The Biodesy® 1536-well Plate

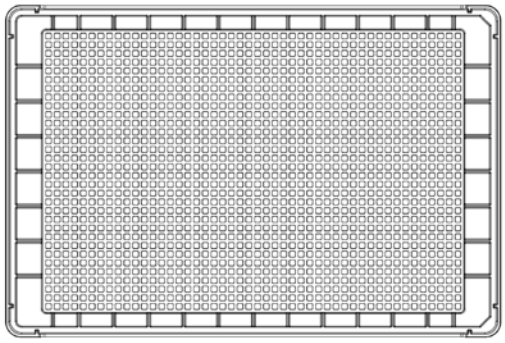
High-quality structural data with increased throughput and low sample consumption

Overview

The Biodesy Delta™ measures conformational changes in real time, enabling insight into the functional outcome of analyte binding. The Delta System reveals conformational signatures that can distinguish activators from inhibitors and allosteric from orthosteric interactions.

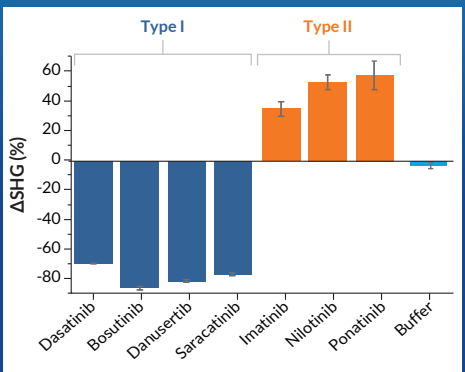
Biodesy's new 1536-well plate delivers the highest degree of sample efficiency on the Delta System, through significantly increased throughput (>100,000 drug candidates/week) and lower sample consumption.

These enhanced capabilities allow researchers to discover functionally qualified hits earlier in the screening pipeline. With the addition of our new 1536-well plate, customers can now choose the plate format (384-well or 1536-well) that best suits their screening needs.

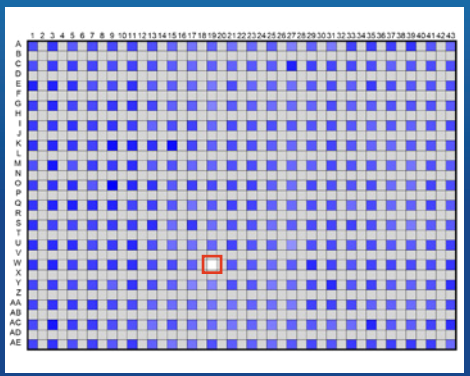


Highlights

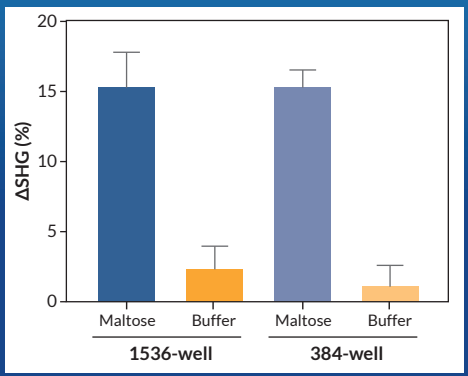
Identify and differentiate hits by functional outcome



Consistent readings observed throughout the 1536-well plate



Protein binding interaction results in conformational change



Technical Specifications

Biodesy's 1536-well plate:

- ANSI standard compatible for robotic integration
- 7 min read time for 1536 wells
- Glass bottom

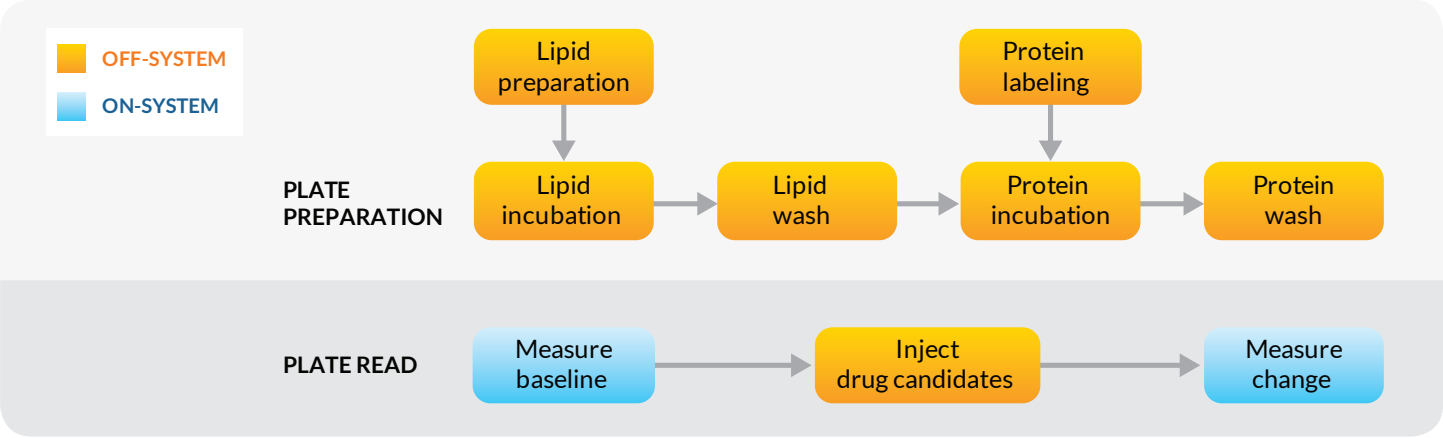
1536-well Plate

Protein per well	1–5 pmoles/well
Assay volume	4 µL protein/lipid + 4 µL ligand
Sample rate	3413 wells/hour
Samples per day (8 hr)	27,304 wells
Samples per week (5 days)	136,520 wells

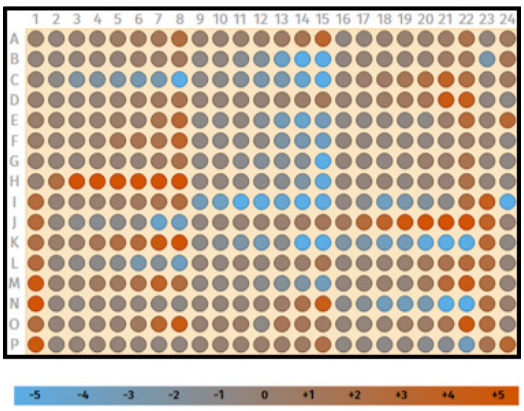
Assay Workflow

The 1536-well format substantially increases throughput while minimizing sample requirements. Prior to making measurements on the Delta, several plate preparation steps occur off-system. Once completed, an initial baseline measurement is taken, followed by analyte addition off-system prior to a final measurement of induced signal change.

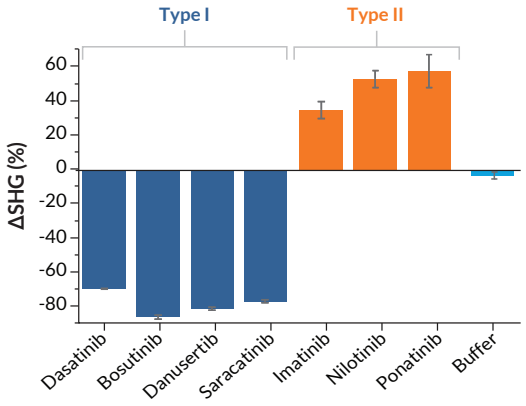
Assay workflow includes steps on and off the Delta System



1536-well plates enable high-throughput screening of candidate molecules

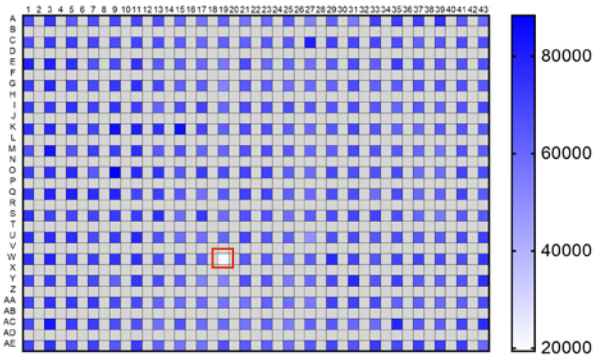


Delta software's intuitive interface enables real-time analysis of results.



Identify and differentiate hits by functional outcome. The SHG signal change discriminates the type of kinase inhibitor.

1536-well Plate Validation Using a Model Protein Interaction

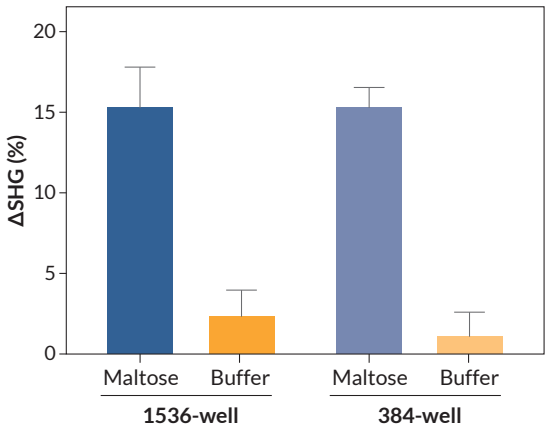


Baseline readings for a model protein interaction using the 1536-well plate.

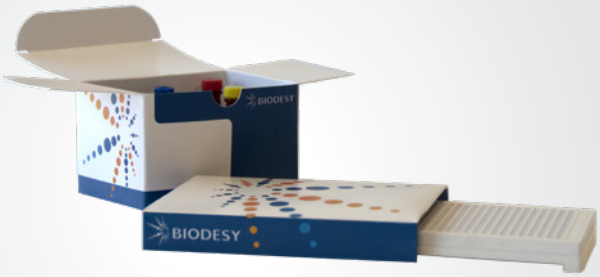
Plate validation: 2.5 pmoles of maltose-binding protein (MBP) in a total volume of 4 µL was added to every other well of the 1536-well plate with the lipid-Ni-NTA surface.

Baseline readings across every other well of the 1536-well plate are highly consistent, with a coefficient of variation ≤ 10%. Wells that fall below a threshold value can be easily flagged (boxed in red).

Assay validation: To induce a conformational change, 4 µL of maltose was added to wells containing MBP to achieve a final concentration of 1 mM in a total final volume of 8 µL. The signal change was measured and the percent ΔSHG was calculated. Buffer alone was added to the wells as a negative control. The average ΔSHG% observed upon adding maltose in the 1536-well plate with 2.5 pmoles of MBP is consistent with that previously observed in our 384-well plate with 10 pmoles of MBP. Data represented as mean ± standard deviation.



Average conformational change for model protein binding interaction.



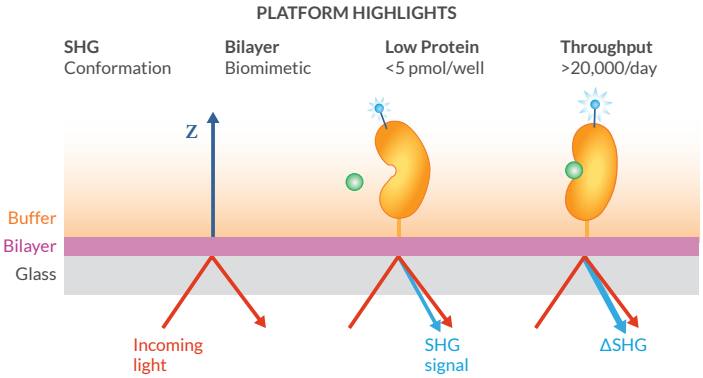
1536-well Kit Contents

The 1536-well plate is provided in an assay kit along with the SHG dye and bilayer. Each kit includes:

- 1536 well optical prism microplate
- SHG dye for easy protein labeling (amine or thiol)
- Selection of lipid bilayer surface for Native, His-Tag or AviTag™ protein tethering

Uniquely Delta

The Biodesy Delta employs orientation-sensitive second harmonic generation (SHG) technology to measure ligand-induced conformational change at high throughout and with low protein consumption. Targets are tethered to a lipid bilayer surface at the bottom of 1536-well plates, enabling your protein to sample its conformational landscape.

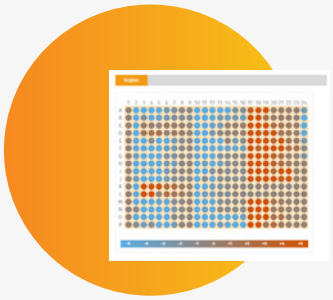


Publications Highlight the Value of the Delta

- **Utilized to detect ligand-induced conformational changes in three different proteins**; Moree et al *Biophys J* (2015)
- **Enabled new mechanistic insights into monomeric ephrinB2-induced changes in Nipah virus G**; Wong et al *Nat Commun* (2017)
- **Measured slow binding kinetics over a thirty minute timeframe**; Spagnuolo et al. *JACS* (2017)
- **Value of SHG highlighted in review on biophysical techniques for HTS drug discovery**; Genick & Wright *Expert Opin. Drug Discov* (2017)

Biodesy Delta System

Conformation Changes Everything



Structural Insight in Seconds

- Designed for your screening, follow-up and SAR workflow
- Cluster drug candidates based on potency, mechanism and function
- All-in-one assay kits include plates, lipid bilayer surface, SHG-active dye, and tips
- Intuitive software and integrated robotics for simple experimental setup and walk-away operation

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Rev C