EXPERIMENT

AIM

To study the T.S. of blastula through permanent slide.

MATERIAL REQUIRED

Permanent slides, microscope.

THEORY

Blastula is an early developmental stage of vertebrate embryos formed by cleavage of the fertilized egg. Blastula is a hollow sphere of cells (blastomeres) surrounding an inner fluid-filled cavity (the blastocoel). Only when the blastocoel is formed does the early embryo become a blastula. The blastula precedes the formation of the gastrula in which the germ layers of the embryo form. After the blastula develops, it undergoes transition to the gastrula, a process called gastrulation.

REQUIREMENTS

Permanent slide of T.S. of blastula, compound microscope, lens cleaning fluid and paper, pencil, eraser.

PROCEDURE

1. Select a good prepared slide of T.S. of blastula and focus under 10x magnification under light microscope.
2. Now, study the structures and draw the different layers of cells seen.
3. And finally compare these structures with the labelled diagrams given ahead and identify then accordingly.

OBSERVATIONS

T.S. through Morula Shows:

1. Spherical mass of cells called blastomeres.
2. Outermost layer is the zona pellucida.

T.S. through Blastula Shows:

1. Outermost layer is zona pellucida followed by trophoblast.
2. Within the envelope there is a fluid filled cavity called blastocoel.
3. Mass of cells inner to the trophoblast is called inner cell mass which develops into embryo.
4. Side of blastocyst which contains inner cell mass is called embryonic or animal pole while the opposite pole is called vegetal pole.

T.S. through Gastrula:

1. Shows trophoblast as the outermost layer.
2. Inner cell mass is differentiated into three germ layers called endoderm, mesoderm and ectoderm.

RESULT

The transverse section of blastula clearly shows all the characteristic features of blastula stage of a mammal.

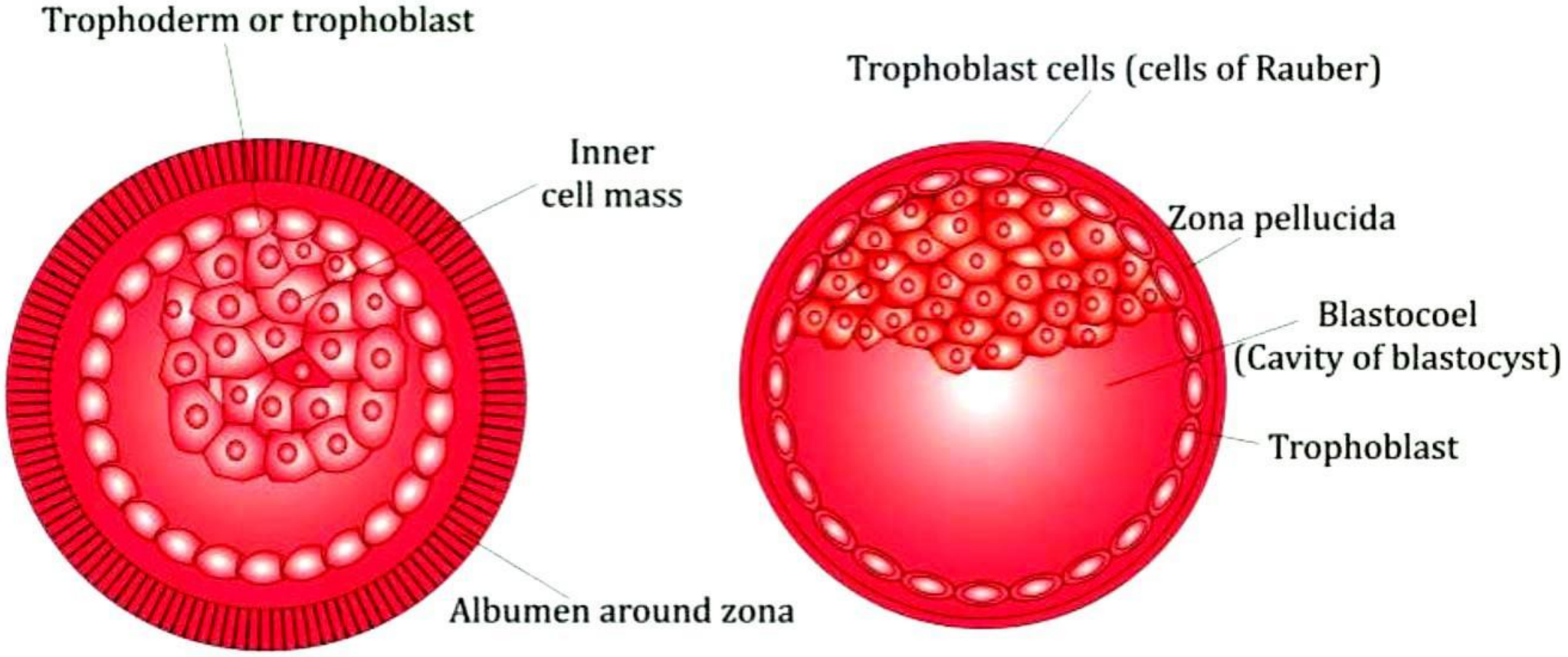

Fig. T.S. of blastula of a mammalian embryo

PRECAUTIONS

Objective and eye lenses should be cleaned before viewing the slide.

The slide should be centrally placed so that it can be focused properly under the low and high powers of compound microscope in order to enhance the clear visibility of all cells.

VIVA VOCE

Q1. Distinguish between macromeres and micromeres.

Ans. The yolk laden large blastomeres are called macromeres. The pigmented small blastomeres are called micromeres.

Q2. Define cleavage and morula.

Ans. Cleavage is defined as a series of mitotic divisions of zygote which convert it into a blastula. The solid cellular mass formed after cleavage is called morula.

Q3. What is implantation?

Ans. The attachment of blastocyst to the uterine wall is known as implantation.

Q4. What is a blastocyst?

Ans. Blastocyst is a stage of embryonic development which consists of an outer cell envelope, an inner cellular mass and a fluid filled blastocoel cavity.

Q5. Name the blastomeres present in (a) lower vegetal hemisphere (b) animal hemisphere

Ans. (a) Macromeres (b) Micromeres.