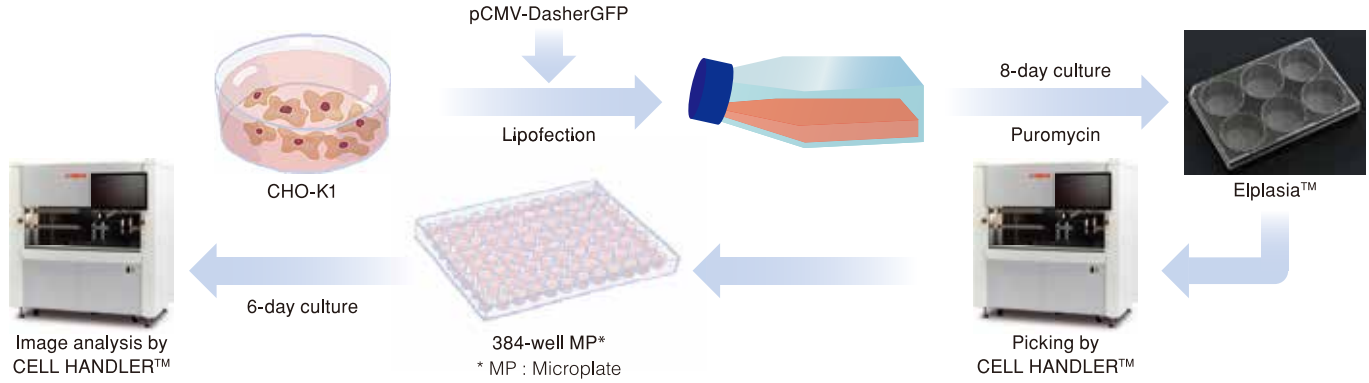
YAMAHA Single Cell Research

Selection of transfectants (fluorescent clones)

CHO cells were transfected with a GFP expression vector containing a puromycin-resistance marker. After selection by puromycin for 8 days, surviving cells were dispensed on a Elplasia™* plate. Single cells were detected by brightfield and fluorescence imaging (Fig. 1). CELL HANDLER™ picked one of the fluorescent target cells and transferred it to a flat bottom plate. Six days after transfer, a colony was formed with stable fluorescence, showing the ability of CELL HANDLER™ in accurately picking single-cell transfectants. Also, CELL HANDLER™ helps save time and effort in establishing stable clones and determining their monoclonality. Tiled images are shown in Figure 2.

* "Elplasia" is a trademark of Kuraray Corporation.



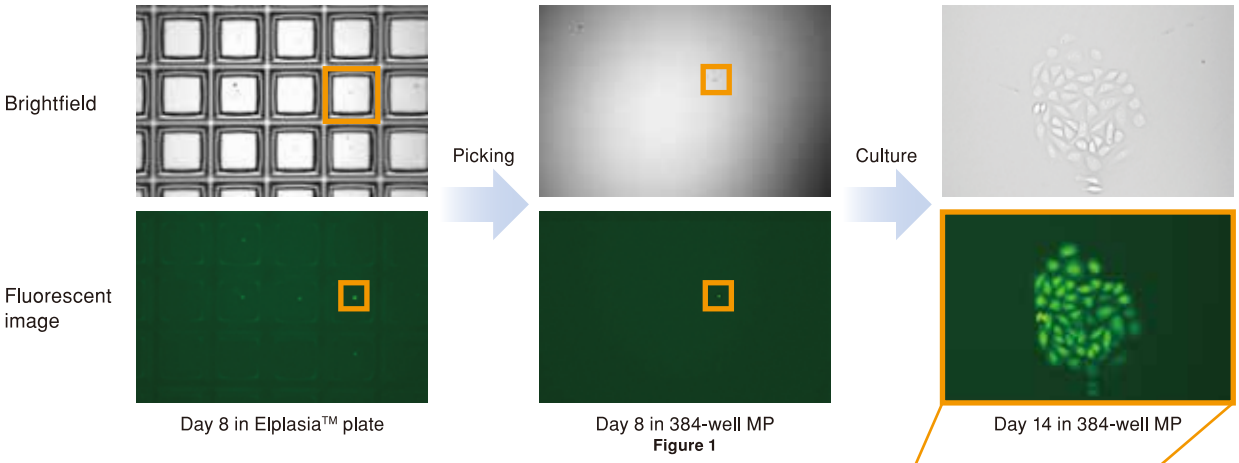
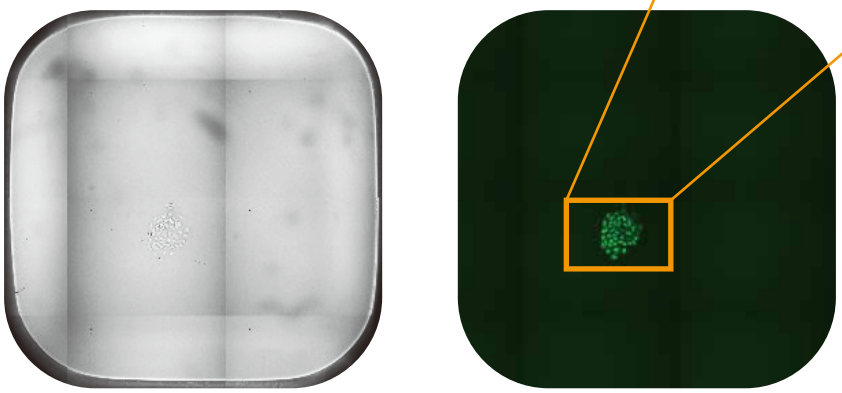


Figure 1



Overall image of one well in 384-well MP (tiling)

Figure 2

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YAMAHA Stem Cell Research

Differentiation analysis of iPSC

Embryoid body (EB) spheroids derived from 201B7 cells were selected and grouped by size (area).
Expression levels of several differentiation markers were measured (Fig. 1).
Our result showed that small-sized EB spheroids tended to remain undifferentiated.

* Data from iPS Portal

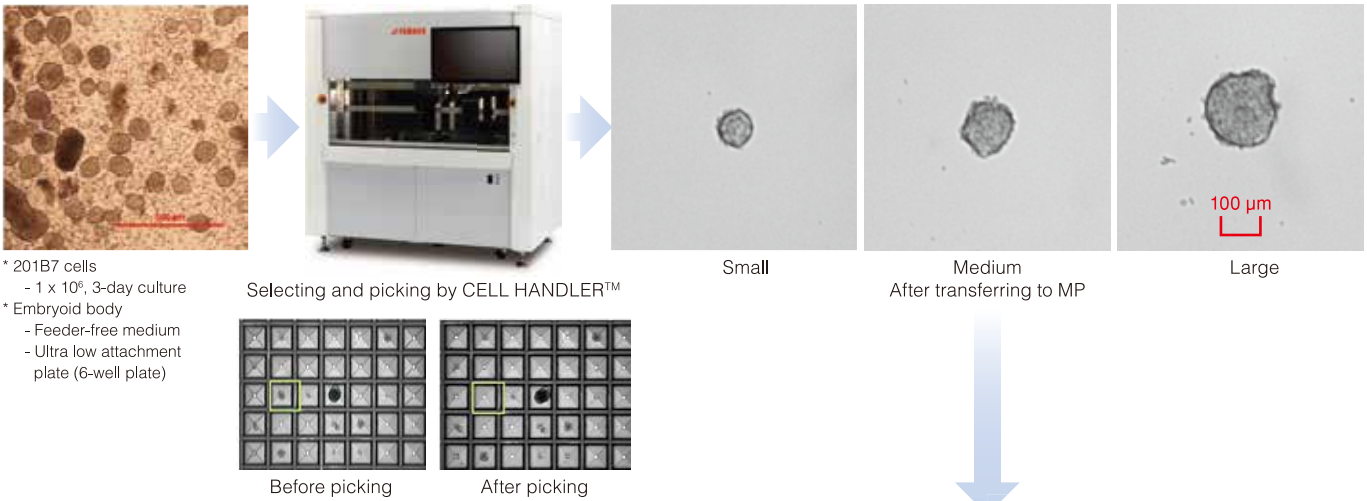

Figure 1
Gene expression levels

iPS-derived cardiomyocytes

CELL HANDLER™ can accurately pick up spheroids of different sizes and shapes. In this example (Fig. 2), cardiomyocyte spheroids with varying characteristics were intentionally picked (Fig. 3).
After 3-day incubation, the spheroids were found to rhythmically contract, resembling functional cardiac muscle.

Figure 2
Cardiomyocytes*

Selecting and picking by CELL HANDLER™

Figure 3
Cardiomyocytes in MP

* Provided by Dr. Shimizu (Professor of Tokyo Women's Medical Univ., ABMES)

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