

# CLINICAL ANDROLOGY



Pan

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Egyptian God

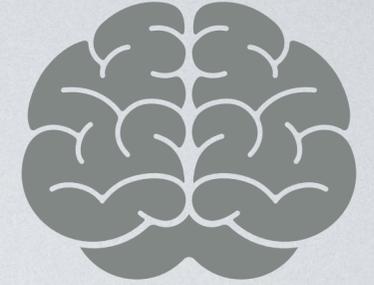
Min

# LECTURE PLAN

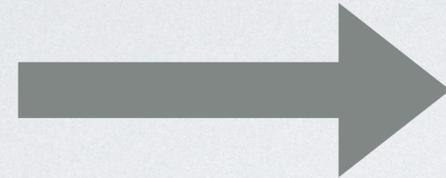
- What is andrology?
- What is a male?
- Male reproductive anatomy, physiology and hormonal system
- Puberty and sexual maturation sexual behavior
- Erection and ejaculation
- Reproductive health examination
- Reproductive diseases



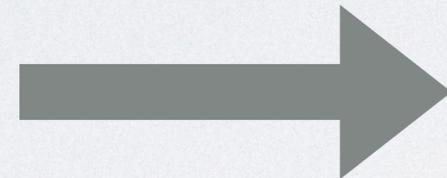
# REFERENCES



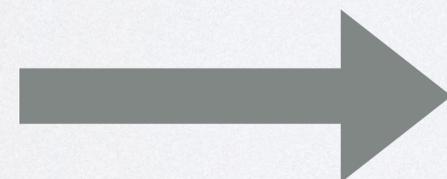
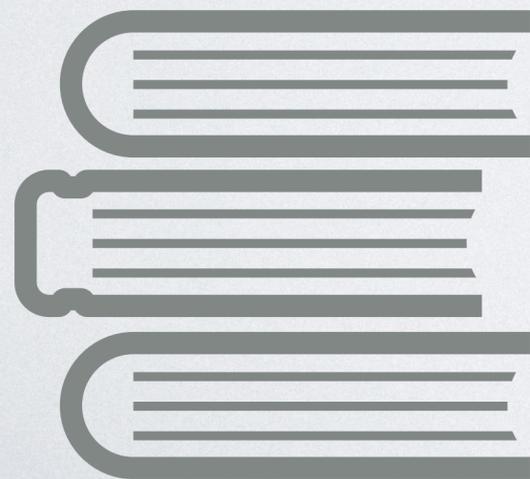
- Keywords



- What you can remember from the lecture



- <https://www.youtube.com/@ProfGovindNarayanPurohit>
- <https://www.youtube.com/watch?v=mjROZrxBdv4&t=1206s>
- <https://www.coursera.org/learn/sex-from-molecules-to-elephants>



- Chenoweth, P. J., & Lorton, S. (Eds.). (2014). *Animal andrology: theories and applications*. Cabi.

# MYTHS

## The Contest between Apollo and Pan



Apollo wins the contest but Midas, who has overheard the contest, claims that Pan is much the better musician.

"If you value the sounds of a fool, you shall have the ears of one."



**Prado Museum, Madrid.**

Jacob Jordaens

Min -4000 BC

Egypt



Son of Osiris and Isis, was an ancient Egyptian god and one of the earliest gods associated with male fertility and virility

Priapus BC and 79

Pompeii

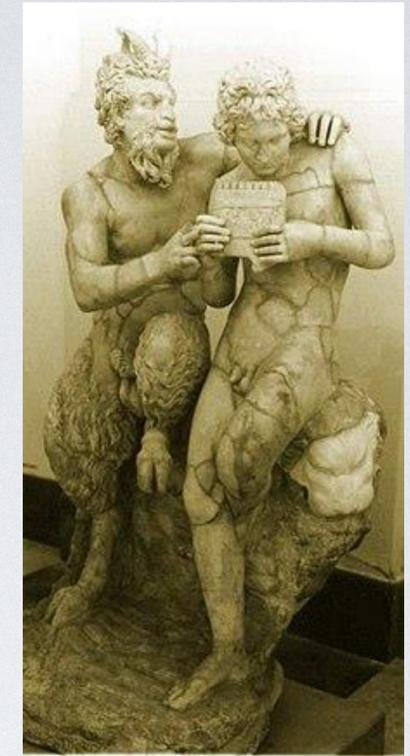


Greek god with permanent erection. He was the son of Aphrodite and Dionysus.

**Priapism**

Pan

Panic



Pan exhibited intense sexual behavior, with several myths describing him using tricks and violence in the pursuit of nymphs and goddesses

Term	Description	God/godess
<b>Hymen</b>	Membrane surrounding entrance of vagina	Hymen – the Greek god of marriage
<b>Aphrodisiac</b>	A chemical purported to stimulate sexual desire	Aphrodite- The Greek goddess of love
<b>Venereal disease</b>	A sexually transmitted infectious disease	Venus – the Roman goddess of love
<b>Hermaphroditism</b>	A condition where both ovarian and testicular tissue are found in the same individual	Hermaphroditus* – the offspring of Hermes and Aphrodite who looked female but had male genitalia
<b>Priapism</b>	A continuous, painful erection	Priapus – the Roman god of male potency
<b>Satyriasis</b>	A condition of compulsive sexual desire in men.	Satyr- a woodland deity part man and part goat. Most notable for chasing nymphs



# WHAT IS ANDROLOGY



Andro + Logy



Male science



- Anatomy,
- Functions,
- Disorders (such as infertility or impotence)

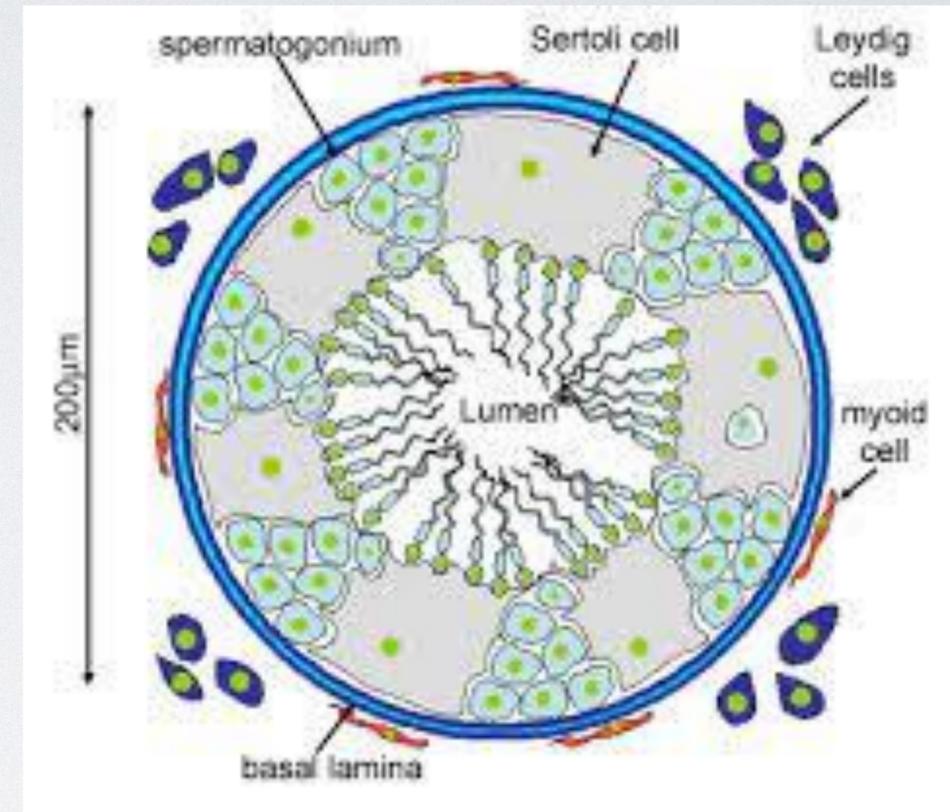
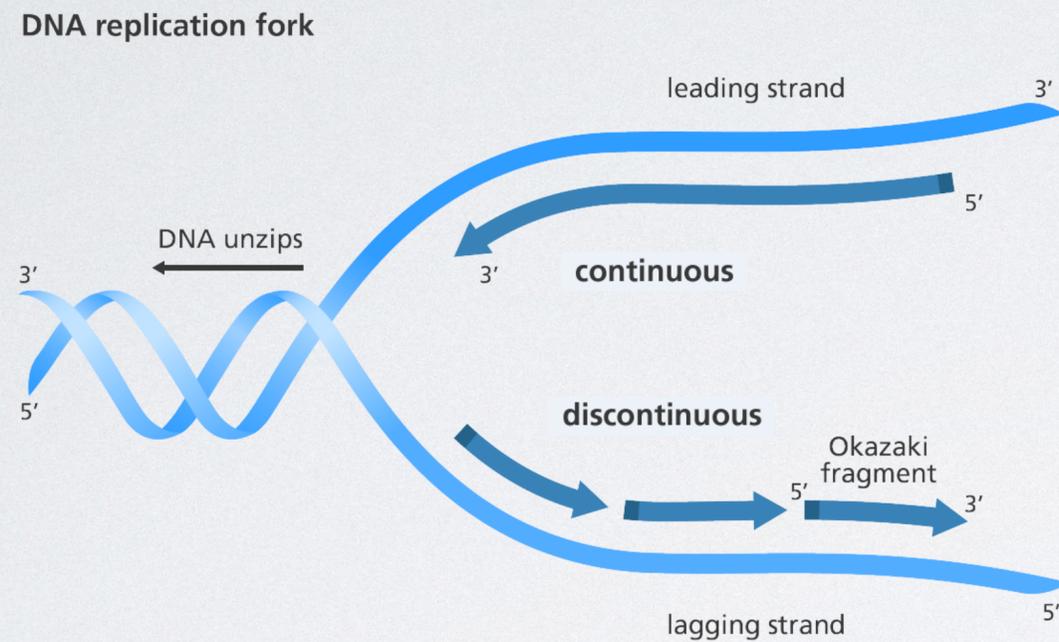


Democritus, 470-402 İÖ



# WHAT IS MALE ?

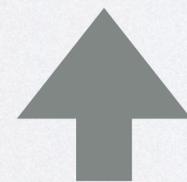
Is a genetically mutated female ?



Haemophilia

10 x in male

Genetic diseases

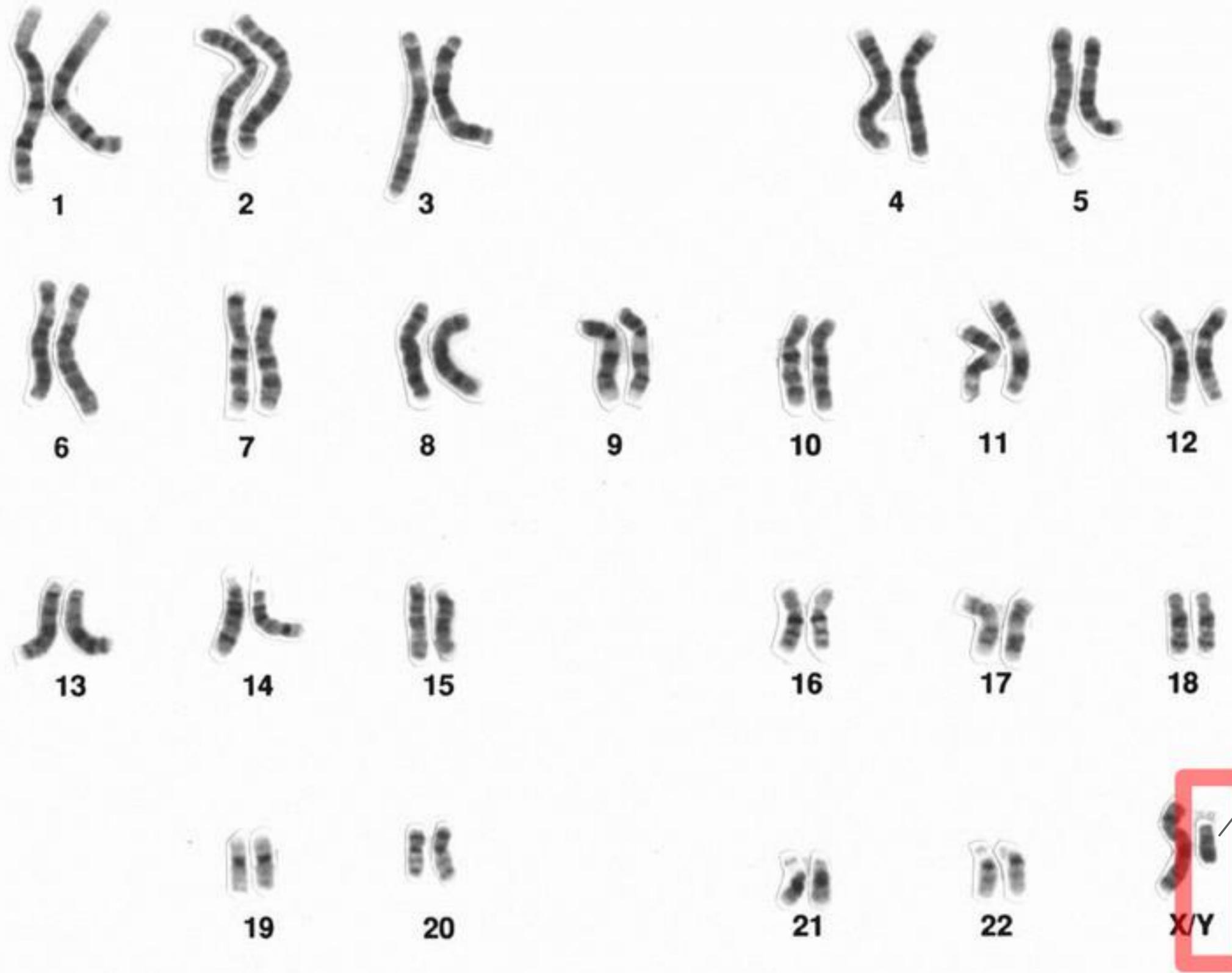


paternal age !!

Sertoli cells divides

DNA makes copy itself

Oogonium stops dividing during birth



SRY gene

Sex determination region Y



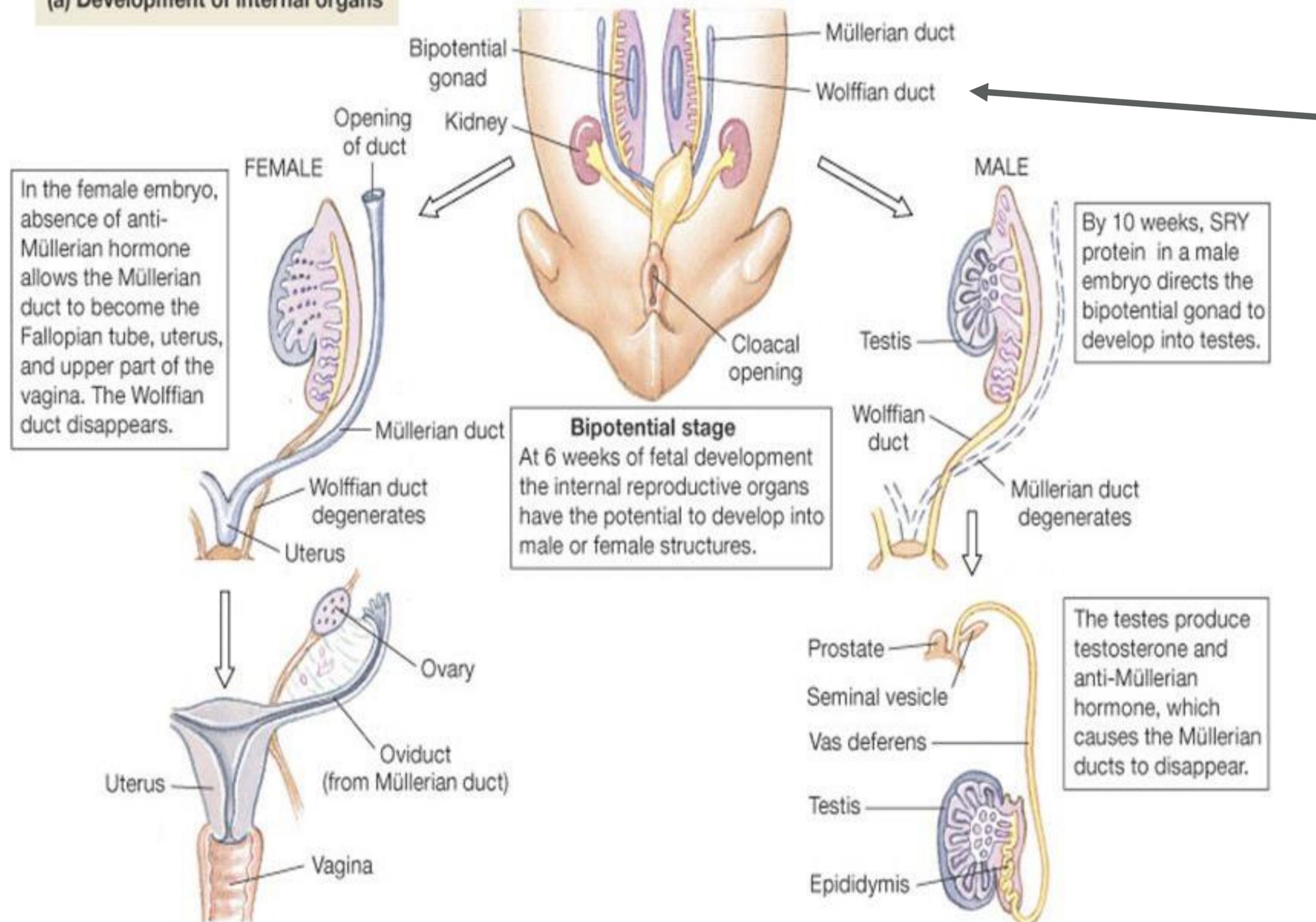
One single copy

Palindrom

S	A	T	O	R
A	R	E	P	O
T	E	N	E	T
O	P	E	R	A
R	O	T	A	S

# SEXUAL DIFFERENTIATION & GONAD DEVELOPMENT

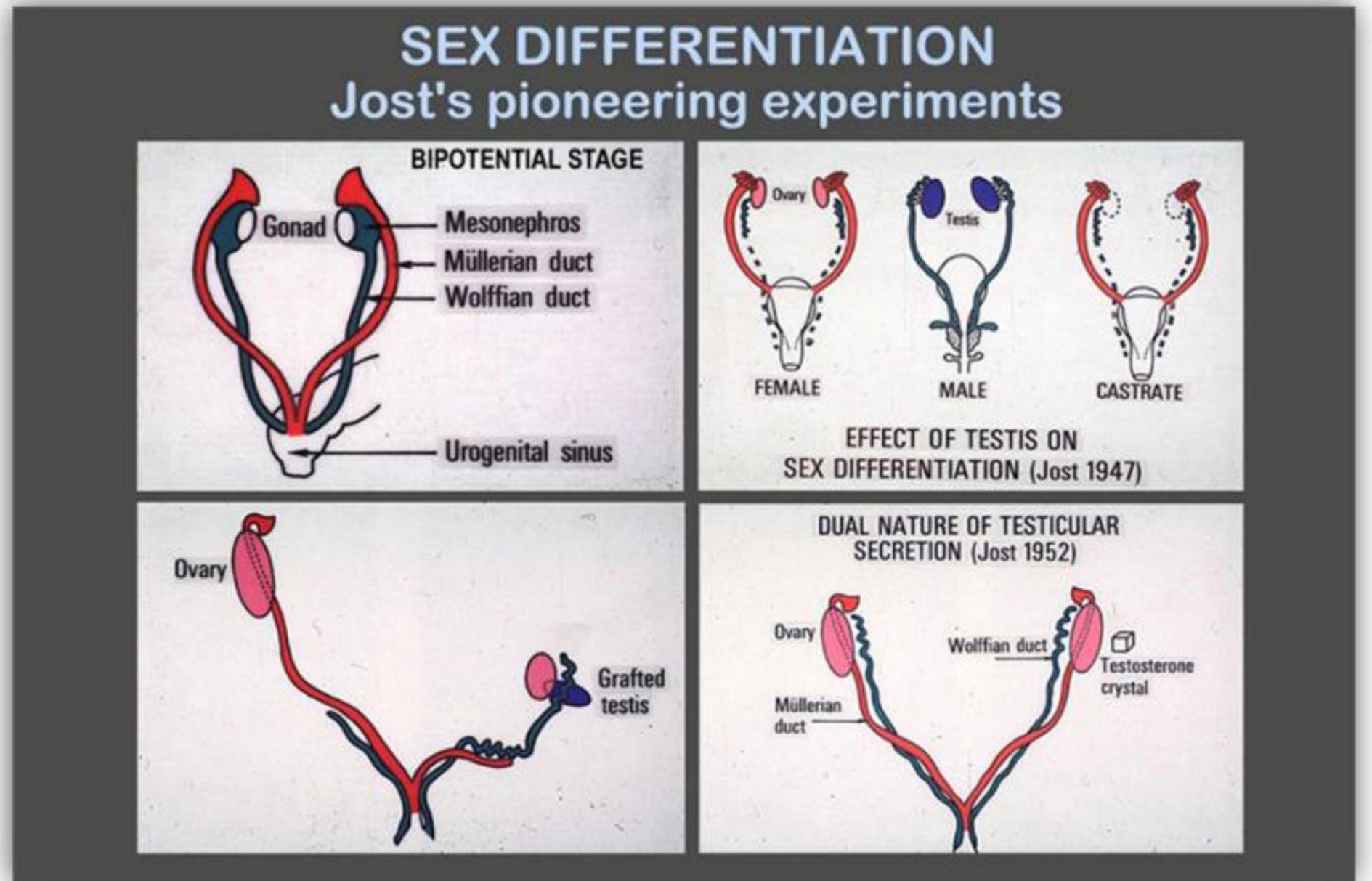
(a) Development of internal organs



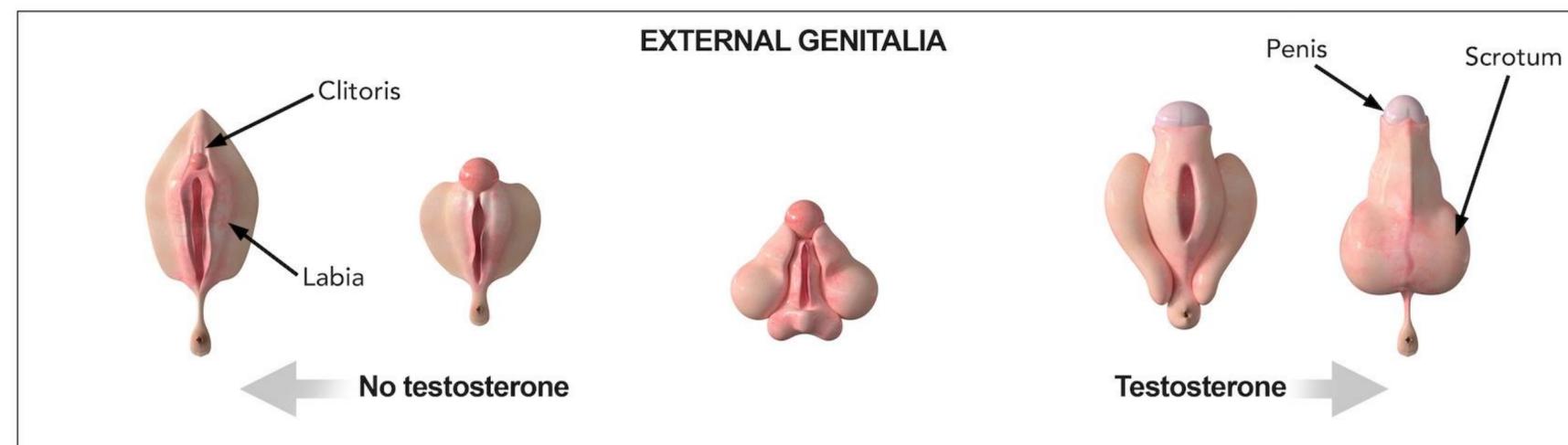
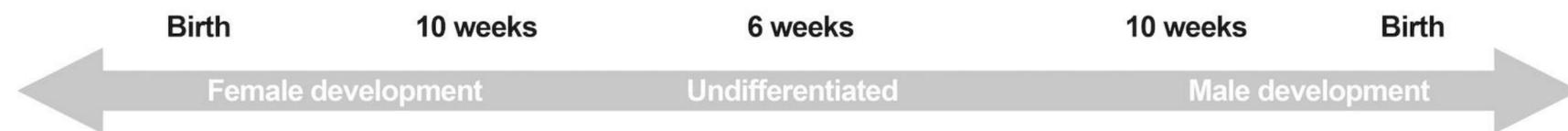
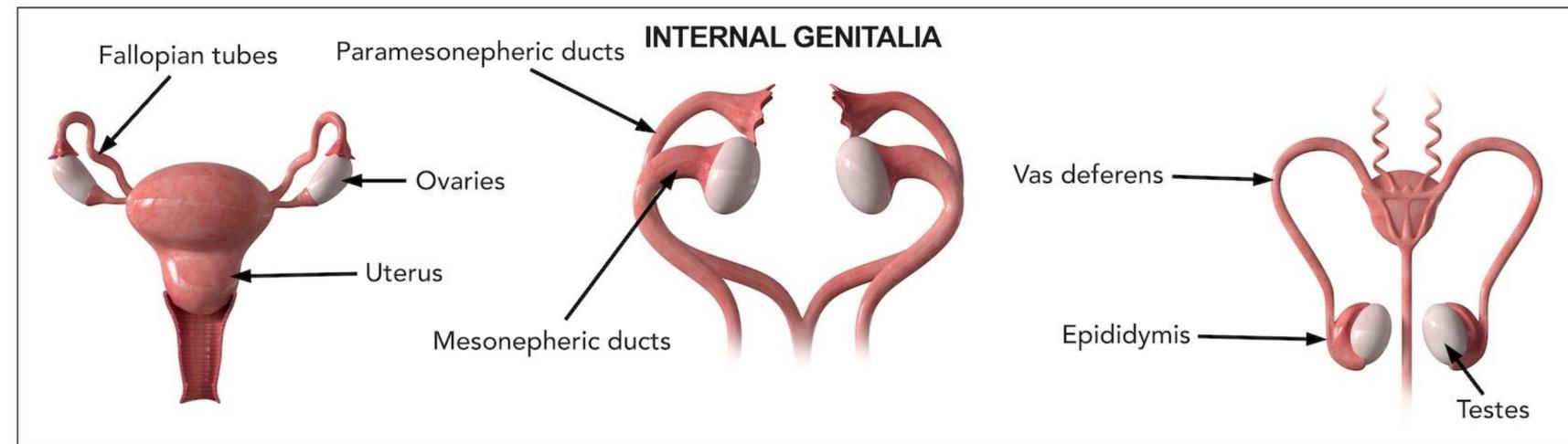
Male reproductive tract develops from wolffian duct or the mesonephric tubules

# SEXUAL DIFFERENTIATION

- Jost grafted testes onto a female embryo, resulting in Müllerian duct regression and Wolffian duct development, proving testicular hormones drive male differentiation.
- Jost placed a testosterone crystal near the Wolffian duct of a female embryo, resulting in Wolffian duct development without a testis, demonstrating that testosterone alone can drive male tract formation.



# SEXUAL DIFFERENTIATION



# SEXUAL DIFFERENTIATION

Animal	Week of Gonadal Differentiation	Notes on Sexual Differentiation	Reference
Cattle	6-7 weeks	Testes develop from the medulla, ovaries from the cortex.	Guraya, 1989
Sheep	6-7 weeks	SRY gene expression triggers testicular formation.	Guraya, 1989
Goat	6-7 weeks	Differentiation follows a similar pattern to sheep.	Guraya, 1989
Pig	5-6 weeks	Rapid differentiation, with visible male structures early.	Guraya, 1989
Horse	7-8 weeks	Gonadal differentiation occurs slightly later.	Guraya, 1989
Dog	5-6 weeks	Wolffian ducts develop in males, Müllerian ducts regress.	Meyers-Wallen, 2012
Cat	5-6 weeks	Testicular cords form early; ovarian follicles later.	Meyers-Wallen, 2012
Buffalo	7-8 weeks	Similar pattern to cattle, with slower development.	Guraya, 1989
Rabbit	6-7 weeks	Gonadal differentiation initiated early during fetal life.	Guraya, 1989

# TESTICULAR DESCEND

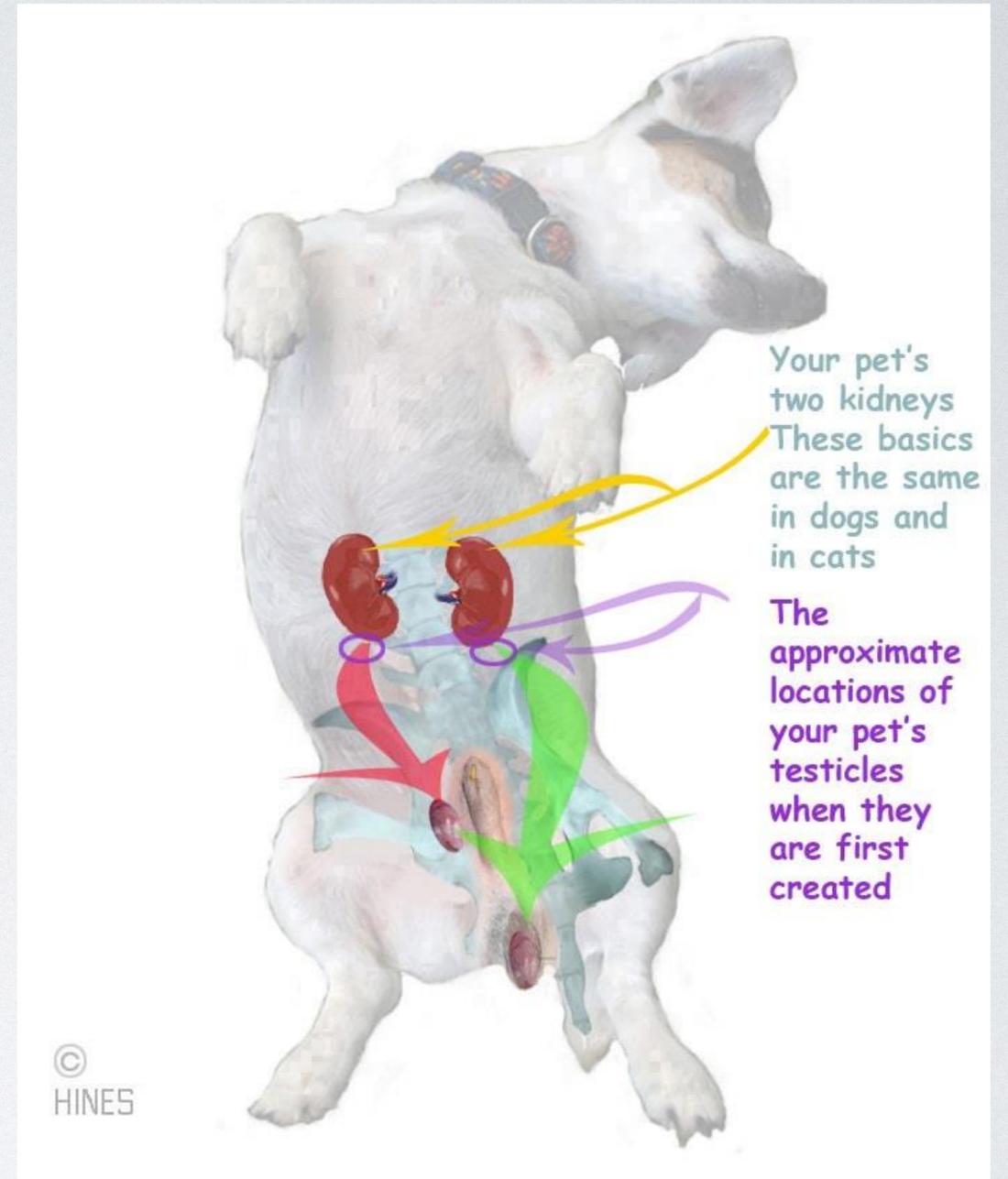
Animal	Week of Testicular Descent	Notes on Testicular Descent	Reference
Cattle	3-4 months (Gestation)	Descent through the inguinal canal between 3rd and 4th months of gestation.	Wensing, 1986
Sheep	2-3 months (Gestation)	Testicular descent occurs during the last third of gestation.	Wensing, 1986
Goat	2-3 months (Gestation)	Similar timing to sheep, with descent during the last third of gestation.	Wensing, 1986
Pig	3 months (Gestation)	Testes descend through the inguinal canal by the end of gestation.	Wensing, 1986
Horse	9 months (Postnatal)	Delayed descent, usually completed within the first year after birth.	Foster, 2005
Dog	35-40 days (Postnatal)	Testes descend shortly after birth, typically between 35-40 days.	Meyers-Wallen, 2012
Cat	2-6 weeks (Postnatal)	Descent may be variable, usually complete by 2 to 6 weeks postnatal.	Meyers-Wallen, 2012
Buffalo	4-5 months (Gestation)	Testicular descent occurs later compared to cattle, between 4-5 months.	Wensing, 1986
Rabbit	10-12 days (Postnatal)	Rapid postnatal descent, usually complete within 10-12 days.	Foster, 2005



Hypospadias



Penile aplasia



Cryptorchidism