

Genere ed ormoni

Campobasso 15/05/2008

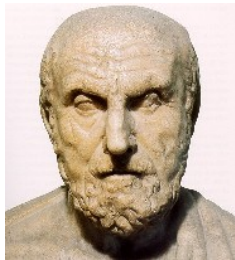


*Maurizio Gasperi
Dipartimento di S.pe.S.
Cattedra di Endocrinologia
Università del Molise*





- **Aspetti di fisiologia**

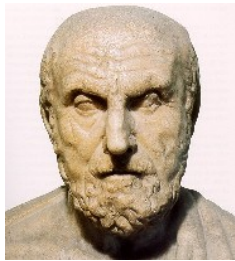


- **Aspetti di patologia**



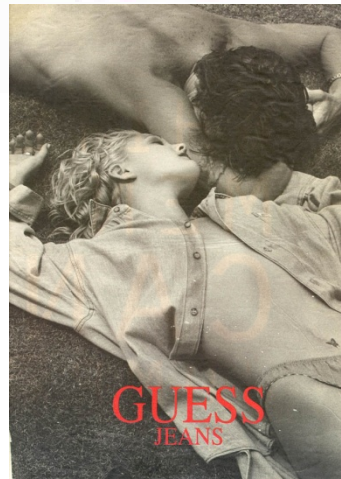
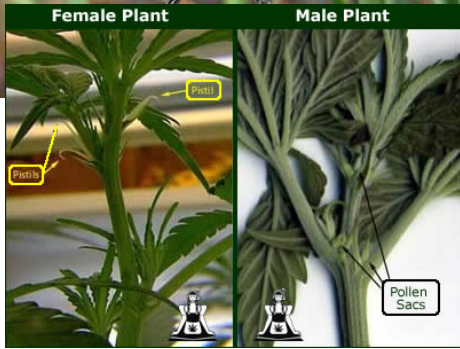


- **Aspetti di fisiologia**



- **Aspetti di patologia**



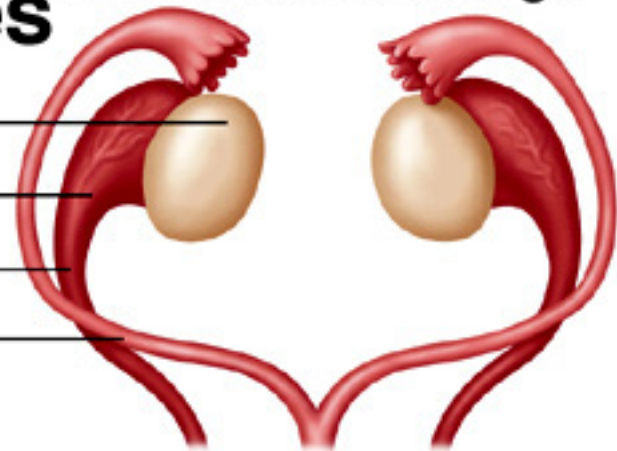




Prenatal Dev. of Internal Reproductive Structures

Undifferentiated stage

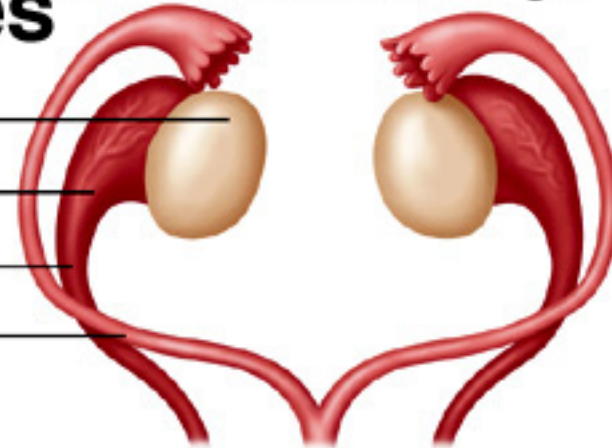
- Gonad
- Mesonephros
- Wolffian duct
- Müllerian duct



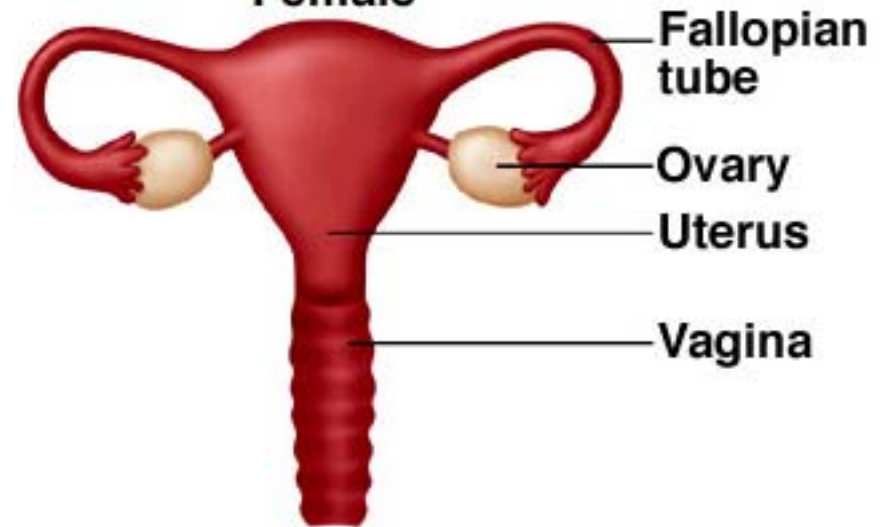
Prenatal Dev. of Internal Reproductive Structures

Undifferentiated stage

Gonad
Mesonephros
Wolffian duct
Müllerian duct



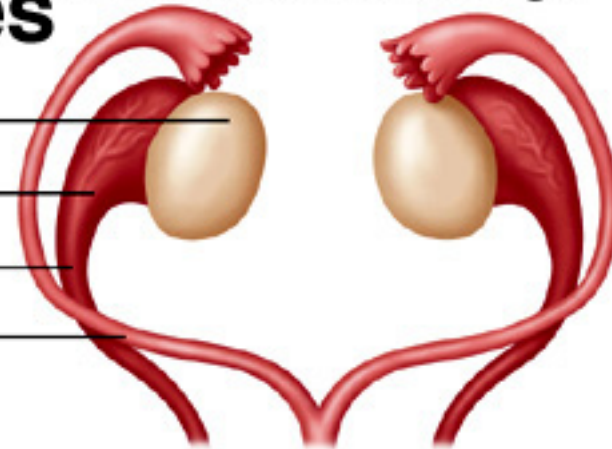
Female



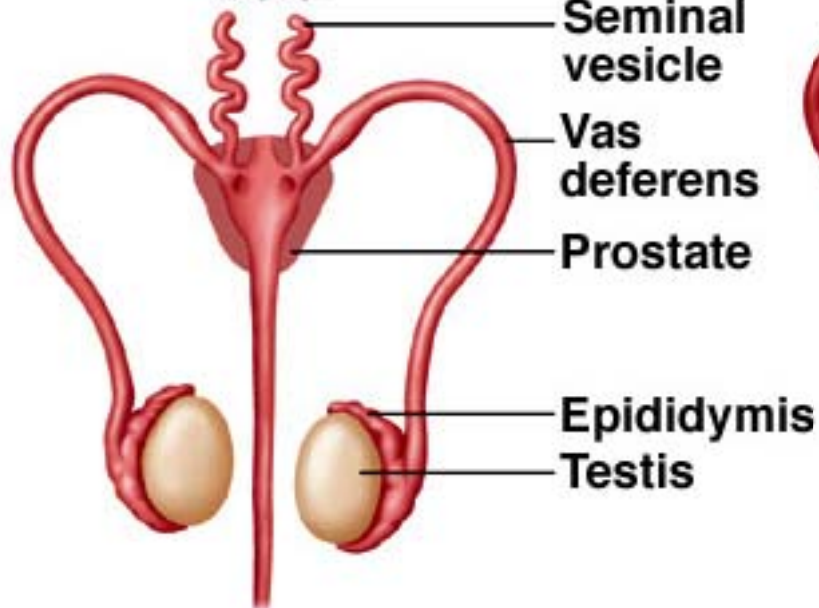
Prenatal Dev. of Internal Reproductive Structures

Undifferentiated stage

- Gonad
- Mesonephros
- Wolffian duct
- Müllerian duct

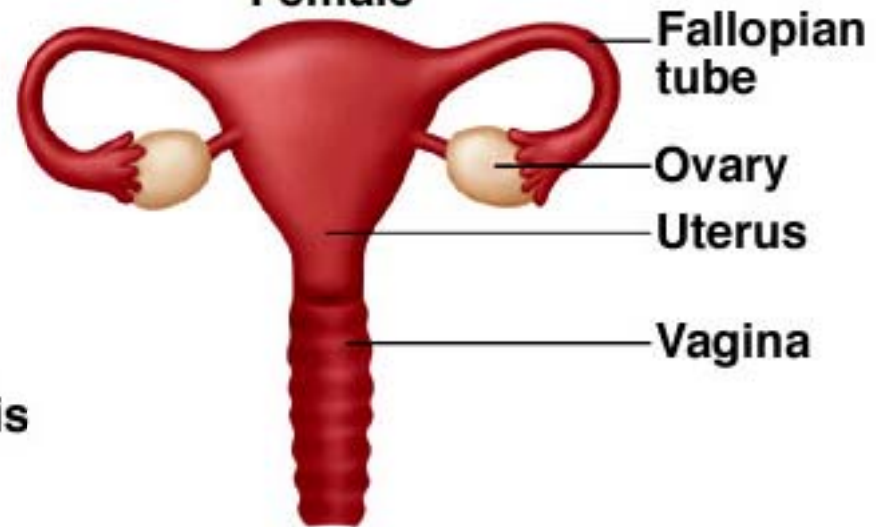


Male



- Seminal vesicle
- Vas deferens
- Prostate
- Epididymis
- Testis

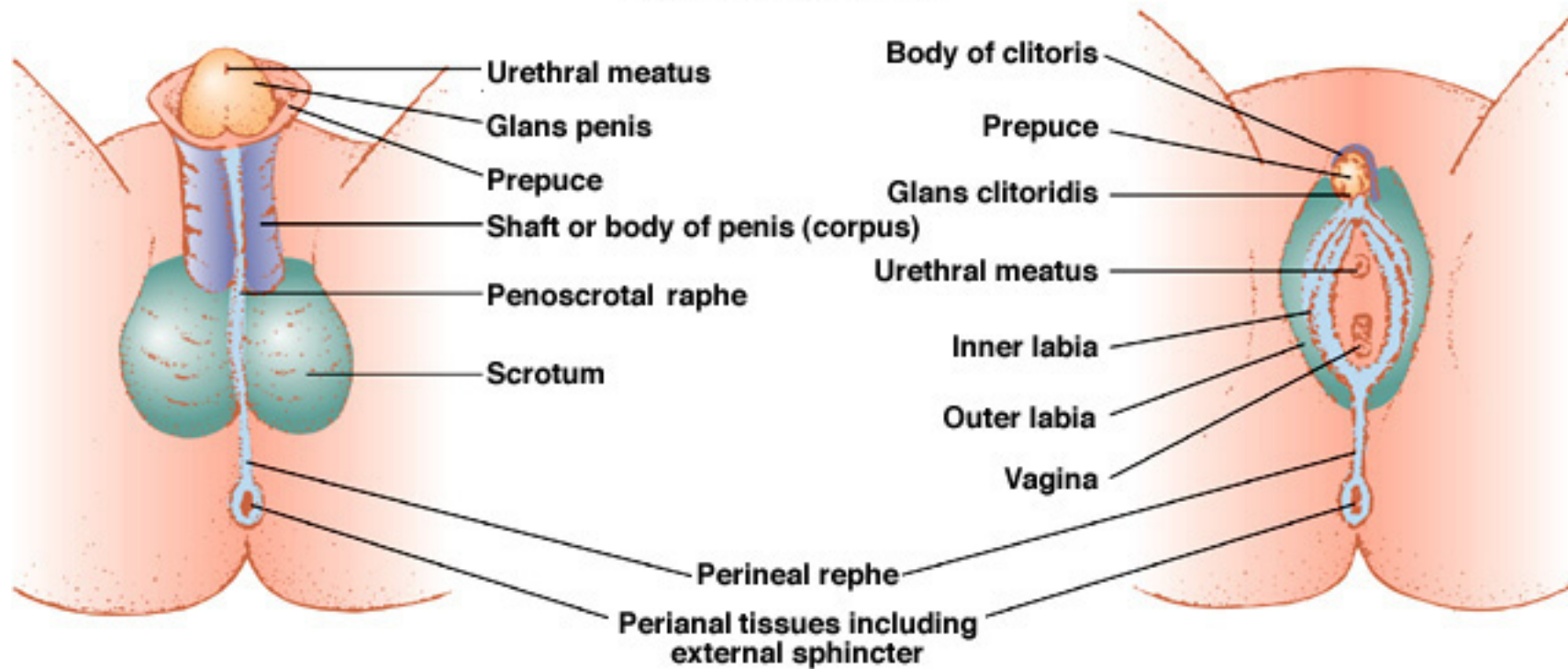
Female

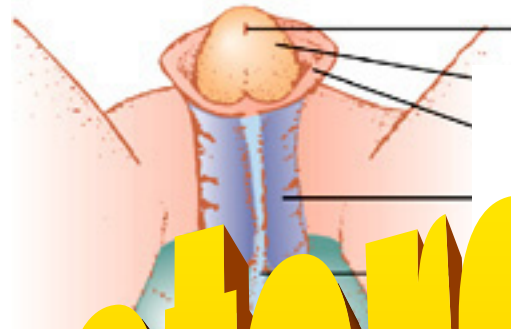


- Fallopian tube
- Ovary
- Uterus
- Vagina

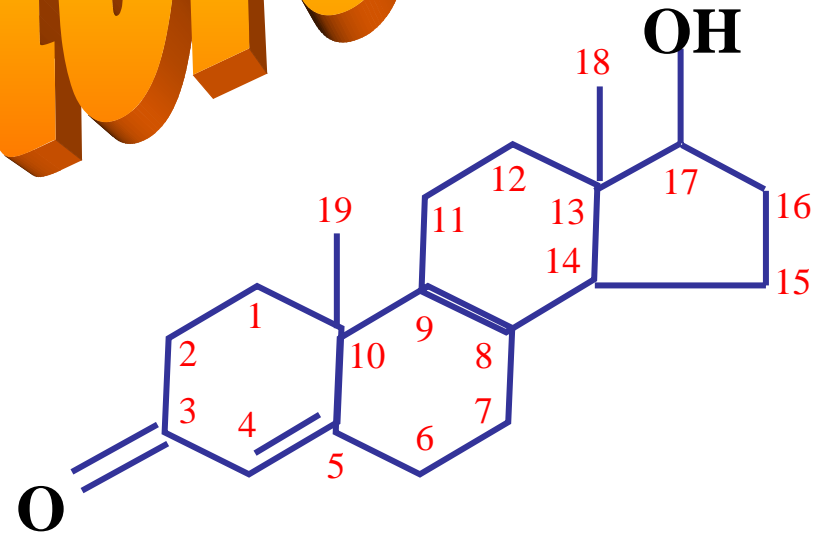
Development of M/F External Genitals

FULLY DEVELOPED

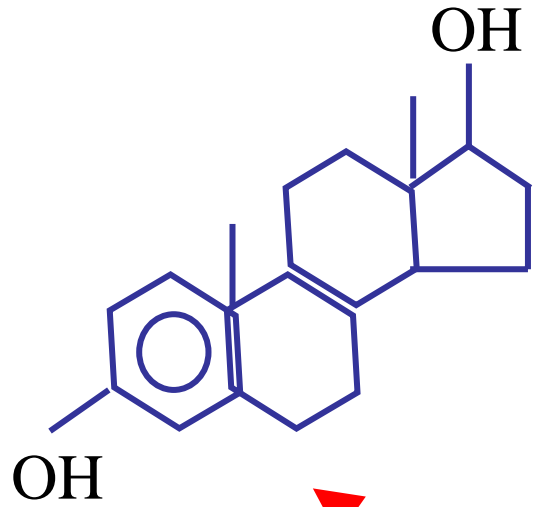




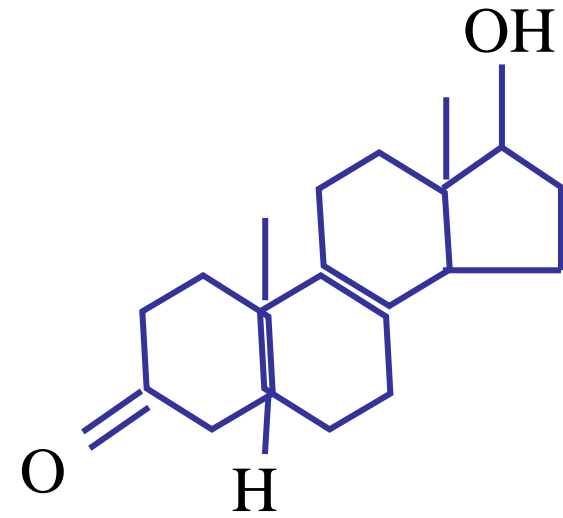
TESTOSTERONE



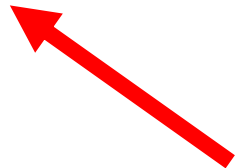
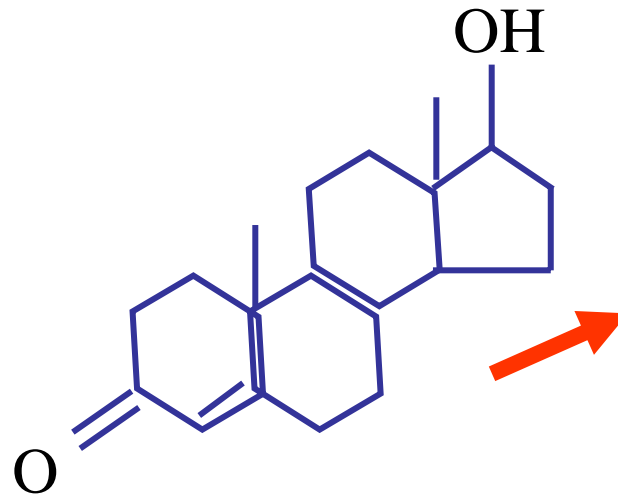
Estradiolo

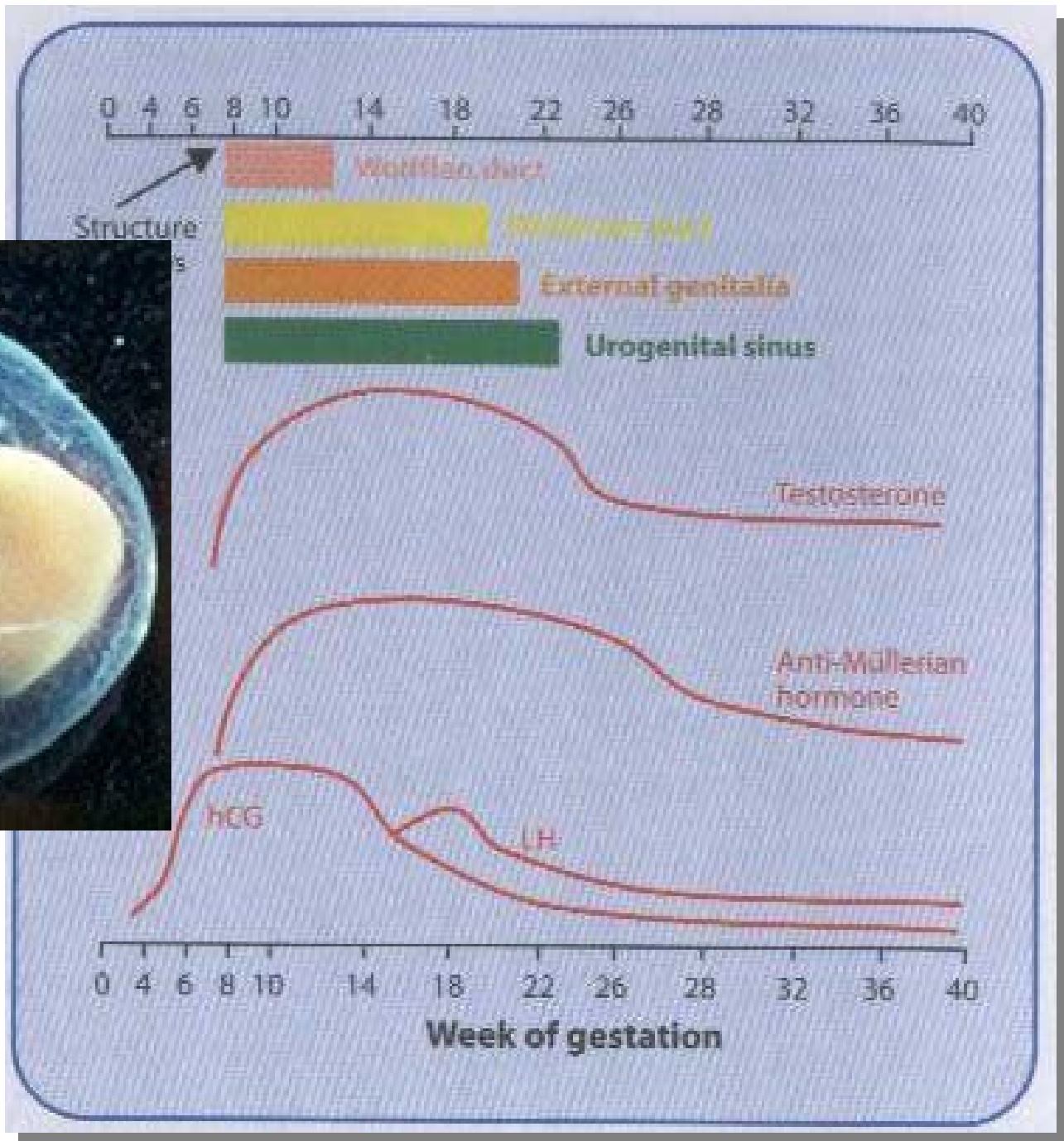


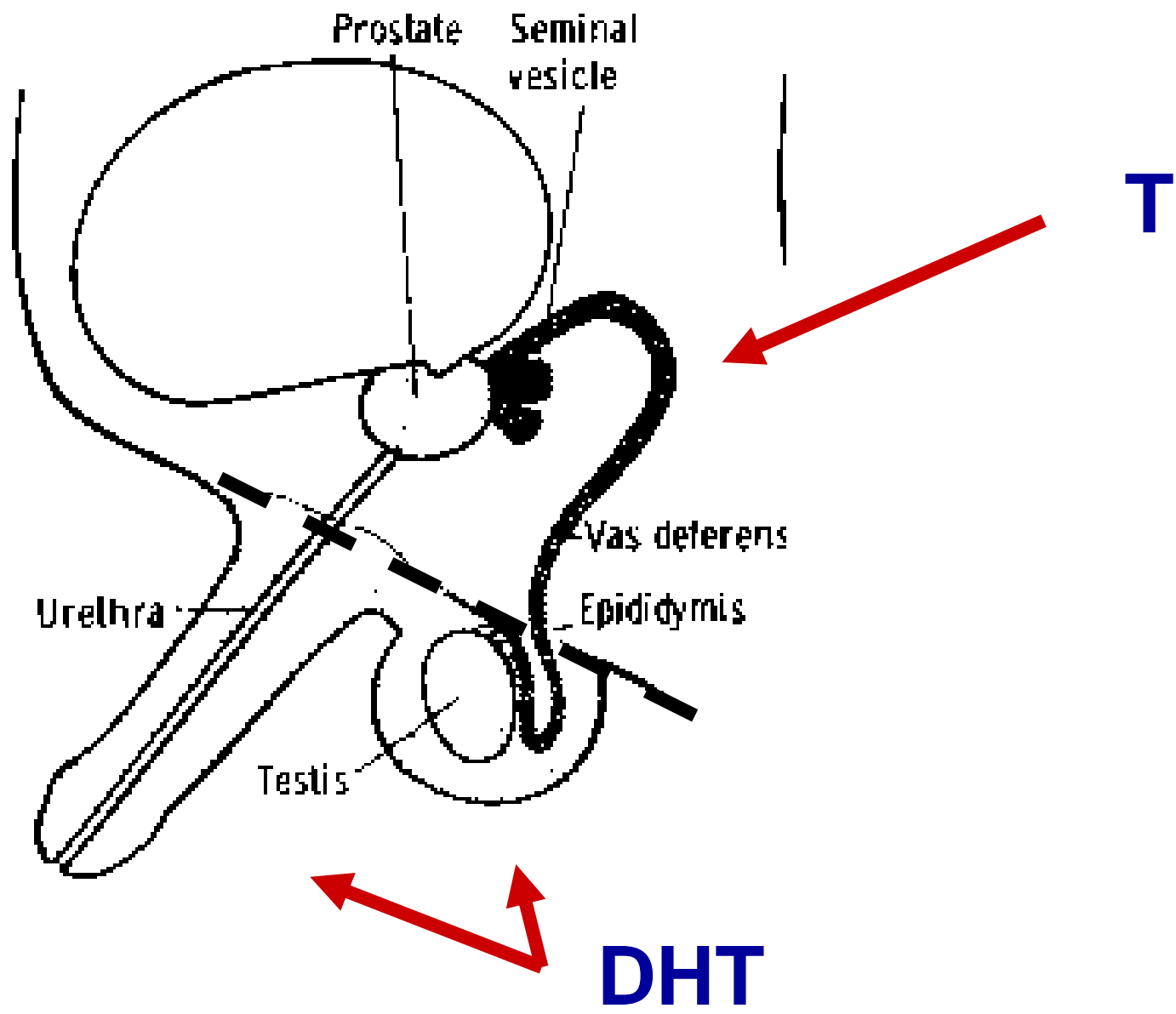
Diidrotestosterone



Testosterone







Abnormal Forms of Sexual Differentiation

Summary of Abnormal Forms of Sexual Differentiation

Condition	Cause	Predominant Gender Identity
Androgen insensitivity syndrome (AIS)		Feminine
DHT-deficiency syndrome		Masculine

= insegnamenti da
"esperimenti"
della natura

Abnormal Forms of Sexual Differentiation

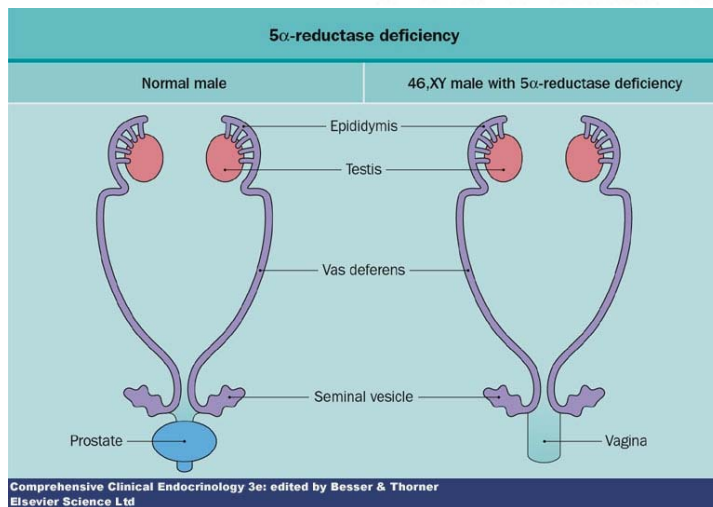
Summary of Abnormal Forms of Sexual Differentiation

<i>Condition</i>	<i>Cause</i>	<i>Typical Characteristics</i>	<i>Predominant Gender Identity</i>
Androgen insensitivity syndrome (AIS)			

Abnormal Forms of Sexual Differentiation

Summary of Abnormal Forms of Sexual Differentiation

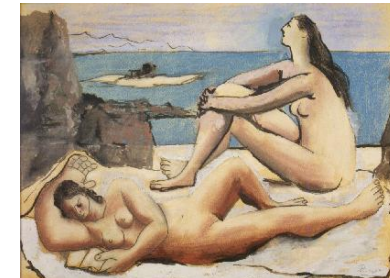
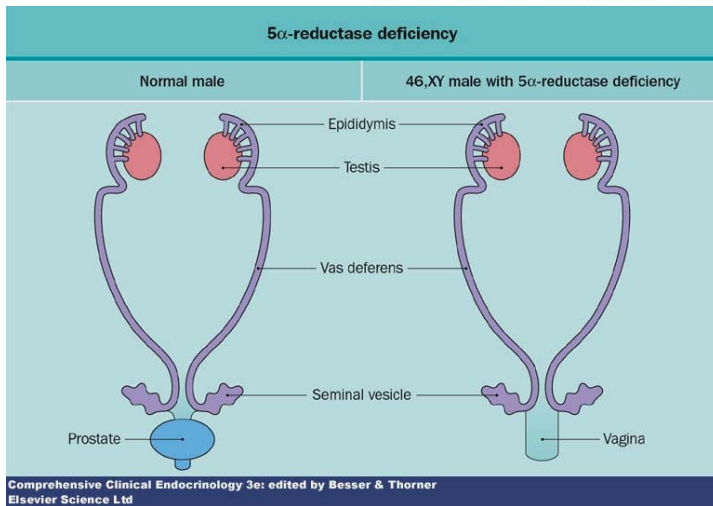
<i>Condition</i>	<i>Cause</i>	<i>Typical Characteristics</i>	<i>Predominant Gender Identity</i>
Androgen insensitivity syndrome (AIS)	Body cells of genetic males are unable to respond normally to testosterone		



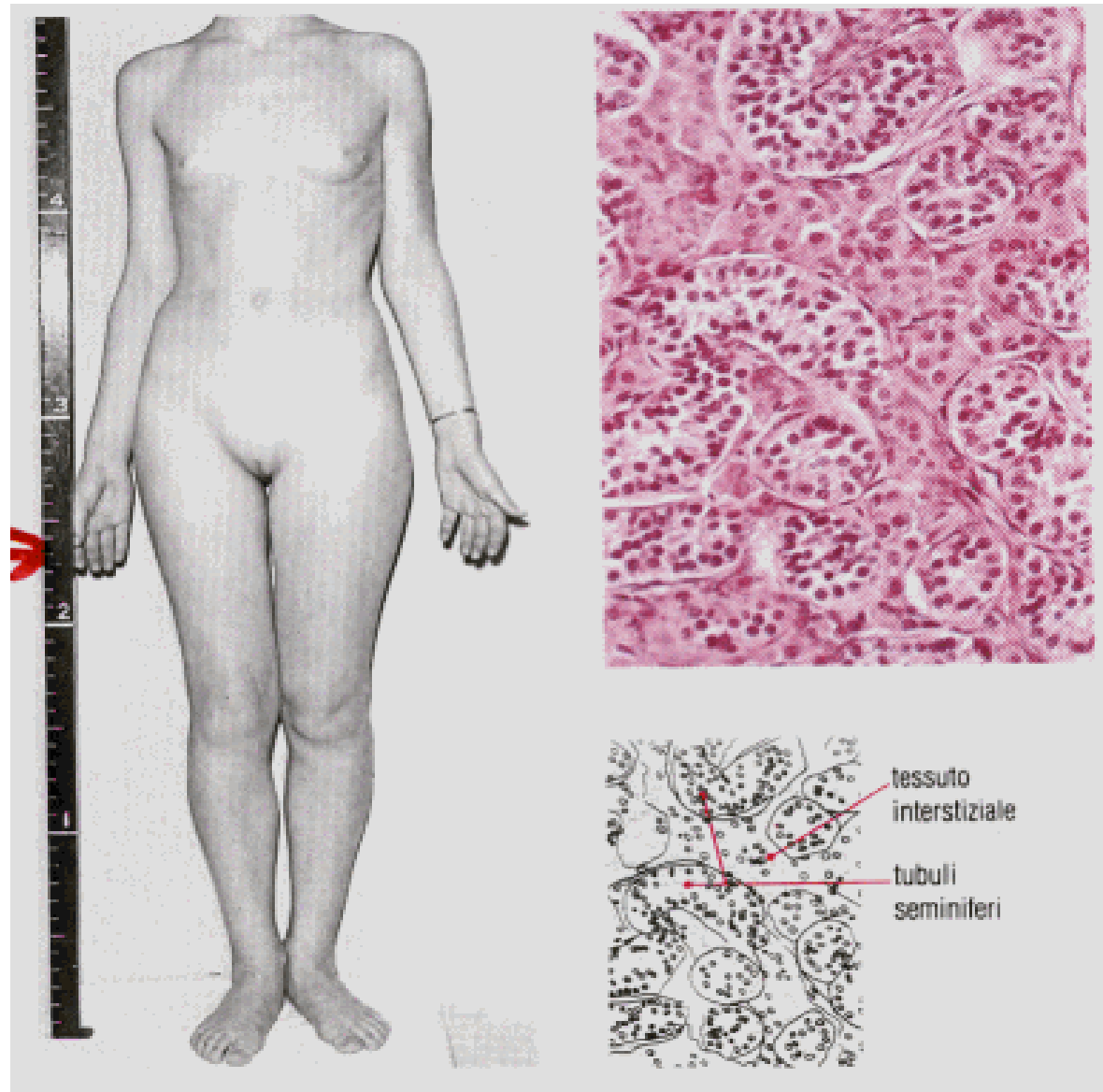
Abnormal Forms of Sexual Differentiation

Summary of Abnormal Forms of Sexual Differentiation

Condition	Cause	Typical Characteristics	Predominant Gender Identity
Androgen insensitivity syndrome (AIS)	Body cells of genetic males are unable to respond normally to testosterone	Genetic males (XY) are born with normal-appearing female genitals, and are usually raised as girls. At puberty, they develop breasts but cannot menstruate. Tend to behave in feminine ways.	Feminine



Sindrome da femminilizzazione testicolare completa (sindrome di Morris)



Abnormal Forms of Sexual Differentiation

Summary of Abnormal Forms of Sexual Differentiation

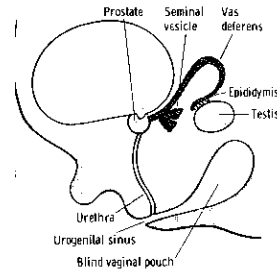
<i>Condition</i>	<i>Cause</i>	<i>Typical Characteristics</i>	<i>Predominant Gender Identity</i>
------------------	--------------	--------------------------------	------------------------------------

DHT-deficiency syndrome

Abnormal Forms of Sexual Differentiation

Summary of Abnormal Forms of Sexual Differentiation

<i>Condition</i>	<i>Cause</i>	<i>Typical Characteristics</i>	<i>Predominant Gender Identity</i>
------------------	--------------	--------------------------------	------------------------------------



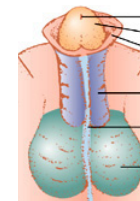
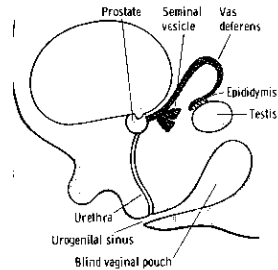
DHT-deficiency syndrome

Lack of enzyme necessary for normal development of male sex organs

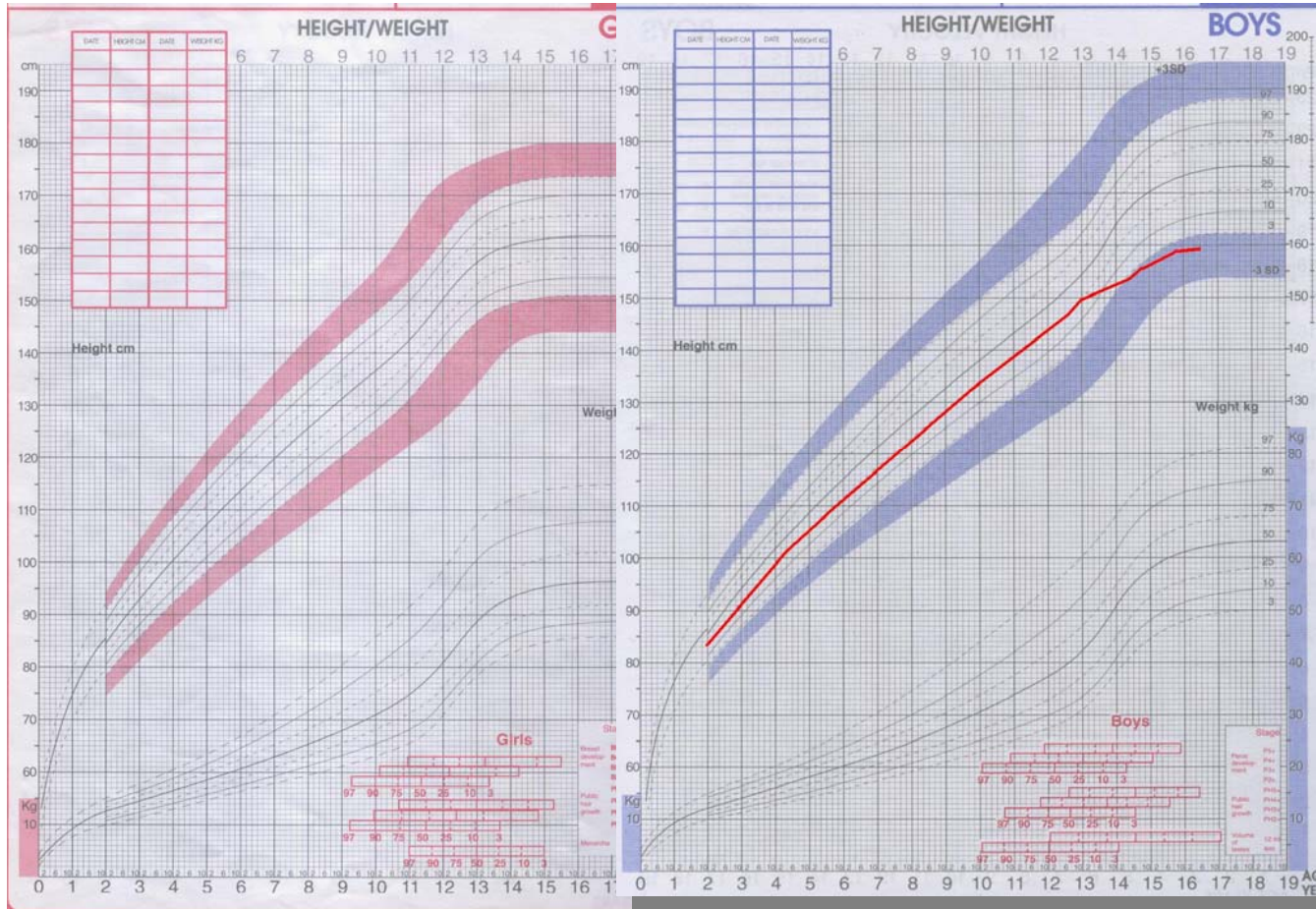
Abnormal Forms of Sexual Differentiation

Summary of Abnormal Forms of Sexual Differentiation

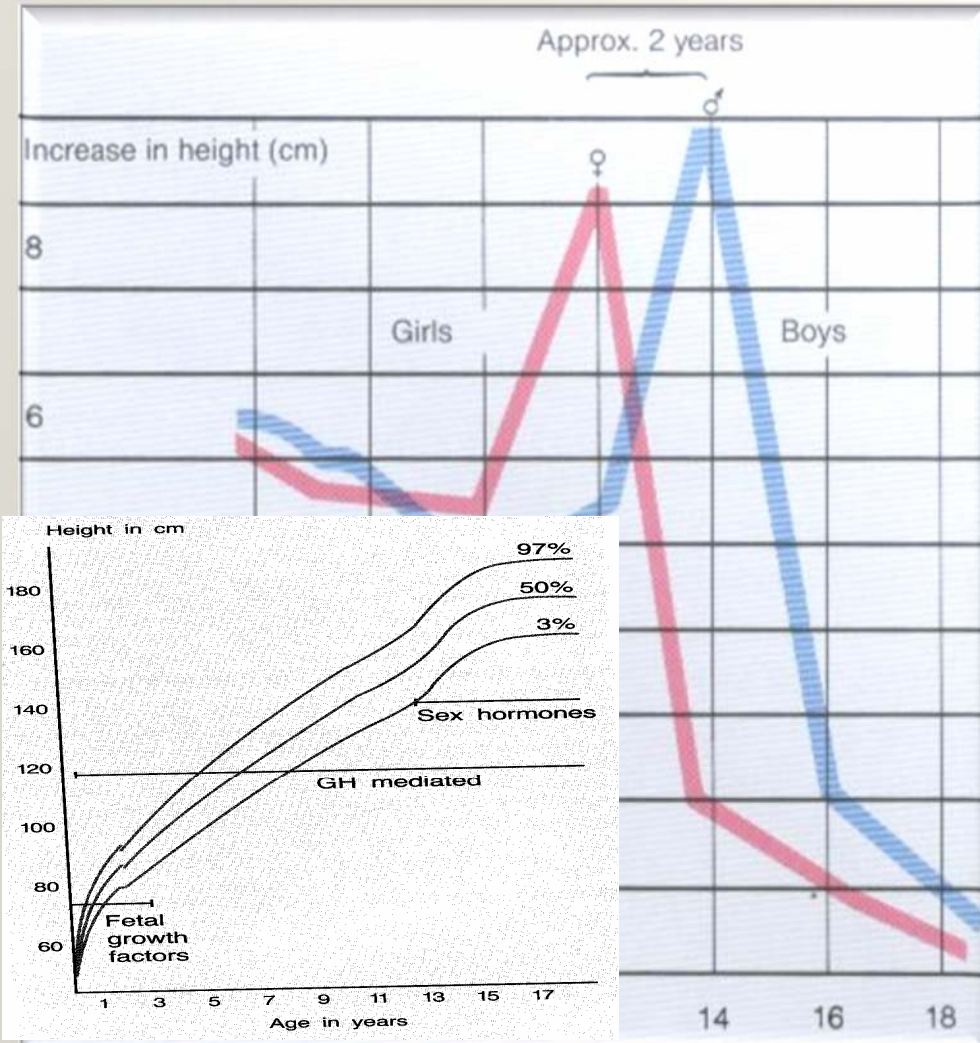
Condition	Cause	Typical Characteristics	Predominant Gender Identity
DHT-deficiency syndrome	Lack of enzyme necessary for normal development of male sex organs	Genetic males (XY) are born with genitalia that tend to appear female . At puberty, they begin to develop masculine secondary characteristics, and may live as males.	Masculine



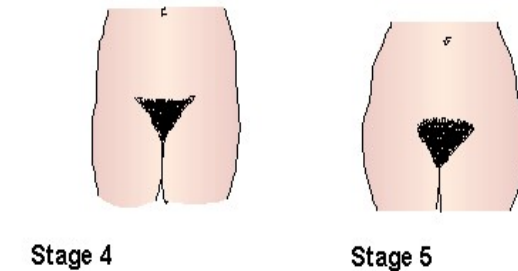
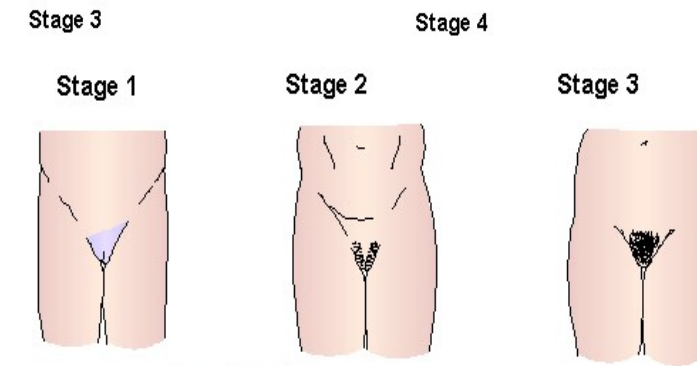
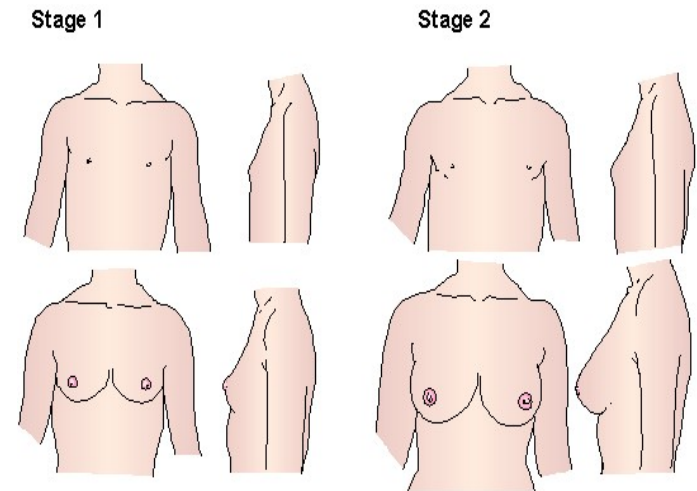
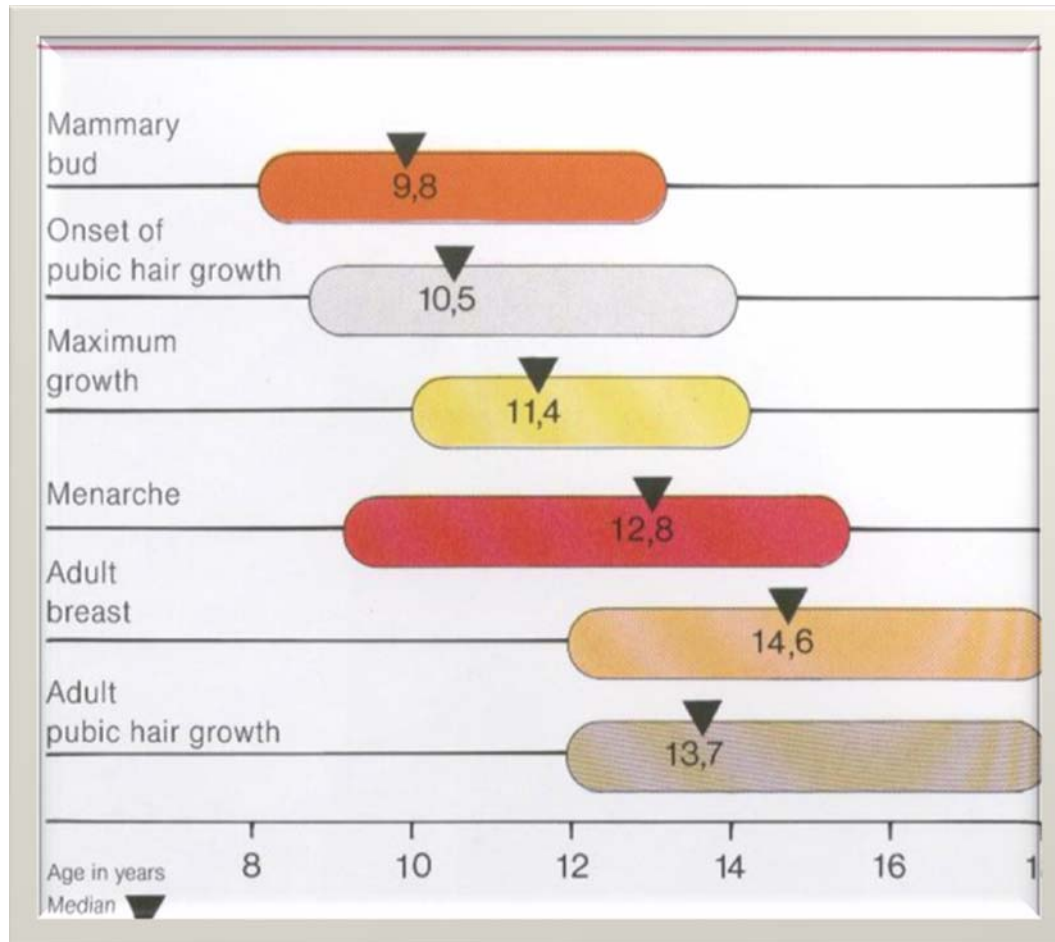


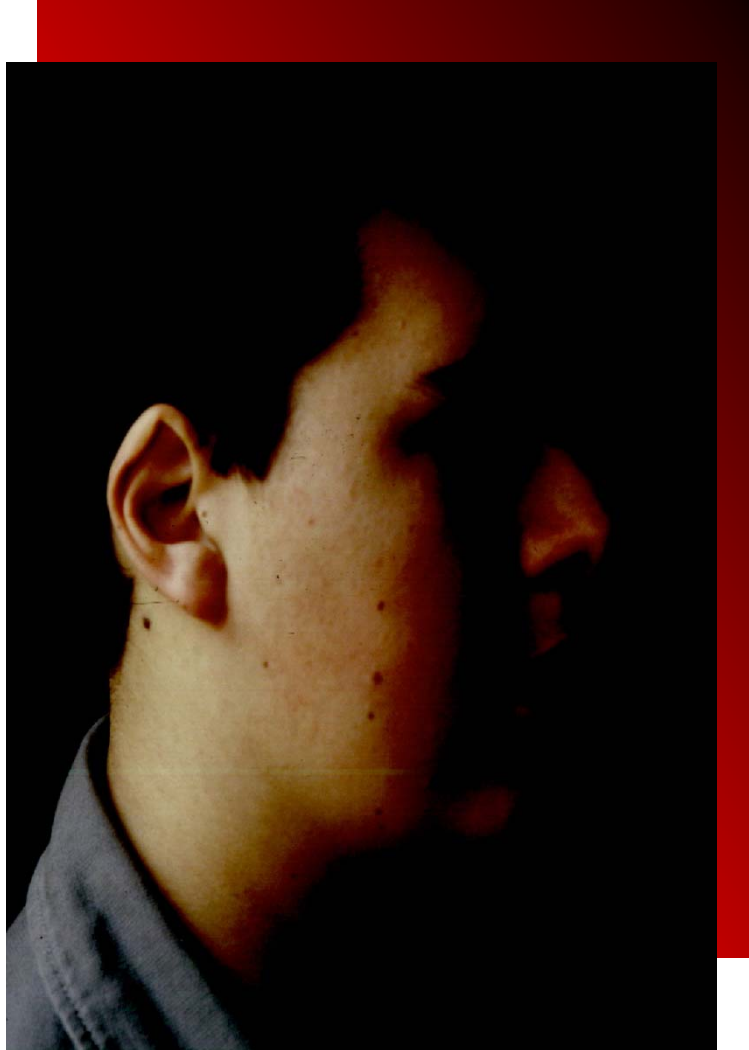
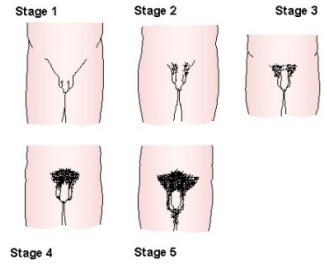
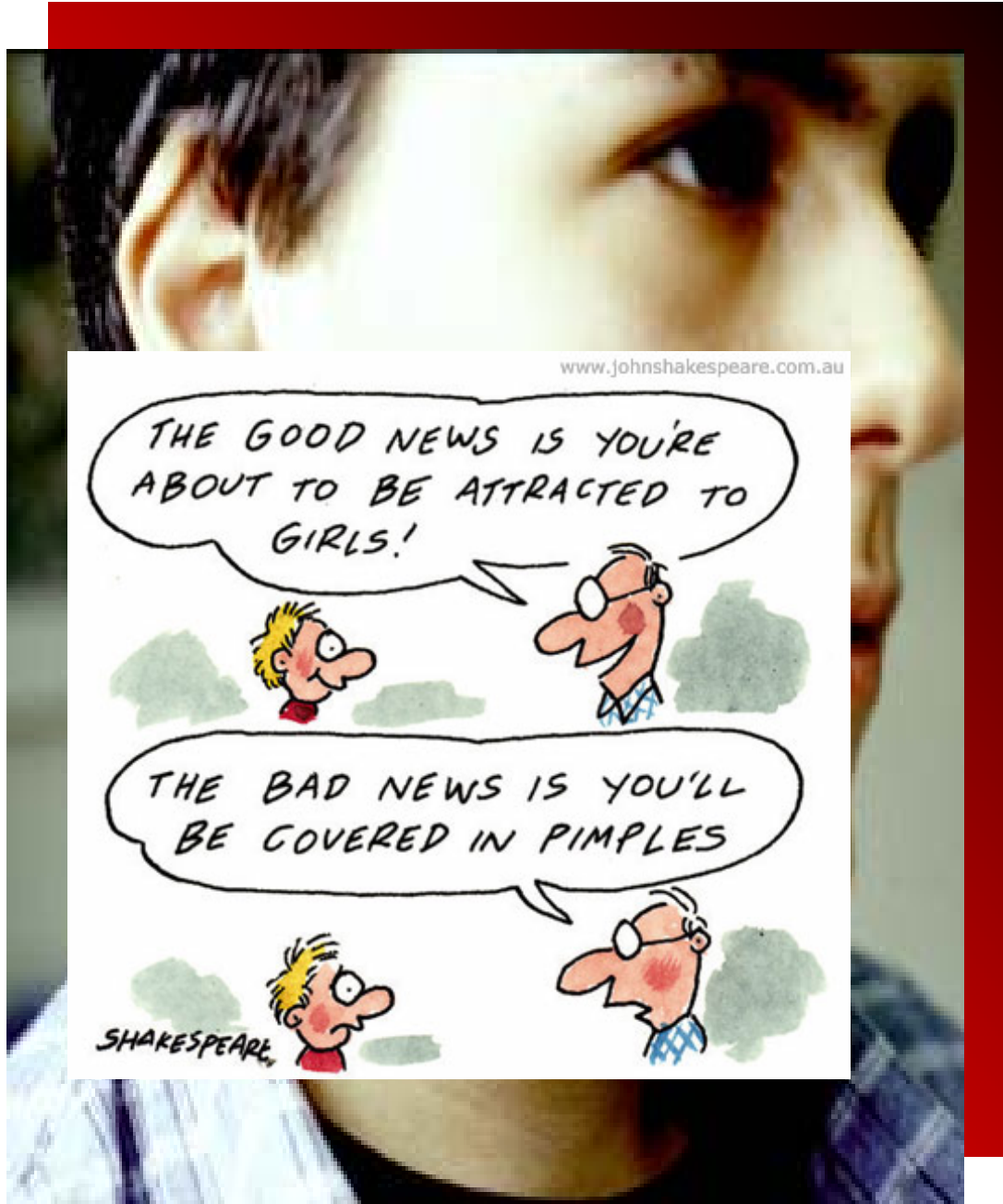


pubertà



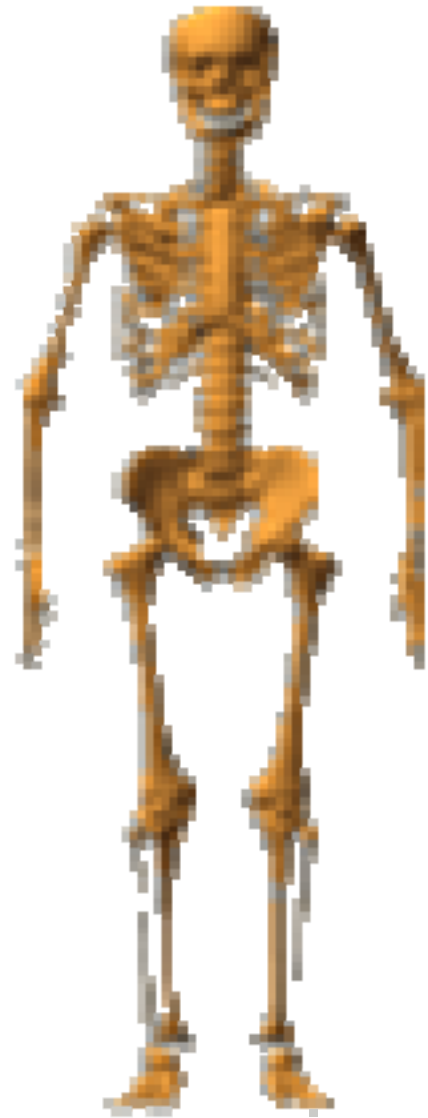
Comparsa delle caratteristiche sessuali secondarie



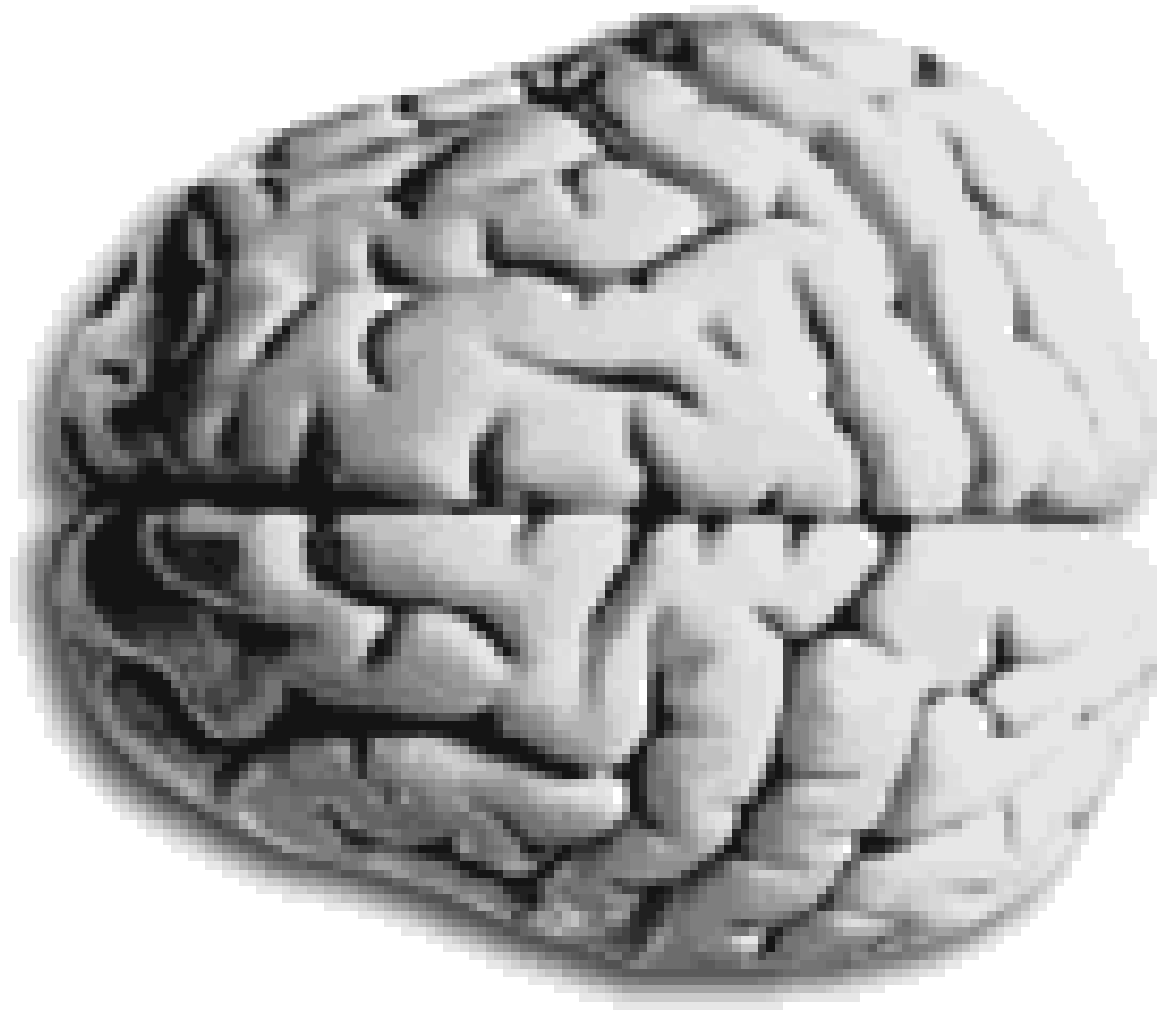
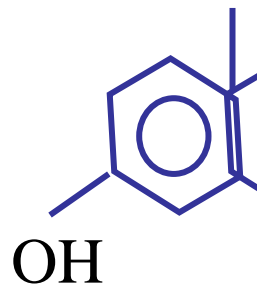


***mantenimento
delle
caratteristiche
sessuali
secondarie***

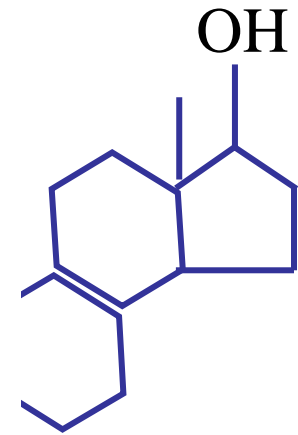


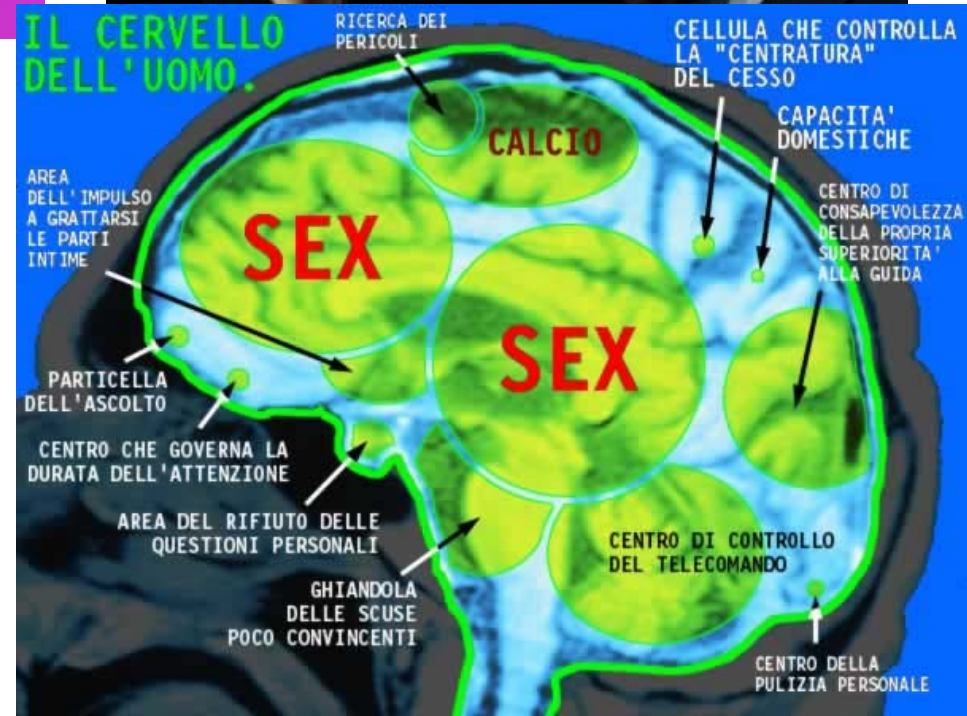
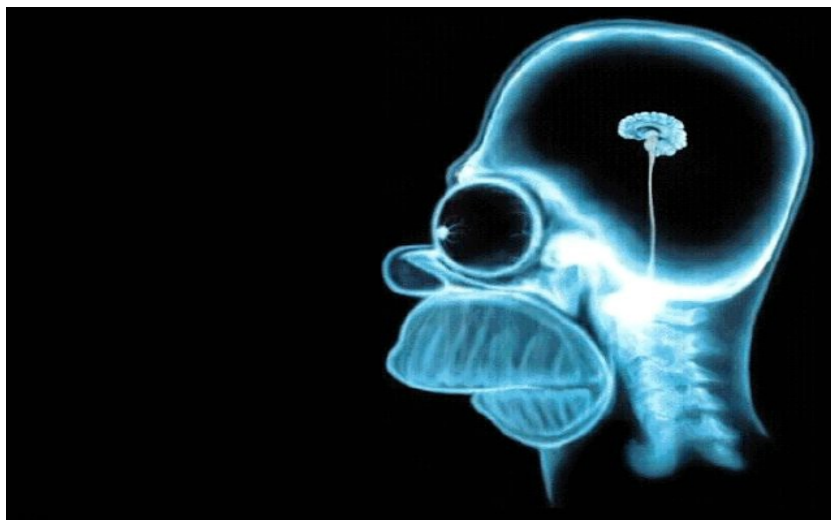
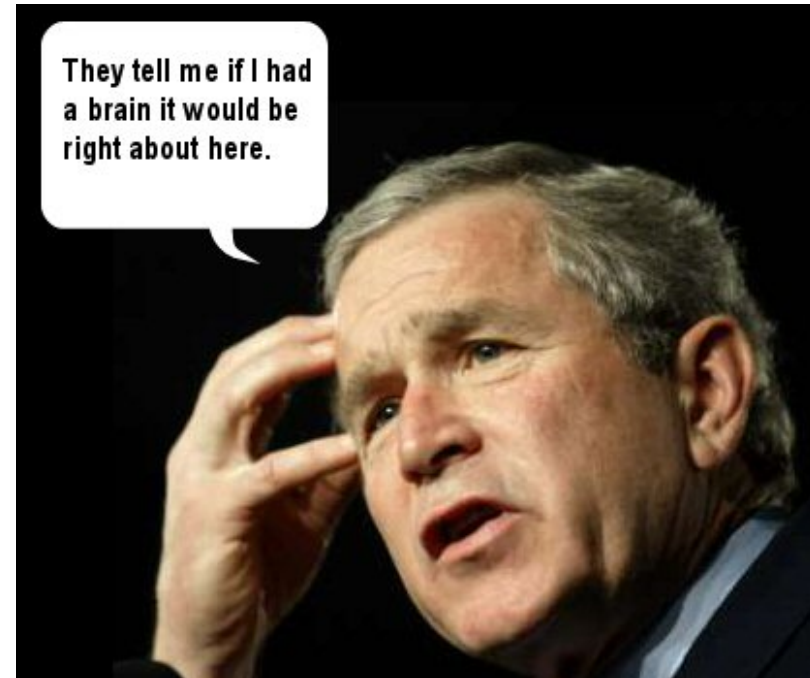
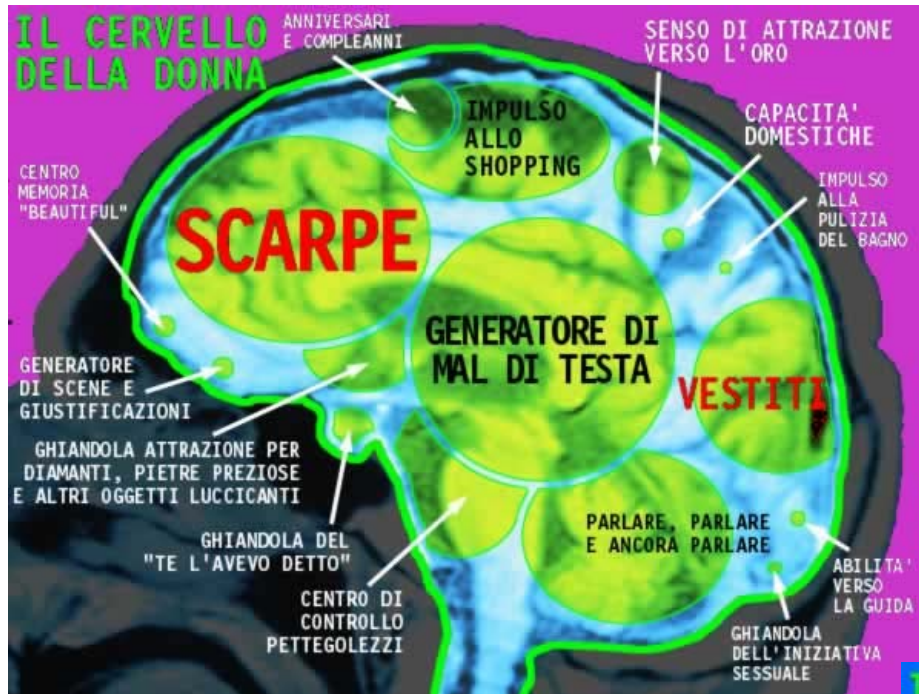


Estra

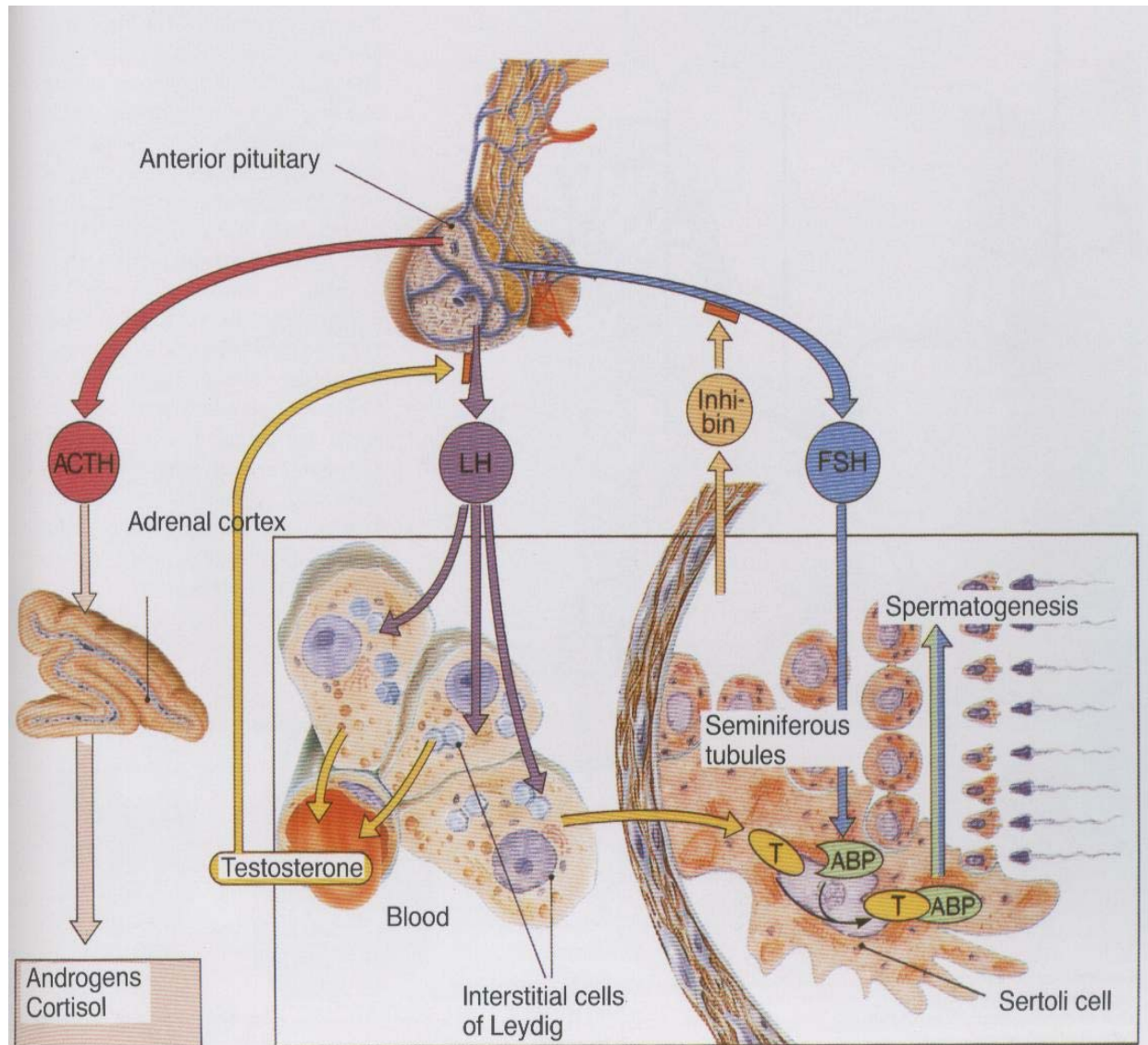


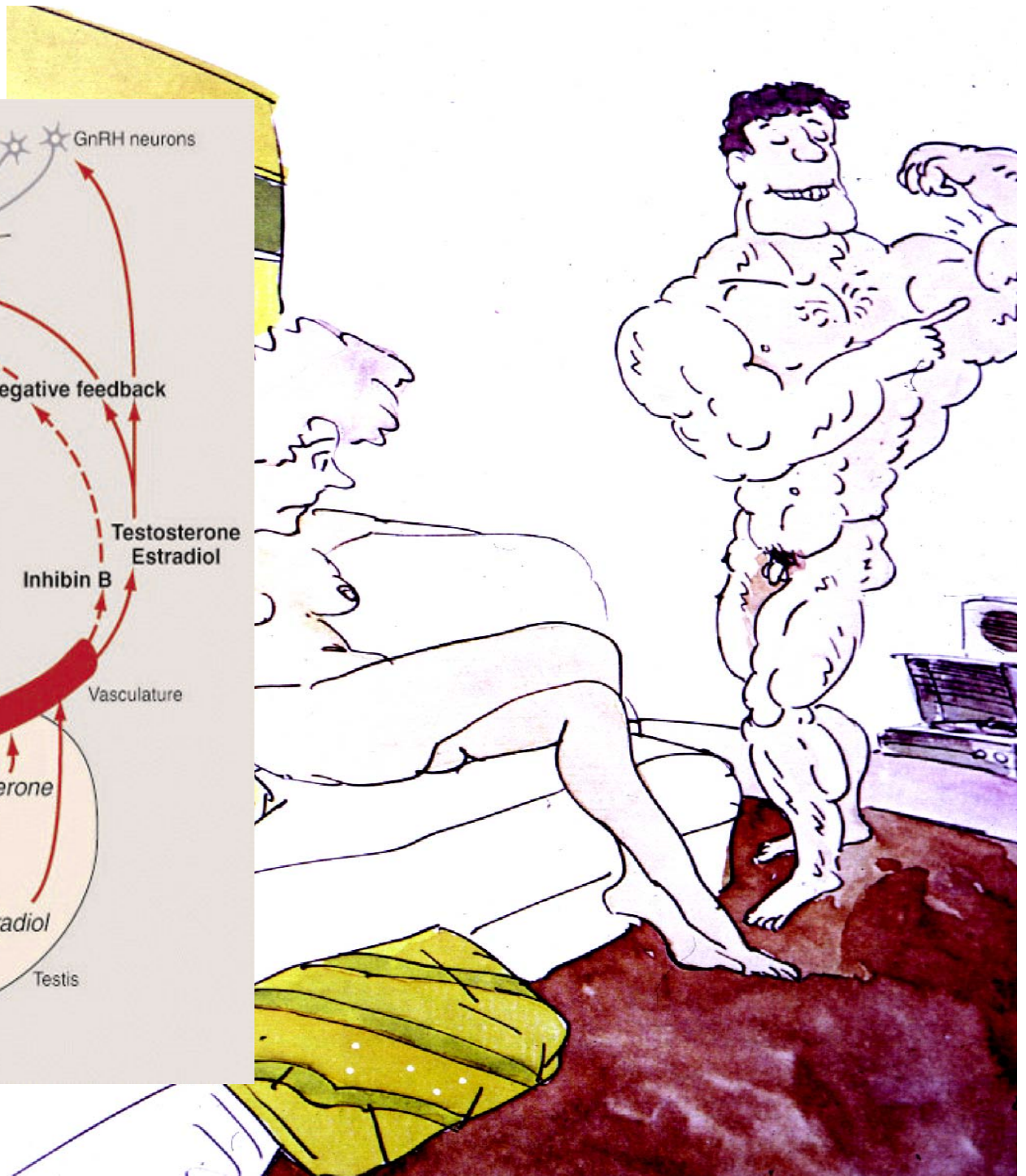
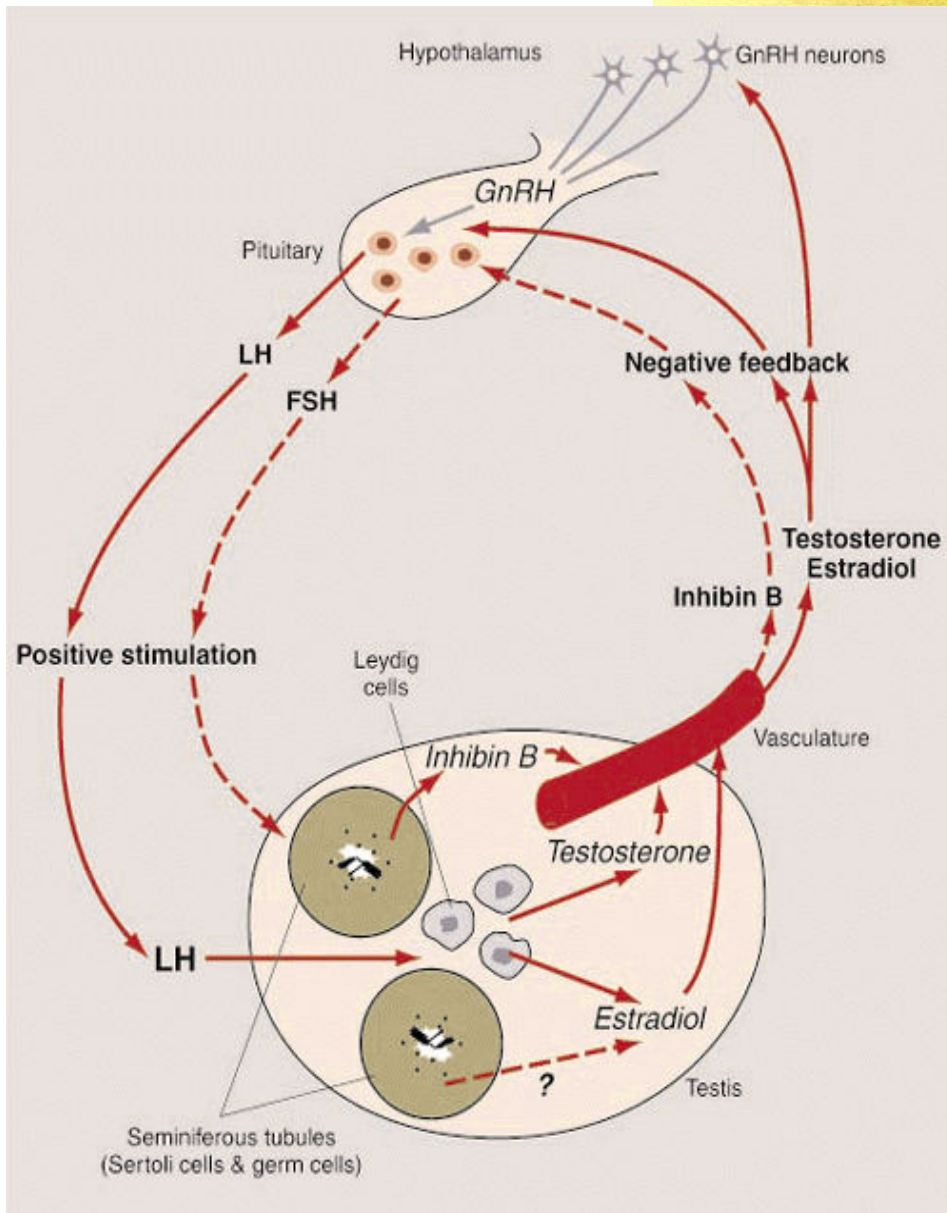
terone



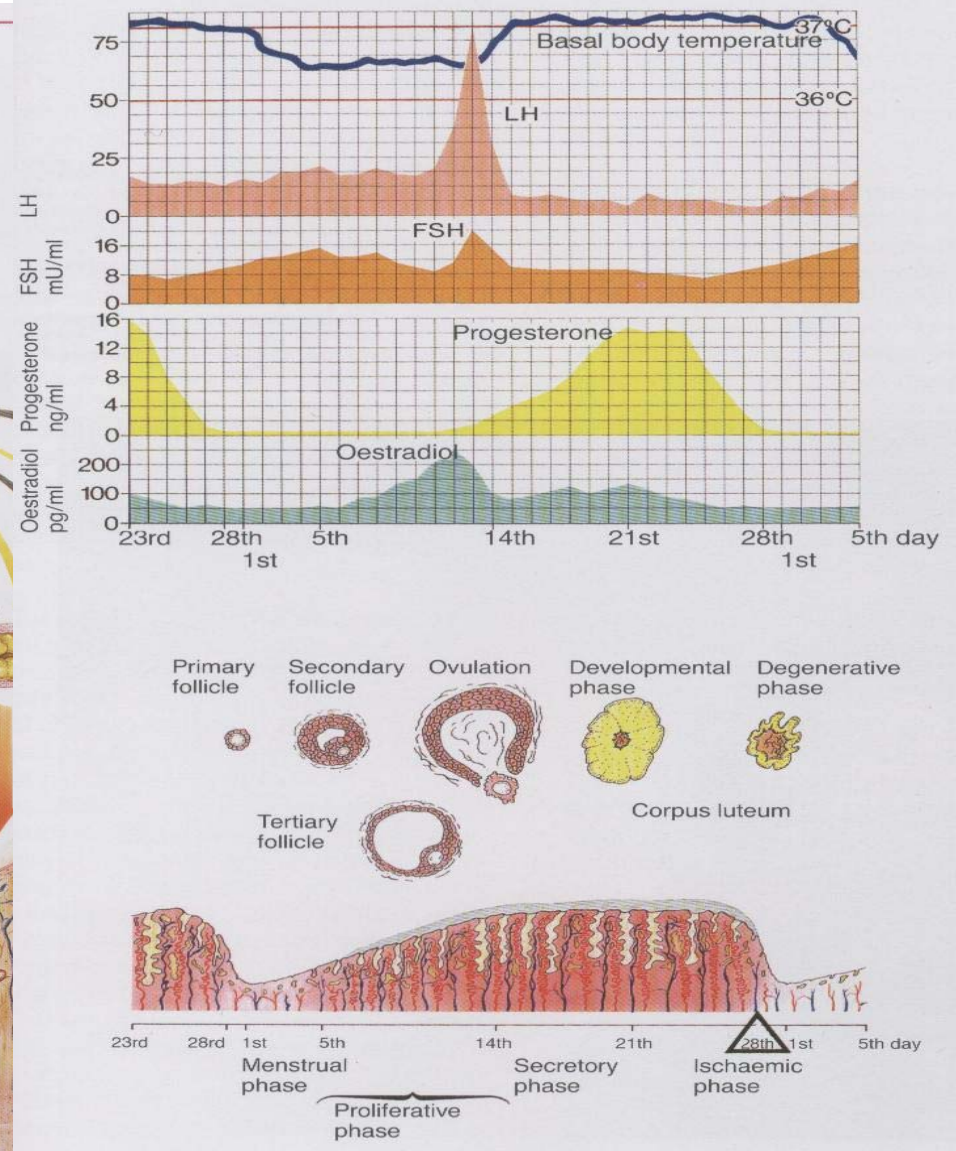


Sistema riproduttivo maschile





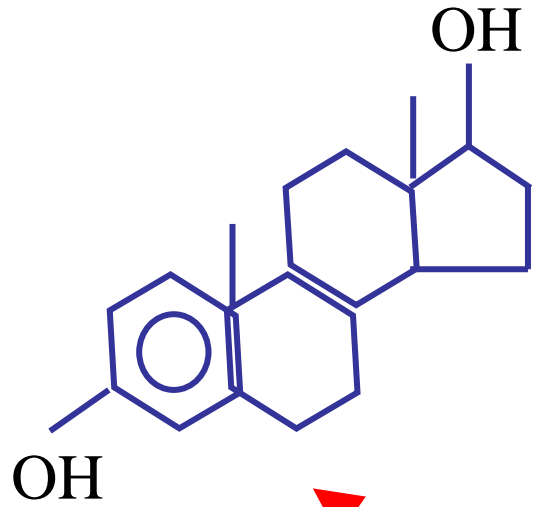
Sistema riproduttivo femminile



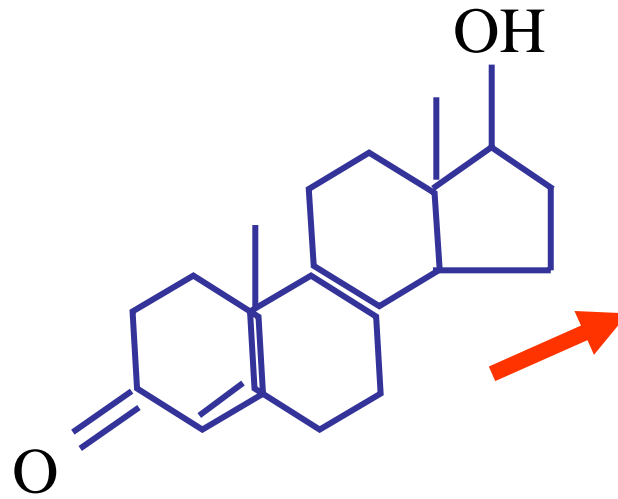
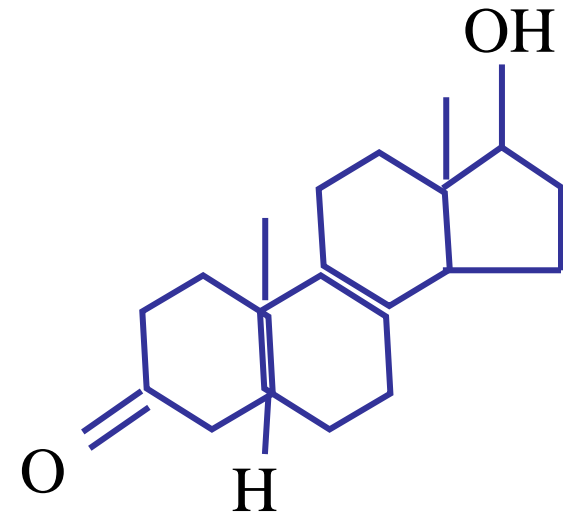




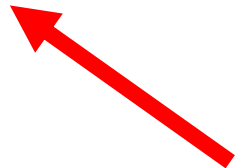
Estradiolo



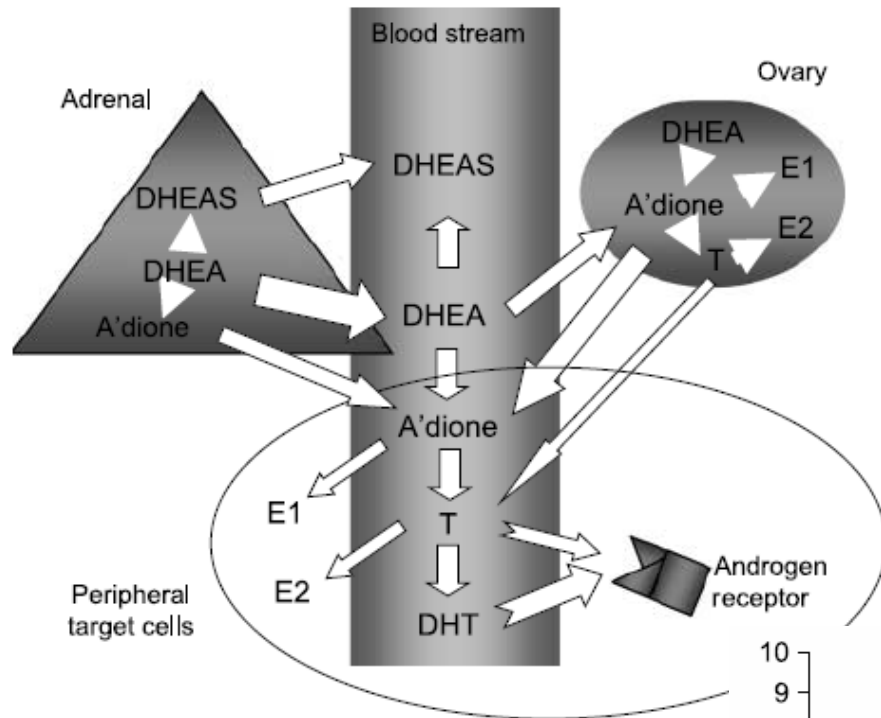
Diidrotestosterone



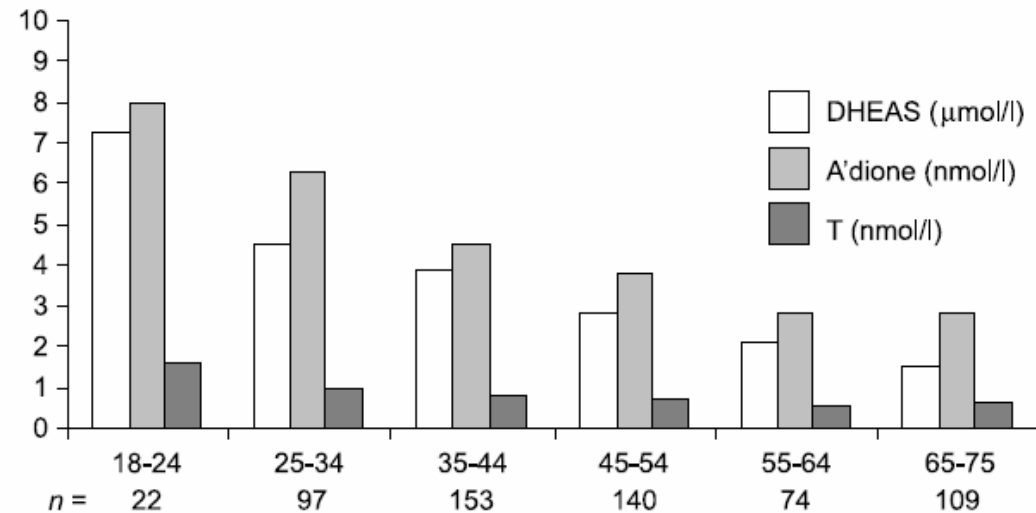
Testosterone



Sintesi degli androgeni nella donna



Art, EJE, 2006

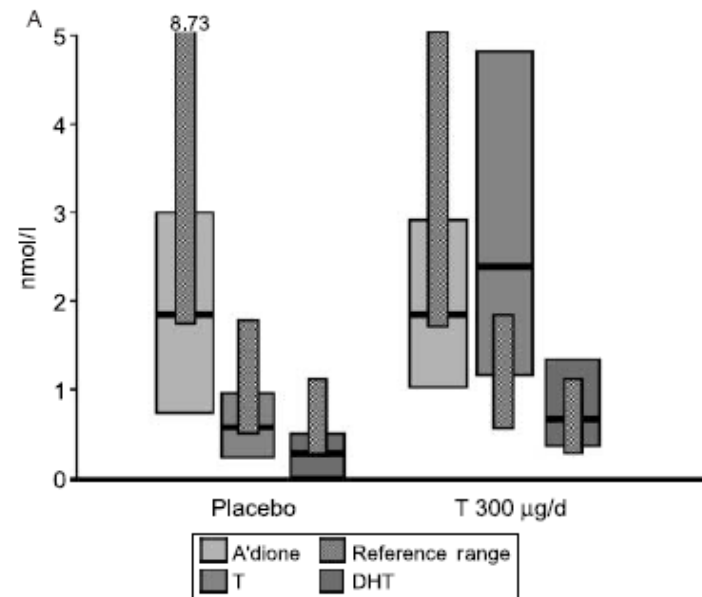


Deficit androgenico nella donna ???

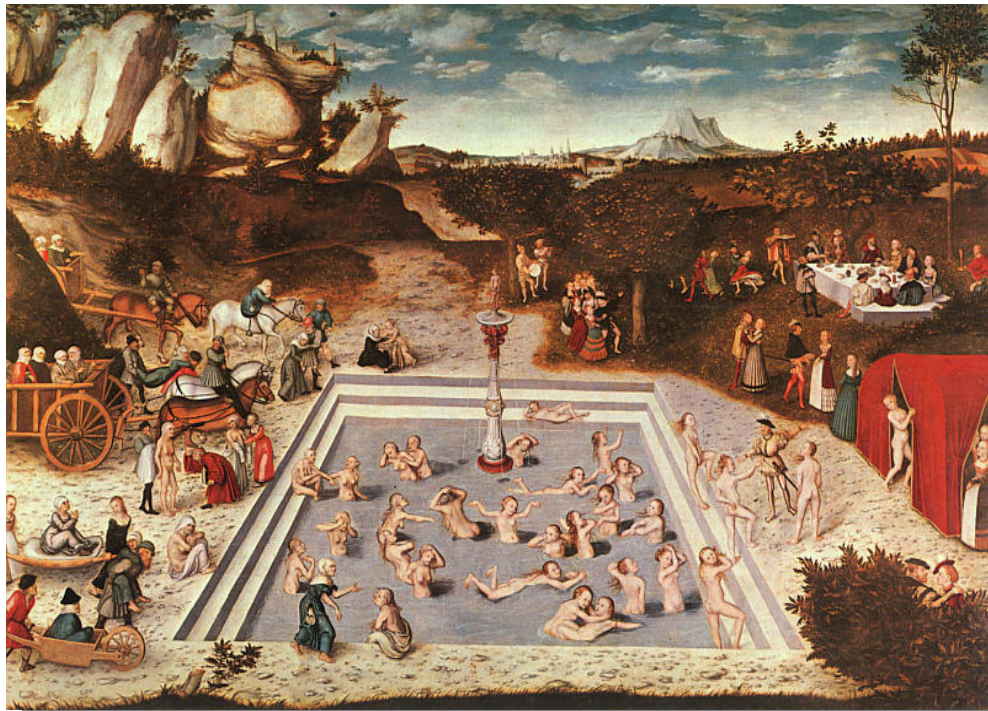
- Livelli di androgeni inferiori al primo quartile della norma (post ovariectomia)
- Normale estrogenizzazione (anche mediante ERT)
- Diminuita libido

Terapia sostitutiva androgenica nella donna ???

- Esperienza limitata, dati scarsi e preliminari
- Rischio di sovradosaggio
- Rischio di effetti collaterali



La fontana della giovinezza



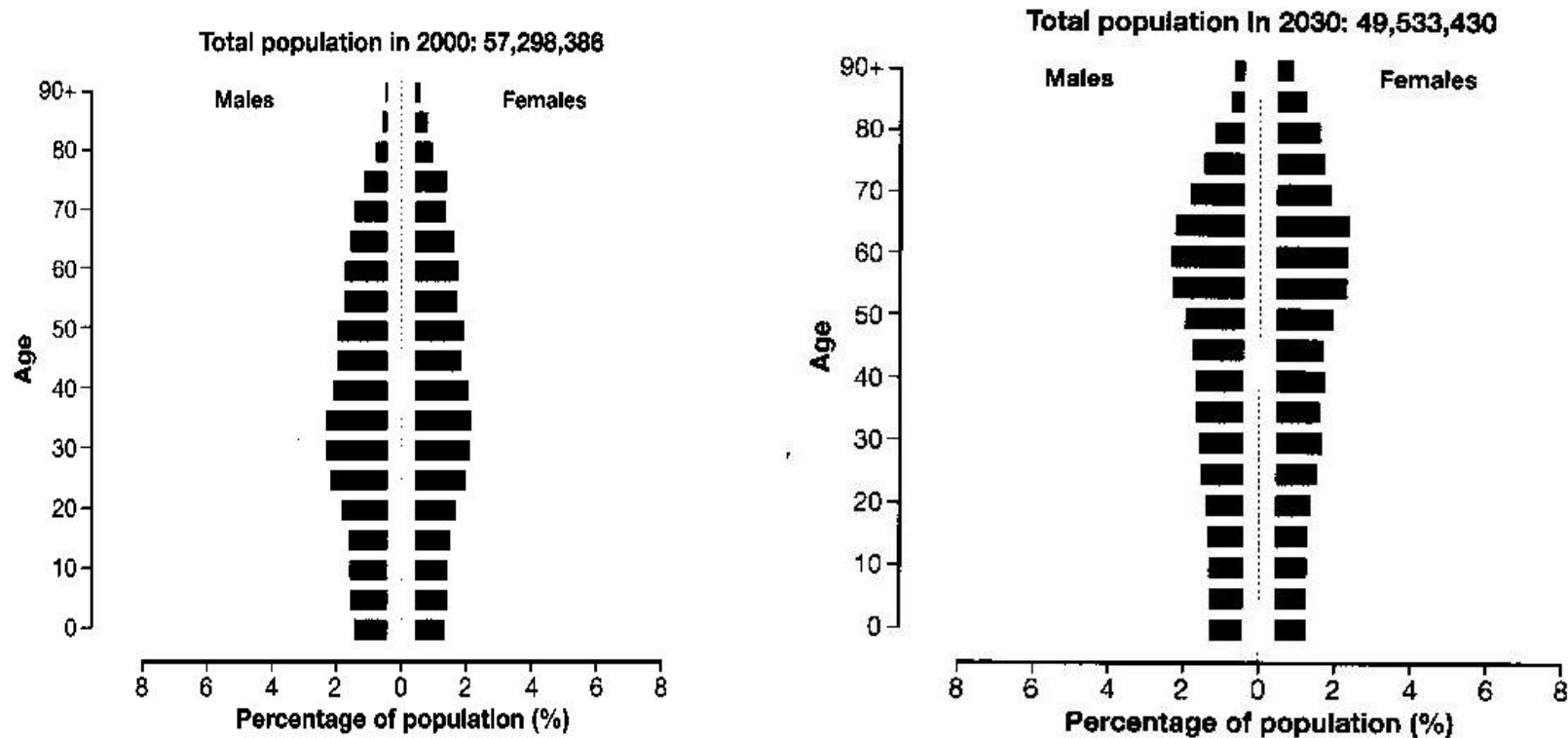
Lucas Cranach

Le 3 età della donna



duhrer

Un mondo di...over 65



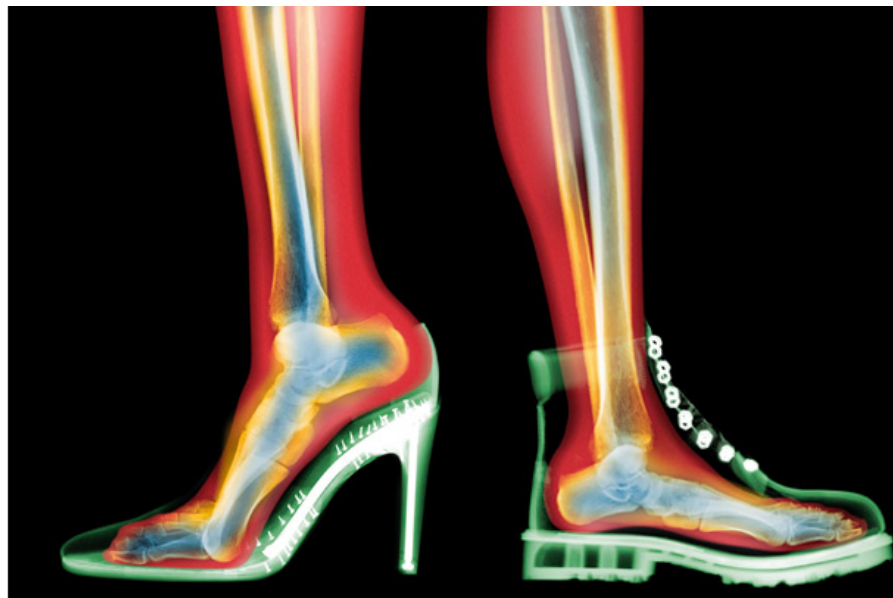
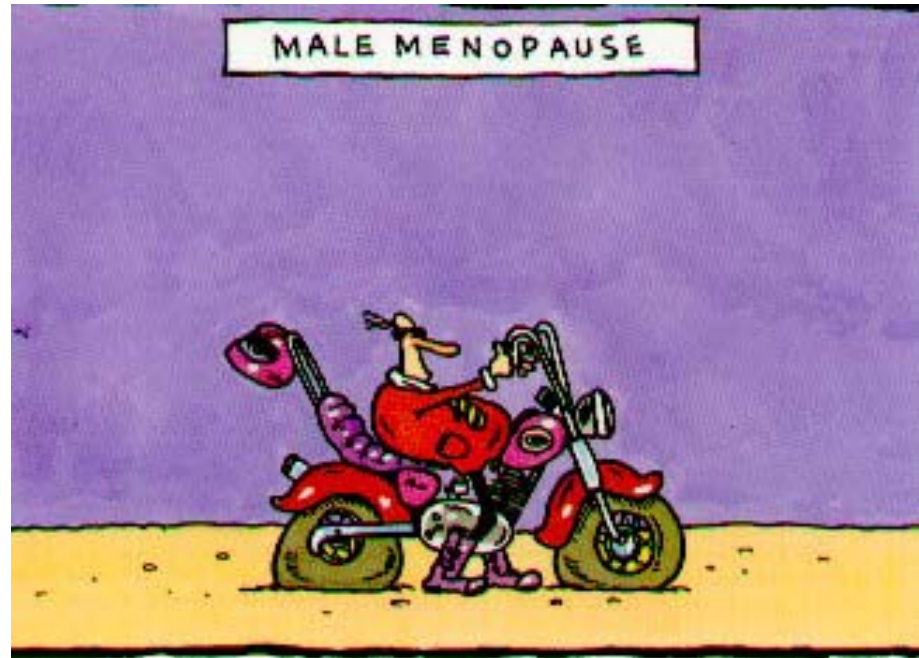
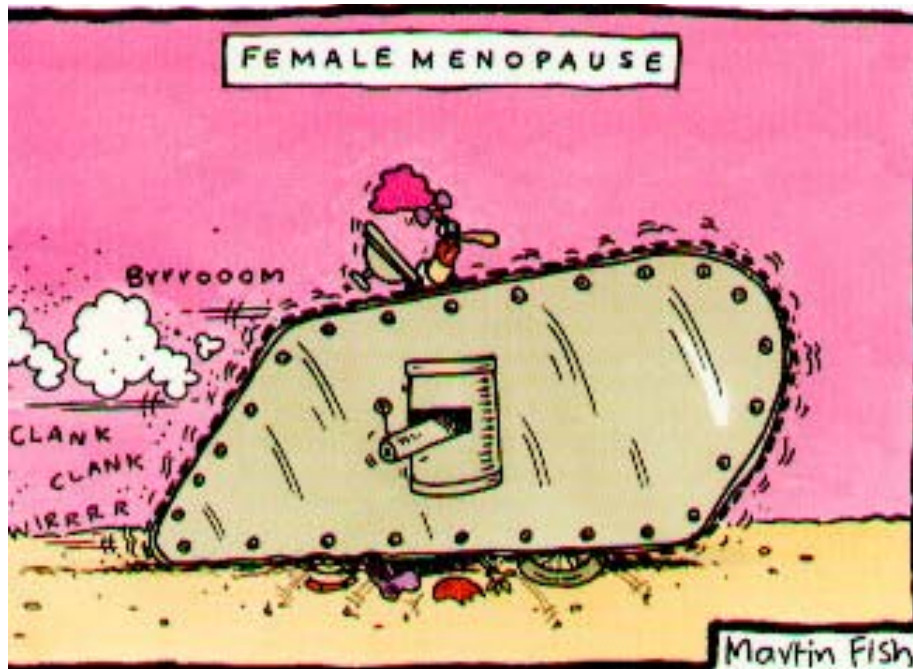
Nel 2025 gli over 65 costituiranno più del 15% della popolazione: nel 1950 erano il 5%!!

NIH report, 2001

Effetti dell'invecchiamento sul Sistema Endocrino

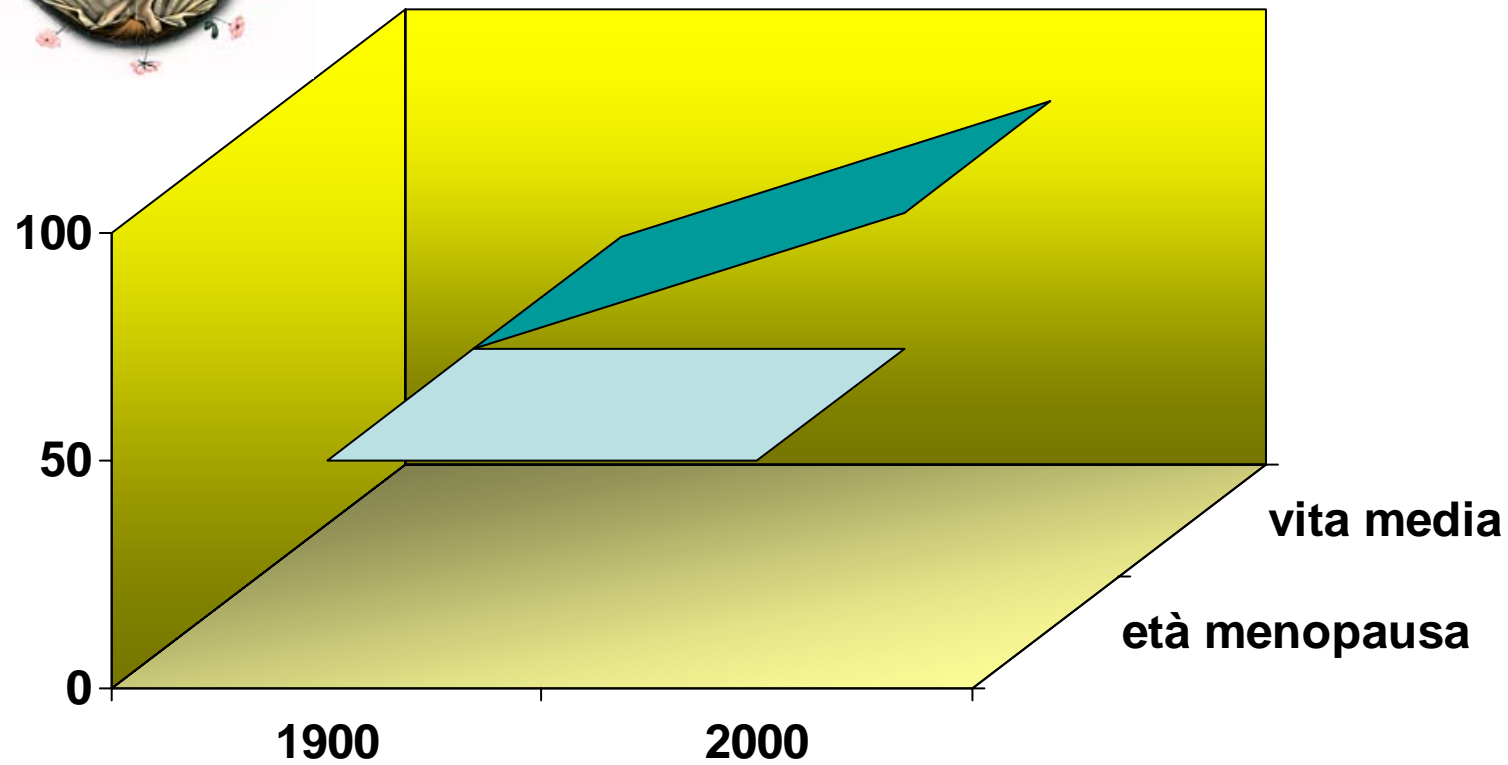


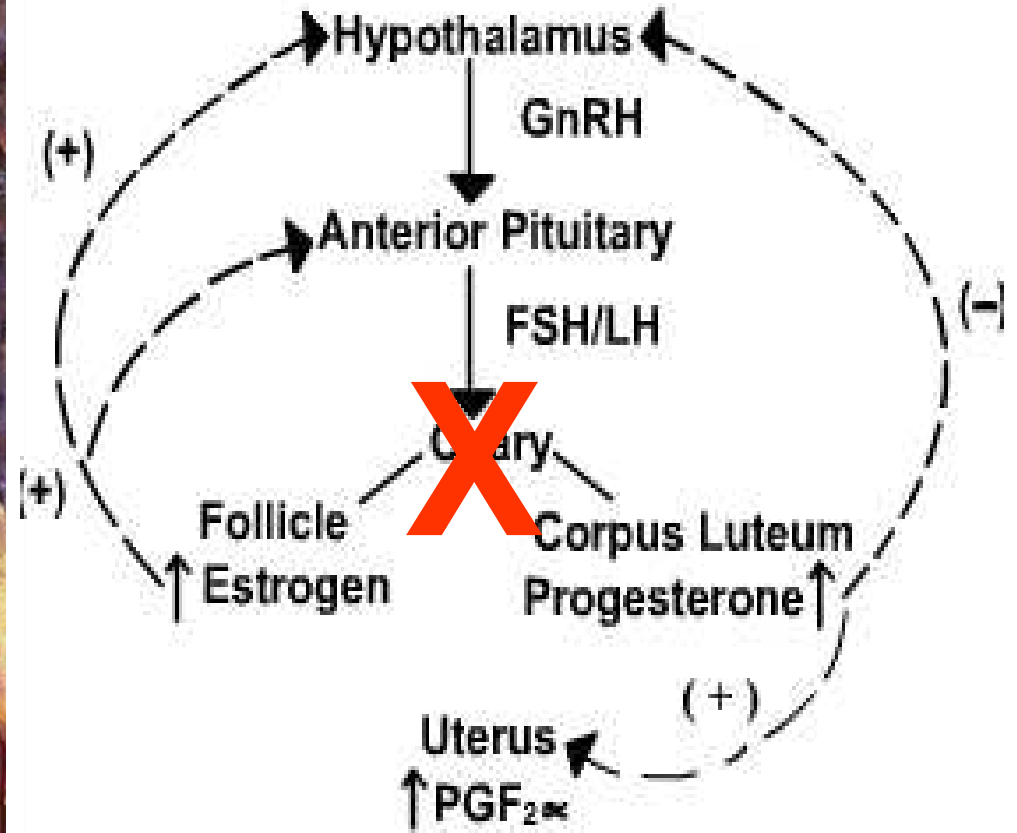
- Declino della funzionalità ovarica
➡ Menopausa
- Declino della secrezione di GH
➡ Somatopausa
- Declino della funzionalità testicolare
➡ Andropausa ??
PADAM
LOH

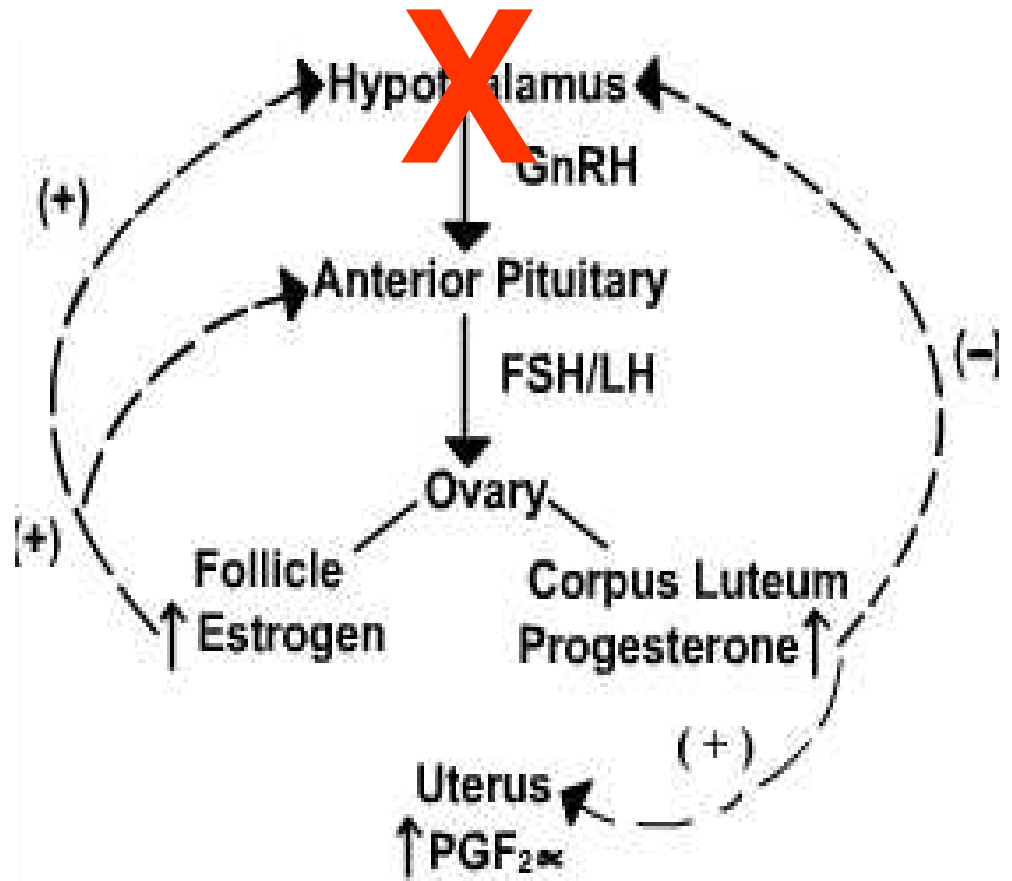




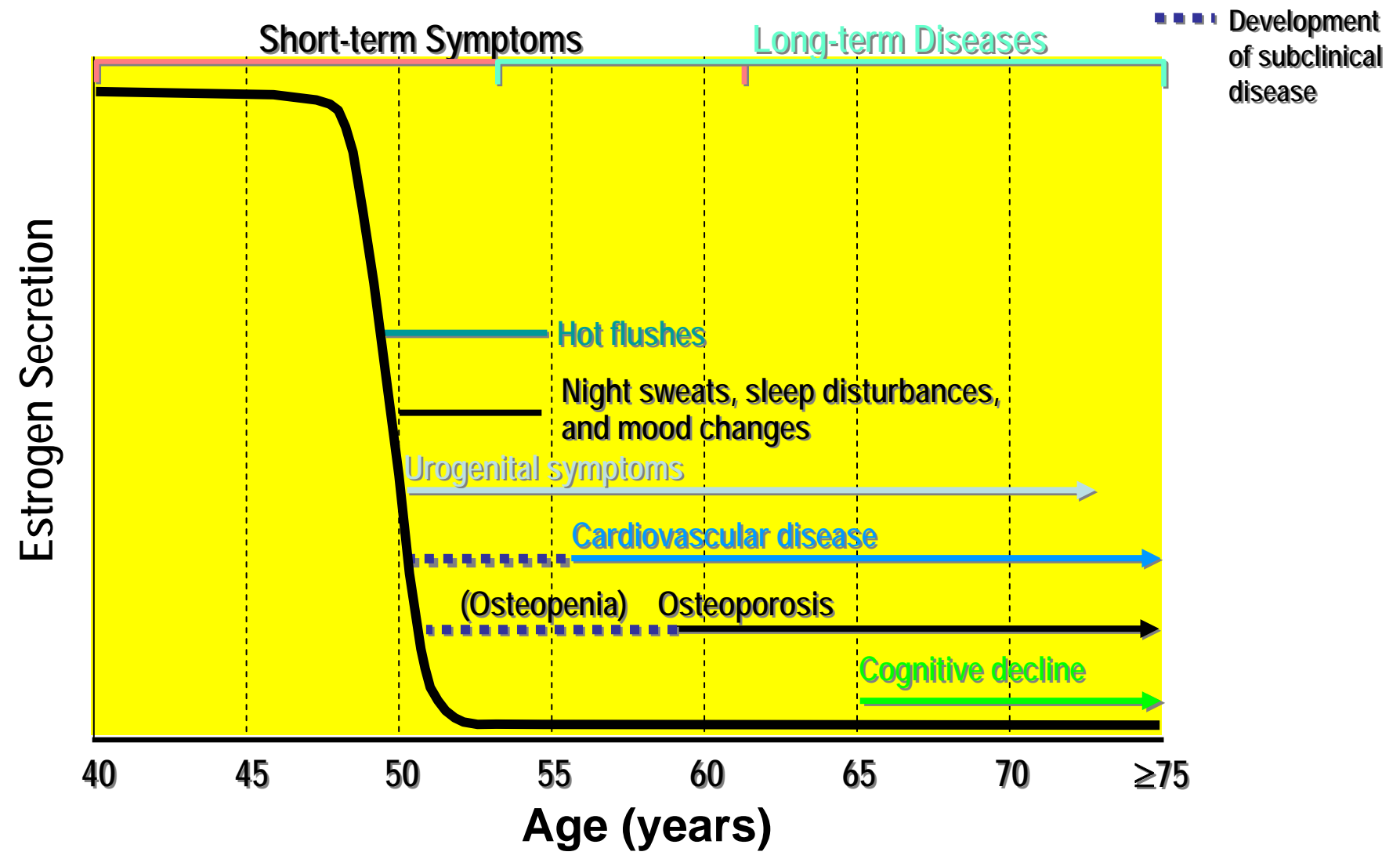
Tendenza secolare





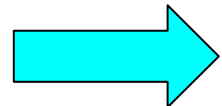


Menopause, Age, and Manifestations of Health Risks Over Time

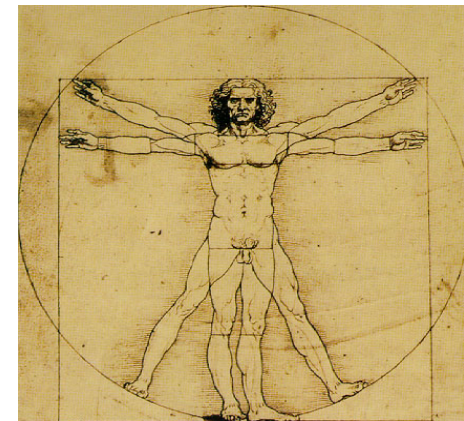


Caratteristiche Cliniche dell'anziano

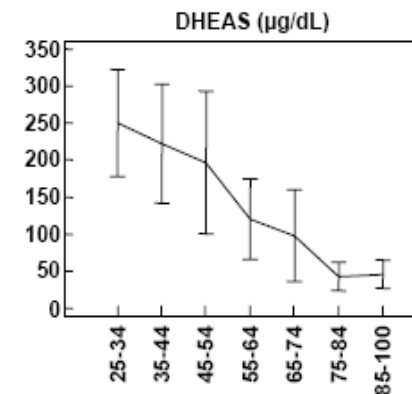
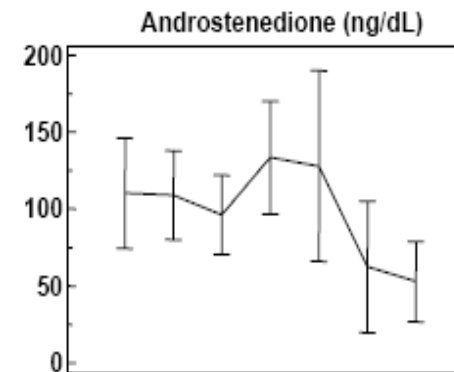
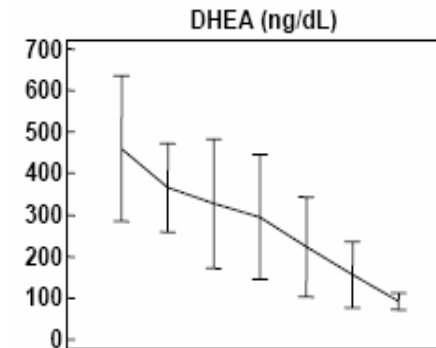
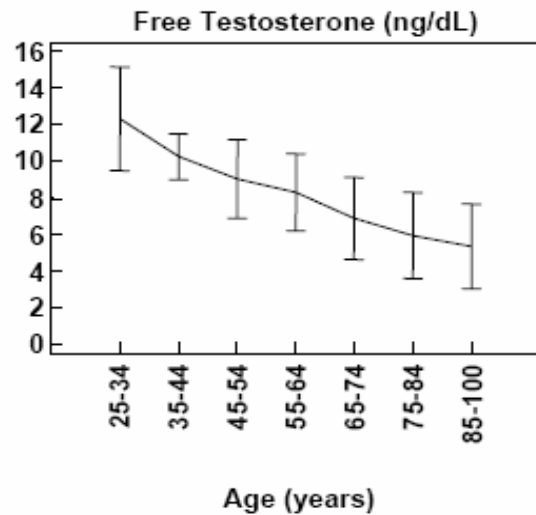
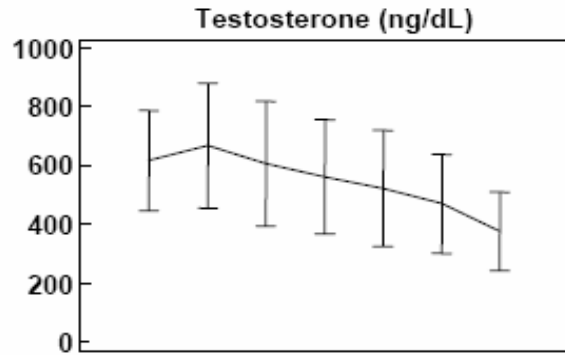
- Riduzione del senso di benessere**
- Riduzione della memoria e capacità cognitive**
- Riduzione della massa ossea**
- Modificazione del profilo lipidico**
- Cambiamento composizione corporea**
- Riduzione forza e massa muscolare**
- Riduzione attività sessuale spontanea e provocata**



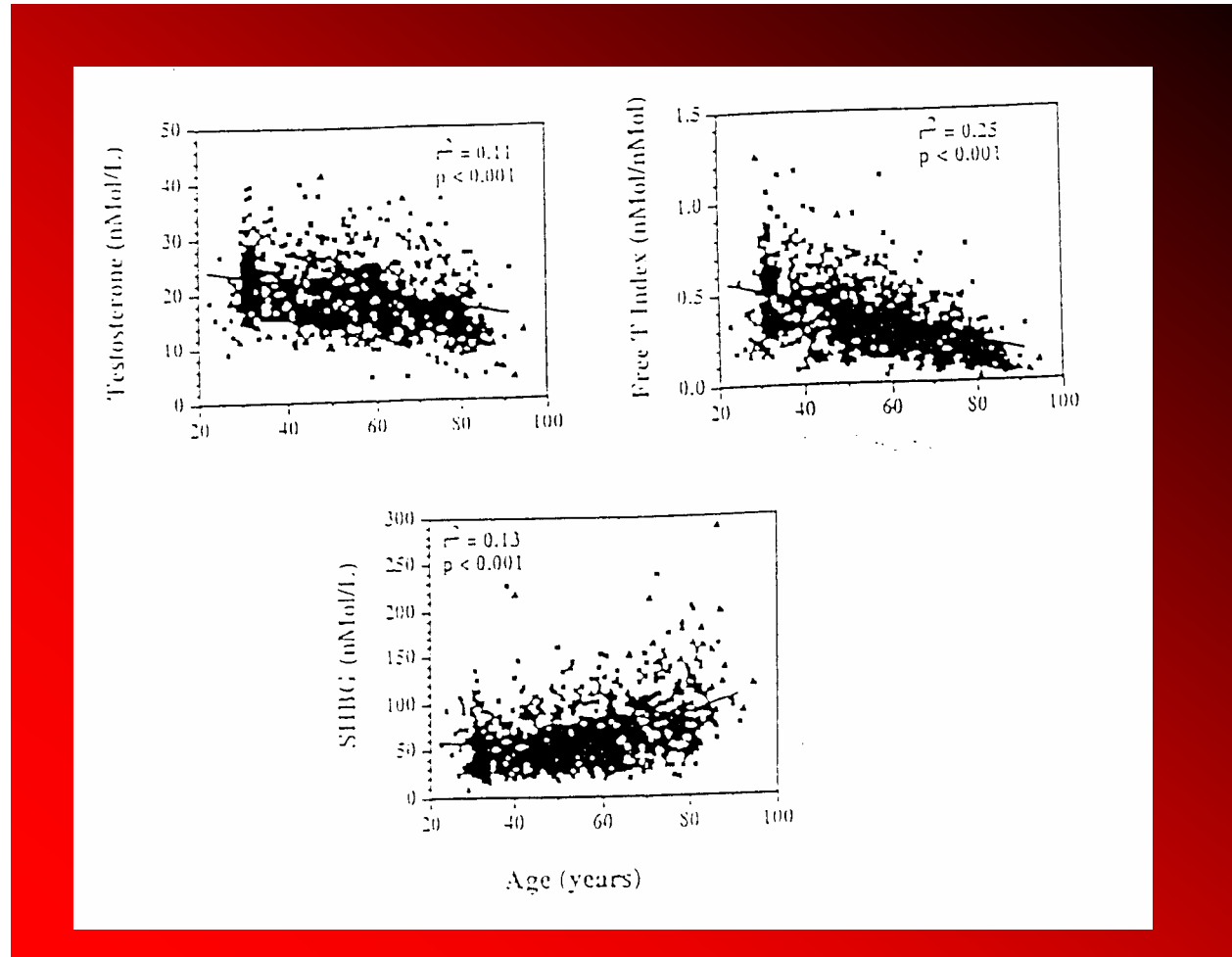
ricordano quelli dell'ipogonadico



Androgeni ed invecchiamento



Testosterone, SHBG and Free Testosterone Index vs Age in Healthy Men



S. M. Hartman, E.J. Metter et al, JCEM 2001

Stile di vita
Abuso di alcool
Fumo
Droghe

Fattori Ambientali e
Esposizione a tossici

Trattamenti
farmacologici

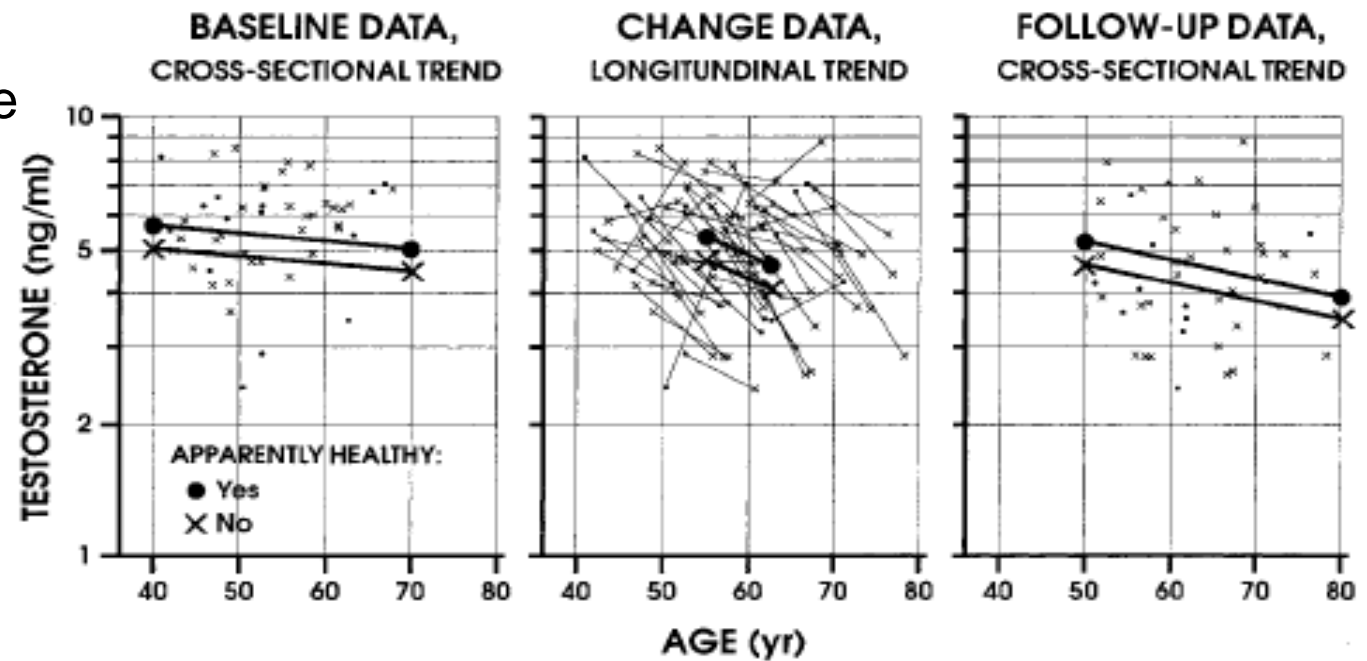
Funzione Testicolare
Fertilità
Libido
Potenza
Sistema Neuroendocrino

Malattie
Invecchiamento
Obesità

Attività Lavorativa
Rischio Lavorativo

Effetti di altre variabili sulla modifica dei valori di testosterone

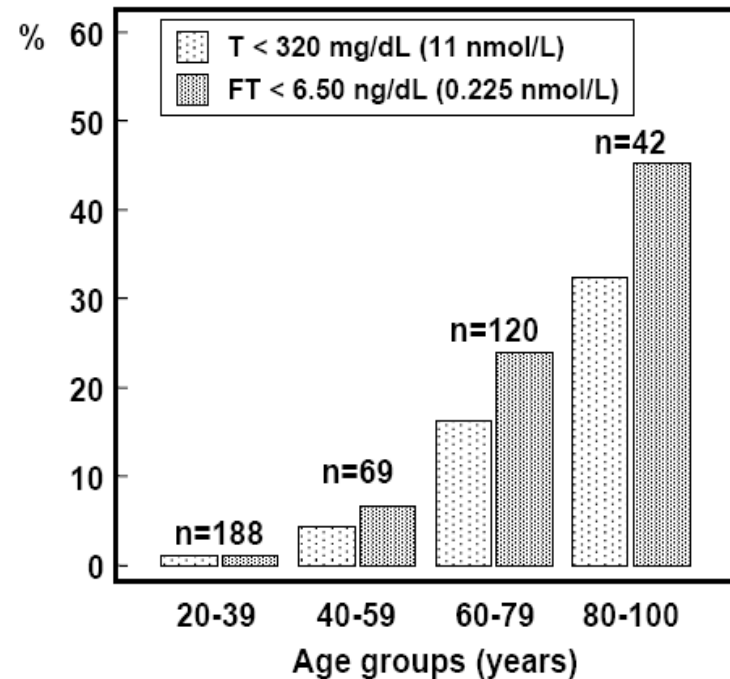
- Obesità
- Uso di farmaci
- Abuso di alcool
- Malattie croniche



Invecchiamento e LOH

% di soggetti con almeno un valore di T o fT index al di sotto del range di riferimento

T < 11.3 nmol/L fTi < 0.153 nmol/nmol



Hartman et al, JCEM 2001

Modificazioni a carico del testicolo

- Modificazioni della spermatogenesi:

Volume di eiaculato

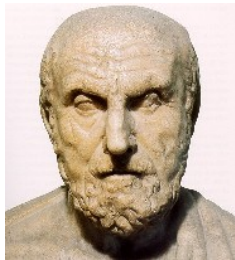
Motilità degli spermatozoi

Morfologia degli spermatozoi

NO riduzione della fertilità !!!!



- Aspetti di fisiologia

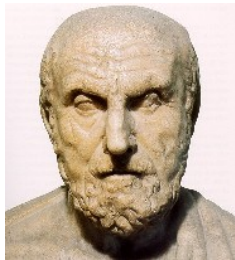


- Aspetti di patologia



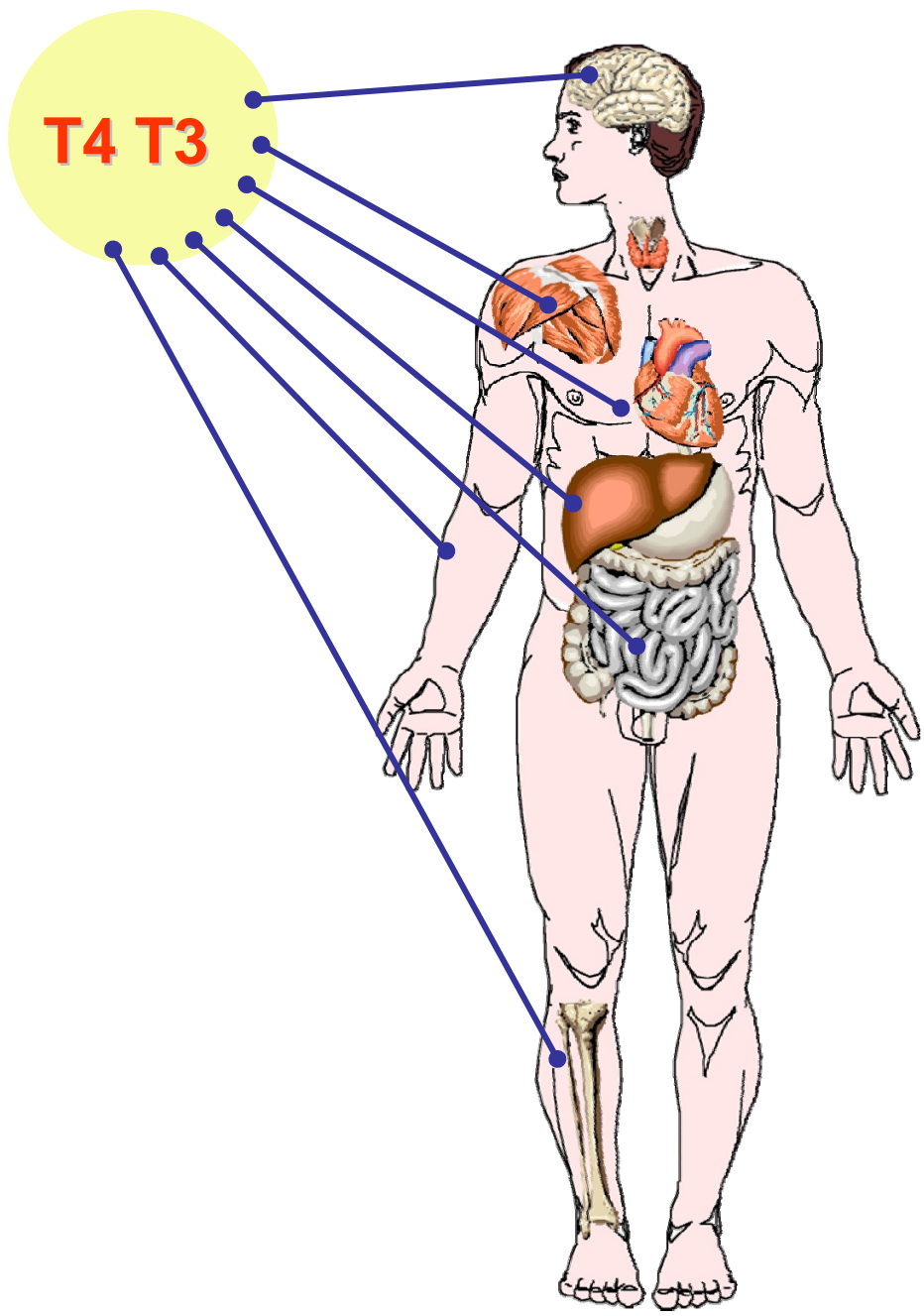


- Aspetti di fisiologia



- Aspetti di patologia





Organi e tessuti bersaglio degli ormoni tiroidei

LE MALATTIE DELLA TIROIDE

Alterata forma/volume

Gozzo diffuso

Gozzo nodulare

Nodulo singolo

Benigno (adenoma)

Maligno (carcinoma)

Carenza iodica
Autoimmunità

Alterata Funzione

Ridotta secrezione
ormoni tiroidei
(Ipotiroidismo)

Aumentata secrezione
ormoni tiroidei
(Ipertiroidismo)

2-10



1

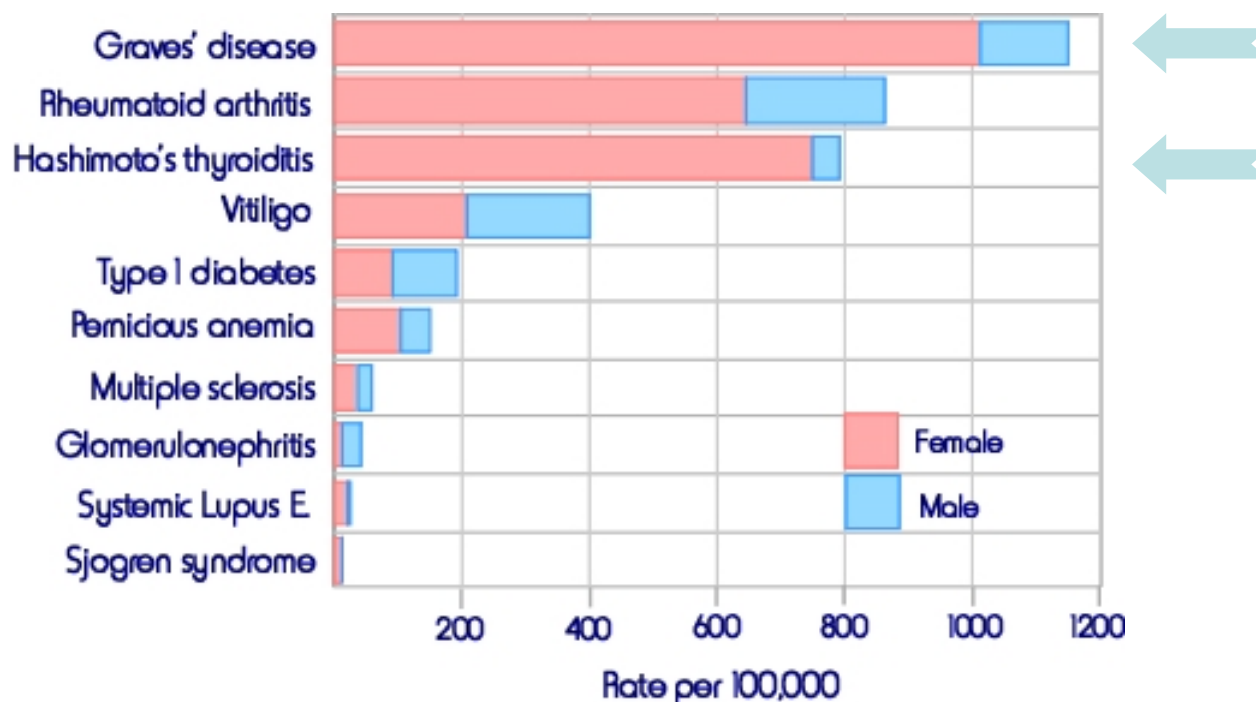


Gender-Specific Determinants of Goiter

JAMSHID FARAHATI,*¹ KARL WEGSCHEIDER,²
KERSTIN CHRIST,¹ ELENA GILMAN,¹ AND WILHELM OING,¹

Pregnant women have been found to have increased circulating levels of thyroid-stimulating hormone (TSH) after the end of the first trimester (22,23). TSH is the principal hormone regulating the growth and function of the thyroid gland (24). Thus, all factors enhancing TSH secretion might be associated with an increased risk for goiter. Sex hormones can also influence thyroid tissue directly. Sex steroid receptors have been identified in normal and pathological human thyroid tissues and it is reported that estrogens might have a promoting effect and androgens a rather restraining effect on thyroid tissue (25–27). Thus, the results of our study suggest that the promoting effect of sex hormones and increased iodine needs during pregnancy results in an increased frequency of goiter in females. Iodine supplementation during pregnancy can reduce goiter prevalence among parous females (11). Thus, the results of the study emphasize that more attention is needed for iodine supplementation during pregnancy.

Prevalence of autoimmune diseases in the USA



Hypophysitis Research Center web site:
<http://pathology2.jjhu.edu/hypophysitis>
from Jacobson DL et al. Clin Immunol Immunopathol, 1997

Prolattinoma

Causa più frequente di iperprolattinemia organica

40-50% di tutti gli adenomi ipofisari

prevalenza: 0,008-0,012 %

incidenza: 2,7/100.000/anno

MICRO

<1 cm

(65-70 %)

F : M = 20 : 1

21-30 yr

MACRO

>1 cm

F : M = 1,04 : 1

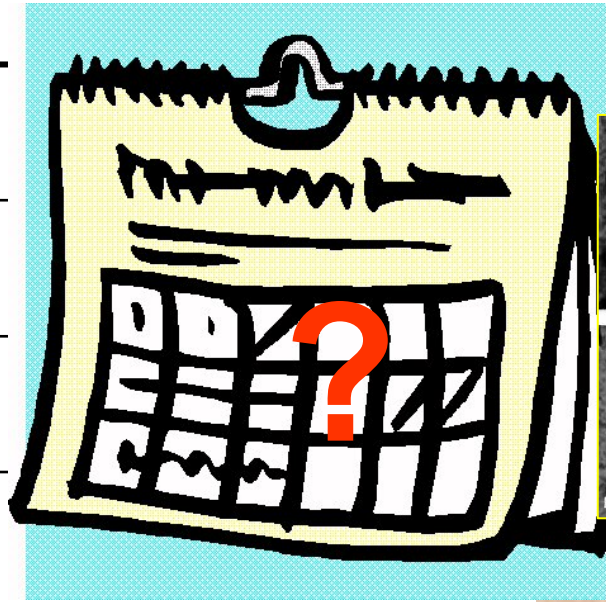
41-50 yr

Post menopausa

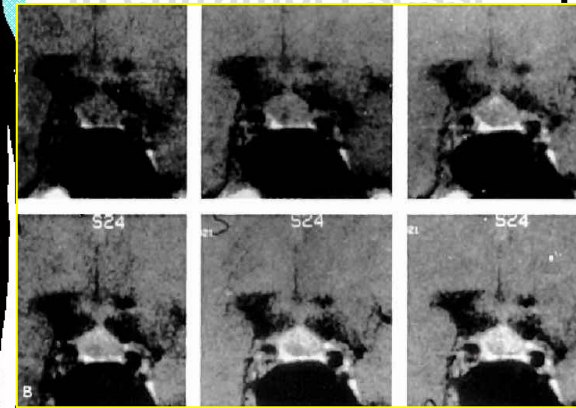
Manifestazioni cliniche dell'iperprolattinemia

l'Endocrinologo, 2006

nella donna
amenorrea
oligomenorrea
polimenorrea
galattorrea
infertilità
riduzione libido





in entrambi i sessi



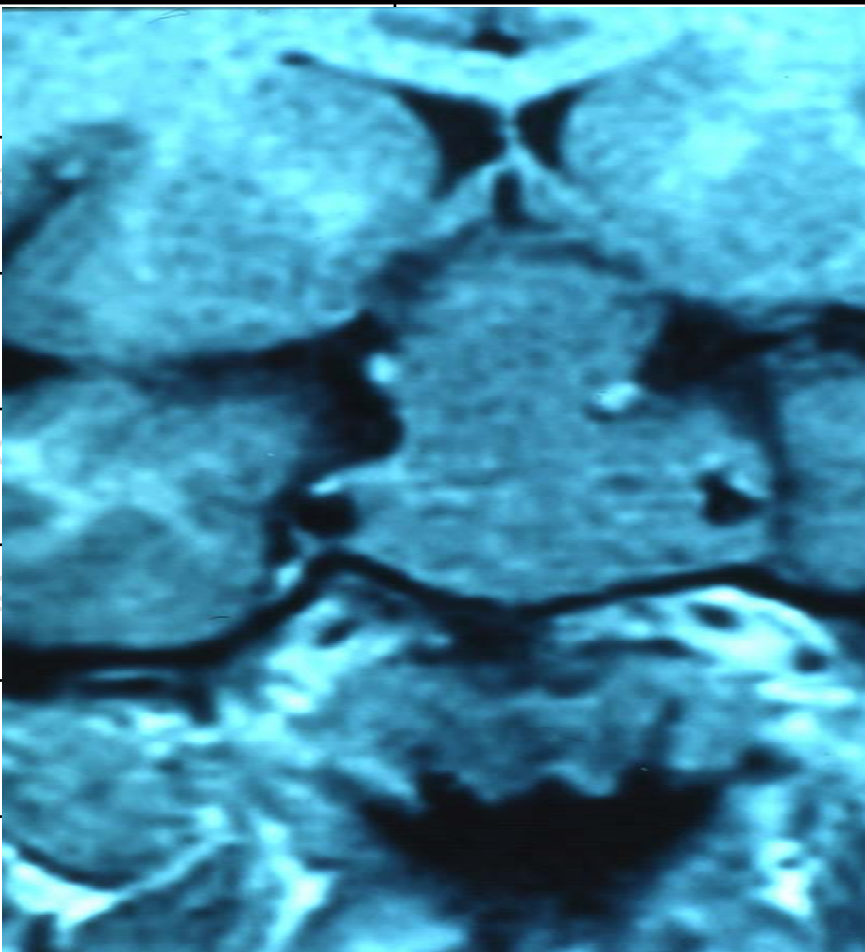
Manifestazioni cliniche dell'iperprolattinemia

l'Endocrinologo, 2006

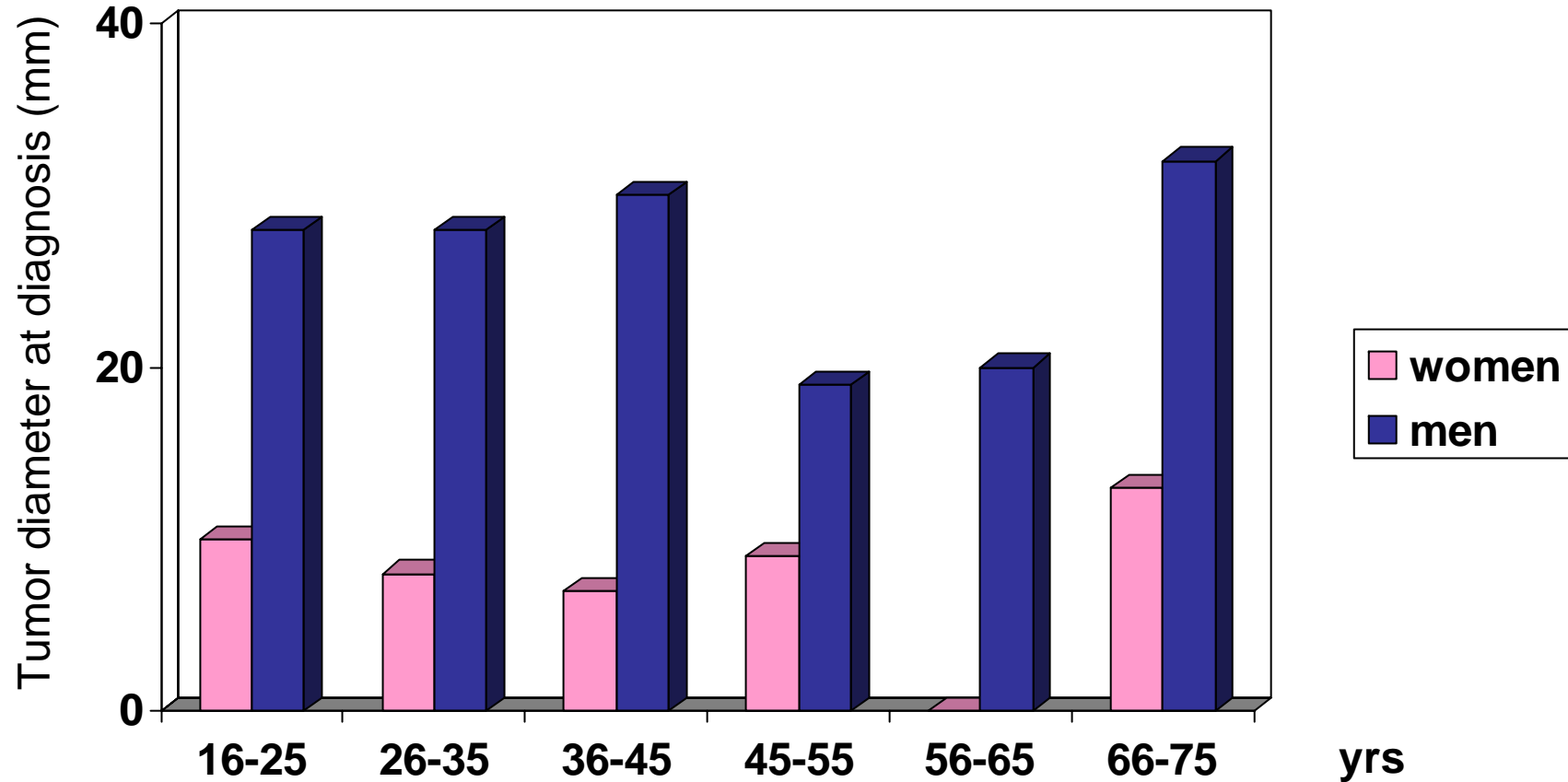
nella donna	nell'uomo	in entrambi i sessi
 riduzione libido	impotenza	Ritardo puberale
	riduzione libido	
	oligospermia	
	ginecomastia	
	galattorrea	
	infertilità	

Manifestazioni cliniche dell'iperprolattinemia

l'Endocrinologo, 2006

n			in entrambi i sessi
a			Ritardo puberale
oli			cefalea
po			Alterazioni CV
S			Riduzione visus
			Paralisi nervi cranici
rid			Ipopituitarismo osteoporosi

Gender differences in prolactinoma



elaborated from Trouillas et al Annal Endocrinol, 2000



grazie

