with Green/Red Optical Module), S3, SX1			
	Incucyte® Annexin V Orange Dye	One vial: 100- 200 tests	4759	SX5, S3 for Neuroscience			
	Incucyte® Annexin V NIR Dye	One vial: 100- 200 tests	4768	SX5, S3 for Neuroscience			
Cytoplasmic Dye _abeling Reagents	Live-cell cytoplasmic labeling dyes that fr into a cell membrane-impermeant form, p						
	Incucyte® Cytolight Rapid Green Dye	One vial: 15 µg	4705	SX5, S3, SX1			
		Five vials: 50 µg	4706	SX5 (configured with Green/Red			
	Incucyte® Cytolight Rapid Red Dye			Optical Module), S3, SX1			
Lentivirus Labeling	Incucyte® Cytolight Rapid Red Dye  Lentivirus reagents provide homogenous quantification of spheroid growth and shr	expression of a fluores	scent protein wit				
Cytoplasmic Lentivirus Labeling Reagents	Lentivirus reagents provide homogenous	expression of a fluores	scent protein wit				

<sup>\*</sup> Pre-labeled Nuclight cell lines are also available for purchase. Please visit **www.sartorius.com/shop** for more information.

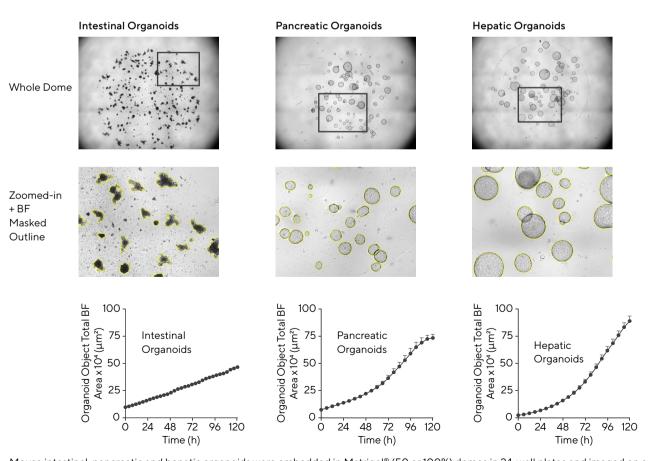
# Organoid Culture QC and Organoid Assay

The Incucyte® Organoid Analysis Software Module enables you to standardize your entire organoid workflow, from generation, maintenance (Organoid Culture QC) or access treatment effect on organoid growth (Organoid Assay) and analysis, using image-based, label-free measurements.

- Locate and analyze Matrigel® embedded organoids automatically
- Perform continuous label-free analysis in physiologically relevant conditions
- Use quantitative data to support and document passaging decisions or probe the effects of treatments through unbiased assessment of size, count and morphology

# Application Spotlight: Organoid Culture QC

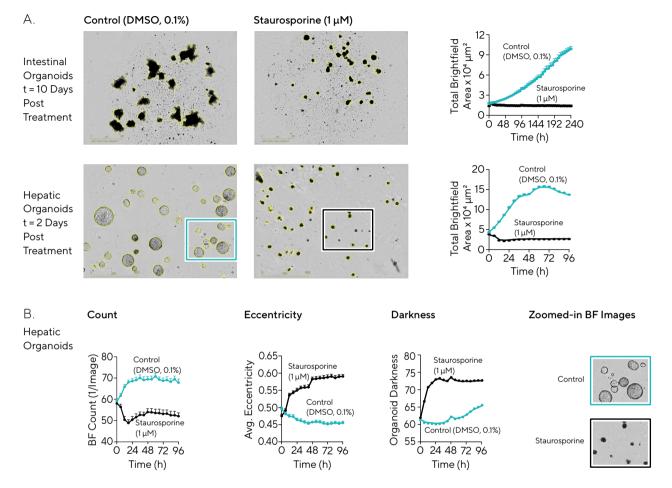
Evaluate multiple organoid types using image-based, kinetic analysis and characterize differentiation and maturation of organoids in Matrigel® domes in 24- or 48-well plates.



Mouse intestinal, pancreatic and hepatic organoids were embedded in Matrigel® (50 or 100%) domes in 24-well plates and imaged on an Incucyte®. Organoids were automatically located, imaged and over 6-8 days using the Incucyte® Organoid Analysis Software Module. Time course profiles and brightfield images show cell type-specific organoid differentiation, morphology and growth.

### Application Spotlight: Organoid Assay

Track and standardize the analysis of organoids embedded in Matrigel® to generate real-time, physiologically relevant analysis of organoids to better predict therapeutic outcomes using the Incucyte® Organoid Analysis Software Module.



Brightfield images (A) show mouse intestinal and hepatic organoids (1K cells/well) were embedded in Matrigel® (50%) in 96-well plates and allowed to form organoids for 3 days prior to treatment (vehicle or staurosporine; SSP). Corresponding time-courses of BF area demonstrate the continued growth of vehicle-treated organoids and the inhibitory effects of SSP across both cell types. SSP-treated organoids lose distinctive rounded phenotype (increased eccentricity) and increase in darkness over time (B).

	Product	Description	Cat. No.	Instrument Compatibility			
Organoid Software		Characterize the differentiation and maturation of organoid cultures in 24- or 48-well plates and assess treatment effects on organoid growth in 96-well microplates.					
	Incucyte® Organoid Analysis Software Module	1 module	9600-0034	SX5, S3, SX1			

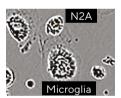
# Efferocytosis

pHrodo® Cell Labeling Kits for Incucyte® are formulated for long-term and sensitive analysis of phagocytosis of dead, apoptotic or antibody-targeted cells over time.

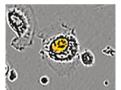
- Study the model of your choice over time with specific and sensitive reagents paired with simple mix-and-read 96 / 384-well protocols
- Quantify antibody-dependent cellular phagocytosis (ADCP) with the addition of antibodies (e.g., anti-CD-47)
- Confirm phagocytosis signals using HD phase-contrast and fluorescent images

# Application Spotlight: Efferocytosis Assay

Observe and measure efferocytosis over the entire assay time course using your choice of target cells labeled with pHrodo® Orange Cell Labeling Dye for Incucyte® (pseudo-colored orange, acquired with the Incucyte® S3 for Neuroscience).

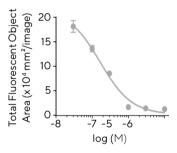




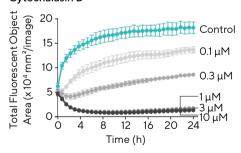


Time-lapse visualization of iPSC-derived microglia (Axol BioSciences) engulfing pHrodo® Orange-labeled apoptotic Neuro-2A (N2A) cells. Images verify the entry of an apoptotic target cell into the cytoplasm of the microglia. Inhibition of this engulfment by cytochalasin D was quantified based on orange fluorescence object area over the course of the experiment.

#### Cytochalasin D IC<sub>50</sub>



#### Inhibition of Efferocytosis With Cytochalasin D



	Product	Description	Cat. No.	Instrument Compatibility		
pHrodo® Cell Labeling Kits	Fluorescent dyes label whole cells with a pH-sensitive fluorophore for real-time analysis of efferocytosis and antibody mediated cellular phagocytosis.					
	pHrodo® Orange Cell Labeling Kit for Incucyte®	One kit	4766	SX5, S3 for Neuroscience		
	pHrodo® Red Cell Labeling Kit for Incucyte®	One kit	4649	SX5 (configured with Green/Red Optical Module), S3, SX1		

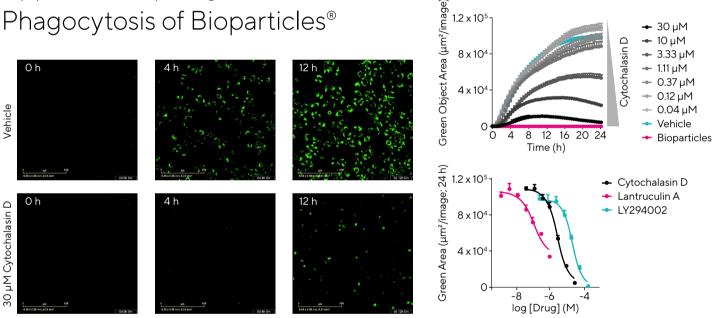
## Phagocytosis

pHrodo® Bioparticles® for Incucyte® are pH-sensitive conjugated probes specifically formulated for analysis of the internalization of bacterial Gram-positive, Gramnegative or yeast-derived bioparticles by immune cells.

- Monitor phagocytosis in real-time with simple mix-and-read 96- and 384-well protocols
- Validate phagocytosis with time-lapse images and movies
- Study the effect of treatments on full time course phagocytosis profiles

1.2 x 10<sup>5</sup>

### Application Spotlight: Phagocytosis of Bioparticles®



J774A.1 murine macrophages phagocytosing pHrodo® Green E. coli Bioparticles® for Incucyte® in the presence of inhibitors. Time-lapse visualization of cytochalasin D inhibition of Bioparticle® phagocytosis compared to vehicle over 12 h. Time course also shown for cytochalasin D inhibition. Concentration-response curves at 24 h compare inhibition of phagocytosis by cytochalasin D, lantruculin A, and LY294002.

	Product	Description	Cat. No.	Instrument Compatibility			
pHrodo® Bioparticles®	Sterile fluorogenic reagents ideally suited to a simple mix-and-read, real-time live cell quantification of phagocytosis.						
	pHrodo® Red <i>E. coli</i> Bioparticles® for Incucyte®	One vial: 2 mg	4615	SX5 (configured with Green/Red Optical Module), S3, SX1			
	pHrodo® Green <i>E. coli</i> Bioparticles® for Incucyte®	One vial: 2 mg	4616	SX5, S3, SX1			
	pHrodo® Red Zymosan Bioparticles® for Incucyte®	One vial: 1 mg	4617	SX5 (configured with Green/Red Optical Module), S3, SX1			
	pHrodo® Green Zymosan Bioparticles® for Incucyte®	One vial: 1 mg	4618	SX5, S3, SX1			
	pHrodo® Red <i>S. aureus</i> Bioparticles® for Incucyte®	One vial: 2 mg	4619	SX5 (configured with Green/Red Optical Module), S3, SX1			
	pHrodo® Green S. aureus Bioparticles® for Incucyte®	One vial: 2 mg	4620	SX5, S3, SX1			

# Neurite Dynamics and Neuronal Activity

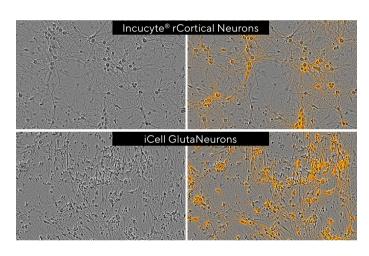
Incucyte® novel, live-cell labeling reagents and purposebuilt software quantify long-term changes in neurite dynamics and neuronal activity that enable continuous analysis of sensitive neuronal cell models.

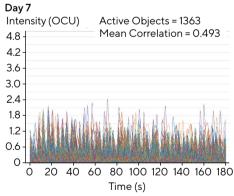
- Conduct long-term studies of neuronal function with novel, non-perturbing fluorescent reagents
- Capture transient events in your choice of cell model with non-invasive, repeated measurements of the same neuronal culture in physiologically relevant conditions
- Analyze relevant morphological and functional metrics using intuitive, purpose-built Incucyte<sup>®</sup> software

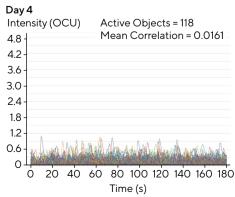
### Application Spotlight: Neuronal Activity Assay

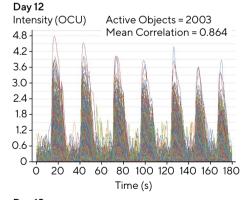
Access complex, neuronal activity and connectivity measurements from thousands of cells chronically to gain unprecedented functional insight into neuronal cell models using our novel Incucyte® Neuroburst Orange Lentivirus and Incucyte® Neuronal Activity Analysis Software Module.

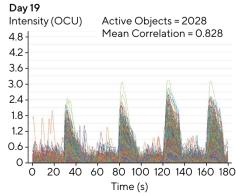
Incucyte® rCortical Neurons and iCell GlutaNeurons (Cellular Dynamics International) express the Incucyte® Neuroburst Orange Lentivirus, without perturbing the health and morphology of the cells.

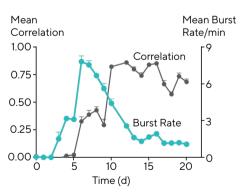










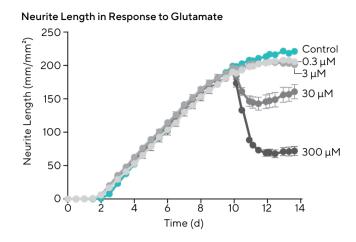


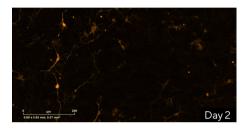
Kinetic quantification (graph above) of longitudinal, dynamic changes in neuronal activity (mean burst rate and mean correlation) of iCellGluta Neurons expressing Neuroburst Orange Lentivirus, showing changes over time during neuronal network maturation. Active object traces (corner traces) provide detailed insight into the dynamic changes in neuronal activity and connectivity for every acquired time point.

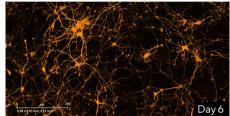
### Application Spotlight: Neurite Dynamics Assay

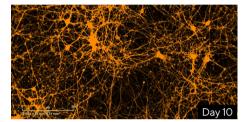
Generate kinetic, image-based and automated measurements using Incucyte® Neurotrack Analysis Software Module for continuous analysis of neurite outgrowth and stability—inside your incubator.

Incucyte® rCortical Neurons transduced with Incucyte® Neurolight
Orange Lentivirus labeled cells cultured in the presence of Incucyte®
rAstrocytes were treated with glutamate at Day 10. Time course analysis
of orange fluorescence neurite length reveals concentration-dependent
treatment effects.









Product	Description	Cat. No.	Instrument Compatibility			
Record activity from over a thousand cells t	o study changes in	neuronal network	activity and connectivity.			
Purpose-built acquisition and analysis softw	vare for the detection	on of calcium osc	illations in 96-well plates.			
Incucyte® Neuronal Activity Analysis Software Module	1 module	9600-0032	SX5, S3 for Neuroscience			
Fluorescently detect changes in activity usi	ng a novel genetica	ally-encoded fluo	rescent calcium indicator.			
Incucyte® Neuroburst Orange Lentivirus	One vial: 2 mL	4736	SX5, S3 for Neuroscience			
Incucyte® Neuroactive Orange Kit	One kit	4761	SX5, S3 for Neuroscience			
Characterize neurite dynamics over time in Annexin V Reagents)	mono- or co-cultur	e models while as	ssessing cell viability (refer to page 7,			
Enables label-free or fluorescent analysis of 384-well plate.	f neurite outgrowth	, maturation and	disruption in each well of a 96- or			
Incucyte® Neurotrack Analysis Software Module	1 module	9600-0010	SX5, S3, SX1			
Lentivirus reagents driven off a synapsin promoter provide homogenous expression of a fluorescent protein in target cells without altering cell function for live-cell quantification of neurite outgrowth.						
Incucyte® Neurolight Orange Lentivirus	Two vials: 0.45 mL each	4808	SX5, S3 for Neuroscience			
Incucyte® Neurolight Red Lentivirus	Two vials: 0.45 mL each	4807	SX5 (configured with Green/Red Optical Module), S3, SX1			
Incucyte® Neuroprime Orange Kit	One kit	4760	SX5, S3 for Neuroscience			
Incucyte® Neuroprime Red Kit	One kit	4585	SX5 (configured with Green/Red Optical Module), S3, SX1			
Ready-to-use cryopreserved cells from the	cortex of Sprague [	Dawley rats at Day	y 18 of gestation.			
Incucyte® rCortical Neurons	One vial: 2 x 10 <sup>6</sup> cells	4753	Assay dependent			
	Record activity from over a thousand cells to Purpose-built acquisition and analysis softwom Incucyte® Neuronal Activity Analysis Software Module  Fluorescently detect changes in activity using Incucyte® Neuroburst Orange Lentivirus Incucyte® Neuroactive Orange Kit  Characterize neurite dynamics over time in Annexin V Reagents)  Enables label-free or fluorescent analysis of 384-well plate.  Incucyte® Neurotrack Analysis Software Module  Lentivirus reagents driven off a synapsin procells without altering cell function for live-cells without altering cells function f	Record activity from over a thousand cells to study changes in Purpose-built acquisition and analysis software for the detection incucyte® Neuronal Activity Analysis  Incucyte® Neurolust Orange Sin activity using a novel genetical incucyte® Neuroburst Orange Lentivirus  Incucyte® Neuroactive Orange Kit  Characterize neurite dynamics over time in mono- or co-cultur Annexin V Reagents)  Enables label-free or fluorescent analysis of neurite outgrowth 384-well plate.  Incucyte® Neurotrack Analysis  Software Module  Lentivirus reagents driven off a synapsin promoter provide honcells without altering cell function for live-cell quantification of Incucyte® Neurolight Orange Lentivirus  Two vials:  0.45 mL each  Incucyte® Neuroprime Orange Kit  One kit  Incucyte® Neuroprime Red Kit  One kit  Ready-to-use cryopreserved cells from the cortex of Sprague Incucyte® rCortical Neurons  One vial:	Record activity from over a thousand cells to study changes in neuronal network Purpose-built acquisition and analysis software for the detection of calcium oscillations of the detection of calcium oscillations oscillations of the detection of calcium oscillations oscillations oscillations of the detection of calcium oscillations oscillations of the detection of calcium oscillations oscillations of calcium oscillations oscillations of calcium oscillations of calcium oscillations of calcium oscillations of calcium oscillations on the detection of calcium oscillation of calcium oscillations on the detection of calcium oscillation on calcium osci			

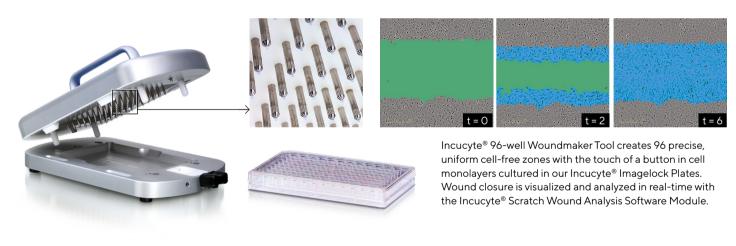
# Invasion and Migration Assays

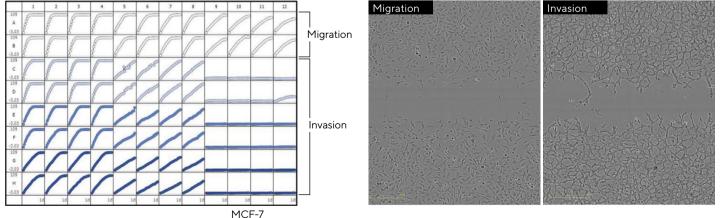
Incucyte® Scratch Wound and Chemotaxis Assays allow you to continuously monitor and analyze migration and invasion using purpose-built consumables and automated software.

- Unlock your productivity with optimized protocols, peripherals and automated analysis
- Confirm cell movement and morphology with images and movies—all from inside your incubator
- Perform reproducible 96-well kinetic migration or invasion assays using the cell model of your choice adherent or non-adherent

### Application Spotlight: Scratch Wound Migration and Invasion Assay

Make label-free, quantitative measurements of migration and invasion while visualizing morphological changes due to treatment effects, using the integrated Incucyte® Scratch Wound Analysis Software Module.

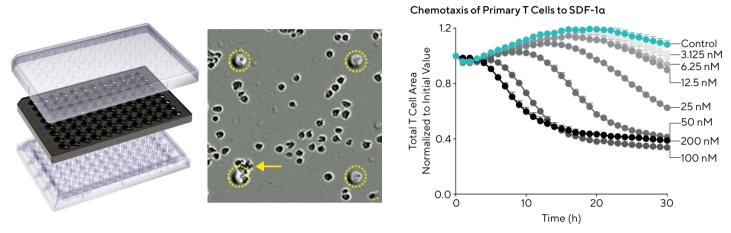




Microplate graph showing progression of differential cell migration and invasion of three different cell types using the Relative Wound Density metric. Representative images of HT-1080 fibrosarcoma cells highlight differences in morphology of cells during migration versus invasion.

### Application Spotlight: Incucyte® Chemotaxis Assay

Maximize your productivity and insight into dynamic cell movement with automated, label-free imaging and analysis using optically clear Incucyte® Clearview 96-well Chemotaxis Plates and Incucyte® Chemotaxis Analysis Software Module.



Incucyte® Clearview 96-well Chemotaxis Plates provide an optically clear surface for label-free imaging and analysis of chemotactic cell migration or invasion. Cells are added to the upper chamber and chemoattractant to the lower reservoir plate. Chemotactic transmembrane migration is automatically quantified as the cells migrate through laser etched pores (yellow circles) toward chemoattractant. Example data of concentration-dependent SDF- $1\alpha$  mediated chemotaxis of CD3/CD28 activated human T cells.

	Product	Description	Cat. No.	Instrument Compatibility			
Scratch Wound	Analyze 96-well Incucyte® Scratch Wo	und Assay images to analyze co	ell migration and	invasion with or without labels			
Cell Migration and Invasion	Incucyte® Scratch Wound Analysis Software Module	1 module	9600-0012	SX5, S3, SX1			
	Incucyte® 96-well Woundmaker Tool	1 wounder	4563	SX5, S3, SX1			
	Incucyte® Cell Migration Kit	Woundmaker Tool 2 Rinse boat assemblies 15 Imagelock Plates 1 Incucyte® Microplate Tray Alconox	SX5, S3, SX1				
	Incucyte® Cell Invasion Accessories Kit	2 Biocision Coolbox Microplate Systems 3 Coolsink XT96F 1 Biocision Coolbox kit	4444	SX5, S3, SX1			
	Incucyte® Imagelock 96-well Plate	Pack of 10 plates	BA-04856	SX5, S3, SX1			
		Pack of 50 plates	BA-04857	SX5, S3, SX1			
Chemotaxis Cell	Track and quantify label-free and fluorescently labeled chemotaxis cell migration and invasion in microplate format.						
Migration and Invasion	Incucyte® Chemotaxis Analysis Software Module	1 module	9600-0015	SX5, S3, SX1			
	Incucyte® Clearview 96-well	1 plate	4582	SX5, S3, SX1			
	Chemotaxis Plates	Pack of 10 plates	4648	SX5, S3, SX1			

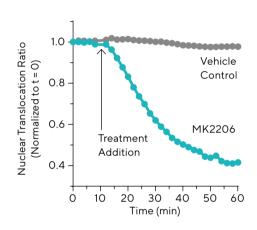
# Kinase Activity Assays

The Incucyte® Kinase Activity Assay enables users to measure and analyze dynamic changes in Akt activity in live cells in physiologically relevant environments.

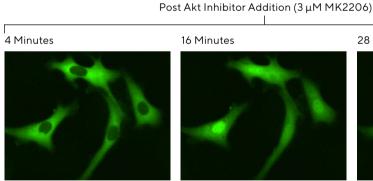
- Bridge the gap between single, target-focused biochemical assays and lower-throughput cell-based follow-up experiments for the identification of novel treatments
- Enhance productivity by evaluating multiple compounds or treatments in a 96-well format, from any time point
- Gain deeper insight into treatment effects through coupling long-term evaluation of protein kinase activity with effects on cell proliferation

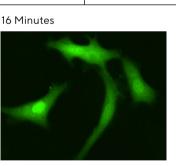
### Application Spotlight: Monitoring Kinase Akt Activity

Generate kinetic, image-based and automated measurements of kinase Akt activity using the Incucyte® Kinase Akt Green/Red Lentivirus to express a stable, genetically-encoded reporter in a variety of cell types.



# Pre-compound







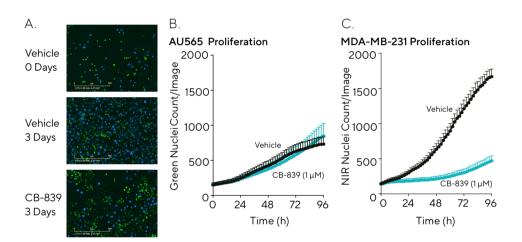
SK-OV-3 cells stably expressing the Incucyte® Kinase Akt Green/Red indicator were treated with Akt selective inhibitor MK2206, resulting in translocation of the green fluorescent sensor from the cytoplasm to the nucleus. Time course analysis shows a decrease in the nuclear translocation ratio over time, indicating Akt inhibition.

	Product	Description	Cat. No.	Instrument Compatibility	
Kinase Translocation Reporter	Fluorescently evaluate changes in kinase Akt activity using a novel genetically-encoded kinase translocation indicator				
	Incucyte® Kinase Akt Green/Red Lentivirus	One vial: 0.2 mL	BA-04868	SX5 (configured with Green/Red Optical Module), S3, SX1	

# Incucyte® Nuclight Cells

The Incucyte® Nuclight labeled cell lines are ideal for use in cell counting and proliferation studies and can be easily multiplexed with other Incucyte® Cell Health reagents for simultaneous measurements of apoptosis and cytotoxicity in monoculture or co-culture models.

- Select your pre-labeled cell line of choice, as well as the fluorescent protein and antibiotic selection
- Validated to confirm that Nuclight expression does not interfere with cell replication
- Tested to confirm that the number of residual viral particles is below detectable limits (GP120 assay) and certified mycoplasma-free by ATCC—can be used in lowlevel safety category 1



Fluorescent labeling prior to forming a co-culture. An equal number of AU565-Nuclight Green and MDA-MB-231-Nuclight NIR were seeded into a 96-well plate and treated with a glutaminase inhibitor CB-839  $(1 \mu M)$ . Phase and fluorescence images were collected in an Incucyte® Live-Cell Analysis System over 4 days. Images of green and NIR fluorescence (A) show that under normal conditions both cell types proliferate, while in the presence of CB-839, fewer NIR nuclei are observed. AU565 cell growth was minimally affected (B), while MDA-MB-231 cell count was reduced by the compound (C). AU565 cells have a slower growth rate compared to MDA-MB-231 cells.

	Product	Description	Cat. No.	Instrument Compatibility
Incucyte® Nuclight Cells	One cryopreserved vial of cells expressing Incucyte® Nuclight Lentivirus (nuclear-labeled fluorescent protein) at a density of 1 or 2 x 106 cells/vial. Each vial contains a stable population of cells expressing the Incucyte® Green/Red/Orange/NIR fluorescent protein restricted to the nucleus. Upon arrival, cells should be stored at -150° C or in liquid nitrogen.			
	Incucyte® Nuclight Green A549 Cells	1 mL cryopreserved vials (1 x 10 <sup>6</sup> cells/mL)	4492	SX5, S3, SX1
	Incucyte® Nuclight Red A549 Cells	1 mL cryopreserved vials (1 x 10° cells/mL)	4491	SX5, S3, SX1
	Incucyte® Nuclight Orange A549 Cells	1 mL cryopreserved vials (1 x 10 <sup>6</sup> cells/mL)	BA-04864	SX5, S3, SX1
	Incucyte® Nuclight NIR A549 Cells	1 mL cryopreserved vials (1 x 10 <sup>6</sup> cells/mL)	BA-04865	SX5, S3, SX1
	Incucyte® Nuclight Red HT-1080 Cells	1 mL cryopreserved vials (1 x 10 <sup>6</sup> cells/mL)	4485	SX5, S3, SX1
	Incucyte® Nuclight Green HT-1080 Cells	1 mL cryopreserved vials (1 x 10° cells/mL)	4486	SX5, S3, SX1
	Incucyte® Nuclight Green MCF-7 Cells	1 mL cryopreserved vials (1 x 10 <sup>6</sup> cells/mL)	4528	SX5, S3, SX1
	Incucyte® Nuclight Red MCF-7 Cells	1 mL cryopreserved vials (1 x 10° cells/mL)	4524	SX5, S3, SX1
	Incucyte® Nuclight Green HeLa Cell	1 mL cryopreserved vials (1 x 10 <sup>6</sup> cells/mL)	4490	SX5, S3, SX1
	Incucyte® Nuclight Red HeLa Cells	1 mL cryopreserved vials (1 x 10 <sup>6</sup> cells/mL)	4489	SX5, S3, SX1
	Incucyte® Nuclight Green Neuro-2a Cells	1 mL cryopreserved vials (1 x 10 <sup>6</sup> cells/mL)	4511	SX5, S3, SX1
	Incucyte® Nuclight Red Neuro-2a Cells	1 mL cryopreserved vials (1 x 10° cells/mL)	4512	SX5, S3, SX1
	Incucyte® Nuclight Red Jurkat Cells	1 mL cryopreserved vials (1 x 10° cells/mL)	4613	SX5, S3, SX1
	Incucyte® Nuclight Mix HT-1080/A549 Cells (Green/Red)	1 vial of HT-1080 and A549 cells (1:1) at a total density of 1 x 106 cells/vial)	4516	SX5, S3, SX1

From our workhorse, the Incucyte® S3, to our economical Incucyte® SX1, to the newest member, the frontier-breaking Incucyte® SX5, we deliver real-time insights to simplify progress for labs of any size.

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