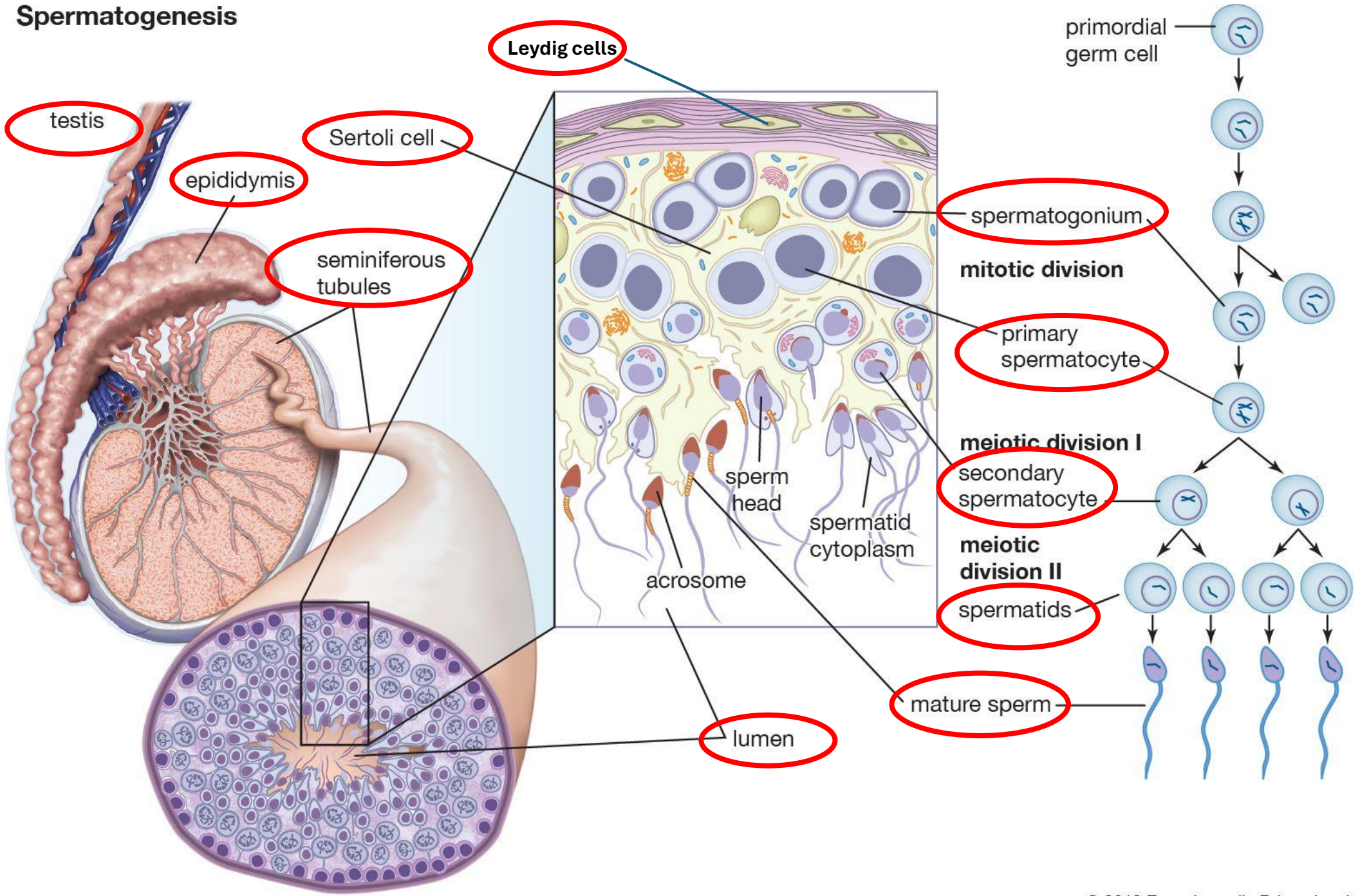
Spermatogenesis

Prepared by: Besir Zeneli


Spermatogenesis
Leydig cells
testis
Sertoli cell
epididymis
seminiferous tubules
primordial germ cell
spermatogonium
mitotic division
primary spermatocyte
meiotic division I
secondary spermatocyte
meiotic division II
spermatids
mature sperm
sperm head
spermatid cytoplasm
acrosome
lumen
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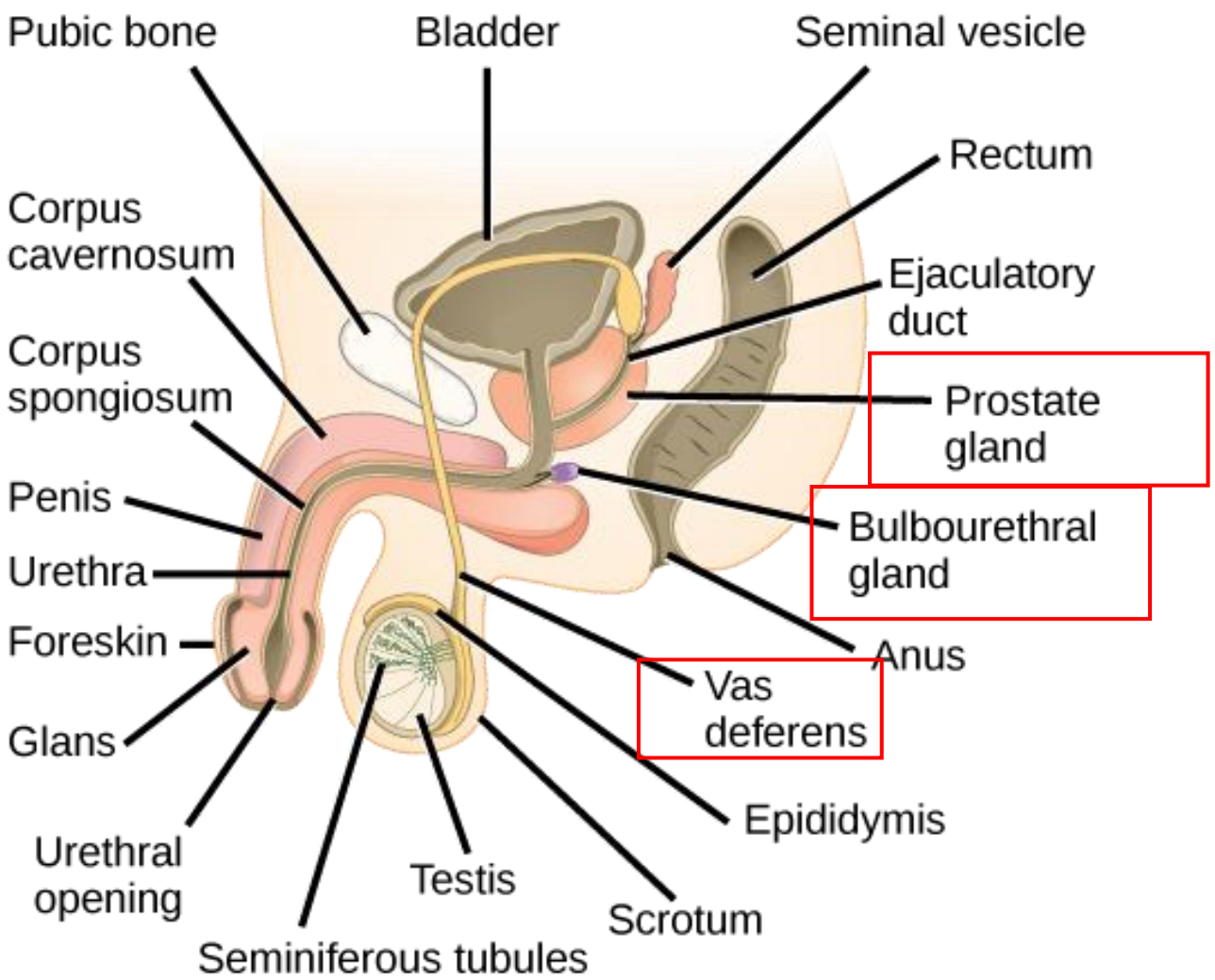
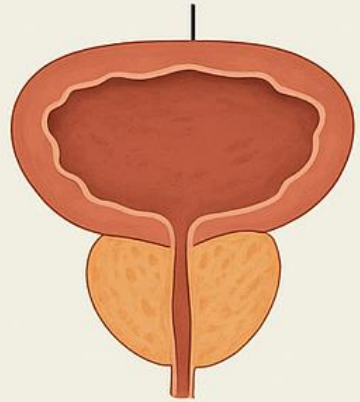
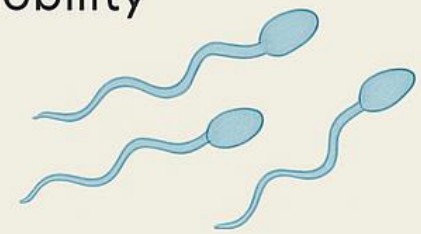
Cell Type	Primary Function
Sertoli Cells	- Support and nourish developing sperm cells.
	- Create the blood-testis barrier to protect sperm from immunity system
	- Secrete inhibin to regulate spermatogenesis.
Leydig Cells	- Produce testosterone in response to luteinizing hormone (LH).
	- Testosterone is crucial for the development of male secondary sexual characteristics.
	- Stimulate spermatogenesis in the seminiferous tubules.


Pubic bone
Bladder
Seminal vesicle
Rectum
Corpus cavernosum
Ejaculatory duct
Corpus spongiosum
Prostate gland
Penis
Bulbourethral gland
Urethra
Anus
Foreskin
Vas deferens
Glans
Epididymis
Urethral opening
Testis
Scrotum
Seminiferous tubules

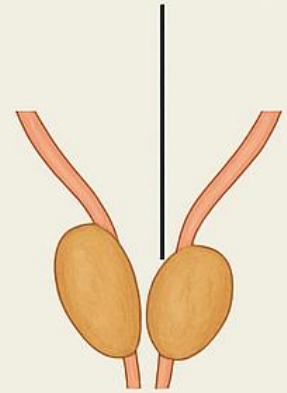
PROSTATE GLAND



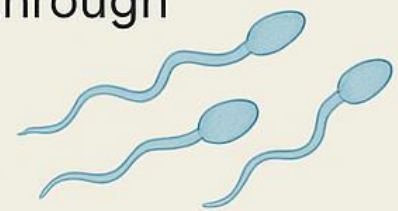
- Contributes ~30% of semen: nourishes & protects sperm
- Muscular contractions help propel semen
- Activates and supports sperm survival and mobility



BULBOURETHRAL GLANDS



- Lubricates urethra and neutralizes traces of acidic urine
- Released before ejaculation to prepare the urethra
- Provides a safe pathway for sperm to travel through



Hormonal Regulation – The Hypothalamic-Pituitary-Testicular (HPT) Axis

🧠 **1. Hypothalamus:**

•Releases **GnRH** (Gonadotropin-Releasing Hormone)

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🧬 **2. Pituitary Gland (Anterior Lobe):**

•**GnRH** stimulates release of:

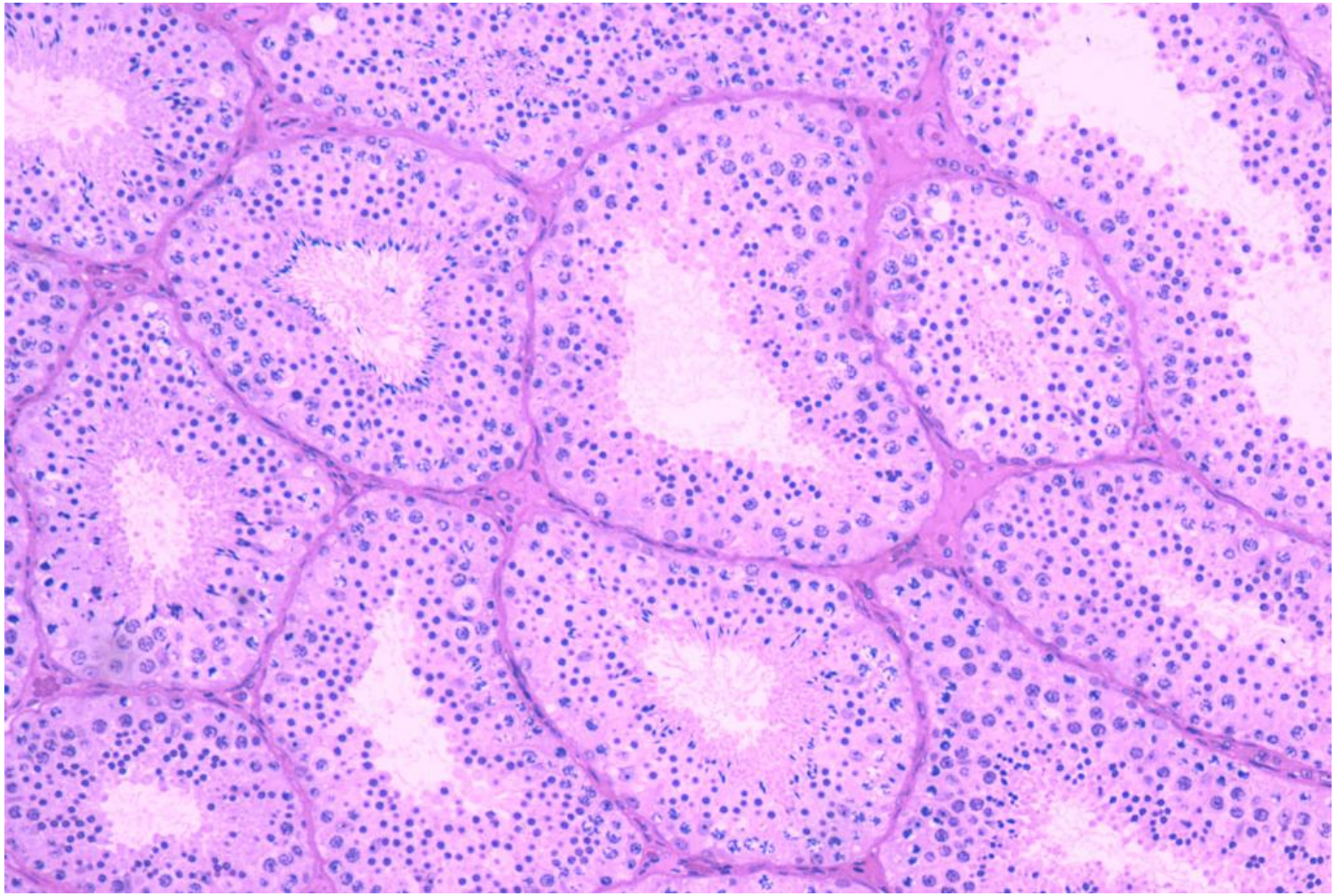
- **FSH (Follicle-Stimulating Hormone)**
  → Stimulates **Sertoli cells** in seminiferous tubules
  → Supports sperm cell development
- **LH (Luteinizing Hormone)**
  → Stimulates **Leydig cells**
  → Produces **testosterone**

⬇️

💪 **3. Testes:**

•**Testosterone**:

- Promotes **spermatogenesis**
- Affects development of **male secondary sex characteristics**



This is how seminiferous tubules look under microscope

Everything to know about spermatogenesis

https://digfir-published.macmillanusa.com/life11e/asset/img_ch42/life11e-fig-42-10-0.html