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Fertilisation and Implantation:

- **Insemination:** During coitus or copulation semen is released into the vagina by the penis.
- The motile sperms swim rapidly through the cervix, enter into the uterus and finally reach the ampullary region of the fallopian tube.
- The ovum released by the ovary is also transferred to the ampullary region of the fallopian tube.
- Fertilisation occurs in the fallopian tube only if the ovum and sperms are simultaneously transferred into the ampullary region of the fallopian tube.
- **Fertilisation:** It is the fusion of the sperm and the egg. During fertilisation the sperm induces changes in the zona pellucida layer of the ovum that block the entry of additional sperms ensuring that only one sperm can fertilise an ovum.
- The secretions of the acrosome help the sperm enter the ovum through the zona pellucida and the plasma membrane.
- This induces the secondary oocyte to complete meiosis. This is again an unequal division. It results in the formation of a second polar body and a haploid ovum.
- The haploid nuclei of the sperm and the ovum fuse to form a diploid zygote. The zygote contains 46 chromosomes.
- The sex of the foetus is determined by the sex chromosome present in the sperm. As the female is XX the ovum will always carry the X chromosome. Males are XY and therefore, the sperm can contain either X or Y. Therefore, half of all the sperms carry the X chromosome and the other half carry the Y chromosome. Depending on whether the X-containing sperm or the Y-chromosome fuses with the ovum, the zygote will be female or male.

- The zygote undergoes mitotic cleavage as it moves along the isthmus of the oviduct towards the uterus. It forms 2, 4, 8 and 16 daughter cells called as **blastomeres**.
- **Morula**: The embryo with 8-16 **blastomeres**.
- The morula continues division as it moves further along into the uterus. The blastomeres arrange in to an outer layer called as the **trophoblast**. The **inner cell mass** is attached to the trophoblast.
- The trophoblast attaches to the endometrium
- The inner cell mass differentiates to form the embryo
- The cells of the uterus divide rapidly and cover the blastocyst. The blastocyst thus embeds in the uterine wall. This is called as **implantation**. This leads to pregnancy.

Draw the diagram of transport of ovum, fertilization and passage of growing embryo through fallopian tube .