

Agilent BioTek Synergy H1 Microplate Reader

Designed for flexibility and performance



Agilent BioTek Synergy H1 Microplate Reader



The Agilent BioTek Synergy H1 is a configurable multimode microplate reader, with monochromator-based optics for flexibility, filter-based optics for sensitivity, or both. The patented Agilent BioTek Hybrid Technology offers applications versatility and excellent performance in a modular platform to expand as your laboratory's needs change.

Ready for any assay

The modular design of the Synergy H1 allows you to start with what you need now, and add detection modes, gas control, and dual reagent injectors as your laboratory's workflows evolve.



The Agilent BioTek Synergy H1 shown with CO₂/O₂ gas controller and dual reagent injector.



Absorbance



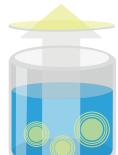
Fluorescence intensity



Glow luminescence



Flash luminescence



Filtered luminescence



Fluorescence polarization



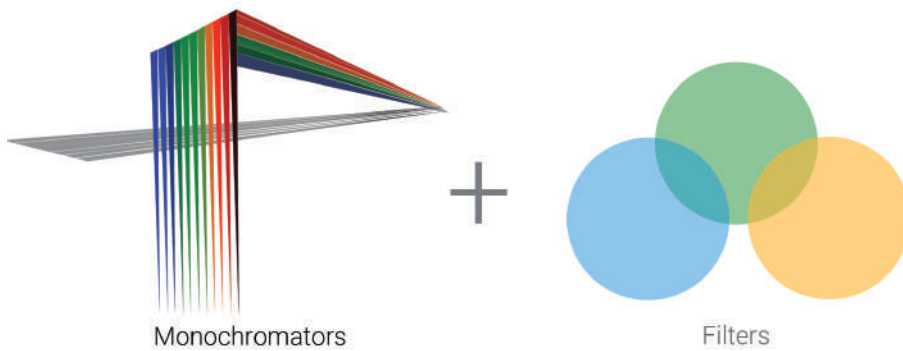
Time-resolved fluorescence



TR-FRET

"BioTek's Synergy H1 is an easy to use instrument that allows flexibility of assays and analysis. The customer support team and local rep have always been highly responsive to our lab's needs."

– **Kate Mueller,**
University of MN

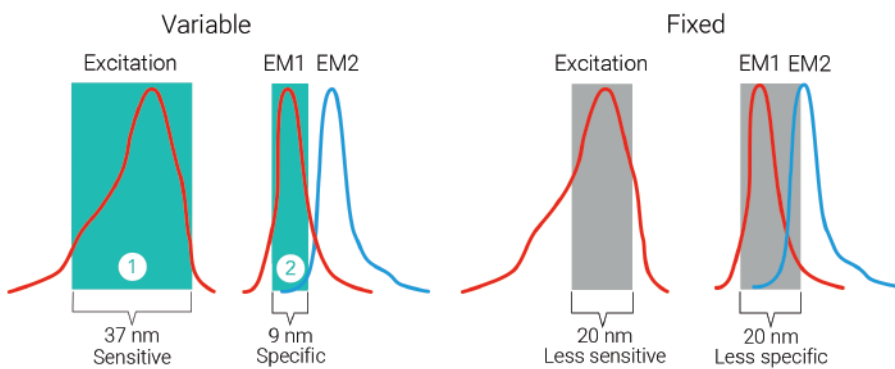


Hybrid plate reader: Flexibility and performance

With its patented combination of monochromator and filter optics, Synergy H1 is an advanced plate reader that delivers both the flexibility and performance you need for a wide range of microplate assays in your lab.

Monochromators: variable bandwidth, absorbance, fluorescence, luminescence

Filters: fluorescence polarization, time-resolved fluorescence, Alpha, filtered luminescence



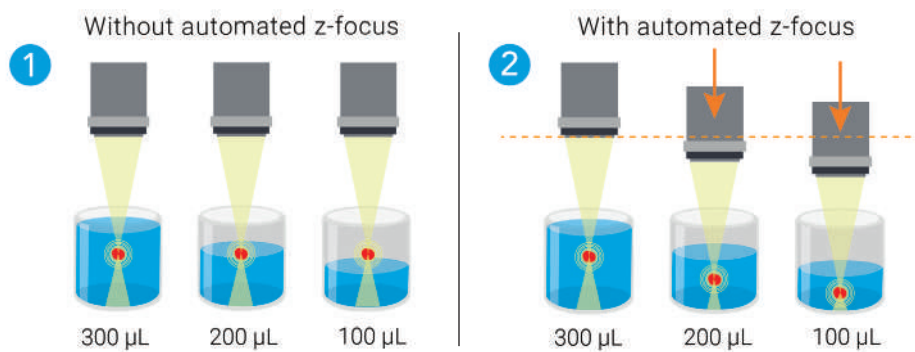
Variable bandwidth for sensitivity and specificity

Synergy H1 offers quad monochromator optics with variable bandwidth. The excitation and emission bandwidths can be set between 9 nm and 50 nm, in 1 nm increments. Wide bandwidths **(1)** provide increased sensitivity and lower limits of detection. Narrow bandwidths **(2)** provide increased specificity when multiple signals are present, reducing crosstalk and enhancing assay performance.

"It is very effective equipment for all the assays using absorbance quantification methods. High sensitivity and reproducibility to detect samples. This equipment is very easy to use and came with a reasonable pricing and a good after-sales care."

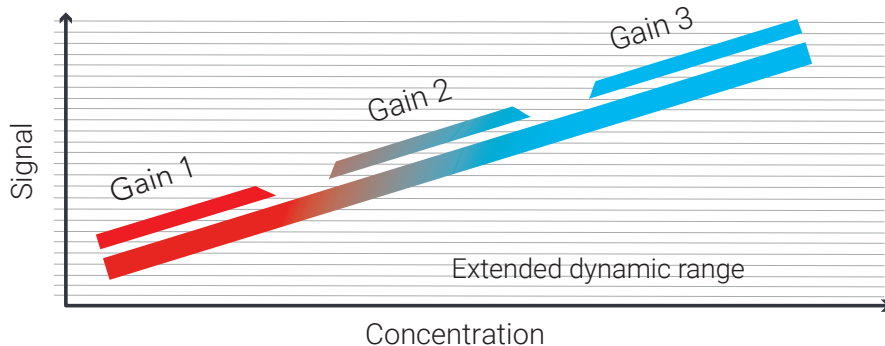
– Lufen Chang

City of Hope National Medical Center and Beckman Research Institute Department of Cancer Genetics and Epigenetics



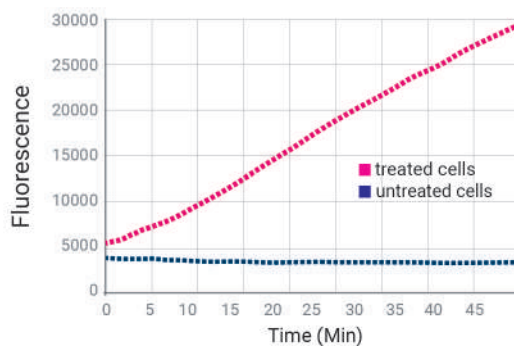
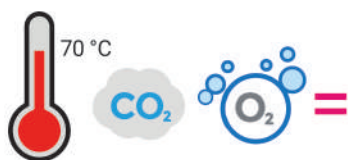
Automated z-focus: best performance with all plate types

(1) Without automated z-focus available, performance at low volumes is affected. **(2)** With automated z-focus, reading height is precisely adjusted for best performance in all plate types and all volumes.



Extended dynamic range

Synergy H1 offers an extended dynamic range, which allows detection of signals across a 7 log measurement range. Other systems can measure only small portions of the dynamic range of Synergy H1 using preset gains – this can cause reduced sensitivity on the low end or saturated signals on the high end of the assay signal range.



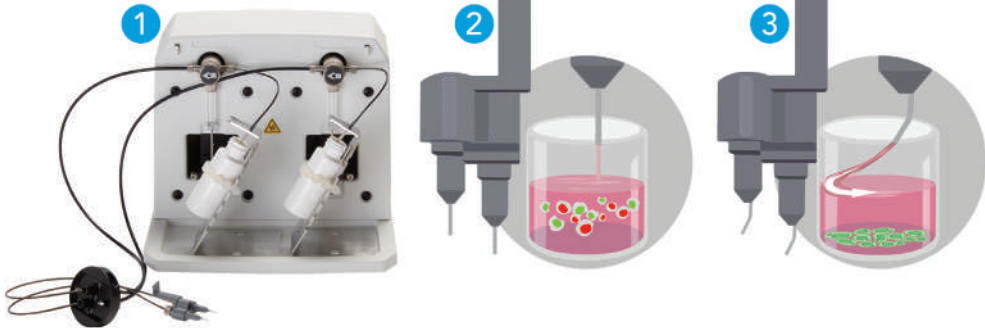
Environmental controls for cell-based assays

Temperature control to 70 °C, CO₂ / O₂ control, and shaking create the ideal environment for live cell assay workflows. A consistent environment leads to consistent data for long-term kinetic assays.



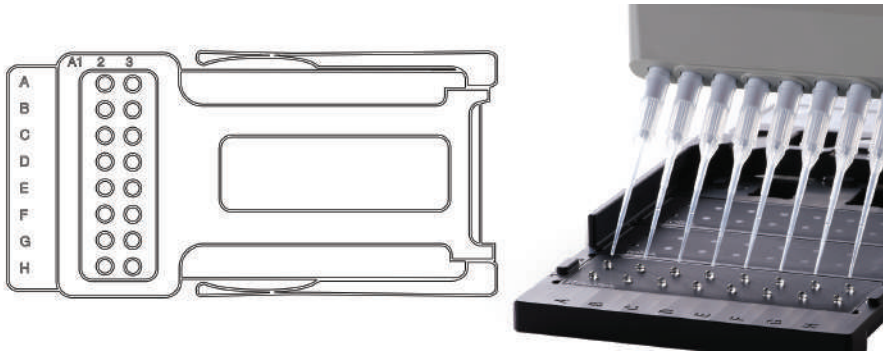
Agilent BioTek Synergy H1

Synergy H1 now offers continuously variable bandwidth monochromators for fluorescence excitation and emission wavelength selection; the fluorescence bandwidth can be set between 9 nm and 50 nm, in 1 nm increments, allowing users to fully optimize reader settings to drive the best assay performance compared to fixed bandwidth systems.



Dual syringe injectors with specialized tips

(1) The robust precise dual syringe design eliminates the need for regular tubing replacement required by some peristaltic pump injector designs. Synergy H1 offers two tip types: **(2)** the straight tips enable vigorous mixing for rapid inject/read assays, and **(3)** the angled tip option won't disturb cell layers for applications such as calcium kinetics.

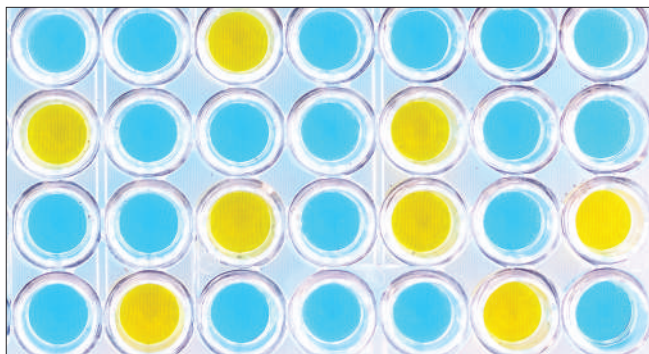


Microvolume analysis the Agilent BioTek Take3 microvolume plate

Enable microvolume analysis with the Synergy H1, using the Take 3 microvolume plate. Measure up to 16 or 48 samples in one run and save a lot of time, compared to single-sample devices. Agilent BioTek Gen5 microplate reader and imager software has customizable protocols for ssDNA, dsDNA, RNA, and protein quantification in 2 μ L.

Applications

ELISA



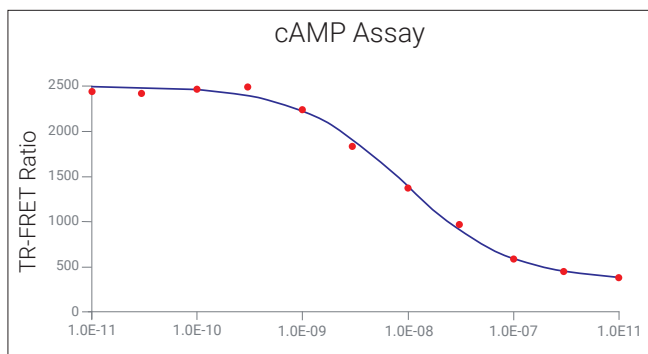
ELISA methods with colorimetric, fluorescent, and luminescent substrates are easily detected with Synergy H1.

Nucleic acid and protein quantification



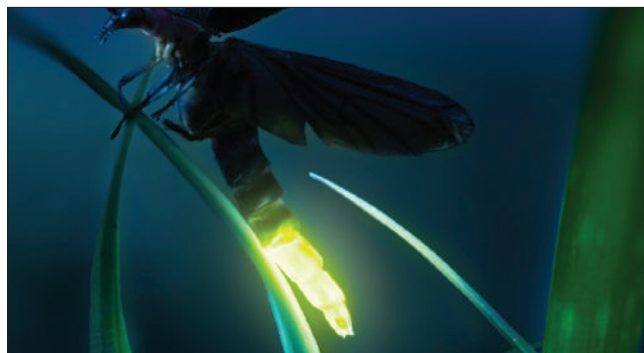
Nucleic acid and protein quantification assays can be executed by spectrophotometric or fluorescent determination with Synergy H1, in microplates or in microvolumes with the Take3 microvolume plate.

TR-FRET



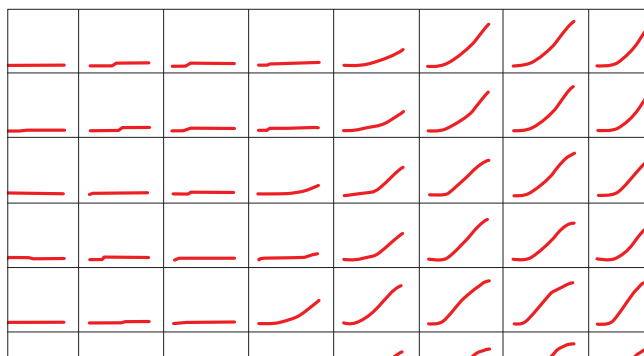
TR-FRET and HTRF are sensitive robust methods. Synergy H1 and Gen5 provide excellent sensitivity for optimal Z' factors.

Luciferase reporter assays



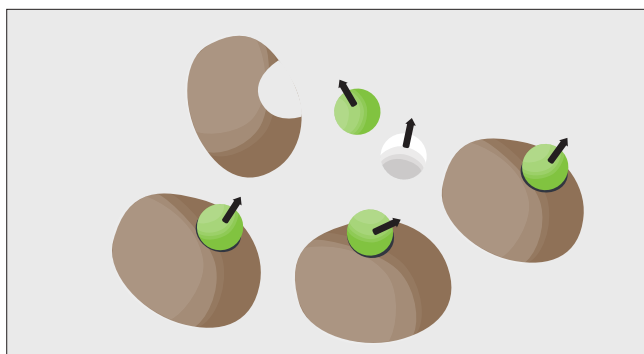
Luciferase-based reporter assays measure luminescent signal, allowing the quantification of the activity of factors affecting the signaling pathways under investigation.

Microbial growth assays



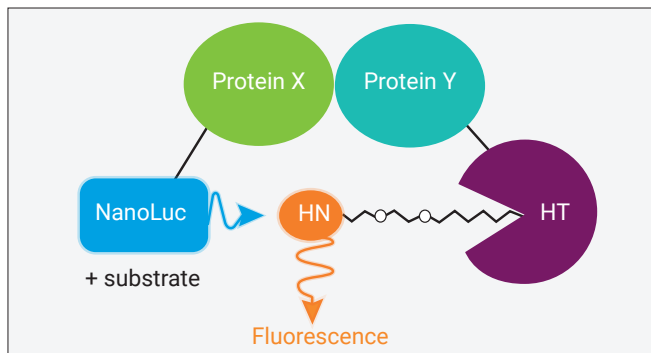
Microbial growth assays including yeast and bacteria can be measured by several methods, including turbidimetric measurements with Synergy H1.

Fluorescence polarization (FP)



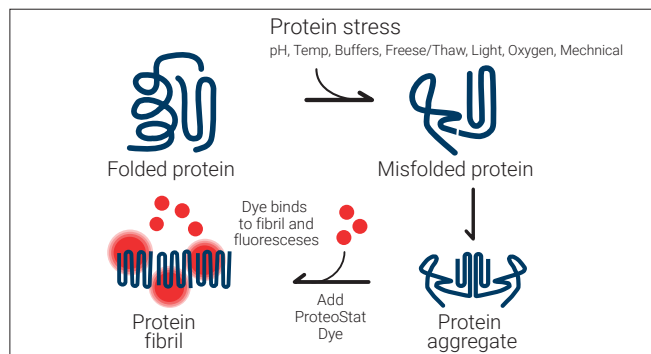
FP is widely used in research labs to study molecular binding or dissociation events and in screening labs to screen for drug candidates.

Bioluminescence resonance energy transfer (BRET)



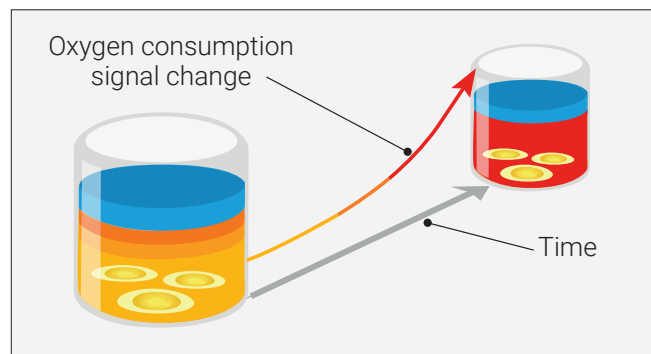
Bioluminescence resonance energy transfer (BRET) proximity assays enable detailed investigations of protein:protein interactions. BRET is easily detected with Synergy H1.

Protein aggregation



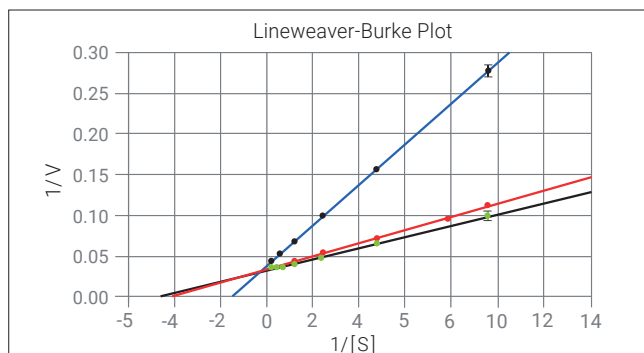
Synergy H1 has a robust shaking mechanism needed to quantify protein aggregation and amyloid formation via kinetic fluorescent measurements of Thioflavin T.

Metabolic activity



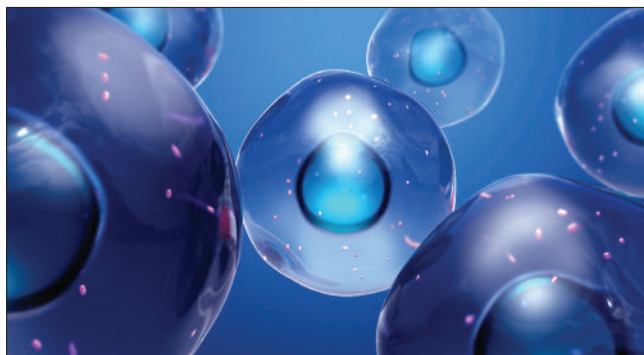
Use Agilent MitoXpress and pH-Xtra kits to measure real-time metabolic markers such as Oxygen Consumption Rates (OCR) and Extracellular Acidification Rates (ECAR).

Enzyme kinetics



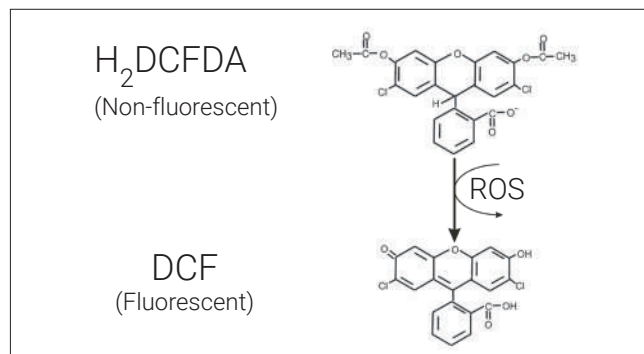
Measurement of enzyme reaction rates can easily be measured with Synergy H1. Agilent BioTek Gen5 microplate reader and imager software has built-in protocols for kinetic reactions, including Michaelis-Menten kinetics.

Cell-based assays



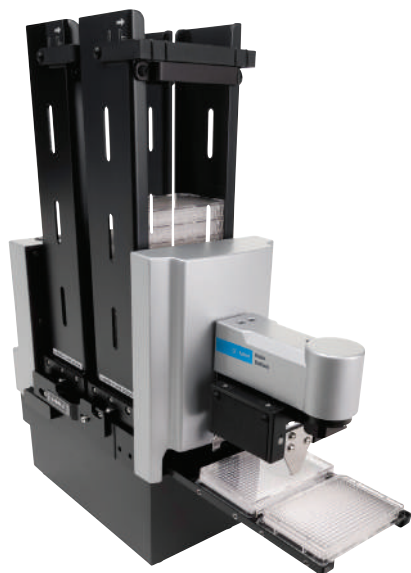
Cell-based assays assess critical characteristics such as viability, toxicity, proliferation, and cell death.

Reactive Oxygen Species (ROS)



The formation of Reactive Oxygen Species (ROS) can be measured with the use of fluorescent probes in the Synergy H1.

Peripherals



Agilent BioTek BioStack microplate stacker

The BioStack microplate stacker manages up to 50 microplates for automated multimode operations, including de-lidding and re-lidding of microplates used with cell-based assays.



CO₂/O₂ controller

The compact gas controller maintains control of CO₂ and O₂ levels in the Synergy H1 to support live cell assays.

Dual reagent injector

The dual reagent injector module enables fast inject/read processes. Angled injector tips protect cell monolayers from shear stress during injection.



Agilent BioTek BioSpa 8 automated incubator

The BioSpa 8 automated incubator's environmental controls and labware handling capabilities, integrated with Synergy H1, facilitate assays from ELISA to long-term live cell kinetic processes for up to eight microplates.



Take3 microvolume plate

Measure multiple 2 μ L samples at a time with the Take3 microvolume plate, used with Synergy H1. Microvolume nucleic acid and protein quantification made fast and easy, for up to 16 or 48 samples at a time.



Technical Details



General	
Detection modes	UV-Vis absorbance Fluorescence intensity Luminescence Fluorescence polarization Time-resolved fluorescence
Wavelength selection	Monochromators for fluorescence intensity, UV-Vis absorbance, luminescence. Filters for fluorescence intensity, time-resolved fluorescence, fluorescence polarization and filtered luminescence
Monochromator bandwidth	Fixed: 16 nm Variable: from 9 to 50 nm, in 1 nm increments ("M2" configurations)
Read methods	Endpoint, kinetic, spectral scanning, well-area scanning
Microplate types	6- to 384-well plates
Other labware supported	Take3 microvolume plates
Environmental controls	4-Zone incubation to 70 °C ("M2" configurations) or 45 °C, with Condensation Control CO ₂ / O ₂ controller available
Shaking	Linear, orbital, double orbital
Automation	BioStack and third party automation compatible BioSpa 8 automated incubator compatible
Software	Gen5 microplate reader and imager software Gen5 Secure for 21 CFR Part 11 compliance (option)
Modularity and configurability	Synergy H1 has many available configurations. Detection modules and peripherals can be added as laboratory needs change.

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