GloMax® Discover

An instrument for your assays

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Promega Corporation

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Getting the Most From Your Plate-Based Assays

- Scientific discoveries involve not only finding the right assay, but also the right instrument.

- *Assay sensitivity*, *dynamic range*, *sample-to-sample cross-talk*, and *ease-of-use* are critical considerations when choosing an assay and instrument.

- Promega develops and QC tests many of it's luminescence assays using GloMax® instruments, because of their:
  - Superior luminescence performance
  - World-wide acceptance and publications in peer-reviewed research journals

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Introducing …

- Multi-mode detection (Luminescence, Fluorescence, UV-Vis Absorbance, BRET, FRET, filtered luminescence)
- Easy to use: Plug-n-play setup
- Tablet PC touchscreen control and wireless connectivity to network and Promega.com
- 6 to 384-well plate formats
- Heating & shaking
- Optional: Dual injector
- Automation-friendly
- IQ / OQ Service

GloMax DISCOVER

➢ Integrated with Promega assays

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Integrated with Promega Assays

The Perfect Partner for Promega Assays

Preloaded Promega protocols
or customize your own

Cell Signaling & Metabolism Assays: Including:

- ADP-Glo™
- Kinase-Glo®
- P450-Glo™
- cAMP-Glo™

Cell Health Assays: Including:

- CellTiter-Glo®
- CellTox™ Green
- Caspase-Glo®
- BacTiter-Glo®

Luciferase Reporter Assays: Including:

- Nano-Glo®
- ONE-Glo™
- Dual-Glo® & DLR
- Bright-Glo™

BRET and FRET Assays: Including:

- NanoBRET™
- Renilla/YFP
- Commercial and Homebrew assays

…plus many, many more

DLR ready

NanoLuc® Luciferase Ready

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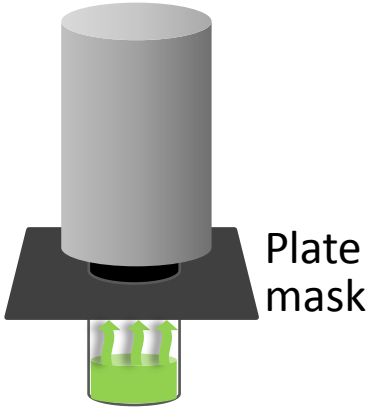
Built-In Detectors for each Module
-behaves like three separate instruments

Head-on PMT for photon counting

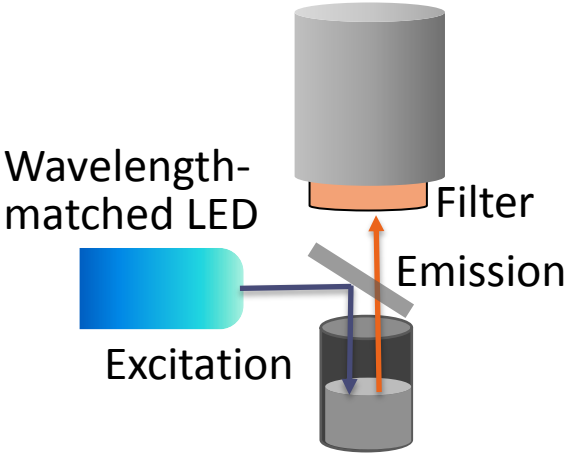


Luminometer

Plate mask switching for 96/384-well measurements

- $3x10^{-21}$ moles Luciferase sensitivity
- 9 logs dynamic range

PiN-Photodiode

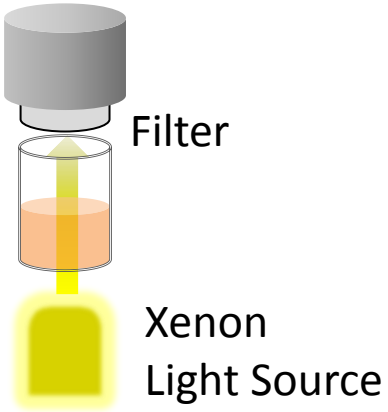


Fluorometer

Filter slides for automatic filter switching

- 2fmol/200ul fluorescein sensitivity
- 6 logs dynamic range

PMT



Photometer

Filter Wheel with UV-Vis Abs filters

- 0.01 OD sensitivity
- 0-4 OD range

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Luminescence Filters

Luminescence Filters (standard)

Position	Filter wavelength	Assay
5	Empty (user configurable)	
4	530nm LP	Click Beetle Luciferase; BRET1
3	540nm SP	Firefly Luciferase; ChromaGlo
2	600nm LP	HaloTag
1	495nm SP	NanoLuc (NanoBRET$_{618}$), Renilla Luciferase

- All of the filters needed for NanoBRET™$_{618}$ are included
- Custom Luminescence Emission filters are available

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Fluorescence Filters

5 Standard Excitation filters and 2 custom positions.

Empty Emission filter paddles for 6 customized positions are available as accessory

	Excitation Peak Wave length	Emission wave length	Assays
UV	365	415-445	Hoechst dye, 4-MU
Blue	475	500-550	EGFP, or hMGFP, DNA, RNA or protein quantitation dyes, QuantiFluor™ , Fluorescein, Rhodamine-110
Green	525	580-640	Rhodamine, Cy®3, resorufin
Red	605	660-720	Cy®5, RNA quantitation dyes
AFC	405	495-505	Aminofluorocoumarin

Custom Excitation and Emission filters are available

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Absorbance Filters

9 UV-Vis Absorbance filters are provided with the instrument

The wavelength just needs to be close, not exact. A 450nm filter is actually 445-455nm

i.e. Pierce 660 Reagent calls for a 660nm filter, but 600nm works great, that's 60nm off-peak

Filters (10nm bandpass)	Assays
230nm	Contaminants (Guanidine, Phenol, carbohydrates)
260nm	Nucleic Acid Quantitation
280nm	Protein Quantitation (Nucleic Acid Purity)
320nm	Background subtraction for Nucleic Acid/Protein Quantitation
405nm	Colorimetric Promega Assays (CaspACE)
450nm	ELISA Assays
490nm	Colorimetric Promega Assays (CellTiter 96/Aqueous/Aqueous ONE / CellTiter Blue)
560nm	BCA Protein Assays
600nm	Bradford Protein Assays Coomassie® Blue Protein Assays

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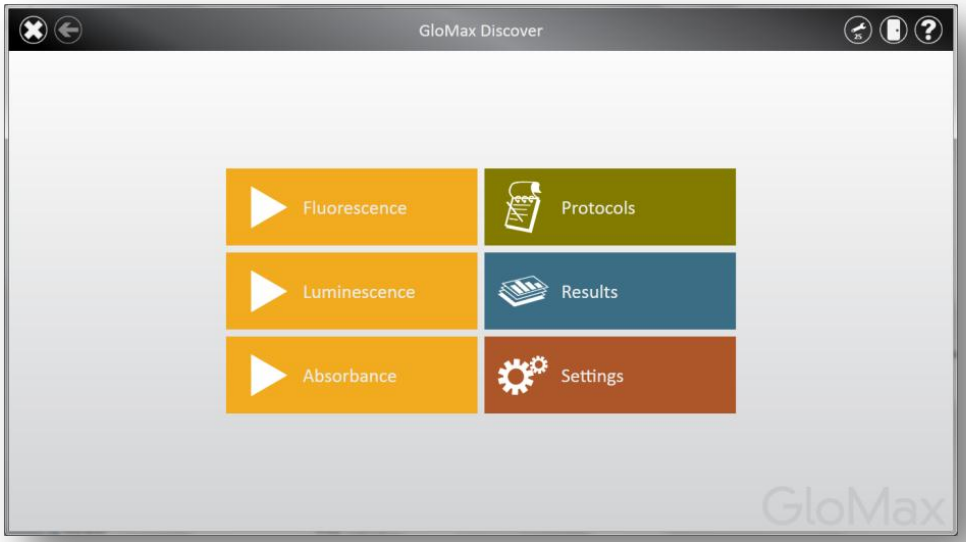
Intuitive Software Makes it Easy

Simple GUI Interface

- Quick Start reads
- Select / Create Protocols
- View / Export Results
- User Settings



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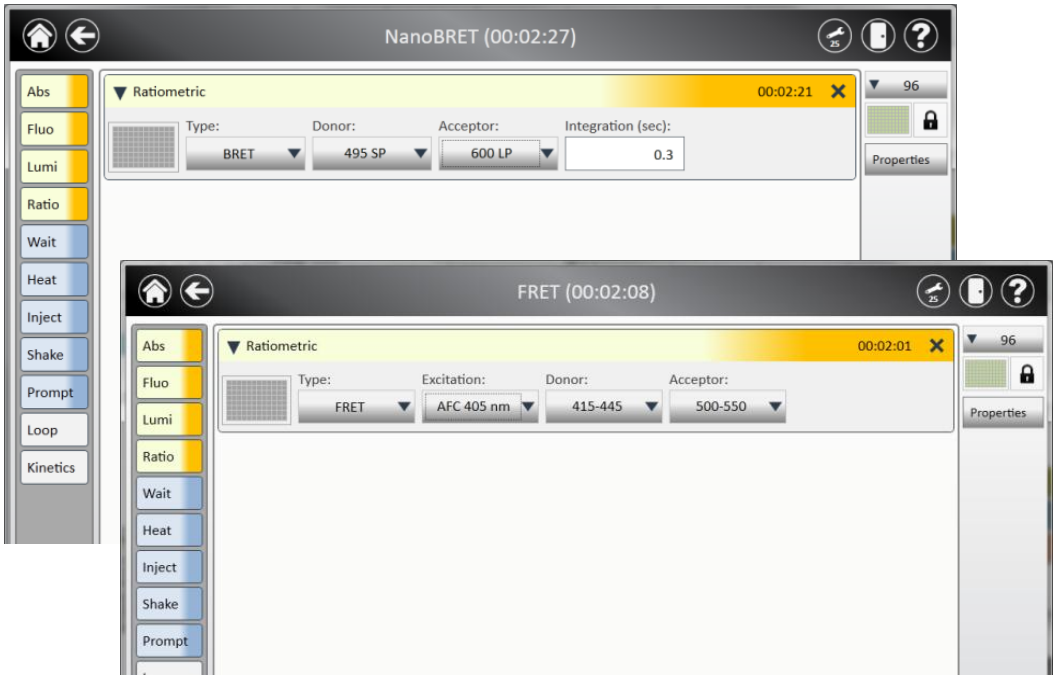
Intuitive Software Makes it Easy

Flexible protocol-builder

- User customizable
- State-of-the-art touchscreen response
- Drag and drop navigation



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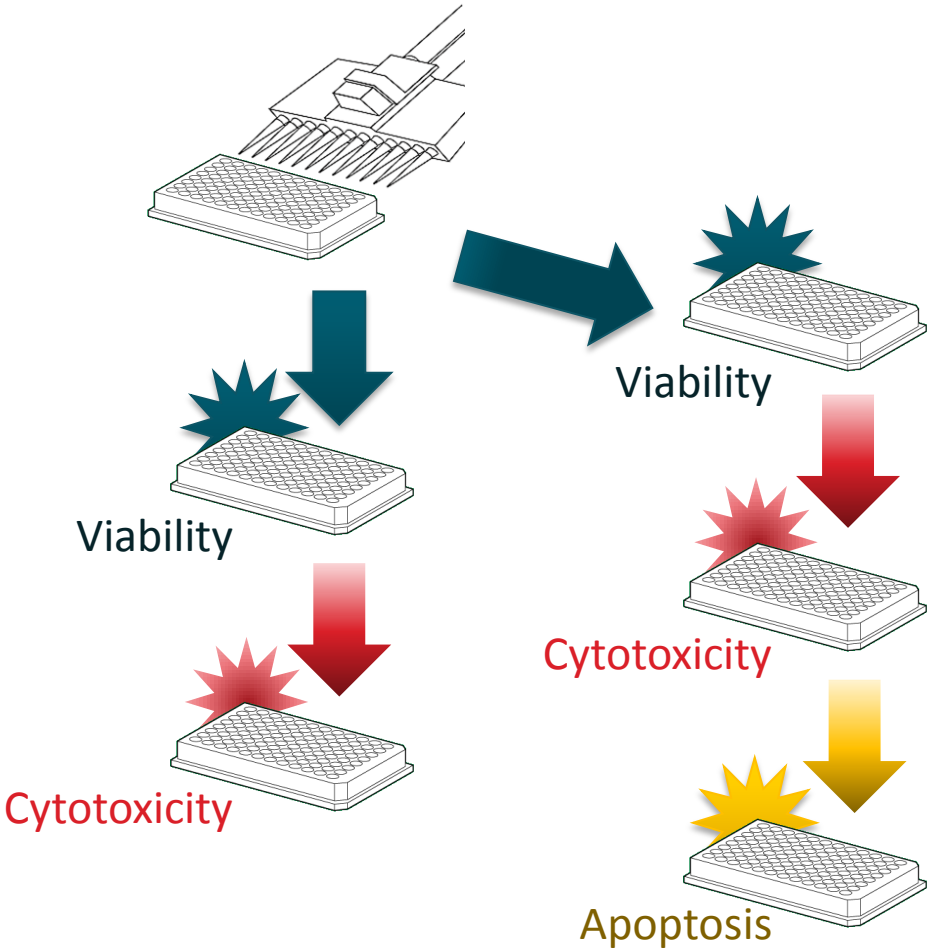
Multiplex Assays for a More Complete Picture

- Automatic filter slides enable multiple reads without user intervention
- Intuitive software provides flexible and easy protocol design
- Easily perform BRET and FRET studies
- Customize filters for your needs



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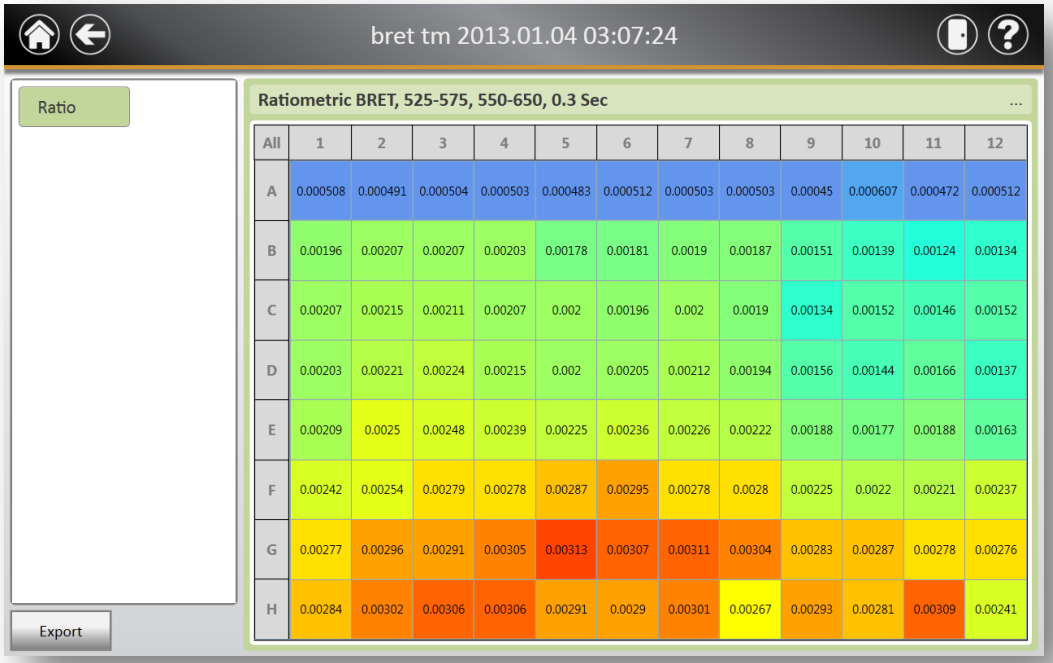
Intuitive Software Makes it Easy

Data Portability

- Network-ready
- Heat-map display
- Multi-touch pinch/zoom gestures
- Export to USB, microSD, network, LIMS, Cloud



All	1	2	3	4	5	6	7	8	9	10	11	12
A	0.000508	0.000491	0.000504	0.000503	0.000483	0.000512	0.000503	0.000503	0.00045	0.000607	0.000472	0.000512
B	0.00196	0.00207	0.00207	0.00203	0.00178	0.00181	0.0019	0.00187	0.00151	0.00139	0.00124	0.00134
C	0.00207	0.00215	0.00211	0.00207	0.002	0.00196	0.002	0.0019	0.00134	0.00152	0.00146	0.00152
D	0.00203	0.00221	0.00224	0.00215	0.002	0.00205	0.00212	0.00194	0.00156	0.00144	0.00166	0.00137
E	0.00209	0.0025	0.00248	0.00239	0.00225	0.00236	0.00226	0.00222	0.00188	0.00177	0.00188	0.00163
F	0.00242	0.00254	0.00279	0.00278	0.00287	0.00295	0.00278	0.0028	0.00225	0.0022	0.00221	0.00237
G	0.00277	0.00296	0.00291	0.00305	0.00313	0.00307	0.00311	0.00304	0.00283	0.00287	0.00278	0.00276
H	0.00284	0.00302	0.00306	0.00306	0.00291	0.0029	0.00301	0.00267	0.00293	0.00281	0.00309	0.00241

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Performance

Multiplexing: CellTox™ Green and CellTiter®-Glo

NanoBRET™ Technology for Protein Interactions

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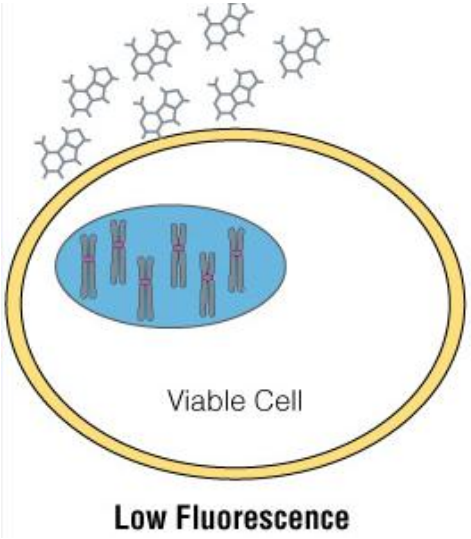
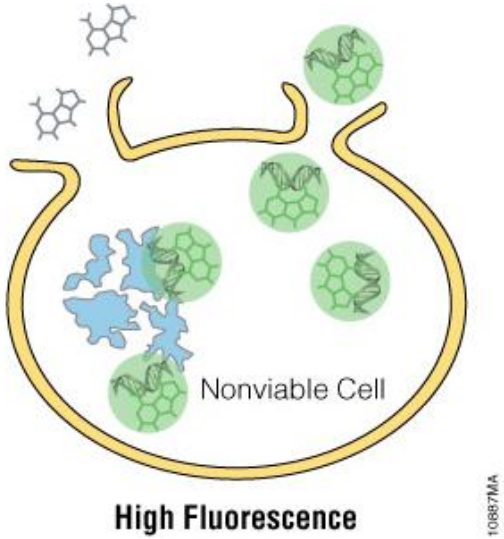
Multiplexing: CellTox™ Green and CellTiter® Glo



Low Fluorescence



High Fluorescence

Excluded dye yields no increase in fluorescence with viable cells

Non-excluded dye yields increase in Fluorescence with compromised cells

CellTox™ Green

Non-lytic Assay

Cytotoxicity (Fluorescence)

CellTiter®-Glo

Reagent Lyses Cells

Viability (Luminescence)

GloMax® Discover Detection System

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Multiplexing: CellTox™ Green and CellTiter® Glo

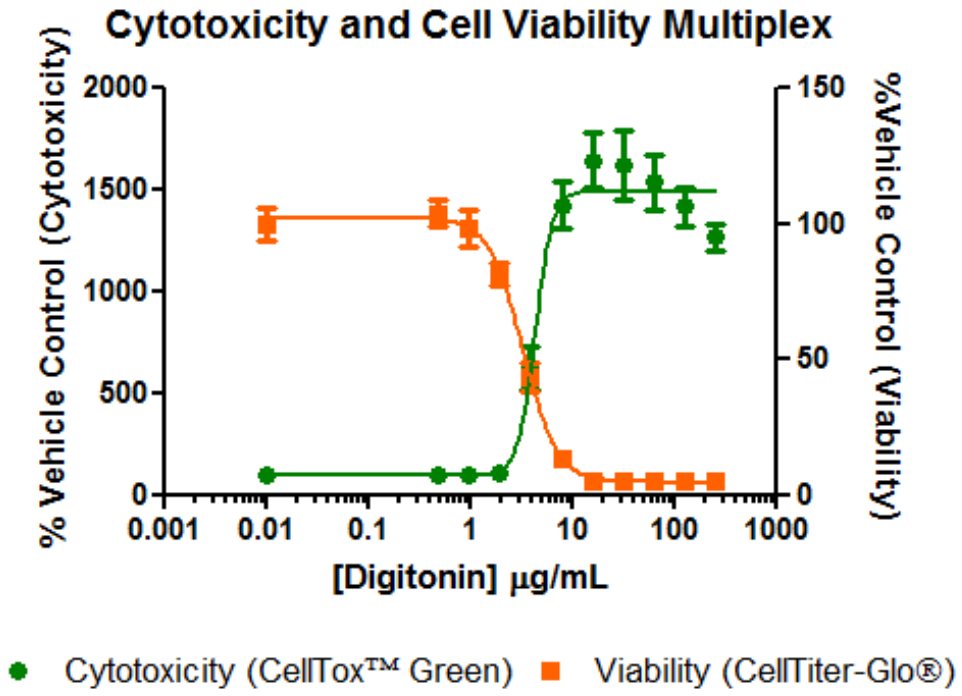
Expected Results:

- A dose-dependent effect on K562 cell viability. As digitonin concentration increase, so does cytotoxicity

- Luminescent ATP detection decreases due to decreased cell viability

- GloMax® Discover provides easy setup to multiplex Promega assays

- GloMax® Discover results provide expected biology



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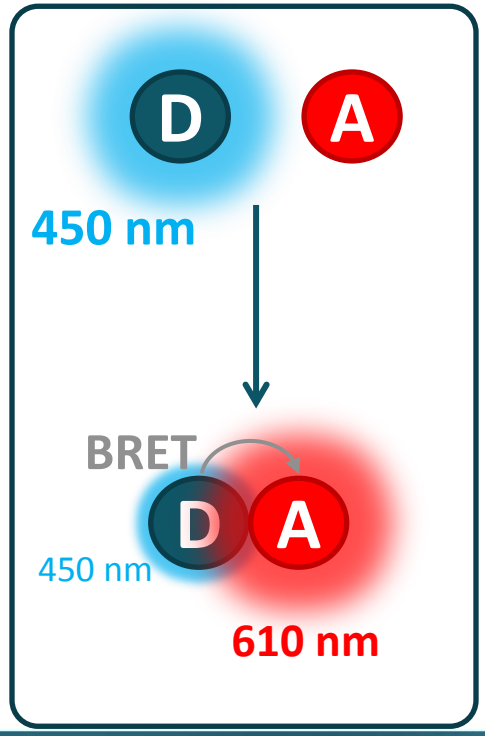
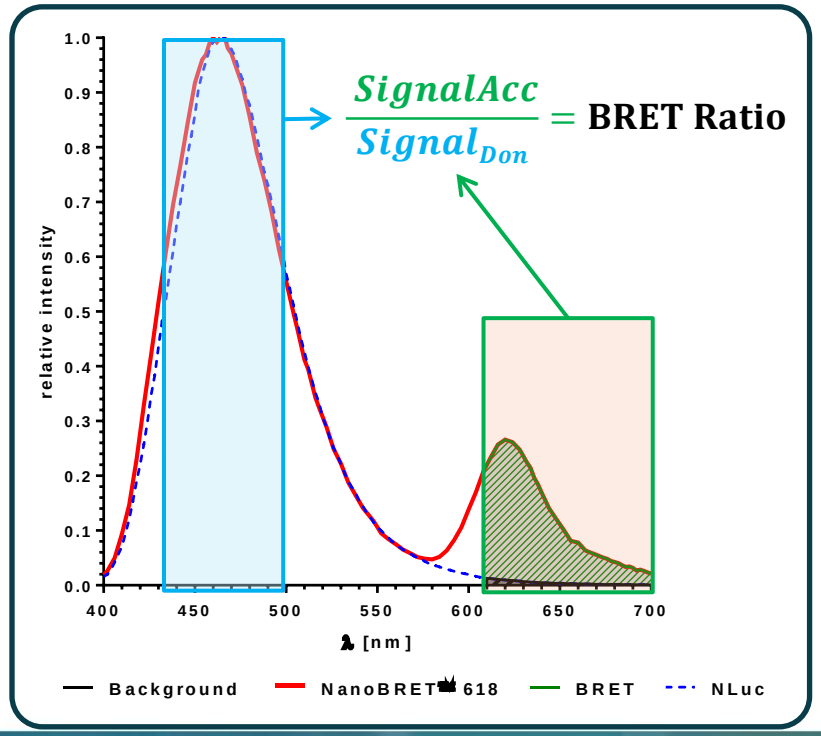
NanoBRET™ Technology for Protein Interactions

- BRET provides real time measurement *in living cells*
- Superior luminescent Donor signal from NanoLuc™
- Flexible choice of Donor/Acceptor Separation
- Low Donor/Acceptor ratios provides best dynamic range





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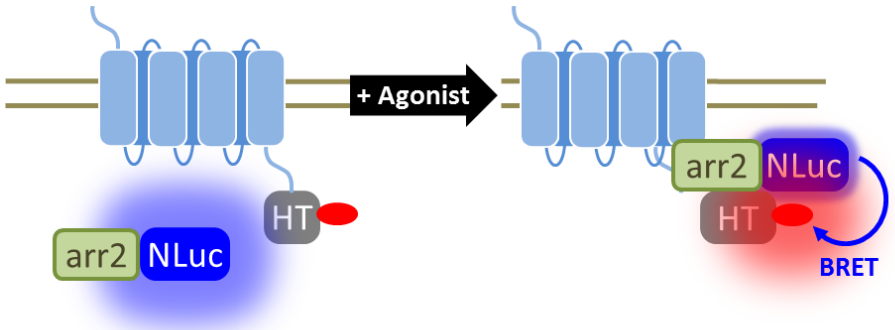
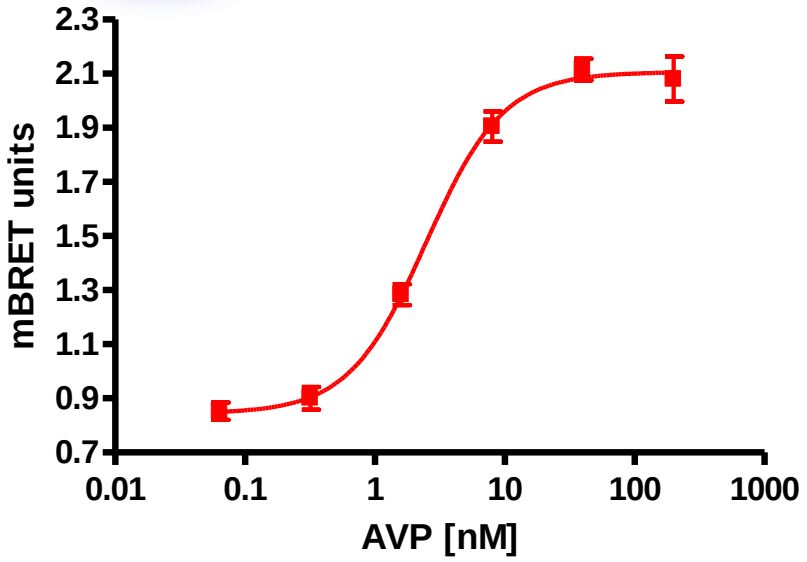
NanoBRET™ Application

AVPR2 / β-arr2 Model





Donor:
b-arrestin-NanoLuc

Acceptor:
Arginin-Vasopressin receptor-HaloTag fusion

AVP = Arginin Vasopressin (Agonist)

In HeLa cells

NanoBRET™

Express Donor and Acceptor protein fusions

Label Cells with HaloTag (Acceptor fusion)

Induce interaction

GloMax® Discover Detection System

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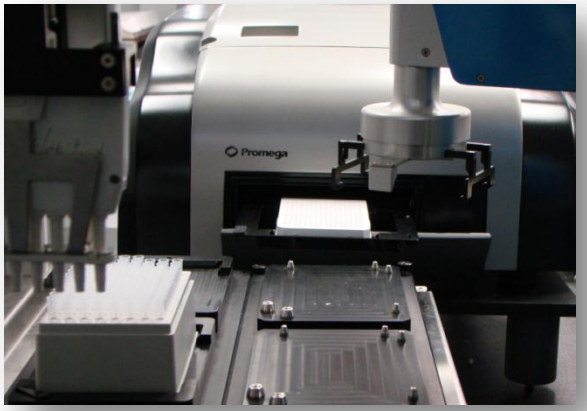
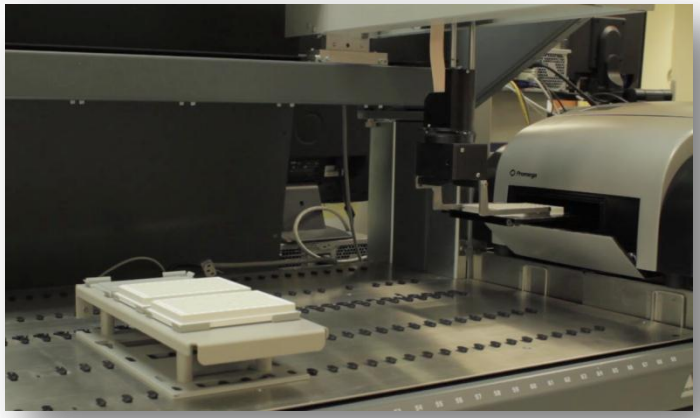
Automation Integration

Demonstrated Integration with:

- **Tecan** Freedom EVO® liquid handler
- **Hudson Robotics** Solo™ liquid handler and PlateCraneEX™ robotic arm
- Additional platforms planned



3rd party software control of Discover



Integrator's Kit (PDF command-line instructions)

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GloMax® Discover

Integrated	Seamless workflow with Promega Cell and Reporter assays.
Performance	Broader dynamic range, better sensitivity, and lower well-to-well cross-talk for more usable data from your experiment.
Easy-to-use	Simple Tablet PC touchscreen navigation with full PC capabilities and a state-of-the-art Graphical User Interface makes the workflow simple, smooth, yet flexibly.
Connected to your Workflow	Stand-alone instrument or integrate with automation. Export data to your laboratory network, LIMS, or Cloud. Enable 21CFR Part 11 electronic signature compliance.

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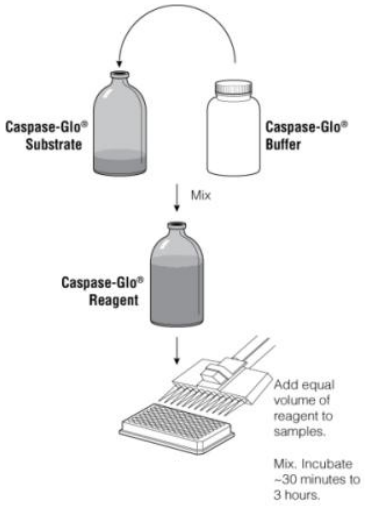
Promega Supports Your Entire Workflow for Reporter and Cell-Based Assays

Investigate → Quantitate → Analyze

Add – Mix – Read :
Cell Viability, Apoptosis,
Gene Reporter assays,
Drug Discovery assays



GloMax® Discover

Request a free demo at www.promega.com/discover

One Call Supports it All

Scientists to help you:

- Interpret results
- Troubleshoot issues
- Design experiments

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Hands-On: Find the dirtiest place

Promega's BacTiter-Glo™ Microbial Cell Viability Assay (reagent) and GloMax® Discover (Instrument)

1) Swab with a cotton swab a surface that you think is dirty
2) Add 400ul water (sterile) in Eppendorf Tube (2ml)
3) Put cotton swab into the Ependorftube that contains 400ul water
4) Remove the cotton swab
5) Take 100ul of the water and put into a well of a white 96-well plate
6) Add 100ul BacTiter-Glo™
7) Incubate 5 mins
8) Measure with Glomax® Discover

Request a free demo at www.promega.com/discover

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Using GloMax® Discover

1) Open door

2) Add plate (note: A1)

3) Select protocol

4) Select wells

5) Start read

6) Export results

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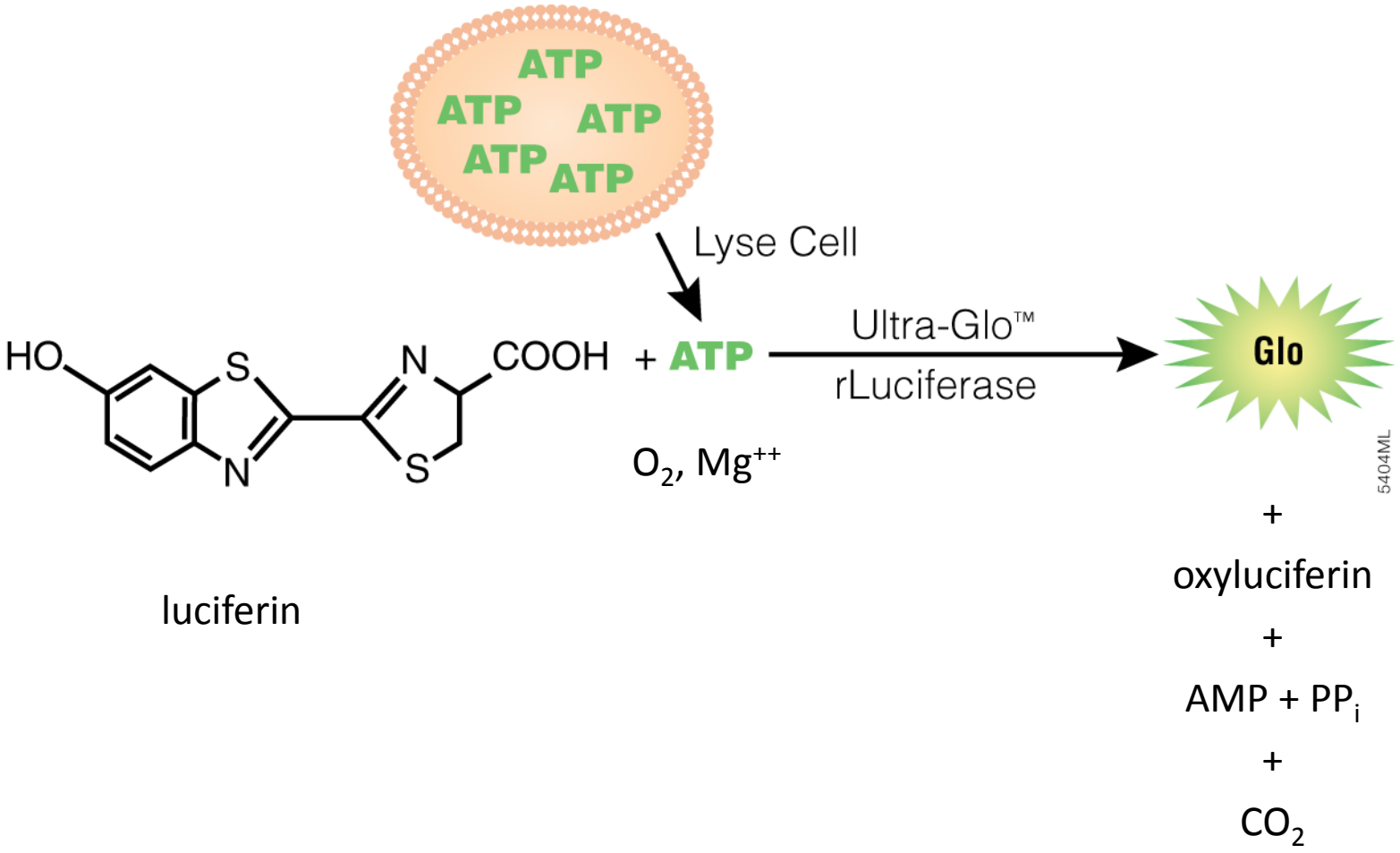
Bactiter-Glo™ Experiment



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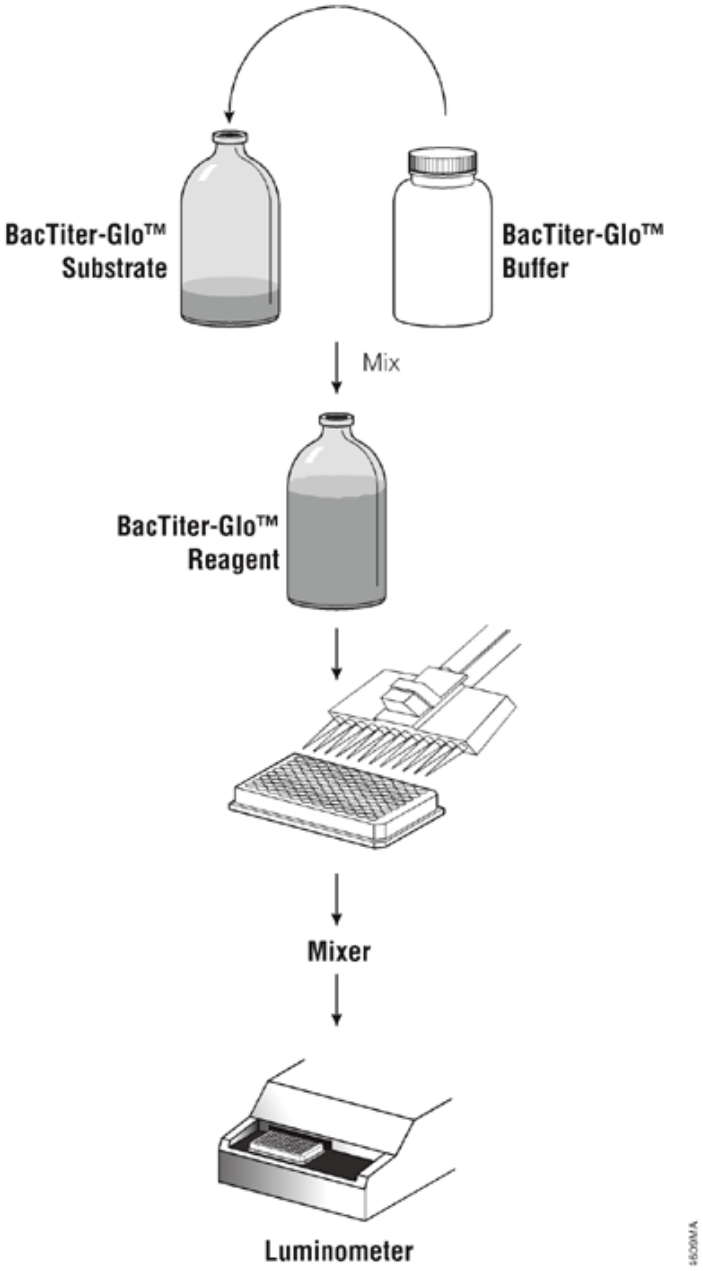
Find the dirtiest spot.....

- Use a cotton swab to sample

  Hands, pen, toilet, money, cell phone

- Return the cotton swab with the form
- Specify your sample on the form
- Incubate the cotton swab in water
- Transfer sup to white 96-wells plate
- Add 1:1 Bactiter-Glo™ reagent
- Incubate 5 min
- Read luminescence in the Discover
- Win an orange labcoat



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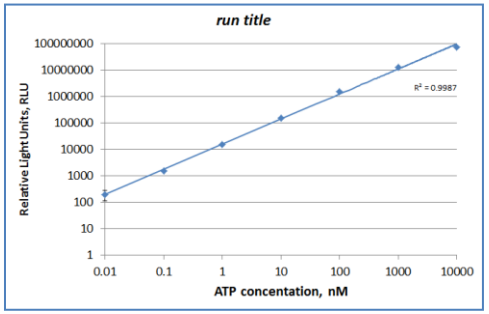
Hands-On: Smart Protocols

1. Select Smart Protocol from menu

2. Discover loads the Kit protocol & guides FAS / customer through assay setup

3. Discover reads the plate & automatically analyzes data



1) GloMax® Luminescence Functional Test Kit: 7 point serial dilution of ATP and Promega's CellTiter®-Glo assay.
2) GloMax® Fluorescence Functional Test Kit: 7 point serial dilution of DNA and the QuantiFluor™ dsDNA System.
3) GloMax® Absorbance Functional Test Kit: 7 point BSA protein dilution and Pierce 660nm Protein assay

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