

DENT 3005: Introduction to Pharmacology

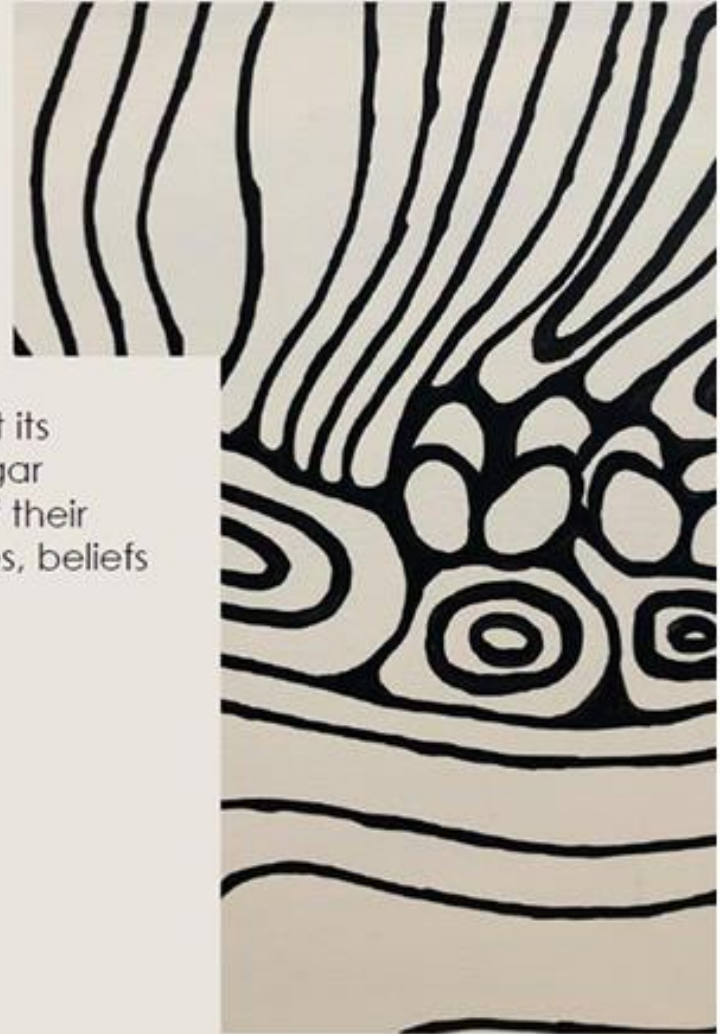
Hormonal drugs

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Acknowledgement of country

The University of Western Australia acknowledges that its campus is situated on Noongar land, and that Noongar people remain the spiritual and cultural custodians of their land, and continue to practise their values, languages, beliefs and knowledge.



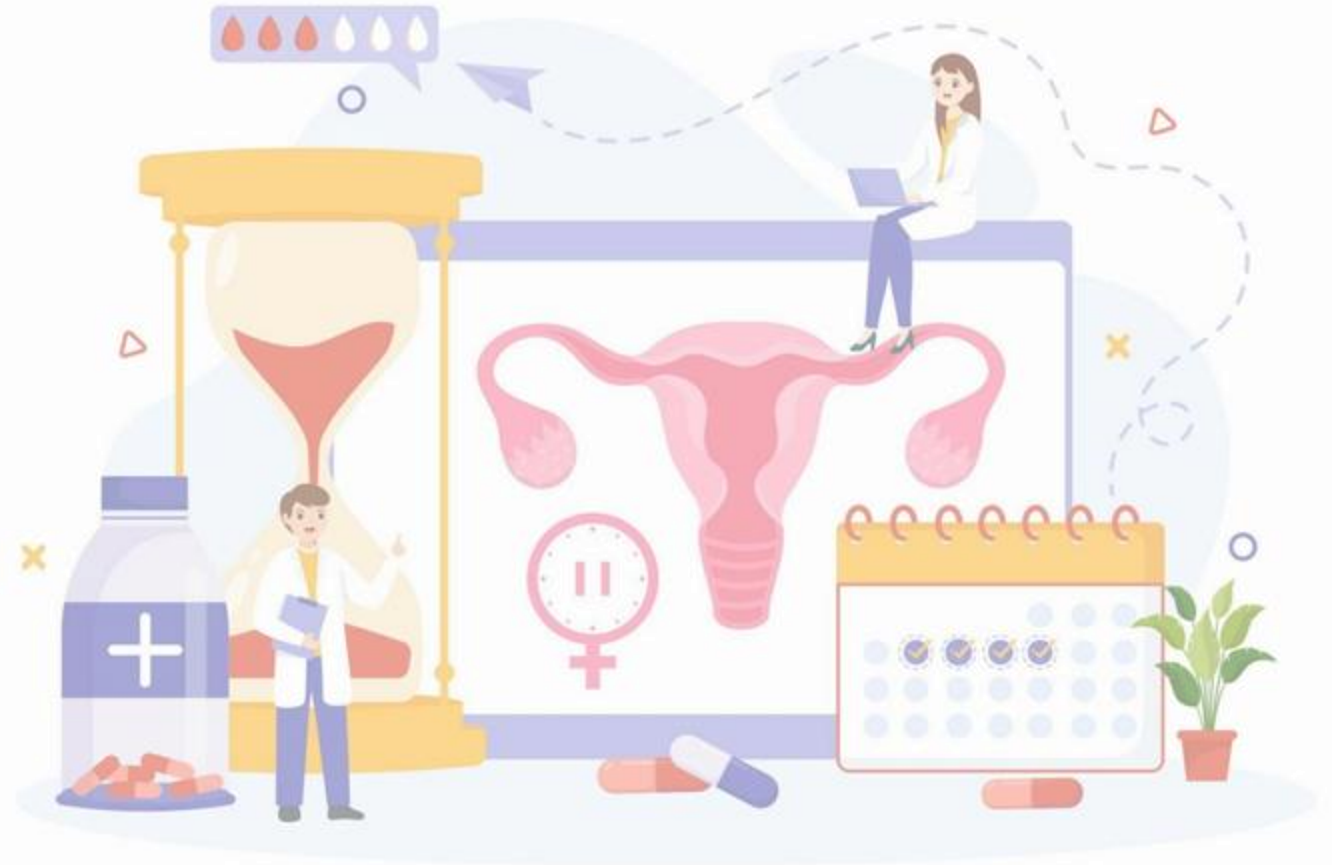
Artist: Dr Richard Barry Walley OAM



Learning Outcomes

Learning objectives

- 1) Identify major endocrine gland the the hormones they produce
- 2) Basic understanding of steroid hormones
- 3) Broad understanding of the pituitary gland and the various hormones it produces and their function
- 4) Broad understanding of estrogen, progestogens and androgen drugs and their implications in the dental setting
- 5) Applied knowledge to clinical scenarios





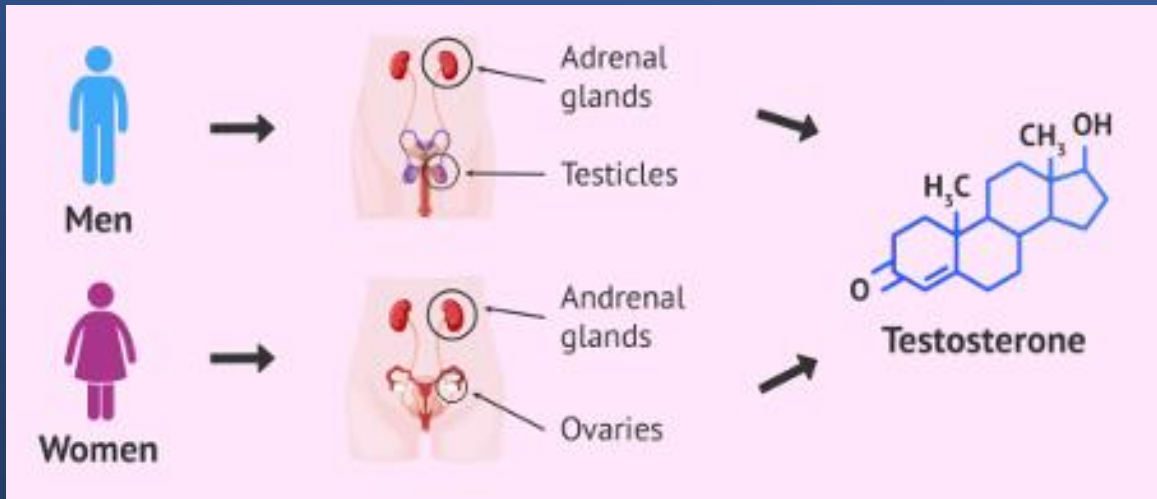
World Health Organization

Gender and Hormonal therapy

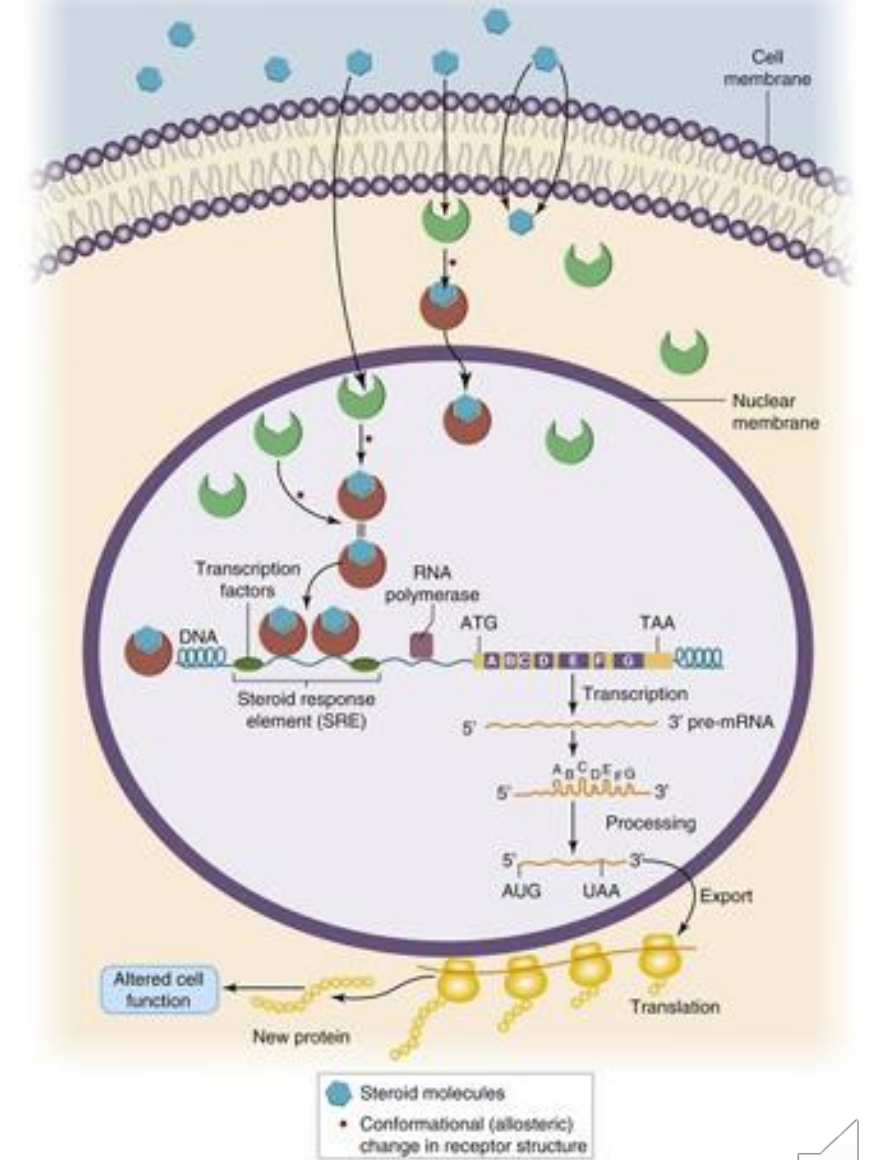
- Gender refers to the characteristics of women, men, girls and boys that are socially constructed.
- This includes norms, behaviours and roles associated with being a woman, man, girl or boy, as well as relationships with each other.
- As a social construct, gender varies from society to society and can change over time.
- As a healthcare professional, we need to be treating patients with justice regardless of gender.
- Gender is not the same as Sex.

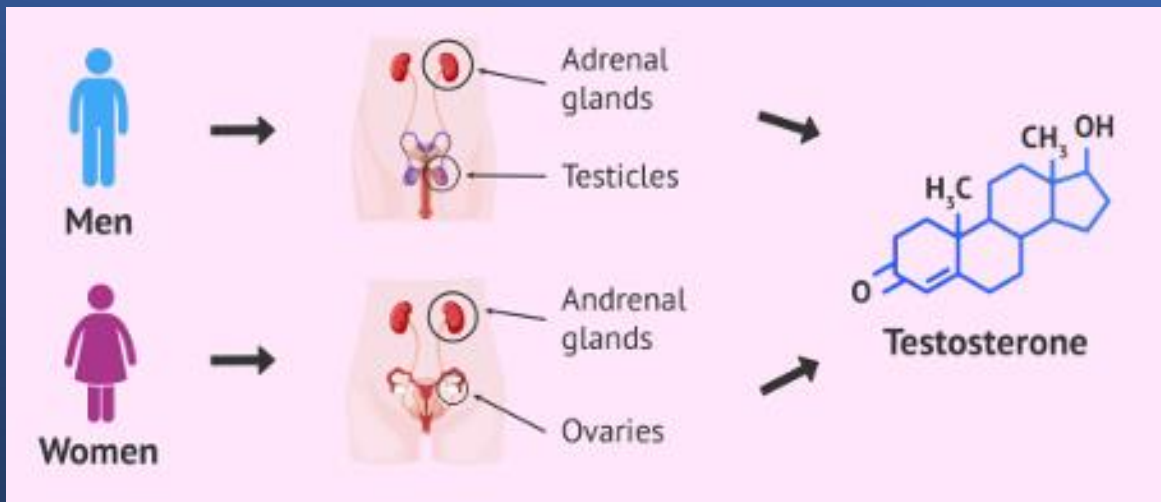
If unsure → Ask





- **Testosterone in males**
 - Made by Leydig cells (testes)
 - Role: reproductive development, secondary sex traits, muscle/bone maintenance
- **Testosterone in females**
 - Made by ovaries & adrenal glands
 - Role: libido, muscle strength, bone density, estrogen precursor



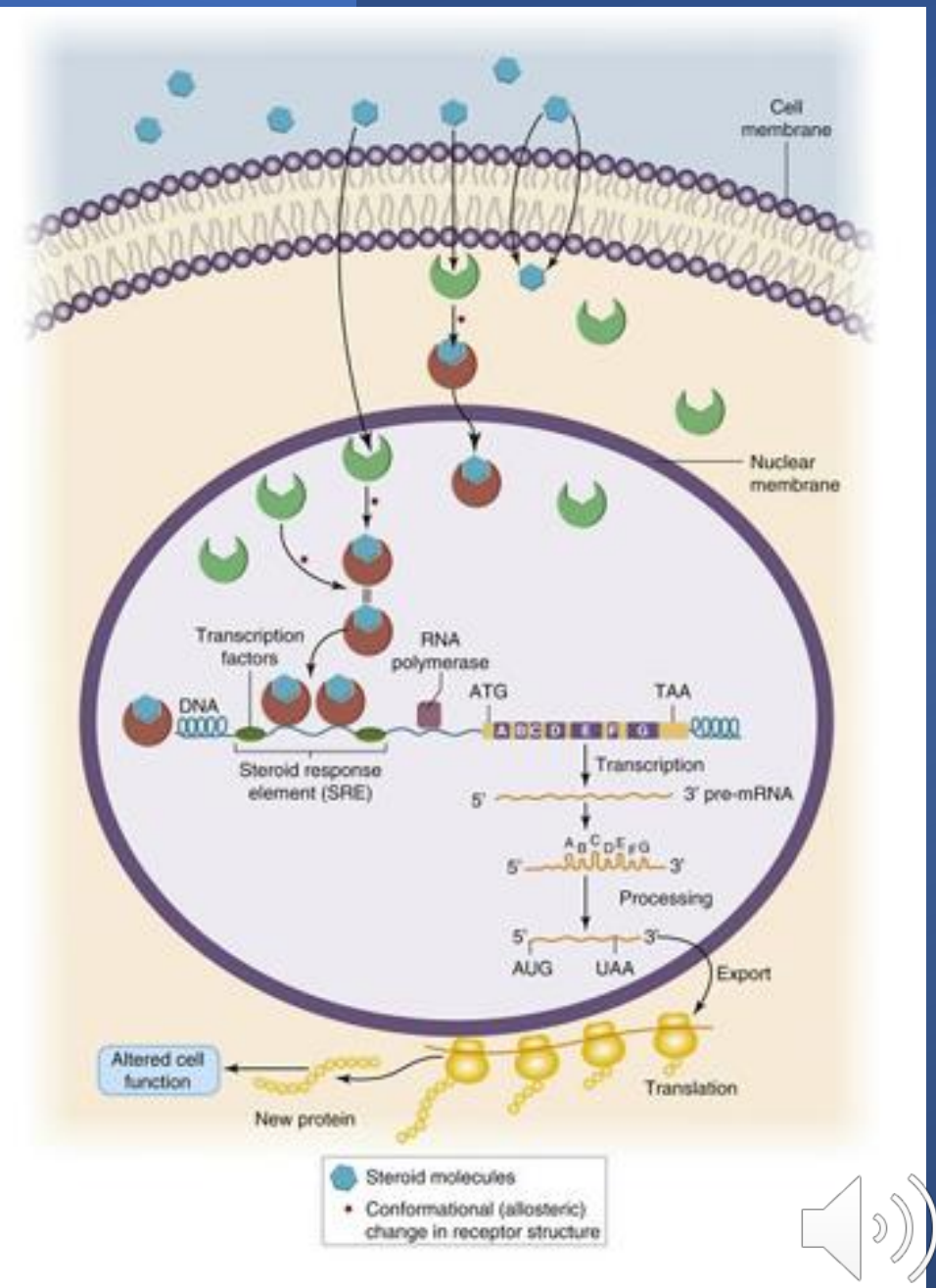


• Steroid hormone mechanism

- Lipid-soluble → crosses cell membrane
- Binds intracellular receptors (cytoplasm/nucleus)
- Activates receptor → hormone-receptor binds DNA (HREs)
- Regulates gene transcription → alters protein synthesis

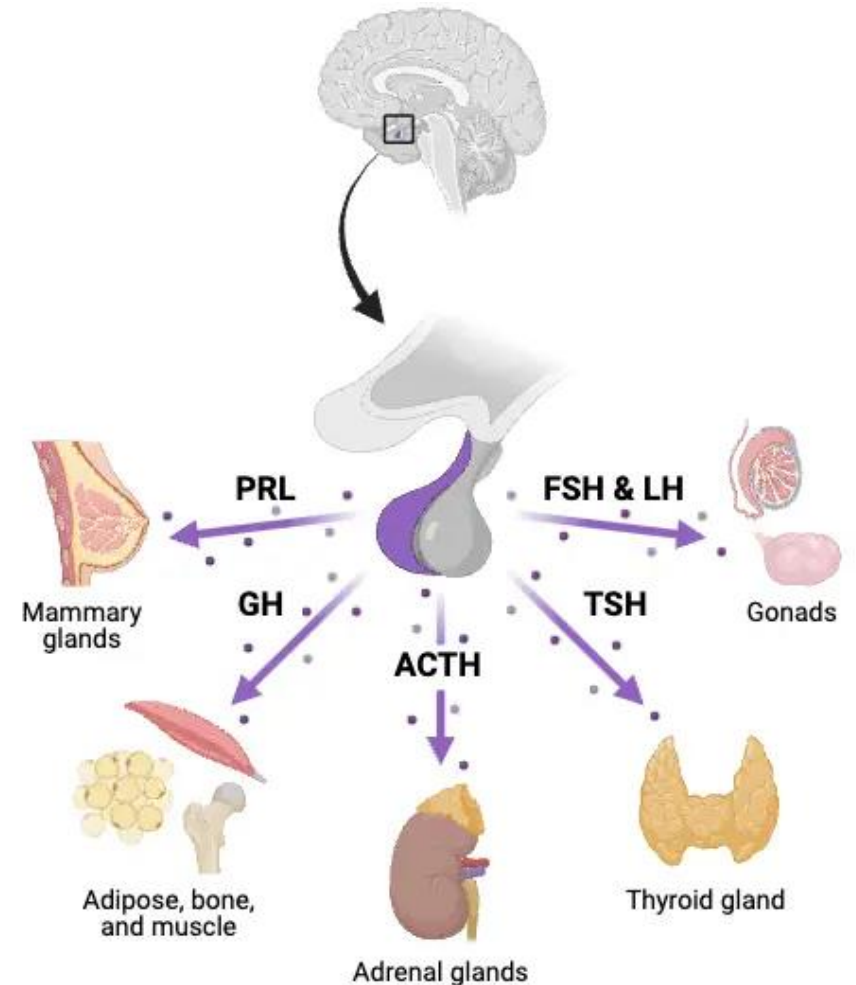
• Examples

- *Cortisol: stress, inflammation*
- *Estrogen: reproduction, bones*
- *Testosterone: muscle, bones, sex traits*



The pituitary Gland

- A tiny gland at the base of the brain:
small but mighty!!!
- A major endocrine gland!
 - Produces a wide variety of hormones that travel to regulate other glands & organs in the body
- Anterior lobe: GH, ACTH, TSH, FSH, LH
- Posterior lobe: ADH, oxytocin



Brain and hormones

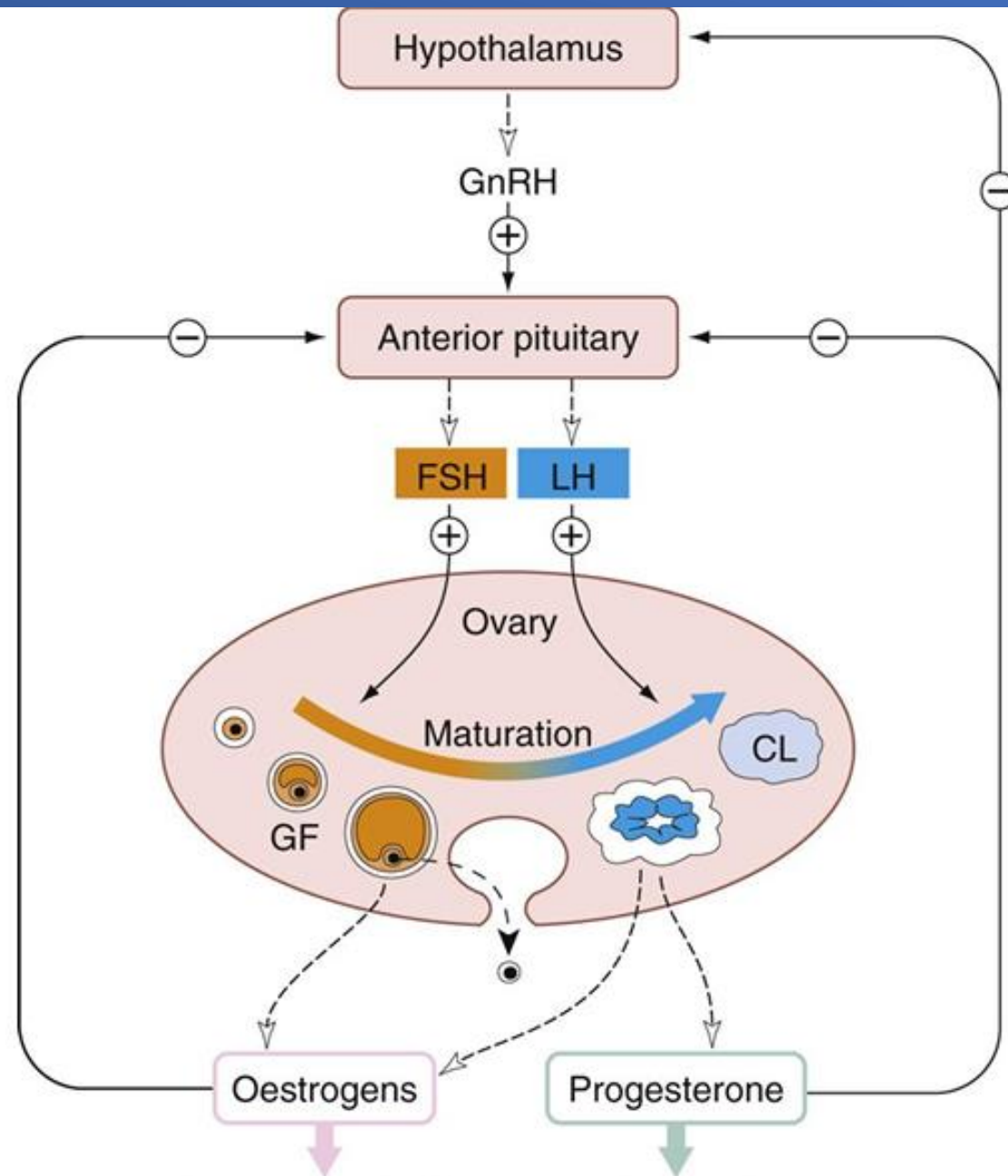
- Hypothalamus releases GnRH
- GnRH signals pituitary to release FSH and LH

FSH

- Stimulates egg growth
- Promotes estrogen production
- Prepares for ovulation

LH

- LH surge triggers ovulation



Hormonal contraceptives

- Combined pill
 - Estrogen inhibits FSH and LH
 - Progesterone inhibits LH and thickens cervical mucus
- Progestin-only pill
 - Thickens cervical mucus
 - Alters endometrium to prevent implantation

No pregnancy

- Corpus luteum degenerates
- Estrogen and progesterone levels drop
- Endometrial lining sheds, leading to menstruation

Estrogen

- **Replacement therapy**
 - Menopause – Flushing, vaginal dryness, Preserve bone mass
 - Tablets, patches are most commonly used
- **Contraception**
 - Combination: ethinylestradiol, oestradiol
- **Antiestrogen**
 - Oestrogen-sensitive breast cancer (Tamoxifen)
 - Induce ovulation (Clomiphene) in treating infertility

Generic name	Brand Name
COCs Ethinylestradiol Oestradiol Mestranol	Yaz, Femme, Zoley, Brenda, Madeline... many more

Progestogen

- **Contraception** e.g. *Norethisterone*, *Levonorgestrel*
 - Combined with Oestrogen
 - Progesterone only [Oral, Injection, Implant, Intrauterine] e.g. Medroxyprogesterone, Etonogestrol
 - Endometriosis
- **Antiprogestogens**
 - Medical termination of pregnancy (Mifepristone)

Generic name	Brand Name
COCs Drospirenone Levonorgestrel Nomegestrol Norethisterone Many more+++	Yaz, Femme, Zoley, Brenda, Madeline... many more
Etonogestrel	Implanon NXT
Medroxyprogesterone	Provera

Androgens

- Aka anabolic steroids
- Bind & activate androgen receptors
- Hormone replacement
 - Male hypogonadism
- Anti-androgens e.g. Flutamide, Cyproterone
 - Indication: tx of prostatic cancer, COCs
- 5 α -Reductase inhibitors e.g. finasteride
 - Indication: benign prostatic hyperplasia

Generic name	Brand Name
Testosterone	Testogel
COCs cyproterone	Brenda, Carolyn, Diane, Estelle
Finasteride	Finpro



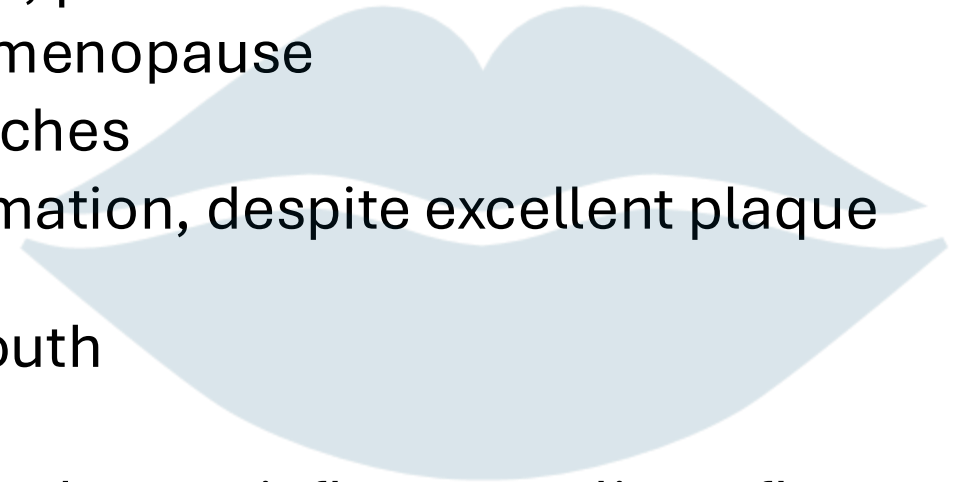
Hormonal drugs Dental implications

- Hormonal based medications can exacerbate gingival overgrowth
- ADR: dry mouth, taste disturbances
- Oral contraceptive
 - Potential risk factor for dry socket after dental extraction

Case 1: the menopause mambo

- **Scenario**

- Mrs. Canine, a 54-year-old woman, presents for her routine dental exam.
- **Medical history:** started HRT for menopause
- **Medication history:** estrogen patches
- **Clinical findings:** gingival inflammation, despite excellent plaque control
- Patient also reports recent dry mouth



- **Discussion Points**

- How might hormonal replacement therapy influence salivary flow and increase xerostomia risk in postmenopausal patients?
- Why is it important to recognize inflammation in patients with good plaque control, especially those on HRT?
- What preventative or supportive strategies can we offer patients experiencing hormone-related oral dryness?

Case 2: “my gum has a tumor!”



- **Scenario**

- Mrs Lip, a 32-year-old woman, presents for her routine dental exam
- **Medical history:** pregnant in her 2nd trimester, borderline gestational diabetes
- **Medication history:** Elevit
- **Presenting concern:** “I have a lump around my canine”

- **Discussion Points**

- How does pregnancy affect gingival health?
- Why is periodontal monitoring critical in diabetic patients?
- What role does patient education play in managing oral health during pregnancy?

References

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