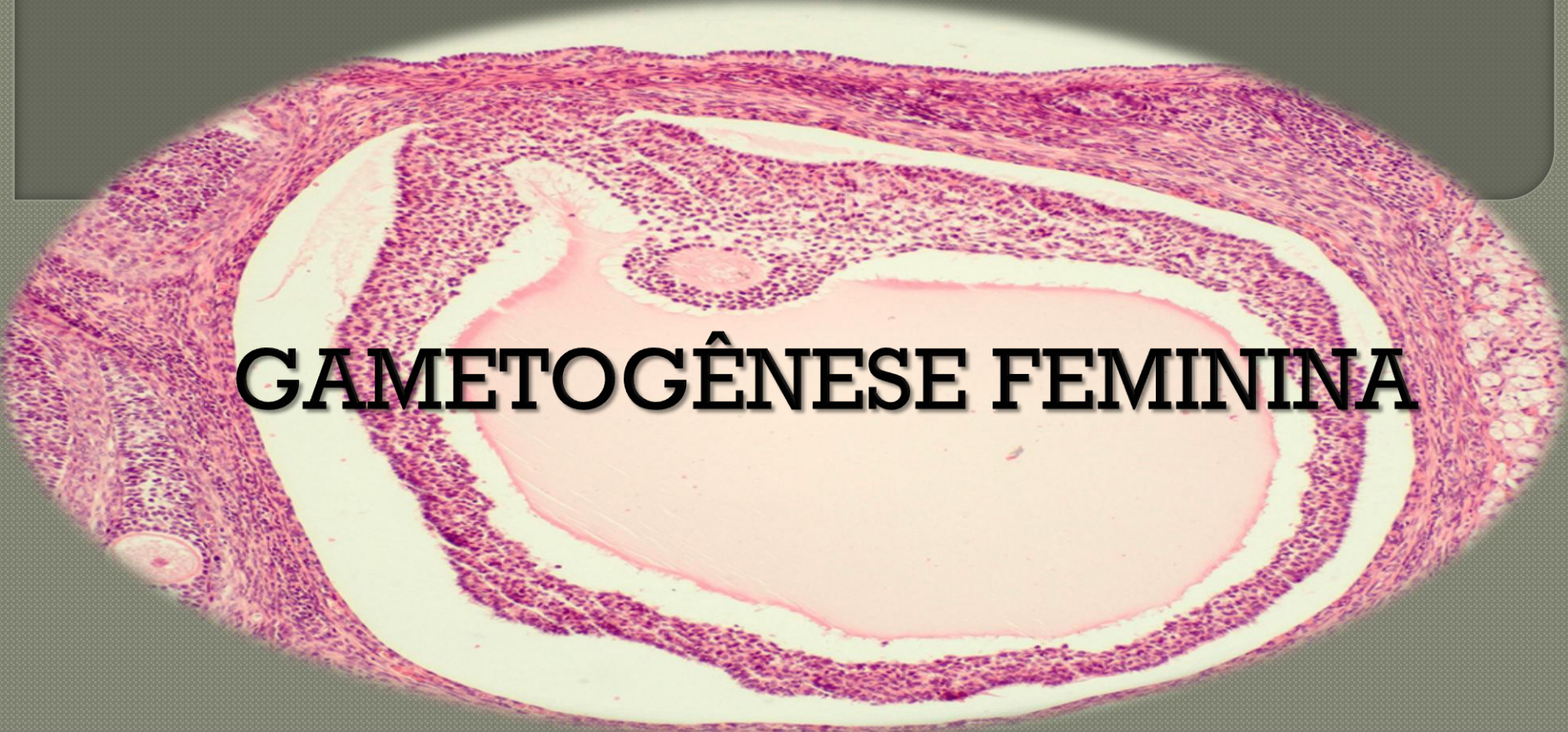




UNIVERSIDADE FEDERAL FLUMINENSE
PROF. MSc DANIELA FRANKLIN
DISCIPLINA DE EMBRIOLOGIA
CURSO DE MEDICINA VETERINÁRIA

A histological section of an ovary, stained with hematoxylin and eosin (H&E). The image shows a large follicle with a prominent, pink-stained nucleus (nucleolus) and a surrounding layer of granulosa cells. The follicle is surrounded by a thick layer of theca cells. The overall structure is oval-shaped and shows the typical architecture of an ovary.

GAMETOGENESE FEMININA

OVOGÊNESE
OVULOGENESE



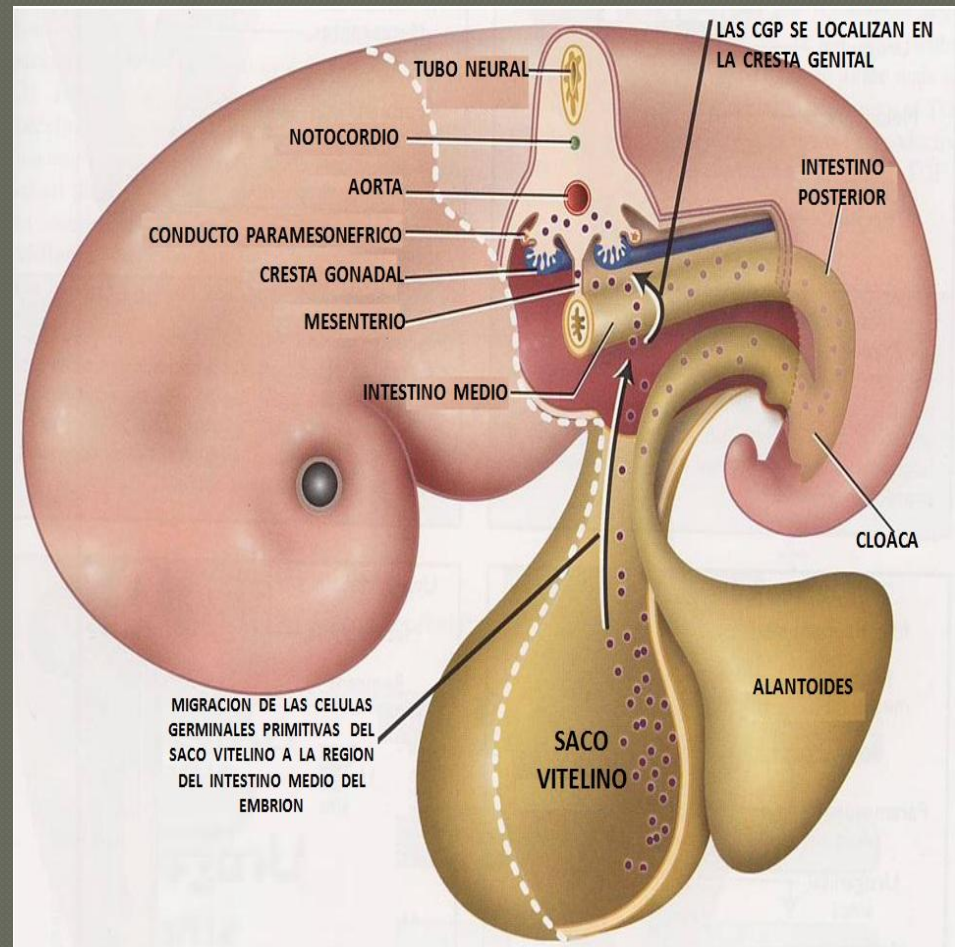
FASES DA GAMETOGENESE

- FASE 1: Origem e Migração das Células Germinativas Primordiais (CGP)
- FASE 2: Aumento do Número de Células Germinativas por Mitose
- FASE 3: Redução do Número de Cromossomos por Meiose
- FASE 4: Estruturação Final e Diferenciação Funcional dos Gametas

FASE 1: CÉLULAS GERMINATIVAS PRIMORDIAIS

1ª FASE DA GAMETOGENÊSE:

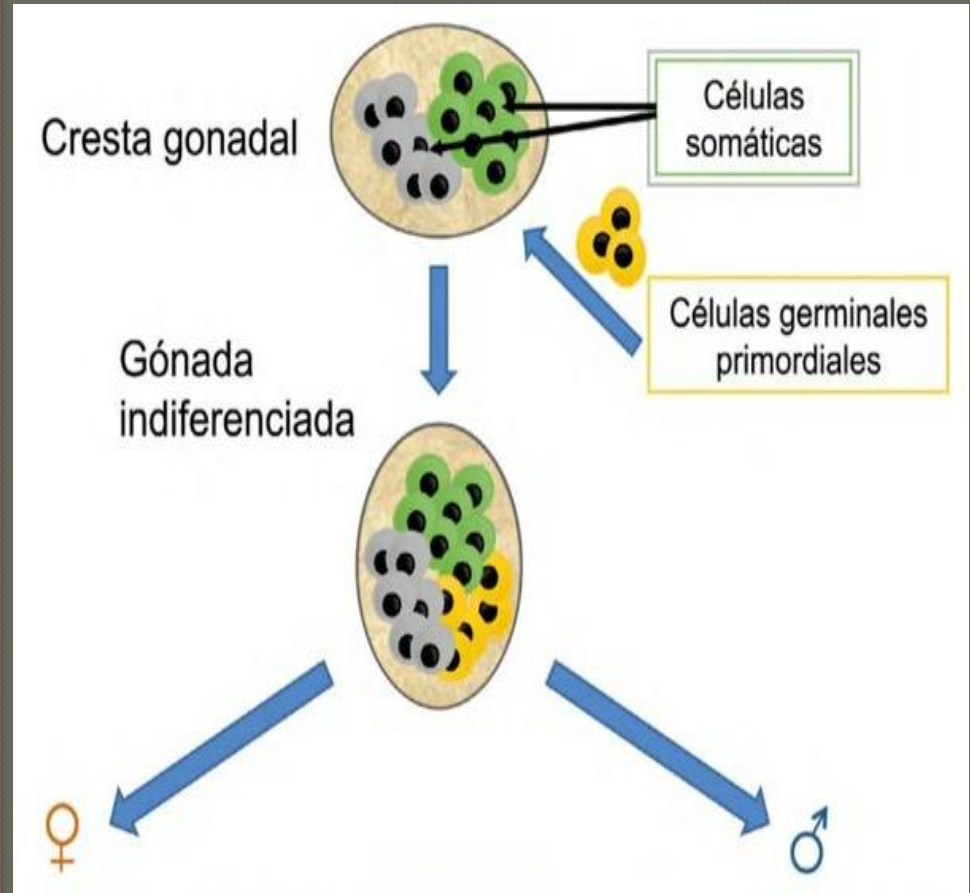
- ORIGEM E MIGRAÇÃO DAS CÉLULAS GERMINATIVAS PRIMORDIAIS (CGP)
- Elas são as precursoras dos gametas
- Elas se originam da camada endodérmica do saco vitelino, migram através do mesentério dorsal do intestino médio, e chegam nas gônadas
- As células que dão origem aos gametas são de origem endodérmica.





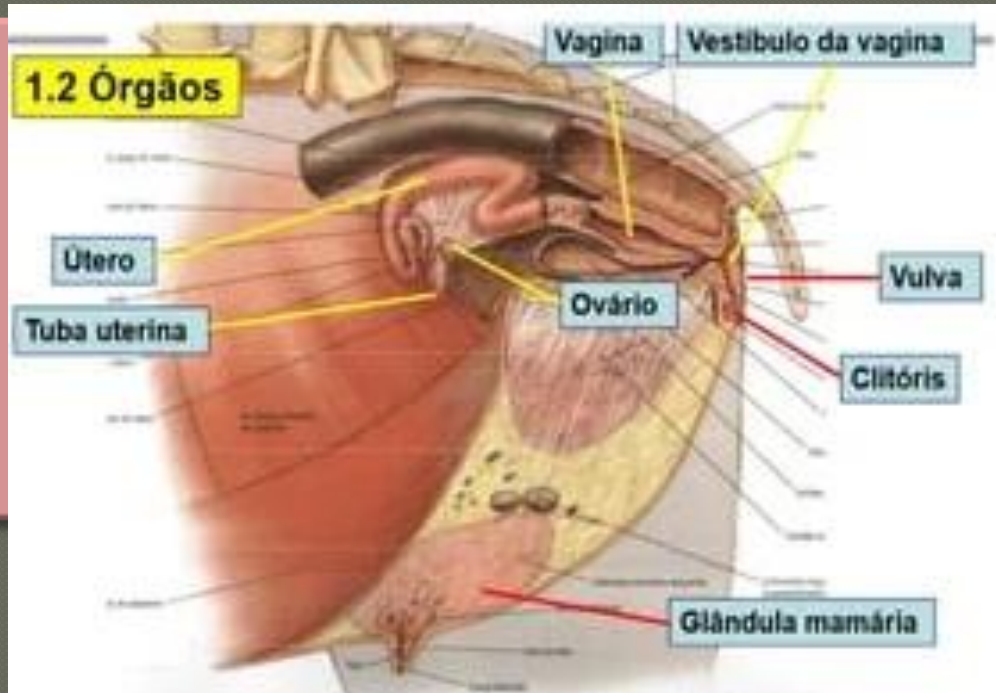
FASE 2: MITOSE DAS CÉLULAS GERMINATIVAS

- Assim que as CÉLULAS GERMINATIVAS PRIMORDIAIS (OS GONÓCITOS) chegam nas gônadas, elas começam a se multiplicar por mitose, a partir do momento em que a gônada se diferencia, aumentando com isso o número de células na gônada ainda em desenvolvimento. Essas células, chamadas de gônias, são diplóides ($2n$).
- A partir da fase 2, temos diferenças entre a Espermatogênese e a Ovogênese





APARELHO REPRODUTOR FEMININO



TUBA UTERINA

OVÁRIO

CORNO
UTERINO

CORPO
DO ÚTERO

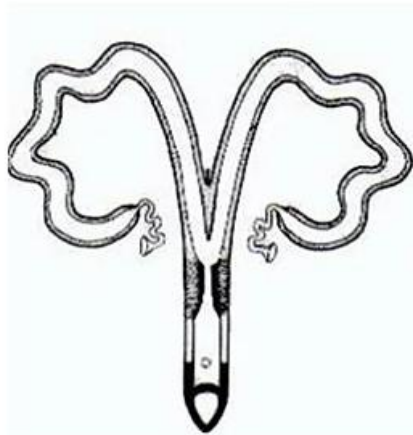
CÉRVICE

VAGINA

Cats, dogs and cows

TIPOS DE ÚTERO

PORCA

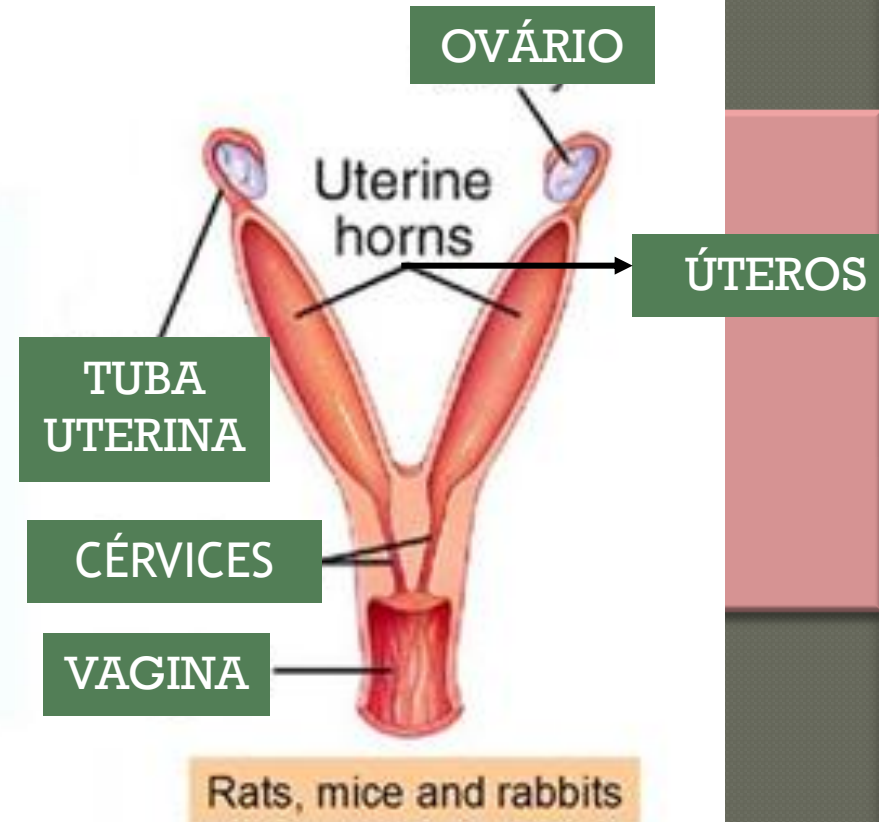


**Bicornual
Septado**

CADELA
GATA
VACA

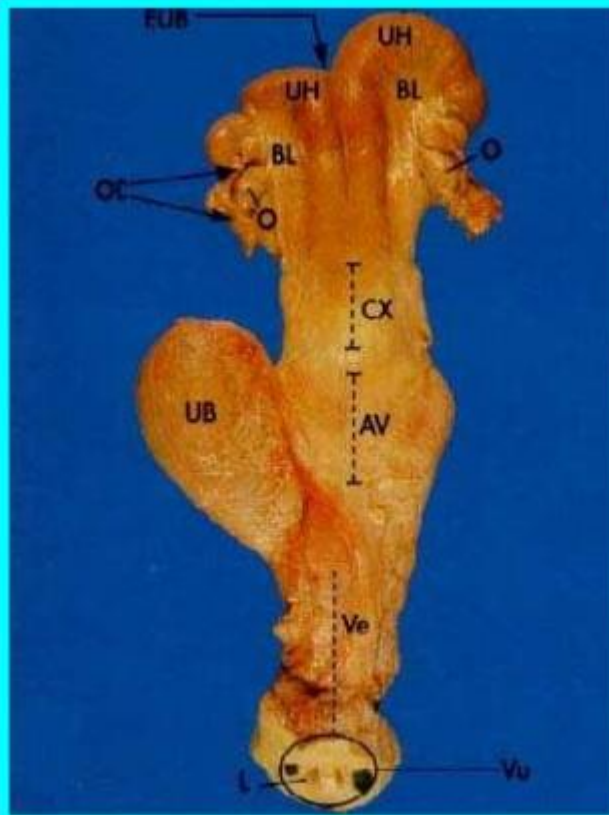


**Bicornual
Típico**

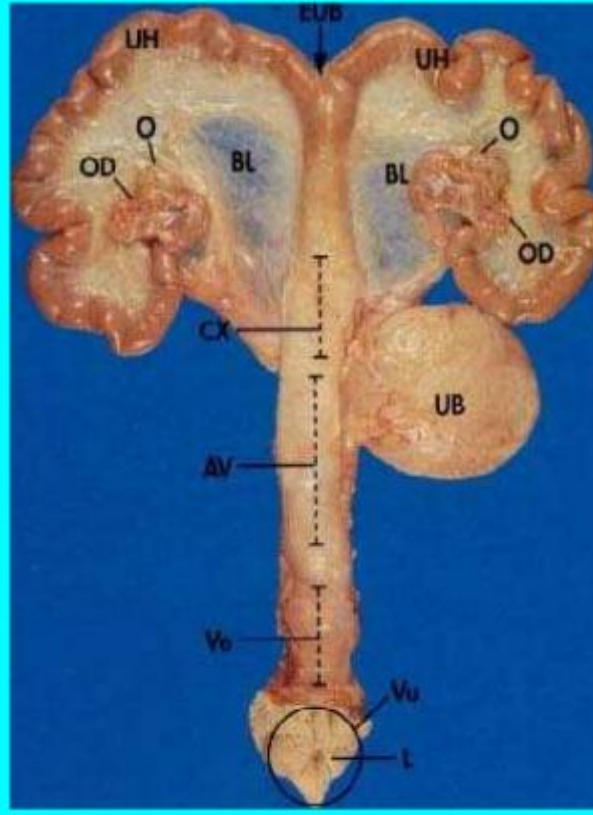




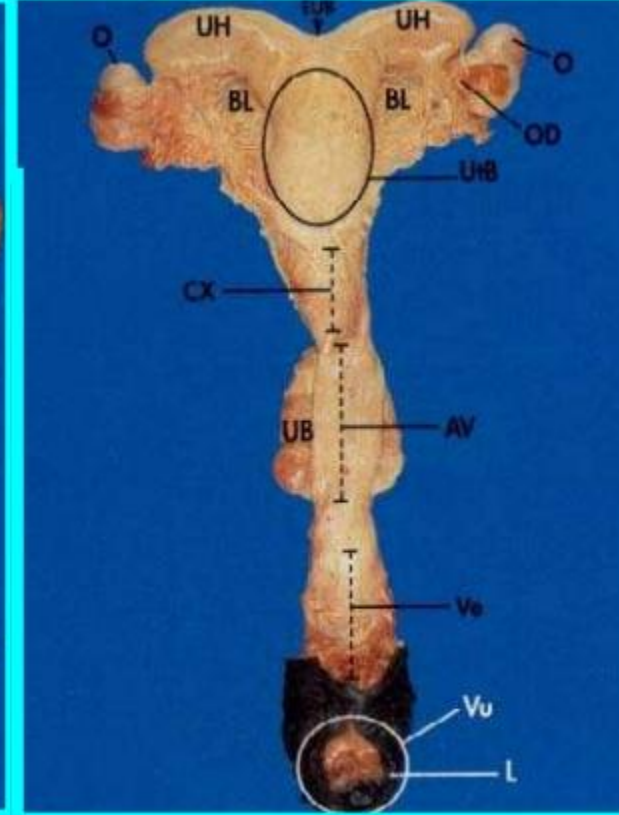
APARELHO REPRODUTOR FEMININO



VACA



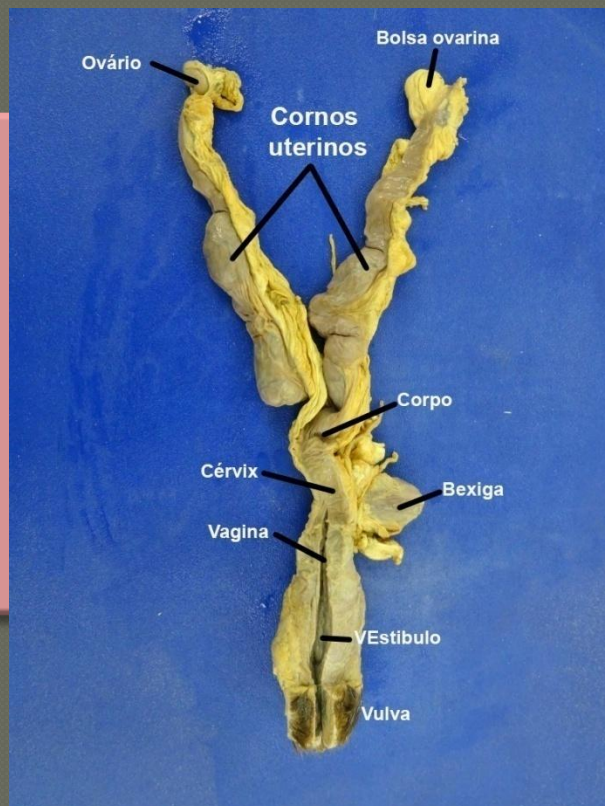
PORCA



ÉGUA



APARELHO REPRODUTOR FEMININO

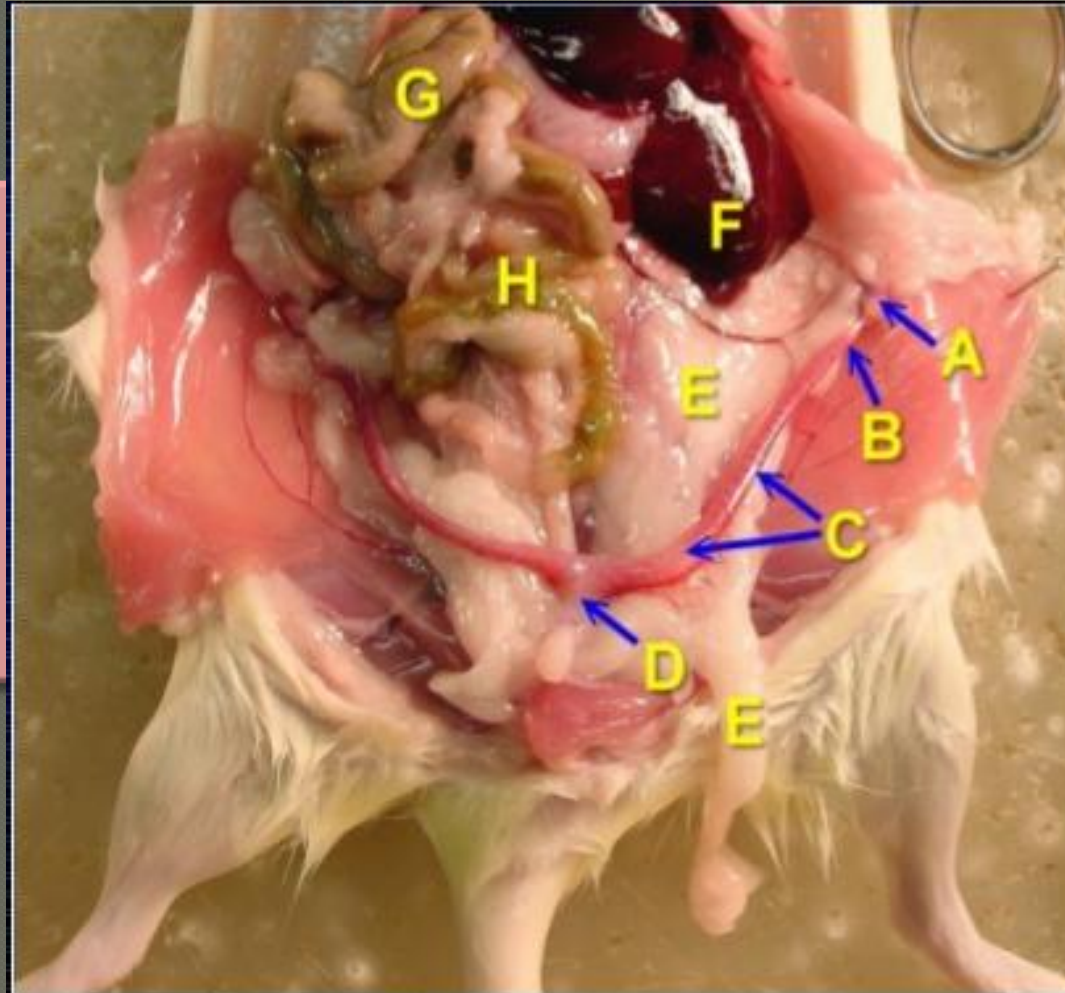


CADELA

GATA

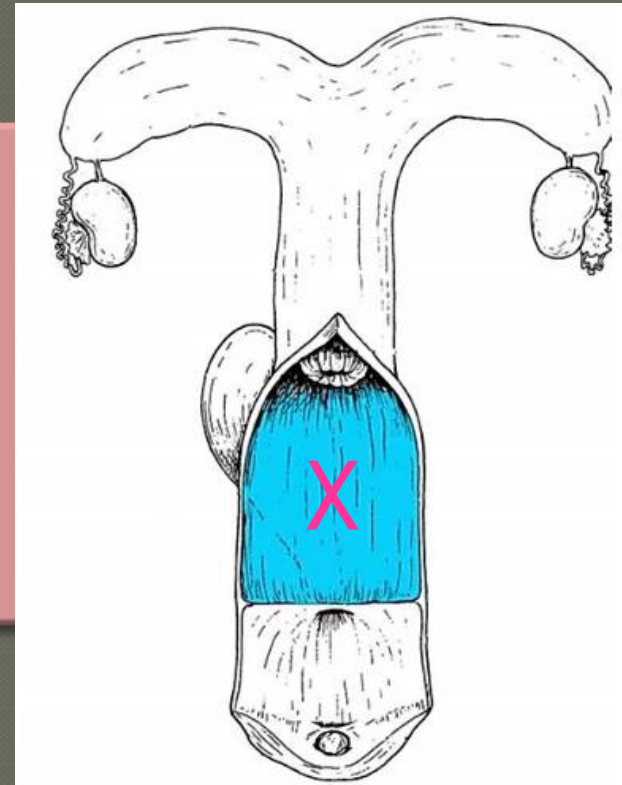
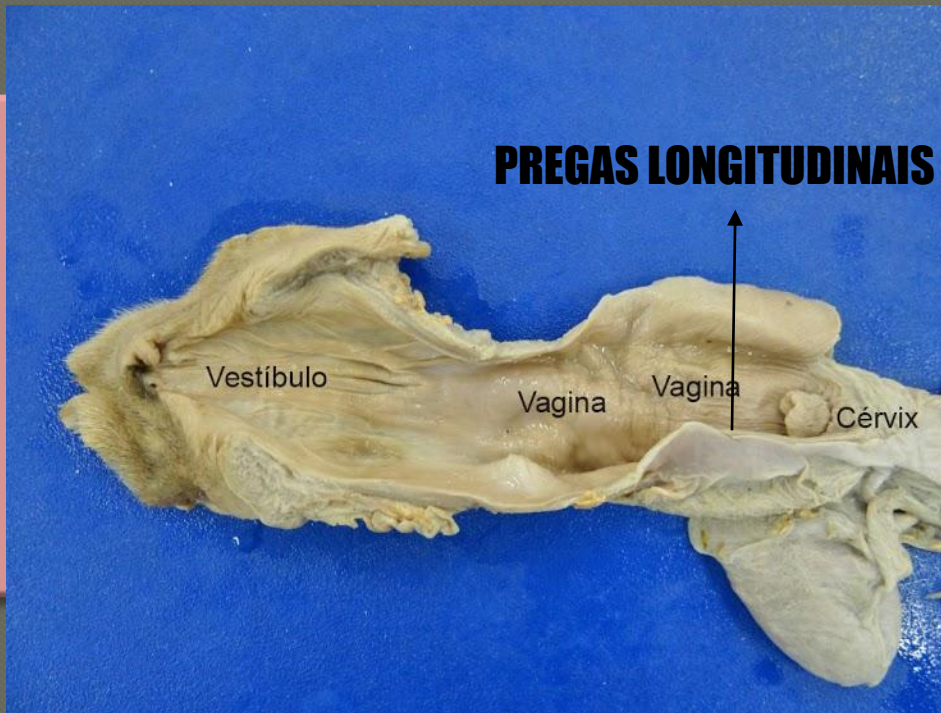


APARELHO REPRODUTOR RATA



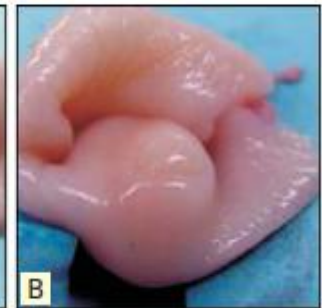
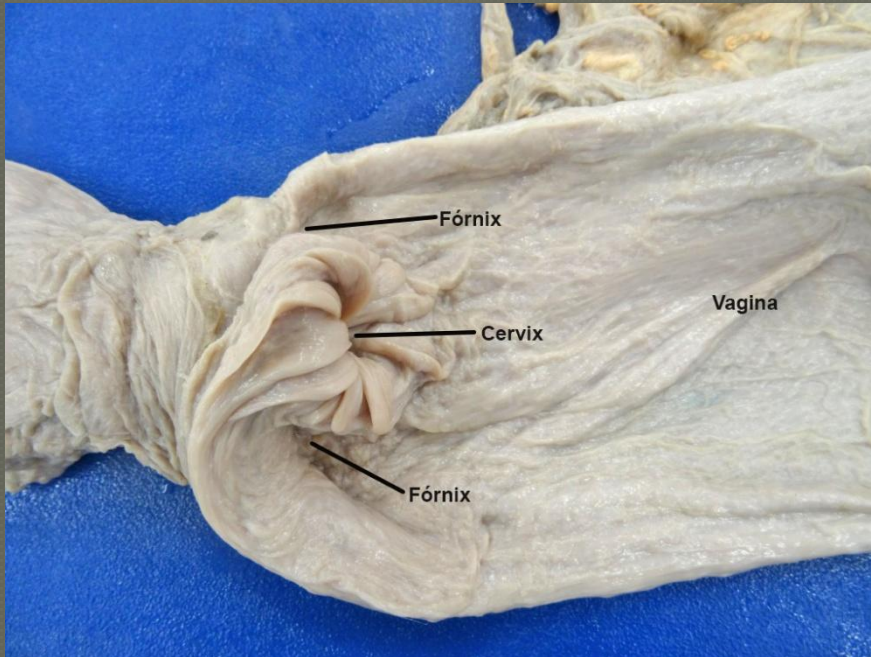


CANAL VAGINAL DOMÉSTICOS



CÉRVIX (COLO) DO ÚTERO

- Projeta-se na vagina, formando uma invaginação denominada fórnix em égua, vaca e ovelha



ÉGUA

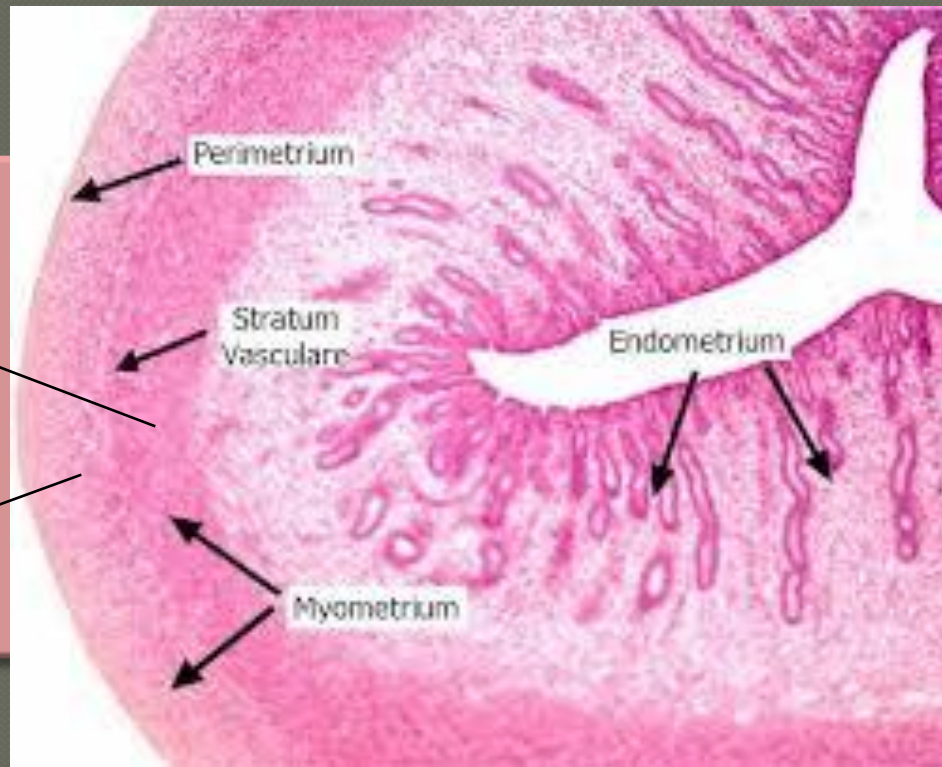
OVELHAS



CAMADAS DO ÚTERO

CAMADA MUSCULAR
CIRCULAR INTERNA

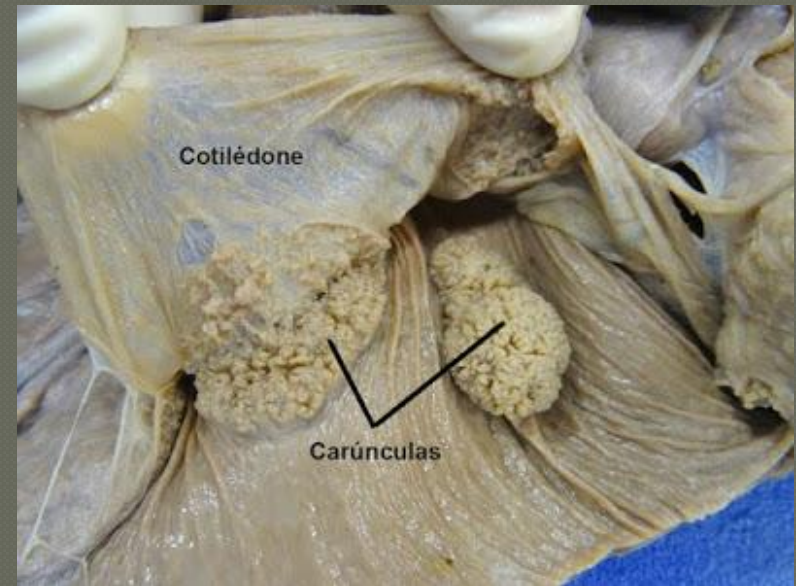
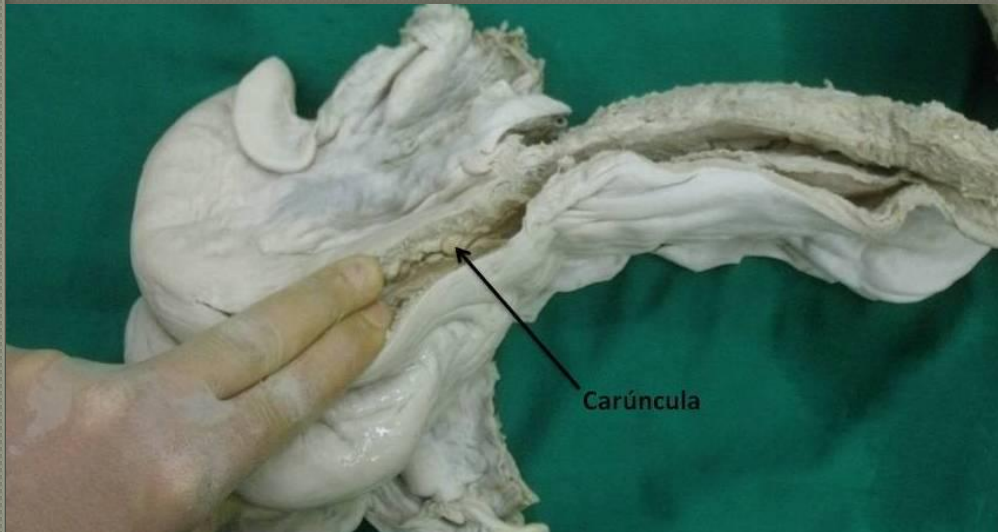
CAMADA MUSCULAR
LONGITUDINAL EXTERNA

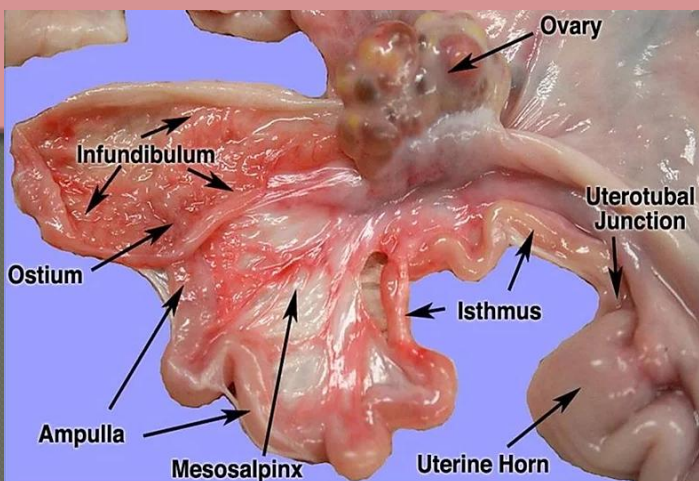




ÚTERO DE DOMÉSTICOS EXCEÇÃO

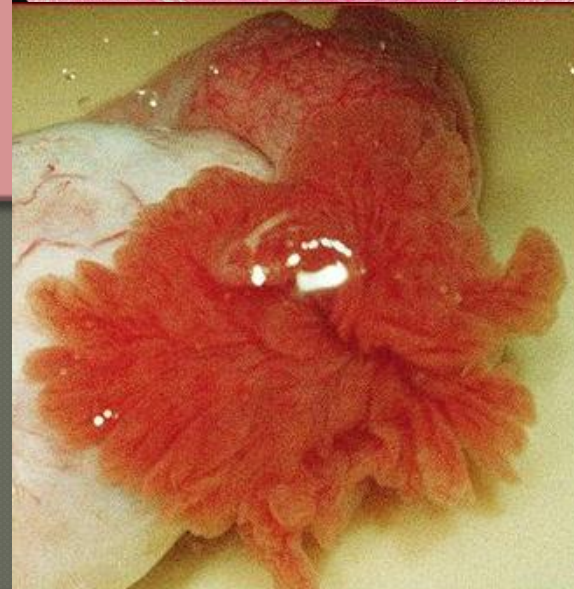
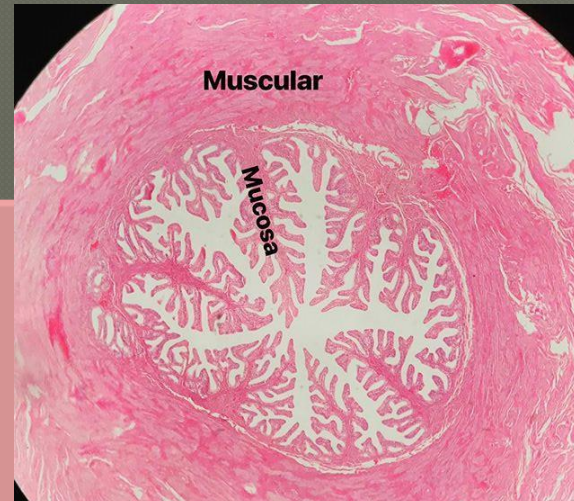
RUMINANTES







TUBA UTERINA





OVÁRIO DE DOMÉSTICOS

DOMÉSTICOS

CÓRTEX

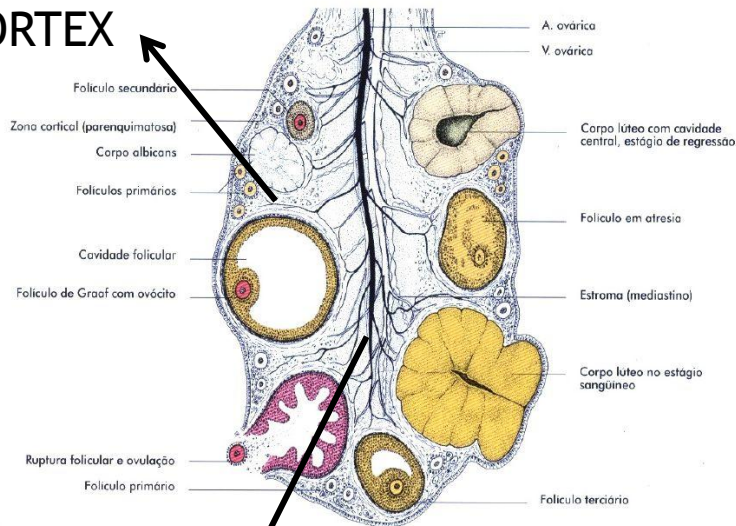
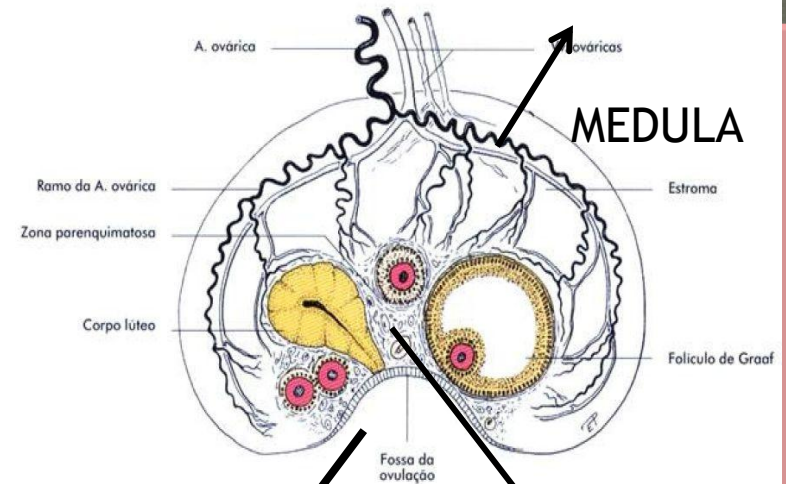


fig. 11-2. Representação esquemática do ovário da vaca com diferentes formações cíclicas funcionais, conforme Grau e Walte

MEDULA

ÉGUA



5. Representação esquemática do ovário da égua.

FOSSA DE OVULAÇÃO

OVÁRIOS DE DOMÉSTICOS

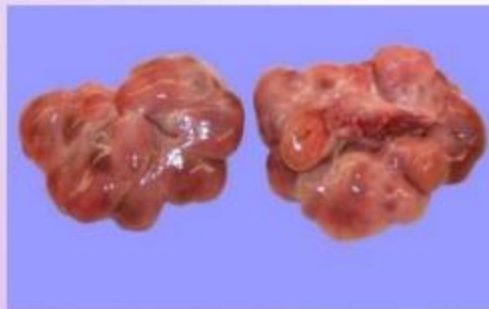
FORMATO DOS OVÁRIOS



Ovário de Gata



Ovário de Vaca



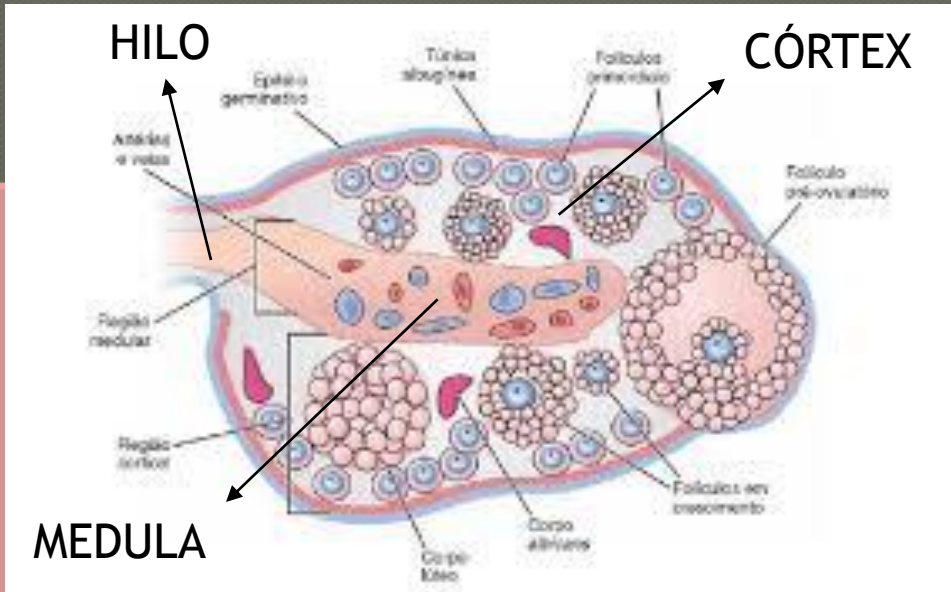
Ovários da Porca



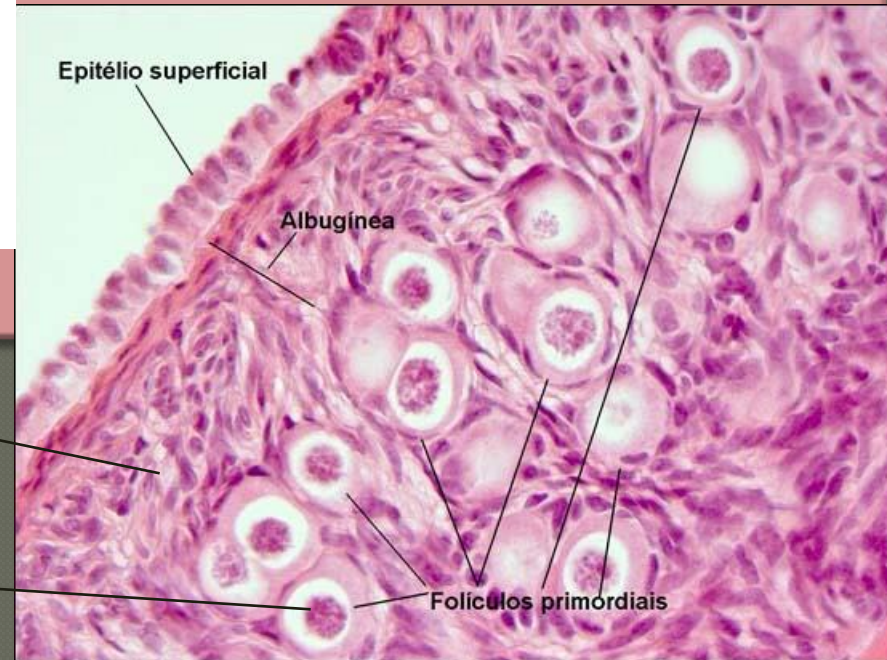
Ovários da Égua



GÔNADA FEMININA - OVÁRIO



CÓRTEX

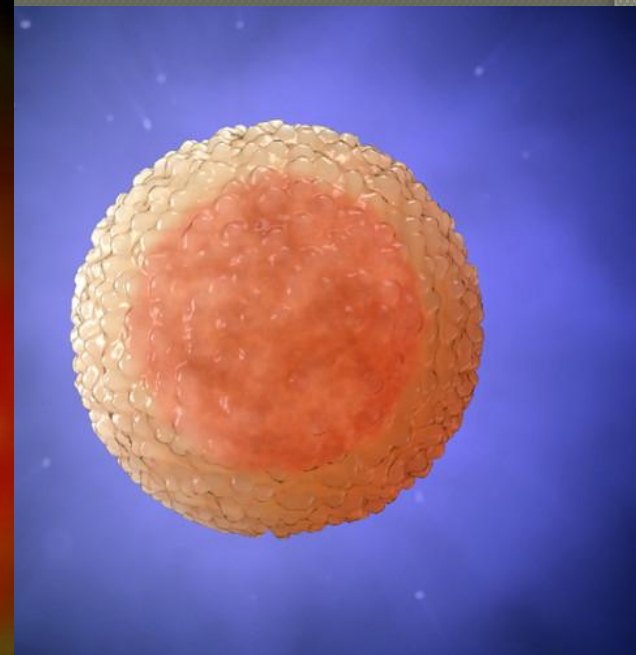


CÉLULAS DE SUSTENTAÇÃO
= ESTROMA OVARIANO

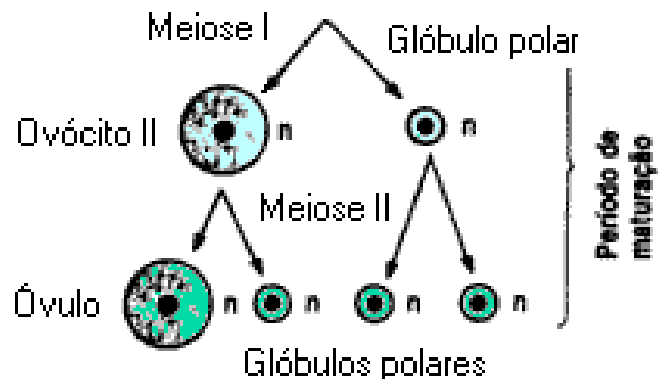
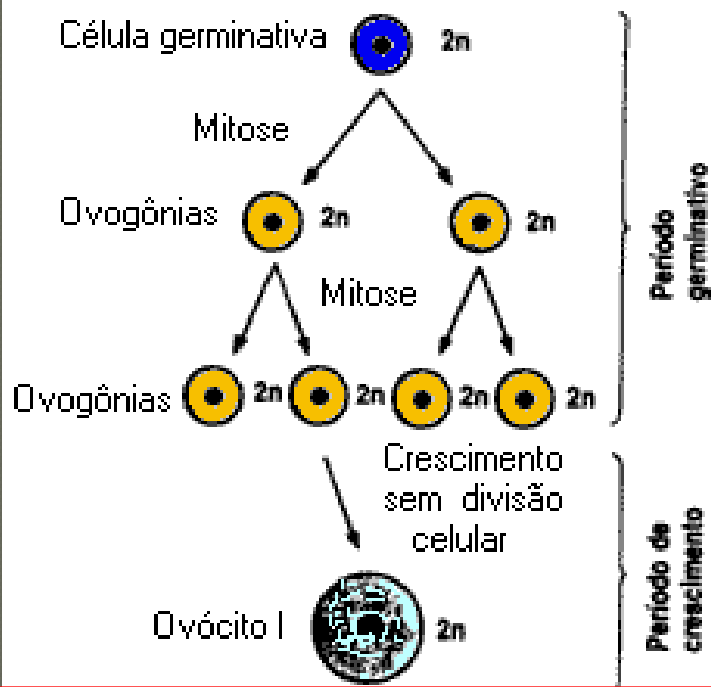
CÉLULA GERMINATIVA (CGP) =
FOLÍCULOS OVARIANOS



GAMETA FEMININO - ÓVULO



Ovogênese



GAMETOGENÊSE FEMININA



FASE 2 = 6 SEMANAS A 5 MESES VIU

5 MESES = OVÓCITO I PARADO EM PI

MATURIDADE
SEXUAL

FECUNDAÇÃO

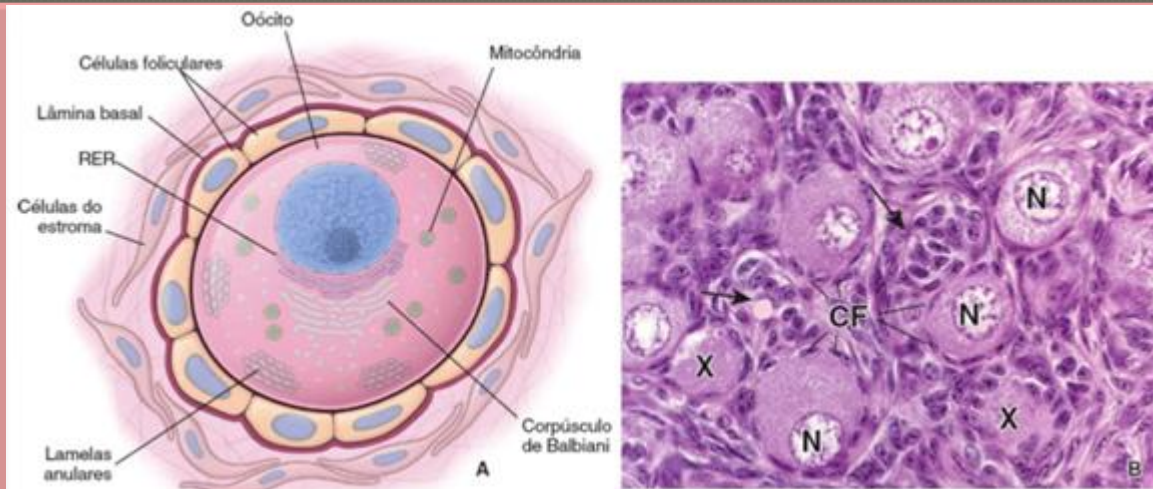
FASE 3 =
PUBERDADE ATÉ
50 ANOS

FASE 4

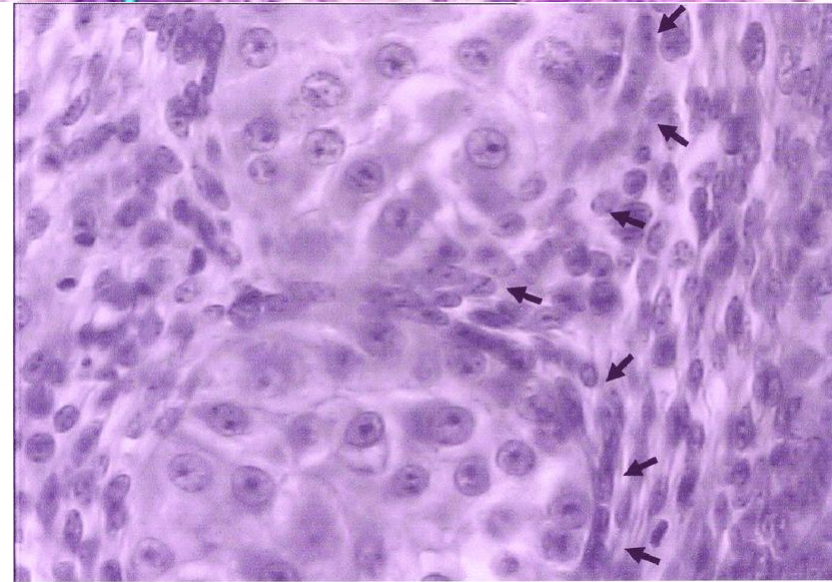
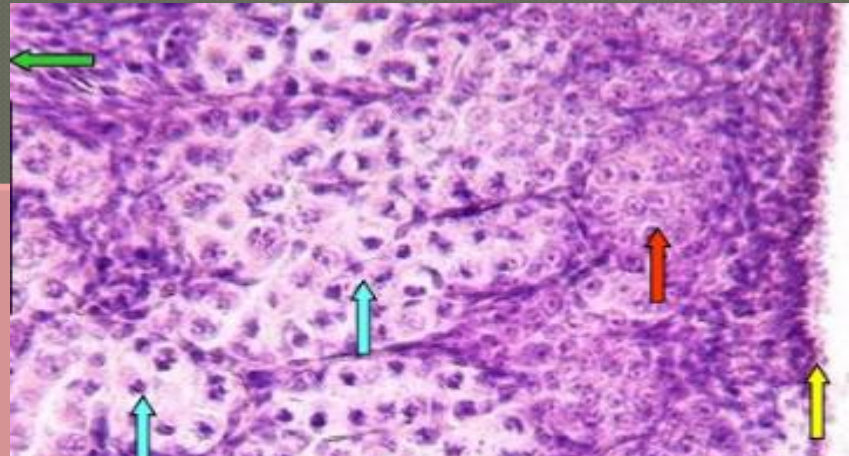
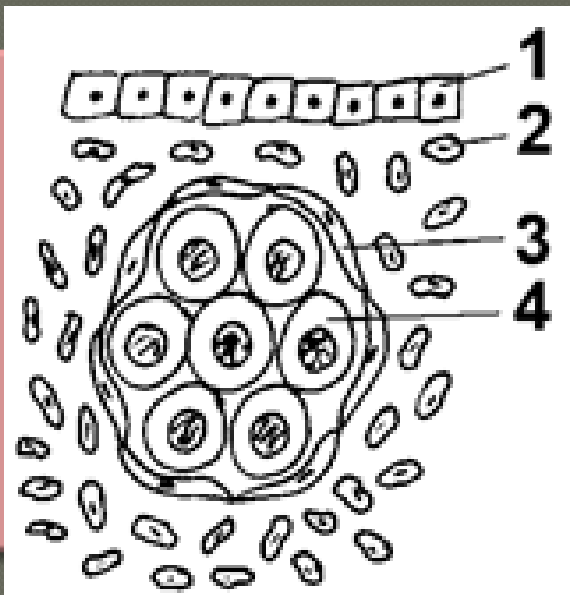


FOLÍCULOS OVARIANOS

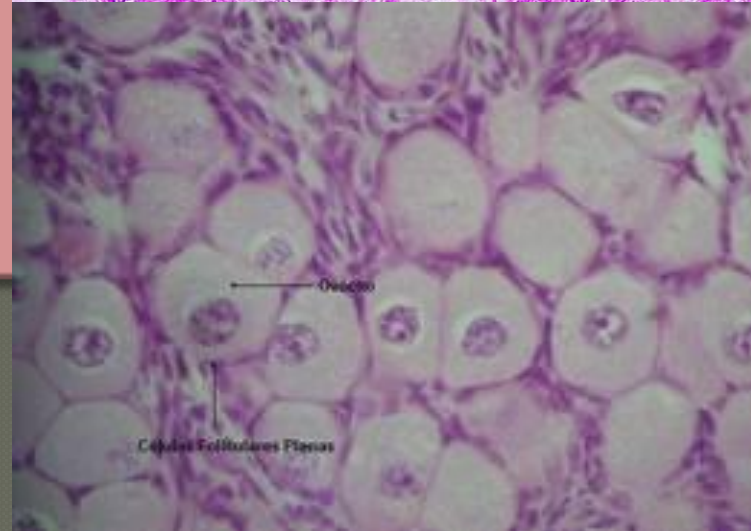
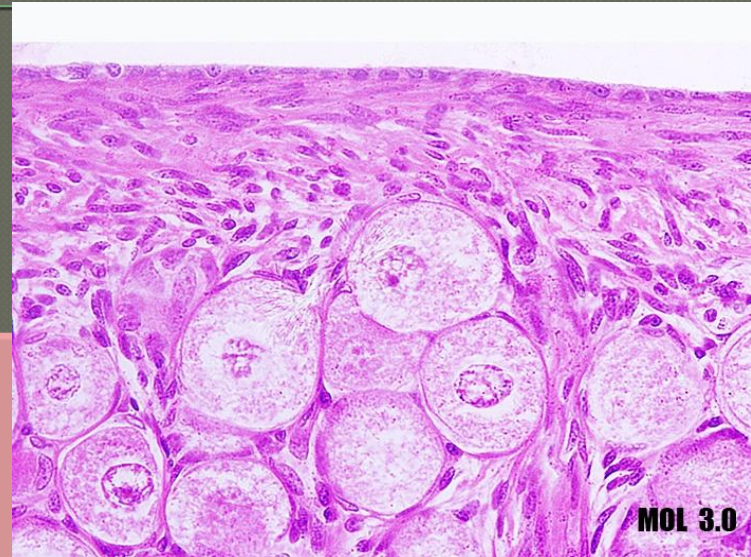
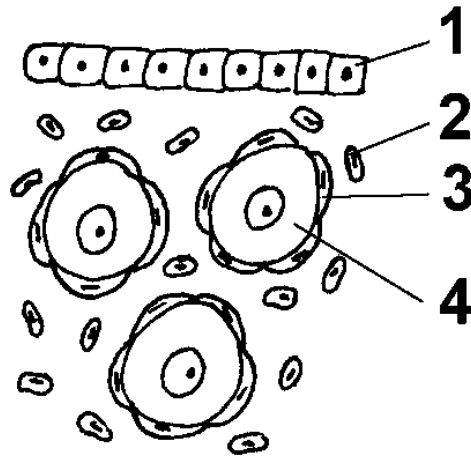
- REUNIÃO DOS OVÓCITOS COM CÉLULAS FOLICULARES
- SE FORMAM ANTES DO NASCIMENTO
- A FÊMEA JÁ NASCE COM TODOS OS SEUS FOLÍCULOS



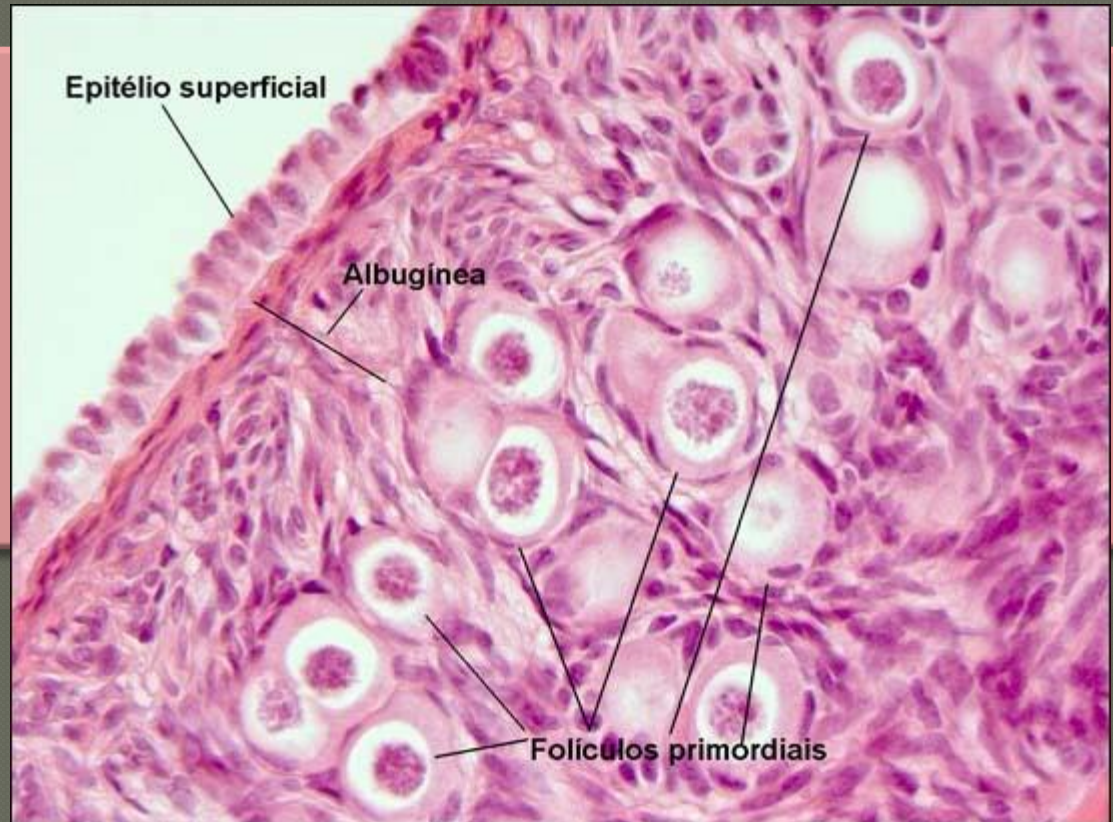
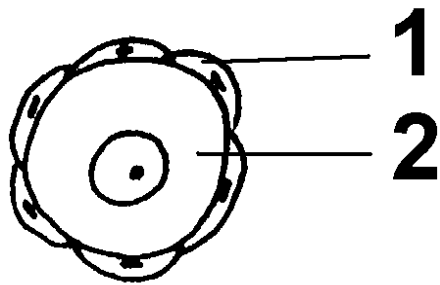
PERÍODO PRÉ-NATAL



PERÍODO PRÉ-NATAL



FOLÍCULO PRIMORDIAL



5 meses = 7 milhões
 Nascimento = 700.000 a 2 milhões
 Maturidade Sexual = 400.000



MATURIDADE SEXUAL

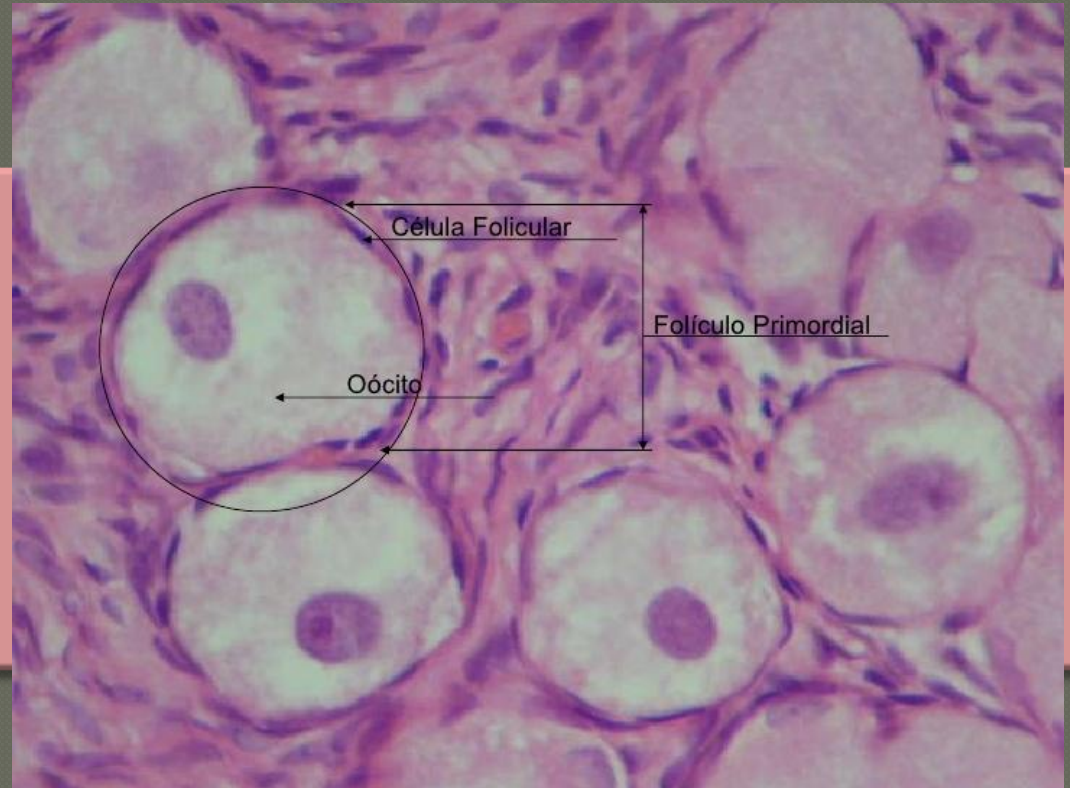
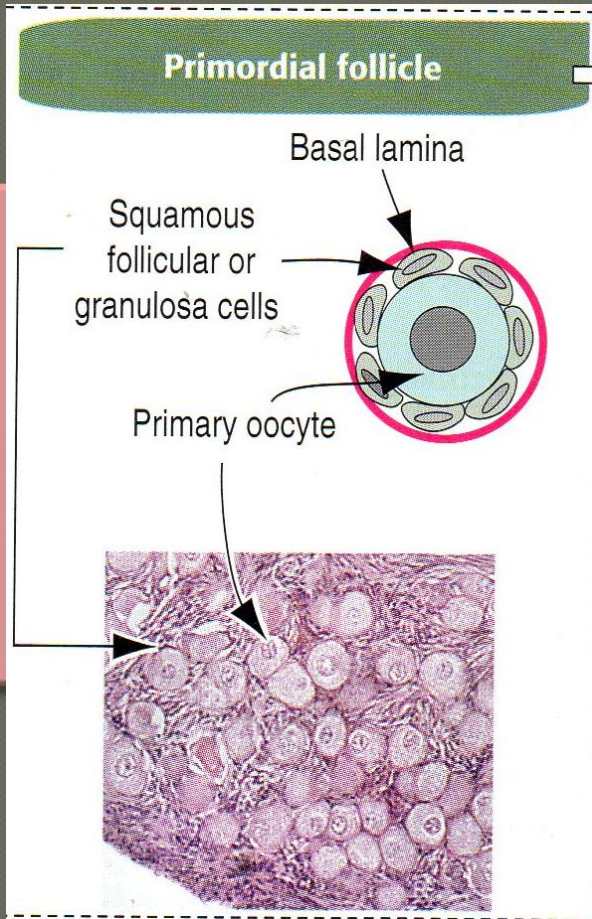
- Iniciam os ciclos estrais
- 5 a 15 folículos se desenvolvem



ESPÉCIE	PUBERDADE (MESES)
Canina	6-9
Felina *	6-9
Equina	20
Bovina	6-18
Ovina	6-12
Caprina	4-8
Suína	5-10
Humana	11-14 anos



FOLÍCULO PRIMORDIAL





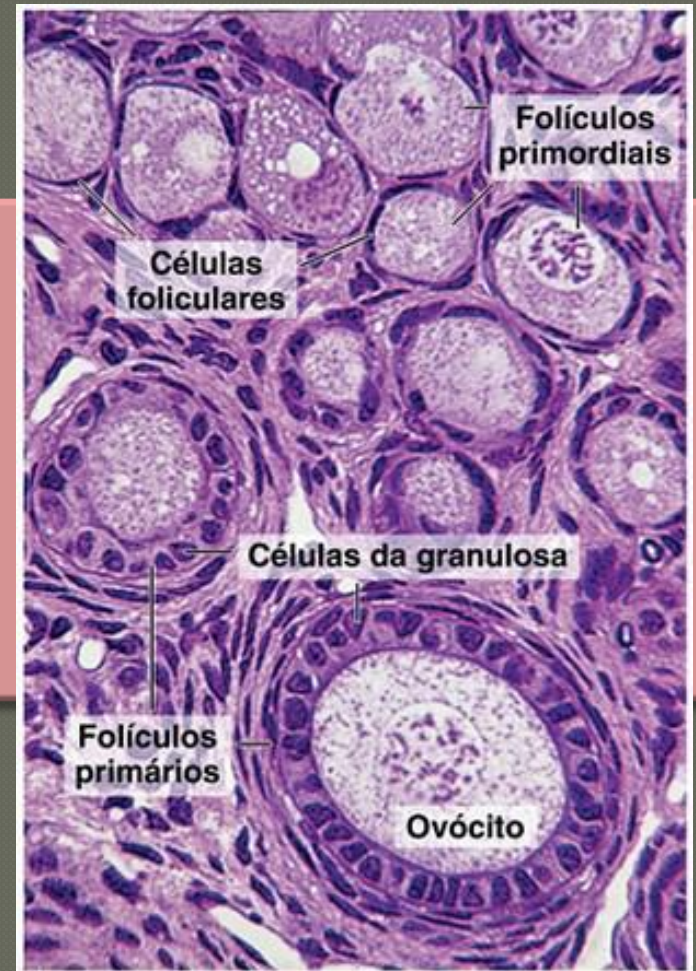
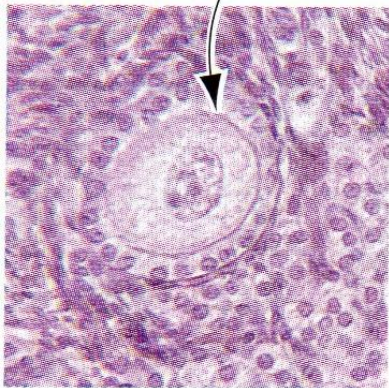
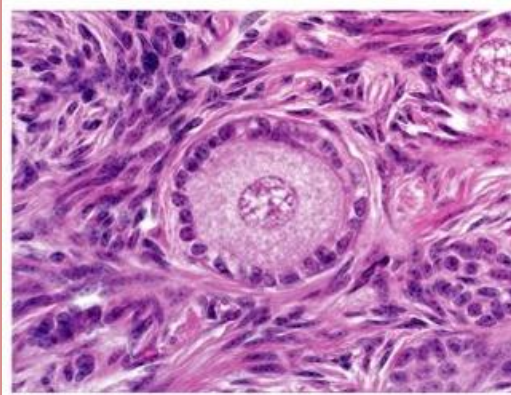
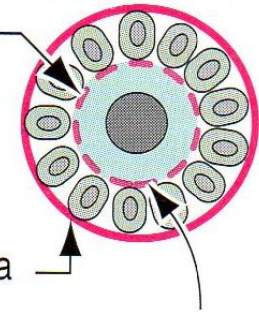
FOLÍCULO PRIMÁRIO

Primary follicle (unilayered)

The zona pellucida begins to assemble

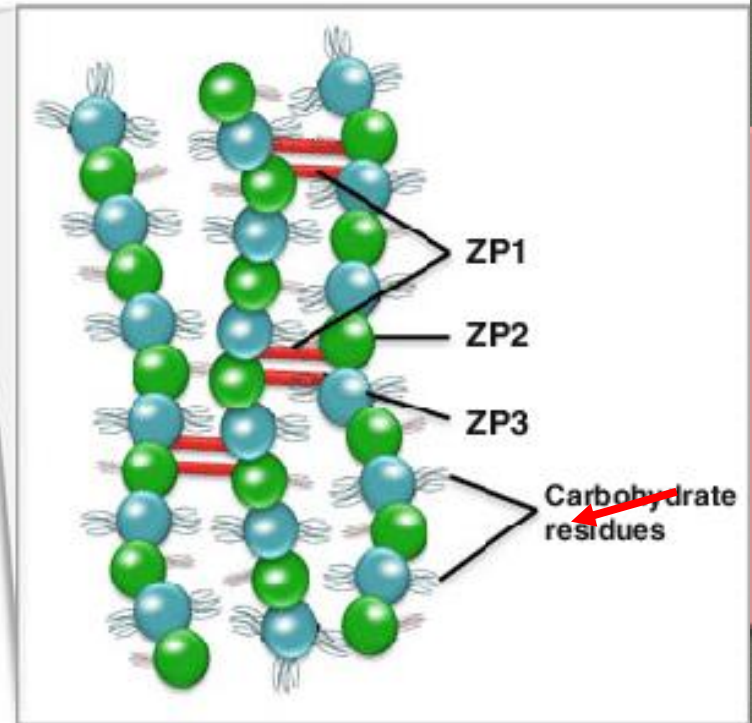
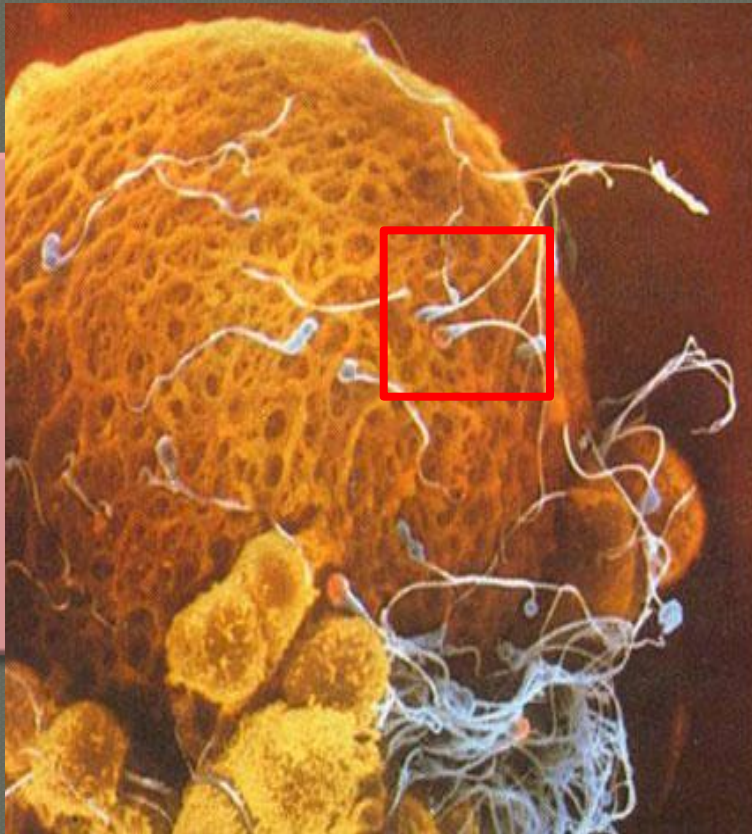
Basal lamina

The zona pellucida is produced by the primary oocyte



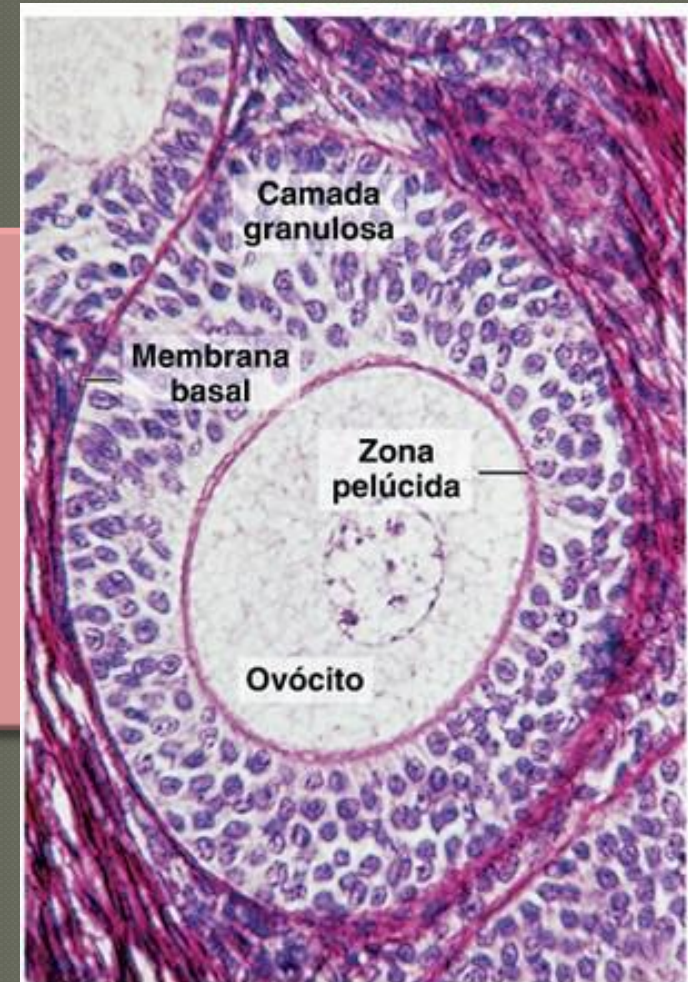
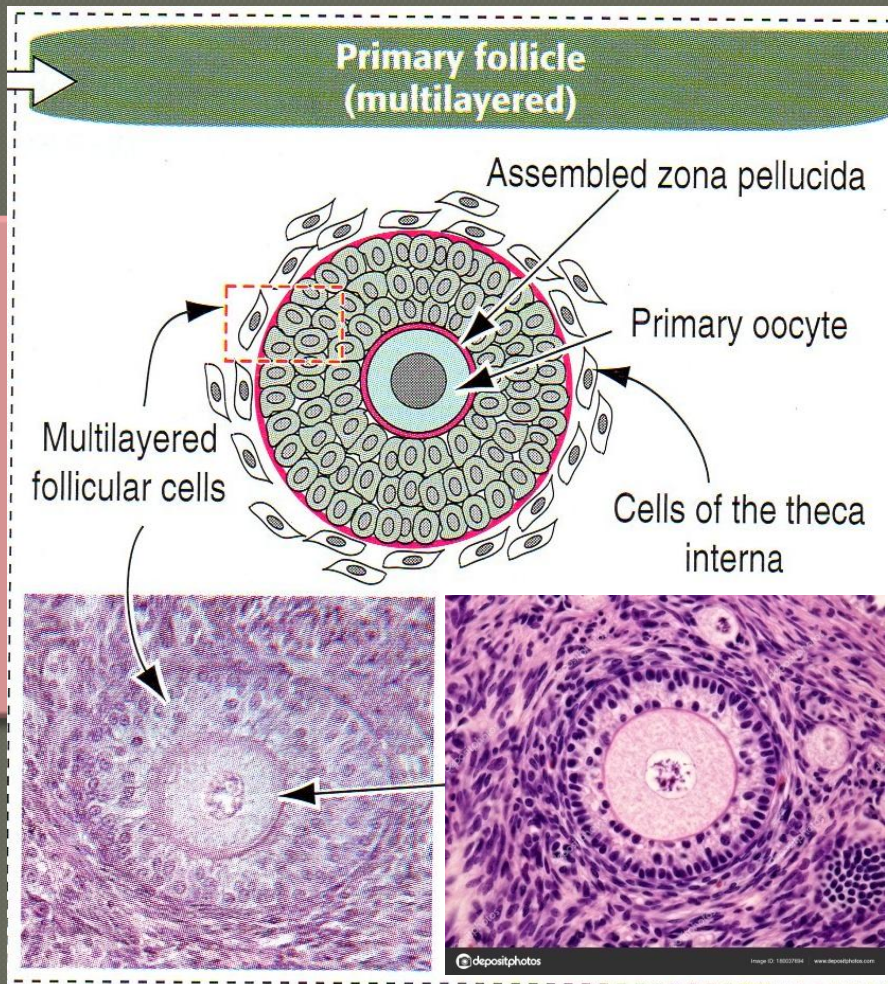


ZONA PELÚCIDA



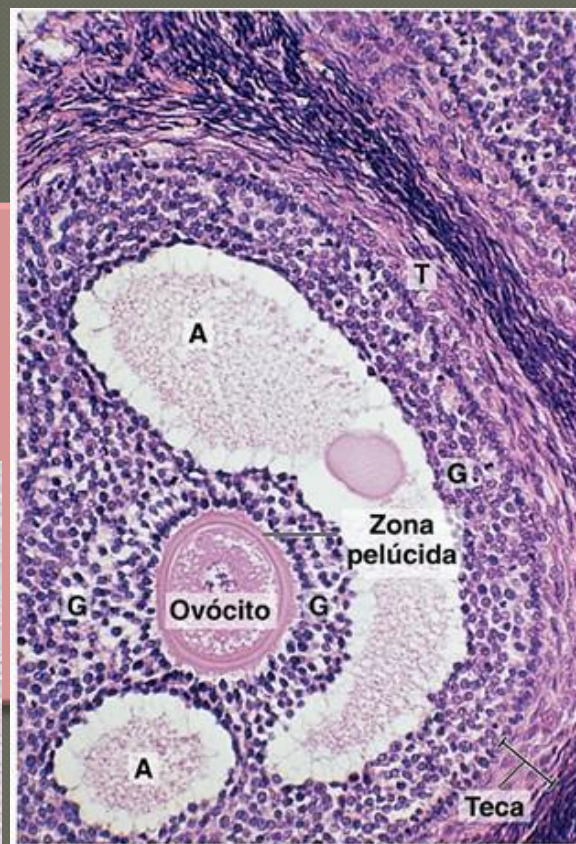
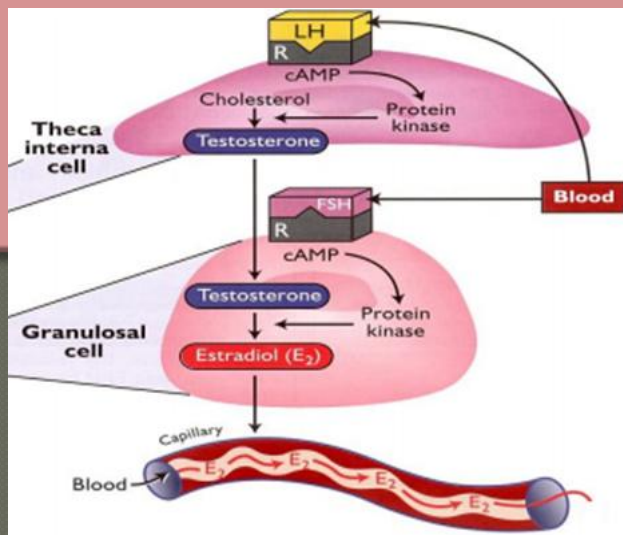
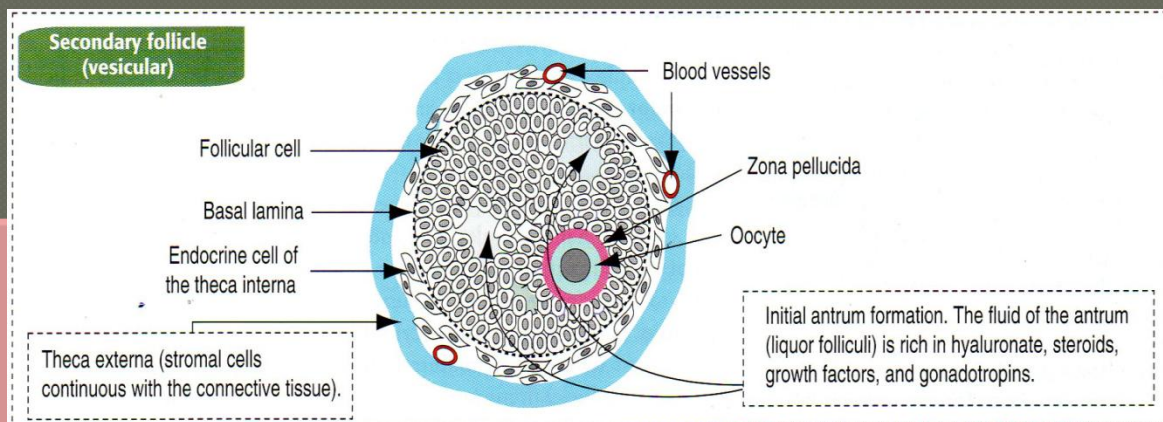


FOLÍCULO SECUNDÁRIO



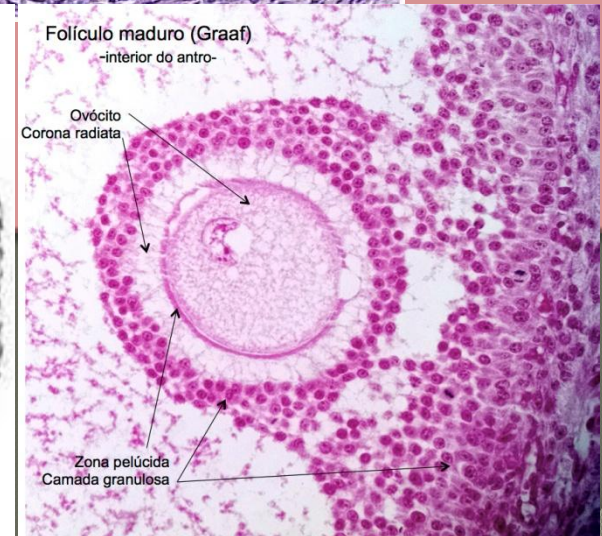
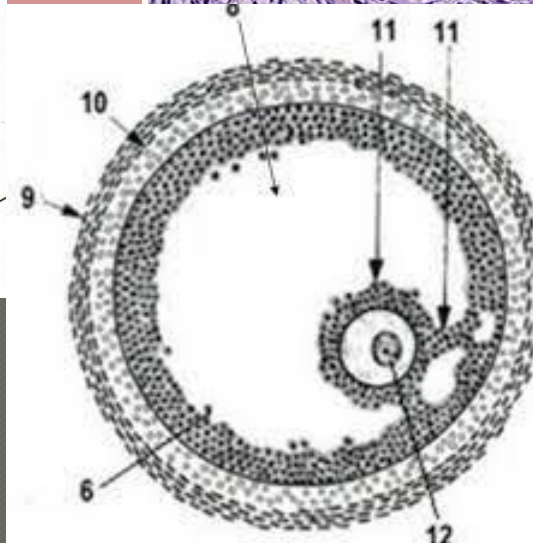
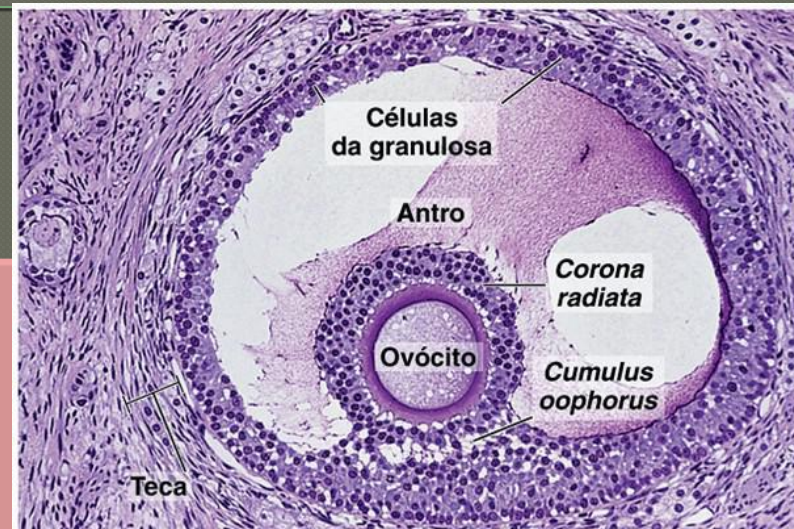
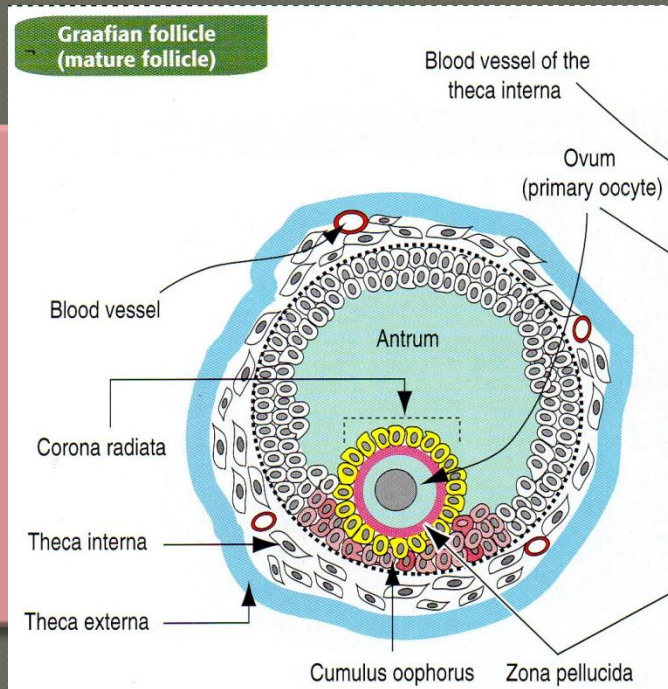


FOLÍCULO TERCIÁRIO INICIAL



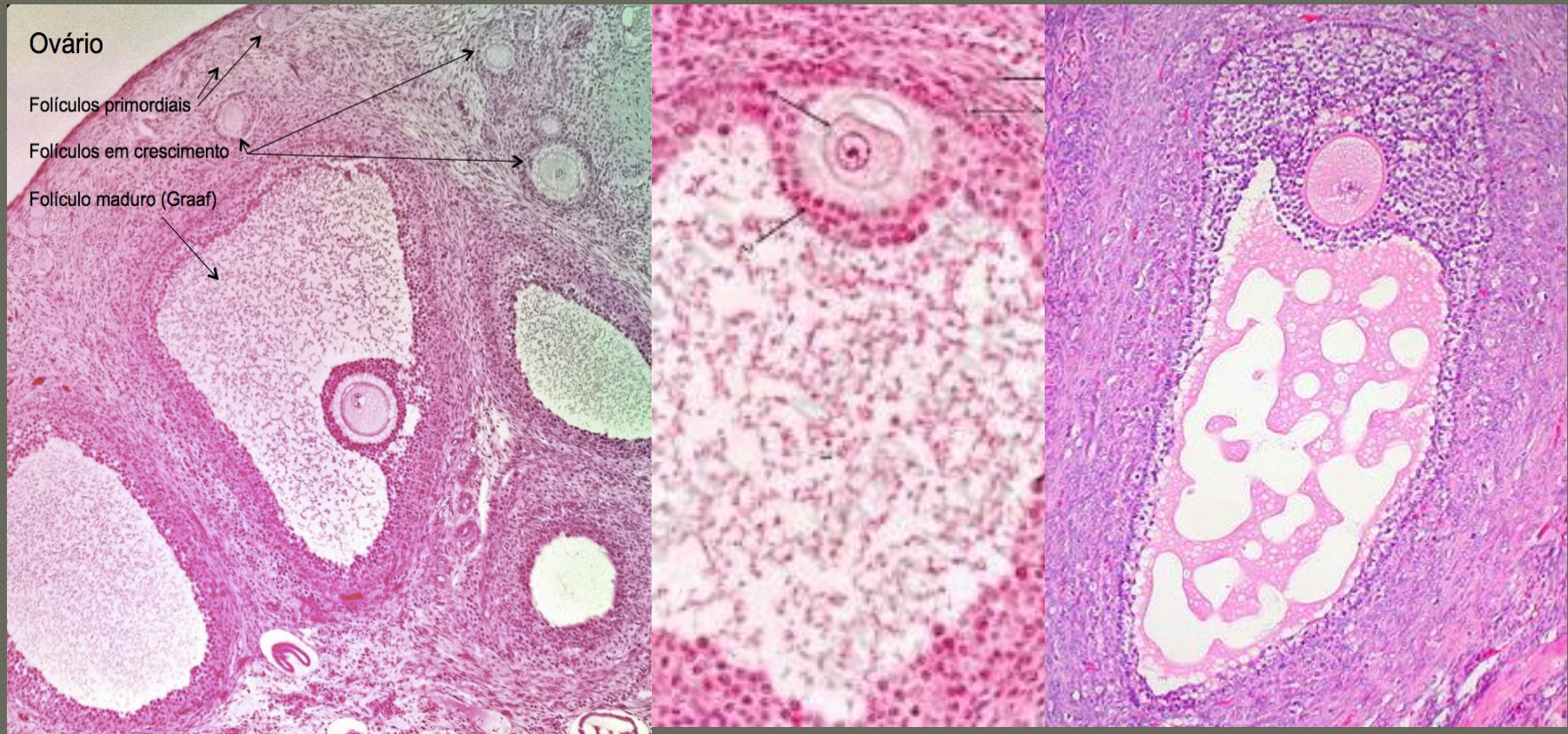


FOLÍCULO TERCIÁRIO TARDIO (PRÉ-OVULATÓRIO)

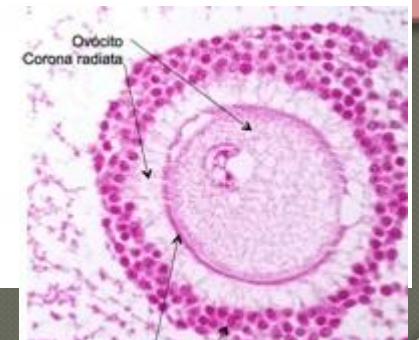
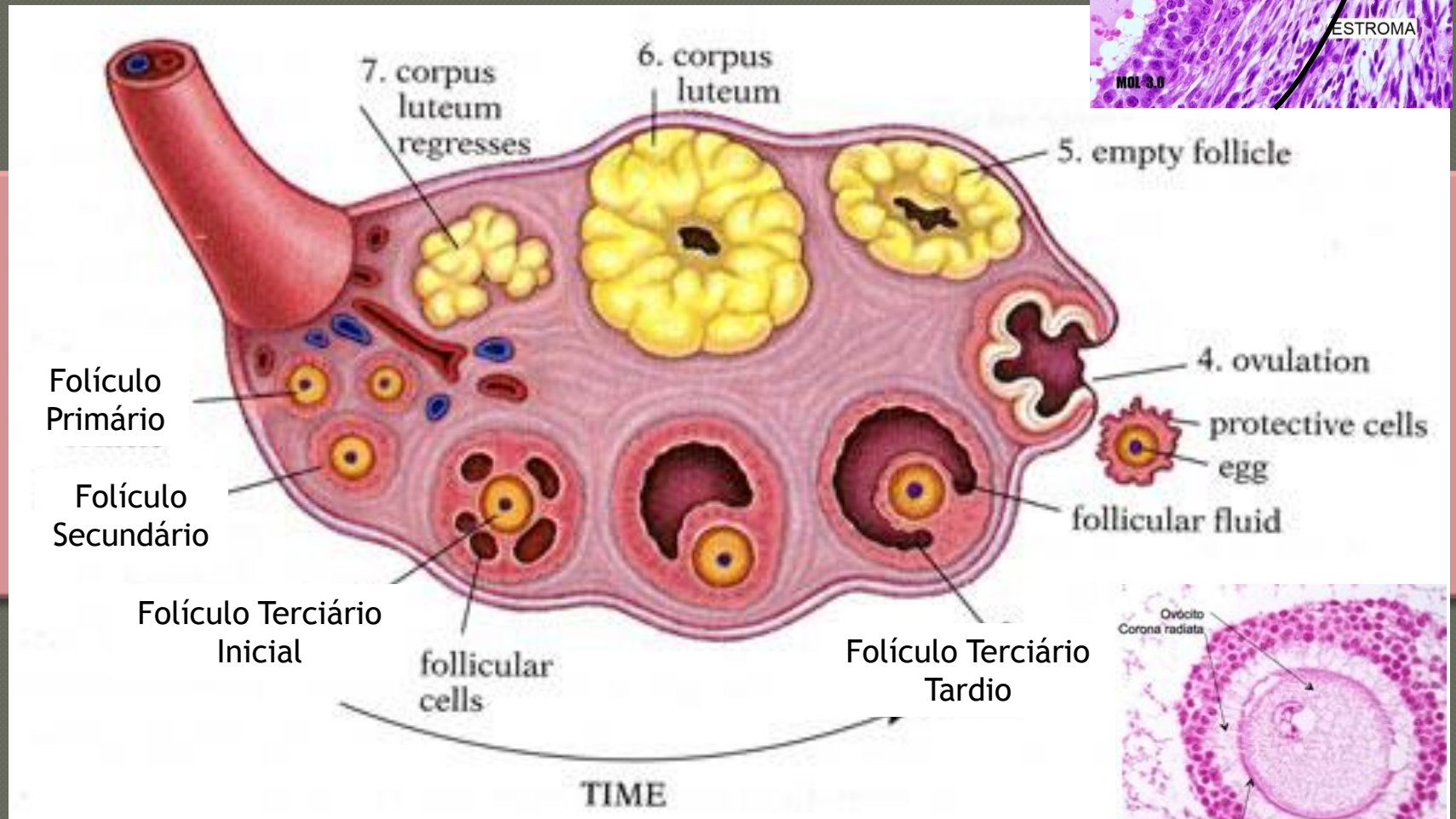
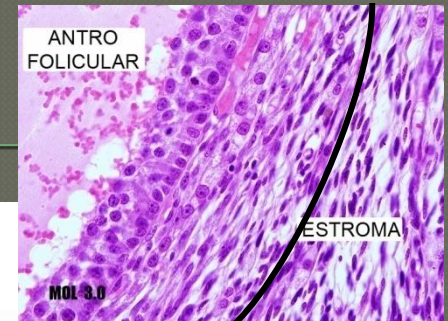




FOLÍCULO TERCIÁRIO TARDIO



OVÁRIO



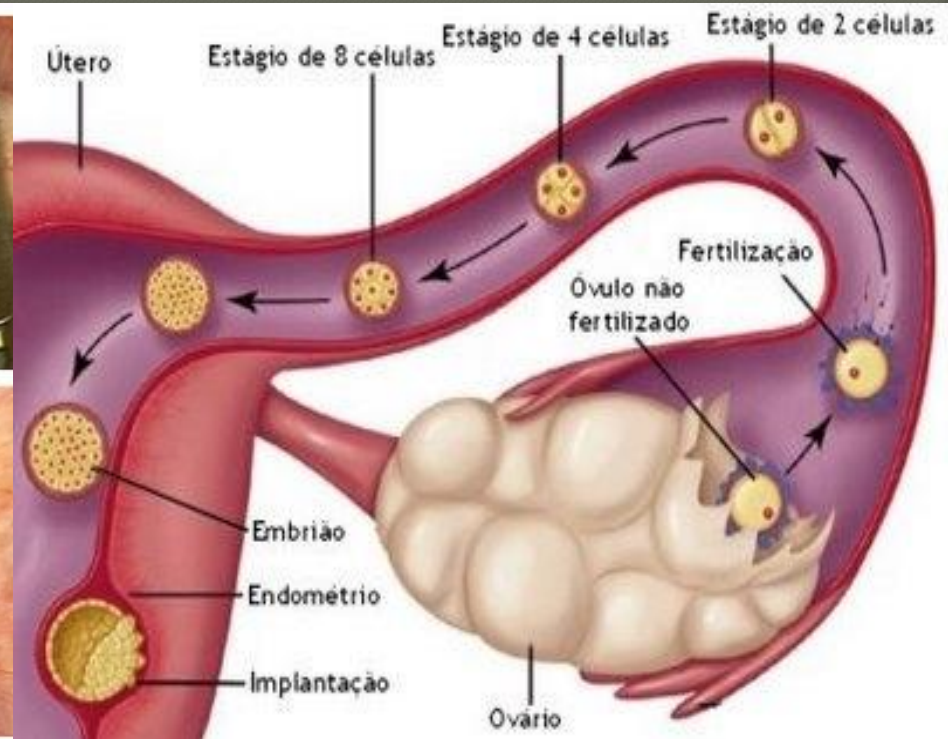
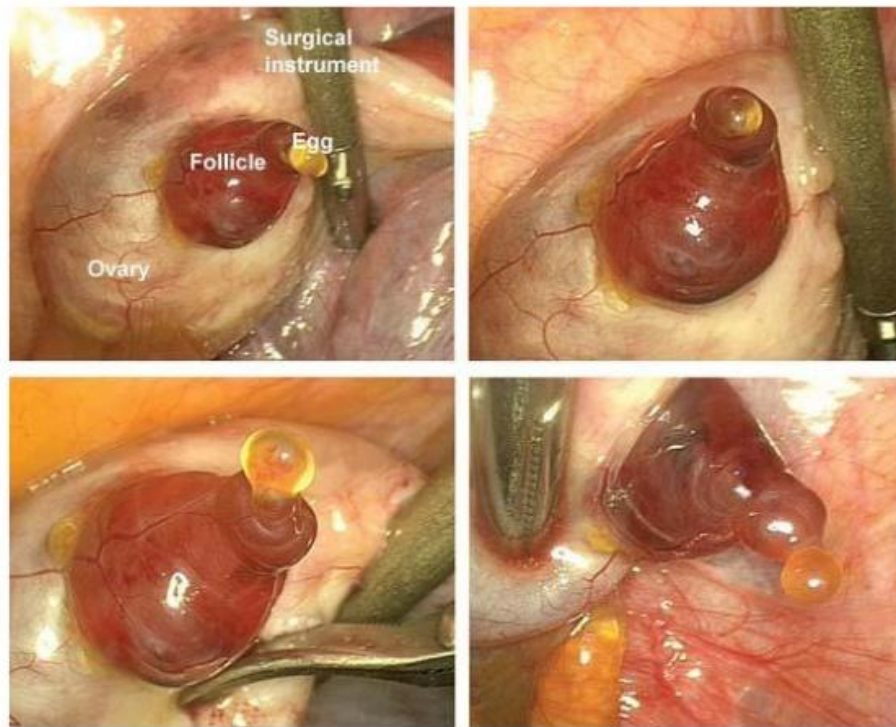


OVULAÇÃO



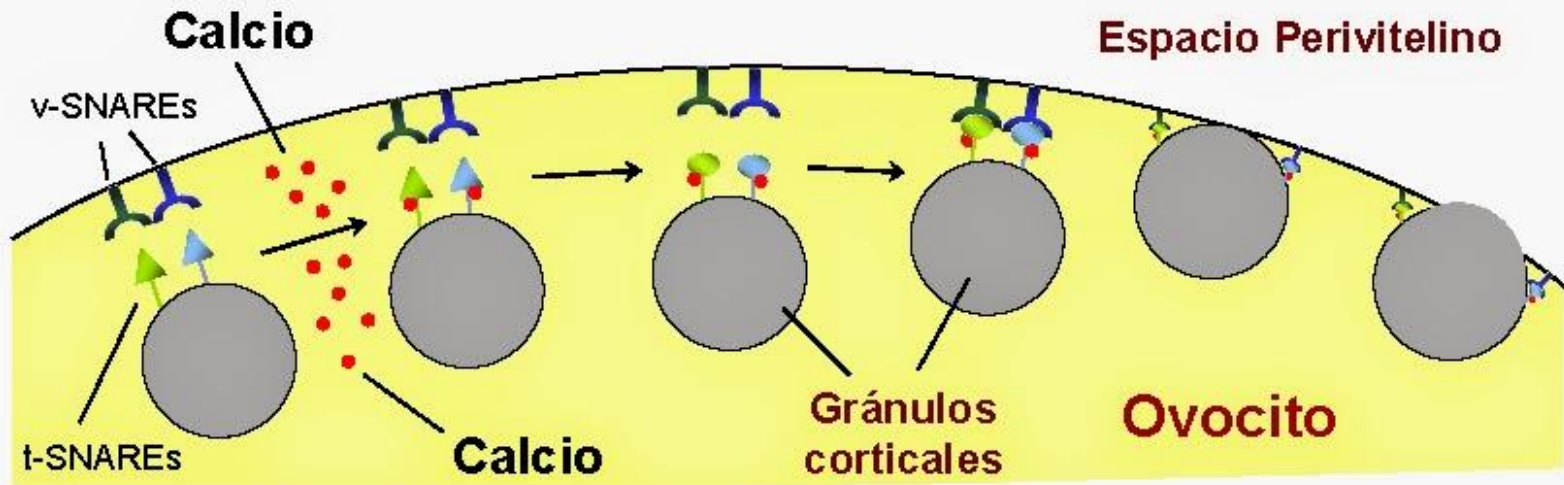


OVULAÇÃO



ATIVAÇÃO DO OVÓCITO

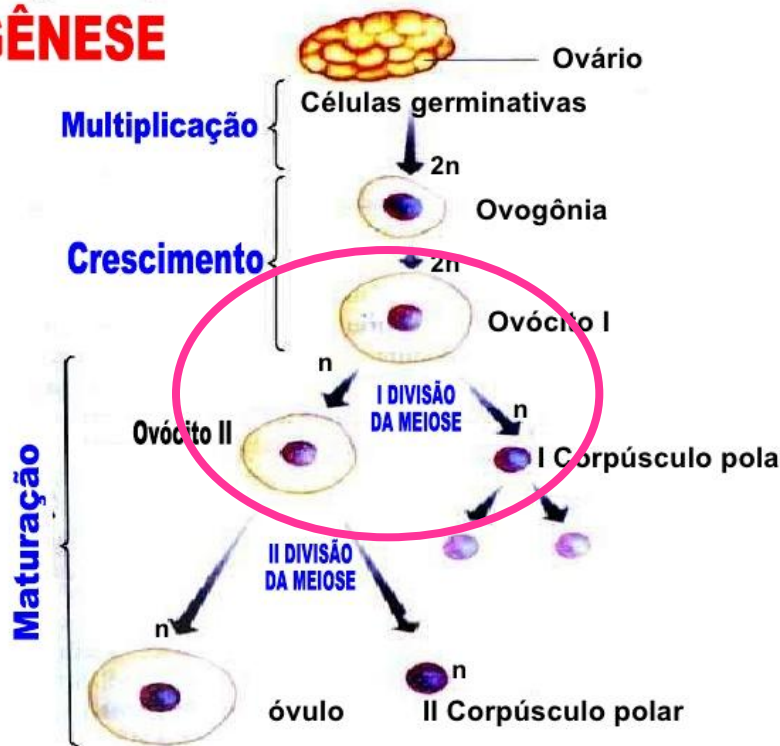
Reacción Cortical



Não possuí grânulos corticais (rato e cobaia);

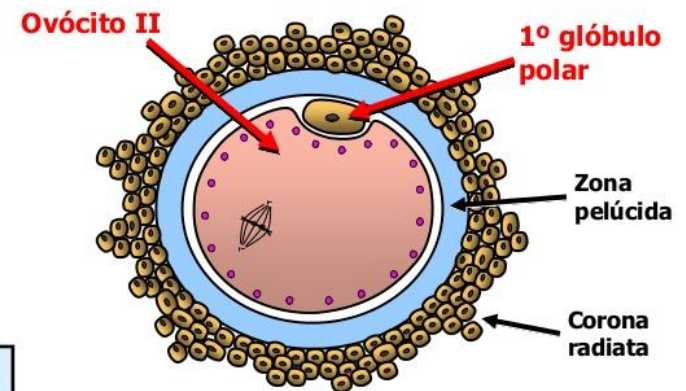
OVULAÇÃO – TÉRMINO DA MEIOSE I

OVULOGÊNESE



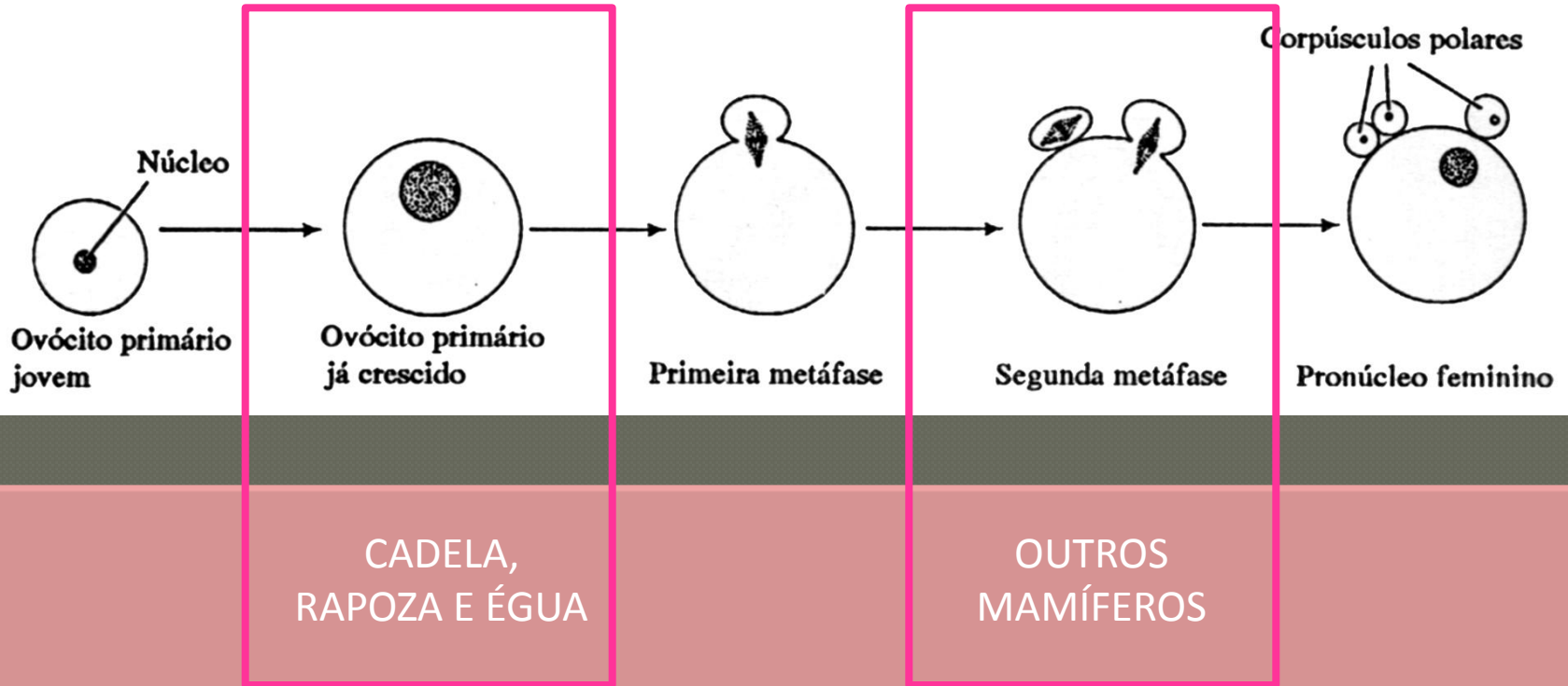
Estrutura do óvulo

Prof. Emanuel





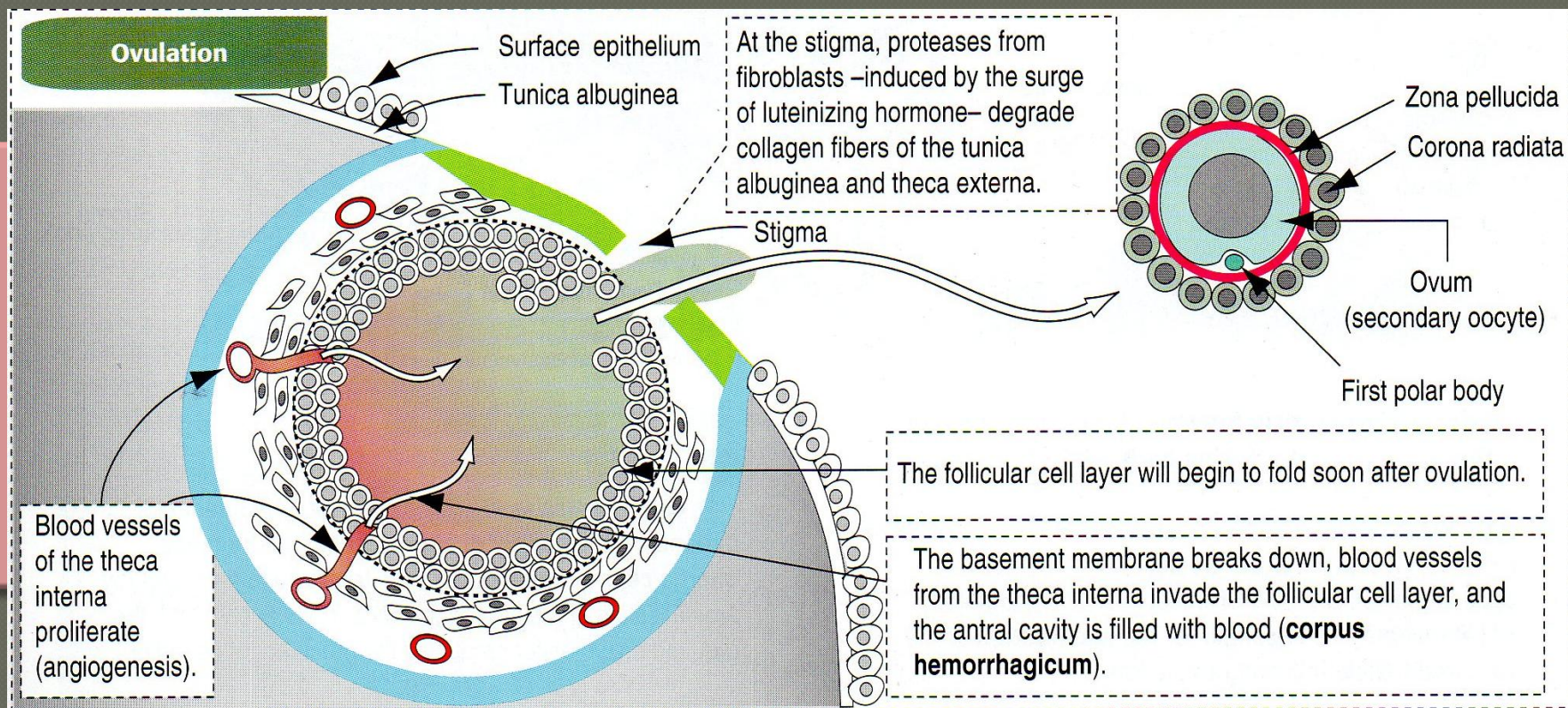
OVULAÇÃO DOMÉSTICOS



Primatas, bovinos, eqüinos = ovulação única

Caninos, roedores, suínos, felinos = ovulação múltipla

OVULAÇÃO



Vasos sanguíneos da teca interna se proliferam pra dentro do antro folicular; As células da granulosa começam a se dobrar, formando invaginações.

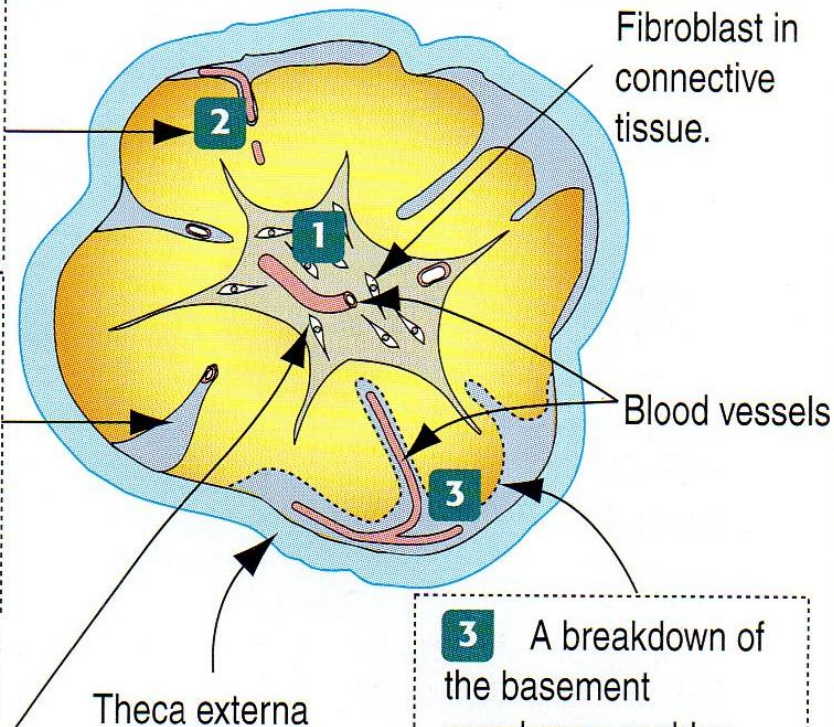


FORMAÇÃO DO CORPO HEMORRÁGICO

Voltas das células da parede do folículo estocando lipídios

The spaces between the folds are occupied by theca lutein cells, connective tissue, and blood vessels.

Antro passa a ser formado por tecido conjuntivo e sangue



Fibroblast in connective tissue.

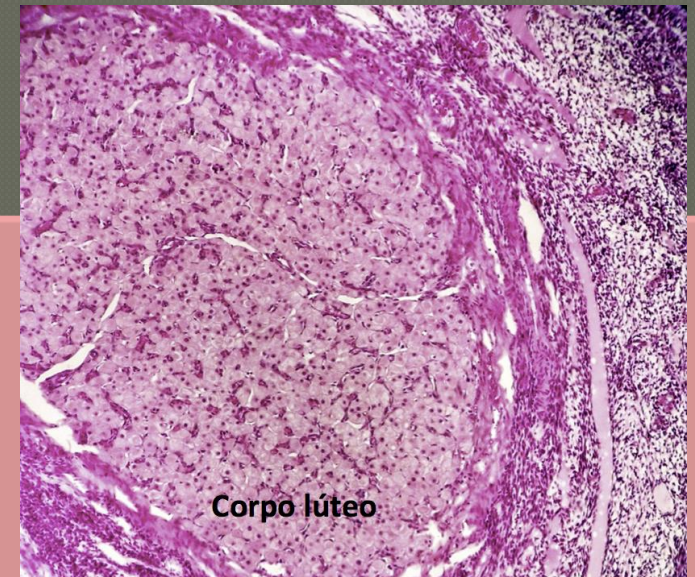
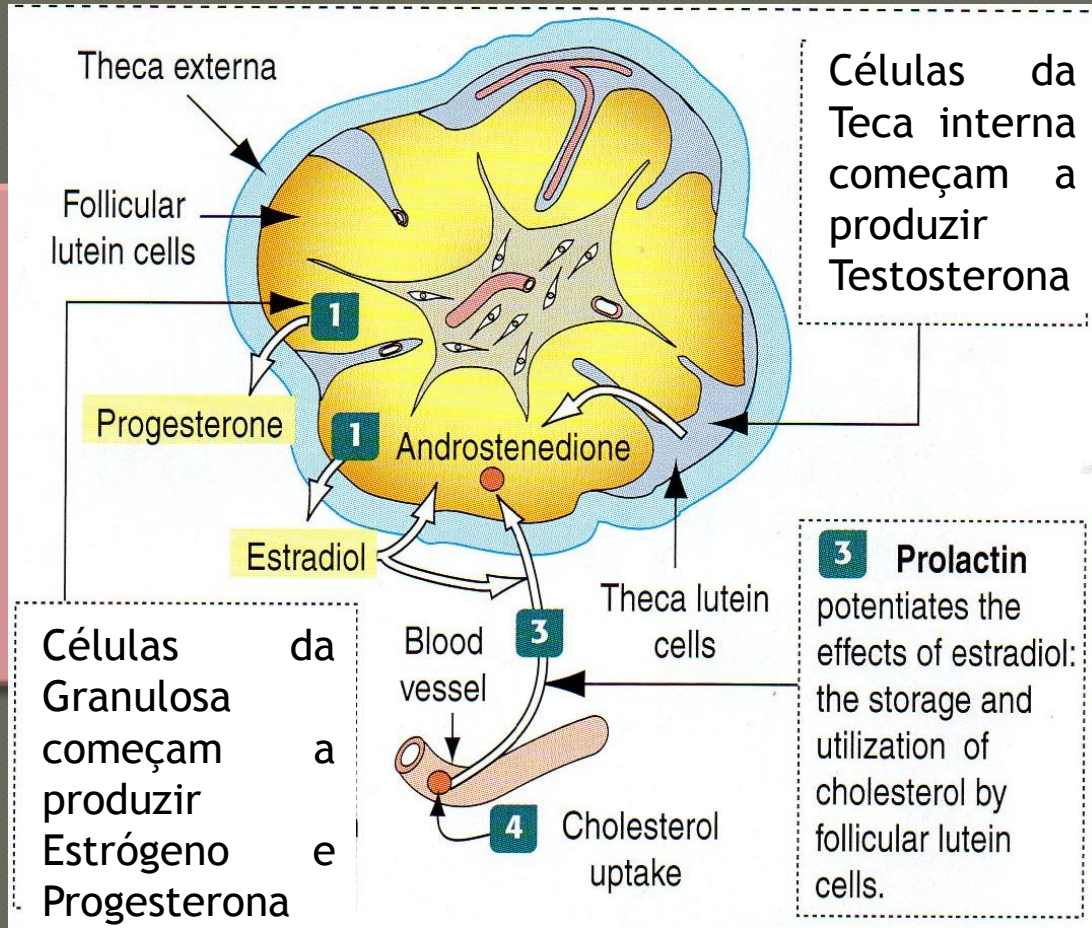
Blood vessels

Theca externa

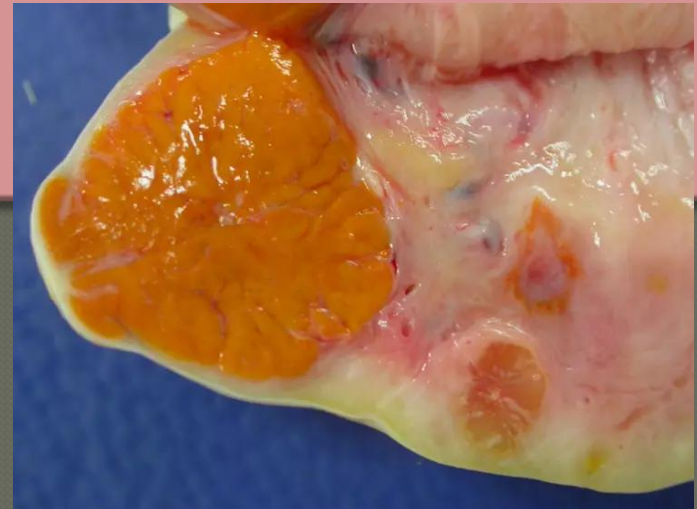
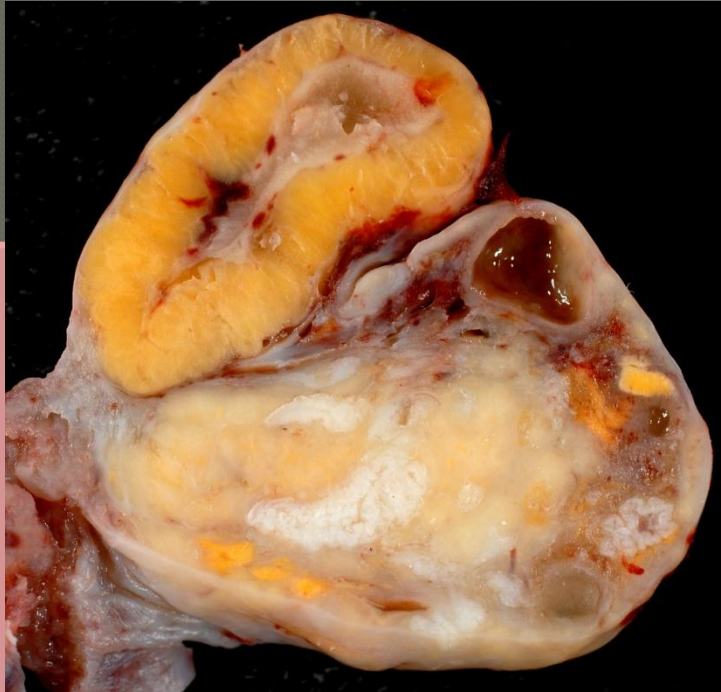
3 A breakdown of the basement membrane enables blood vessels of the theca interna to invade the ruptured follicle.



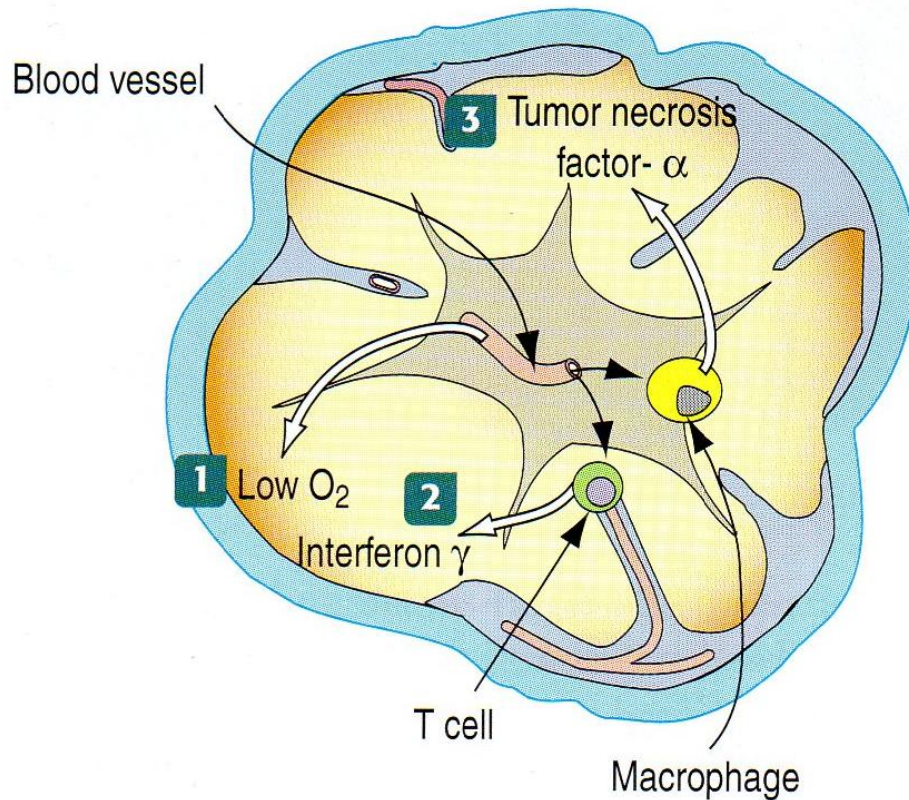
CORPO LÚTEO (AMARELO)



CORPO LÚTEO



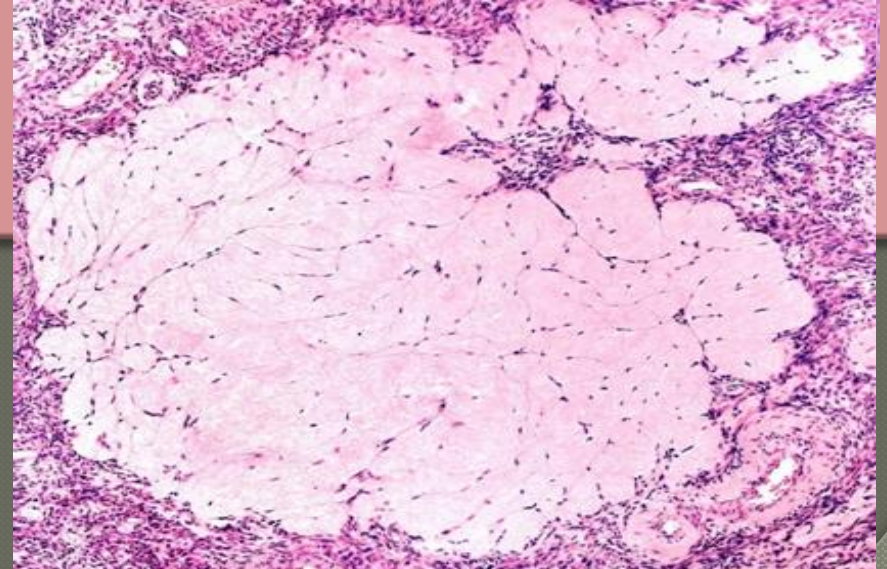
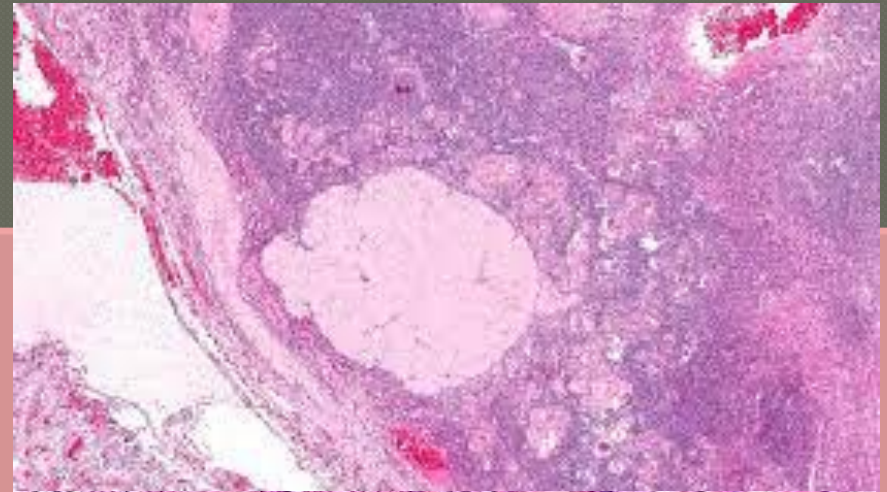
MORTE DO CORPO LÚTEO



1. COM A NÃO FERTILIZAÇÃO, O CORPO LÚTEO SOFRE A LUTEÓLISE.
2. A LUTEÓLISE ENVOLVE UMA SEQUÊNCIA DE APOPTOSE:
 - REDUÇÃO DO FLUXO SANGUÍNEO DEVIDO À HIPÓXIA
 - CÉLULAS T LIBERAM INTERFERON QUE CHAMAM MACRÓFAGOS
 - MACRÓFAGOS PRODUZEM FATOR DE NECROSE TUMORAL E INICIA A APOPTOSE
 - CÉLULAS DO ENDOMÉTRIO SECRETAM PROTAGLANDINAS QUE PROMOVEM A LUTEÓLISE DO CL.

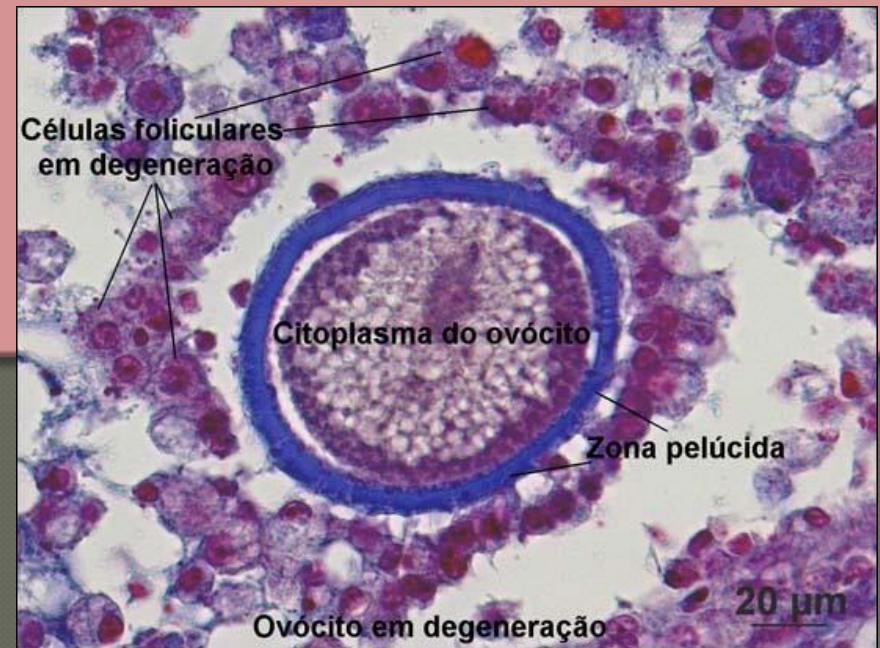


CORPO ALBICANS (BRANCO)



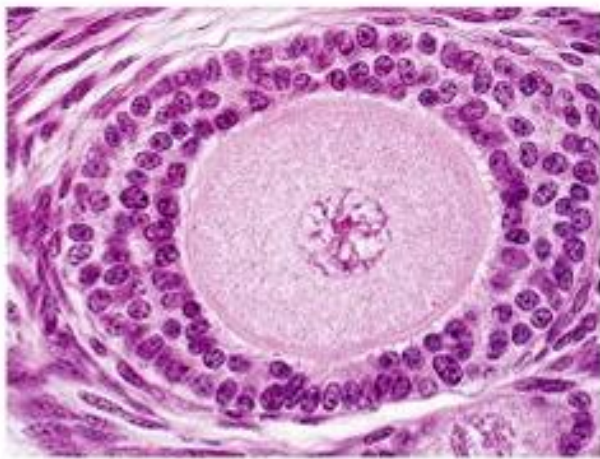
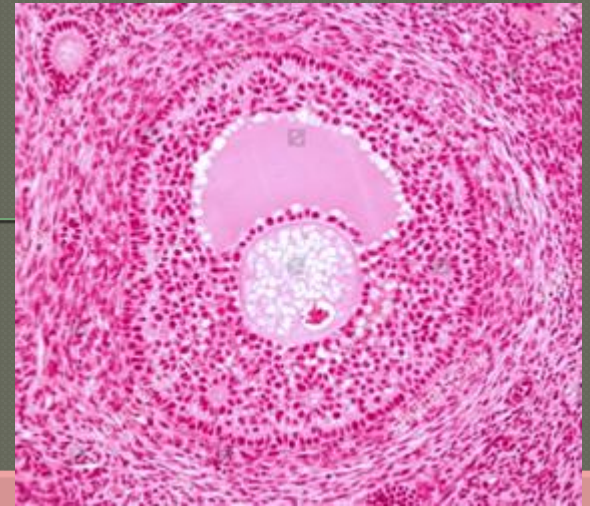
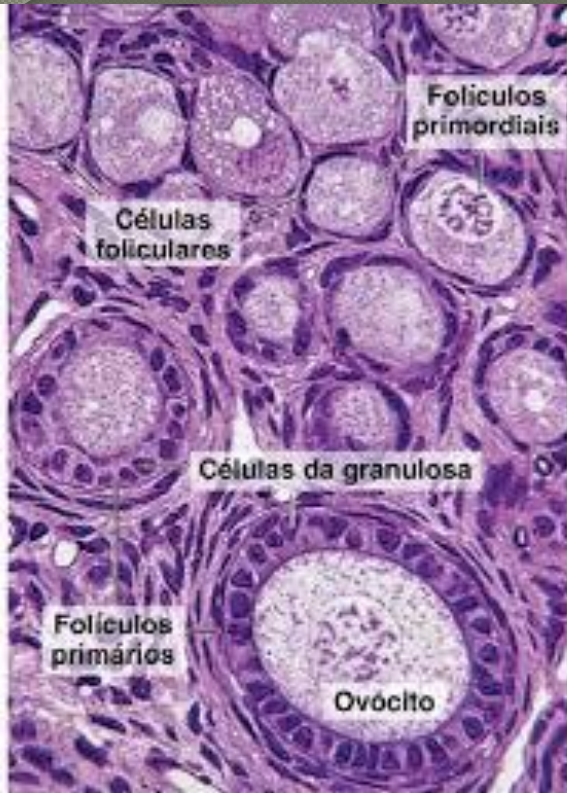
ATRESIA FOLICULAR

Folículo ovariano em degeneração

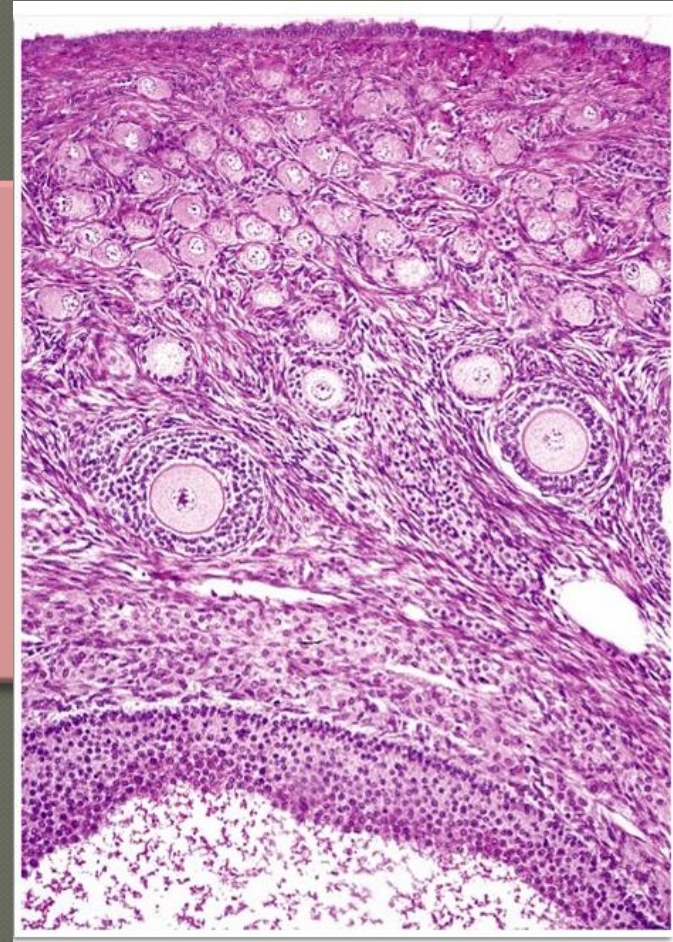
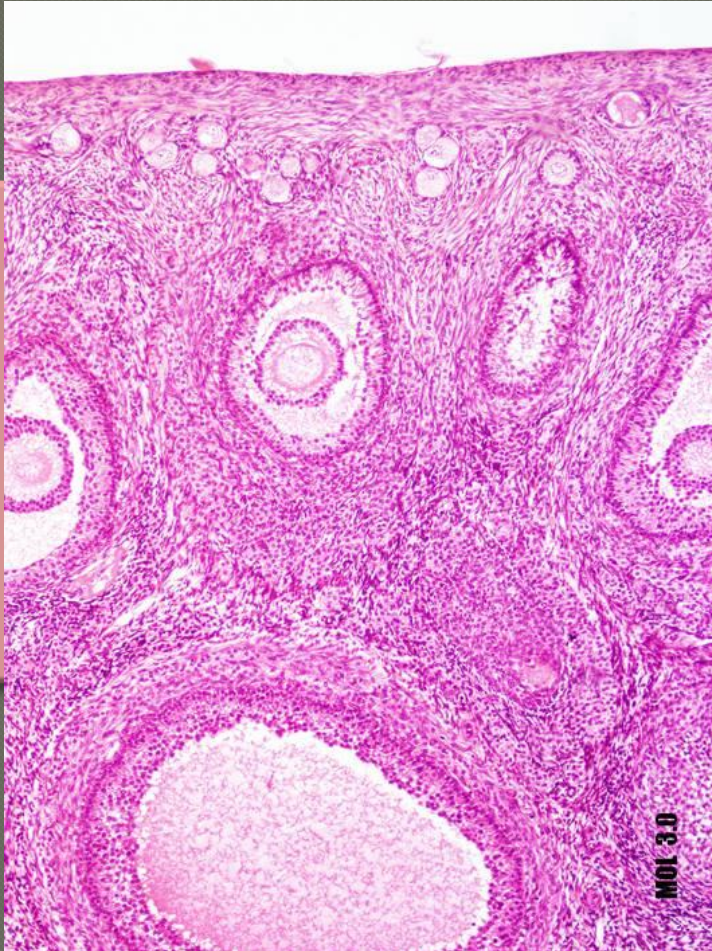




FOLÍCULOS



OVÁRIOS



CASTRACÃO





TEMPO DE VIDA DOS GAMETAS FEMININOS

ANIMAL	TEMPO
OVINO	16 A 24 HORAS
SUÍNO	8 A 10 HORAS
BOVINO	8 A 12 HORAS
COELHO	6 A 8 HORAS
CADELA	45 HORAS
EQUINOS	6 A 8 HORAS
RATO	8 A 12 HORAS
HOMEM	6 A 24 DIAS

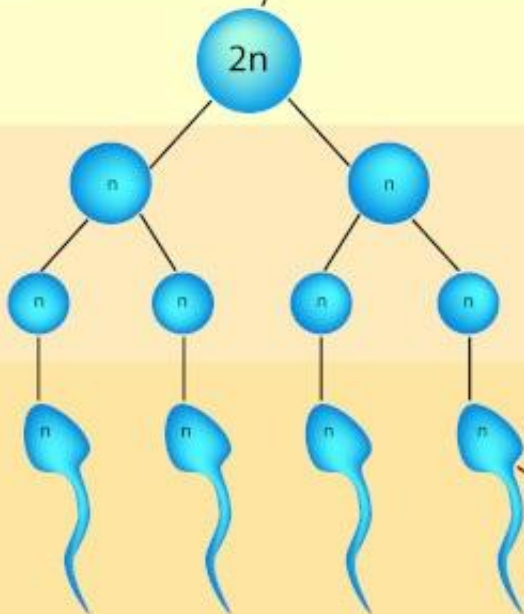
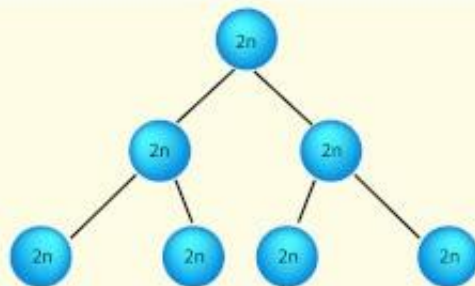


REPRODUÇÃO ASSISTIDA

- INDUÇÃO DA OVULAÇÃO
- COLETA DOS ÓVULOS POR ASPIRAÇÃO



ESPERMATOGÊNESE



OVOGÊNESE

