



# TrailBio® Endothelial Cells


**TrailBio® Endothelial Cells** are high-quality, ready-to-use cells derived from highly characterized human induced pluripotent stem cells (iPSCs) using Trailhead’s HD-DoE® differentiation and stringent QC platforms. These cryopreserved, assay-ready cells demonstrate key phenotypic and functional performance post-thaw, with high expression of CD31, CD105, and CD144 and no detectable PDGFRβ<sup>+</sup> (pericyte) or CD324<sup>+</sup> (epithelial) contaminating populations. TrailBio® Endothelial Cells can also be expanded up to three passages while maintaining consistent phenotype and function, enabling robust scale-up experiments. Start your research with genetically identical, highly reproducible, and functionally robust cells.




**Reproducible Biology**  
Consistent endothelial performance without donor variability



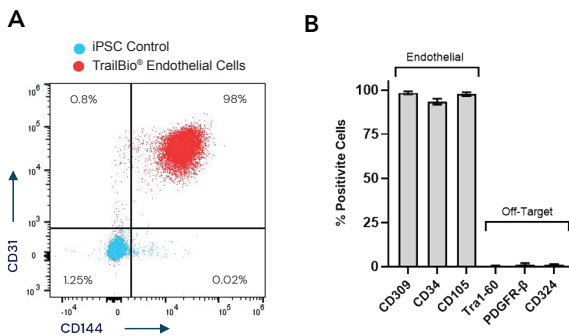
**Validated Phenotype**  
≥90% CD31+/CD144+ with no detectable PDGFRβ or CD324 contamination



**Functional Performance**  
Robust angiogenic activity, including VEGF-responsive behavior and Ac-LDL uptake



**Ready-to-Use**  
Assay-ready post-thaw and expandable for 3 passages

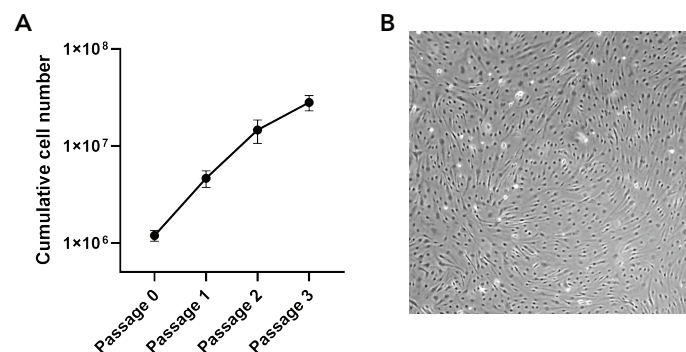
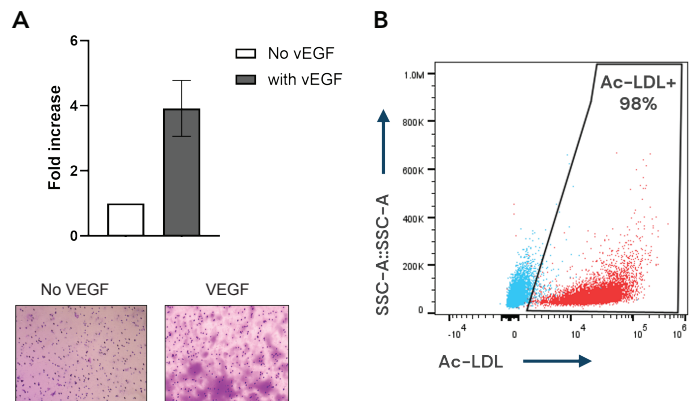


## Highly Pure Endothelial Cells Ready for Immediate Use Post-Thaw

**Figure 1:** (A) Representative flow cytometry data show >98% of TrailBio® Endothelial Cells co-express CD31 and CD144, confirming a highly pure endothelial population. (B) Additional endothelial markers (CD309, CD34, CD105) are highly expressed, while off-target markers (TRA-1-60, PDGFRβ, CD324) remain minimal, demonstrating no iPSC, pericyte or epithelial contamination.

## VEGF-Induced Invasion and Ac-LDL Uptake Confirm Endothelial Function

**Figure 2:** (A) In Matrigel-coated invasion assays, cells show ~4-fold increased invasion in response to VEGF, with invading cells detected by crystal violet staining, indicating intact proteolytic and invasive capacity. (B) Flow cytometry shows >98% of cells uptake Ac-LDL, confirming intact scavenger receptor activity.



## Endothelial Identity and Function are Preserved After Expansion

**Figure 3:** (A) TrailBio® Endothelial Cells demonstrate consistent expansion across passages. Cells are passaged every 3-4 days to ensure cultures do not become overconfluent. (B) Cells retain characteristic endothelial cobblestone morphology following expansion.

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Product	Cell Density	Kit #
TrailBio® Endothelial Cells	1 x 10 <sup>6</sup> viable cells per vial	ME010101021

iPSC Line Information	
Donor Information	Hispanic Female, Age 30
Source Cell	iPSCs from Blood (EPCs)
Karyotype by G-Banding	Normal
CNV Analysis	Normal

Handling	
Shipping	Dry Shipper - Liquid Nitrogen
Storage	Vapor Phase Liquid Nitrogen
Usage	Research Use Only

## The Trailhead® Approach

- **Built from Scratch:** TrailBio® cells are produced by directed differentiation and are built to exhibit the properties of naturally occurring cells.
- **HD-DoE® Platform:** Trailhead's proprietary HD-DoE® (High-Dimensional Design-of-Experiments) technology has been utilized to create a multi-stage protocol for induction of endothelial cells from human iPSCs.
- **Quality:** Cell quality is defined and verified at multiple stages during manufacturing using flow cytometry, gene expression by qRT-PCR, bulk RNA-seq data and functionality of cells is determined by key cellular markers using immunocytochemistry (ICC) data.
- **Data, Not Hypothesis, Driven:** Our methods are based on empirical data obtained using HD-DoE®.
- **Quality by Design:** Product development adheres to Quality-by-Design standards at all stages.
- **Cellular Identity:** Cell fate is confirmed by molecular and functional attributes.

## Applications

TrailBio® cells are well suited for use in 2D and 3D applications, including drug discovery, disease modeling, drug toxicity, 3D tissue printing, organoid formation, tissue-on-a-chip manufacturing and functional assay development.



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