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Trusted Answers

Agilent xCELLigence Real Time Cell Analyzer HT-BioTek BioSpa 8

High-throughput RTCA, expanded

www.ols-bio.com

Drive Your Research and Therapeutic Discovery with a Functional, Cell-Based, Label-Free, Real-Time Screening Platform

Integrating the Agilent xCELLigence Real Time Cell Analyzer (RTCA) HT instrument with the Agilent BioTek BioSpa 8 automated incubator expands the screening throughput of your RTCA HT instrument to eight 384-well plates. Label-free high-throughput xCELLigence Real-Time Cell Analysis is ideal when screening for viral-mediated cytopathic effects (CPE), neutralizing antibodies, antibody-dependent cytotoxicity (ADCC), and compound-mediated cytotoxicity.

Simple, compact, convenient

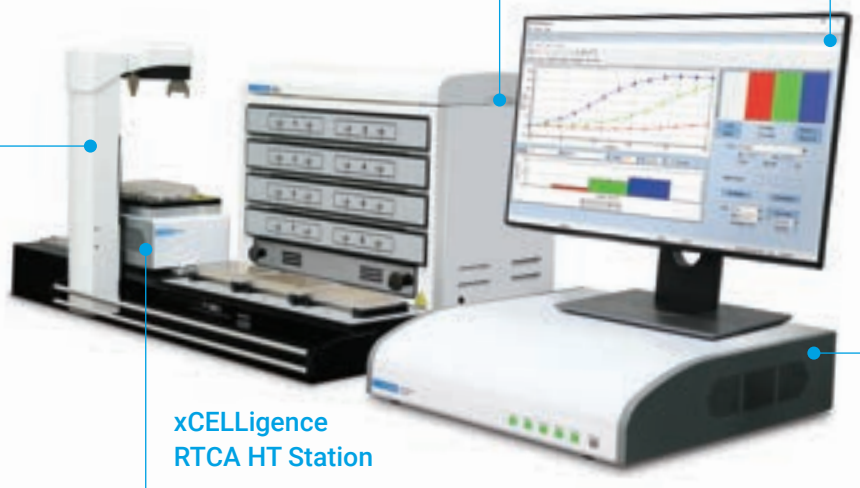
xCELLigence RTCA uses impedance biosensors to obtain noninvasive, label-free measurements to continuously monitor cell health, behavior, and function, with high accuracy, sensitivity, and reproducibility. Integration of the BioSpa 8 automated incubator with the xCELLigence RTCA HT model enables live cell analysis of up to eight 384-well E-Plates, for a total of 3,072 wells, to meet high-throughput sample screening needs.

BioTek BioSpa 8

- 8-plate automated incubator
- Small footprint automation
- Temperature, CO_2/O_2 control, humidity monitoring

xCELLigence control unit with RTCA Software Pro (HT-BioSpa)

- Simple assay setup and scheduling
- Optimized for both single and multiple users
- Streamlined real-time data acquisition and analysis



BioTek BioSpa 8

- Robotic arm

xCELLigence RTCA HT Station

- Interfaces with Biosensor E-Plate 384
- Precision temperature control
- 10-second data acquisition for an entire 384 well plate

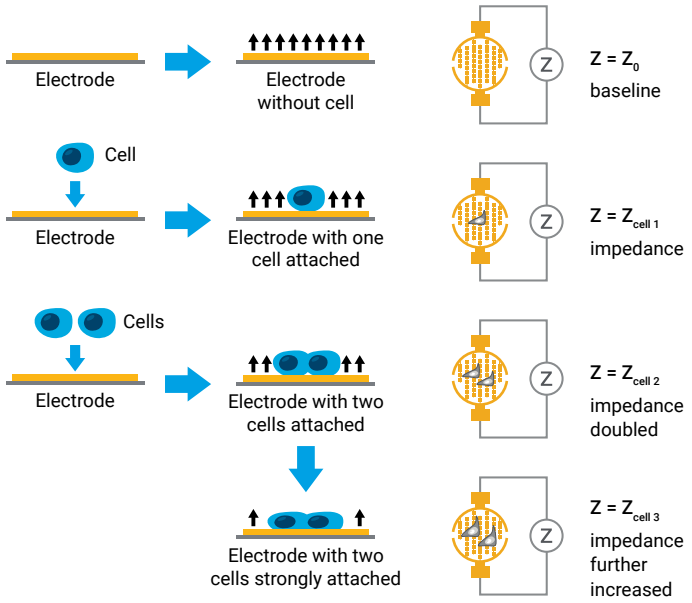
xCELLigence RTCA HT Analyzer

- Processes data in real time
- Validated performance

Impedance-based biosensor technology

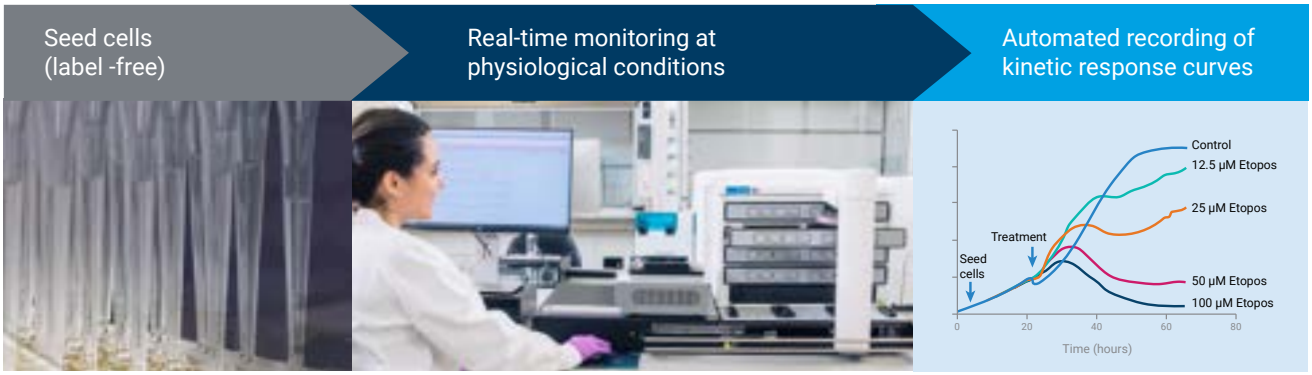
The functional unit of a cellular impedance assay is a set of gold electrodes fused to the bottom surface of a microtiter plate well. The presence of adherent cells affects the local ionic environment at the electrode-solution interface, leading to an increase in cellular impedance. The magnitude of this impedance is dependent on the number of cells, their size and shape, cell barrier function formation, and the cell-substrate attachment quality.

Thus, electrode impedance, displayed as Cell Index (CI) values, can be used to monitor cell viability, number, morphology, and adhesion in several cell-based assays. In addition, the electronic signal (22 mV) used is noninvasive to the living cells, and has no effect on cell health or behavior.



Experience the advantages of real-time cell analysis

The automated workflow allows users to simply add cells to the 384-well E-Plates and begin kinetic measurements at physiological conditions. The BioSpa 8 robotic arm transfers the E-Plates from their incubator to the xCELLigence RTCA HT station. Multiple 384-well E-Plates are automatically processed while unattended, saving you time in the lab.



Real-Time Screening Application Highlights

Cytotoxicity screening for compounds

- Identify optimal times for compound treatment and data collection
- Remove possible compound and reagent interference seen with traditional optical detection methods using labels
- Gain insight into compound mechanism of action (MOA) from kinetic cell response curves

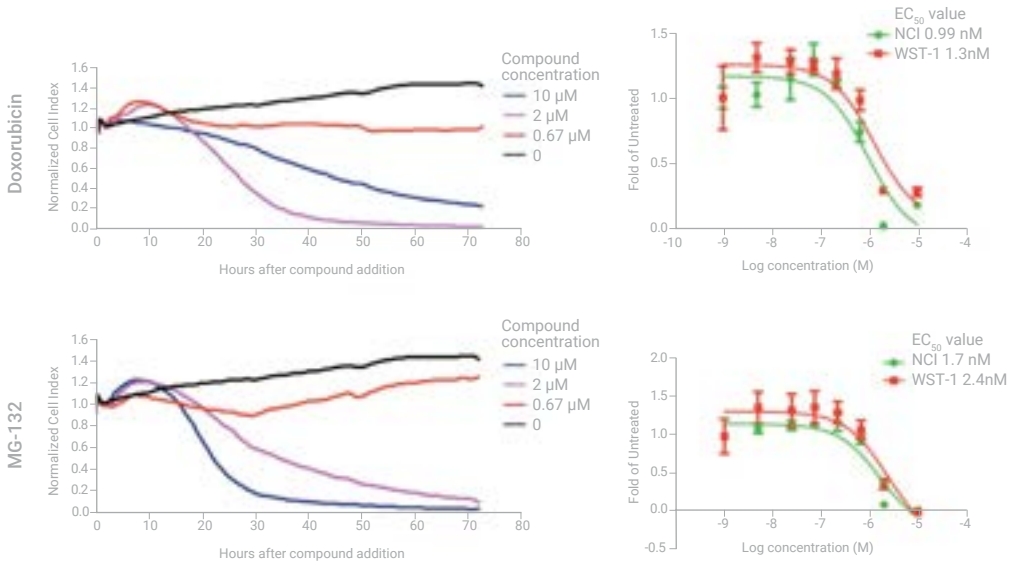


Figure 1. Profiling of cytotoxic agents on the Agilent xCELLigence RTCA HT instrument using A549 lung carcinoma cells. Compounds shown in each image were added at indicated concentrations and responses were monitored hourly by automated cycling between the RTCA HT station and the incubator. Left panels show cellular responses measured using the RTCA HT instrument. Right panels show the dose-response curves at the 72-hour time point from both the xCELLigence system and WST-1 assays. The EC50 values derived from each assay are shown.

Cell-mediated cytotoxicity and antibody-dependent cell-mediated cytotoxicity (ADCC)

- Screen and evaluate cell constructs via simple homogenous killing potency assay
- Ideal functional screening platform for antibody-dependent cell-mediated cytotoxicity (ADCC)
- Optimized for both adherent and liquid target tumor cells

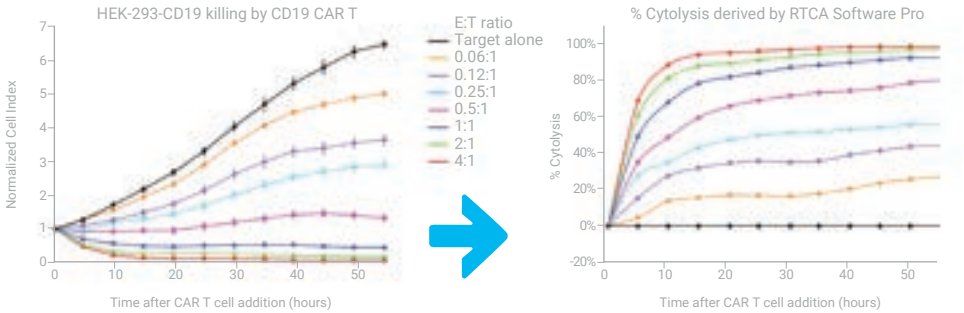


Figure 2. Time courses for HEK-293-CD19 killing by CD19 CAR T cells as measured by impedance. Normalized Cell Index depicted on the left; percent cytolysis depicted on the right. Assays were run in duplicate; error bars represent standard deviation.

Rapid detection of viral-mediated cytopathic effects (CPE) and escape mutant viruses

- Simple alternative to the plaque assay to measure viral-mediated cytopathic effects (CPE) and viral titer
- Replace cumbersome two-week process to screen antibody escape viruses (plaque assay and reculturing)
- Obtain quantitative information about CPE onset and kinetics

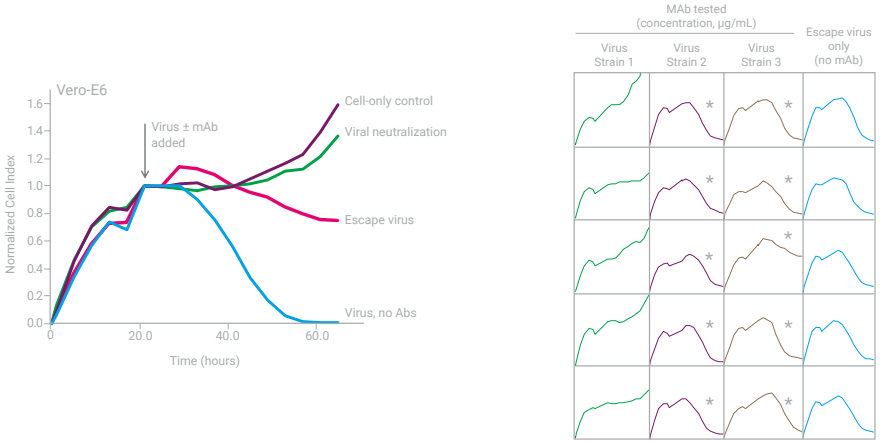


Figure 3. Real-time cell analysis assay for rapid screening of mAb neutralization activity. Representative curves for neutralizing mAbs (left panel), with escape virus curve in red. Example sensograms from individual wells of the 384-well E-Plate are portrayed on the right. Strain 1 achieved full virus neutralization, whereas strains 2 and 3 were able to escape neutralization. Internal Agilent data.

Antibody screening for virus neutralization

- Access a rapid assay for neutralizing antibodies and serum screening
- Attain quantitative information to easily assess neutralizing antibody EC50

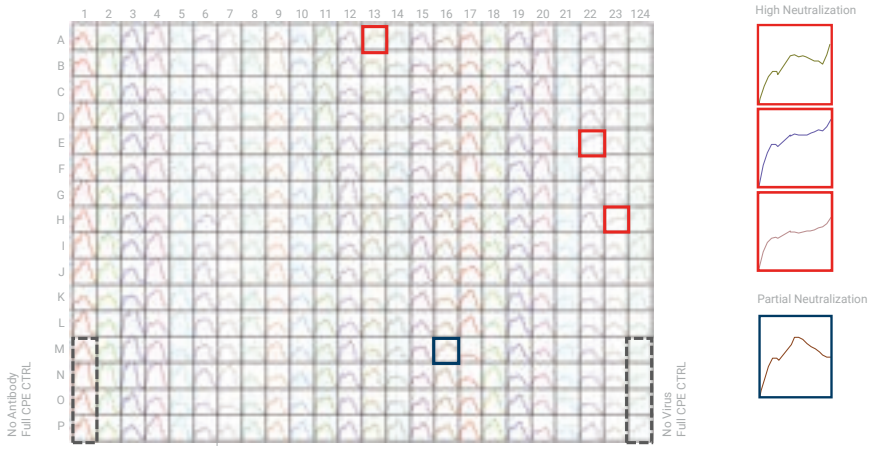
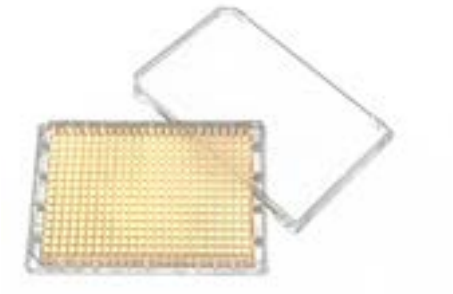


Figure 4. SARS-CoV-2 CPE measurement over time, in 384-well E-Plate assay. Wells with high and partial neutralizing activities are highlighted. Functional neutralizing antibodies are identified.

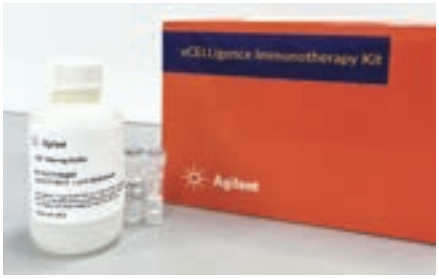
xCELLigence RTCA biosensor E-Plate



Gold biosensors enable dynamic monitoring in a label-free manner. The 384-well E-Plates are single-use, disposable devices used to perform cell-based assays on xCELLigence RTCA HT instruments. Plate dimensions and well-spacing conform to the ANSI/SBS 4-2004 standard for 384-well microplates. Gold biosensors cover approximately 80% of the well bottom. This design enables large populations of cells to be monitored simultaneously, providing a sensitive read-out of dynamic changes in the physical properties of cells.

xCELLigence immunotherapy kits

Use xCELLigence immunotherapy kits with your real-time cell analysis system for a noninvasive solution to a broad range of liquid cancer immunotherapies and suspension tumor cell killing applications. Determine the potency of immune cells against liquid tumors in vitro.



Liquid Tumor Tethering Specificity	Effector Cells	Target Cells
anti-CD40	NK-92, CAR-T, primary CD8+ T cells	Daudi, Raji, Ramos, MEC2
anti-CD29	NK-92	K562, HEL 92.1.7
anti-CD19	NK-92, primary CD8+ T cells	Raji
anti-CD9	NK-92	NALM6, RS4;11, RPMI 8226
anti-CD71	NK-92	K562

Product specifications

Parameter		Value
Temperature Control	Range	Ambient temperature + 4 °C to 45 °C
	Resolution	0.1 °C
	Stability	± 0.5 °C at 37 °C Temperature stability is the range divided by 2 of a single measurement point in the incubator, monitored over 30 minutes, following a minimum two-hour stabilization (e.g. R = 0.1, equivalent to ± 0.5 °C) with all doors and covers closed.
	Heater ramp	Less than one hour from ambient temperature (AT) to 37 °C. That is, from AT 20 °C or greater, the time for air temperature to read within 0.5 °C of the 37 °C setpoint (e.g. 36.5 °C) without overshooting by 0.5 °C (37.5 °C), with all doors and covers closed.
CO_2 Control	Range	0 to 20%
	Control resolution	± 0.1 °C
	Stability	± 0.2 at 5% CO_2
O_2 Control	Range	1 to 19%
	Control resolution	± 0.1 °C
	Stability	± 0.2 at 1% O_2
Humidity	Control	Passive humidity is provided by water pan and temperature control only. The system shall operate for a period of three days without needing to refill the water pan (assuming maximum door-opening frequency of eight times per hour, with chamber at 37 °C and 5% CO_2)
	Range	Relative humidity shall be in the range of 80 to 95% when running with lidded plates at 37 °C and 5% CO_2, with all drawers and doors closed, and following a minimum one hour stabilization time.

Parameter		Value
Labware	Compatible labware	384-well-E-Plate
	Capacity	BioSpa can hold up to eight 384-well E-Plates
Impedance Measurement	Test signal	22 mV rms ± 20%, with maximum 5 mV DC offset at 10 kHz
	Average impedance measurement speed	6 seconds/plate
	Impedance measurement accuracy	± (1.5% + 1 Ω)
	Impedance measurement repeatability	0.8%
	Impedance measurement dynamic range	50 Ω to 2 kΩ
	Electronic switch resistance	7 to 12 Ω
Data Management	Software	RTCA Software Pro (HT-BioSpa)
	Parameters	Cell Index
	File format	.plt
	File export	Excel file; text file
	User management	Administrative creation of individual user accounts
	Workstation	Intel Core i7 processor or above; 16G DDR4 RAM or above; 512G solid state drive or above
Operating Conditions	System dimensions (W x D x H)	180 cm × 72 cm × 55 cm
	System weight	62.6 kg (with an empty water pan)
	Operating environment	Operating temperature range: 15 to 30 °C Operating humidity range: 80% max. up to 25 °C, 60% max. up to 30 °C without condensation
	Storage environment	Temperature: 1 to 40 °C Relative humidity: 80% maximum
	Power requirements	100 to 240 VAC, 50 to 60 Hz
	Power usage	xCELLigence RTCA HT Analyzer: 100 W maximum HT Station: 15 W maximum BioSpa: 250 W maximum
Regulatory Compliance	Indoor/outdoor use	Indoor
	Overvoltage category	Class II
	Pollution degree of intended environment	2
	Degree of ingress protection	IPX0
384-well E-plate	Footprint	Compliance with ANSI/SBS 1-2004 requirements
	Dimensions (W x D x H)	12.77 cm × 8.55 cm × 1.75 cm (with lid) 12.77 cm × 8.55 cm × 1.435 cm (without lid)
	Spacing	The spacing of the wells is 4.5 mm center-to-center as per ANSI/SBS 4-2004 standard for 384-well microplates
	Volume	95 ± 5 µL
	Well-bottom dimension	(2.5 ± 0.1 mm) × (2.5 ± 0.1 mm)
	Electrical interface	Interface with HT station
	Sensor impedance	112 ± 22 Ω at 10 kHz, when measured with a 1× PBS solution
	Material	Polystyrene well plate, glass sensor substrate, UV irradiated
	Operating environment	Temperature: + 15 to + 40 °C Relative humidity: 98% maximum without condensation
	Storage conditions	Room temperature
384-well RTCA Resistor Plate	Dimensions (W x D x H)	12.77 cm × 8.55 cm × 1.75 cm
	Resistor values	37.4 Ω, 100 Ω, 150 Ω, 200 Ω, 499 Ω, ± 0.5% precision
	Operating environment	Temperature: + 15 to + 40 °C Relative humidity: 98% maximum without condensation
	Storage conditions	Room temperature

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We guarantee at least ten years of instrument life with seven years of guaranteed support. If you have aging equipment, our CrossLab Extended Services plan provides diagnostics, repairs, maintenance, and education services with consistent quality. Our engineers use the latest tools and procedures and genuine Agilent parts..

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