

OCR (B) Biology A-level

4.2 - Mammalian reproduction

Flashcards

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List parts of the male urogenital system
and explain their function.

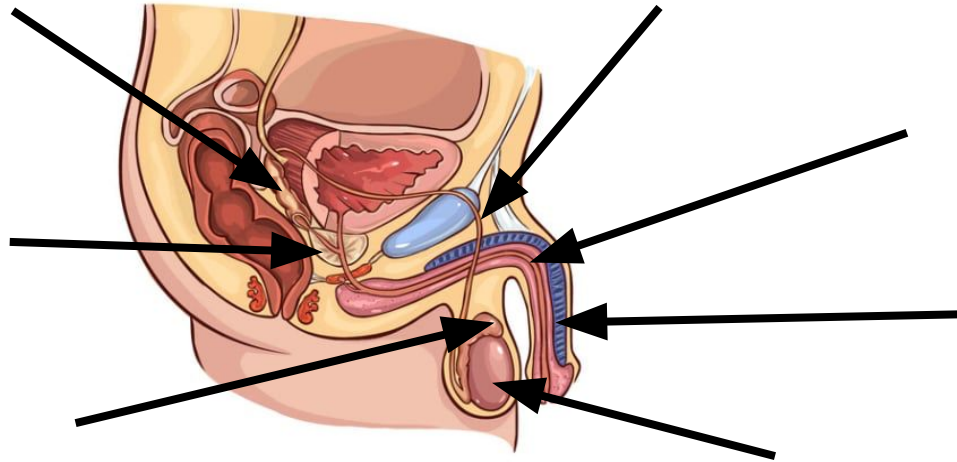


List parts of the male urogenital system and explain their function.

- **Testes** = production of sperm cells and testosterone.
- **Sperm ducts** = carry sperm from testes to urethra.
- **Prostate gland** = secretes alkaline fluid to counteract vaginal acidity
- **Urethra** = allows excretion of urine and semen from the body.
- **Seminal vesicle** = secretes fluid (proteins and fructose) to nourish sperm
- **Penis** = penetrates the vagina, releases sperm
- **Epididymis** = stores sperm



Label this diagram of the male urogenital system.



Label this diagram of the male urogenital system.

Seminal vesicle

Sperm duct

Urethra

Prostate gland

Penis

Epididymis

Testis

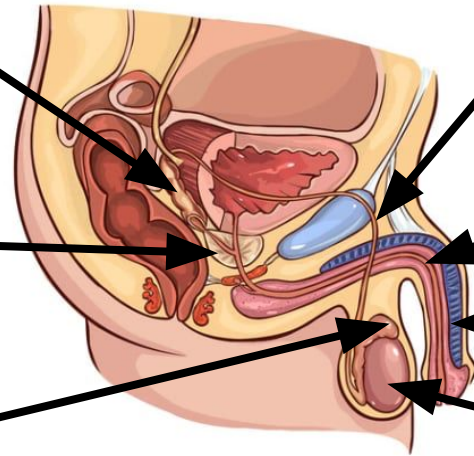


Image source: buzzfeed.com



List parts of the female urogenital system and explain their function.

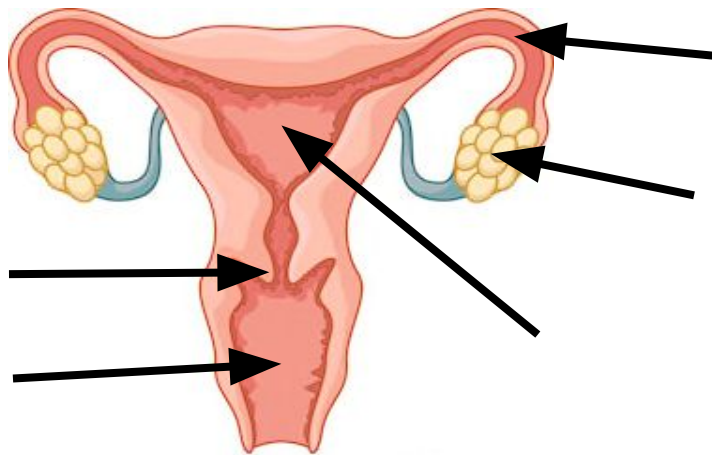


List parts of the female urogenital system and explain their function.

- **Ovaries** = develops eggs cells.
- **Oviducts** = transports an egg cell from ovary to uterus.
- **Uterus** = where embryo develops.
- **Cervix** = separates uterus from vagina, protects fetus
- **Vagina** = leads from the cervix to outside of the body.



Label this diagram of the female urogenital system.



Label this diagram of the female urogenital system.

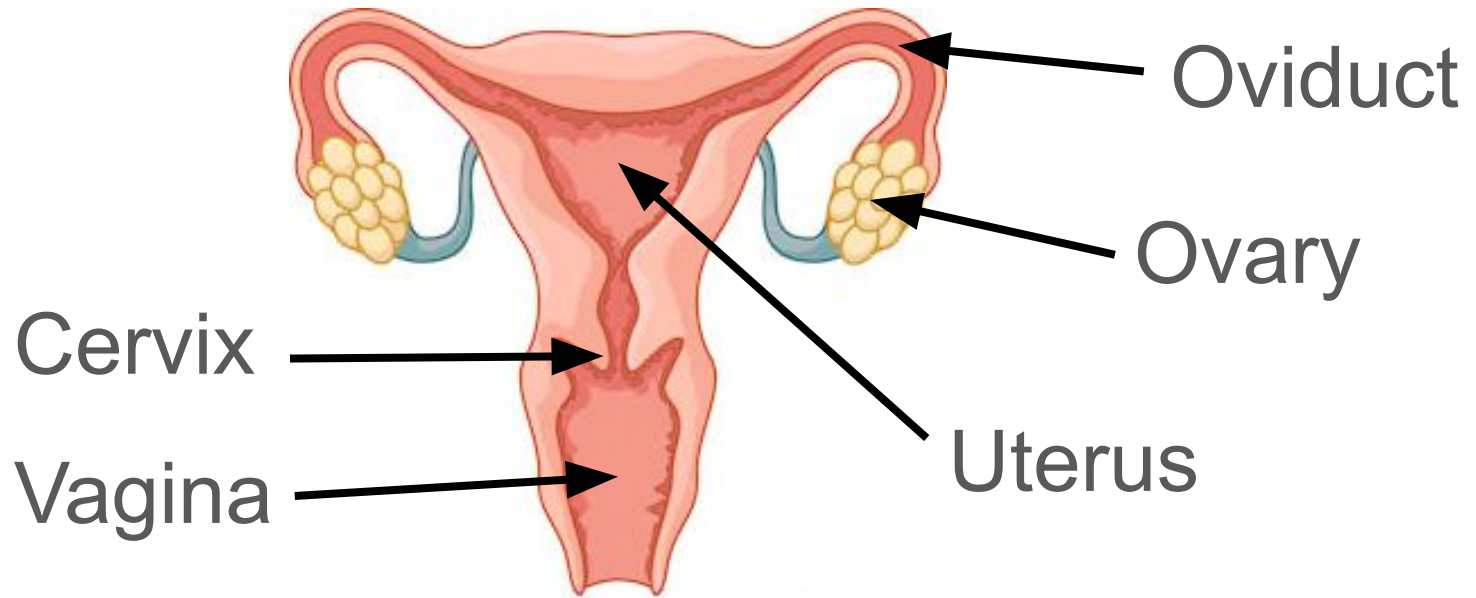


Image source: shutterstock.com



How does the body produce gametes?



How does the body produce gametes?

- **Spermatogenesis** = mitosis, meiosis I, and meiosis II all take place. The cells then differentiate into sperm cells.
- **Oogenesis** = mitosis takes place, and meiosis I pauses in prophase I until the egg is ready to mature. Then meiosis I is completed, and meiosis II pauses in metaphase II unless fertilisation occurs.



Describe the structure of a secondary oocyte.



Describe the structure of a secondary oocyte.

- The cell is encased in a glycoprotein shell (zona pellucida), for protection and to prevent polyspermy.
- Follicle cells (corona radiata) adhere to the oocyte, releasing chemicals that attract sperm.



Describe the structure of a sperm cell.



Describe the structure of a sperm cell.

- Head (acrosome) contains digestive enzymes which break down the zona pellucida of the egg.
- Flagellum for propulsion.
- Contains many mitochondria for energy.



Name the hormones involved in the functioning of the male reproductive system.



Name the hormones involved in the functioning of the male reproductive system.

- Gonadotropin-releasing hormone (GnRH)
- Follicle stimulating hormone (FSH)
- Luteinising hormone (LH)
- Testosterone
- Inhibin



Name the hormones involved in the functioning of the female reproductive system.



Name the hormones involved in the functioning of the female reproductive system.

- Gonadotropin-releasing hormone (GnRH)
- Follicle stimulating hormone (FSH)
- Luteinising hormone (LH)
- Oestrogen
- Progesterone



Describe the role of hormones in the menstrual cycle.



Describe the role of hormones in the menstrual cycle.

- Follicle stimulating hormone (FSH) = triggers development of an egg, stimulates oestrogen production.
- Oestrogen = stimulates LH production, inhibits FSH production.
- Luteinising hormone (LH) = triggers release of egg, stimulates oestrogen production.
- Progesterone = maintains uterus lining, inhibits LH and FSH.



Describe the process of mammalian fertilisation.



Describe the process of mammalian fertilisation.

1. Acrosome reaction = enzymes in acrosome digest zona pellucida. Sperm nucleus enters egg cell.
2. Cortical reaction = causes zona pellucida to harden, preventing polyspermy.
3. Nucleic fusion = restores full set of chromosomes, forming a diploid zygote. Genetic material mingles.



How do pregnancy tests work?



How do pregnancy tests work?

Use monoclonal antibodies attached to an indicator. The hormone human chorionic gonadotropin (hCG) indicates pregnancy. When this hormone is present in urine, it will bind to the antibody and activate the indicator, producing a coloured strip on the test.



Give some reasons why males may have fertility problems.



Give some reasons why males may have fertility problems.

- Abnormal sperm
- Low sperm count
- Blocked sperm duct
- Ovulatory disorders



Give some reasons why females may have fertility problems.



Give some reasons why females may have fertility problems.

- Blocked oviduct
- Endometriosis
- Anti-sperm antibodies



Discuss some ethical issues surrounding infertility.



Discuss some ethical issues surrounding infertility.

- IVF/genetic screening may encourage ‘designer babies’, where eggs with unwanted characteristics are discarded.
- Spare embryos are sometimes destroyed, which some see as murder.



Describe two methods of assisted reproduction.



Describe two methods of assisted reproduction.

- Artificial insemination = injecting sperm into the uterus.
- In vitro fertilisation (IVF) = fertilising egg outside of the body, then implanting into a uterus.



Name other methods of assisted reproduction.



Name other methods of assisted reproduction.

- Intra-cytoplasmic sperm injection
- Surgical sperm retrieval
- Ovulation induction
- Frozen embryo replacements
- Gamete intra-fallopian transfer



Describe the effects of ageing on the female reproductive system.



Describe the effects of ageing on the female reproductive system.

- Decrease in hormone production e.g. oestrogen.
- Subsequently leads to menopause. Eggs no longer released, therefore lose fertility.



Evaluate the use of HRT in managing the effects of ageing in women.



Evaluate the use of HRT in managing the effects of ageing in women.

- HRT = hormone replacement therapy. Increases levels of oestrogen in order to reduce hot flushes and other symptoms of the menopause.
- Disadvantages include an increased risk of cancer. Alternative treatments advised e.g. reducing caffeine/alcohol.



Describe the effects of ageing on the male reproductive system.



Describe the effects of ageing on the male reproductive system.

- Decrease in hormone production e.g. testosterone. Causes decreased libido, erectile dysfunction, reduced fertility.
- Benign prostatic hyperplasia results in difficulty urinating and retention of urine.

