TrailBio® A9 Dopaminergic Neurons

TrailBio® A9 Dopaminergic Neurons are a highly specialized subtype of midbrain neurons, crucial for motor control and implicated in the pathology of Parkinson's disease. Developed using our proprietary HD-DoE® platform, these neurons are differentiated from human induced pluripotent stem cells (iPSCs) and validated for key dopaminergic and A9-specific markers including TH, MAP2, SOX6, CALB1, NR4A2 and KCNJ6. These cryopreserved cells offer a consistent, ready-to-use in vitro model system for studying A9 dopaminergic function, degeneration, and neuro protective strategies. These cells enable scientists to study disease progression, screen therapeutic compounds, and explore regenerative medicine.

A9 Specific Phenotype

Express A9 markers TH and SOX6 while lacking CALB1, confirmed by qRT-PCR, ICC, and bulk RNA-seq analysis

Complete, Optimized Kit

Cryopreserved cells supplied with media and supplements formulated to support post-thaw recovery and maturation

Functional Performance

Efficient dopamine synthesis and release for disease modeling and drug screening

Disease Relevance

Critical in the study of Parkinson's disease, as the main subtype affected in neurodegeneration

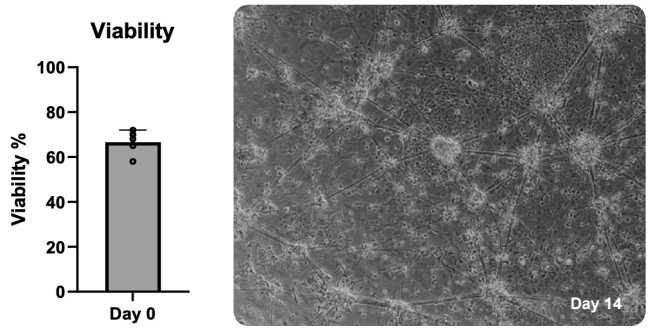

FIGURE 1. Trailbio® A9 Dopaminergic Neuron progenitors exhibit high viability upon thaw (day 0) and typical morphology in culture at day 14 post-thaw maturation as shown in brightfield image.

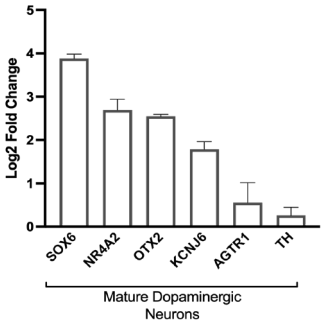

FIGURE 2. Bulk RNA-sequencing confirms the successful stepwise differentiation into dopaminergic neurons. Subsequent comparison of day 14 neurons to the progenitor population demonstrates a marked induction of genes critical for dopaminergic neuron maturation and function.

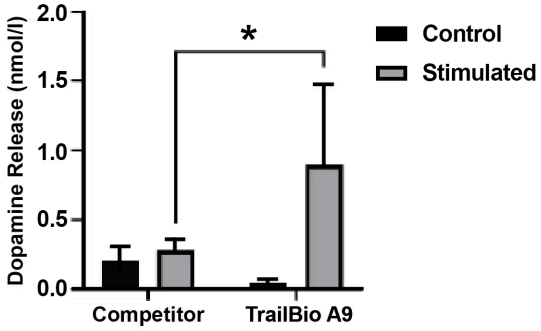

FIGURE 3. Functional analysis of dopamine release from TrailBio® A9 and competitor iPSC-derived dopaminergic neurons. Following stimulation with 50 mM KCl, dopamine secretion was quantified by ELISA. TrailBio® A9 neurons exhibited significantly higher levels of dopamine release.

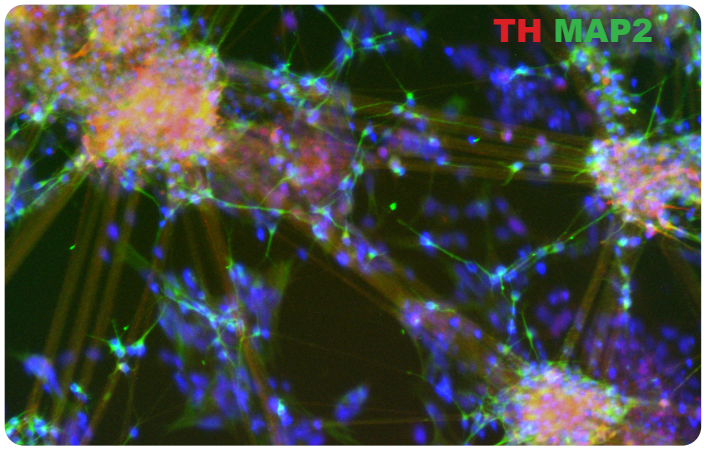

FIGURE 4. Trailbio® A9 Dopaminergic Neurons (day 14 culture) stained for mature neural marker microtubule-associated protein 2 (MAP2), A9 subtype dopaminergic neuron marker tyrosine hydroxylase (TH) and nuclei (DAPI). Images were taken at 10X magnification on the EVOS M7000 Imaging System.

Biology.Controlled.

TrailBio® A9 Dopaminergic Neurons

Product	Cell Density	Kit #
TrailBio® A9 Dopaminergic Neurons *Kit includes: Cells, Basal Medium, Plating Supplement and Medium Supplement** **Media kit and individual components are also available*	3 X 10^6 viable cells per vial	KEC05010301

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 creates an efficient protocol for A9 dopaminergic neurons from 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 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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