TrailBio® Hematopoietic Progenitor Cells

TrailBio® Hematopoietic Progenitor Cells (HPCs) are high-quality, ready-to-use cells derived from human induced pluripotent stem cells (iPSCs) using our proprietary HD-DoE® platform. These cryopreserved HPCs ensure exceptional experimental reproducibility by offering high batch-to-batch consistency and eliminating primary donor variability. Validated for key markers including CD34 and CD43, TrailBio® HPCs also retain high CD90 expression. TrailBio® HPCs are multipotent with the capability to differentiate into multiple lineages, making them an ideal solution for disease modeling, drug discovery, and toxicology studies.

Assay Reproducibility

Engineered to minimize variability, providing a reproducible biological starting material

Validated Phenotype

>70% expression of CD34 and CD43, and retention of the HSC marker, CD90

Multilineage Potential

Versatility supports research on hematopoiesis, disease modeling, drug discovery and toxicology

Ready-to-Use

Cryopreserved cells ready for immediate use or downstream differentiation upon thaw

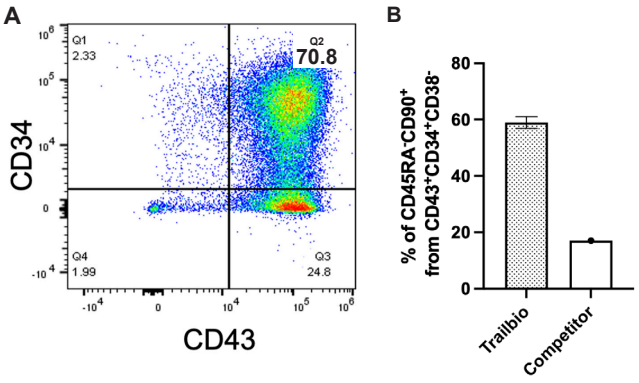
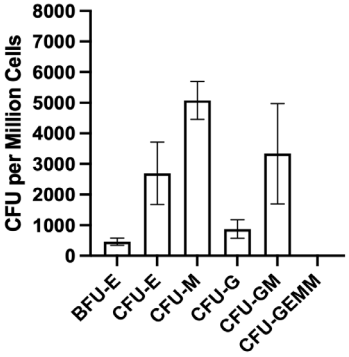


FIGURE 1. Flow cytometric characterization of TrailBio® Hematopoietic Progenitor Cells. (A) Thawed TrailBio® HPCs display an early hematopoietic phenotype, characterized by high expression of CD34 and CD43. (B) Approximately 60% of cells exhibit the classical primary HSC profile (CD45RA-,CD90+, CD43+, CD34+, CD38-), representing a significant enrichment compared to other commercially available cells. Data are representative of three independent experiments (n=3 or n=4).

FIGURE 2. Multilineage potential of TrailBio® Hematopoietic Progenitor Cells in a colony-forming unit (CFU) assays. TrailBio® HPCs demonstrate robust differentiation capacity, giving rise to multiple colony types. The formation of myeloid (e.g., CFU-GM) and erythroid (e.g., BFU-E) colonies confirmed their multipotent nature. Data are representative of three independent experiments (n=3).



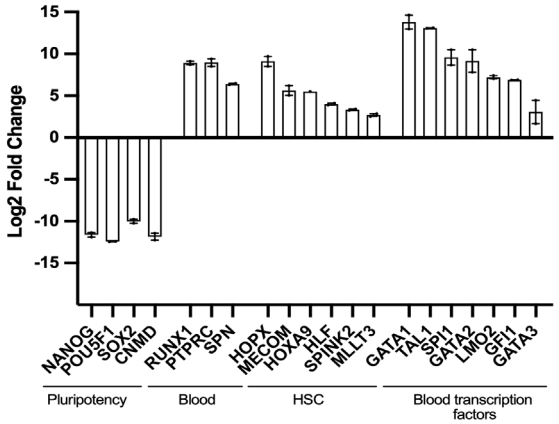


FIGURE 3. Bulk RNA-seq of differentiated TrailBio® Hematopoietic Progenitor Cells compared to iPSCs. Bulk RNA-seq analysis confirmed loss of pluripotency marker expression and upregulation of hematopoietic genes (RUNX1, PTPRC, SPN), HSC-associated genes (HOPX, MECOM, HOXA9, HLF, SPINK2), and key hematopoietic transcription factors (GATA1, TAL1, SPI1, GATA2, LMO2, GFI1, GATA3). These results confirm the hematopoietic lineage identity of TrailBio® HPCs.

Biology.Controlled.

TrailBio® Hematopoietic Progenitor Cells

Product	Cell Density	Kit #
TrailBio® Hematopoietic Progenitor Cells	≥ 1 X 10^6 viable cells per vial	ME060001020

Production	
Donor Information	Human Male
Source Cell	iPSCs from CD34+ Cord Blood
Karyotype by G-Banding	Normal

Handling	
Shipping	Dry Ice
Storage	Liquid Nitrogen
Usage	Research Use Only

Trailhead® Cells

- **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 hematopoietic progenitor cells from human iPSCs
- **Quality:** Cell quality is defined and verified using flow cytometry and gene expression analysis by qRT-PCR
- **Data, Not Hypothesis, Driven:** Our methods are based on empirical data obtained using HD-DoE®
- **Quality by Design:** Product development adheres to a 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, drug discovery, disease-modeling, drug toxicity, 3D tissue printing, organoid formation, tissue on-a-chip manufacturing and functional assay development.

Trailhead Biosystems®

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