

WORKFLOW · NEW INNOVATIONS

3D CELL CULTURE

3D Models – Spheroids, Organoids

Automated platforms and morphological, viability and functional analyses for the characterization of spheroids and organoids

WORKFLOW STEPS

1	Cell Source, Isolation	iPSC-derived cells, media and kits for in vitro human disease models Axol Bioscience Cell sorters, automated detection of proteins, stem cells and extracellular vesicles (EVs) Beckman Coulter	Cells, antibodies, cytokines, growth factors, assay kits Abcam, Qkine, Reddot and Promega
2	Creating a 3D Model	3D Bioprinter Inventia Hydrogel-based bioinks, matrices, plates and reagents for 3D cell culture TheWell Bioscience	3D cell culture, hydrogel-coated plates for spheroids and organoids Apricell, TheWell Bioscience
3	Culture (Selection, Activation, Transduction, Reprogramming)	Hypoxia incubators and chambers BioSpherix	
4	Testing, Manipulation	Automated liquid handlers Beckman Coulter, Opentrons	
5	Analysis, Characterization	Imaging systems and Multi-Electrode Array (MEA) Molecular Devices, Axion, Zeiss	
6	Storage	Refrigerators, freezers, ultra-low temperature freezers, storage units see: Cell-based work	

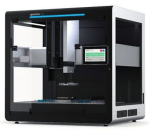
BIO-SCIENCE
A magyar tudomány szolgálatában.

Bio-Science Kft. · Fehérvári út 79, 1119 Budapest, Hungary · Postal address: P.O. Box 129, 1518 Budapest
Phone: +36 1 619 8321, +36 1 619 8316 · Fax: +36 1 799 0159
E-mail: bio-sci@bio-science.hu · www.bio-science.hu

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FEATURED INSTRUMENTS



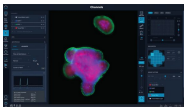
OPENTRONS FLEX ROBOT



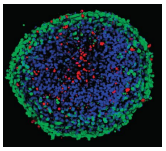
IMAGEXPRESS HCS.AI HIGH-CONTENT SCREENING SYSTEM



RASTRUM 3D BIOPRINTER



IMAGING ANALYSIS OF ORGANOIDS



FLUORESCENT IMAGING OF A SPHEROID



CYTOFLEX SRT CELL SORTER

MANUFACTURERS AND PRODUCT FAMILIES

MANUFACTURER	PRODUCT FAMILY	PRODUCT DESCRIPTION
Molecular Devices	ImageXpress Pico, Nano, HCS.ai Confocal, SpectraMax, ClonePix, Clone Select, Automated 3D System-CellXpress.ai, AI IN-Carta SW	Fluorescent and confocal imaging systems, AI-based analysis software. Multimode readers. Organoid “expansion” service. Labeling kits and reagents for live-cell analysis. AI-based 2D / 3D cell culture automation. Systems for colony picking and isolation.
Opentrons	Flex, OT-2	Next-generation, closed, HEPA-filtered automated liquid handling robots for sterile work. Sample preparation, protein purification, NGS, PCR, nucleic acid isolation, for every step of the 3D workflow.
Beckman Coulter	CytoFLEX, SRT, NANO, AQuios STEM System, CytoFLEX mosaic Spectral Detection Module	Flow cytometers (with spectral module), sorters, centrifuges, cell counters. Automated platforms for analyzing EVs, hematopoietic stem or progenitor cells. Wide range of reagents and kits. Spectral module for CytoFLEX S and LX instruments.
Inventia		3D bioprinter, RASTRUM platform for printing droplets, embedded or complex 3D models, and tissue structures. A wide selection of matrices and bioinks helps model the appropriate microenvironment. Reproducible results with a fast, user-friendly automated platform, even for sensitive cells.
Apricell		Ready-to-use 3D cell culture plates pre-coated with hydrogel for culturing and standardizing spheroids and organoids. Inserts and microwells are available in various pore sizes for several cell types/samples, and support testing large numbers of samples, e.g., for drug candidate development.
Abcam, Qkine		Primary and secondary antibodies for labeling, assay kits, reagents. For cell culture: cytokines, growth factors and fluorescently conjugated antibodies, labeling kits, ELISA kits. Wide selection of cells.
TheWell Bioscience		Matrices (VitroGel®, hydrogel-based, xeno-free, requiring no UV, heat or chemical treatment), plates, bioinks, assay kits, media and biomarkers for 3D cell culture (Organoids, Spheroids, Stem Cells, MSC, etc.).
Axol Bioscience		iPSC-derived cells from human donors of various age groups, media and kits for in vitro human disease models.
Promega		3D kits and reagents for cell viability testing (CellTox™ Green Cytotoxicity Assay, CellTiter-Glo® 3D Luminescent Cell Viability Assay, RealTime-Glo™ Annexin V Apoptosis and Necrosis Assay, etc.). Assays: cell metabolism, cell expression and genome analysis or inflammation.

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MANUFACTURER	PRODUCT FAMILY	PRODUCT DESCRIPTION
Axion Biosystems	OMNI, LUX, Maestro	OMNI and LUX live-cell automated monitoring systems for kinetic measurements in 2D and 3D applications, even with large sample numbers. Maestro, multiwell microelectrode array (MEA) and impedance system for measuring the electrical activity of cells, also available with an Organoid module.

FURTHER WORKFLOWS

Integrated automated platforms | Detection and Analysis | EV Research, Nanoparticles | Molecular Biology
Liquid Handling Automation Systems and Robots | Cell-based workflows

REQUESTS FOR QUOTATION, QUESTIONS

bio-sci@bio-science.hu · Phone: +36 1 619 8321, +36 1 619 8316
This workflow online, with product and manufacturer links: www.bio-science.hu/en/lab-workflows/3d-cell-culture

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