Assay Solutions
Easy-to-use, Relevant Assays
to Assess Cell Health and Function
Assay Solutions

Lonza offers a range of biochemical, luminescent and cell-based assays that provide a wealth of information relating to your cells; from their state of health to the finest detail of their intracellular signaling mechanisms. These assays can become key tools in your pre-clinical drug discovery processes, from monitoring the quality of the cells you are using to target identification and validation, compound hit and safety screening.

The ViaLight™ Plus Cell Viability Assay is designed to deliver a high, stable luminescent signal for an extended period of time for greater experimental design flexibility. The ToxiLight™ BioAssay Kit is a bioluminescent, non-destructive cytolysis assay kit designed to measure the release of the enzyme adenylate kinase (AK) from damaged cells. For fat and bone-like cells, we provide a distinct range of assay tools to measure lipid accumulation, lipolysis, and bone resorption or mineralization.

Adipocytes, MSCs, and ADSCs can have lipid metabolism measured with AdipoRed™ Adipogenesis Assay Reagent and AdipoLyze™ Lipolysis Assay. Bone cells like osteoclasts and osteoblasts, and even differentiated MSCs and ADSCs can have bone remodeling measured with OsteoAssay™ Human Bone Plate, OsteoLyse™ Bone Resorption Assay Kit and OsteoImage™ Bone Mineralization Assay. All of these assays will support both primary cells and related cell lines.

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AdipoLyze™ – Lipolysis Assay
OsteoAssay™ – Human Bone Plate
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OsteoImage™ – Bone Mineralization Assay
Luminescent Bioassays

**ViaLight™ Plus**

Measure Cell Proliferation and Cytotoxicity

- Uses bioluminescent detection of cellular ATP as a measure of viability
- Designed to deliver a high, stable luminescent signal for an extended period of time for greater experimental design flexibility

**Benefits**

**Fast:** Results from a 96-well plate can be processed and analyzed in <15 minutes

**Sensitive:** Detect as few as ten cells allowing lower seeding densities and more assays

**Convenient:** Simple, no-shake protocol for easy and scalable automation — add two reagents directly to your culture well and read luminescence

**Flexible:** Dynamic range of five decades with both adherent or suspension cell cultures, can be run on a variety of luminometers or scintillation counters

**Safe:** No radioactivity or toxic components required

![EC 50 Data Generated Using ViaLight Plus Shows Consistency Over Time](image)

HepG2 cells were incubated with the alkylating agent Mitomycin C for 48 hours and the assayed using ViaLight™ Plus. The experimental values are the mean of eight replicant samples read every hour over a 5 hour period. The EC values remain consistent over the 5 hour read period.

**Ordering Information**

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<thead>
<tr>
<th>Cat. No.</th>
<th>Description</th>
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<tr>
<td>LT07-221</td>
<td>ViaLight™ Plus Cell Proliferation and Cytotoxicity BioAssay Kit</td>
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<td>LT17-517</td>
<td>ViaLight™ 100% Lysis Control Set (sold separately)</td>
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www.lonza.com/vialight

**ToxiLight™**

Non-Destructive Cytotoxicity Bioassay Kit

- Designed to measure the leakage of adenylate kinase (AK) from damaged cells
- AK catalyzes the conversion of ADP to ATP which is then measured using a bioluminescent reaction.

**Benefits**

**Highly sensitive:** As few as 10 cells, due to the cyclic nature of the AK reaction

**Non-destructive:** Eliminating the need to lyse, cytotoxicity can be monitored from a sample of supernatant

**Simple:** Addition of a single reagent directly to your cells or supernatant

**Fast:** Results from a 96-well plate can be processed and analyzed in <10 minutes

**Flexible:** Supernatants can be frozen with no loss of AK activity (for long-term studies)

![Identify Dose-dependent Activities in Cells](image)

Comparison of ViaLight™ Plus and ToxiLight™ Kits using HUVECs dosed with camptothecin. The ATP levels indicated by the ViaLight™ Plus RLUs reduce steadily in a dose-dependent manner. At the lower drug doses, the AK released from the cells is relatively low compared with that of the control, only increasing dramatically at the highest drug doses.

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<td>ToxiLight™ Non-destructive Cytotoxicity BioAssay Kit</td>
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www.lonza.com/toxilight
Cell Function Assays

AdipoRed™ Assay Reagent

Quantify Intracellular Lipid Accumulation

- Assess the effect of compounds on the differentiation of preadipocytes or lipid utilization in mature adipocytes
- AdipoRed™ Assay Reagent specifically partitions into the fat droplets of differentiated adipocytes and fluoresces at 572 nm

Benefits

Convenient: Simply replace cell culture medium with PBS, add AdipoRed™ Reagent and read in a standard fluorimeter
Fast: Process an entire 96-well plate in as little as 20 minutes. Much faster and easier than Northern and Western blots
Effective: Provides objective high-throughput measurement of the accumulation of intracellular triglycerides with high signal-to-noise ratios
Sensitive: More sensitive than other methods, such as the Oil Red O assay

PDELight™

High-throughput Screening Phosphodiesterase Assay

- Luminous assay to identify inhibitors of phosphodiesterase activity
- Luciferase-based system quantifies AMP produced from the hydrolysis of cyclic AMP by phosphodiesterases

Benefits

Simple: Only one reagent to add
Generic: The same assay can be used for all cAMP dependent phosphodiesterases
Fast: Complete a 384-well plate in less than 3 minutes
Versatile: Scalable to 96-, 384-, or 1536-well formats

PPiLight™

Inorganic Pyrophosphate Assay

- Non-radioactive bioluminescent assay for the detection of inorganic pyrophosphate (PPi)
- In the presence of PPi, the conversion of AMP to ATP is catalyzed. Luciferase produces light from the newly formed ATP.

Benefits

Fast: Measure enzyme activity via pyrophosphate production in 1 hour
Simple: 2-step luminescent assay; no radioactive substrates, beads, or antibodies required
Wide detection range: Linear range from 0.02 μM to 10 μM PPi
Sensitive: Down to 0.02 μM
Versatile: Scalable to 96-, 384-, and 1586-well formats

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<td>PDELight™ HTS cAMP Phosphodiesterase</td>
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<td>LT07-610</td>
<td>PPiLight™ Inorganic Pyrophosphate Assay</td>
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AdipoLyze™

Lipolysis Detection Assay

- Fluorescently detect small quantities of glycerol in cells undergoing lipolysis
- Quantitate in vitro lipolysis of adipogenic cell lines as well as primary cells of both subcutaneous and visceral origin

Benefits

Fast: Completed in < 2 hours
Sensitive: Detects very low levels of glycerol (0.44 μM or 0.04 μg/ml)
Versatile: For use in 96-well plate format, but scalable to 384-well

Glycerol Released by Subcutaneous and Visceral Preadipocyte in PGM-2, Measured by AdipoLyze Lipolysis Detection Assay

![Graph showing glycerol released by subcutaneous and visceral preadipocytes.]

Poietics™ Human Subcutaneous and Visceral Preadipocytes (undiff & differentiated) treated with isoproterenol alone or with insulin. Lipolysis measured with AdipoLyze™ Assay Kit.

Differentiated visceral adipocytes stained with AdipoRed™ Assay Reagent.

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<td>PT-7009</td>
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<td>00193339</td>
<td>AdipoLyze™ Lipolysis Detection Assay</td>
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OsteoAssay™ Human Bone Plate

Measure Osteoclastic Bone Resorption

- Thin layer of adherent human bone (chips) for the culture of primary human or non-human osteoclasts, osteoclast precursors, and immortalized cell lines
- Measure bone resorption and/or enzyme activity by sampling the cell culture supernatant

Benefits

Convenient: Ready-to-use plates with human bone chips attached to the wells eliminates the need for dentine or animal bone slices
Simple: Cells can be seeded onto the surface of the OsteoAssay™ Plate and used in traditional cell culture protocols
Flexible: Can be used with a variety of cell types and cell-based assays
Novel: Contains real human bone for more biologically relevant results

OsteoAssay™ Plate Is Superior To Dentine Slices

Comparison of primary human osteoclast function (in vitro bone resorption) grown on OsteoAssay™ Plate vs. dentine slices.

OsteoLyse™ Assay Kit (Human Collagen)

Measure Bone Resorption in Minutes

- Measure in vitro osteoclast-mediated bone matrix resorption in a high-throughput format
- Kit includes a 96-well cell culture plate coated with europium-labeled human Type I collagen and a bottle of Fluorophore Releasing Agent
- Assay directly measures the release of europium-labeled collagen fragments (resorptive activity) into the osteoclast cell culture supernatant via time resolved fluorescence

Benefits

Convenient: Human collagen is bound to wells in the plate eliminating the need to purchase bone matrices separately
Easy-to-use: Cells can be seeded onto the surface of the OsteoLyse™ Plate and used in traditional cell culture protocols
Homogeneous: Resorptive activity is easily measured by sampling the cell culture supernatant and counting via time-resolved fluorescence

Comparison of the TRAP Stain and the OsteoLyse™ Assay Kit in an Assay of Interferon γ-inhibition of Osteoclast Precursor Differentiation

Poietics™ Human OCP were differentiated on OsteoLyse™ Plate and assessed after 9 days for collagen peptide release using OsteoLyse™ Assay and or TRAP-positive multinucleated cells.

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<td>PA1000</td>
<td>OsteoAssay™ Human Bone Plate</td>
<td>96-wells</td>
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OsteoImage™ Mineralization Assay

Rapid Fluorescent Bone Mineralization Assay

- Quantitate *in vitro* mineralization by osteogenic stem cells, primary osteoblasts, and osteoblast-like cell lines
- Based on specific binding of the fluorescent OsteoImage™ Staining Reagent to the hydroxyapatite portion of bone-like nodules deposited by cells

**Benefits**

**Novel:** Measures hydroxyapatite, similar to real bone
**Quick:** Completed in less than 90 minutes with no tedious extractions for quantitation
**Sensitive:** Detects time-dependent increases in mineralization in differentiating cells
**Scalable:** From 6-well up to 96-well plates

**Works with Stem Cell. Primary Cells, and Cell Lines**

- UMR-106, Day 7
- Saos-2, Day 11
- NH0st, Day 21
- hMSC, Day 28

**Detects Mineralization With Time**

- NH0st – Normal Human Osteoblasts were seeded at 3,200 cells/well in a 96-well plate. Cells were cultured as undifferentiated control cells or with differentiation factors. Mineralization was quantitated on a plate reader after staining with the Osteolmage™ Assay on days 7, 14 and 21.

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