StemTAG™ PCR Primer Set (for Stem Cell Characterization)

CATALOG NUMBER: CBA-303 **STORAGE:** -20ºC (4ºC for 1 week)

QUANTITY AND CONCENTRATION: 7 primer pairs; 50 µL of 50 pmol/µL for each primer

Background

Embryonic stem (ES) cells are continuous proliferating stem cell lines of embryonic origin first isolated from the inner cell mass (ICM). Two distinguishing features of ES cells are their ability to be maintained indefinitely in an undifferentiated state and their potential to develop into any cell within the body. Although stem cells from different origins require different growth conditions for self-renewal and display different cell surface markers, OCT-4 and NANOG are the most widely used stem cell markers.

Pluripotent Stem cells can differentiate into cells derived from all three embryonic germ layers—mesoderm**,** endoderm, and ectoderm. The kit provides primers for AFP (endoderm marker), Flk-1 (mesoderm marker), and NCAM (ectoderm marker) to monitor differentiation.

The StemTAG™ Primer Set offers an efficient system for monitoring ES cell undifferentiation/differentiation through RT-PCR.

Primer Description

	Component #	Primer Name	Primer Size (# bases)	Fragment Size (bp)
Controls	#130301	GAPDH Forward	20	162
		GAPDH Reverse	20	
	#130302	β-Actin Forward	20	137
		β-Actin Reverse	20	
Stem Cell	#130303	OCT-4 Forward	20	174 (Human), 176 (Murine)
		OCT-4 Reverse	19	
	#130304	NANOG Forward	20	175 (Human), 178 (Murine)
		NANOG Reverse	20	
Endoderm	#130305	AFP Forward	20	136
		AFP Reverse	20	
Mesoderm	#130306	Flk-1 Forward	20	175
		Flk-1 Reverse	20	
Ectoderm	#130307	NCAM Forward	20	140
		NCAM Reverse	20	

Application

Use 1 µL of each primer pair solution (50 pmol/primer) in a 50 µL total volume of PCR reaction mixture.

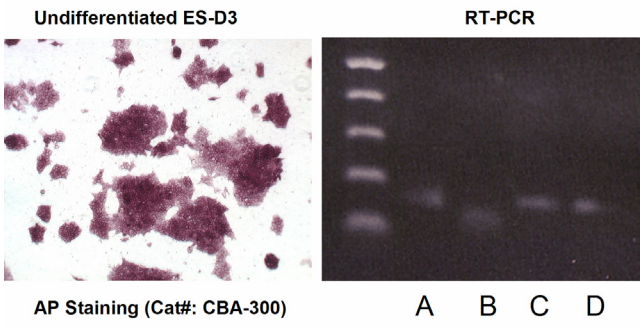

Figure 1. RT-PCR Analysis of OCT-4 and NANOG in Murine Embryonic Stem Cells (ES-D3). Total RNA was isolated from undifferentiated ES-D3. 5 µg of total RNA was used for cDNA synthesis. PCR reactions were performed at annealing temperature of 55 0C for 30 cycles in 50 µL total volume. The products are separated on 1% Agarose. A: GAPDH; B: β-Actin; C: OCT-4; D: NANOG.

References

1. Stem Cells: Scientific Progress and Future Research Directions. *Department of Health and Human Services. June 2001. http://stemcells.nih.gov/info/scireport.*

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