Kyoto SMI Seminar

Essential 8™, a new chemically defined, feeder-free culture system and innovations in non-integrating reprogramming

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Venue: **Seminar Room (#A207)**
2nd Floor of the Main Building
iCeMS Complex 1, Kyoto University

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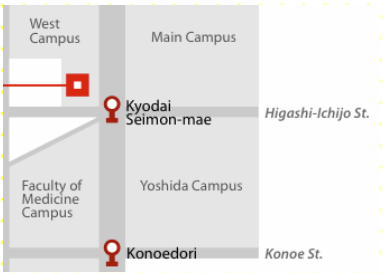

Human embryonic stem cells (ESCs) and induced pluripotent stem cells (iPSCs) are invaluable tools in basic and translational research since they have the ability for long-term proliferation and the potential to give rise to cells of all three germ layers. Over the last decade, various systems have been used to culture and propagate pluripotent stem cells. Two main challenges in maintaining and expanding these cultures are reproducibility and cost of the culture system, particularly for large scale studies. Here we present a robust, well-defined, feeder-free and xeno-free culture system that provides only the essential components for optimal pluripotent stem cell culture and expansion, improving reproducibility and differentiation potential, while reducing costs. The Essential 8™ medium consists of eight well-defined components that are necessary for the successful long-term culture of existing pluripotent stem cells, as well as derivation of new cells lines using non-integrative viral and episomal reprogramming approaches. The Essential 8™ medium along with a recombinant human vitronectin (rhVTN) as a substrate, provides a culture system that is well-defined, cost-effective and offers a clean background for examination of specific pathways related to self-renewal, pluripotency and terminal differentiation. Essential 8™ medium along with rhVTN also allows for successful transition and easy adaptation of cell lines cultured in a variety of other systems in an optimal and timely manner. Cell lines transitioned into Essential 8™ medium from other culture systems have been shown to retain their pluripotency and differentiation capabilities as well as exhibit normal karyotypes in long-term studies. The system provides a cost-effective way for creating cell banks for research, current Good Manufacturing Practice (cGMP) production and drug discovery platforms and therefore is a valuable tool for basic and clinical research, as well as future potential therapies.

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