

HUMAN REPRODUCTION PROBLEM SOLVING

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Capacitation occurs in

NEET - 2017

(A) Rete testis

(B) Epididymis

(C) Vas deferens

Female reproductive tract

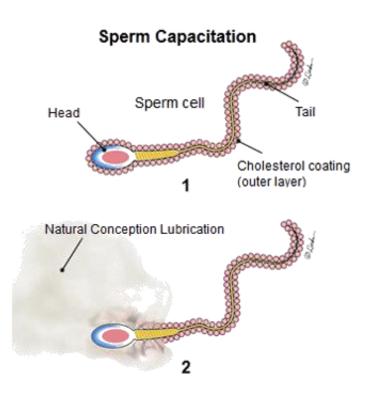
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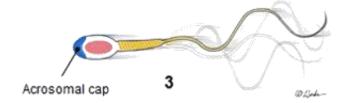
Ans [D]

Capacitation is a process, where the spermatozoa acquire the capacity to fertilise the eggs. It occurs in female reproductive tract.

Capacitation involves following changes

- (i) Dilution of inhibitory factors of semen.
- (ii) Removal of cholesterol vesicles covering sperm head and acrosome.
- iii) Increase in the permeability of acrosome.





Embryo with more than 16 blastomeres formed due to in vitro fertilisation is transferred into

ᢊ Uterus

(B) Fallopian tube

(C) Fimbriae

(D) Cervix

ARTA Assisted Rephoduntive Jechnologies

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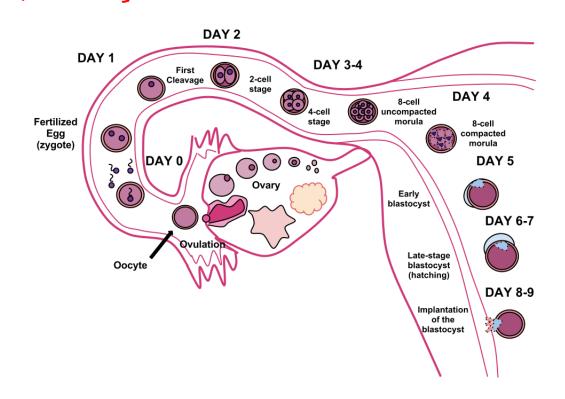
Fallopian Jube

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Ans [A]

Embryo with more than 16 blastomeres formed due to in vitro fertilization is transferred into the uterus to complete its further development. Intra Uterine Transfer or IUT is an assisted reproductive technology to solve the infertility problems.



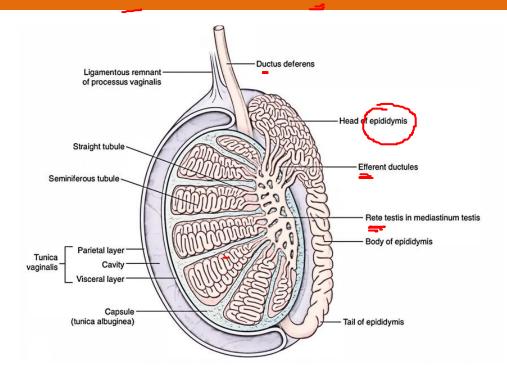
Which of the following depicts the correct pathway of transport of sperms?

- (A) Rete testis → Efferent ductules → Epididymis → vas deferens NEET 2016
 - (B) Rete testis → Epididymis → Efferent ductules → vas deference
 - (C) Rete testis \rightarrow Vas deference \rightarrow Efferent ductules \rightarrow Epididymis
 - (D) Efferent ductules → Rete testis → Vas deference → Epididymis

Ans [A]

Rete testis → Efferent ductules → Epididymis → vas deferens

The sperms are produced in the seminiferous tubules. The rete testis is connected to these tubules at one end and transfers sperms to vasa efferentia. The sperms reach to epididymis through vasa efferentia where they are temporarily stored for maturation and then transferred to seminal vesicle through vas deferens.



Several hormones like HCG, HPL, oestrogen, progesterone are produced by

(A) Ovary Placenta NEET - 2016

(C) Fallopian tube (D) Pituitary

Ans [B]

Several hormones like HCG, HPL, oestrogen, progesterone are produced by placenta. Placenta is a structural and functional connectivity between the developing embryo (foetus) and the maternal body through an umblical cord which helps in transport of substances to and from the embryo. Placenta also acts as an endocrine tissue.

Identify the correct statement on 'inhibin'

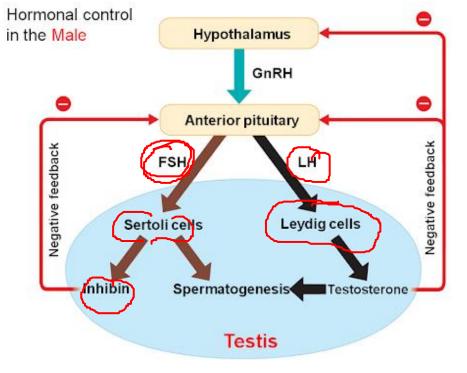
NEET - 2016

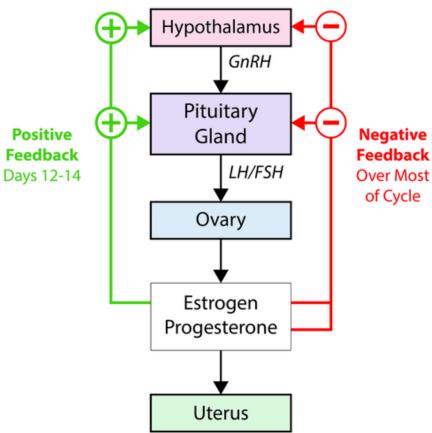
- Is produced by granulos cells in ovary and inhibits the secretion of FSH **M**A)
 - (B) Is produced by granulos cells in ovary and inhibits the secretion of LH >
 - (C) Is produced by nurse cells in testes and inhibits the secretion of LH K
 - (D) Inhibits the secretion of LH, FSH and prolacting

Inhibir | nurse tells | terbs: rate

Ans [A]

One of two hormones (designated inhibin-A and inhibin-B) secreted by the gonads (by Sertoli cells in the male and the granulosa cells in the female) and that inhibit the production of follicle-stimulating hormone (FSH) by the pituitary gland. The inhibins are also involved in the control of the production of gametes and embryonic and fetal development.





Select the incorrect statement

NEET - 2016

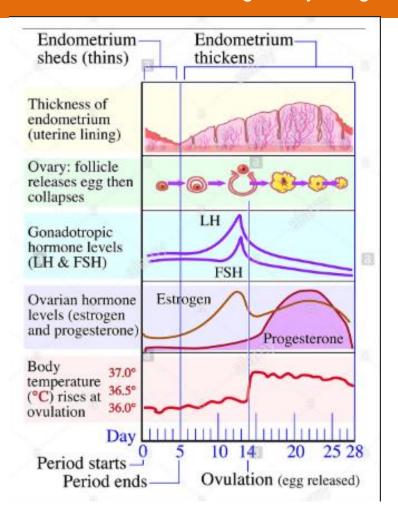
- (A) LH and FSH triggers ovulation in ovary
- (B) LH and FSH decrease gradually during the follicular phase 🗡
- (C) LH triggers secretion of androgens from the Leydig cells

 **The plant of the control of the
- (D) FSH stimulates the Sertoli cells which help in spermiogenesis.

Receptor for LH are present on which of the following ealls.?

Ans [B]

In follicular phase of menstrual cycle. LH and FSH increase gradually and stimulate follicular development as well as secretion of estrogens by the growing follicles.



Fertilisation in humans is practically feasible only if

NEET - 2016

- The ovum and sperms are transported simultaneously to ampullary-isthmic junction of the fallopian tube
 - (B) The ovum and sperms are transported simultaneously to ampullary-isthmic junction of the cervix y
 - (C) The sperms are transported into cervix within 48 hrs of release of ovum in uterus
 - (D) The sperms are transported into vagina just after the release of ovum in fallopian tube

Ans [A]

Fertilisation in humans, is practically feasible only if the sperms and ovum are transported simultaneously at ampullary-isthetic junction of Fallopian tube.

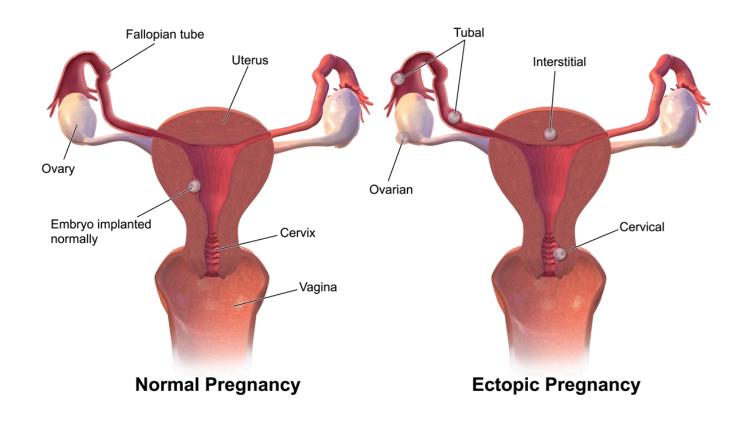
Ectopic pregnancies are referred to as

NEET - 2015

- (A) Pregnancies with genetic abnormality *
- (B) Implantation of embryo at site other than uterus
 - (C) Implantation of defective embryo in the uterus 🗡
 - (D) Pregnancies terminated due to the hormonal imbalance >

Ans [B]

Ectopic pregnancy develops when an embryo implants somewhere other than the uterus, such as in one of Fallopian tube. It is also known as eccyesis or tubal pregnancy.



Which of the following events is not associated with ovulation in human female?

Decrease in oestradiol

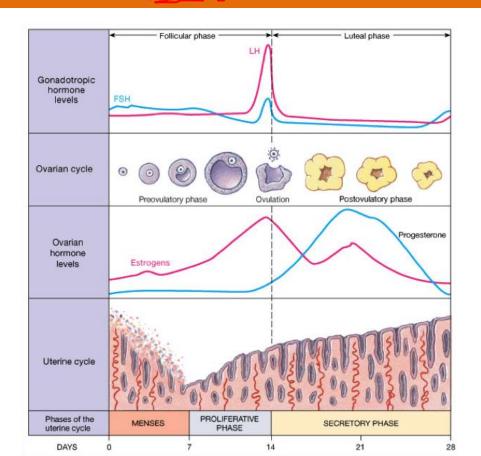
NEET - 2015

- (B) Full development of Graafian follicle 🗸
- (D) LH surge

✓Ans [A]



Oestradiol levels fall after ovulation and before menstruation while, its levels peak prior to ovualtion. Oestradiol is not associated with ovulation. Decrease in oestradiol level result in the cessation of menstruation.



Which of the following layers in an antral follicle is acellular?

NEET - 2015

(A) Granulosa

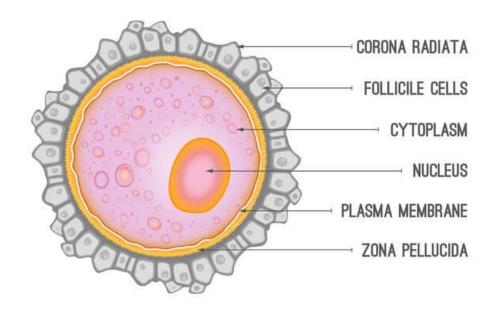
(B) Theca interna

(C) Stroma

(D) Zona pellucida

Ans [D]

Follicles that form an antrum during maturation are called antral follicle or Graafian follicle. During the development of the follicle, a glycoprotien polymer capsule called the zona pellucida which is acellular, forms around the oocyte, separating it from the surrounding granulosa cells.



In human females, meiosis-II is not completed until

NEET - 2015

(A) Puberty

√B) Fertilization

(C) Uterine implantation

(D) birth

Ans [B]

In human females, meiosis-II is not completed until fertilisation. Secondary oocyte is arrested metaphase-II stage until sperm cell contacts plasma membrane of the oocyte and completes meiosis II resulting in release of ovum.

Which of the following cells during gametogenesis is normally diploid? **NEET - 2015**

(A) Primary polar body

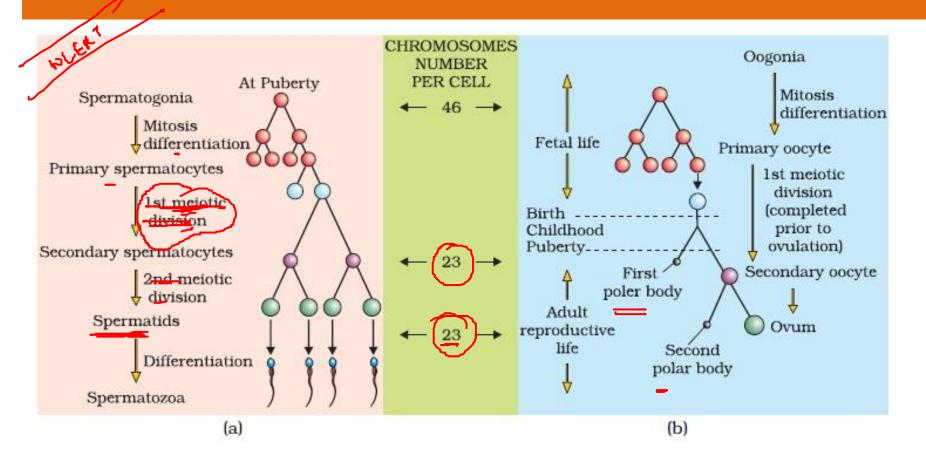
(B) Spermatid

Spermatogonia

(D) Secondary polar body

Ans [C]

The spermatogonia present on the inside wall of seminiferous tubules multiply by mitotic division and increase in numbers. Each spermatogonium is diploid and contains 46 chromosomes.



The shared terminal duct of the reproductive and urinary system in the human male is

NEET - 2014

(B) Ureter

(C) Vas deferens (D) Vasa efferentia

URINOLE NITAL TRACT

Ans [A]

In the human male, the urethra is about 8 inches (20 cm) long and opens at the end of the penis. The urethra provides an exit for urine from the bladder as well as semen from vasa defferentia during ejaculation.

Thus, it is known as **urogenital duct**.

The main function of mammalian corpus luteum is to produce NEET - 2014

(A) Estrogen only

- ✓B) Progesterone
- (C) Human chorionic gonadotropin
- (D) Relaxin only

Ans [B]

The corpus luteum (which develops from ovarian follicle) secretes steroid hormone progesterone responsible for decidualisation of the endometrium (its development) and its maintenance. This hormone basically supports pregnancy.

It stimulates development of placenta, maintenance of pregnancy, and formation of alveoli in the mammary glands for milk secretion.

Select the correct option describing gonadotropin activity in a normal pregnant female

NEET - 2014

- (A) High level of FSH and LH stimulates the thickening of endometrium
- (B) High level of FSH and LH facilitate implantation of the embryo
- (C) High level of HCG stimulates the synthesis of estrogen and progesterone
 - (D) High level of HCG stimulates the thickening of endometrium

Ans [C]

- Human chorionic gonadotrophin is a reproductive hormone that is essential for establishing and maintaining early pregnancy. Human chorionic gonadotrophin is a hormone produced by the cells that surround the growing human embryo; these cells will eventually go on to form the placenta.
- Human chorionic gonadotrophin is the embryonic hormone, which ensures the corpus luteum continues to produce progesterone throughout the first trimester of pregnancy.
- As well as maintaining progesterone production from the ovary, human chorionic gonadotrophin may also play a role in making sure the lining of the uterus (endometrium) is ready to receive the implanting embryo.
- hCG may also promote the production of other steroids (e.g., estrogen) and protein (e.g., relaxin, inhibin A) hormones whose actions in the uterus may facilitate gestation.

Menstrual flow occurs due to lack of

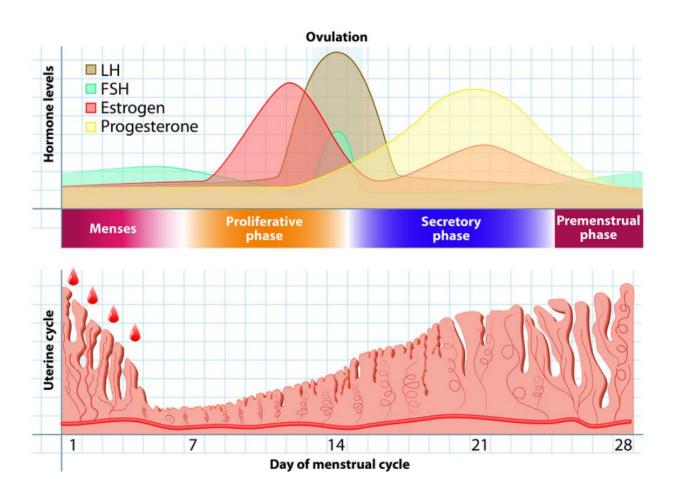
NEET - 2013

- (A) Progesterone
- (C) Oxytocin

- (B) FSH
- (D) Vasopressin 🌱

Ans [A]

Progesterone Supports pregnancy FSH Stimulates gonadal activity called as gonadotrophins.



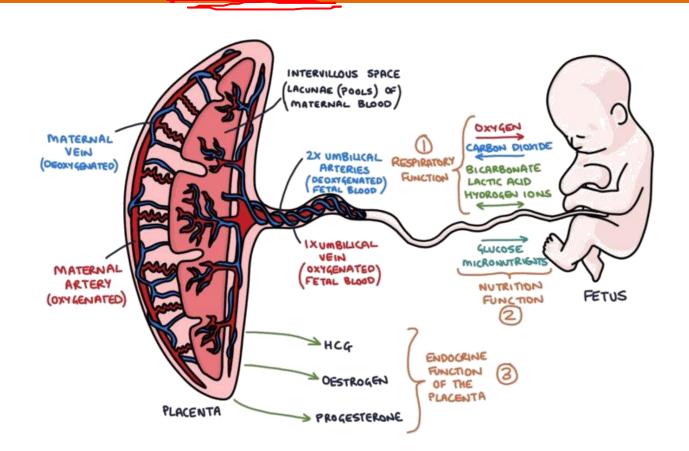
Which one of the following is not the function of placenta?

NEET - 2013

- (A) Facilitates supply of oxygen and nutrients to embryo
- (B) Secretes oestrogen
- (C) Facilitates removal of carbon dioxide and waste material from embryo
- (D) Secretes oxytocin during parturition

Ans [D]

Pituitary secretes oxytocin during parturition. The function of placenta are supply of oxygen and nutrients to embryo, secretes oestrogen, facilitates removal of carbon dioxide and waste materials from embryo.



Which one of the following statements is false in respect of viability of mammalian sperm?

NEET - 2012

- (A) Sperm is viable for only up to 24 h
- (B) Survival of sperm depends on the pH of the medium and is more active in alkaline medium
- (C) Viability of sperm is determined by its motility
- (D) Sperms must be concentrated in a thick suspension

Ans [A]

The sperm can stay viable for several days and not just for 24 hours. Survival of sperm do depend on pH and that to alkaline; hence the pH of the semen is 7.4-8.

Viability of sperm can be determined by motility.

Sperms are suspended in seminal fluid or semen which is thick in nature.

Signals for parturition originate from

NEET - 2012

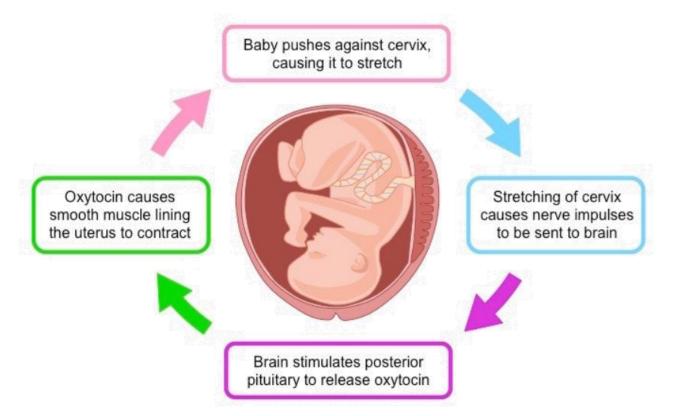
- (A) Both placenta as well as fully developed foetus
- (B) Oxytocin released from maternal pituitary
- (C) Placenta only
- (D) Fully developed foetus only



Ans [A]

Parturition induced by a complex neuroendocrine mechanism. The signals for parturition originate from the fully developed foetus and the placenta which induce mild uterine contractions called foetal ejection reflex.

The Role of Positive Feedback in the Birth Process



In a normal pregnant woman, the amount of total gonadotropin activity was assessed. The result expected was **NEET - 2012**

- (A) High level of circulating FSH and LH in the uterus to stimulate implantation of the embryo
- (B) High level of circulating HCG to stimulate endometrial thickening
- (C) High levels of FSH and LH in uterus to stimulate endometrial thickening
- (D) High level of circulating HCG to stimulate oestrogen and progesterone synthesis

Ans [D]

In a pregnant female, high levels of HCG will maintain corpus luteum and stimulate it to secrete oestrogen and progesterone.



Prostate gland secretion helps in formation of

(A) Larva

(B) Semen

(C) Cocoon

(D) None of these

· unpained



Ans [B]

Prostate gland is part of the male reproductive system.

Along with seminal vesicles and bulbourethral glands, prostate helps in the formation of semen.



The extra-embryonic membranes of mammalian embryo are derived from

(A) Trophoblast

(B) Follicle cells

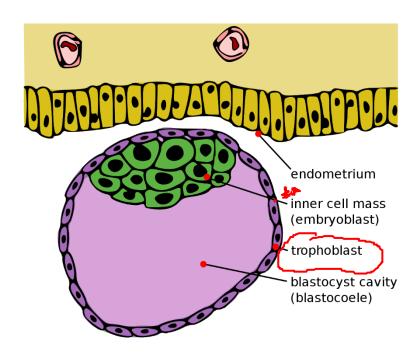
(C) Inner cell mass

(D) Formative cells



Ans [A]

Trophoblast in mammalian embryo produces extra embryonic membranes which provide protection and nourishment to foetus. These are 4 – chorion, amnion, allantois & yolk sac.





Acrosome of sperm is formed by

(A) Nucleus

✓B) Golgi bodies

(C) Lysosome

(D) E. R.



Ans [B]

Acrosome of sperm is formed from Golgi bodies and contains hydrolysing enzymes for sperm penetration.



Cumulus covers

(A) Ovary

(B) Ovum

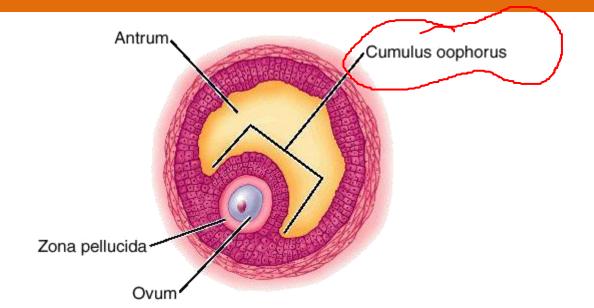
(C) Embryo

(D) Sperm



Ans [B]

Cumulus covers the ovum. The ovum at the matured conditions has a massy cloud formed with a flat base and rounded outlines piled up like a mountain. A granulosa cell is a somatic cell found closely associated with the developing female gamete (oocyte or egg) in the ovary of mammals. Granulosa cells form a single flattened layer around the oocyte in the primordial ovarian follicle and later in follicle development they advance to form a multi layered cumulus surrounding the oocyte.





Cessation of menstrual cycle in women is called

 \mathcal{A}

Menopause

(B) Lactation

(C) Ovulation

(D) Parturition



Ans [A]

Menopause is the period when ovulation and menstrual cycle stop in human females. The period of menopause is between 45-55 years.



Both corpus luteum and macula lutea are

- (A) Found in human ovaries x
- (B) A source of hormones *
- Characterized by a yellow colour
- (D) Contributory in maintaining pregnancy 🗡



Ans [C]

Corpus luteum is the fluid filled yellow body in the ovary and macula lutea is the yellow spot present in the eyes