

two systems, two cycles, and the timeline from fusion to birth



The male system

- the testes lie in the scrotum, outside the body, because spermatogenesis needs a temperature about 2° below body temperature
- each testis holds about 250 compartments, the testicular lobules, and each lobule has one to three seminiferous tubules
- the tubule wall carries spermatogonia and the tall Sertoli cells, which NOURISH the developing sperm; between the tubules lie the Leydig or interstitial cells, which secrete androgens
- the duct route is rete testis, vasa efferentia, epididymis, vas deferens, ejaculatory duct, urethra
- the glands are the seminal vesicles, prostate and bulbourethral glands, and their secretions ALONE make the seminal plasma, rich in fructose, calcium and enzymes; seminal plasma together with the sperm is semen

The female system

- a pair of ovaries, the oviducts (fallopian tubes), the uterus, the cervix and the vagina
- the oviduct begins in the funnel shaped infundibulum with finger like fimbriae that collect the released ovum, then the wider ampulla, then the narrow isthmus joining the uterus
- the uterine wall has three layers: the outer perimetrium, the muscular myometrium, which gives the strong contractions of labour, and the glandular endometrium, which is what changes through the cycle
- mammary glands are modified sweat glands: the alveoli secrete milk, which passes through mammary tubules, ducts, ampulla and lactiferous duct

Spermatogenesis *

- begins at puberty, driven by GnRH from the hypothalamus, which triggers LH and FSH from the anterior pituitary
- LH acts on the Leydig cells to make androgens; FSH acts on the Sertoli cells to release factors needed for spermiogenesis
- diploid spermatogonia multiply by mitosis; one becomes a primary spermatocyte, which completes meiosis I to give two haploid secondary spermatocytes, and meiosis II gives four spermatids
- spermiogenesis is the transformation of a spermatid into a sperm; spermiation is its release into the lumen
- so one primary spermatocyte gives FOUR sperm, and all four are functional, which is the contrast with the female process

primary spermatocyte



one primary spermatocyte gives four sperm, and every one of them is functional

