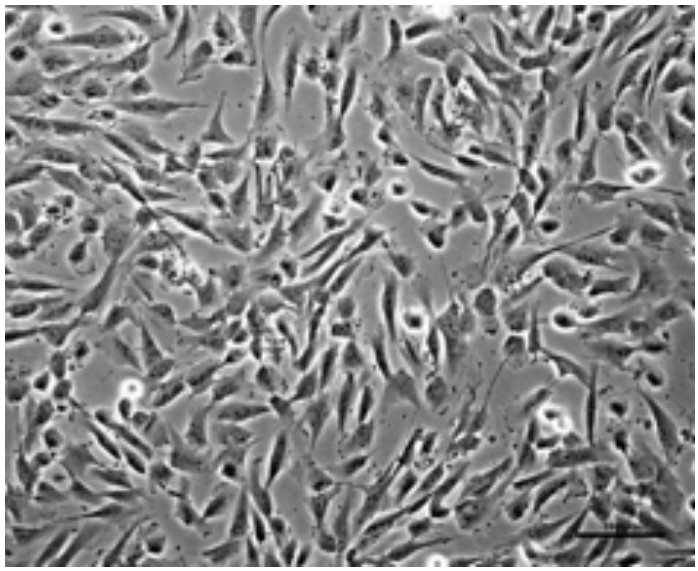
TECHNICAL DATA SHEET

PureStem® SK11, NCr-fac Progenitor

Catalog Number: ES-250



OVERVIEW

PureStem SK11, NCr-fac Progenitor expresses chondrogenic (COL1A1, VCAN, SOX9, COL6A1) and osteogenic (RUNX2, ALPL, SPP1) markers. In addition, it expresses markers of axial and appendicular level-derived mesenchymal cells (SIX1, TWIST1,SNAI2). This embryonic progenitor exhibits chondrogenic and osteogenic fates upon differentiation *in vitro* when using PureStem Differentiation Kits.

This Progenitor was clonally derived from the parental NIH registered Human ES cell line H9 (WA09) (West, M.D. et al, 2008).

NOTES ON NOMENCLATURE

PureStem progenitors are named by embryologist and cell biologists based on fate mapping the progenitors' undifferentiated and differentiated gene expression using annotated genetic expression interpretations found on LifeMap Discovery™ and classic embryology terminology. The following standardized system is used by BioTime, Inc. and/or all of it's subsidiaries:

Meso (Mesoderm):	**cor** (chordamesoderm: notochord); **prx** (paraxial or somatic mesoderm: head; somites; skeletal muscle; cartilage & IVD; dermis; tendons; endothelial cells); **int** (Intermediate: kidney; gonads); **latp** (Lateral Plate: circulatory system; body cavity; extra-embryonic tissues; Adipose; limb bones and cartilage)
Ecto (Ectoderm):	**srf** (surface ectoderm: epidermis; hair; nails; subacceous glands; olfactory epithelium; mouth (anterior pituitary, tooth enamel, cheek epithelium); lens, cornea)
NCr (Neural Crest):	**pns** (peripheral nervous system); end (endocrine and paraendocrine); **pig** (pigment Cells); **fac** (facial cartilage and bone); con (connective tissue and stroma: corneal endothelium and stroma; tooth papille; dermis, smooth muscle, adipose tissue of skin head and neck; connective tissue of salivary, lachrymal, thymus, thyroid, and pituitary glands; connective tissue of smooth muscle in arteries of aortic arch origin)
Endo (Endoderm):	**pnc** (pancreas); **prs** (prostate); **git** (GI tract); **lvr** (liver); **thy** (thyroid)

PRODUCT INFORMATION

Differentially expressed positive mRNA markers (by microarray):	ZIC2, VCAN, TWIST1, TSPAN18, TBX15, SPP1, SOX9, SNAI2, SIX1, RUNX2, PITX1, COL6A1, COL1A1, ALPL	
Contents:	Vial contains >500,000 cells cryopreserved in 1 ml of FBS/10% DMSO	
Growth Medium:	PureStem™ EPM k05	Part number EM-1005
Differentiation Media:	PureStem™ Chondrogenesis Kit HyStem-4D™ Chondrogenesis Kit (with HyStem hydrogel matrix) PureStem™ Osteogenesis Kit 01	Part number EM-2001 Part number EM-2002 Part number EM-2003
Recommended Culture Conditions:	Cells should be plated onto tissue culture grade polystyrene plastic coated with 0.1% gelatin. Following rapid thawing & slow dilution in final culture medium, the initial seeding density should be ~ 20,000 cells/cm2. Cells should be maintained at 37°C in a humidified incubator preferably with 10% CO2 and 5% oxygen with medium change at least twice a week. At confluence, split 1:3 for routine maintenance. Confluence for more than 2 days may lead to terminal differentiation.	
Population Doubling Time:	Approximately 50 hours.	
Population Doubling:	PureStem SK11, NCr-fac Progenitor is sold at passage 11 (passage 1: original clonal isolate at confluence in 1.9 cm2 well), which corresponds to approximately 13.5 doublings since the first passage and approximately 31.5 doublings since its original clonal plating. The line displays a finite lifespan in vitro, and when properly maintained may reach > 50 population doublings. BioTime tests and guarantees that this progenitor will express its differentiated function using BioTime media systems during 15 population doublings following plating from the frozen ampoule.	
Sterility:	The embryotic progenitor is negative for HIV (1,2), HBV, HCV, bacteria, mycoplasma, and fungal contamination	
Thaw Test Result:	>50% viability, >25% attachment, growth to confluence, and maintenance of original morphologic appearance.	
Certificates of Analysis:	Available on request	
Restrictions:	Cells are for research use only. They are not for human use, and may not be used for commercial purposes. User is responsible for proper handling upon receipt.	
Manufacturer:	BioTime, Inc.	

PRODUCT WARRANTY

BioTime, Inc. and/or its subsidiaries warrants its products as set forth in the General Terms and Conditions of Sale found on ESI BIO's website at **www.esibio.com/termsandconditions.**

DISCLAIMER

BIOTIME, INC. AND/OR ALL ITS SUBSIDIARIES PRODUCTS MAY CONTAIN HUMAN OR OTHER ANIMAL SOURCE MATERIAL; TREAT AS POTENTIALLY INFECTIOUS. ALWAYS USE PROPER HANDLING TECHNIQUES. PRODUCTS SHOULD BE HANDLED AND USED ONLY BY PEOPLE TRAINED IN PROPER LABORATORY SAFETY PROCEDURES AT BIO-SAFETY LEVEL 2 OR HIGHER AS RECOMMENDED BY THE CDC FOR ANY HUMAN OR OTHER ANIMAL SOURCED MATERIAL.

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