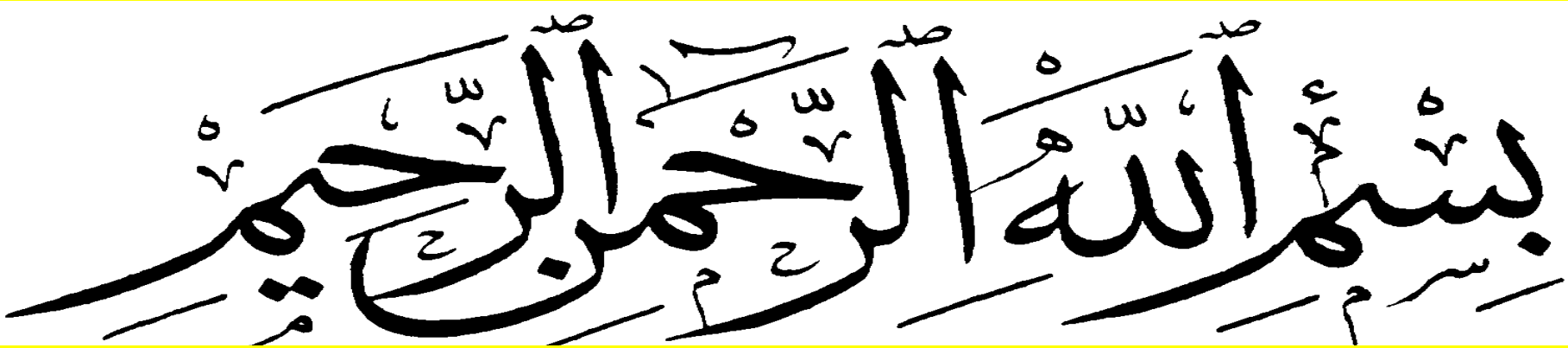

بسم الله الرحمن الرحيم

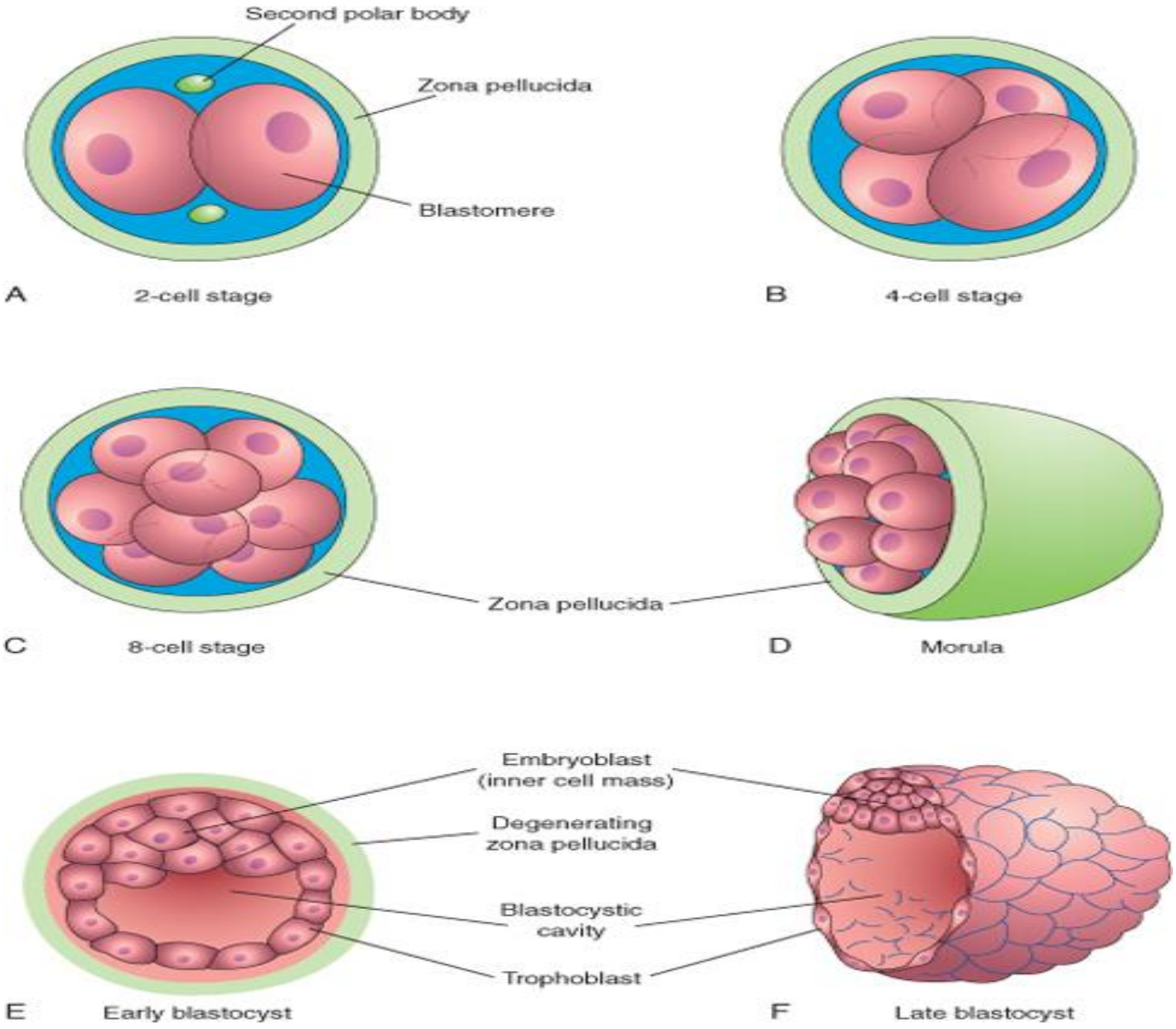
CLEAVAGE OF THE ZYGOTE


Dont weep any more
Infant
I need just milk. Why you dont understand?

CLEAVAGE OF THE ZYGOTE

- Cleavage is the repeated mitotic divisions of the zygote, resulting in a rapid increase in the number of cells.
- These cells are called blastomeres which become smaller with each successive cleavage division.
- During cleavage, the zygote is within the rather thick zona pellucida.
- Division of the zygote into blastomeres begins approximately 30 hours after fertilization.

- After the nine-cell stage, the blastomeres change their shape and tightly align themselves against each other to form a compact ball of cells.
- Compaction permits greater cell-to-cell interaction
- It causes segregation of the internal cells that form the inner cell mass or embryoblast of the blastocyst.
- When there are 12 to 32 blastomeres, the developing human is called a morula.
- Internal cells of the morula (inner cell mass) are surrounded by a layer of cells that form the outer cell layer.
- The spherical morula forms approximately 3 days after fertilization and enters the uterus.



- FORMATION OF THE BLASTOCYST
- Shortly after the morula enters the uterus (approximately 4 days after fertilization), a fluid-filled space called the blastocystic cavity appears inside the morula .
- The fluid passes from the uterine cavity through the zona pellucida to form this space.
- As fluid increases in the blastocystic cavity, it separates the blastomeres into two parts:
- A thin, outer cell layer, the trophoblast (Greek, trophe, nutrition), which gives rise to the embryonic part of the placenta
- A group of centrally located blastomeres are called the inner cell mass (embryoblast).

- During this stage of development-blastogenesis-the conceptus is called a blastocyst .
- The embryoblast now projects into the blastocystic cavity and the trophoblast forms the wall of the blastocyst.
- After the free blastocyst has floated in the uterine secretions for approximately 2 days, the zona pellucida gradually degenerates and disappears .
- Shedding of the zona pellucida and hatching of the blastocyst have been observed in vitro.
- Shedding of the zona pellucida permits the hatched blastocyst to increase rapidly in size.
- While floating in the uterus, this early embryo derives nourishment from secretions of the

UTERINE GLANDS.

- Approximately 6 days after fertilization (day 20 of a 28-day menstrual cycle), the blastocyst attaches to the endometrial epithelium,
- usually adjacent to the embryonic pole .
- The trophoblast starts to proliferate rapidly and gradually differentiates into two layers :
- An inner layer of cytotrophoblast
- An outer layer of syncytiotrophoblast

- At approximately 6 days, the fingerlike processes of syncytiotrophoblast extend through the endometrial epithelium and invade the connective tissue.
- By the end of the first week, the blastocyst is superficially implanted in the compact layer of the endometrium
- It deriving its nourishment from the eroded maternal tissues .

THANKS