

Stem cell origin

Adult

Mesenchymal stem cells

1. Bone marrow, adipose tissue, dental tissue, amniotic fluid, human umbilical cord.
2. CD73+, CD90+, CD105+, CD11b-, CD14-, CD19-, CD34-, CD45-, CD79a- and HLADR-.
3. Multipotent – chondrogenic, adipogenic, osteogenic differentiation ex-vivo.
4. Ability to regulate the immune system.
5. Self-renewing.

Endothelial progenitor cells

1. Bone marrow and circulation.
2. CD34+, CD133+, CD31+, CD45+, CD146+, VEGFR, VE-Cadherin, CXCR4, c-KIT, Tie-2.
3. Differentiates to form endothelial cells that are part of the vasculature.

Cardiac stem cells

1. Heart.
2. c-KIT, Sca-1, Abcg-2, Flt1/4, Nkx2.5, GATA4, Oct3/4, Bmi-1, Nanog.
3. Clonogenic
4. Self-renewing
5. Multipotent - can differentiate to form beating heart cells.

Pathfinder cells

1. Pancreas.
2. CD90+/-, CD24+/-, CD44+, CD49+, CD147+, CD130+, CD34-, cKIT-, CD31-, CD45-, CD71-, CD105-, CD73-, c-myc, GFAP, HLA class 1, ABC, ICAM3, Nestin, Nanog, Oct4, Integrin $\alpha 2\beta 1$, Ngn3, Sox2 and CXCR4.
3. Do not induce immune responses in immunologically different individuals.

Other cell types

1. Induced pluripotent stem cells (iPS) – adult stem cells induced to become pluripotent.
2. Foetal aorta-derived CD133+ progenitor cells.

Embryo

Embryonic stem cells (ESC)

1. Inner cell mass of a blastocyst.
2. Nanog, Oct4, GCTM-2, CD9+, TACSTD1, EPCAM, SSEA-1, SSEA-3, SSEA-4, CD324, CD90, CD117, CD326, CD29, CD24, CD59, CD133, CD31, TRA-1-61, TRA-1-81, Frizzled5, SCF, TDGF-1.
3. Pluripotent.
4. Ability to replicate indefinitely.
5. Ethical and safety issues due to origin of cells (can be overcome by using induced pluripotent stem cells (iPS), donor-host rejection, teratogenicity).