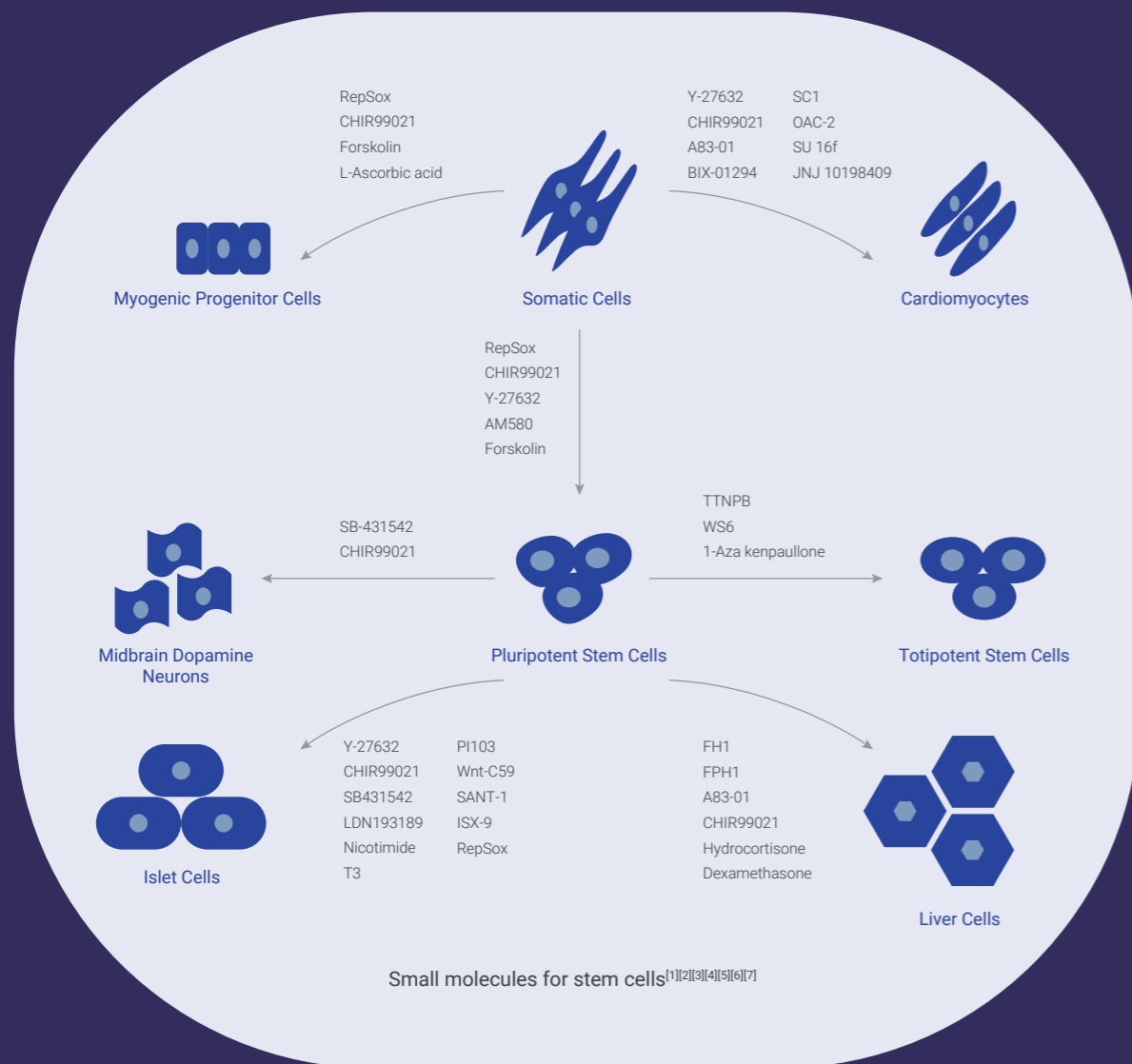


Stem Cells and Small Molecules



As raw materials in the stem cell therapy, small molecules are used in following operations:

1/ To introduce new, safe, and fast reprogramming technology^{[1][3]}

2/ To maintain self-renewal, and potency of stem cells^[3]

3/ To induce differentiation of stem cells^[6]

4/ To trans-differentiate somatic cells into another functional cells^[2]

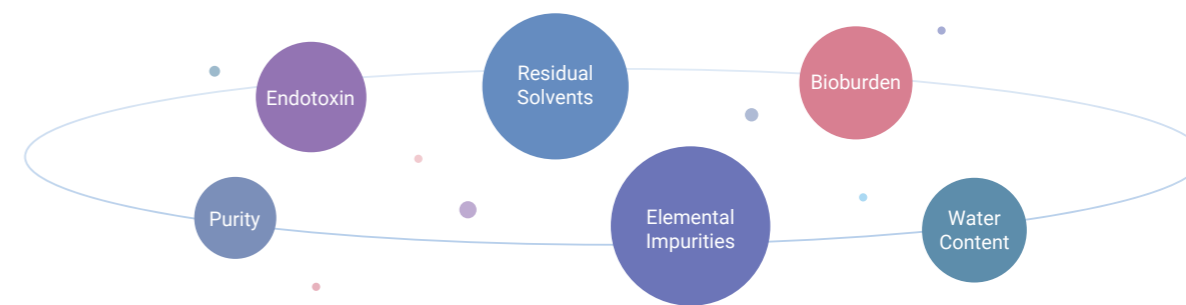
Small Molecules as Ancillary Reagents for Stem Cell Therapy

Advantages of using small molecules in cell preparation for stem cell therapy:

- Low cost, convenient storage, and transportation
- Work faster than traditional technology i.e. gene-editing
- Safer than traditional gene-editing technology
- Easy operation, small molecules perform various functions in different combination and concentration

MCE Product Quality Assurance

The GMP Small Molecules are synthesized following ICH Q7 guidelines (Good Manufacturing Practice Guide for Active Pharmaceutical Ingredients). Each batch has strict QC tests, including:



Ancillary Materials Features

To avoid any unnecessary cost and risk, MCE can provide GMP Small Molecules:

- In large quantity and with high purity
- Quick research, development, and production, products in stock can reduce time & cost
- Multiple products for different targets, fulfill diverse needs of cell therapy
- Batch to batch consistency, lowers the risk of changing raw materials during clinical trials
- Extra service, provide relative materials and papers for project declarations and official on-site audits in period of new drug application (NDA) and biologics license application (BLA)

Drug name	Catalog	Function
Laduviglusib (CHIR-99021)	HY-10182G	Laduviglusib is a potent, orally active and selective GSK-3 α / β inhibitor. Laduviglusib converts human fibroblasts into functional cardiomyocytes.
Y-27632 dihydrochloride	HY-10583G	Y-27632 dihydrochloride is an orally active and ATP-competitive ROCK inhibitor. Y-27632 dihydrochloride induces fibroblasts into pluripotent stem cells.
XAV-939	HY-15147G	XAV-939 is a tankyrase inhibitor. XAV-939 induces human pluripotent stem cells to post-mitotic cortical neurons differentiation.
SB-431542	HY-10431G	SB-431542 is a TGF- β type I receptor inhibitor. SB-431542 promotes differentiation of human pluripotent stem cells to multipotent hematopoietic progenitors.
LDN193189 (DM-3189)	HY-12071G	LDN193189 is a selective BMP type I receptor inhibitor. LDN193189 induces the generation of glucose-responsive β cells from human pluripotent stem cells.
RepSox (E-616452)	HY-13012G	RepSox is a potent and selective TGF- β type I receptor inhibitor. RepSox induces MEFs reprogramming to chemically induced pluripotent stem cells.
AM580	HY-10475G	AM580 is a selective RAR α agonist. AM580 induces human iPSCs/ESCs into Nephrogenic Intermediate Mesoderm.
Forskolin	HY-15371G	Forskolin is a potent adenylate cyclase activator and intracellular cAMP formation inducer. Forskolin induces MEFs reprogramming to chemically induced pluripotent stem cells. Forskolin induces human iPSCs into hepatocytes and islets.

References:

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 [4] Nat Med. 2022 Feb;28(2):272-282. [5] STAR Protoc. 2020 Oct 16;1(3):100130. [6] Nature. 2022;10.1038/s41586-022-04967-9.
 [7] Stem Cell Reports. 2018;10(5):1505-1521. [8] Science. 2013, 341(6146):651-4. [9] Cell Stem Cell. 2008;3(1):7-8.

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GMP Small Molecules for Cell Therapy

Good Manufacturing Practice (GMP) is a comprehensive guideline ensuring safety and high quality of pharmaceutical products. GMP Small Molecules are produced in strict accordance with cGMP guidelines, assuring reliable, consistent, and quality-assured ancillary reagents for cell therapy. These are needed at all stages of stem cell therapy such as reprogramming, self-renewal, proliferation, and differentiation.

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