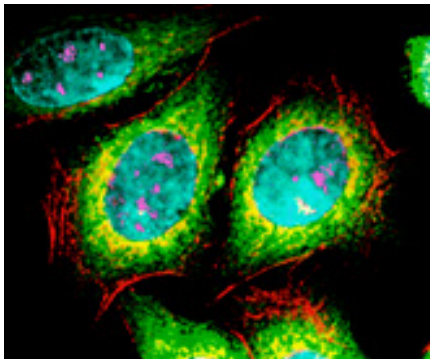
Cell Viability, Proliferation & Cytotoxicity

Cell-based models continue to be critical tools for drug discovery. Assays to measure viability, proliferation, and cytotoxicity are commonly used to monitor the response and health of cells in culture after treatment with various drugs, chemicals, or stimuli. BioVision offers an extensive range of easy-to-use, non-radioactive and high-throughput assays to specifically detect the number of living cells (Viability assay), the number of proliferating cells (Cell proliferation assay), and/or the number of dead cells (Cytotoxicity assay). Many of these assays are luminescence-, fluorescence- or colorimetric- based, offering sensitivity, convenience and accuracy that correlates well with the traditional isotope-based assays.



Assays to Detect Living and/or Proliferating cells

Parameter	Type	Assay Name	Incubation Time	Detection	Sample Type	Sensitivity	Unique Features
Established Viable Cell Biomarker	ATP and/or ADP	ApoSENSOR™ Cell Viability (K254)	10 min.	Luminescence	Suspension or Adherent cells	10-100 cells	- High-throughput. - Highly Sensitive. - Measures ATP levels.
		ApoSENSOR™ ADP/ATP ratio (K255)	10 min.	Luminescence	Suspension or Adherent cells	100 cells	- High-throughput. - Measures ADP/ATP ratio.
		StayBrite™ Highly Stable ATP Bioluminescence Assay (K791)	5-10 min.	Luminescence	Tissues & Cells	1 nmol to 10 fmol	- rLucHS: highly stable & highly sensitive Luciferase. - High-throughput. - Measures ATP levels.
		ATP Colorimetric/ Fluorometric Assay (K354)	30 min.	Absorbance (OD 570 nm)/ Fluorescence (Ex/Em = 535/587 nm)	Tissues & Cells	50 pmol (1 µM)	- Does not require luminometer. - Highly stable. - Measures ADP levels.
		ADP Colorimetric/ Fluorometric Assay (K355)	30 min.	Absorbance (OD 570 nm)/ Fluorescence (Ex/Em = 535/587 nm)	Tissues & Cells	1 µM	- Does not require luminometer. - Highly stable. - Measures ADP levels.
		ADP Colorimetric Assay II (K356)	20-30 min.	Absorbance (OD 450 nm)	Tissues & Cells	<20 µM	- Does not require luminometer. - Highly stable. - Measures ADP levels in samples that contain reducing substances, which may interfere with oxidase-based assays
Enzymatic Activity	Intracellular esterase	EZViable™ Calcein AM Cell Viability Assay (K305)	30 min.	Fluorescence (Ex/Em = 485/530 nm)	Suspension or Adherent cells	~ 50 cells	- High throughput. Measures only intact and live cells.
	Mitochondrial dehydrogenases	Quick Cell Proliferation Assay (WST-1) (K301)	30 min.-4 hrs	Absorbance (OD 440 nm)	Suspension or Adherent cells	~400 cells	- Just add & read. No washing, harvesting and solubilization steps. - Rapid and more sensitive than MTT and XTT assays.
		Ready-to-use Cell Proliferation Colorimetric Reagent, WST-1 (K304)	30 min.-4 hrs	Absorbance (OD 440 nm)	Suspension or Adherent cells	~400 cells	- Ready-to-use reagent. Just add & read. No washing, harvesting and solubilization steps. - Rapid and more sensitive than MTT and XTT assays.
		Quick Cell Proliferation Assay plus (proprietary WST) (K302)	30 min.-4 hrs	Absorbance (OD 440 nm)	Suspension or Adherent cells	~300cells	- Just add & read. No washing, harvesting and solubilization steps. - Rapid and more sensitive than MTT, XTT and WST-1 assays.
General Metabolic Activity	MTS reduction	MTS Cell Proliferation Assay (K300)	30 min.-4 hrs	Absorbance (OD 490 nm)	Suspension or Adherent cells	~600 cells	- Just add & read. No washing, harvesting and solubilization steps. - Rapid and more sensitive than MTT and XTT assays.
	VisionBlue™ reduction	Vision Blue™ Quick Cell Viability Assay (K303)	1-5 hrs	Fluorescence (Ex/Em = 530-570 nm/ 590-620 nm)	Suspension or Adherent cells	~100 cells	- Just add & read. No washing, harvesting and solubilization steps. - Rapid and more sensitive than MTT, XTT, WST-1 and proprietary WST assays.
DNA Synthesis	Brdu incorporation	BrdU Cell Proliferation Assay Kit (K306)	4-8 hrs	Absorbance (OD 450 nm)	Suspension or Adherent cells	~50-100 proliferating cells	- Only measures the proliferating, viable cells.

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Assays to Detect Dead Cells

Parameter	Type	Assay Name	Incubation Time	Detection	Sample Type	Sensitivity	Unique Features
Enzymatic Activity	Lactate Dehydrogenase released from compromised (leaky) cells	LDH-Cytotoxicity Assay (K311)	30 min.-1 hr	Absorbance (OD 495 nm)	Suspension or Adherent cells	~200-250 cells	- Stable and abundant enzyme. - Based on reaction of pyruvate with tetrazolium salt INT to form formazan.
		LDH-Cytotoxicity Assay II (K313)	< 1 hr	Absorbance (OD 450 nm)	Suspension or Adherent cells	~500-600 cells	- Minimize background from sreum & culture media: culture cells in regular 10% serum. - More stable: stop reaction at any time point and read multiple times. - Based on reaction of NADH with WST to generate color.
		PicoProbe™ LDH-Cytotoxicity Assay (K314)	< 20 min.	Fluorescence (Ex/Em = 535/587 nm)	Suspension or Adherent cells	~100 cells	- High sensitivity - High-throughput - Stable Enzyme
	Adenylate kinase released from compromised (leaky) cells	Bioluminescence Cytotoxicity Assay (K312)	30 min.	Luminescence	Suspension or Adherent cells	~50-100 cells	- High throughput. - Simple one step procedue involving two chemical reactions
Live/Dead Cell Fluorescent Probes	Cell-permeable green fluorescent dye: To label live cells	Live-Dead Cell Staining Kit (K501)	20 min.	Fluorescence Microscopy/Flow Cytometry	Suspension or Adherent cells	Single Cell	- Visualize and/or sort the live and dead cells. - Analyze the apoptotic cells.
	Cell nonpermeable red fluorescent dye: to label late apoptotic and necrotic cells	Cell-Mediated Cytotoxicity Fluorometric Assay Kit (7-AAD/ CFSE) (K315)	30 min.	Fluorescence Microscopy/Flow Cytometry	Suspension or Adherent cells	Single Cell	- Measure cell-mediated cytotoxicity. - Visualize and/or sort the live and dead cells. - Analyze apoptotic/necrotic cells. - Broader applications. - Multi-parametric analysis.