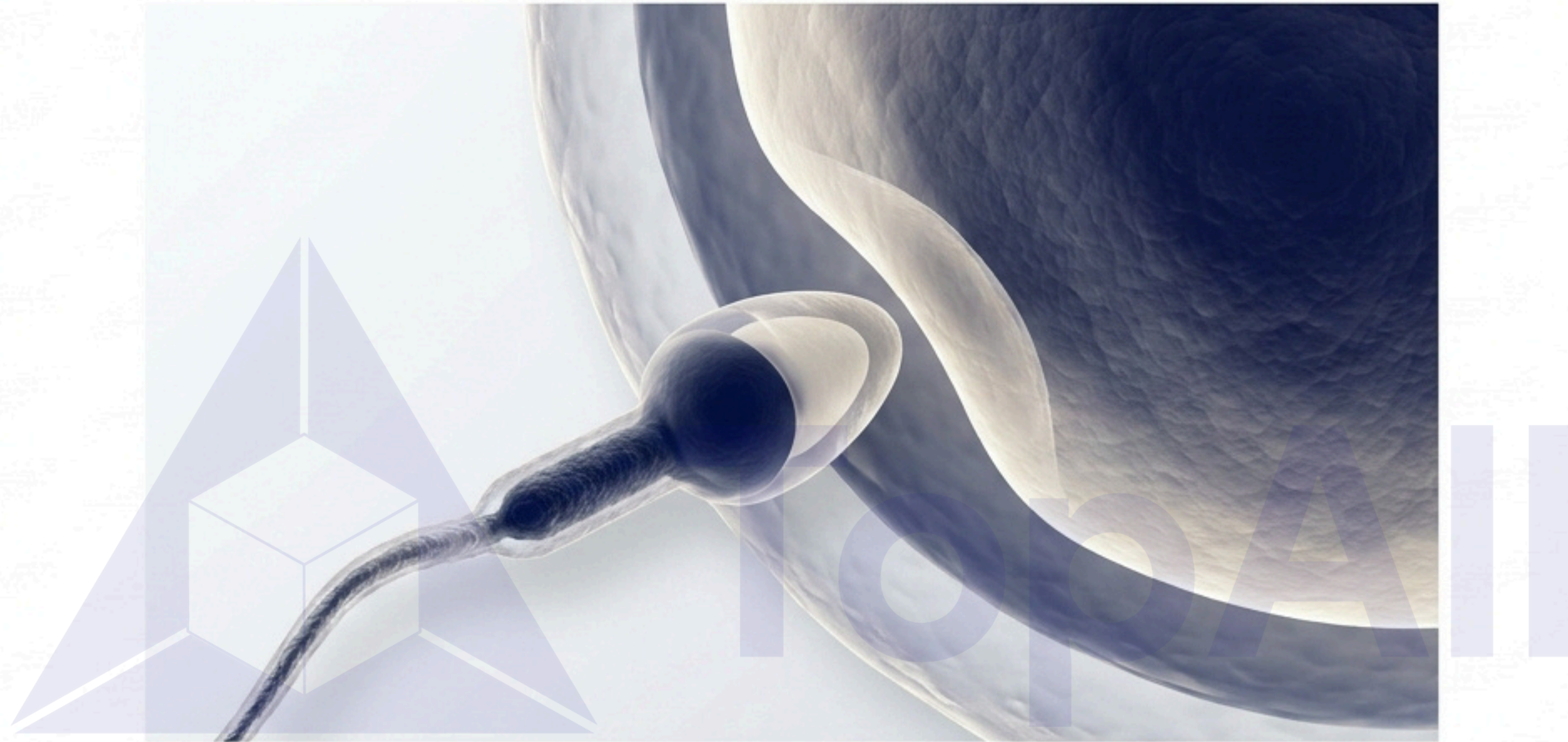


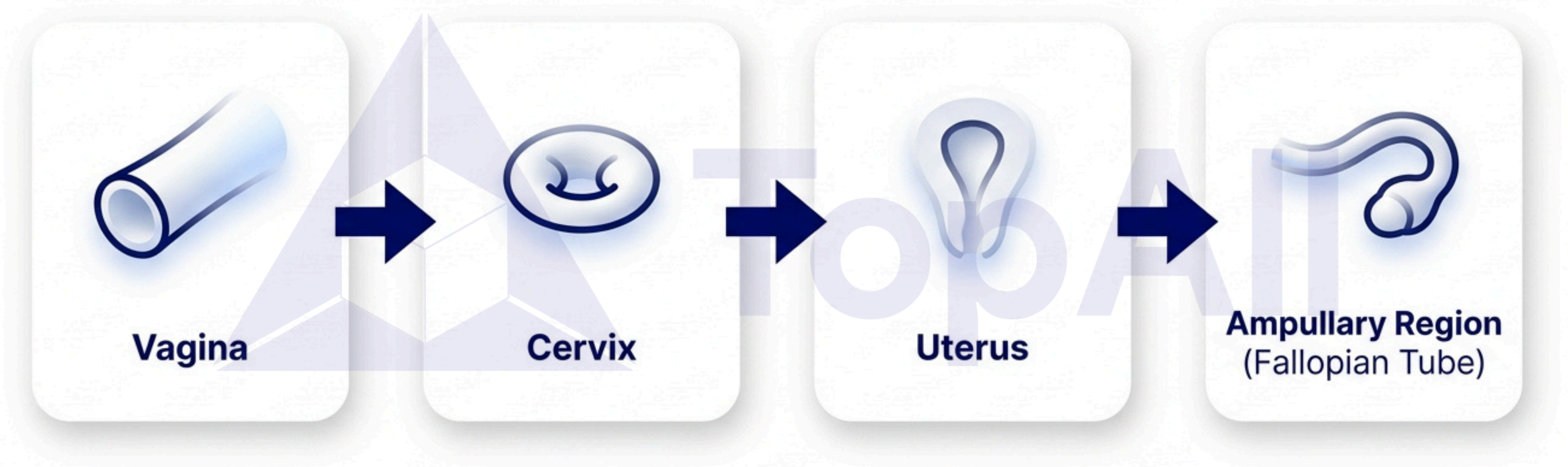


Fertilisation and Implantation

From Sperm Entry to Pregnancy

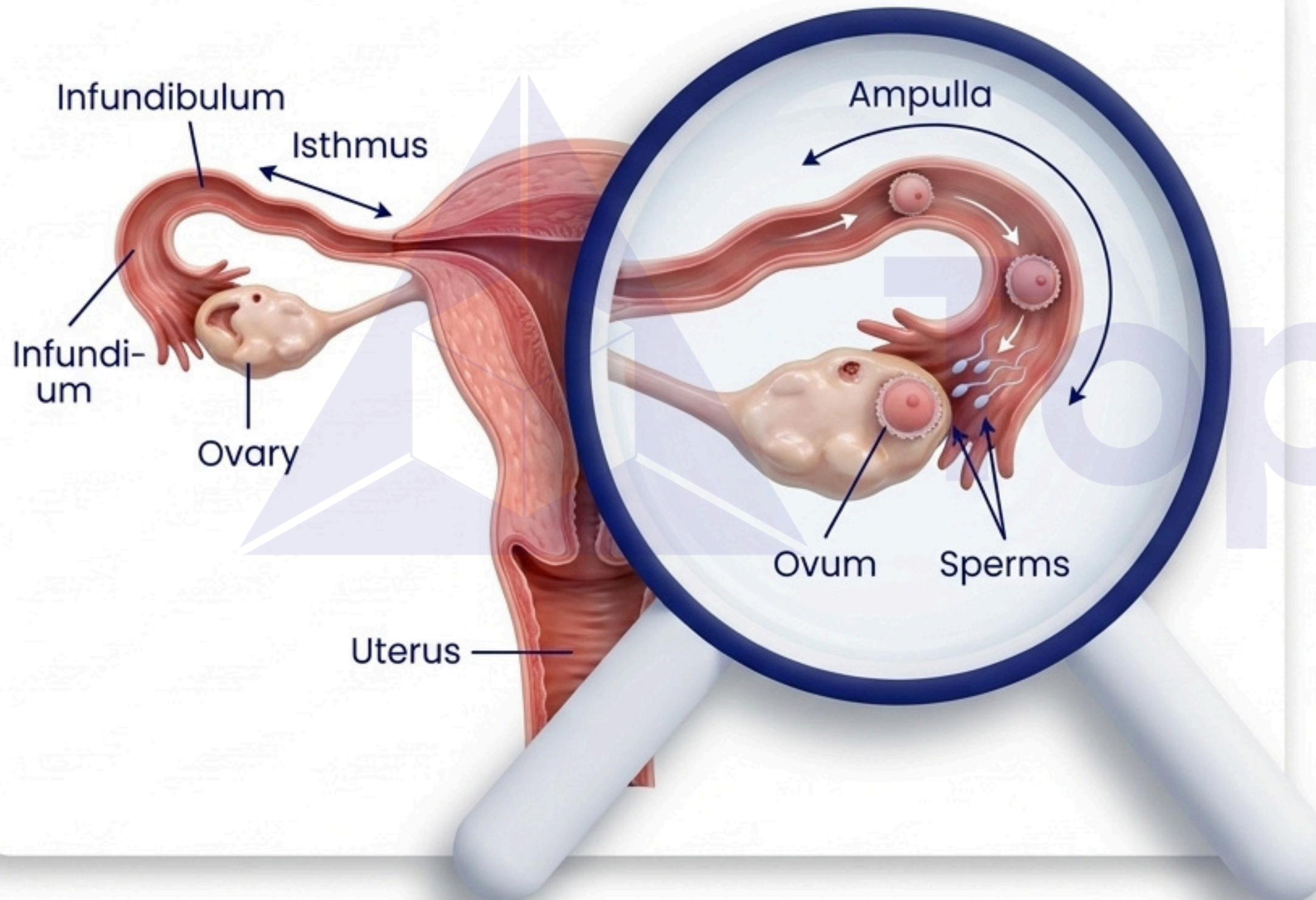
Class 12 Biology NEET Series

The Path of Insemination



Motile sperms swim rapidly through the female genital tract to reach the site of fertilisation.

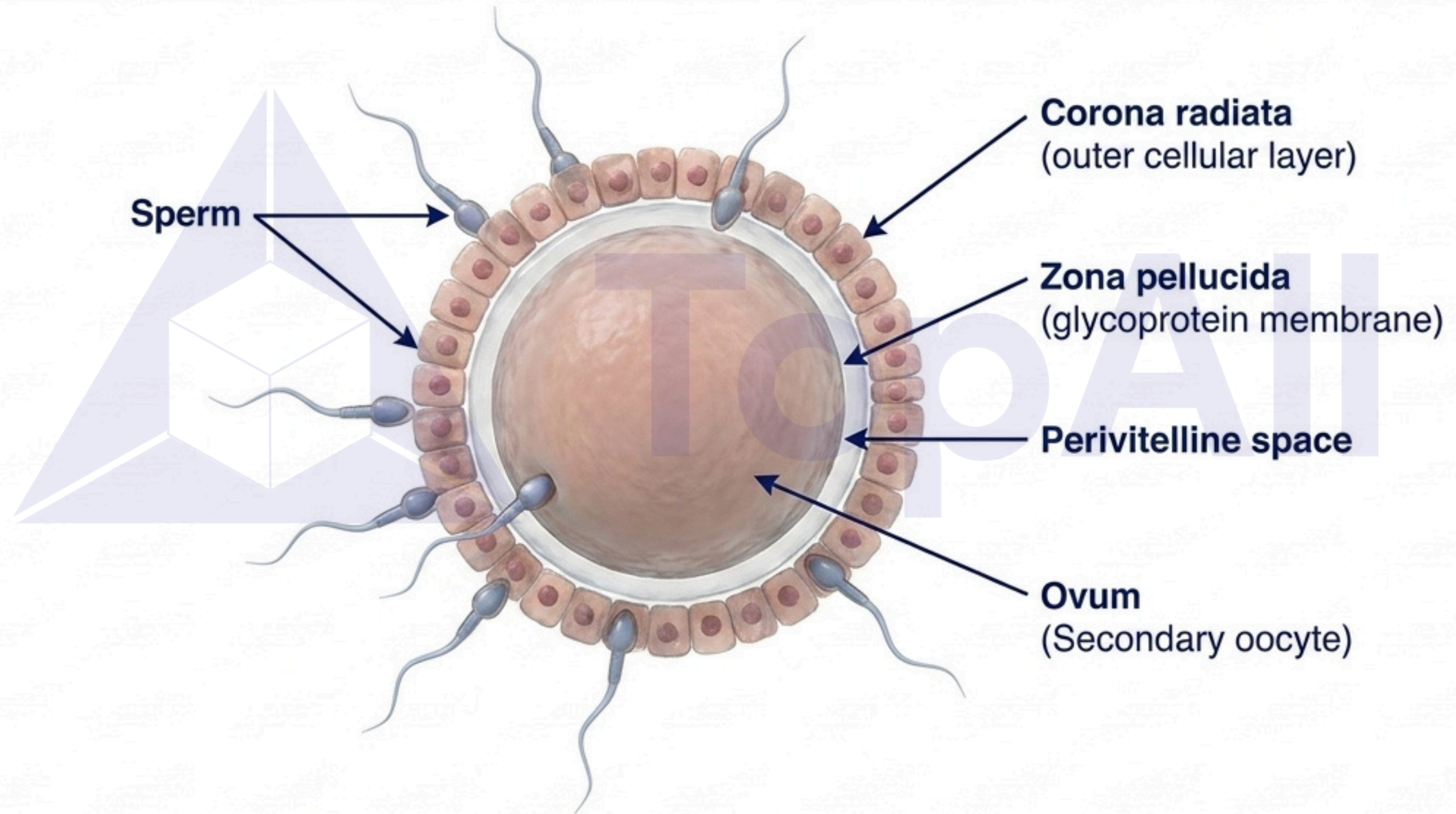
The Ampullary Region



Fertilisation strictly takes place in the ampulla of the fallopian tube.

NEET Trap: Fertilisation only occurs if the ovum and sperms are transported to the ampullary region simultaneously. This is why not all copulations lead to pregnancy.

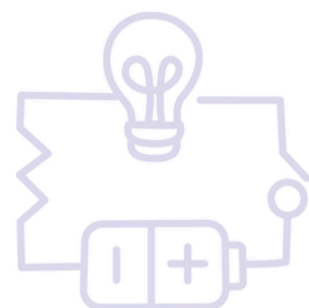
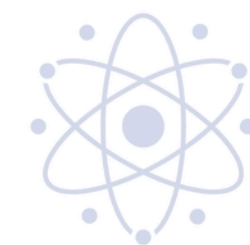
Anatomy of the Ovum





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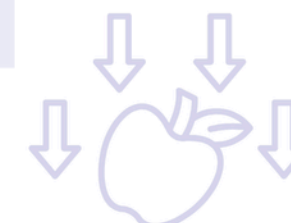
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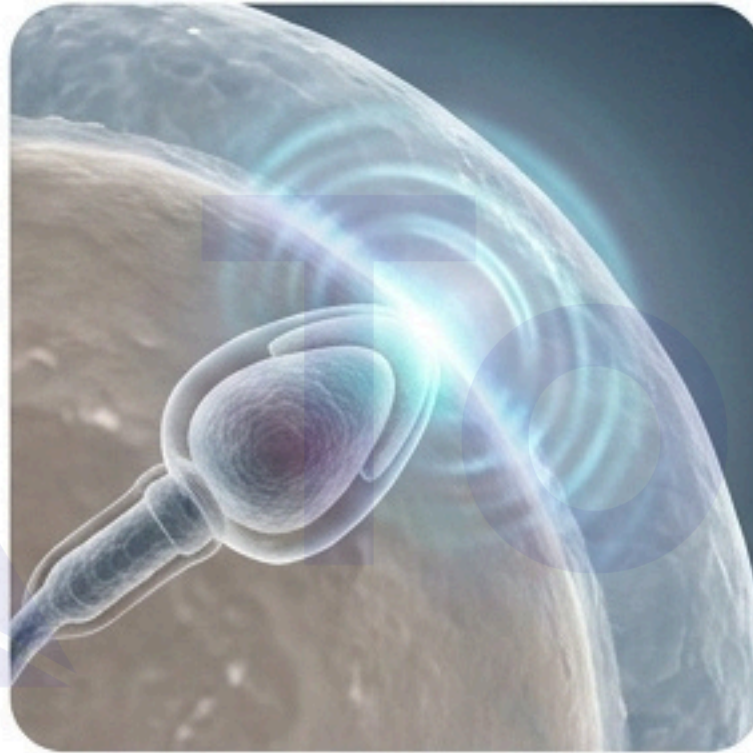
Breaking the Barrier

Step 1: Contact



Sperm contacts the zona pellucida. Acrosome secretions help enter the cytoplasm.

Step 2: Induction



The physical contact induces structural changes in the ovum's membrane.

Step 3: Blockade



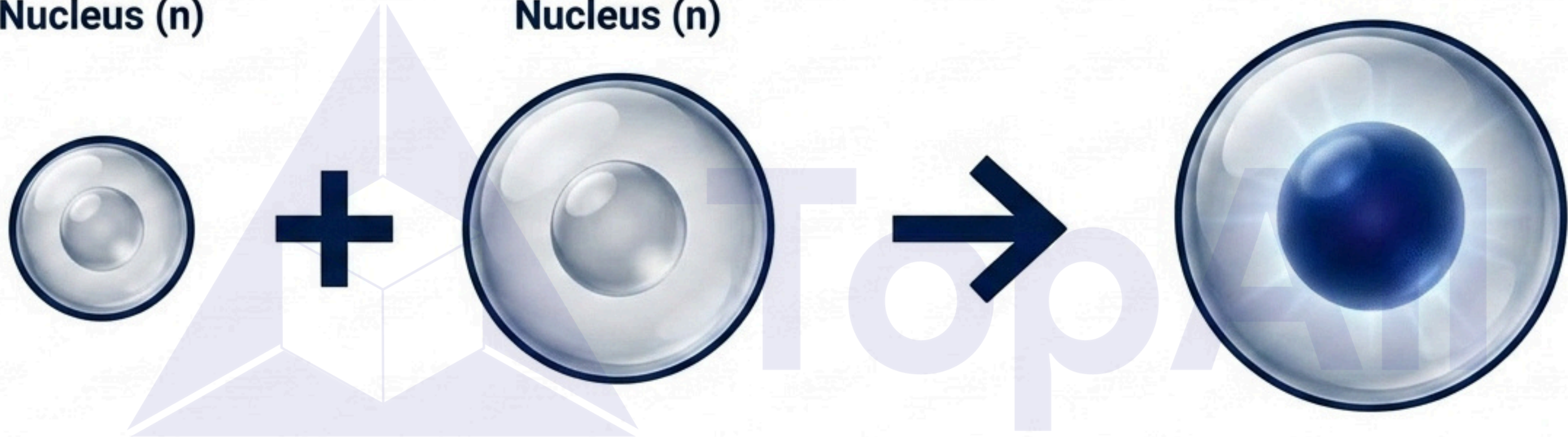
Membrane changes block the entry of additional sperms, ensuring only one sperm fertilises the ovum.

The Fusion of Gametes

Haploid Sperm
Nucleus (n)

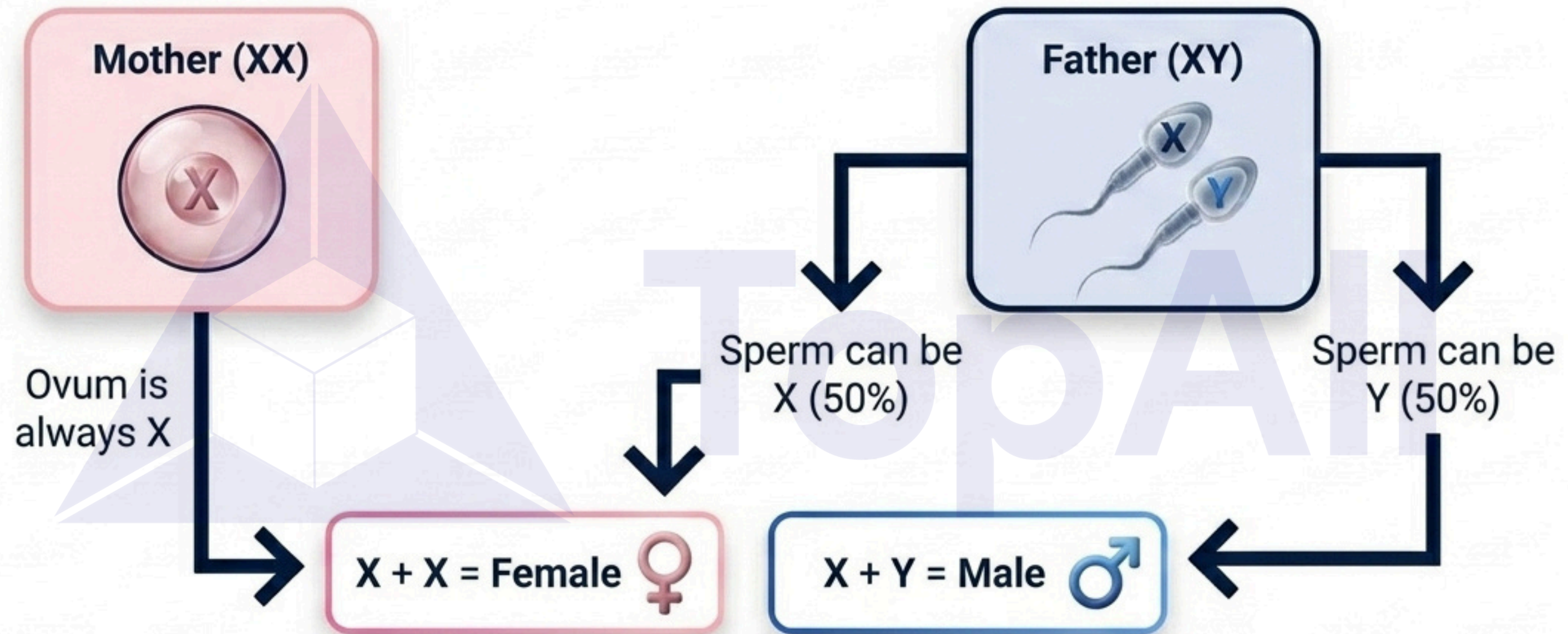
Haploid Ovum
Nucleus (n)

Diploid Zygote (2n)



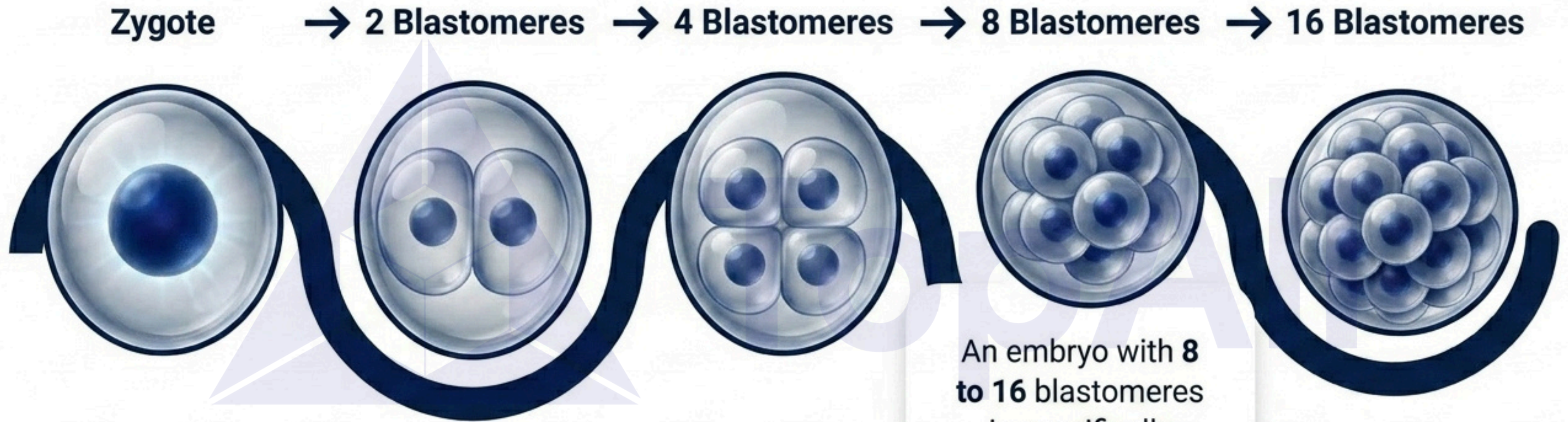
Critical Detail: Sperm entry induces the completion of the secondary oocyte's meiotic division, forming a second polar body and a haploid ootid (ovum) right before final fusion.

The Genetic Blueprint



Scientifically, the sex of the baby is exclusively determined by the genetic payload of the father's sperm.

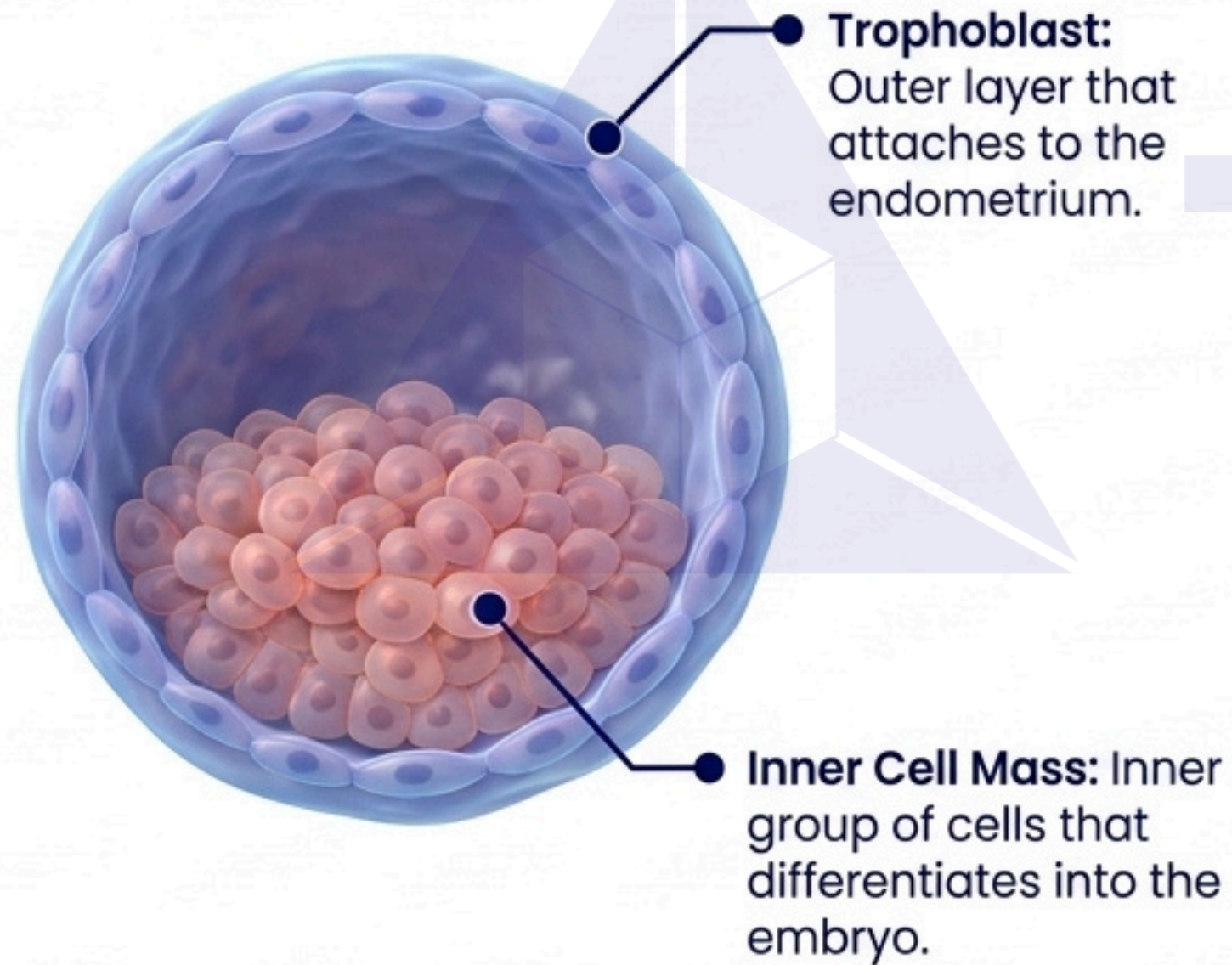
Cleavage: The Mitotic Journey



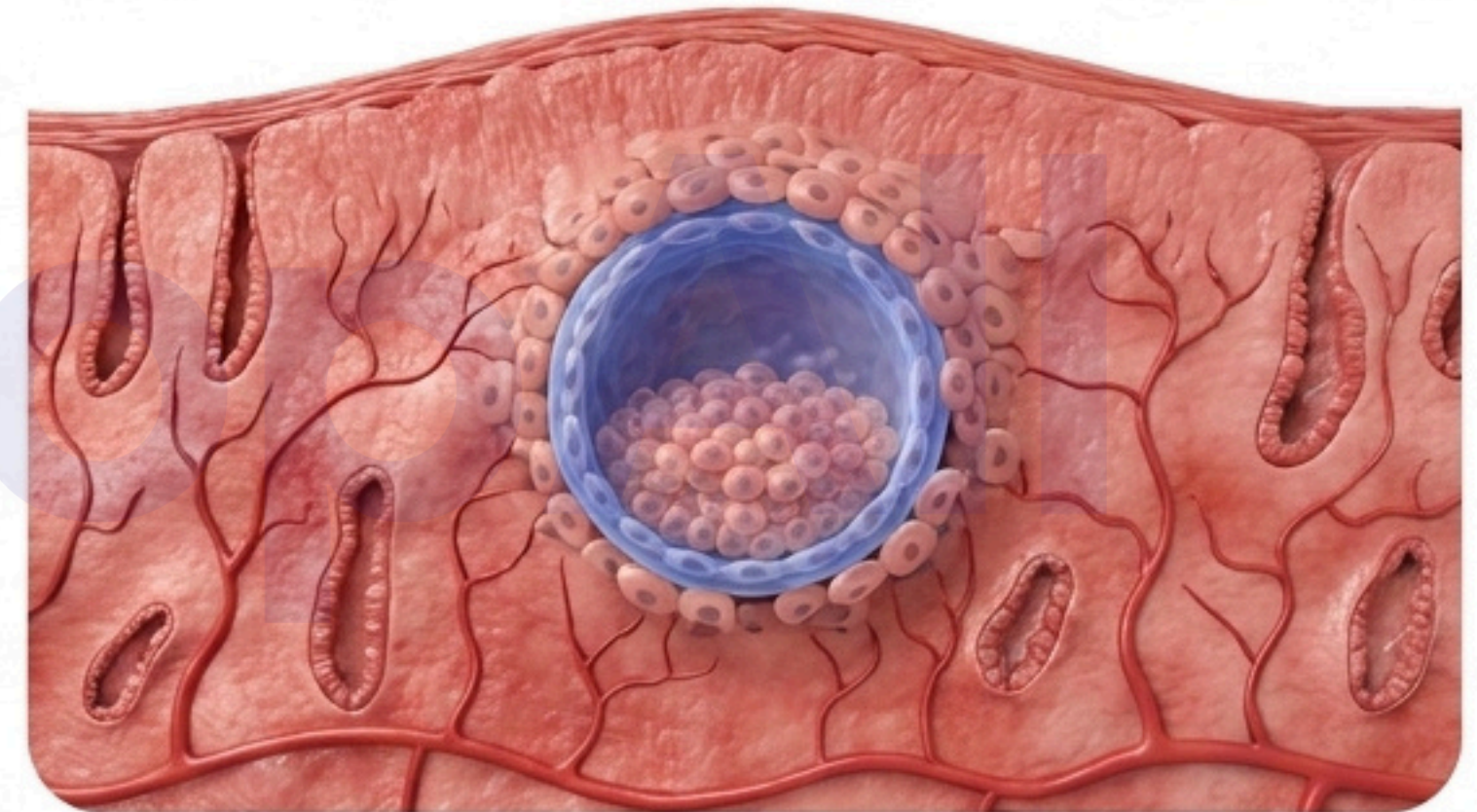
An embryo with **8 to 16** blastomeres is specifically called a **Morula**.
(This stage moves through the isthmus towards the uterus).

Blastocyst and Implantation

Blastocyst Anatomy



The Final Step



Uterine cells divide rapidly, covering the blastocyst. The embedding of the blastocyst into the endometrium is called Implantation, officially leading to pregnancy.

High-Yield NEET Takeaway

Fertilisation occurs only with simultaneous arrival in the ampullary region. The resulting zygote undergoes mitotic cleavage to form a morula. The blastocyst then implants into the endometrium, establishing pregnancy.



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