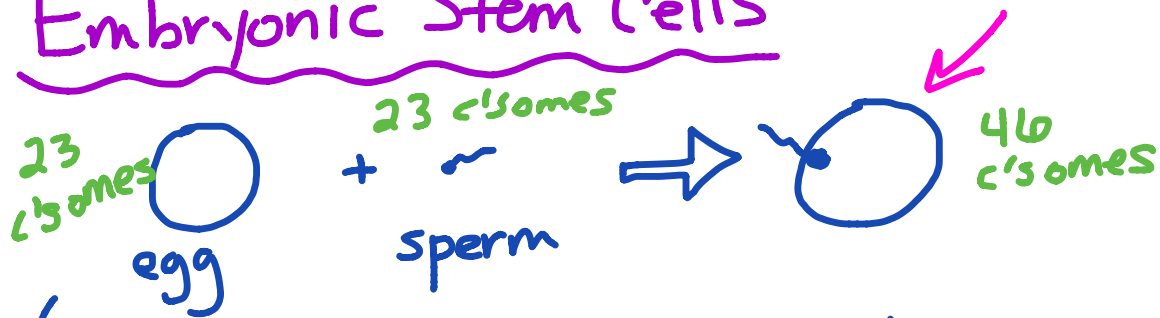


Embryonic Stem Cells




- Fertilization = CONCEPTION
- forming one cell called a **ZYGOTE**.

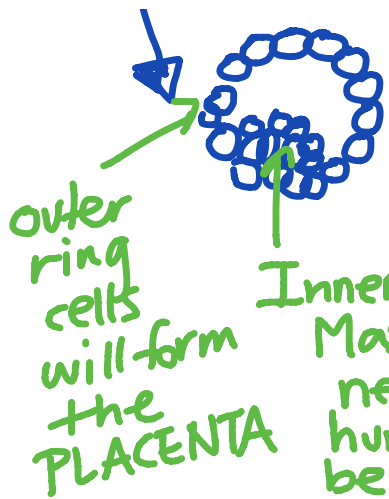
 4 cell Zygote (mitosis is process of cell ÷).

These cells are called **TOTIPOTENT**, meaning they have total potential to become any other cell type, including the PLACENTA.

(Identical twins = split in these cells, forming 2 humans with same DNA, 1 egg + 1 sperm!)

(Fraternal twins = 2 eggs, 2 sperm)

 16 cell zygote (~3 days). This ball of cells is called a **MORULA** (=raspberry!)



Several hundred cells (3-14 days). This is called a **BLASTULA**. (Body is not aware of being pregnant yet!)

These cells are no longer Totipotent, they are **PLURIPOTENT** (can become any cell type except the placenta!)

* These are the cells used for Embryonic Stem Cell research!



After 14 days — **GASTRULA**.

At this stage, the cells are becoming **DIFFERENTIATED** (cells are specialized for specific functions) Now the cells are **MULTIPOTENT** (can only become that cell type).

* These cells are the same as Adult Stem Cells, and Umbilical cord cells.

