iotaSciences

isoCell

TECHNICAL DATA SHEET

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INTRODUCTION

The isoCell is a compact and user-friendly instrument designed to automate single-cell cloning and enable easy visual verification of monoclonality in small volumes. This instrument takes the user through the complete cloning workflow, from single-cell dispensing through to exchange of cell culture medium and the detachment and extraction of resulting colonies, all with minimal manual handling.

VERIFICATION OF MONOCLONALITY

The isoCell plates single cells into GRID chambers, which do not suffer the optical edge effects of conventional plasticware. As a result, your single cells are visible immediately in a single field of view after plating, enabling easy verification of monoclonality using any inverted microscope with 4x/10x objectives.

CLONING AUTOMATION

This instrument enables the automation of many steps in cloning workflows that traditionally are performed manually with low precision. Specifically, the isoCell allows accurate single cell isolation, feeding of selected developing colonies, then detachment and extraction of resulting monoclonal cultures. The automated fluid handling enables high consistency within your cloning experiments via the integrated nanolitre fluid handling system. This eliminates many manual pipetting steps that can often be sources of experimental variation at low volumes.

PROVEN WORKFLOWS

The isoCell has well established single-cell cloning workflows for a variety of cell types, including iPSCs. Using our recommended protocols, users can generate verified monoclonal cultures in as little as 7 days. Our optimised workflows using the isoCell enable high cloning efficiencies to be consistently achieved with every cloning experiment. Compatible with both adherent and suspension cells, the integrated touch screen provides an intuitive step-by-step guide through the entire cloning workflow.

SMALL VOLUMES & GENTLE CELL HANDLING

Utilising the integrated nanolitre fluid handling system, cells are isolated and cultured in volumes of <1 µL. Not only does this dramatically minimise reagent usage in every cloning experiment, it also provides huge cost savings and almost eliminates wastage of expensive cell culture media and supplements. The isoCell gently isolates your cells with a low pressure of <0.5 psi, ensuring extremely low shear stress that helps maintain cell integrity and viability – maximising cloning efficiencies.

COMPACT SYSTEM

The small footprint of the isoCell means it easily fits inside any existing biosafety cabinet and still allows plenty of room to work around it. This saves precious space in your laboratory. The isoCell can even be moved with ease by a single person if necessary, thanks to its compact size and low weight.

CLONING PLATFORM

The isoCell can be used as a standalone unit or with an isoHub as part of the iotaSciences Cloning Platform. The isoHub makes identifying single cells, selection of cells/colonies of interest and tracking of clonal cultures easy and efficient. A wireless connection between the two devices enables both systems to automatically synchronise data, removing the need to manually record monoclonal GRID chambers.

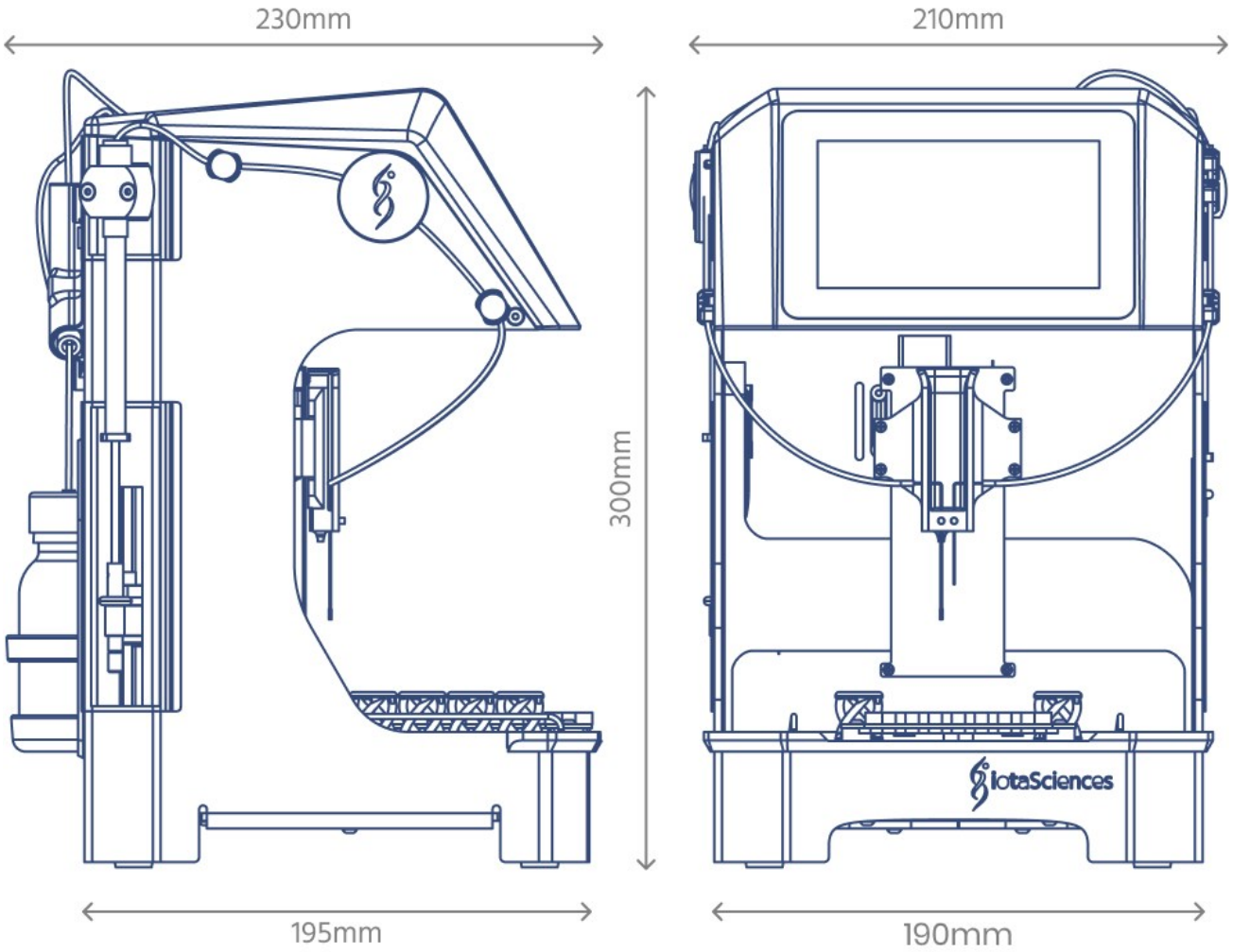
SPECIFICATION

AUTOMATION	• GRID generation • Single-cell plating • Exchange of cell culture media (cell feeding) • Colony dissociation (for adherent cells) • Extraction of colonies at end of workflow • Built-in sterilisation procedures • Compatible with adhesion & suspension cells • Automated maintenance and calibration routines • Ability to optimise cloning conditions within the same GRID • Up to 36 users with nine colour-coded dishes per user
GRID DETAILS	• A single GRID contains 256 culture chambers in a 60 mm dish • Compatible with commonly used culture media and extracellular matrix coatings • Chamber area: 3.24 mm^2 • Chamber volume: 200 – 600 nL depending on workflow stage • Up to 94 single-cell chambers per dish (based on Poisson distribution)

EXTRACTION FORMATS	• Colonies can be harvested into:
	  ○ 8-tube PCR strips
	  ○ 8-well flat culture strips

OTHER SYSTEM FEATURES	• Nanolitre fluid handling system • Heated bed for improved cell health • Extremely low pressure of <0.5 psi, minimising shear stress during cell handling • UV light and ethanol resistant • Rapid exchange of wetted parts • Intuitive GUI and touch interface guides users through the workflow (stylus included) • 2.4 GHz wireless functionality for automated transfer of data between isoCell and isoHub • USB port for easy software updates (requires Windows 10/11)
CONSUMABLES (within CloneG kits)	• 18 colour coded 60 mm dishes (TC-treated or non-treated options available) • 96-well low-profile breakable PCR plates or 8-well flat culture strips • Microcentrifuge tubes & 10 mL reservoirs • Pipetting aid • Replacement dispensing assembly • FC40^{MAX} (sold separately)
OPERATING REQUIREMENTS	• Temperature: 16–35°C (60–95°F) • Humidity: 40% to 60% • Altitude: less than 2000 m • Power supply input: 90-260 V AC, 50-60 Hz, minimum 1 A at 115 V, 0.7 A at 230 V • isoCell power input: 24 V DC, 50 W
PHYSICAL CHARACTERISTICS	• Dimensions: 210 x 230 x 300 mm • Weight: 4.3 kg

PRODUCT SCHEMATIC



Additional Technical Data Sheets (available on iotaSciences website)

- If using the isoCell alongside an isoHub instrument as part of the Cloning Platform, please see the isoHub Technical Data Sheet for additional technical specifications.