

# TrailBio® Hematopoietic Progenitor Cells

## Cells

Trailhead Biosystems® offers iPSC-derived hematopoietic progenitor cells, providing the opportunity to study **lineage differentiation** for co-cultures, **drug discovery for hematological disorders**, and **human disease modeling** of blood dysfunction. TrailBio™ Hematopoietic Progenitor Cells express lineage specific markers which confirm their hematopoietic identity.

## Platform

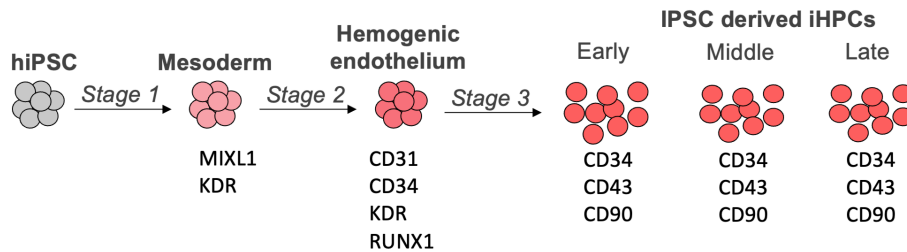
Using our proprietary **HD-DoE®** (High-Dimensional Design-of-Experiments) technology, we created a multi-stage protocol resulting in rapid and homogenous induction of hematopoietic stem progenitor cells and with potential to differentiate into various hematopoietic cell types.

## Quality

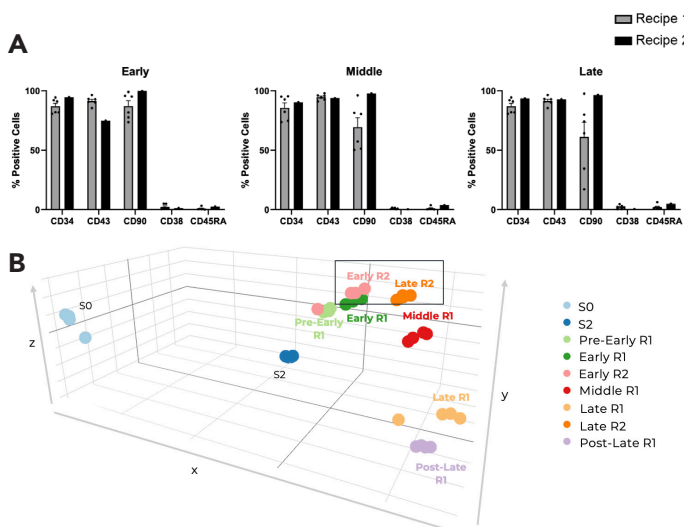
Quality is defined at multiple stages (Fig 1) during manufacturing using flow cytometry, gene expression by qRT-PCR, bulk RNA-seq data, and cellular identity is determined by key cellular markers. Additionally, cells are validated for differentiation into several myeloid blood lineages

## Data

TrailBio® Hematopoietic Progenitor Cells characterization, gene expression and cellular identity. Flow cytometry and gene expression analysis of differentiated cells (Fig 2). HPCs differentiation potential into monocytic, neutrophil, erythroid and lymphoid lineages was tested and validate on a serum-free system (Fig 3).



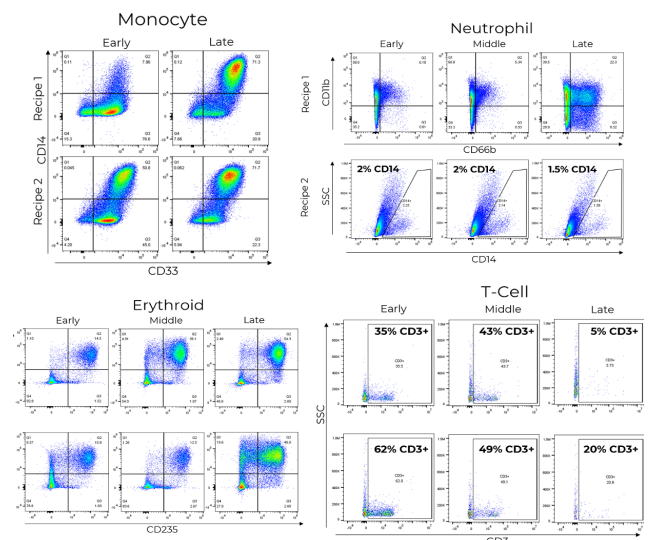
**Fig 1. Schematic of Hematopoietic Differentiation**



**Fig 2. Characterization by Flow Cytometry and Bulk RNA-seq**

(A) Flow cytometry data of HPCs harvested at various time points and analyzed for the expression of CD34, CD43, CD90, CD38 and CD45RA.

(B) Bulk RNAseq data dimensionality reduction plot (PCA) of samples at various stages. Samples from recipe 1 (R1) progress rapidly on S3 media, while cells cultured on recipe 2 (R2) maintained an earlier phenotype for a longer time.



**Fig 3. Cellular Identity**

Lineage differentiation of HPCs into monocytic, neutrophil, erythroid and lymphoid lineages on a serum-free system.

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## Format

Product	Cell Density	Product #
TrailBio® Hematopoietic Stem Progenitor Cells	2 X 10 <sup>6</sup>	Early Access

Production	
Donor Information	Human Male
Source Cell	IPSCs from endothelial progenitor cells (derived from blood)
Karyotype	Normal
Configuration	Cryopreserved Cells in Vials

Handling	
Shipping info	Dry Ice
Storage	Liquid Nitrogen
Usage	Research Use Only

## Trailhead® Cells

- **Built from Scratch:** We create novel protocols for producing specialized human iPSC-derived cells
- **HD-DoE® Platform:** Protocols are built by exploring high-dimensional space of regulatory inputs
- **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 standard at all stages
- **Cellular Identity:** Cell fate is confirmed by molecular and functional attributes

## Applications

Trailhead's 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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