

■ Laboratory for Human Organogenesis

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[Background/Objective]

This laboratory at RIKEN is focused on uncovering the developmental mechanisms of human mesoderm in the kidney by utilizing its unique technology that can generate hiPSC-derived kidney organoids from pluripotent cells *in vitro*. The capability of the CELL HANDLER™ was evaluated in the selection and isolation of target kidney organoids exhibiting specific morphological characteristics.

[Material and Methods]

Kidney organoids were generated in 50% Matrigel® domes produced in EZVIEW® culture plates, subjected to morphological imaging and were subsequently harvested directly from these domes by using the CELL HANDLER™.

[Observations obtained]

Morphological features of kidney organoids generated in Matrigel® domes were imaged and analyzed prior to harvesting. Organized structures, possibly resembling renal vesicles, were apparent in some organoids (Fig. 1A), while no such property was observed in others (Fig. 1B). Organoids of interest (Fig. 2A) were picked without contamination by adjacent organoids, thus showing a high degree of transfer fidelity by the CELL HANDLER™ (Fig. 2B), and were transferred to a 96-well cell culture plate (Fig. 3). These results demonstrate the usefulness of the CELL HANDLER™ in supporting kidney organoid research.

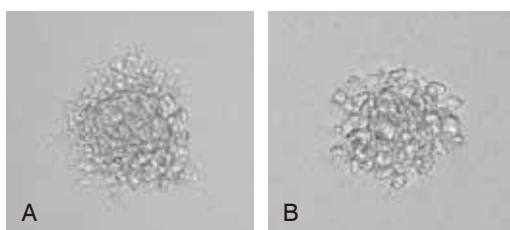


Fig. 1. Images of kidney organoids generated in the Matrigel® dome with (A) and without (B) possible renal vesicle structure.

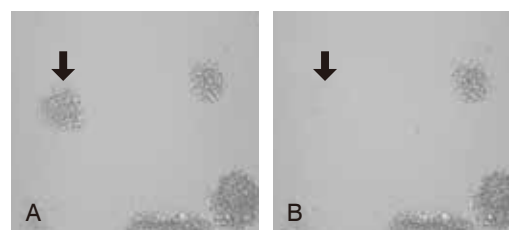


Fig. 2. Images of Matrigel® dome kidney organoids before (A) and after (B) picking by the CELL HANDLER™. Position of a picked organoid is indicated.



Fig. 3. Image of the harvested organoid.

[Acknowledgement]

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* "Matrigel" is a registered trademark of Corning Inc.. * "EZVIEW" is a registered trademark of AGC TECHNO GLASS CO., LTD..

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* For research use only. Not for use in diagnostic or therapeutic procedures. * The specifications are subject to change without notice.
* The above are the results of experiments in our laboratory. The results may vary depending on the work environment, cell type and so on.

