

iCell® Endothelial Cells

Cellular Dynamics International (CDI) provides iCell® Endothelial Cells, human induced pluripotent (iPS) cell-derived endothelial cells enabling powerful new strategies for vascular-targeted drug discovery and predictive disease modeling.

Endothelial cells play a key role in a broad range of physiological, immunological, and pathological processes, including working as a selective barrier between the blood and the surrounding body tissues, controlling the inflammation of tissues, and regulating the angiogenesis process. They are metabolically active, producing physiologically active biochemical substances that play a major role in health and disease.

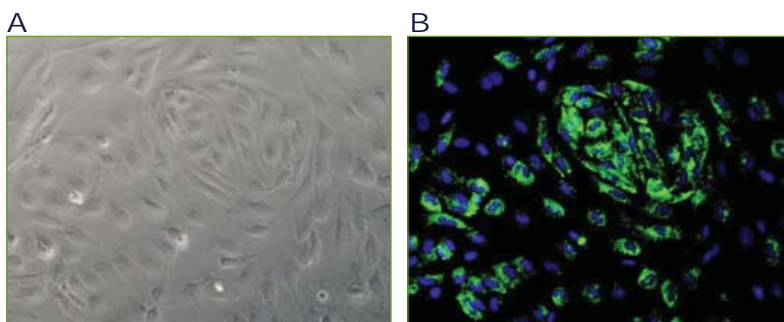
Existing endothelial cell model systems include primary human and animal endothelial cells, in addition to in vivo small animal models. Each of these models presents significant limitations in functionality, reproducibility, and/or availability. The continued challenge to develop effective treatments for vascular diseases (e.g. peripheral arterial disease, hypertension, cancer), as well as the high failure

rate of neurological drugs due to inadequate delivery across the blood brain barrier, reflects the lack of functionally relevant endothelial cell model systems. CDI is working to eliminate these major problems with the existing model systems through the development of iCell Endothelial Cells.

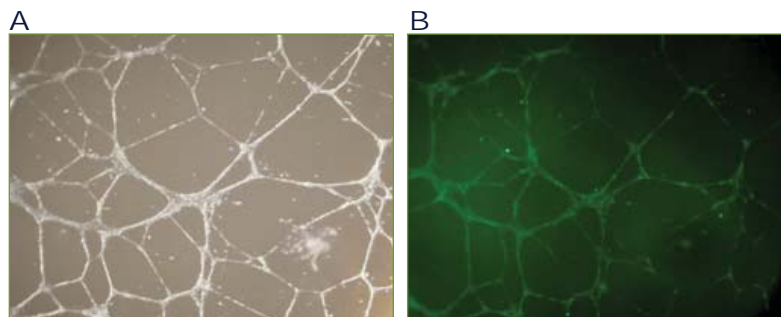
Applications

iCell Endothelial Cells are amenable to a wide array of assays including:

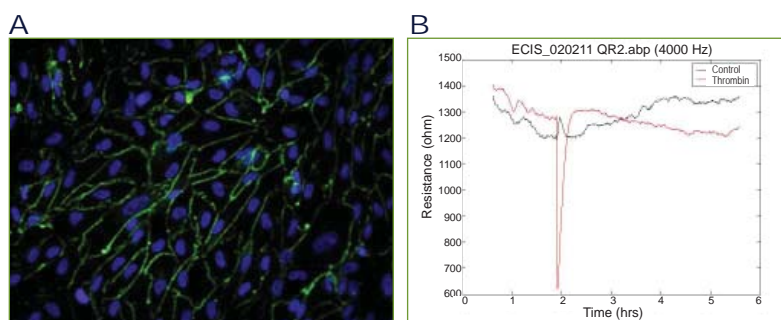
- Cell adhesion
- Cell invasion and migration
- Cell permeability
- Cell proliferation
- Impedance/transendothelial electrical resistance
- Tubular formation



▲ **Figure 1: iCell Endothelial Cells Express von Willebrand Factor (vWF)**
iCell Endothelial Cells were immunostained for von Willebrand Factor, a characteristic marker of endothelial cells. (A) Brightfield image of endothelial cells, 40X magnification. (B) Characteristic Weibel-Palade body staining is observed for vWF (green), and the nuclei are counterstained with Hoechst (blue), 40X magnification.



▲ Figure 2: iCell Endothelial Cells Display Typical Tubule Formation Properties
iCell Endothelial Cells exhibit the capacity to form tubes in a thick layer of Matrigel (A). The same cells were also (B) immunostained for ULEX (UEA-1) (green), which selectively binds to the surface glycoproteins of endothelial cells. Tube formation and binding of ULEX are characteristics typical of endothelial cells.



▲ Figure 3: iCell Endothelial Cells Demonstrate Endothelial Barrier Functions
To assess the barrier function of iCell Endothelial Cells, cells were (A) immunostained for ZO-1 (green), a protein specific to tight junctions between the cells (nuclei counterstaining with Hoechst) (blue), and (B) the resistance was quantified by measuring the transcellular electrical resistance (TER). The control trace (black) displays the baseline TER values characteristic of endothelial cells. The addition of thrombin (red) disrupted the barrier function of the cells, as shown by the decreased resistance, and cells were able to recover after a short period of time.

ADVANTAGES

Quantity, Quality, Purity

- Characteristics and functions required for in vitro vascular-targeted drug discovery and predictive disease models
- Well-characterized and reproducible for consistent results
- High purity (>90%) provides biologically relevant results
- Readily available in cryopreserved format

For More Information

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