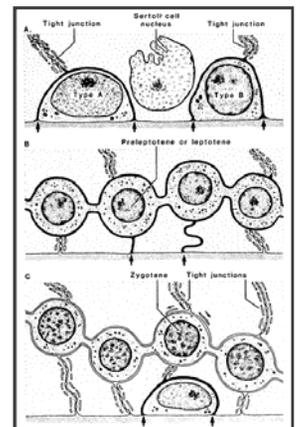
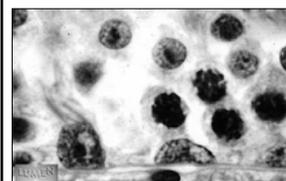
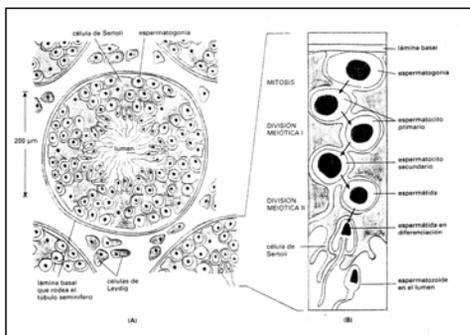
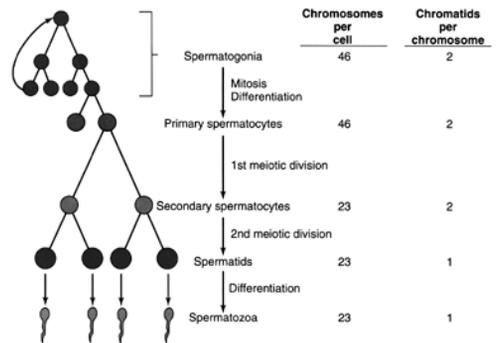
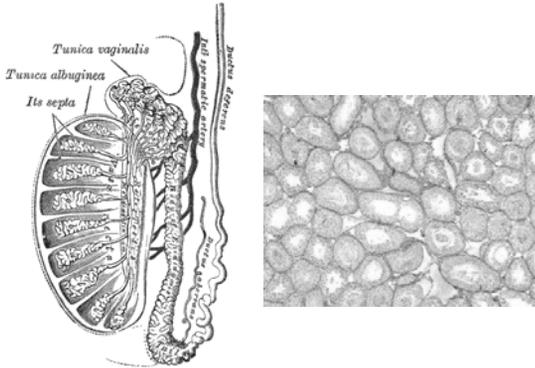
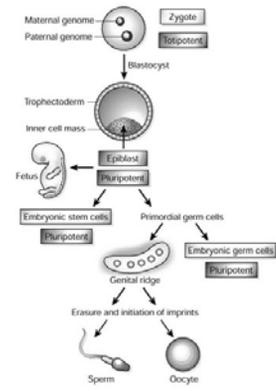
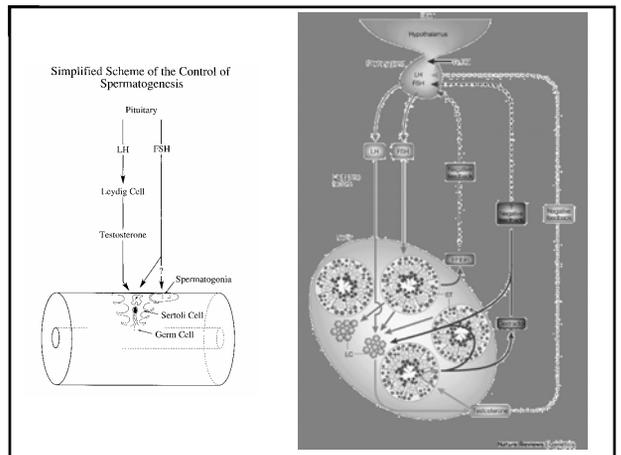
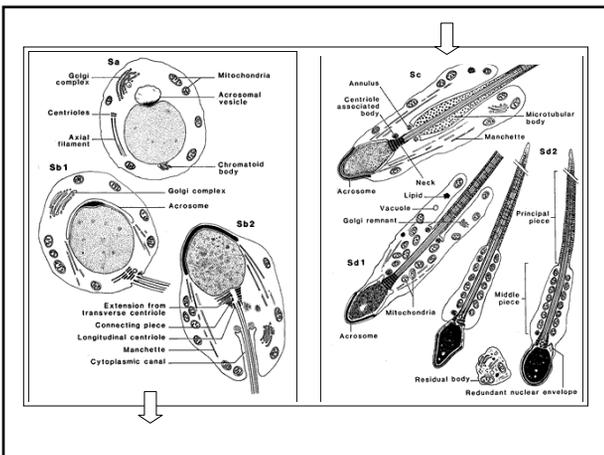
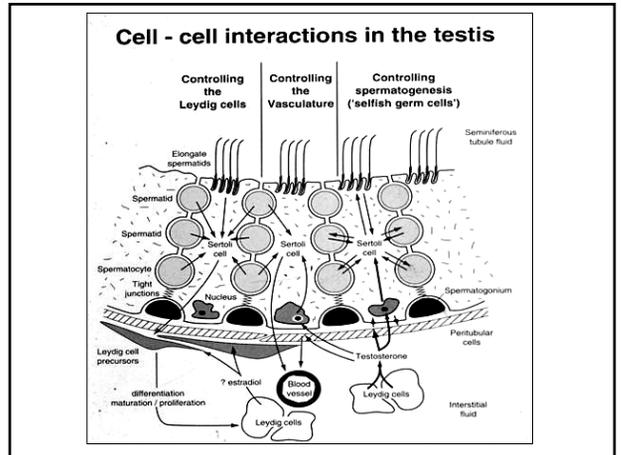
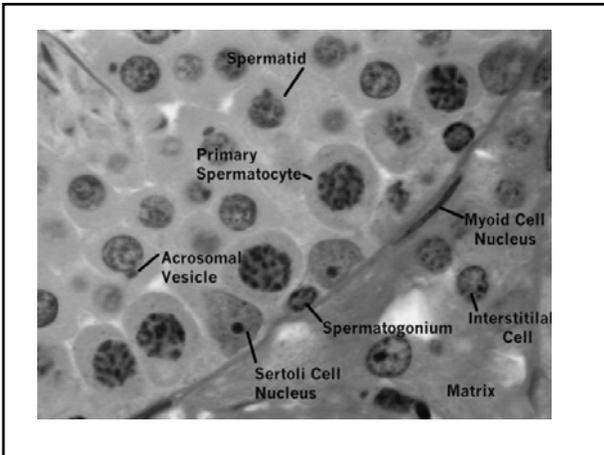
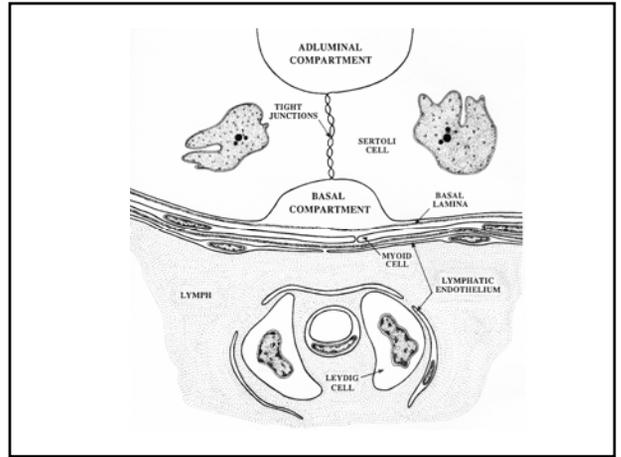
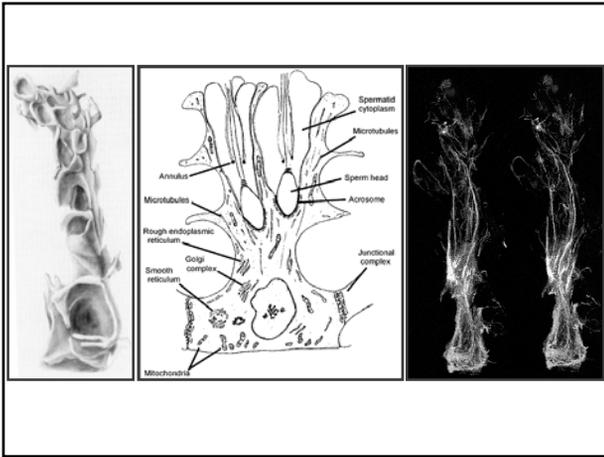


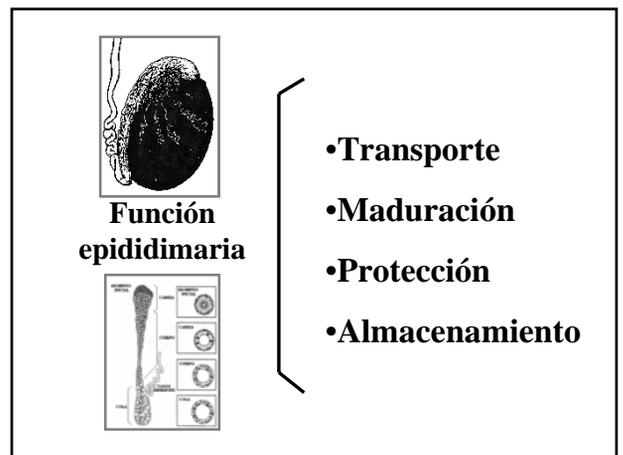
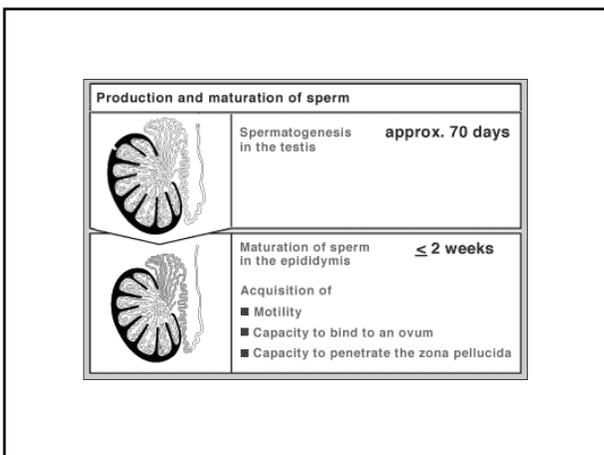
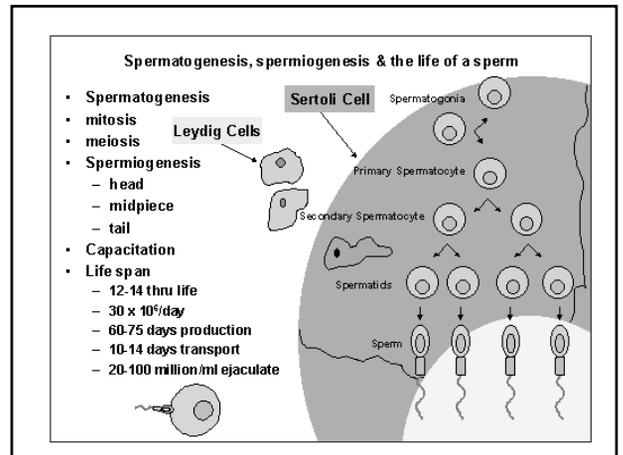
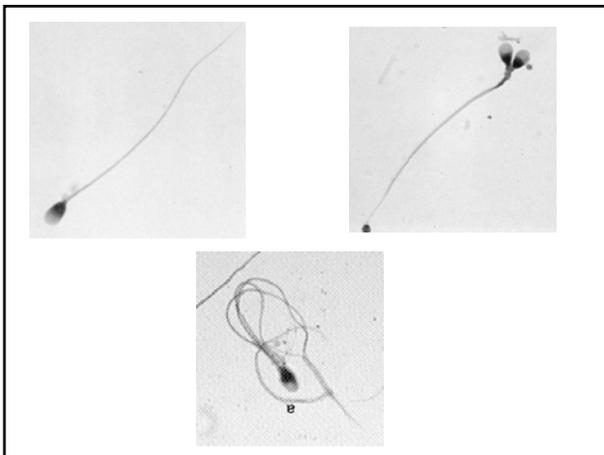
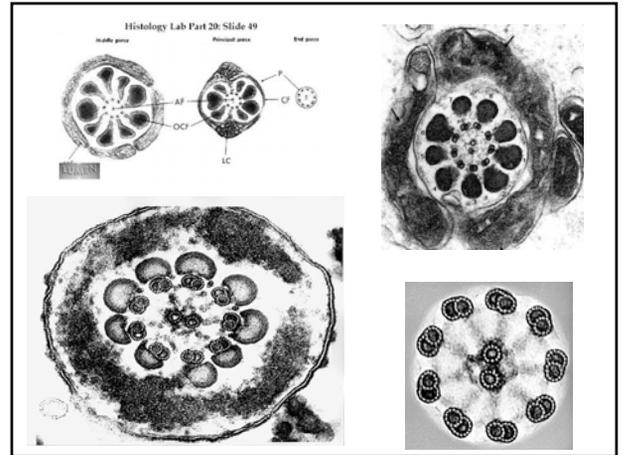
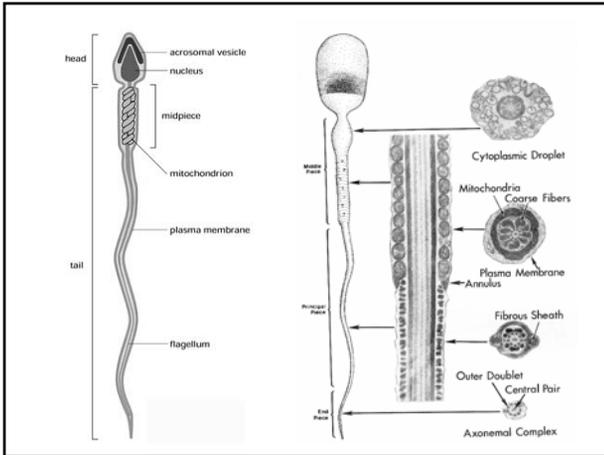


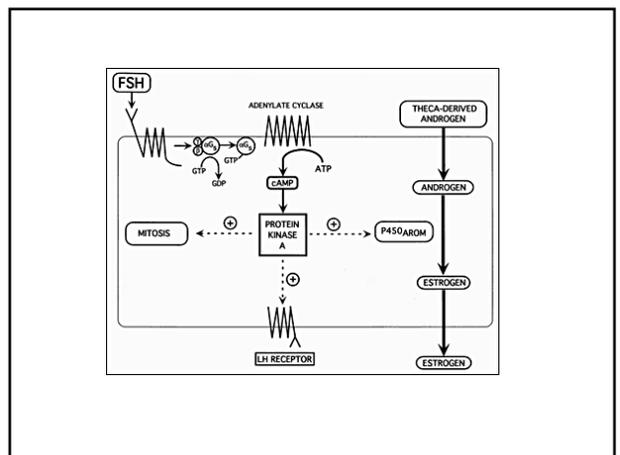
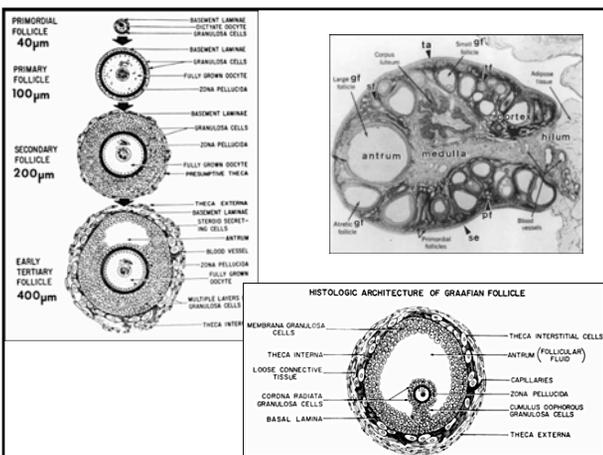
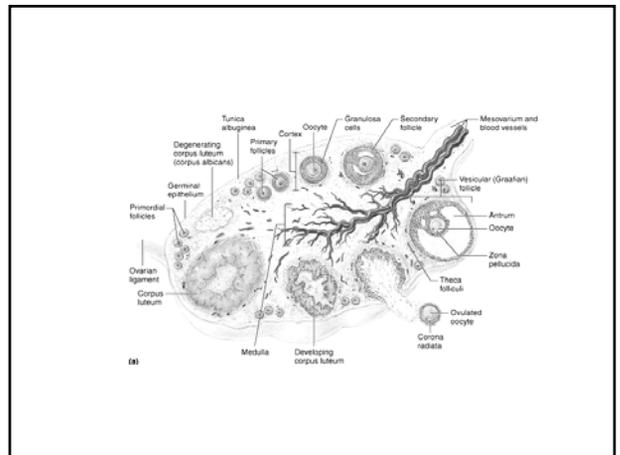
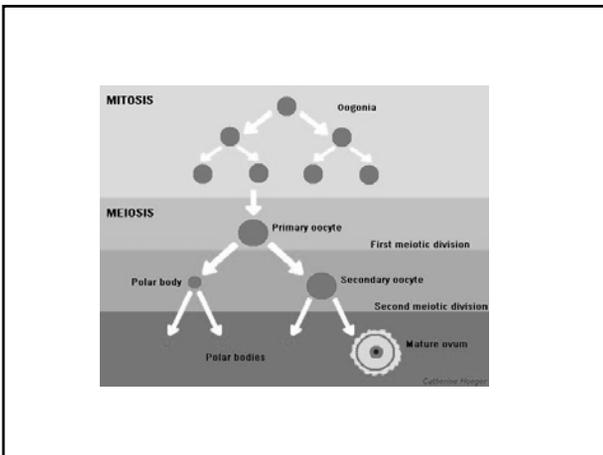
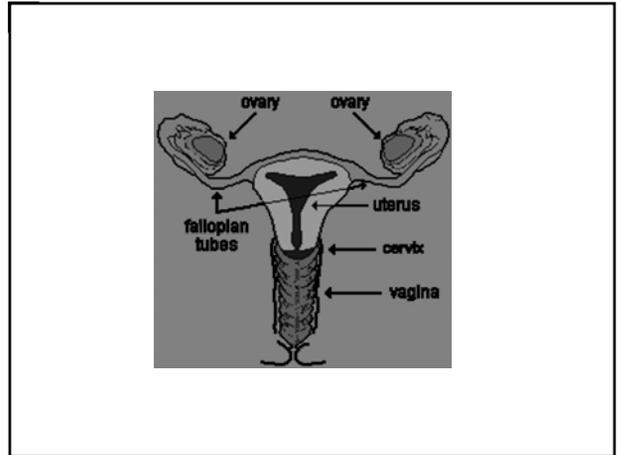
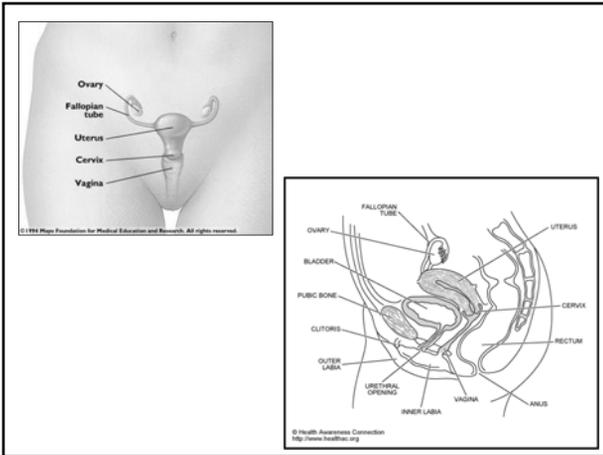
## Reproducción Espermatogénesis y ovogénesis

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Programa de Fisiología y Biofísica  
Instituto de Ciencias Biomédicas  
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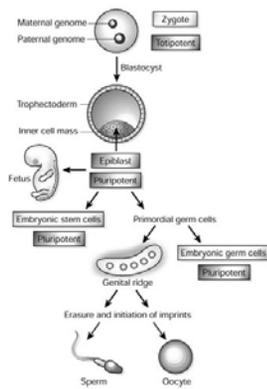
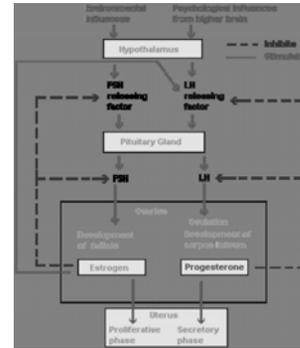
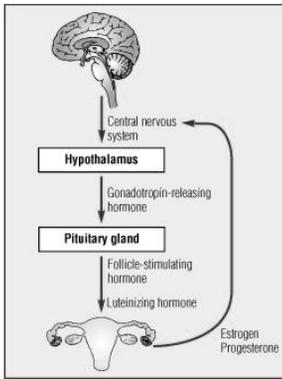








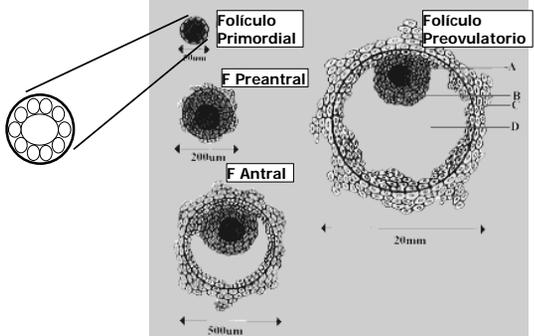




## Aparato Reproductor Femenino



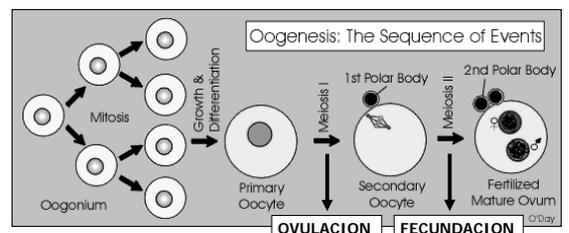
## Folliculogénesis

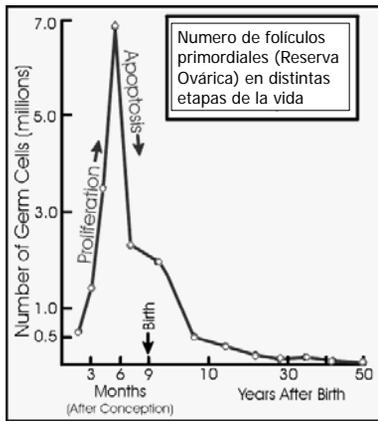


Proliferación celular y Citodiferenciación

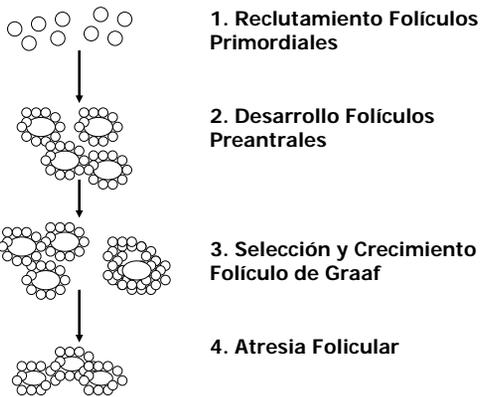
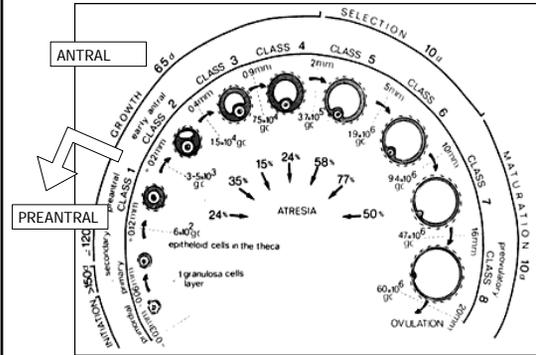
## Establecimiento Reserva Ovática

- Desarrollo embrionario células germinales
- Arresto: Detención en primera Profase (Dictioteno)

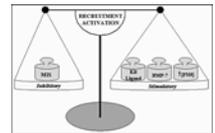
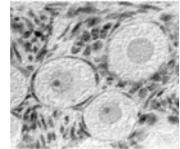
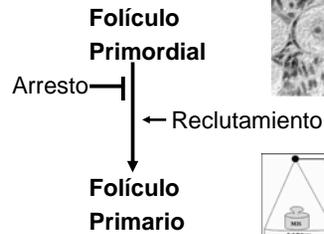




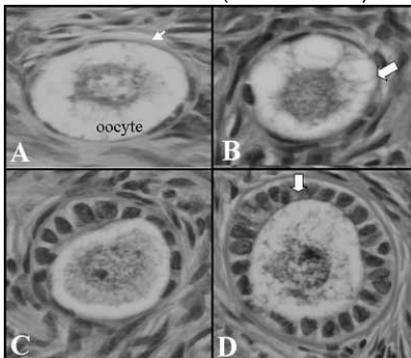
## Ciclo de desarrollo folicular



## 1. Reclutamiento



## • Microambiente folicular (lámina basal)



## Folículos Primarios

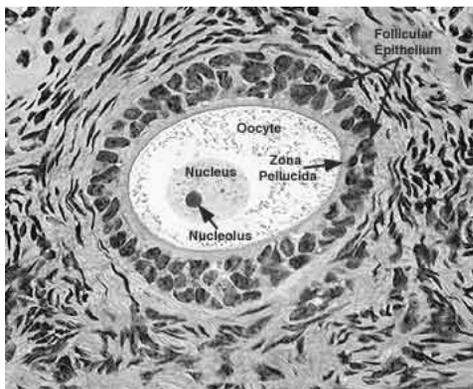
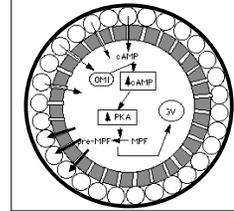
- Diferenciación:
  - Expresión de receptores a FSH (granulosa)
  - Diferenciación Ovocito
  - Expresión proteínas Zona pelúcida (ZP1,2,3)
- Crecimiento Ovocito

## Ovocito: Crecimiento y diferenciación

- 25 a 120  $\mu\text{m}$
- Reactivación genómica:  $\uparrow$  mRNA
- $\uparrow$  síntesis proteica: ZP
- Acumulación agua, iones, lípidos
- Gránulos Corticales
- Desarrollo GAP junctions

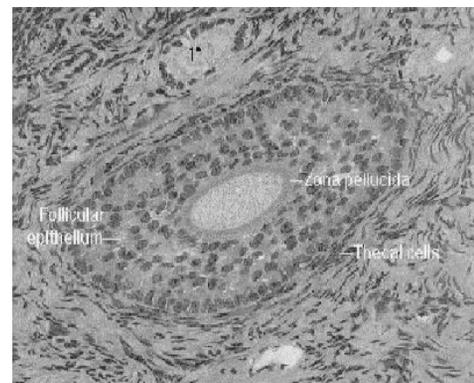
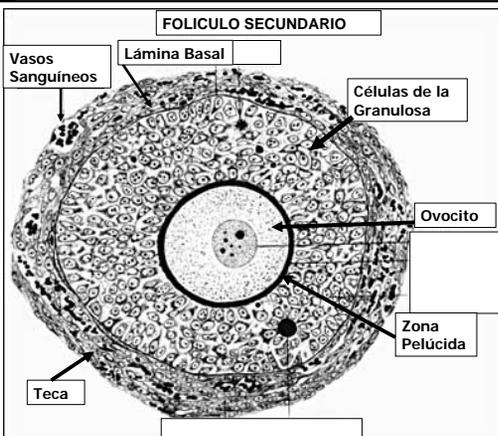
## GAP junctions

- Conexinas
- Soporte nutricional
- Comunicación
- Arresto de Meiosis: AMPc



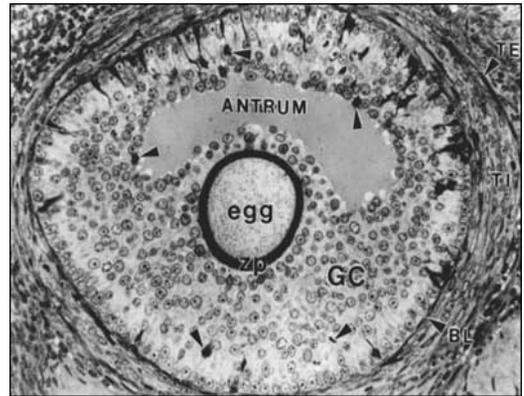
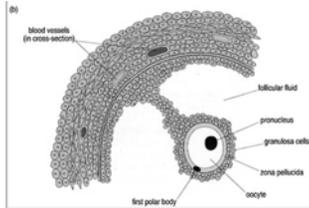
## Folículos secundarios

- Granulosa: Proliferación, Gap junctions
- Se agregan más capas:
  - Teca interna  $\rightarrow$  Intersticiales
  - Teca externa  $\rightarrow$  Muscular lisa
- Se forman nuevos vasos sanguíneos  $\rightarrow$  Llegan Gonadotrofinas

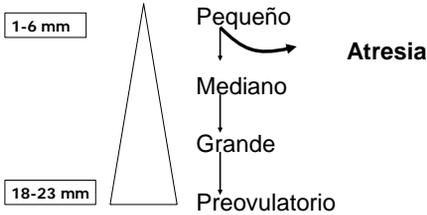


### 3. Folículo de Graaf

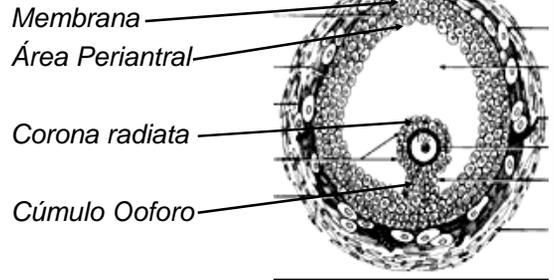
- Fluido Folicular → Antro Folicular → Microambiente/Diferenciación



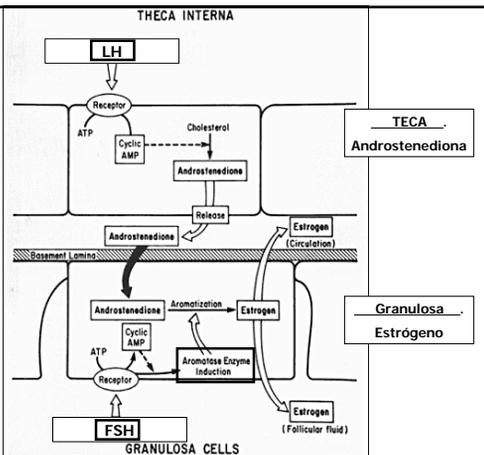
- Crecimiento Folicular:
  - Proliferación teca y granulosa
  - Acumulación fluido folicular



### Células de la granulosa



Síntesis de estrógenos en la granulosa

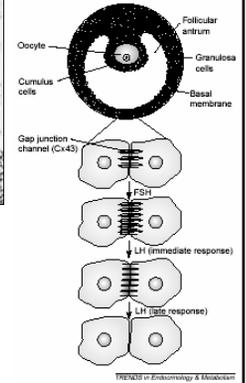
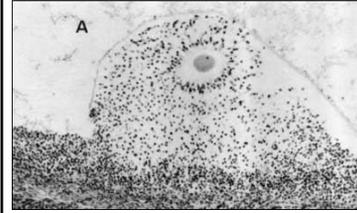
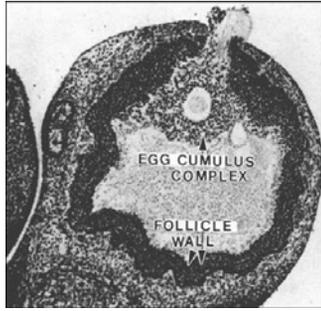
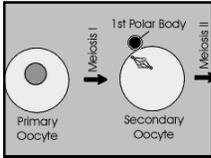


### 4. Atresia

- 99.9% de los ovocitos
- Concentración FSH intrafolicular
- Apoptosis

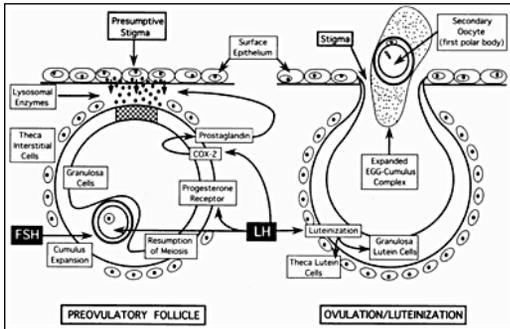
# OVULACION

- Pulso LH y FSH
- Reactiva Meiosis: 1ª división hasta 2ª metafase



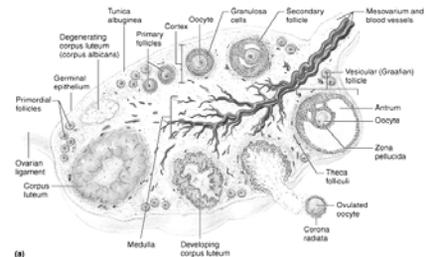
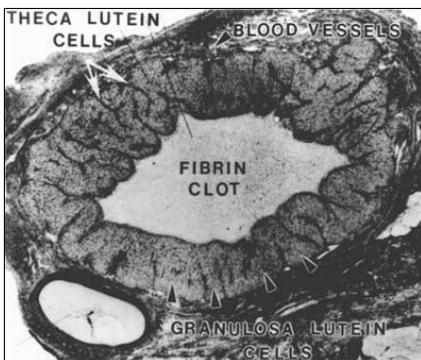
- LH/FSH
- Mucificación
- Pérdida uniones estrechas

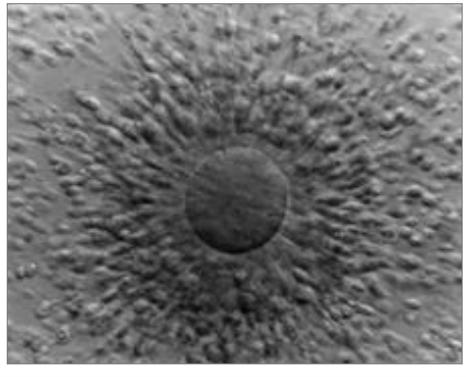
# Estigma y Ovulación



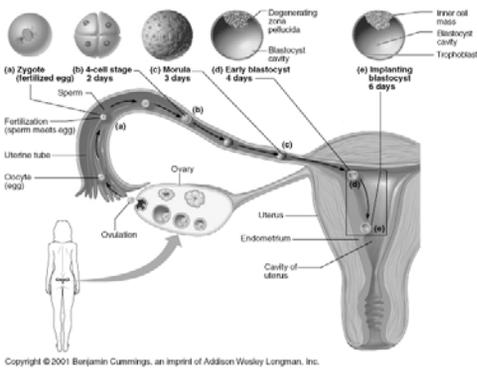
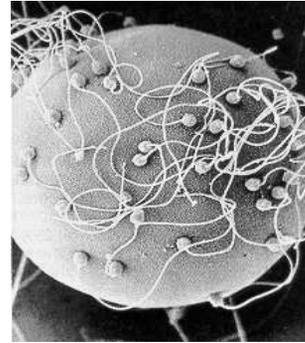
# Fase Luteal

- Estimulación FSH → Potencial
- Granulosa: Cambio Síntesis estrógenos a Progesterona
- Expresión Receptor a LH: Hormona luteinizante
- Cuerpo luteo mantiene gestación primeras etapas



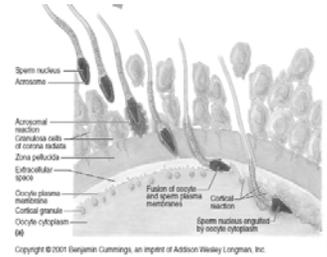


## FECUNDACION



## Fecundación

- Capacitación Espermática
- Interacción Espermio-Óvulo:
- Reconocimiento Especie-Específico
- Fusión de gametos
- Activación Meiótica y metabólica ovocito



## Capacitación Espermática

Espermio eyaculado no es fértil:

-Capacitación: Motilidad, composición membrana, proteínas y medio intracelular

-Bicarbonato en tracto femenino:  $\uparrow$  AMPc

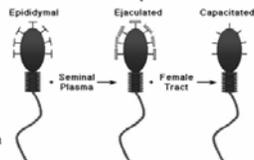
### Capacitation

### Effect of Capacitation

- No change in sperm morphology
- Motility change - hyperactivation



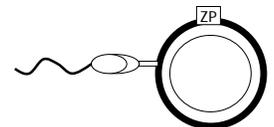
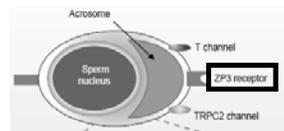
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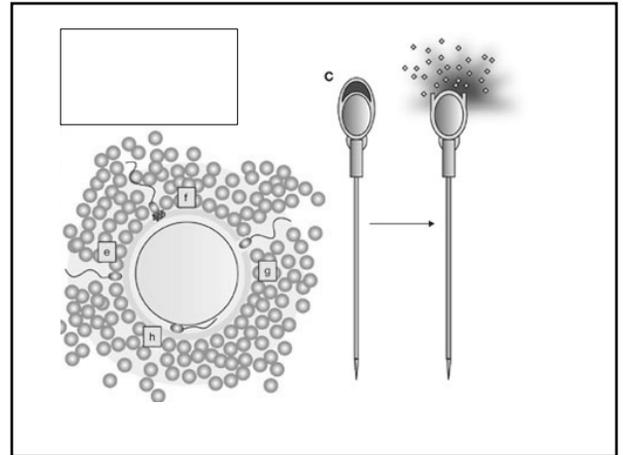
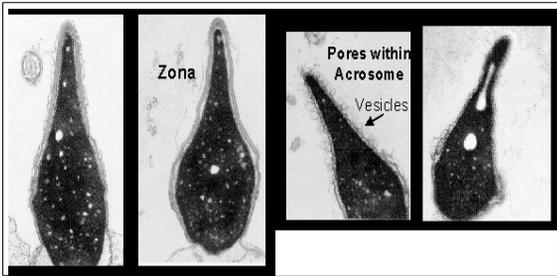
B

## Interacción Óvulo-Espermio

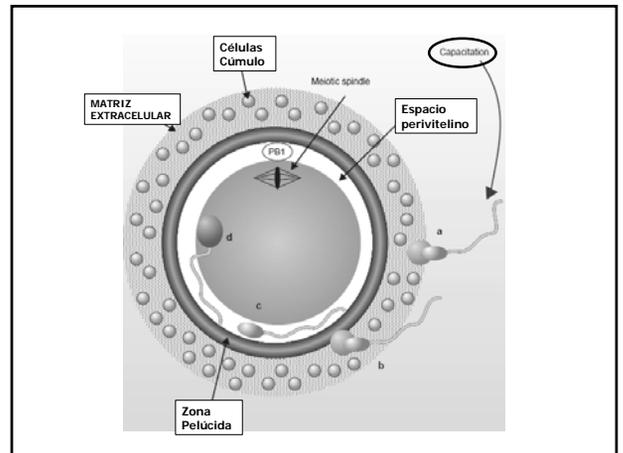
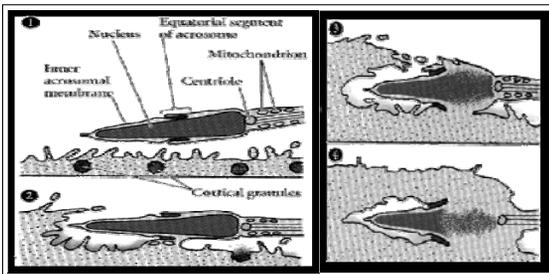
Reconocimiento espermio-óvulo: Zona pelúcida: ZP3



## Reacción Acrosomal: degradación ZP

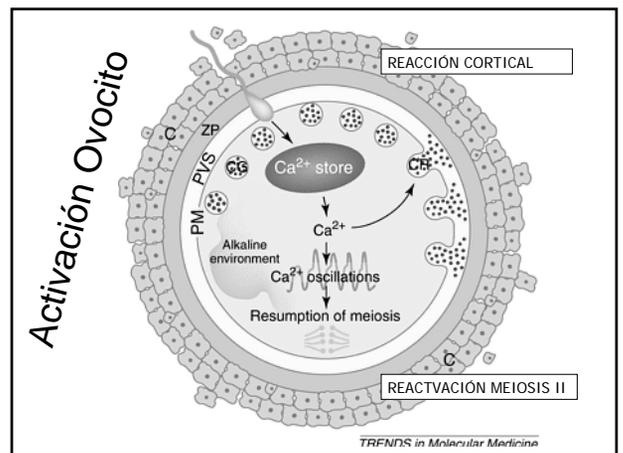


## Fusión de Membranas

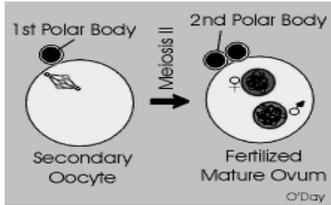


## Activación metabólica

- Eventos fisiológicos, bioquímicos y morfológicos
- Estimulados por fertilización:
  - Respiración
  - Transporte de iones y aminoácidos
  - Síntesis de proteínas
  - Síntesis y activación o inactivación de quinasas y fosfatasa



- Reactivación Meiosis: completa 2ª división meiotica



- Reacción Cortical: modifica Zona Pelúcida, previene poliespermia

