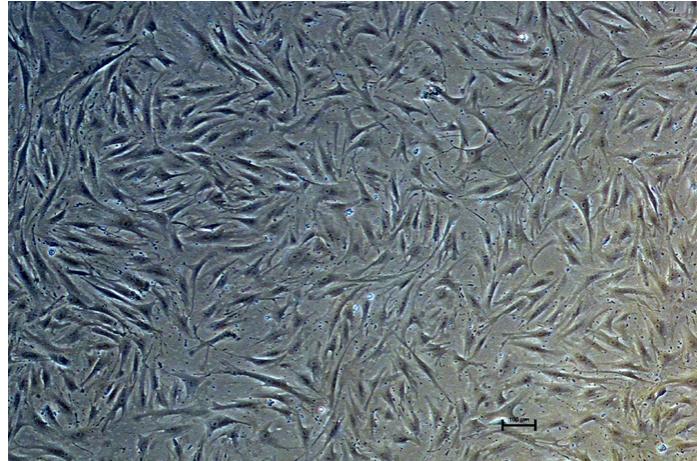


TECHNICAL DATA SHEET

PureStem® Progenitor E72

Catalog Number: ES-100



OVERVIEW

PureStem Progenitor E72 expresses the Mohawk homeobox gene (MKX), HAND2, TBX15, and the HOX genes: HOXA10, HOXD11 (implicated in forelimb development), but does not express the lateral plate mesoderm marker HOXB6 unless exposed to retinoic acid. It does not express the relatively distal HOX genes HOXB7 and HOXC8 (expressed by cultured MSCs from the iliac crest), or the HOX genes HOXC9, HOXC10, or HOXC11 (expressed in hindlimb, but not forelimb bud mesenchyme).

When these cells are cultured for 21 days in HyStem-C hydrogel with TGF β 3 and BMP4, the differentiated cells express strong osteochondral markers including COL2A1, ALPL, IBSP, and osteopontin (SPP1).

When differentiated in HyStem-C in the presence of BMP4 alone, the cells express the adipocyte markers FABP4 and CD36 as well as BETATROPHIN/LIPASIN (C19orf80). Betatrophin-expressing fat cells are useful in research of lipid metabolism and pancreatic beta cell proliferation and diabetes research (Yi et al, 2013).

Progenitor line E72 was derived from the human embryonic stem cell line MA03 (ACT03) as described (West et al, 2008). Since the cells do not express embryonic stem cell markers, the NIH does not place restriction on their use under federal funding.

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 its 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; subaceous 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):

MKX, HAND2, TBX15, HOXA11, HOXD11

Contents:

Vial contains >500,000 cells cryopreserved in 1 ml of FBS/10% DMSO

Growth Medium:

PureStem EPM k01

Part number EM-1001

Differentiation Medium:

HyStem-4D Differentiation Kit 2007

Part number EM-2007

(For expression of BETATROPHIN/LIPASIN)

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 media change at least twice a week. At confluence, split 1:3 for routine maintenance. Note: confluence for more than 2 days may lead to terminal differentiation.

Population Doubling Time:

Approximately 50 hours.

Population Doubling:

PureStem Progenitor E72, is sold at passage 12 (the original clonal isolate confluent in a 1.9 cm² well was P1), which corresponds to approximately 13.5 doublings since the first 1.9 cm² well and approximately 31.5 doublings since its original clonal plating. The line displays a finite lifespan in vitro, senescing at approximately 70 PD. When used properly this product is guaranteed to scale for a minimum of 10 population doublings.

Sterility:

The embryotic progenitor is negative for bacterial 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.

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