

# Garbha Vigyan ( Embryology)

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**By:**

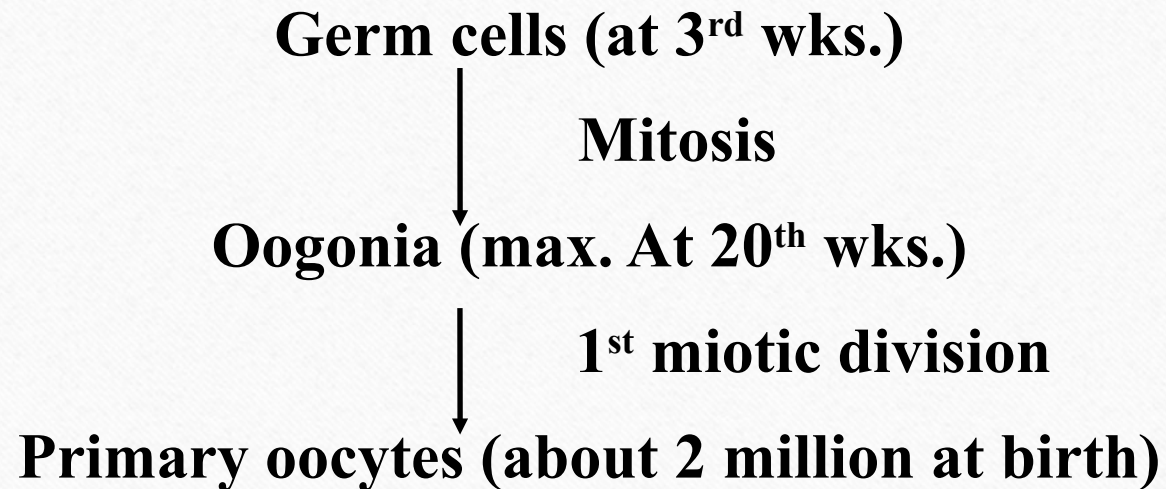
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# Gemetogenesis

- **Oogenesis:**

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## **Development of mature ovum.**



- **At puberty: only about 4 lakhs oocytes remain**

## **Maturation of graffian follicles**



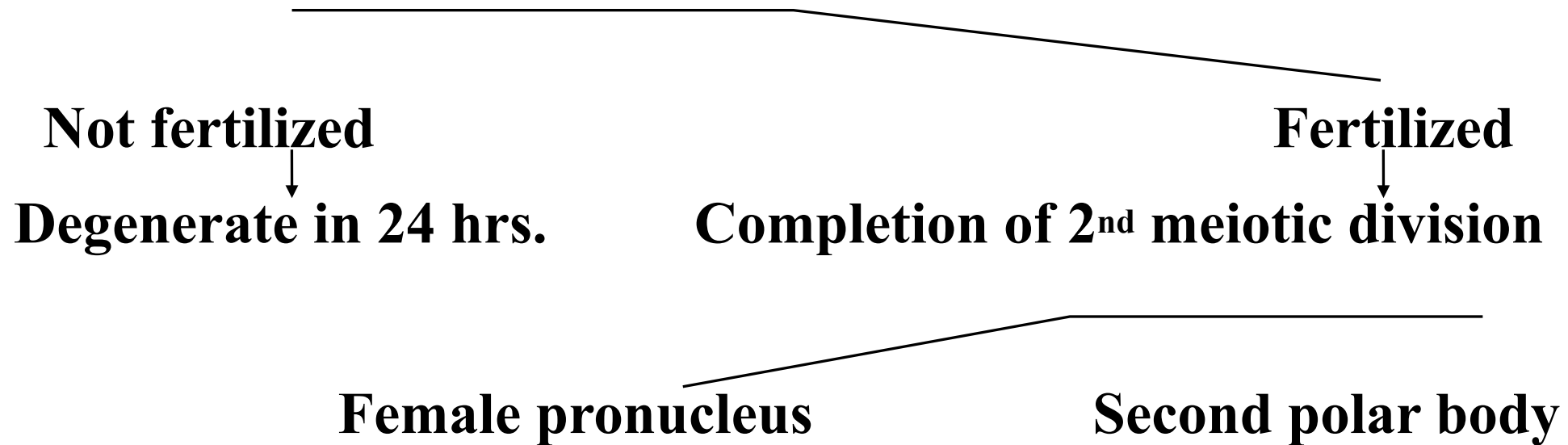
**Completion of 1<sup>st</sup> meiotic division (before ovulation)**



**Secondary oocyte.  
(Ovulation)**

**Polar body**

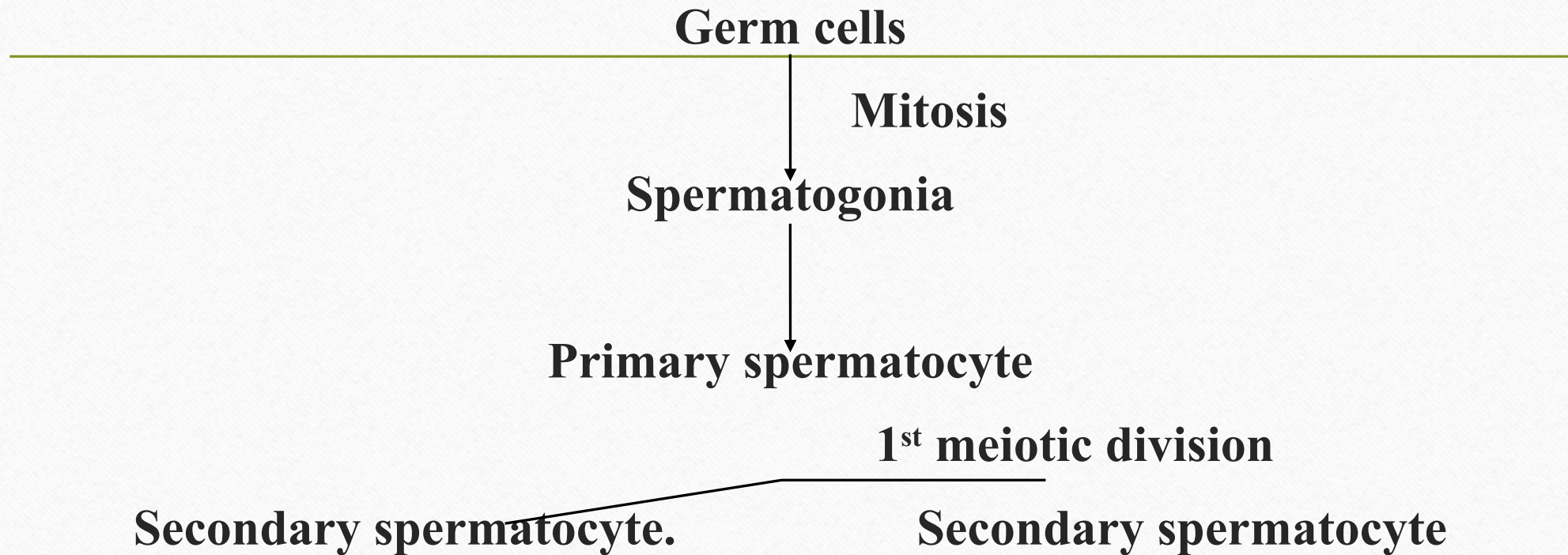
# Ovum



**Mature ovum is the largest cell in body, 130 micron in diameter.**

## Spermatogenesis:

- **Development of spermatids and its differentiation into spermatozoa.**



## Secondary spermatocytes

2<sup>nd</sup> meiotic division

Spermatid  
(23 X).

spermatid  
(23X).

Spermatid  
(23X).

Spermatid  
(23X)

Spermiogenesis

spermatozoa

## **Fertilization:**

- **Fusion of spermatozoa with mature ovum.**
- **Occurs in ampullary part of tubes.**
- **Male and female pronucleus unite at the center and make diploid number of chromosomes, called zygote.**
- **After 30 hrs. Of fertilization, two cells stage is called Blastomere.**
- **After 4<sup>th</sup> days Of fertilization, 16 cells stage is called Morula.**
- **Morula enters in the uterine cavity.**
- **Implantation started at 6<sup>th</sup> – 7<sup>th</sup> day and completed on 10<sup>th</sup> – 11<sup>th</sup> day.**

## **Decidua:**

**Endometrium of pregnant uterus, because it sheds during delivery.**

- **3 layers, Compact layer, Spongy layer and Basal layer.**

- **Function:**

**Acts as bed for implantation.**

**Supplies nutrition at early stage.**

**It forms basal plate of placenta.**



## Placenta:

**Human placenta is discoidal, villous, hemochorial and decarate.**

- **It developed from 2 sources, fetal – Chorionic frondosum and maternal – decidua basalis.**
- **Development begins at 6<sup>th</sup> Wks. And completed at 12<sup>th</sup> wks.**
- **Functions:** Transfer of nutrients.

**Respiratory-** intake of O<sub>2</sub> and output of CO<sub>2</sub> .

**Excretory.**

**Barrier function.**

**Immunological function.**

## Foetal membranes:

- **Membranes are outer chorion and inner amnion.**
- **Chorion is thicker, friable and shaggy. It is remnant of Chorionic leave.**
- **Amnion is smooth and a shiny in contact with liquor amnii.**
- **Function:** Help in formation of liquor amnii.

**Prevent uterine infection.**

**Facilitate dilatation of cervix.**

**Rich source of Arachidonic acid.**

## Amniotic fluid:

- Amniotic fluid is faintly alkaline and pale yellow in colour.
- Water in amniotic fluid is completely replaced in every 3 hrs.
- Volume at 12 wks. – 50 ml. At 36-38 wks. – 1 of.
- **Function:** Protective – shock absorber.

Allows growth.

Helps dilatation of cervix.

Prevent ascending infection.

## **Umbilical cord:**

- **Developed from connective stalk or body stalk.**
- **It is a connecting link between foetus and placenta through which fetal blood flows to and from the placenta.**
- **It is lined by single layer of amniotic epithelium.**
- **Initially It has 4 vessels, 2 arteries and 2 veins.**
- **Right umbilical vein disappears by 4<sup>th</sup> month in intrauterine life.**
- **It is about 50 cm. In length and 1.5 cm. In diameter.**

## Ayurvedic view:

- **गर्भावक्रान्तिः**

“पुरुषस्यानुपहतेरतसः स्त्रियाश्चाप्रदुष्टयोनिशोणितगर्भाशयाया  
यदाभवति संसर्गः ऋतुकाले, यदाचानयोस्तथायुक्ते संसर्ग  
शुक्रशोणितसंसर्गमन्तर्गर्भाशयगतं जीवोऽवक्रामति सत्त्वसंप्रयोगात्तदा  
गर्भोऽभिनिवर्तते।”

(च.सं.शा. ३/३)

- **गर्भः** : “शुक्रशोणितजीवसंयोगे तु खलु कुक्षिगते गर्भसंज्ञा भवति ॥”

(च.सं.शा. ४/५)

## गर्भधारण के लिए आवश्यक घटक:

“ध्रुवं चतुर्णां सान्निध्यात् गर्भः स्याद् विधिपूर्वकं ।  
ऋतुक्षेत्राम्बुबीजानां सामग्यादङ्कुरो यथा ॥”

( सु.सं.शा.२ /३३)

- गर्भ के मुख्य षड्घटक या षड्धातु (six major components or saddhatu of fetus)

“गर्भस्तु खल्वन्तरिक्षवाय्वग्नितोयभूमिविकारश्चेतनाधधिष्ठानभूतः ।”

(च.सं.शा.४ /६)

## जरायु (placenta):

- “ गृहीतगर्भाणामार्तववहानां स्रोतसां वर्तमान्यवरुध्यन्ते गर्भेण, तस्माद् गृहीतगर्भाणामार्तवं न दृश्यते। ततस्तदधःप्रतिहतमूर्ध्वमागतमपरंचोपचीयमानमपरेत्यभिधीयते।।”

(सु० शा० ४/२४)

- नाभिनाड़ी ( Umbilical cord):

“ गर्भस्य नाभौ मातुश्च हृदिनाड़ी निबध्यते। यया स पुष्टिमाप्नोति केदार इव कुल्यया।।”

(अ० ह० शा० १/५६)



**Thank you**