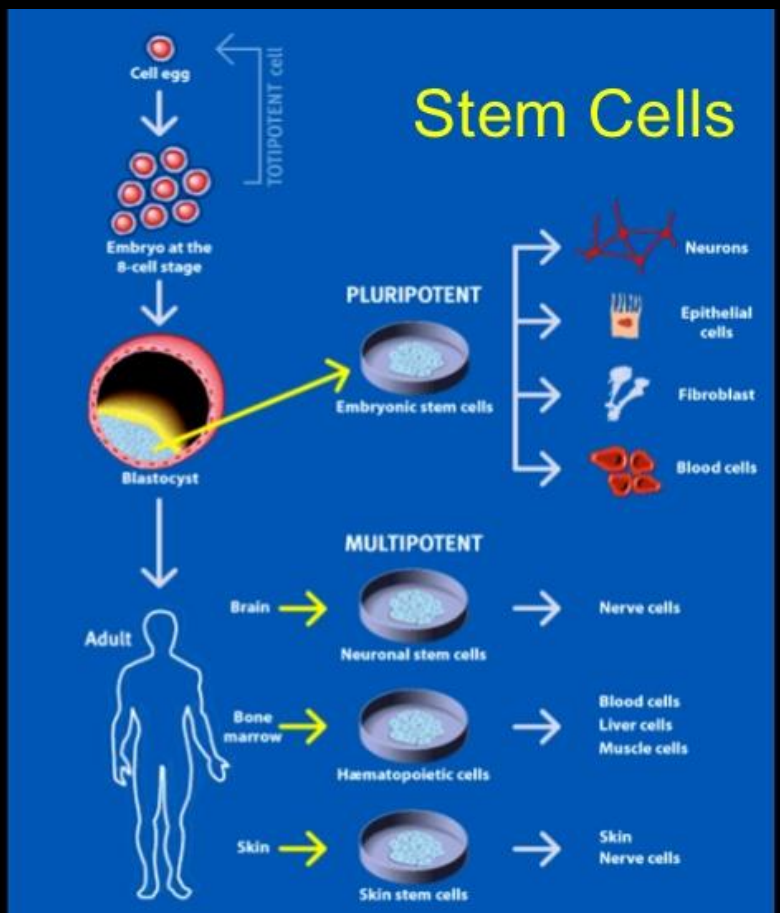
DR ANITA :
LS COLLEGE

# Adult Stem Cells

- Unique cells that are capable of self-renewal
- Have the ability to differentiate through a committed lineage
- Undergo further development within an adult organism v embryo
- They are multi(pluri)potent v totipotent

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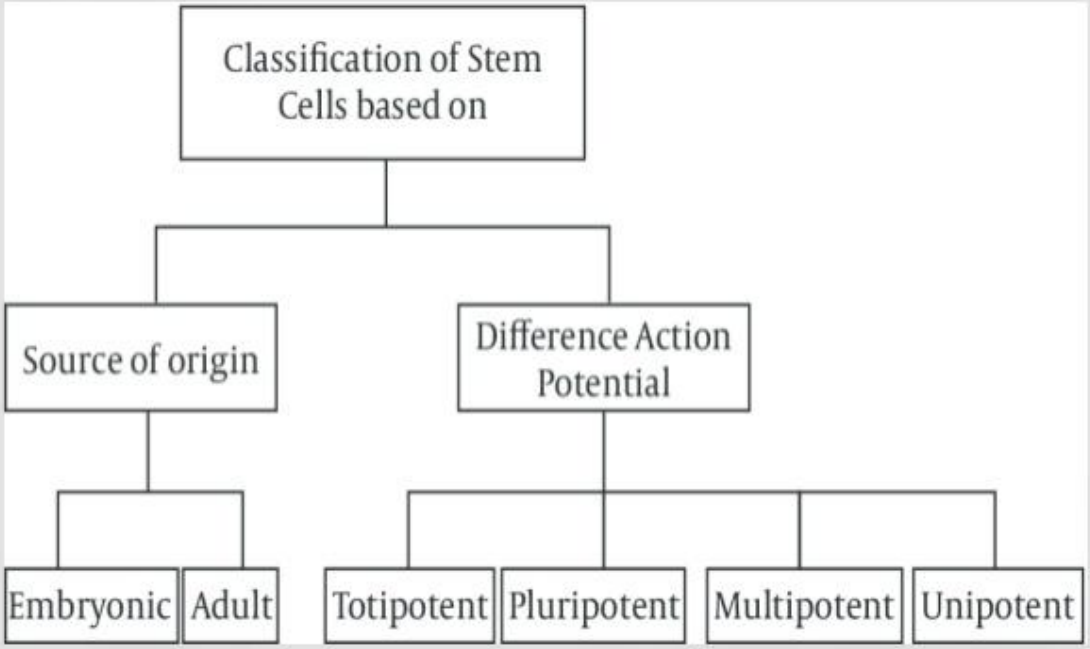
# classification

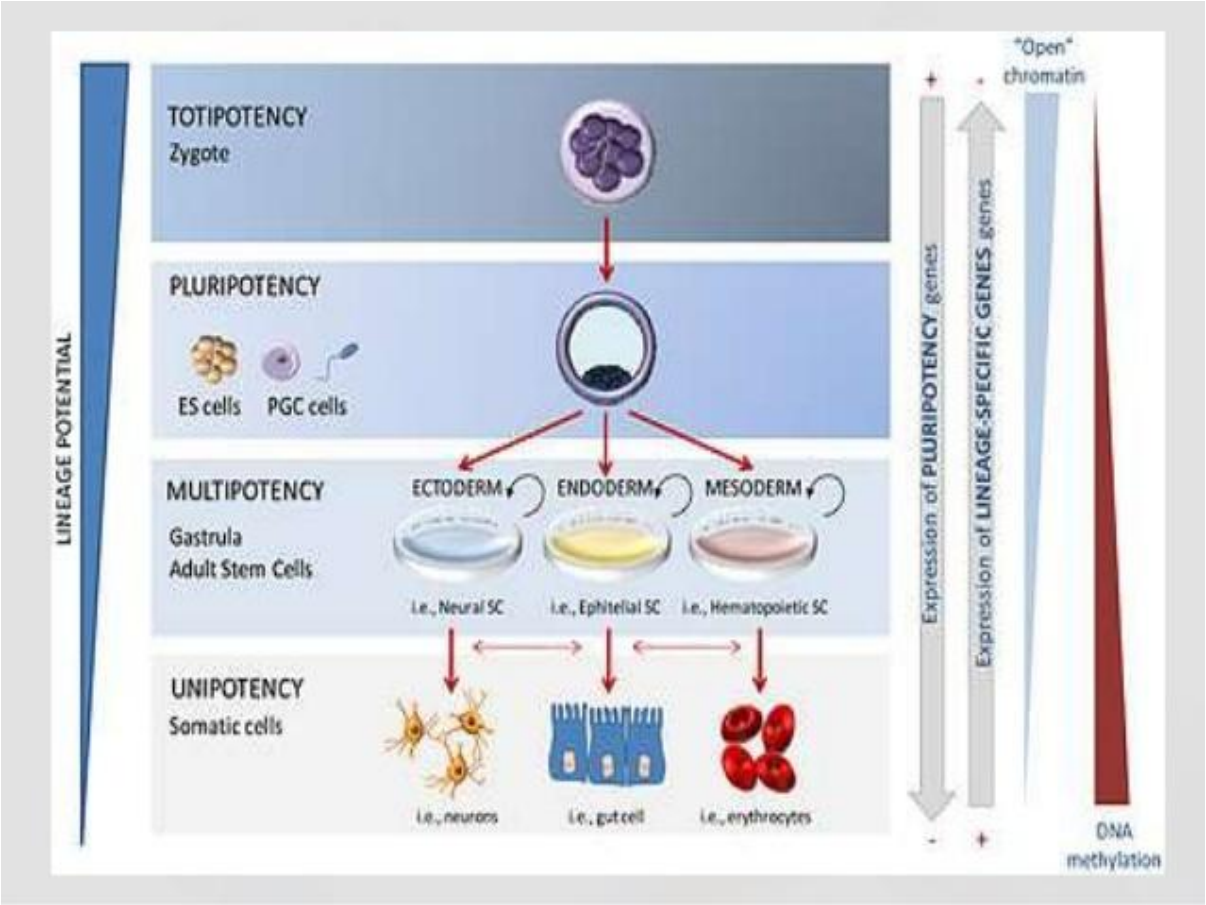



**Totipotent** cells have the capability to produce all cell types of the developing organism, including both embryonic and extraembryonic (eg, placenta) tissues.

• **Pluripotent** cells can only make cells of the embryo proper, but make all cells of the embryo including germ cells and cells from any of the germ layers. Therefore, they can make any cell of the body.

• **Multipotent** cells can only make cells within a given germ layer. For example, multipotent stem cells from a mesodermal tissue like the blood can make all the cells of the blood, but cannot make cells of a different germ layer such as neural cells (ectoderm) or liver cells (endoderm).

• **Unipotent** cells make cells of a single cell type. An example is a germ cell stem cell that makes the cells that mature to become egg or sperm, but not other cell types.


LINEAGE POTENTIAL
TOTIPOTENCY
Zygote
PLURIPOTENCY
ES cells
PGC cells
MULTIPOTENCY
Gastrula
Adult Stem Cells
ECTODERM
ENDODERM
MESODERM
i.e., Neural SC
i.e., Ephitelial SC
i.e., Hematopoietic SC
UNIPOTENCY
Somatic cells
i.e., neurons
i.e., gut cell
i.e., erythrocytes
"Open" chromatin
Expression of PLURIPOTENCY genes
Expression of LINEAGE-SPECIFIC GENES genes
DNA methylation