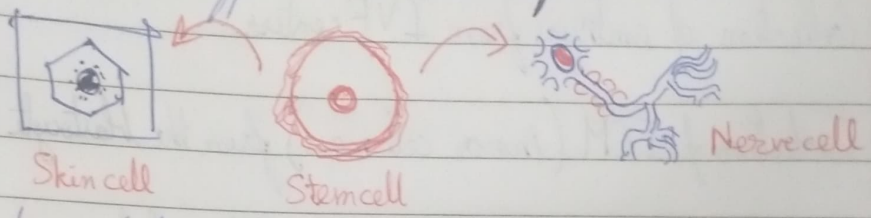
Stem cells :- Cells which have the ability to divide for indefinite periods and can give rise to specialized cells of various tissues of the body.

Properties of STEM Cells :-

1) Ability to differentiate into other cells & self-regenerate

2) It can be maintained in vitro-conditions (controlled environment outside living organism) for extended period using artificial medium

* STEM Cells can differentiate into Specialised cells




Classification of stem cells :-

1. Unipotent :- can only differentiate into one specific type of cell.
Eg :- Muscle stem cells can only produce muscle cells
~~(essential for~~ (specialized for muscle tissue maintainance & repair)

2. Multipotent :- can ~~produce~~ differentiate into limited range of cell types within specific organ/tissue
Eg :- Hematopoietic stem cells can produce various blood cells. (RBC, WBC, Platelets)

3. Pluripotent :- can ~~produce~~ differentiate into any type of cell except for extraembryonic tissues such as placenta. Eg :- Embryonic stem cells

4. Totipotent :- can differentiate into any type of cell (including embryonic & extraembryonic cells/tissues)
Eg :- Morula of Embryo

## Sources of stem cells :-

1) Embryonic Stem cells :- • Isolated from blastocyte stage of embryo
• They are pluripotent in nature

2) Adult stem cells :- • Present in all organs (but very little amount)
• They are Multipotent in nature

## Culture of embryonic stem cells :-

- Collection of embryos from IVF centers
- Isolation of ICM (inner cell mass) from the blastocyte stage
- Transfer ICM to the center of the culture plate containing feeder cells and growth medium
- It can be differentiated into any cell type by adding a specific medium