

Ready-to-use hiPSC-Derived Cardiac Organoids

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Cat. No. CIPO-HWL01

Product Description

Human iPSC-Derived Cardiac Organoids (Cat. No. CIPO-HWL01) are three-dimensional in vitro models that recapitulate key structural and functional features of human cardiac tissue. These organoids are generated from the human iPSC line ATCC-HYR0103 under ultra-low attachment (ULA) culture conditions using a self-assembly cardiac differentiation workflow. Human iPSC-Derived Cardiac Organoids are shipped at ambient temperature and provided in a ready-to-use format for functional assessment and downstream applications. These organoids typically form cavity-containing cardiac structures, exhibit spontaneous contractile activity, and express markers associated with cardiomyocytes (cTnT), fibroblasts (VIM), and endothelial cells (CD31). Human iPSC-Derived Cardiac Organoids are intended for use with Human iPSC-Derived Cardiac Organoid Maintenance Medium (RIPO-HWM01). They are recommended for use between DIV 25 and DIV 50.

Product Specification

Product Name	Ready-to-use hiPSC-Derived Cardiac Organoids
Cat. No.	CIPO-HWL01
Source Cell Line	ATCC-HYR0103 human iPSC line
Product size	5 / 20 / 100 organoids
Packaging format	Individually packaged; 1 cardiac organoid per 2 mL cryovial
Shipping condition	Shipped under temperature-controlled conditions with blue ice, 4-25°C
Applications	Functional assessment, drug screening, in vitro cardiotoxicity assessment
Passaging	Not suitable for passaging
Intended Use	For research use only. Not intended for human or animal diagnostic or therapeutic use.
Shipping window	DIV 25-35. In-transit period is excluded from the DIV count.
COA	Available at https://www.acrobiosystems.cn/resources/download-certificate-of-analysis

Materials (Not include in our kit)

Product Name	Cat. No.	Manufacturer
6-well ULA plate	CP-21	ACROBiosystems
12-well ULA plate	N/A	N/A
24-well ULA plate	WP24-5CCUSH	ALPHA PLUS
48-well ULA plate	WP48-5CCUSH	ALPHA PLUS
96-well ULA plate	CP-22	ACROBiosystems
3mL disposable Pasteur pipette, extended type, sterilized	PP102030	Jet Biofil
hiPSC-Derived Cardiac Organoid Maintenance Kit	RIPO-HWM01	ACROBiosystems

Equipment

Equipment	Specification / Notes
CO ₂ Incubator	37°C, 5% CO ₂
Orbital Shaker	20 mm shaking diameter
Water Bath	37°C
Biosafety Cabinet	Aseptic handling

Experimental Procedure

1. Preparation

1.1 Use sterile technique to prepare complete hiPSC-Derived Cardiac Organoid Maintenance Medium following the product datasheet (Cat. No. RIPO-HWM01).

2. Package Inspection

2.1 Upon receipt, recover Ready-to-use Human iPSC-Derived Cardiac Organoids as soon as possible. Before opening, inspect the outer package, cryovial, transport medium, and organoid integrity.

2.2 Proceed only if the cryovial is intact, the medium is clear with no signs of freezing or precipitation, and the organoid remains visible, spherical, and intact (Figure 1). If damage, leakage, turbidity, freezing, precipitation, or organoid disintegration is observed, do not open the cryovial. Document the issue with photos and contact sales support immediately.



Figure 1. Example of Cardiac Organoid Packaging. * The cardiac organoid is expected to appear intact upon receipt.

3. Organoid Recovery

3.1 Pre-warm only the required volume of Cardiac Organoid Maintenance Medium at 37°C for 15 min before use. Calculate the volume based on the number of wells to be used. Avoid repeated warming of the medium bottle, as frequent temperature changes may affect medium stability. Keep the remaining medium at 4°C. For example, when preparing medium for one well of a 6-well plate, transfer 5 mL of medium into a sterile 15 mL centrifuge tube and pre-warm the aliquot at 37°C for 15 min before medium change.

Culture Format	Maintenance Medium Volume	Organoids per Well	Medium Change Frequency	Orbital Shaker
6-well ULA plate	5 mL	16	Every 2 days	Yes, 100 rpm
12-well ULA plate	2 mL	4	Every 2 days	Yes, 100 rpm
24-well ULA plate	1 mL	1	Every 2 days	Optional, static or 100rpm orbital shaker
48-well ULA plate	500 µL	1	Every 2 days	No, static culture
96-well ULA plate	200 µL	1	Daily	No, static culture

Table 1. Recommended Medium Volumes and Culture Conditions for Cardiac Organoids

3.2 Open the 2 mL cryovial, and gently transfer the organoids from the cryovial to each well of an ULA plate using a Pasteur pipette.

3.3 Remove residual transport medium from each well of the plate. Add pre-warmed maintenance medium to each well, ensuring that the organoids are fully submerged and not exposed to air.

Note: Medium change should be performed gently by adding pre-warmed maintenance medium slowly along the well wall to minimize shear stress and avoid mechanical damage.

3.4 Culture the organoids at 37°C with 5% CO₂ under static conditions for 3-5 days of recovery. For shipments longer than 1 week, allow at least 5 days of static recovery. For shipments of 1 week or less, allow at least 3 days of static recovery. Perform full-medium changes every 2 days without touching or damaging the organoids. A 24-well ULA plate is recommended for the recovery phase.

4. Organoid Maintenance

4.1 After 3-5 days of static culture, confirm spontaneous beating of the organoids. Once an average beating rate of approximately 30 bpm is observed during a 1 min recording at 25-37°C, the organoids are ready for downstream assays. For continued culture, several culture formats are available depending on the downstream applications, as described in Section 4.2.

4.2 Continue culturing the organoids at 37°C with 5% CO₂. Perform a full-medium change every 1-2 days and monitor organoid morphology and culture status regularly, as described in Table 1. For continued culture, select one of the following culture formats based on the downstream experimental requirements.

Option 1: Orbital shaker culture followed by static culture

For applications requiring improved MEA electrode coverage, culture the organoids in 6-, 12-, or 24-well plates on an orbital shaker at 100 rpm for up to 7 days (Figure 2). This format supports modest organoid growth and improves contact with the electrode area during MEA recording. After 7 days of orbital shaker culture, transfer the organoids to static culture for long-term maintenance.

Option 2: Continuous static culture for long-term maintenance

Static culture in 24-, 48-, or 96-well plates is recommended for long-term maintenance, especially beyond DIV 50. This format supports continuous culture and routine monitoring over extended culture periods. Maintain sufficient medium volume to keep the organoids fully submerged, and assess morphology and beating activity regularly.

4.3. Protocols for Ca²⁺ imaging, MEA recording, immunostaining, Masson's trichrome staining and organoid beating analysis are available online.



Figure 2. Orbital shaker culture of cardiac organoids at 37°C with 5% CO₂.

Related Product

Product	Cat. No.
hiPSC-Derived Cardiac Organoid Maintenance Kit	RIPO-HWM01
6-well ULA plate	CP-21
96-well ULA plate	CP-22