

# Reprodução Assistida

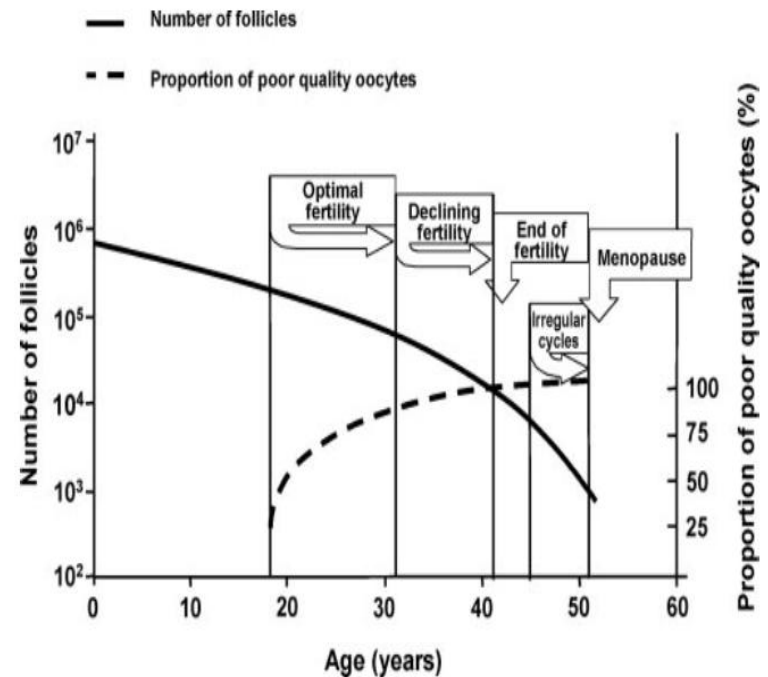
Causas  
Tratamentos

# Infertilidade

- ▶ 1 / 10 casais podem ter dificuldade para engravidar: fatores masculinos/femininos;
- ▶ In general, ~40% male factor and 40% female factor;  
20% Unexplained infertility

# Fatores femininos

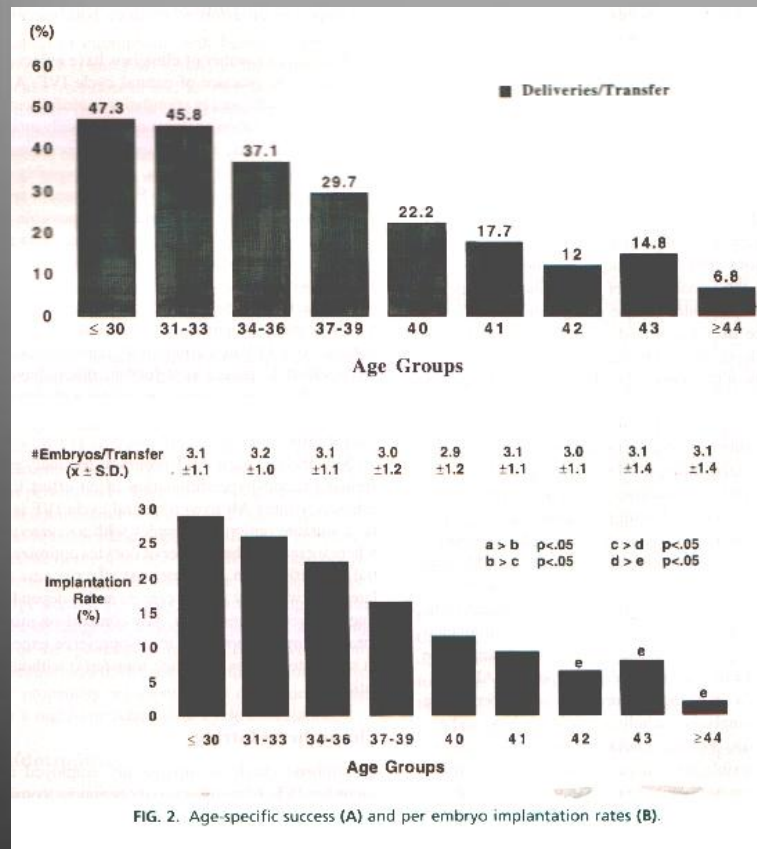
- ▶ Idade
- ▶ Disgenesia Gonadal
- ▶ Disfunção hormonal
- ▶ Trompas danificadas
- ▶ Endometriose



# Idade da mulher



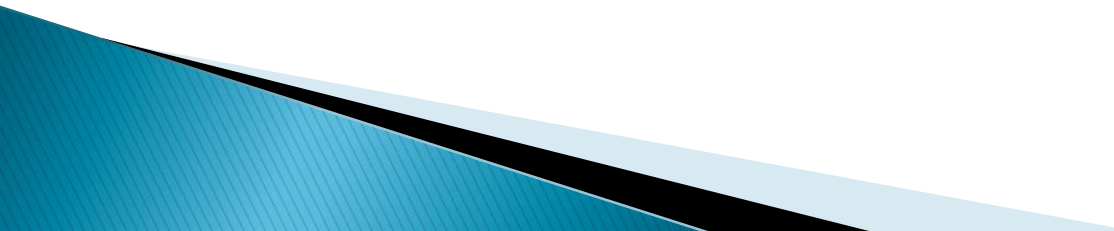
Anomalias cromossômicas



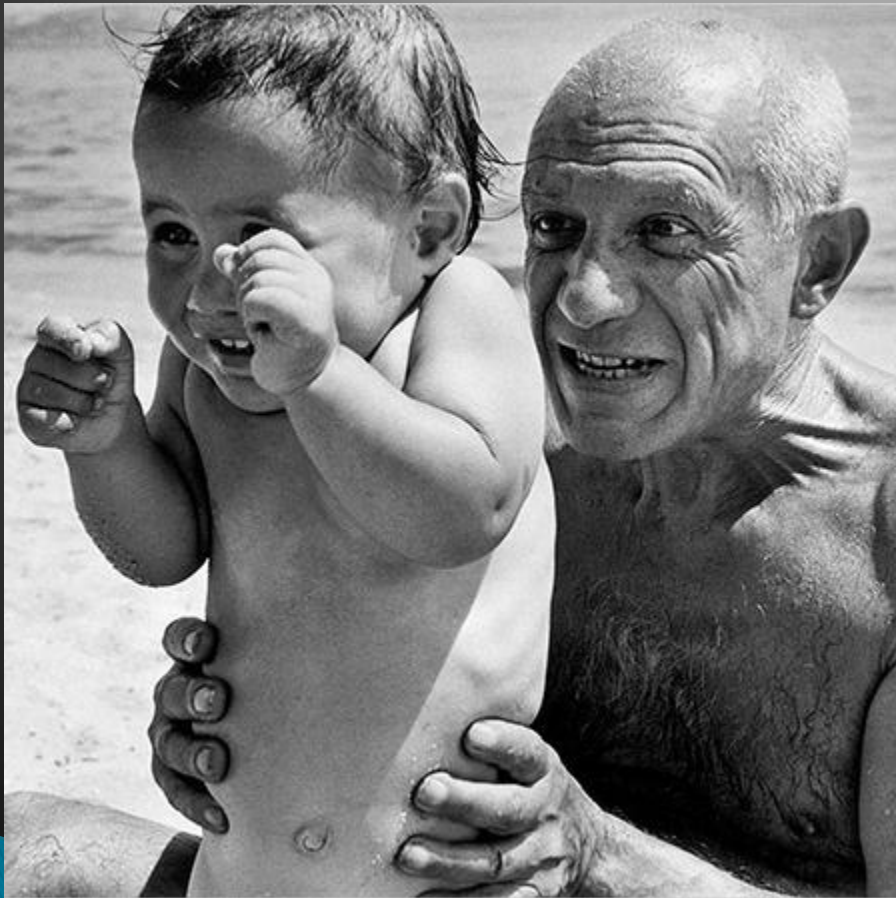
Taxa de nascimentos x idade feminina

Taxa de implantação x no. Embriões transferidos x idade feminina

# Fatores masculinos

- ▶ Baixa contagem de espermatozóides: oligospermia
  - ▶ Motilidade deficiente: astenospermia
  - ▶ Teratospermia
  - ▶ Azoospermia -
  - ▶ Idade
- 

# Idade Paterna



#Autism/schizofrenia/  
neurological disorders



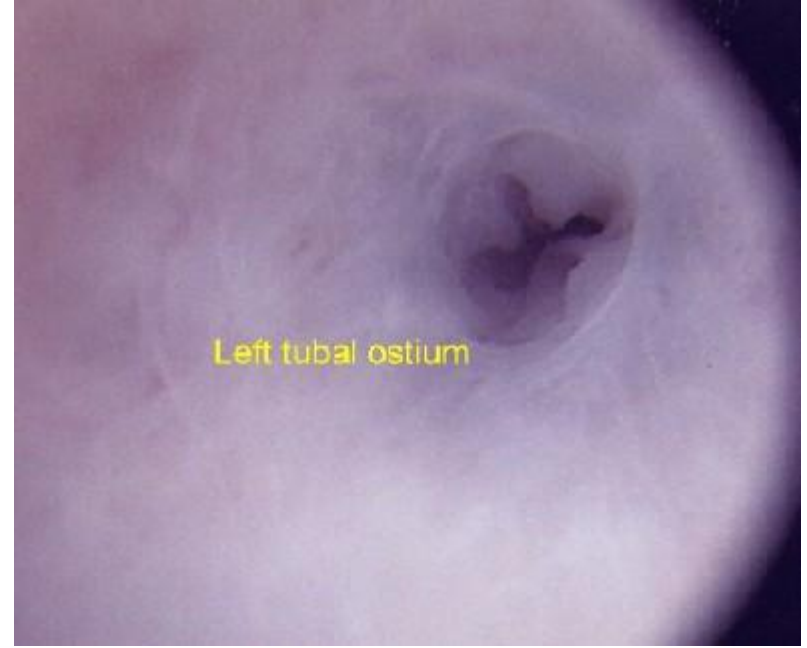
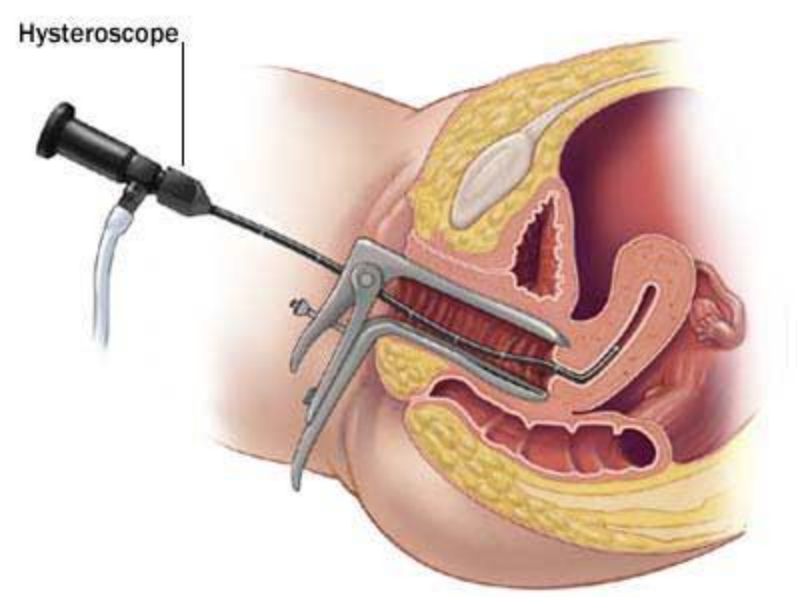
# Exames preliminares

- ▶ Dosagem FSH/AMH
- ▶ Histeroscopia– cavidade uterine
- ▶ Histerosalpingografia–trompas de Falopio
- ▶ Espermograma:  $>20 \times 10^6/\text{ml}$ ; 50% rápidos direcionais  $>4\%$  morfologia normal

# Anti-Müllerian hormone-AMH

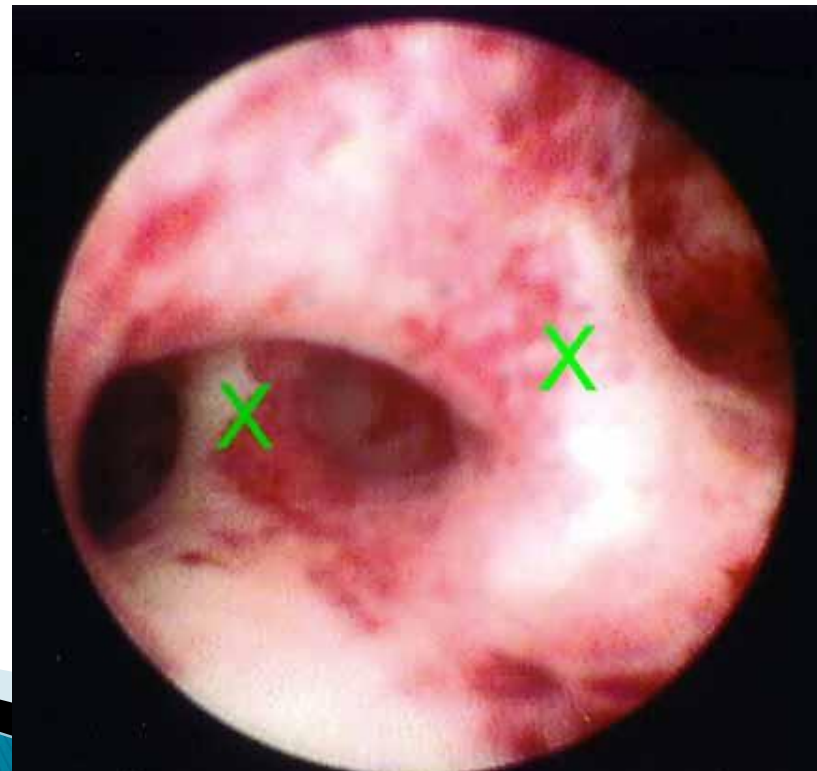
- ▶ Cels Sertoli vida fetal > Regressão Ductos de Müller
- ▶ Foliculos Primordial : NÃO AMH
- ▶ Foliculos Primarios: Sim
- ▶ Expressão acentuada: pre-antral/ antral inicial
- ▶ Níveis AMH são indetectáveis ao nascimento; aumentam muito na puberdade e daí em diante vão regredindo ao longo da vida reprodutiva.....

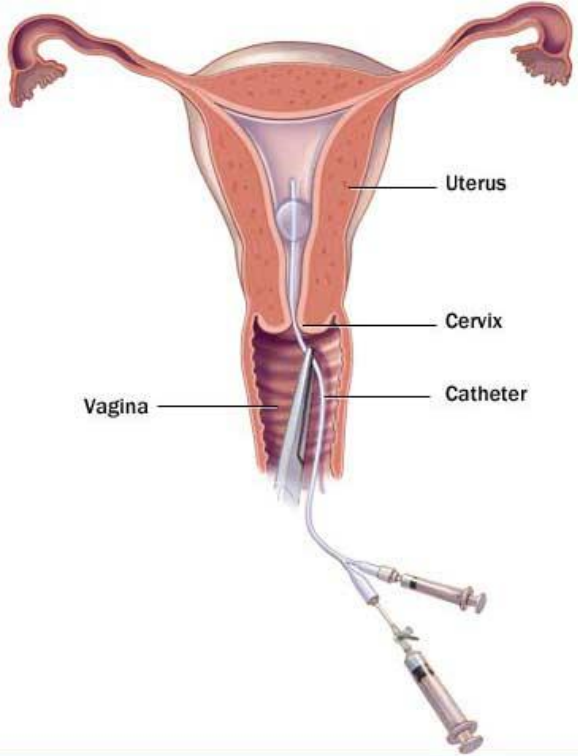




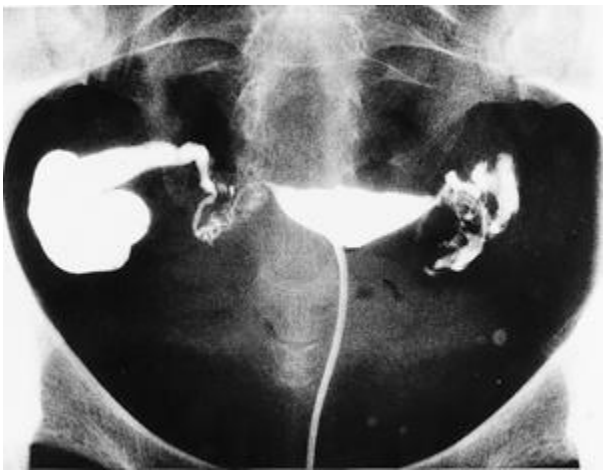
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# Hysteroscopia





# Histerosalpingografia



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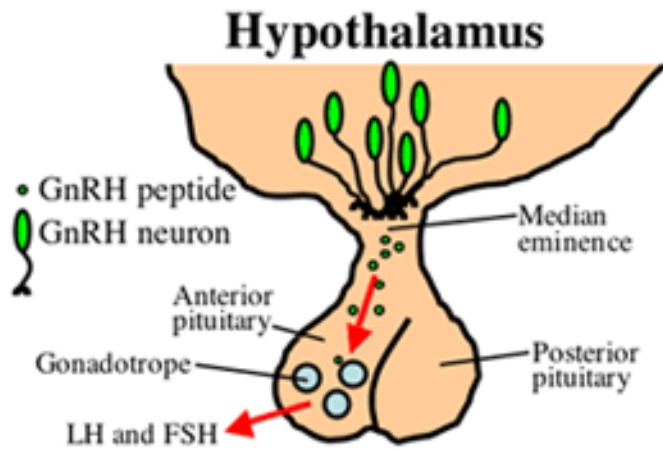
# Técnicas de reprodução assistida

- ▶ Inseminação intra-uterina (IUI)
- ▶ *In vitro* fertilização (IVF)
- ▶ Intracytoplasmic sperm injection (ICSI)
- ▶ *In vitro* maturation (IVM)
- ▶ PESA/TESA/TESE > aspiração percutânea/aspiração testicular/biopsia testicular

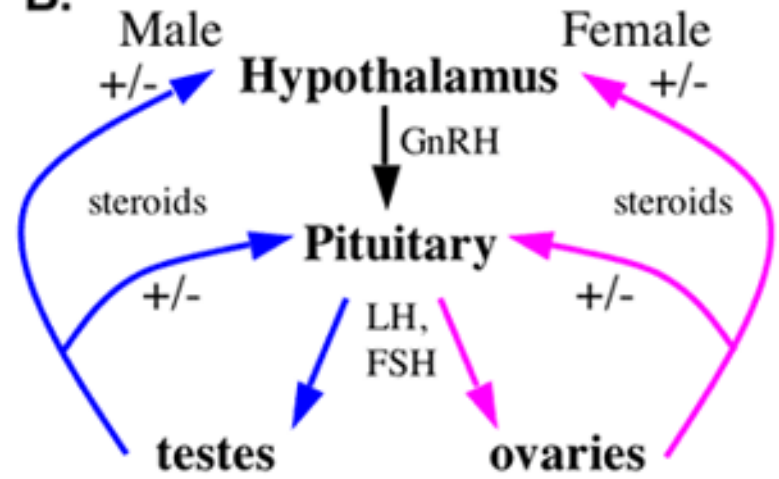
# Superovulação

- ▶ O que consiste:
  - ✓ Bloqueio hipofisario
  - ✓ Injeções diarias FSH
  - ✓ Injeção Final HCG > maturação final oocito

**A.**

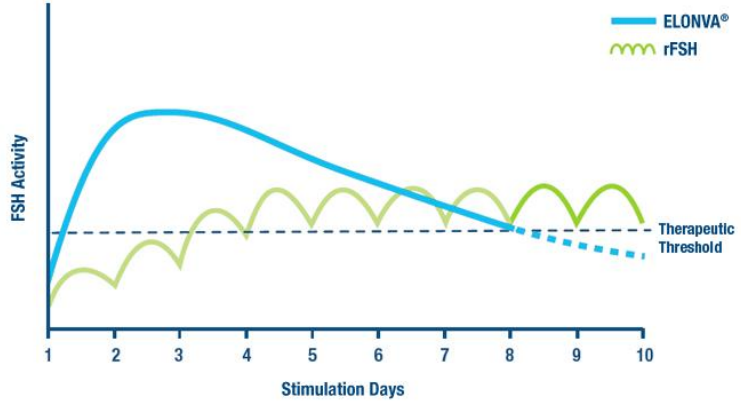


**B.**



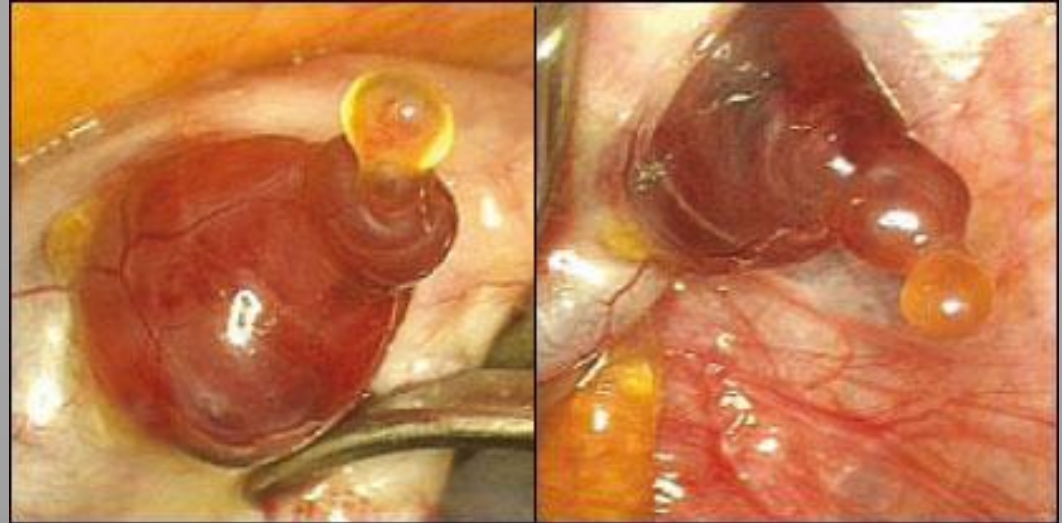


Representative FSH bioactivity levels of a single injection of ELONVA® vs daily injections of rFSH<sup>2,5</sup>

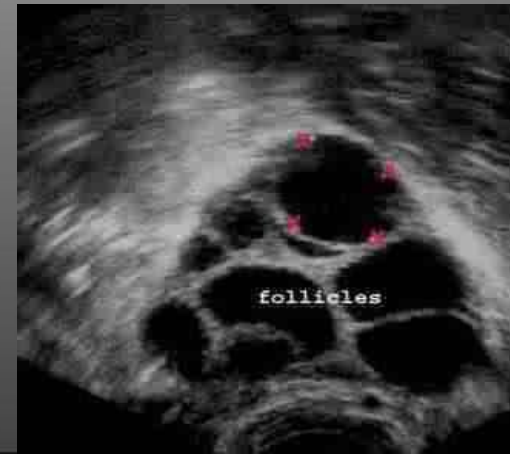
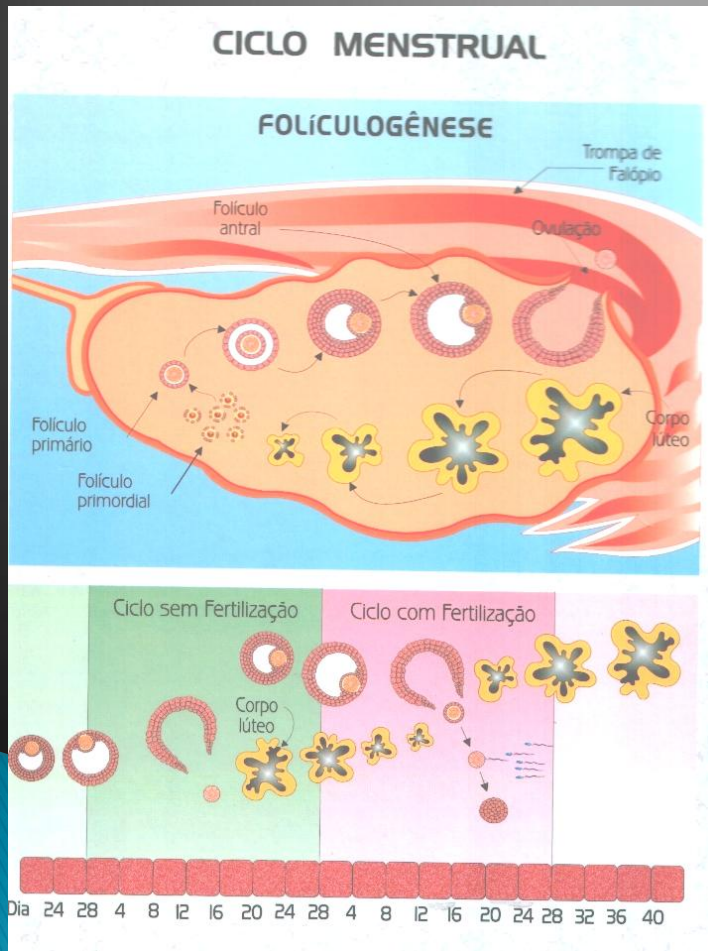




# Foliculogenese e Ovulação



## superovulação





# Observação do crescimento folicular/superoovulação



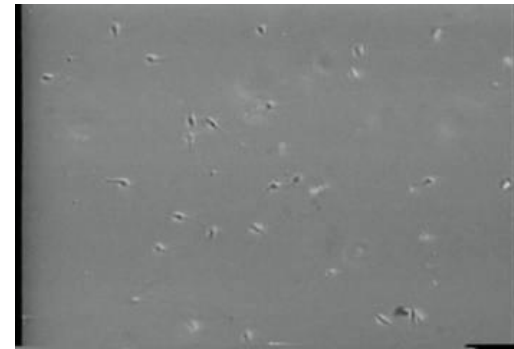
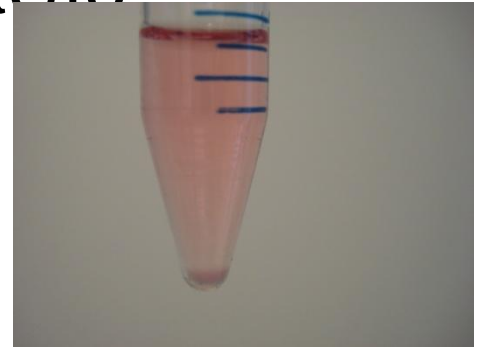
Follicles  $>18\text{mm}$ /  
Day of the hCG injection



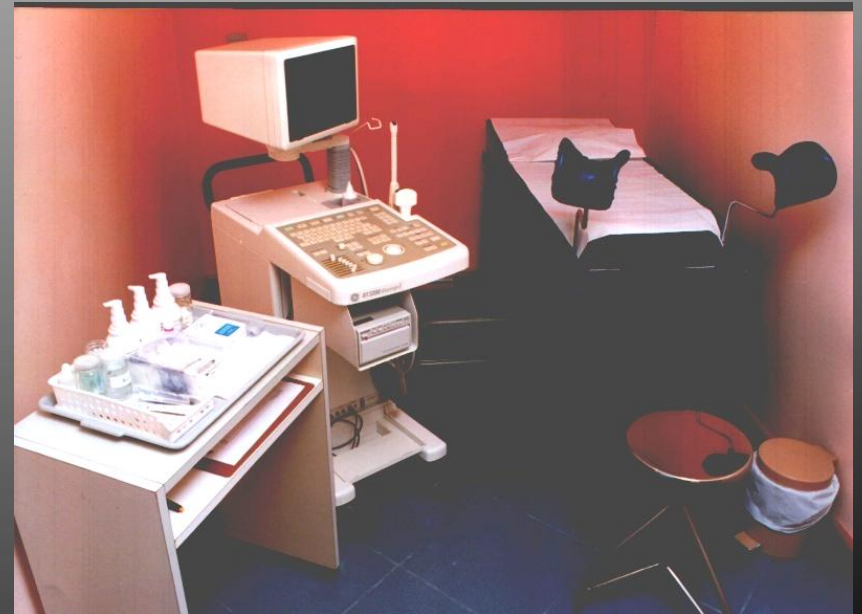
# Preparo Semem

- ▶ Ejaculado > centrifuga > remoção do fluido seminal e capacitação espermática
- ▶ Pellet Final diluído até a concentração espermática desejada para:

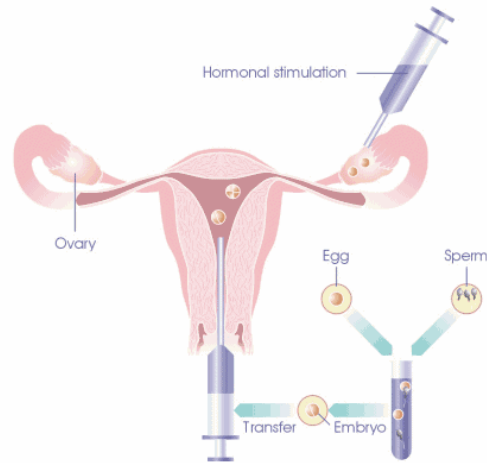
**IUI, IVF, ICSI**



# IUI



# *In vitro* fertilization-IVF

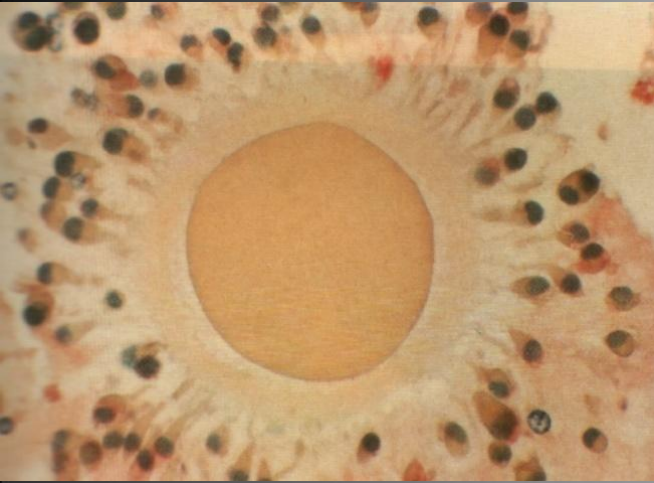




# Laboratorio



# Oocyte/IVF



zigotos





Day-1

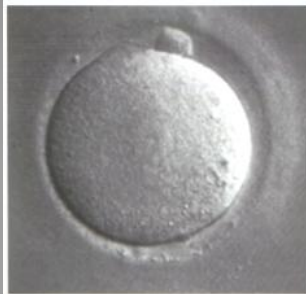


Figure 3.13.1



Figure 3.13.2

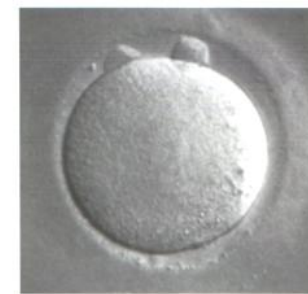


Figure 3.13.3



Figure 3.13.4



Figure 3.13.5



Figure 3.13.6

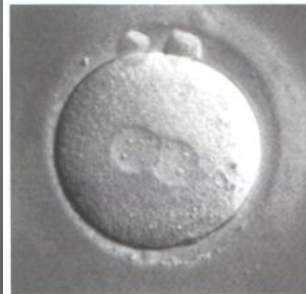


Figure 3.13.7

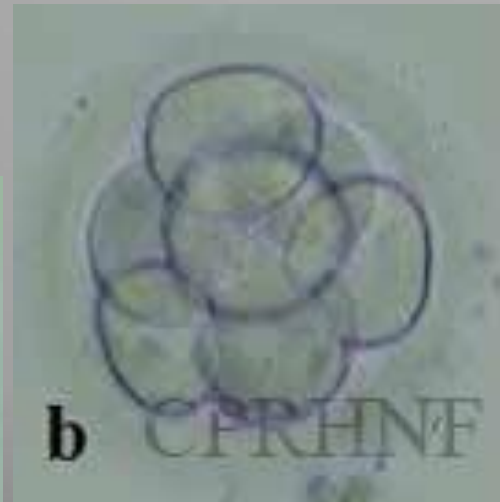
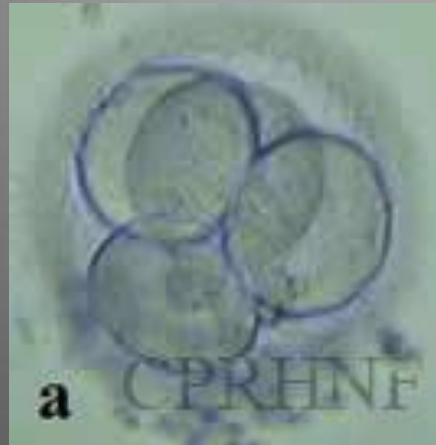
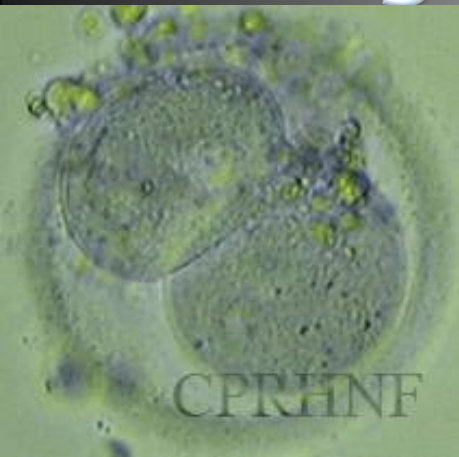


Figure 3.13.8



Observação dos  
Pronucleos/fertilizaçã  
o : 18-20 hrs pos -  
inseminação

# Clivagens iniciais



Dia1 (late)/2

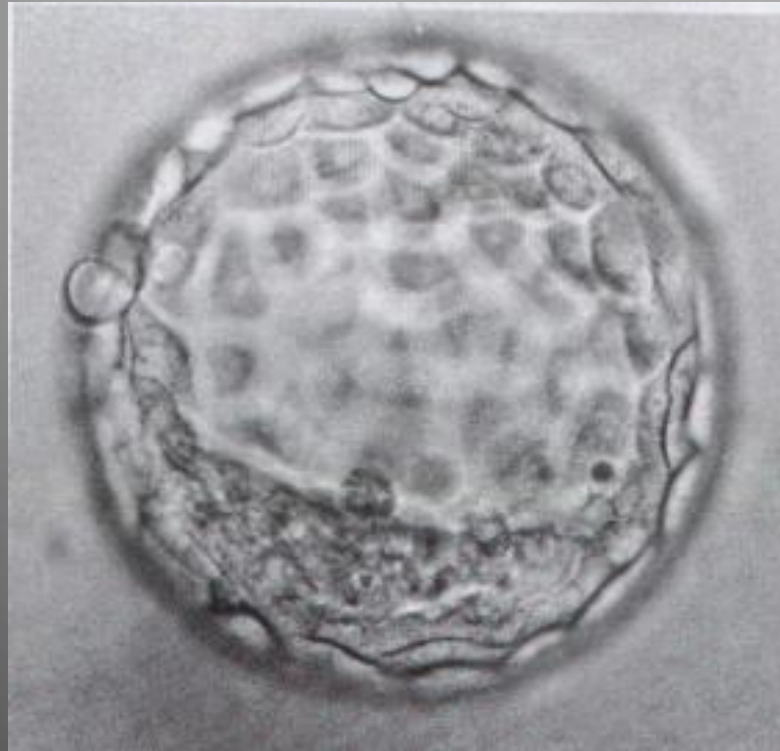
Day-2

DAY-3

DAY-4

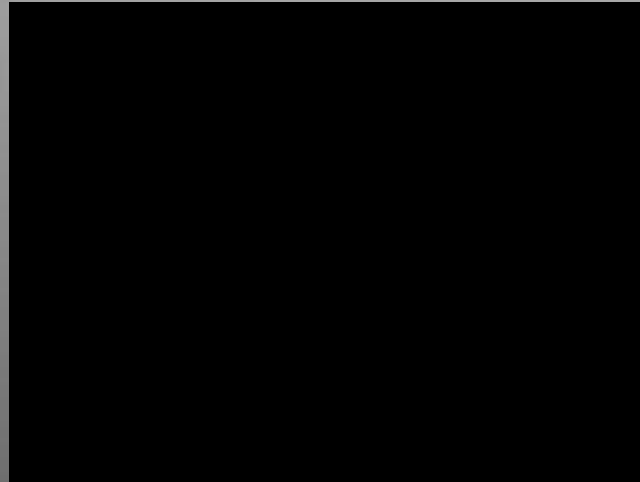
Transferências podem ser desde zigoto (Pn) até blastocisto

# Blastocisto



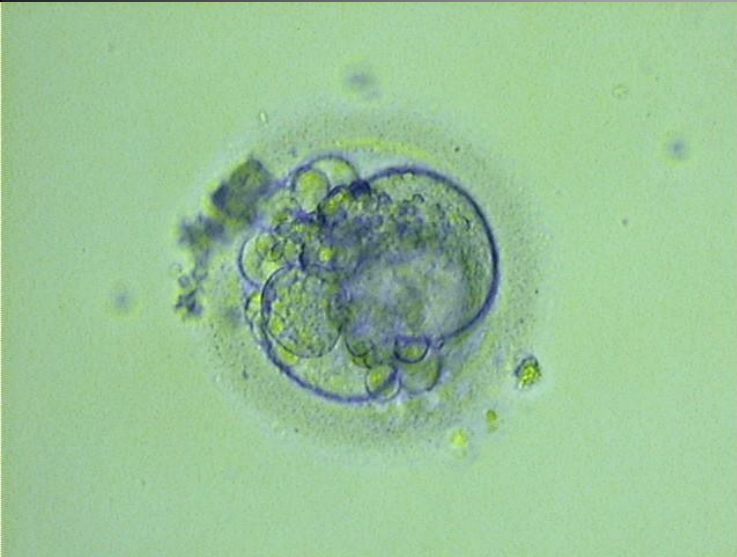
Dia 5/6

# Human embryonic development to blastocist stage -Pera et al., 2009

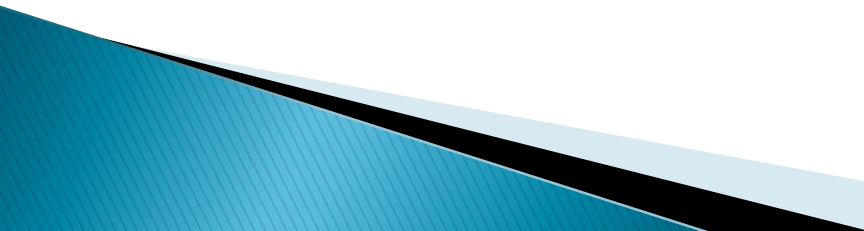




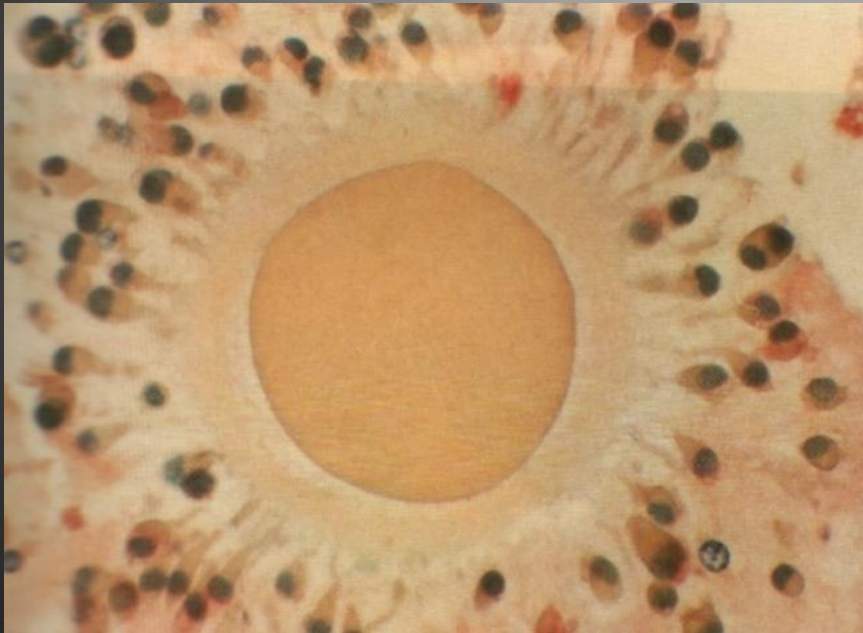
# Embriões baixa qualidade



# ICSI

- ▶ Infertilidade por fator masculino: oligospermia; teratospermia; astenospermia
  - ▶ falhas na IVF
  - ▶ Captura e injeção de um espermatozóide no citoplasma do oócito
- 

# Tratamento com Hyaluronidase





# ICSI

- ▶ Obstructive non-obstructive azoospermia<sup>\*\*</sup>:PESA/TESA/TESE
- ▶ Vasectomy, Cystic fibrosis, infections
- ▶ Sertoli -cells only Syndrome
- ▶ (?) Klinefelter Syndrome...
- ▶ <sup>\*\*</sup>FSH level > Marker probability to find sperm

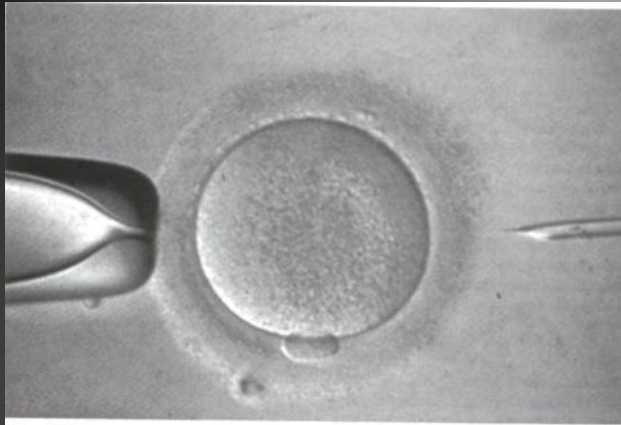


Figure 7.1.1

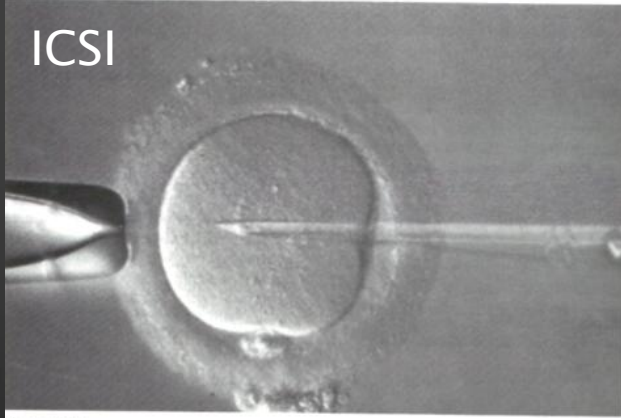
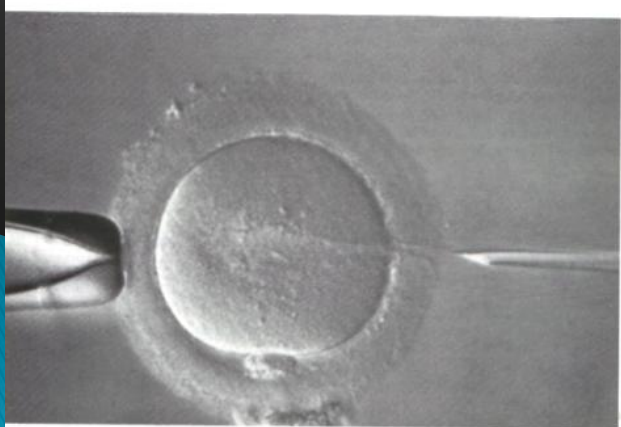


Figure 7.1.2



icsi



# IVM

- ✓ Sem estímulo hormonal exógeno
- ✓ Mulheres jovens; preferencialmente com SOP ou OP
- ✓ Oócitos coletados de folículos antrais em crescimento e maturados no laboratório ~ 30hrs
- ✓ ICSI





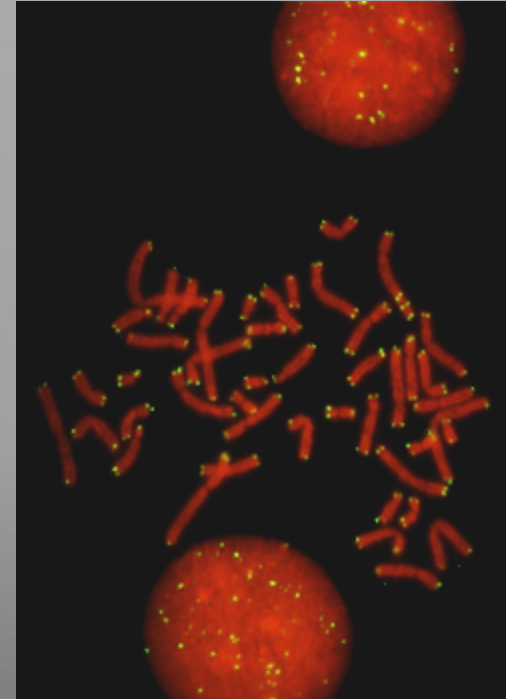
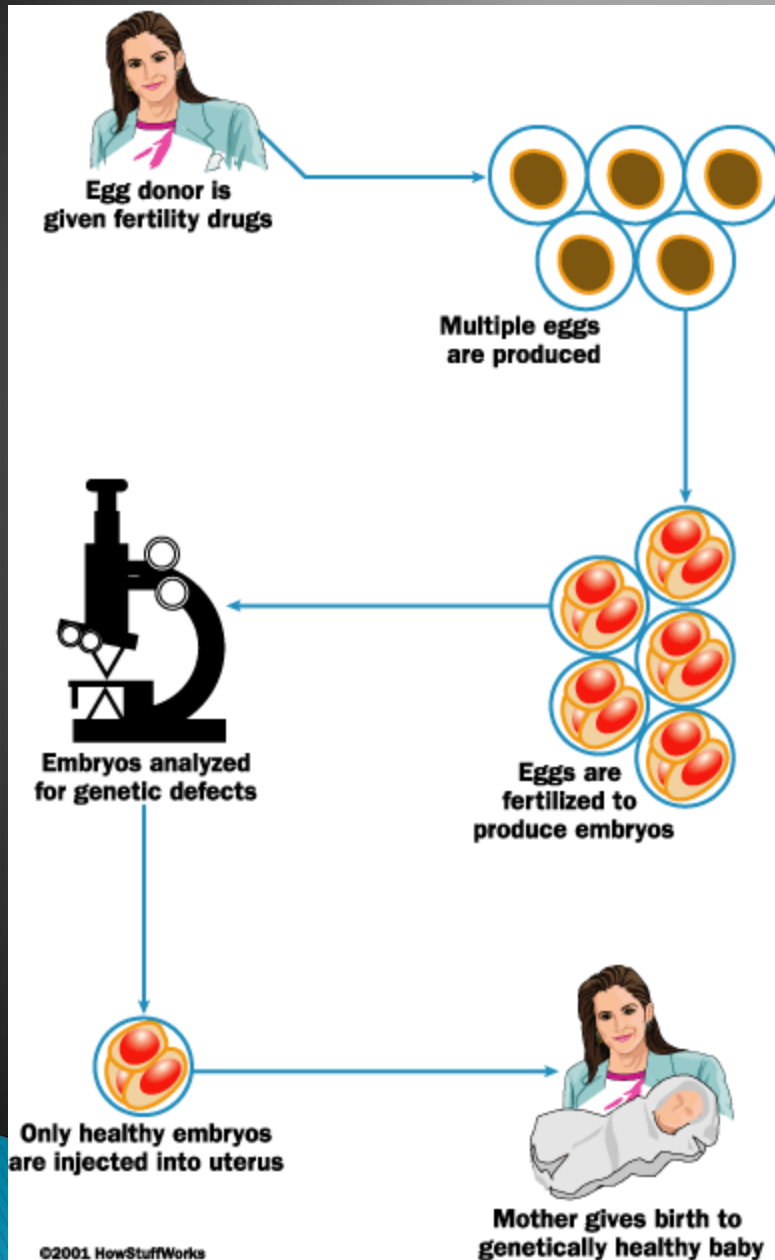
**IVM**



Frantz et al., 2008

# PGD

## Diagnostico Genético Pré-implantacional



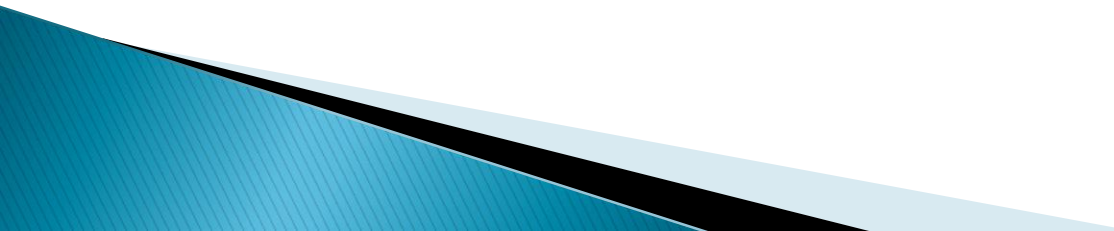
“PGD should be used whenever there is a considerable risk for the health of the unborn child”

Sex-related diseases





# Ovo-doação

- ▶ Menopausa Prematura/ natural
  - ▶ Disgenesia Gonadal
  - ▶ Anonima;
  - ▶ Esquemas de doação x Banco de gametas:
- 



Looking for the  
Right Donor?

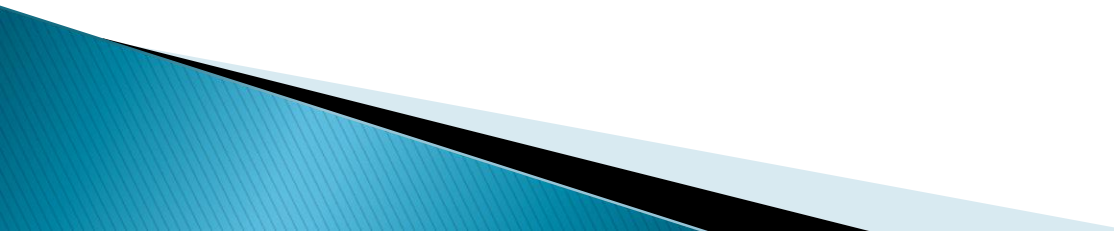
Browse our Database

> Click here

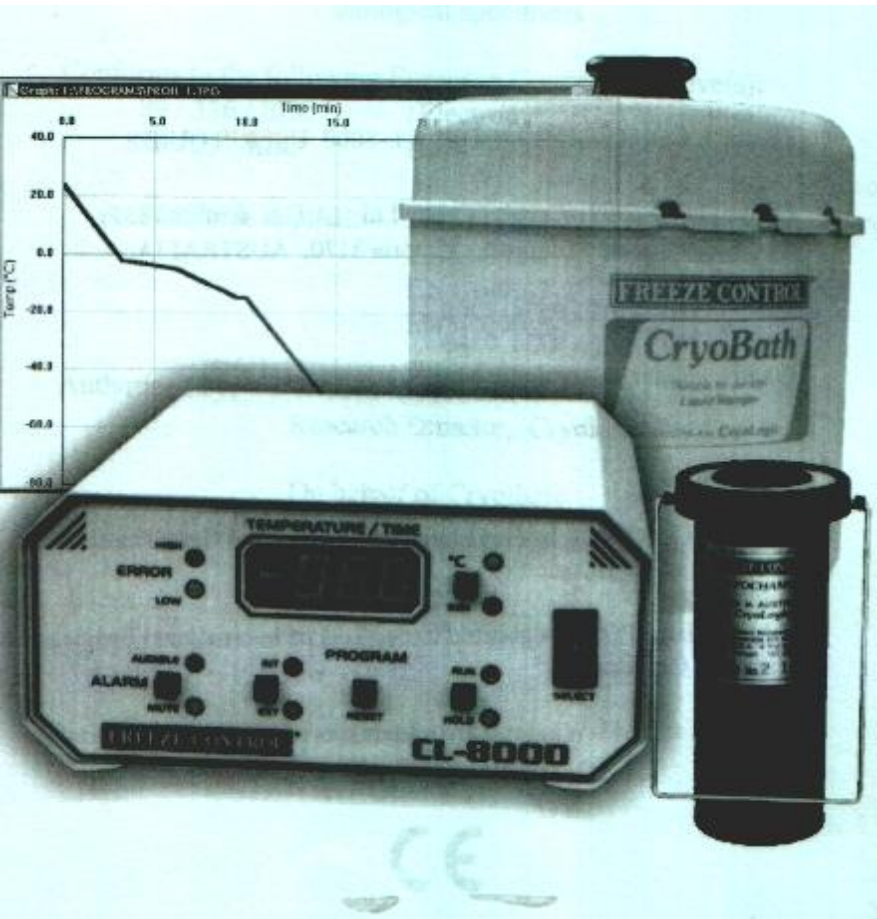
# útero solidário



# Criopreservação de Embriões / oócitos

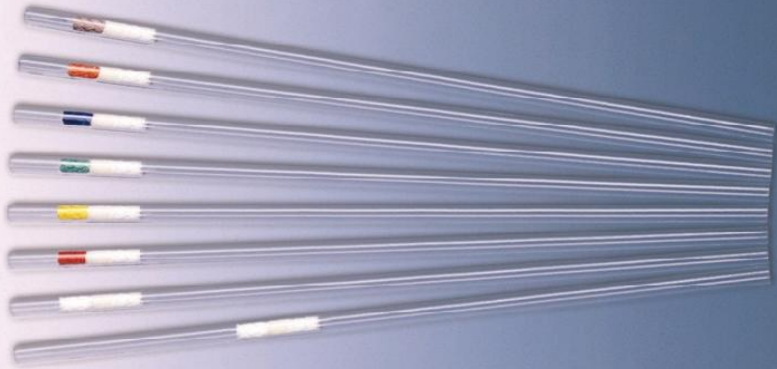
- ▶ “sobras”
  - ▶ O que fazer com os “abandonados”
  - ▶ Duas técnicas: congelamento ou vitrificação
- 

# Equipamento de Congelamento/Curva





# Freezing profiles



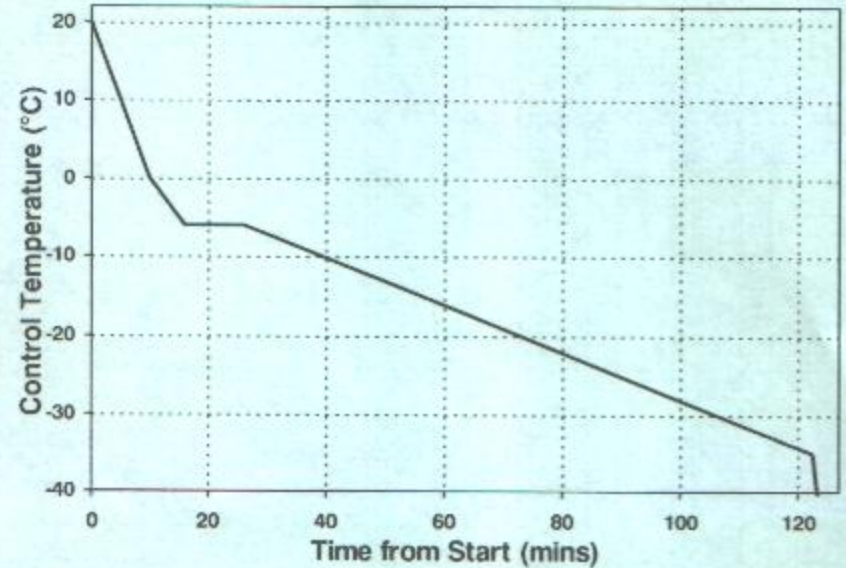
**FREEZE CONTROL**® Graphs

by **CryoLogic**

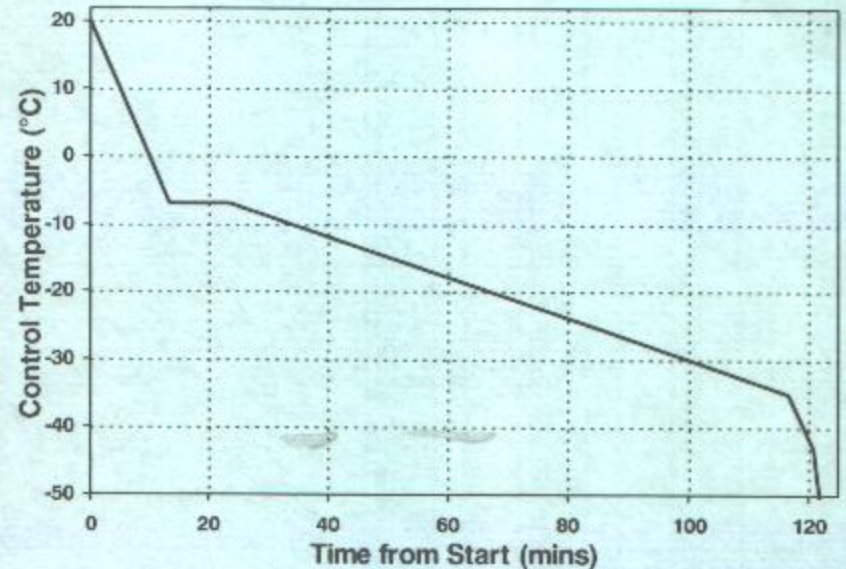
Chip Name: **SP8K\_ART**

For Model **CL8000**

**PROGRAM 0: Embryo - PrOH 1**



**PROGRAM 1: Embryo - PrOH 2**



# Objetivo da Reprodução Assistida : hCG (+) e tres semanas após, batimentos cardíacos



# Comparing indicators of health and development of singleton young adults conceived with and without assisted reproductive technology

Comparar jovens adultos – 18 a 28 anos nascidos por ART ou não;



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<http://dx.doi.org/10.1016/j.fertnstert.2014.01.006>

# Pouca evidencia de disparidades na saúde

- ▶ Estudo único com grupo controle, idade avançada – 28 anos.
- ▶ Os filhos de ART manifestaram seu funcionamento psicossocial sem diferença com os outros
- ▶ IMC semelhante
- ▶ Freqüência hospitalizações – relacionadas á vigilância dos pais
- ▶ Atopias Respiratorias – Continuam sob suspeita : > ART
- ▶ Autismo – Grande estudo , crianças até 10 anos sem evidência > em ART
- ▶ Distúrbios cognitivos – não houve diferença 13,5% Non ART x 12,8% ART – general population 14,6%;



▶ FIM!!