

# CellTiter-Glo<sup>®</sup>

Luminescent Cell Viability Assay

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The best method for

cell  
proliferation  
and cytotoxicity  
determination



**Promega**

## Description

The CellTiter-Glo<sup>®</sup> Luminescent Cell Viability Assay provides a homogeneous bioluminescent assay designed for fast and sensitive measurement of ATP, an accepted marker of cell viability (Figure 1). The assay involves the addition of a single reagent, containing luciferin and stable luciferase, directly to cells in serum-supplemented medium that results in cell lysis and generation of a “glow” luminescent signal proportional to the amount of ATP released from viable cells (Figure 2). The unique properties of Promega’s proprietary Ultra-Glow<sup>™</sup> Recombinant Luciferase enabled the development of the robust and stable CellTiter-Glo<sup>®</sup> Reagent that inhibits endogenous ATPases in a “single addition” homogeneous assay format, improves performance across a wide range of assay conditions and is less likely to be affected by compound interference than other luminescent, fluorescent or colorimetric based cell viability assays.

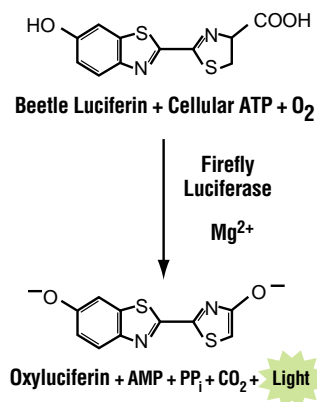


Figure 1. The CellTiter-Glo Assay generates a “glow type” luminescent signal, produced by the luciferase reaction in the presence of cellular ATP.

## CellTiter-Glo Assay—Sensitive, Fast and Flexible

### Increase Your Assay Sensitivity

Detect as few as 15 cells per well in a 384-well format or 50 cells per well in 96-well format (Figure 3).

Accurately measure cells at numbers below the detection limits of standard colorimetric and fluorometric assays (Table 1).

Reduce the number of cells required per assay and reduce cell culture reagent costs.

### Enhance Your Throughput

Eliminate hours of incubation required with other cell viability assays.

Record data 10 minutes after addition of reagent.

### Simplify Your Assay Setup

The homogeneous “add-mix-read” format (single reagent addition) is easily automated.

No cell washing, removal of medium or multiple pipetting steps are required.

Dramatically reduce plate-handling steps required for similar cell viability assays.

### Choose Your Assay Format and Instrumentation

The robustness of the assay and the ~5 hour stable luminescent signal (depending on the cell type and medium used, Figure 4) allow flexibility in assay format and instrumentation.

Use with various multiwell plate formats.

Process plates in batch mode, no injectors required.

Record data with a luminometer or CCD imaging device (Figure 5).

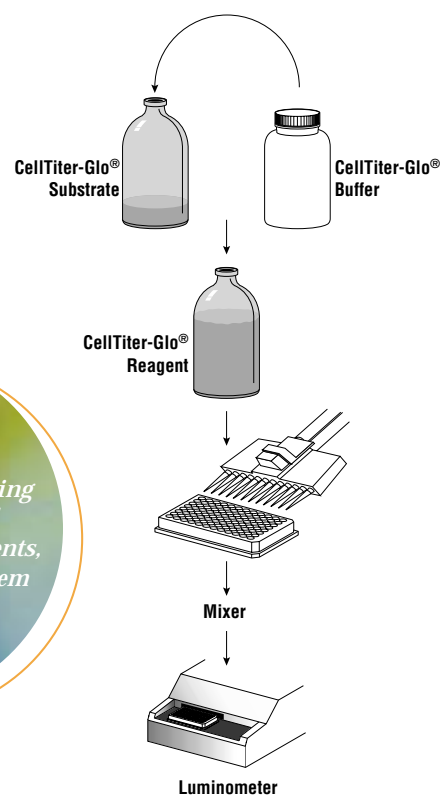
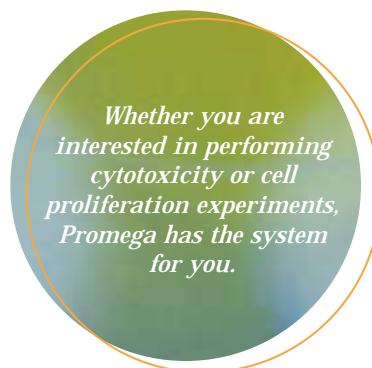


Figure 2. Flow diagram showing preparation and use of the CellTiter-Glo Assay.

# Luminescent Cell Viability Assay

## Great Z' Factor Results

### Get the Results You Need

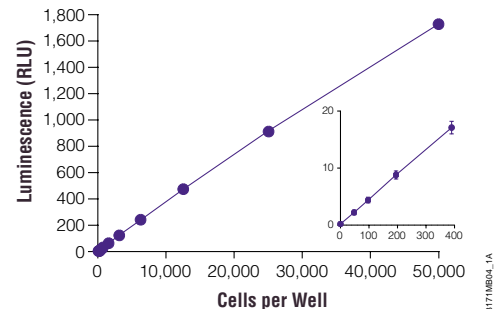
The CellTiter-Glo® Assay is highly reproducible and delivers excellent Z' factors (a statistical value that compares an assay's dynamic range to data variation in order to assess assay quality; a Z' factor between 0.5 and 1.0 indicates an excellent assay, Figure 6).

**Table 1. Comparison of Promega Cell Viability Assays.**

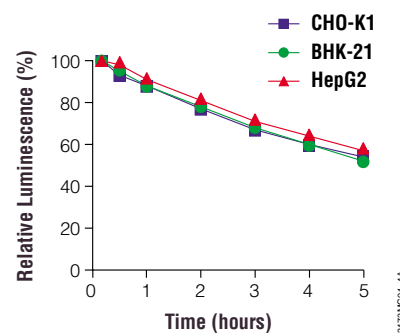
	CellTiter-Glo® Luminescent Assay (ATP)	CellTiter-Blue™ Cell Viability Assay	CellTiter 96® AQ <sub>ueous</sub> One Solution Assay (MTS)	CytoTox-ONE™ Membrane Integrity Assay (LDH)
<b>Incubation Time</b>	10 minutes	1-4 hours	1-4 hours	10 minutes
<b>Simple, Homogeneous Protocol</b>	Yes	Yes	Yes	Yes
<b>Biological Indicator</b>	ATP Content	Reducing Ability	Reducing Ability	Membrane Integrity
<b>Detection Method</b>	Bioluminescent	Fluorometric or Colorimetric	Colorimetric	Fluorometric
<b>Sensitivity* 96-well</b>	50 cells	390 cells*	800 cells	800 cells
<b>384-well</b>	15 cells	50 cells*	200 cells	200 cells

‡Sensitivity is dependent on cell type and other experimental conditions.

\*Measured by fluorescent read out.

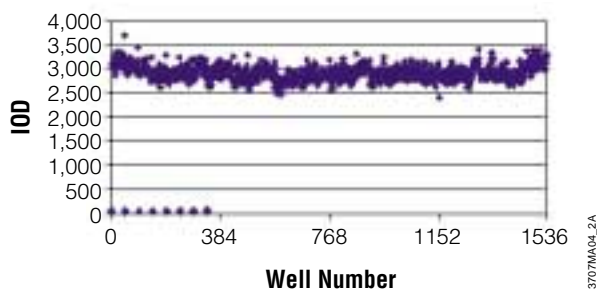


**Figure 3. Excellent sensitivity and extended linearity of the CellTiter-Glo Assay.**



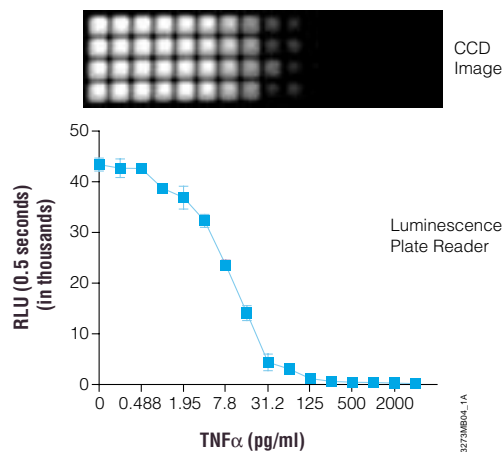
**Figure 4. Optimized luminescent “glow” signal for multiple cell lines.**

### Validation Assay Plate



Neg. Ctrl. Avg.	41.41	Assay Well Avg.	2714.4	Pos. Ctrl. Avg.	2645.9
Neg. Ctrl. S.D.	3.8	Assay Well S.D.	247.9	Pos. Ctrl. S.D.	140.2
Neg. Ctrl. CV (%)	9.1	Assay Well CV%	9.1	Z' Factor	0.84

**Figure 6. Scattergram of 1536-well validation assay plate using the CellTiter-Glo Assay.** A BlueBiRD automated reagent dispenser was used to dispense 1µl/well containing one thousand 293-EBNA cells into wells of a Corning 1536-well test plate. After a 24-hour incubation, 1µl of CellTiter-Glo® Reagent was added, and luminescence recorded using a ViewLux™ CCD camera. Integrated Optical Density units (IOD) are plotted along the y axis. The signal was consistent across the entire plate. The CV, Z' factor, and signal to background were within acceptable ranges for screening. Data provided by Robert Swanson, Pharmacopeia, Inc.



**Figure 5. Flexibility of the CellTiter-Glo Assay.** Luminescence was visualized with a CCD imaging device or recorded with a luminometer. Each column of replicates (CCD image) corresponds to the mean data point on the graph as determined by the luminometer.

### Ordering Information

Product	Size	Cat.#
CellTiter-Glo <sup>®</sup> Luminescent Cell Viability Assay	10ml	G7570

Each vial of substrate is sufficient for 100 assays in 96-well format or 400 assays in 384-well format.

Product	Size	Cat.#
CellTiter-Glo <sup>®</sup> Luminescent Cell Viability Assay	10 x 10ml	G7571

Each vial of substrate is sufficient for 100 assays in 96-well format or 400 assays in 384-well format (1,000 to 4,000 total assays).

Product	Size	Cat.#
CellTiter-Glo <sup>®</sup> Luminescent Cell Viability Assay	100ml	G7572

Each vial of substrate is sufficient for 1,000 assays in 96-well format or 4,000 assays in 384-well format (1,000 to 4,000 total assays).

Product	Size	Cat.#
CellTiter-Glo <sup>®</sup> Luminescent Cell Viability Assay	10 x 100ml	G7573

Each vial of substrate is sufficient for 1,000 assays in 96-well format or 4,000 assays in 384-well format (10,000 to 40,000 total assays).

Products also available in bulk quantities Please inquire

### Related Products and Instrumentation

Product	Size	Cat.#
Reporter <sup>™</sup> Microplate Luminometer System	each	E2701

CellTiter-Blue <sup>™</sup> Cell Viability Assay (Fluorescent, resazurin-based assay)	20ml	G8080
	100ml	G8081
	10 x 100ml	G8082

CellTiter 96 <sup>®</sup> AQueous One Solution Cell Proliferation Assay <sup>(b)*</sup> (Colorimetric, MTS-based assay)	200 assays	G3582
	1,000 assays	G3580
	5,000 assays	G3581

Product	Size	Cat.#
CellTiter 96 <sup>®</sup> AQueous Cell Proliferation Assay <sup>(b)*</sup> (Colorimetric, MTS-based assay)	1,000 assays	G5421
	5,000 assays	G5430
	50,000 assays	G5440

CellTiter 96 <sup>®</sup> AQueous MTS Reagent Powder <sup>(b)*</sup> (Colorimetric, MTS-based assay)	1g	G1111
	250mg	G1112

CellTiter 96 <sup>®</sup> Non-Radioactive Cell Proliferation Assay* (Colorimetric, MTT-based assay)	1,000 assays	G4000
	5,000 assays	G4100

CytoTox-ONE <sup>™</sup> Homogeneous Membrane Integrity Assay (Fluorescent, LDH release)	200-800 assays	G7890
	1,000-4,000 assays	G7891

CytoTox-ONE <sup>™</sup> Homogeneous Membrane Integrity Assay, HTP	1,000-4,000 assays	G7892
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CytoTox 96 <sup>®</sup> Non-Radioactive Cytotoxicity Assay* (Colorimetric, LDH release)	1,000 assays	G1780
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Apo-ONE <sup>®</sup> Homogeneous Caspase-3/7 Assay <sup>(c)</sup> (Fluorescent)	1ml	G7792
	10ml	G7790
	100ml	G7791

Caspase-Glo <sup>™</sup> 3/7 Assay <sup>(a)</sup> (Luminescent)	2.5ml	G8090
	10ml	G8091
	100ml	G8092

\*For Laboratory Use.

<sup>(a)</sup> Patent pending.

<sup>(b)</sup> The MTS tetrazolium compound is the subject of U.S. Pat. No. 5,185,450 assigned to the University of South Florida and is licensed exclusively to Promega Corporation.

<sup>(c)</sup> This product is covered by U.S. Pat. Nos. 4,557,862 and 4,640,893 and is sold for research use only. All other uses, including but not limited to use as a clinical diagnostic or therapeutic, require a separate license. Please contact Promega Corporation for details relating to obtaining a license for such other use.

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