Agilent BioTek Synergy H1 Microplate Reader

Designed for flexibility and performance

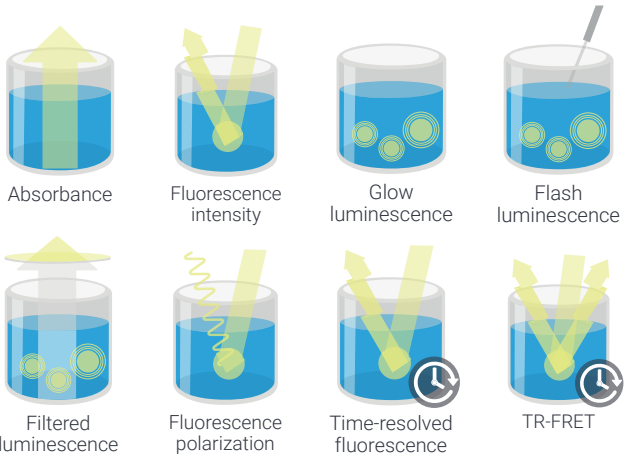
Agilent BioTek Synergy H1 Microplate Reader

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 proprietary Agilent BioTek Hybrid Technology offers applications versatility and excellent performance in a modular platform to expand as your laboratory's needs change.

The Agilent BioTek Synergy H1 shown with CO_2/O_2 gas controller and dual-reagent injector.

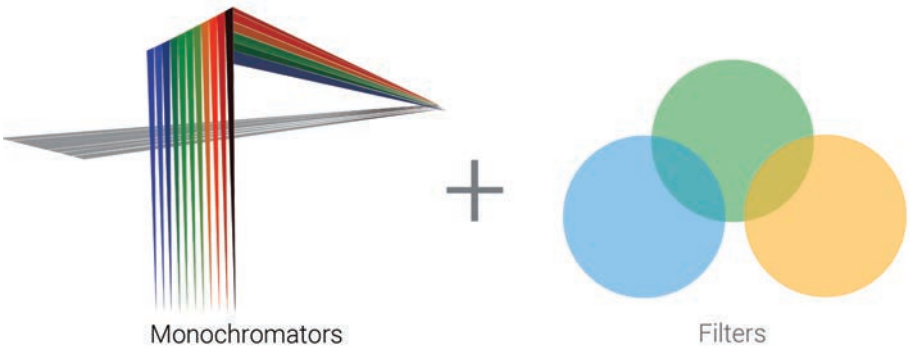
Ready for any assay

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.



" Agilent 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."

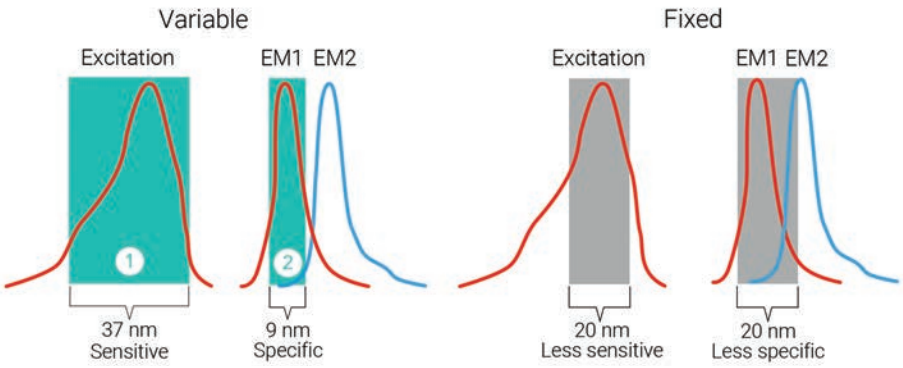
– **Kate Mueller,**
University of MN



Hybrid plate reader—flexibility and performance

With its proprietary 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, and luminescence.
Filters: Fluorescence polarization, time-resolved fluorescence, Alpha, and filtered luminescence.

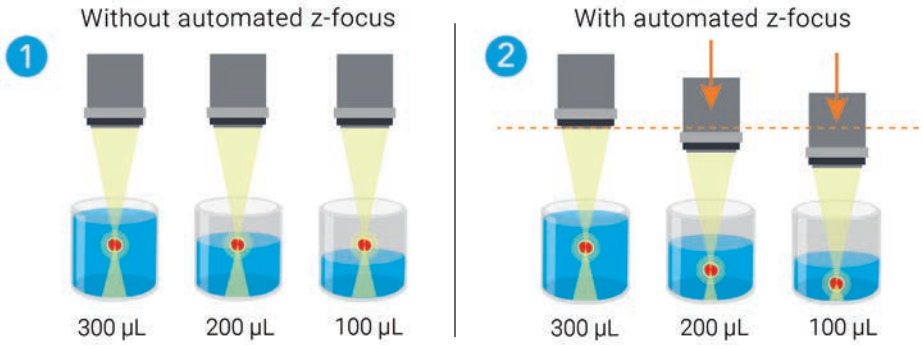


Variable bandwidth for sensitivity and specificity

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

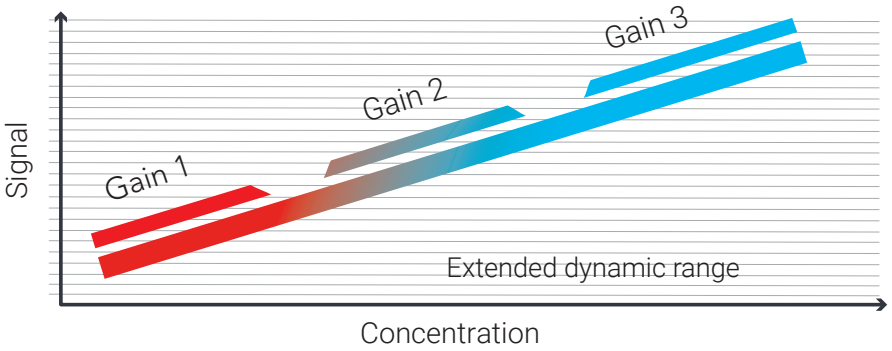
"It is very effective equipment for all the assays using absorbance quantification methods. High sensitivity and reproducibility to detect samples. This equipment is very easy to use and came with a reasonable pricing and a good after-sales care."

– **Lufen Chang**
City of Hope National Medical Center and Beckman Research Institute Department of Cancer Genetics and Epigenetics



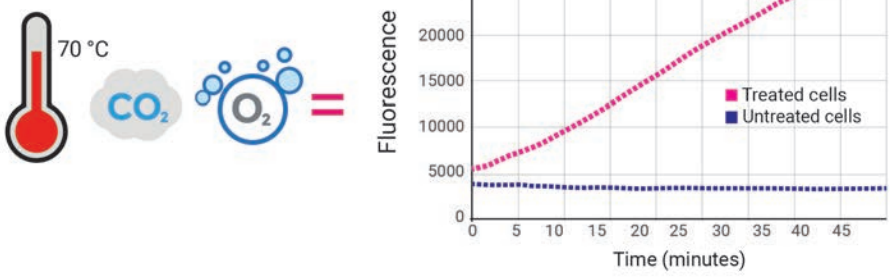
Automated Z-focus—best performance with all plate types

Without automated Z-focus available **(1)**, performance at low volumes is affected. With automated Z-focus **(2)**, 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.

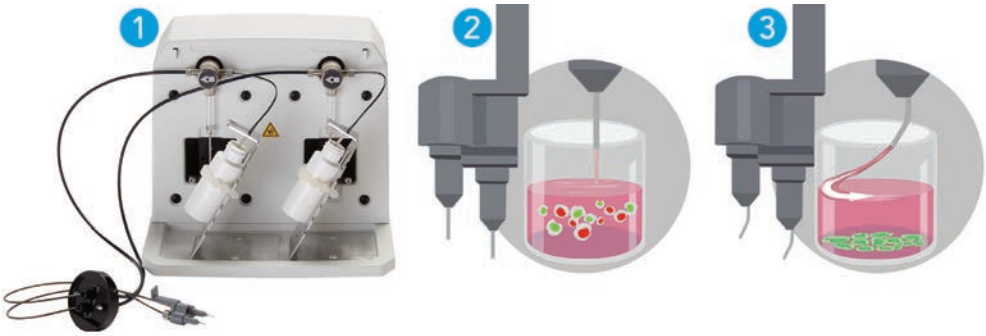


Environmental controls for cell-based assays

Temperature control to 70 °C, CO_2 /O_2 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 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

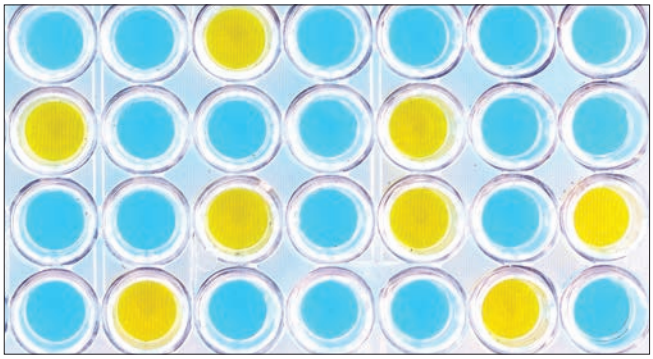
The robust precise dual-syringe design **(1)** eliminates the need for regular tubing replacement required by some peristaltic pump injector designs. Synergy H1 offers two tip types: the straight tips **(2)** enable vigorous mixing for rapid inject/read assays, and the angled tip option **(3)** won't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

Microvolume analysis with the Take3 microvolume plate

Enable microvolume analysis with the Synergy H1, using theTake 3 microvolume plate. Measure up to 16 or 48 samples in one run and save a lot of time, compared to single-sample devices. The available Agilent BioTek Take3 app is preprogrammed for ssDNA, dsDNA, RNA, and protein quantification in 2 µL samples.

Applications

ELISA



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

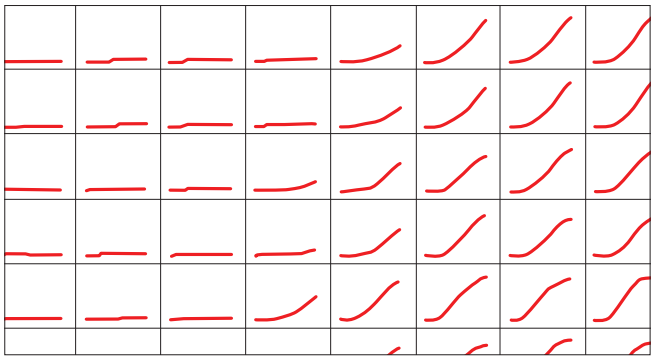
Luciferase reporter assays

Luciferase-based reporter assays measure luminescent signal. This enables users to quantify the activity of factors that affect particular signaling pathways.

Nucleic acid and protein quantification

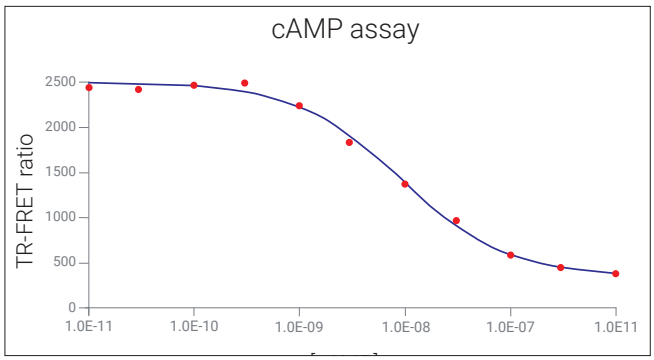
Nucleic acid and protein quantification assays can be executed by spectrophotometric or fluorescent determination with Synergy H1, in microplates or in microvolumes with the Take3 microvolume plate.

Microbial growth assays



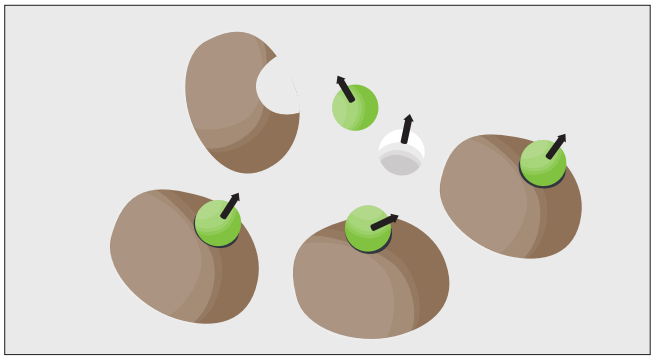
Microbial growth assays including yeast and bacteria, for example, can be measured by several methods, including turbidimetric measurements with Synergy H1.

Time-resolved fluorescence energy transfer



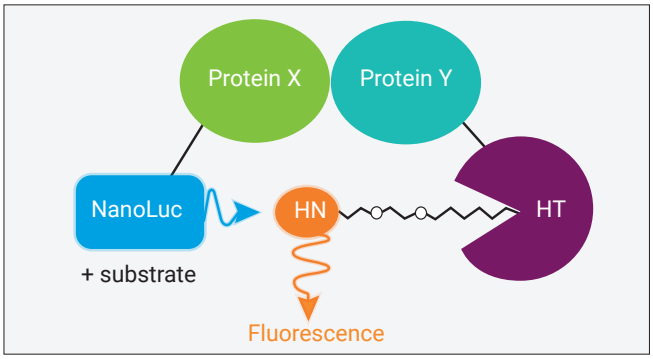
Time-resolved fluorescence energy transfer (TR-FRET) and homogeneous time-resolved fluorescence (HTRF) are sensitive, robust methods. Synergy H1 and Gen6 provide excellent sensitivity for optimal Z-factors.

Fluorescence polarization



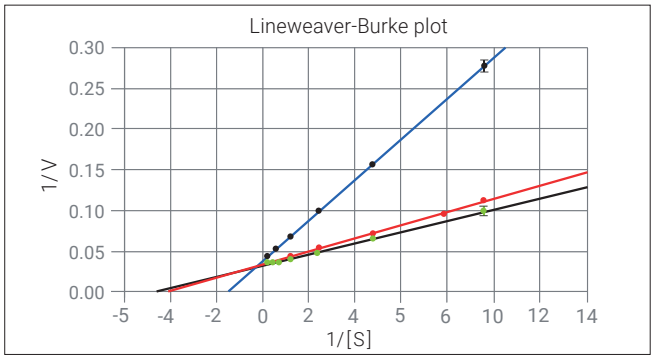
Fluorescence polarization is widely used in research labs to study molecular binding or dissociation events, and in screening labs to screen for drug candidates.

Bioluminescence resonance energy transfer



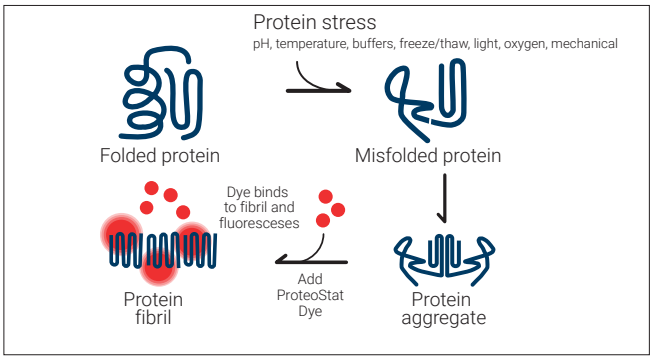
Bioluminescence resonance energy transfer (BRET) proximity assays enable detailed investigations of protein—protein interactions. BRET is easily detected with Synergy H1.

Enzyme kinetics



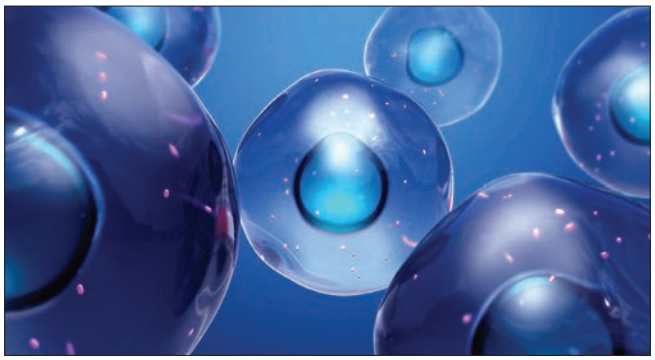
Enzyme reaction rates can easily be measured with Synergy H1. Gen6 data analysis software has built-in protocols for kinetic reactions.

Protein aggregation



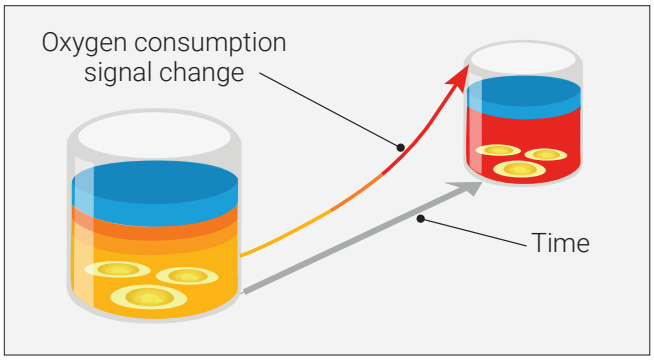
Synergy H1 has a robust shaking mechanism needed to quantify protein aggregation and amyloid formation via kinetic fluorescent measurements of thioflavin T.

Cell-based assays



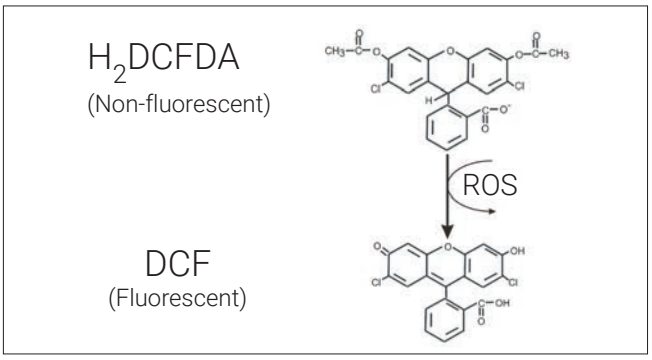
Cell-based assays assess critical characteristics such as viability, toxicity, proliferation, and cell death.

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).

Reactive Oxygen Species



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

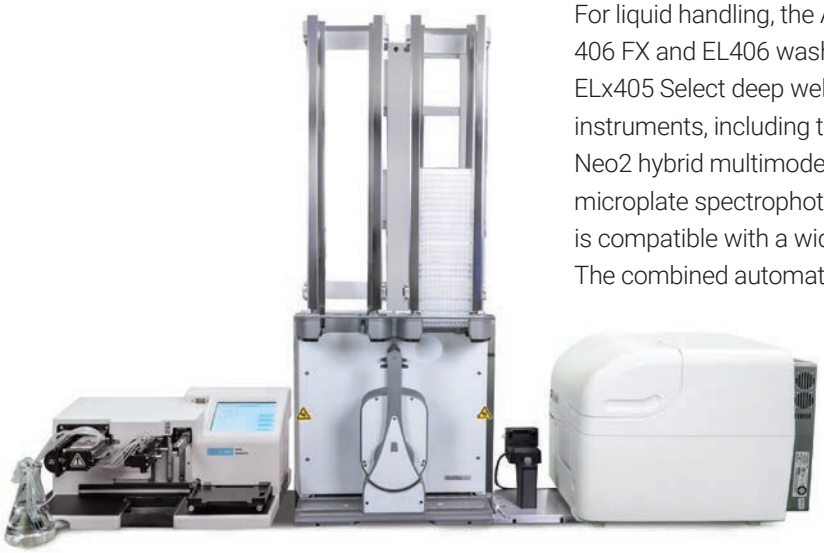
Peripherals

BioStack microplate stacker

The Agilent BioTek BioStack microplate stacker manages up to 50 microplates for automated imaging or multimode operations, including de and relidding of microplates used with cell-based assays.

BenchCel microplate handler

The Agilent BenchCel microplate handler is a compact, automated system that can be integrated with a variety of Agilent BioTek instrumentation. For liquid handling, the Agilent BioTek MultiFlo FX multimode dispenser, 406 FX and EL406 washer dispensers, 405 TS and 405 LS washers, and ELx405 Select deep well washers can be combined. Agilent BioTek detection instruments, including the Cytation 5 cell imaging multimode reader, Synergy Neo2 hybrid multimode reader, Synergy H1 multimode reader, and Epoch 2 microplate spectrophotometer can also be added. In addition, the BenchCel is compatible with a wide range of microplates, including deep-well plates. The combined automated workflows enable a wide variety of applications.



BioSpa 8 automated incubator

The Agilent BioTek BioSpa 8 environmental controls and labware handling capabilities facilitate long-term live cell kinetic imaging processes for up to eight microplates and other labware.

CO_2/O_2 controller

The compact gas controller maintains control of CO_2 and O_2 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.

Take3 microvolume plate

Measure multiple 2 µL 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.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Synergy H1

Agilent BioTek Synergy H1

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, and 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	End point, kinetic, spectral scanning, well-area scanning
MicroplateTypes	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 BenchCel microplate handler compatible
Software	Gen6 data analysis software Gen5 Secure enables 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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