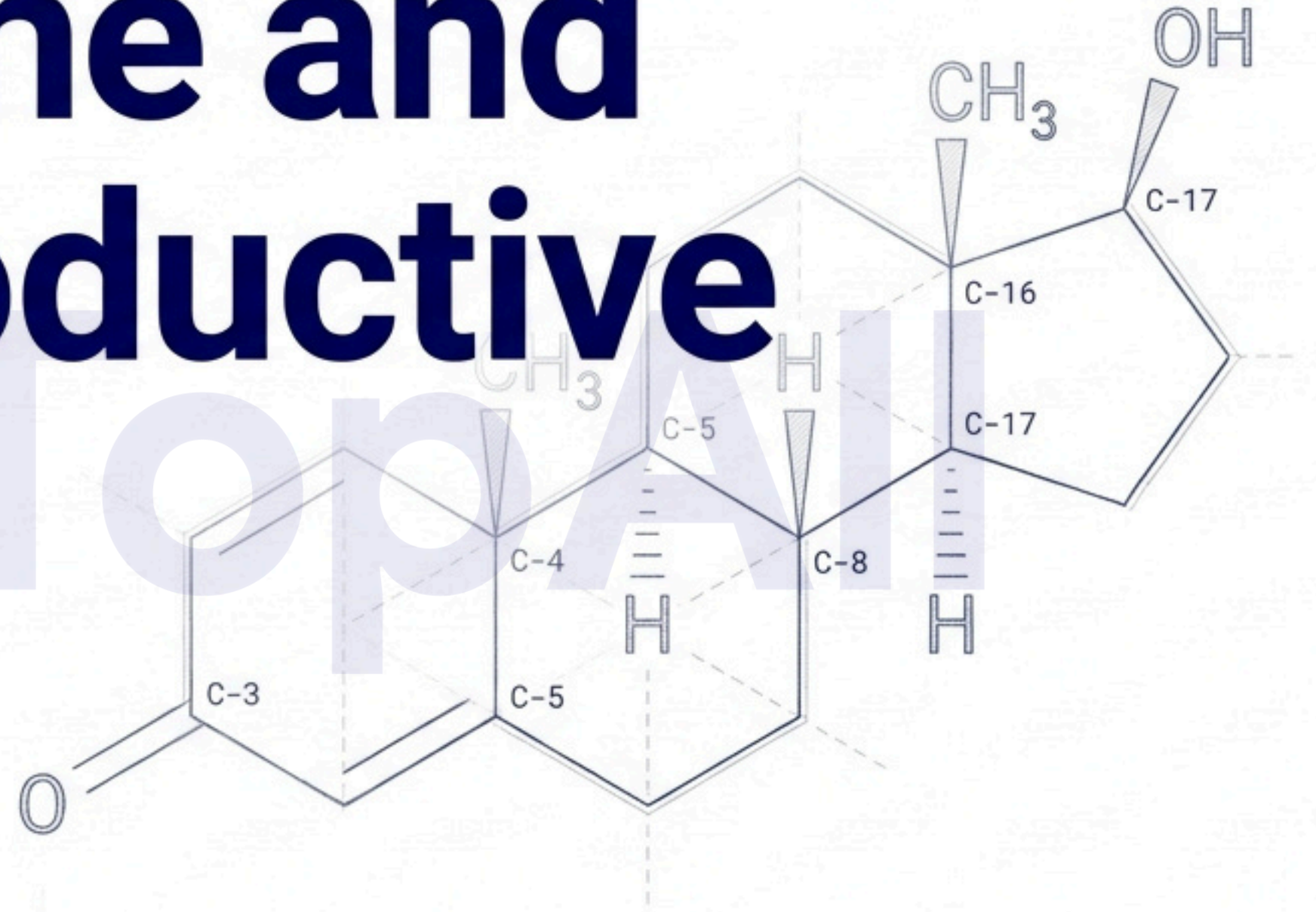
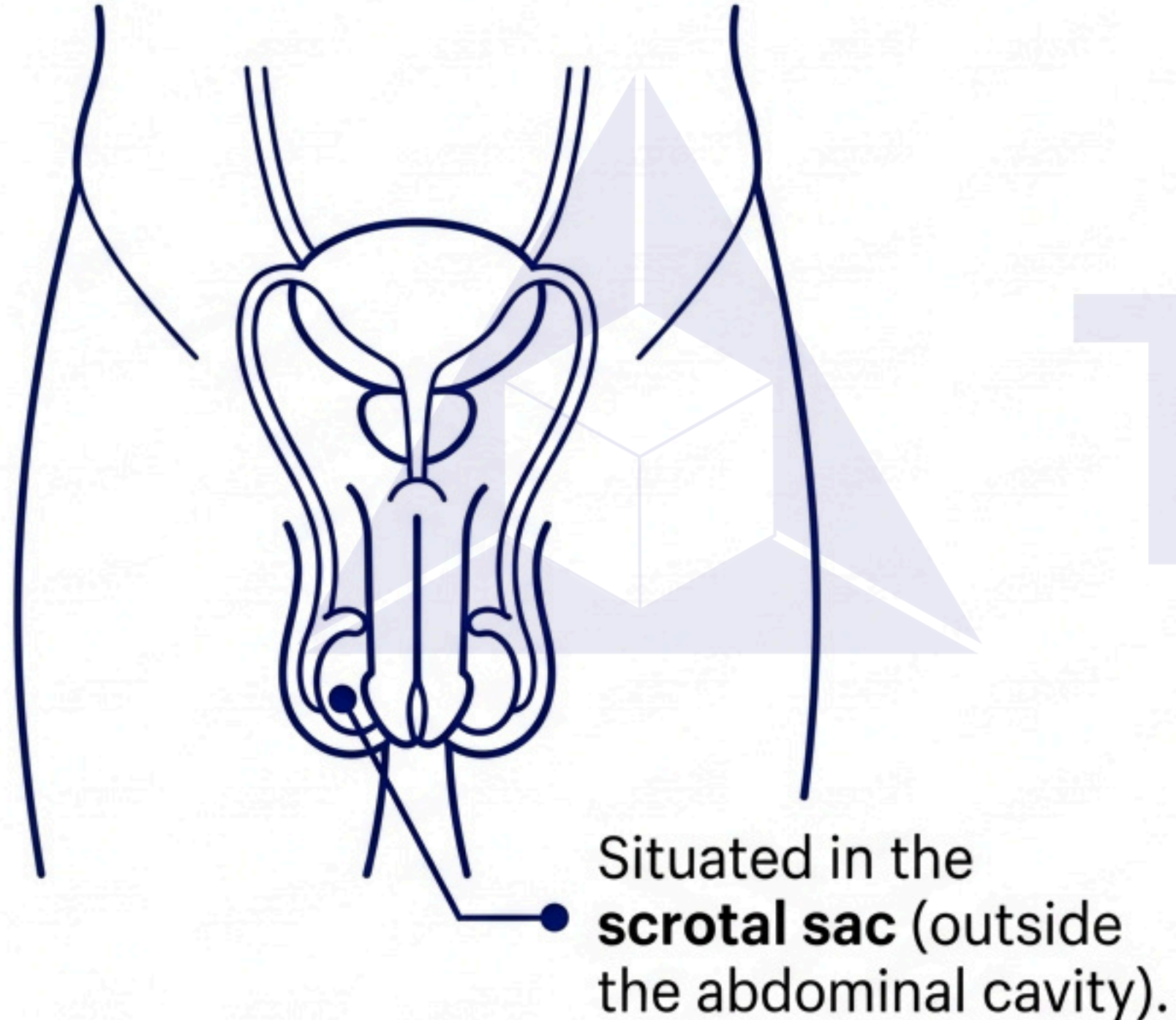


Testosterone and Male Reproductive Hormones

Understanding the Testis as an Endocrine Gland



Location and Dual Function



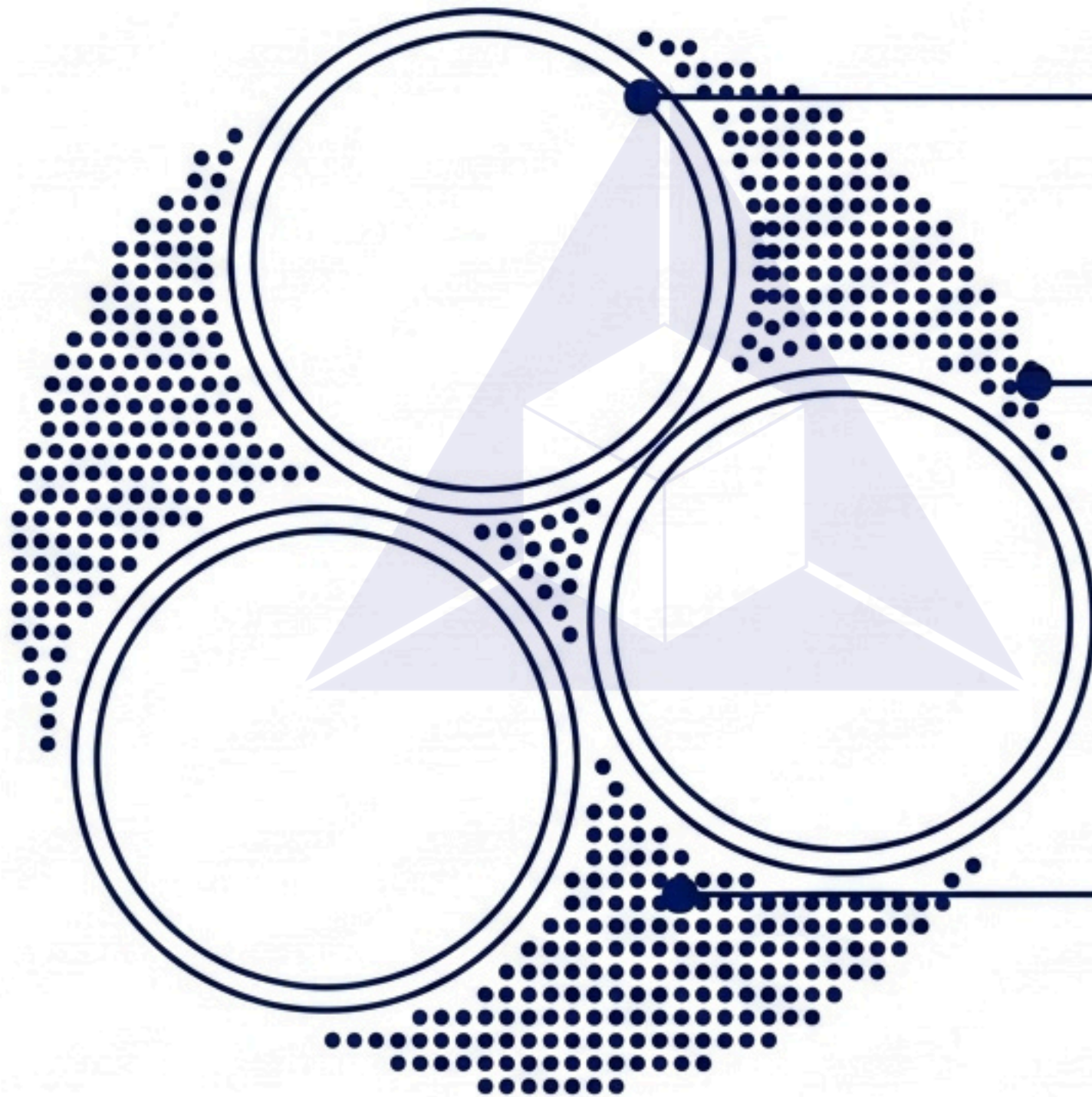
Primary Sex Organ

Responsible for the production of male gametes (SPERMATOZOA).

Endocrine Gland

Responsible for the synthesis and secretion of essential hormones directly into the bloodstream.

Inside the Testis: Structural Composition



○ **Seminiferous Tubules**

The specific site of sperm production.

○ **Stromal / Interstitial Tissue**

The supportive matrix existing between the tubules.

Leydig Cells (Interstitial Cells)
— Located squarely within the intertubular spaces. These are the primary hormone-producing centers.



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Leydig Cells and Androgen Production

Triggered by **LUTEINIZING HORMONE (LH)** from the anterior pituitary.



Leydig Cells synthesize and secrete a group of steroid hormones called **ANDROGENS**.



TESTOSTERONE is the primary and most abundant androgen produced.

These non-nutrient chemicals act as intercellular messengers, dictating male physiological development and maturation.

Physiological Impact of Androgens

Accessory Sex Organs (Maturation & Function)



- Epididymis
- Vas deferens
- Seminal vesicles
- Prostate gland
- Urethra

Secondary Sexual Characters (Physical Changes)



- Significant muscular growth



- Growth of facial and axillary (underarm) hair



- Deepening (low pitch) of voice

Systemic Effects: Brain and Metabolism



Central Neural System ("CNS")

- Androgens act directly on the brain and "CNS".
- Regulate male sexual behavior ("LIBIDO").
- Influence behavioral traits such as aggressiveness.



Metabolic Pathways

- Produce powerful anabolic (synthetic) effects.
- Stimulate protein metabolism (facilitating muscle mass building).
- Stimulate carbohydrate metabolism (regulating energy utilization).

The Ultimate Synthesis: Spermatogenesis

Endocrine Output
("ANDROGENS") + Primary Architecture
("TUBULES") = "SPERMATOGENESIS"

The Master Takeaway

The endocrine function of the testis directly serves its primary reproductive function. Androgens play a major, mandatory stimulatory role in spermatogenesis (the formation of spermatozoa). Without the endocrine output from the Leydig cells, the **primary sex organ fundamentally fails to function.**



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