

# Automated Stem Cell Screening



## Introduction

Stem cell screening is very labour intensive, the stem cells are sensitive to environmental conditions, so the process is ideal for automation.

## S-CEL enclosure

The S-CEL 4000 offers a negative pressure recirculating Class 2 type enclosure, with triple HEPA filters on the inlet and double HEPA filters on the outlet to provide both operator and product protection. The enclosure is designed to optimise access to the instruments without compromising the internal environment. Within the workcell you will find the following equipment:

- Liquid handling using disposable tips; the displayed system uses a Tecan EVO as TSE/BSE free was requested.
- Plate storage and incubation was achieved with multiple LiCONiC STX 37°C CO<sub>2</sub> instruments with gentle cell agitation and a PAA labware carousel.
- Centrifugation is be used to enable cells to be passaged with medium changes. The displayed system used an Agilent VSPIN plate centrifuge with loader.
- Plate transport reliability is ensured with a Mitsubishi industrial robot on a rail.

- Cell and media dispense to the required plate format was achieved with a Multidrop Combi which has an autoclavable fluid path and is certified BSE/TSE free. Media is kept in a warm water bath to avoid temperature shocking the cells when dispensed.
- Delidding is provide with the reliable PAA active pneumatic de-lidding station and plate nest.
- Cell detection was achieved with a Pall Octet reader, Sartorius iQue screener and cell triage and pluripotency was achieved with a Synentec Cellavista instrument.
- Safe waste management system for the disposal of used tips, tip boxes, labware and liquids. Bins can be accessed for emptying without entering the environmentally controlled area. Feedback tells the operator when the bin is full.

Although particular instruments were used for the described system, most other brands can be accommodated.

## Process

The 50-day process was based around the customer manual method and allowed cell growth to be monitored and the top cells picked into new media filled plates. Constant monitoring allows viable cells to be picked and stored.

## Software

The Harmony™ operator interface provides an easy to use walk up and run system, enabling any operator to load, and run their assay with minimal training. This provides a true walk away system that is easy to use and perfect for academic institutions or companies with multiple user groups.



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If you are planning any type of cell screening system, come and discuss your application with PAA: [david@paa-automation.com](mailto:david@paa-automation.com)