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*Sexual function  
and dysfunction in men*

Training Course in Reproductive Health/  
Sexual Health Research

Geneva Foundation for Medical Education  
and Research

Geneva, February 21st 2008



The physical pathways of a normal erection?

After erotical stimulation

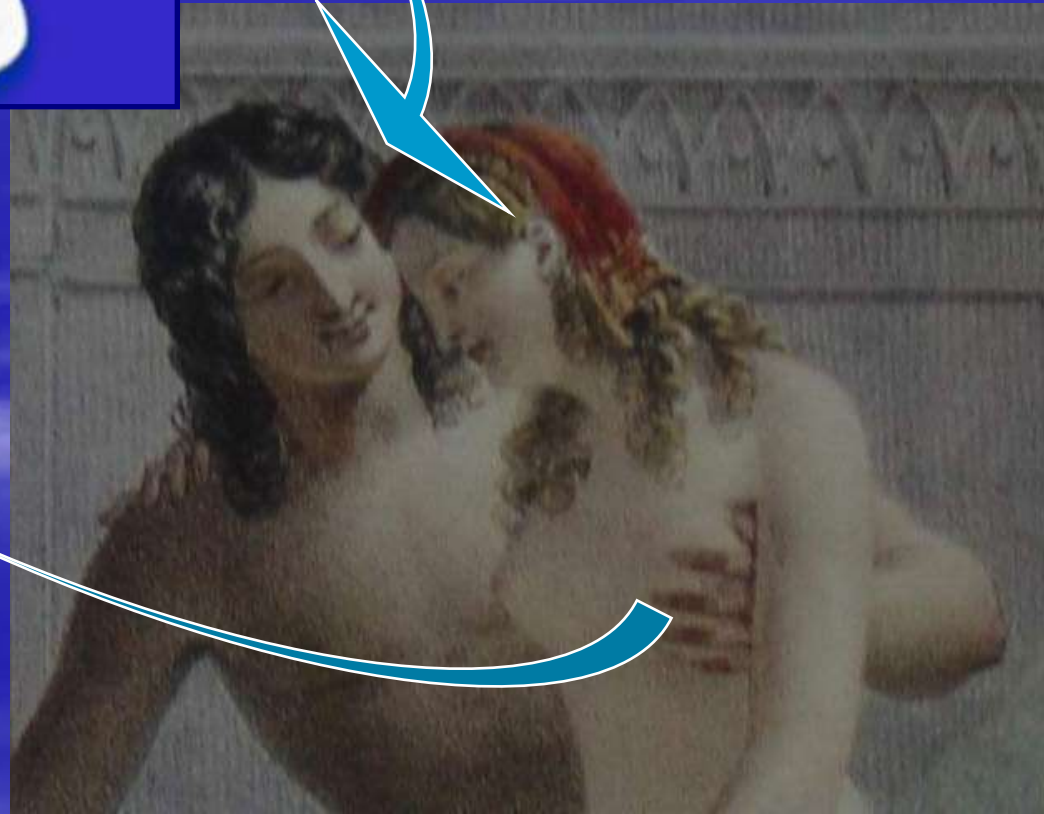
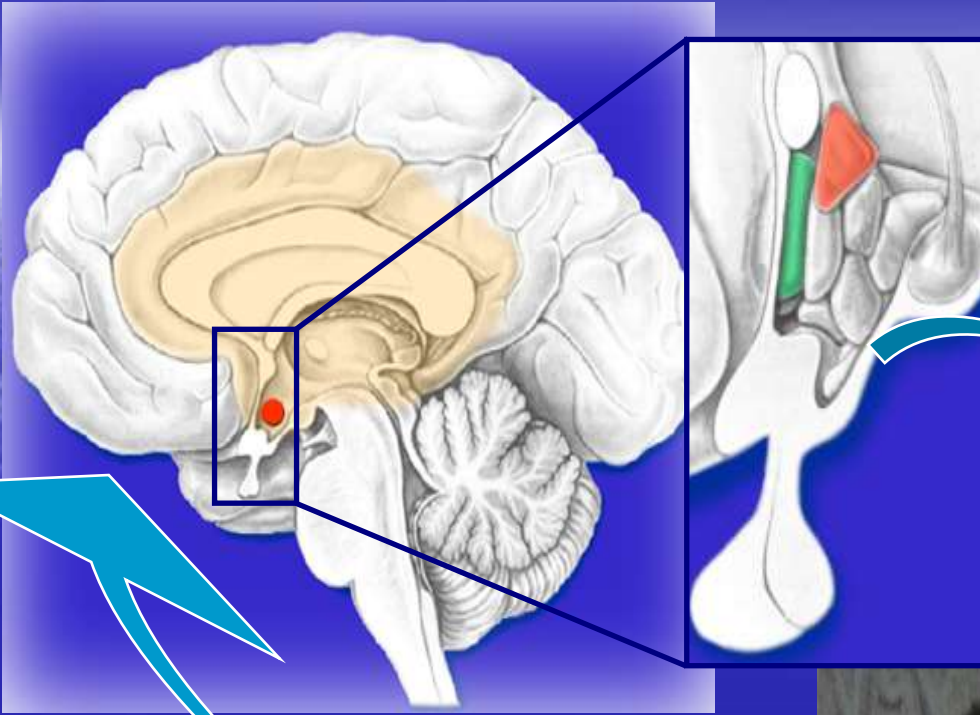
and physical stimulation

visual

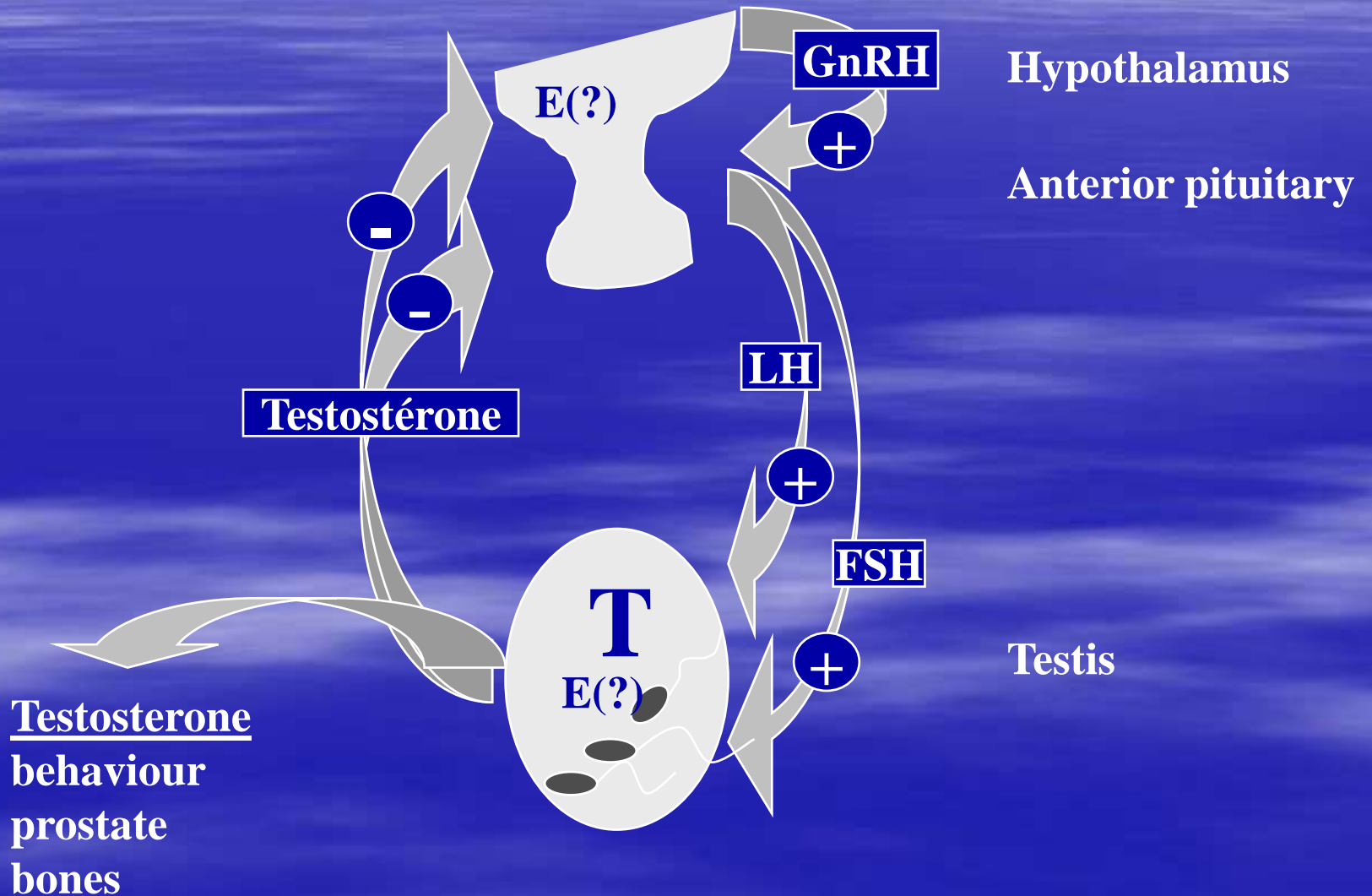
tactile

genital

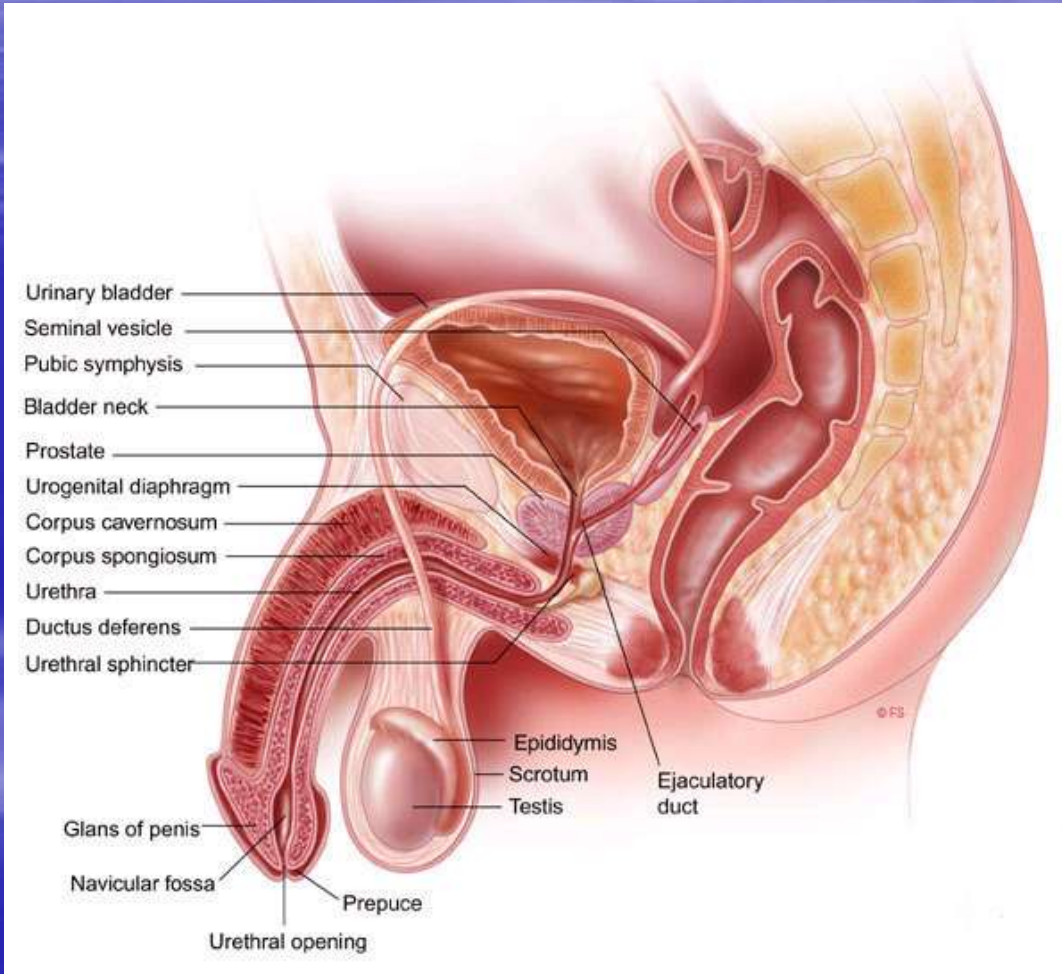
1. Anatomy and physiology of normal erection
2. Incidence of erectile dysfunctions
3. Causes of erectile dysfunctions
4. Diagnostic tools
5. Climax
6. Treatments



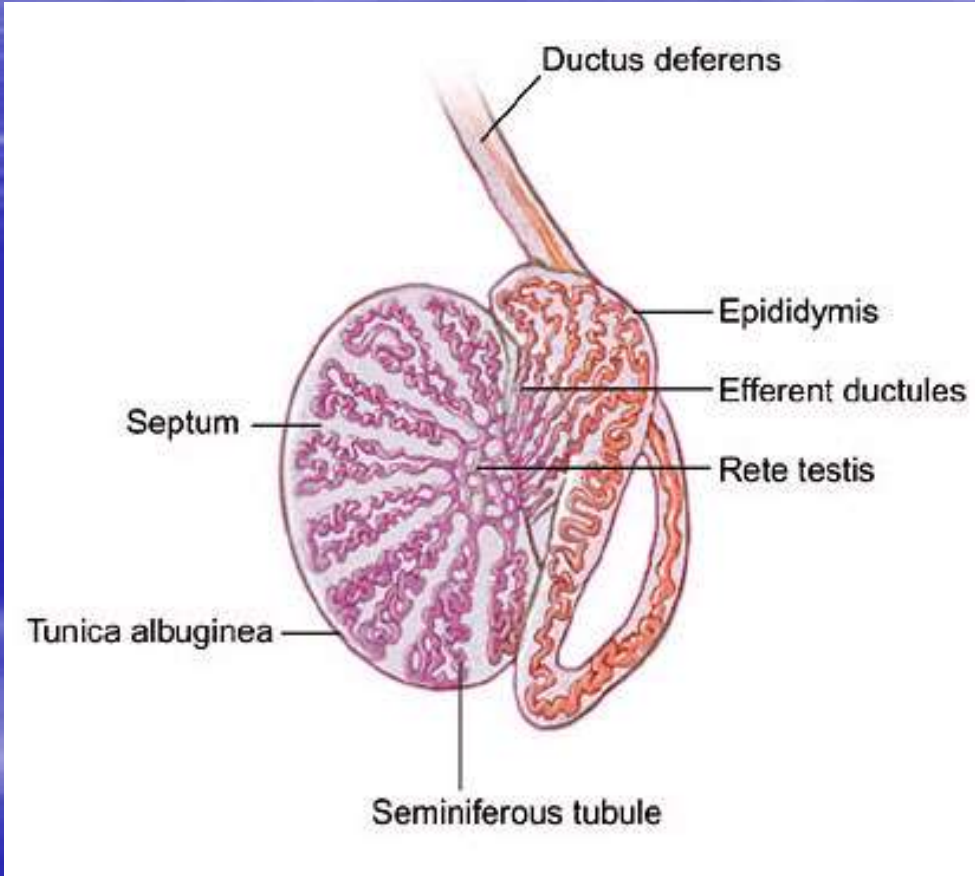
# Pituitary & gonadic physiology



# Anatomy



# Anatomy

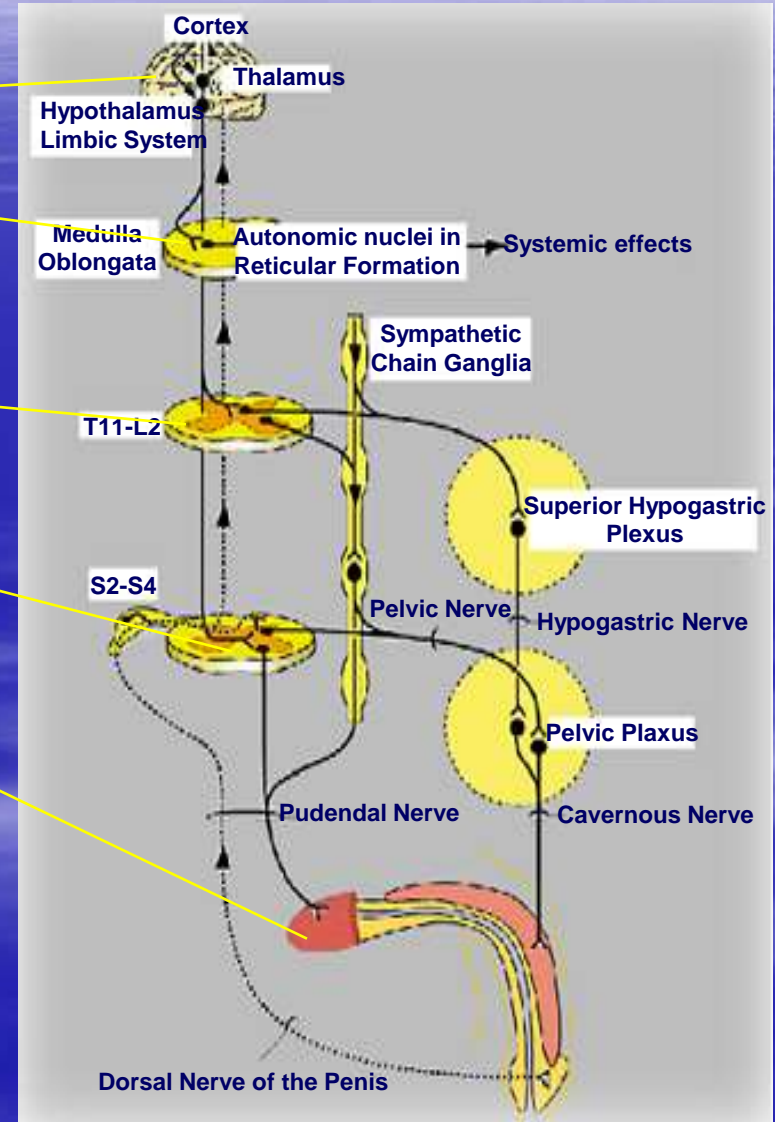
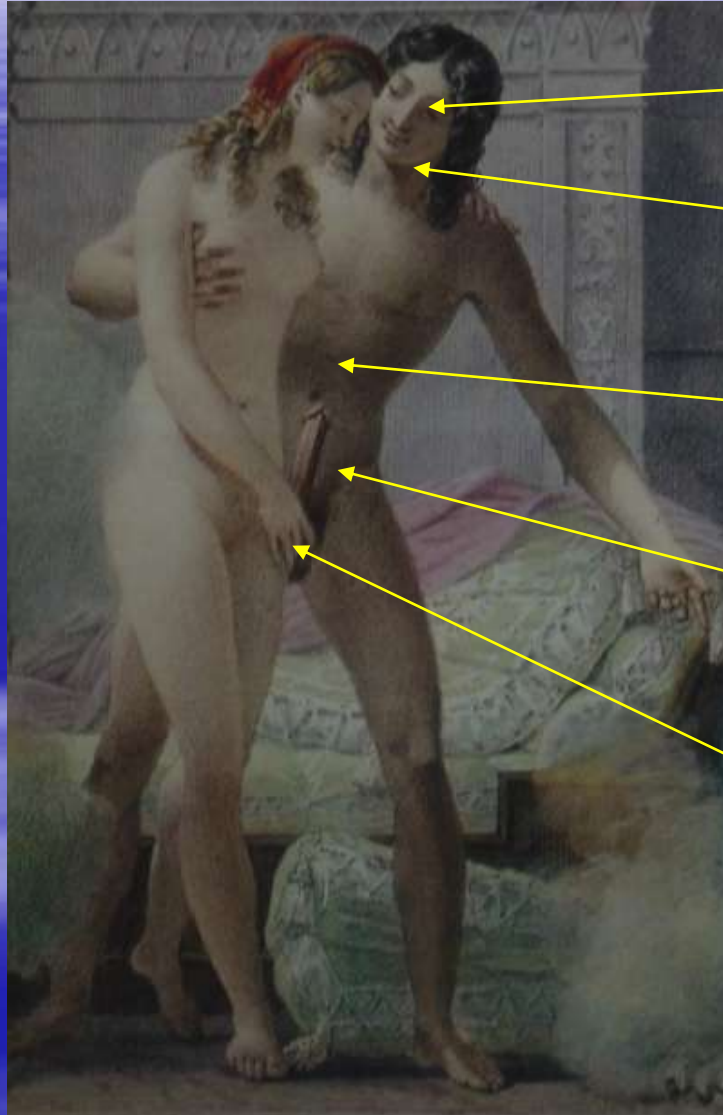


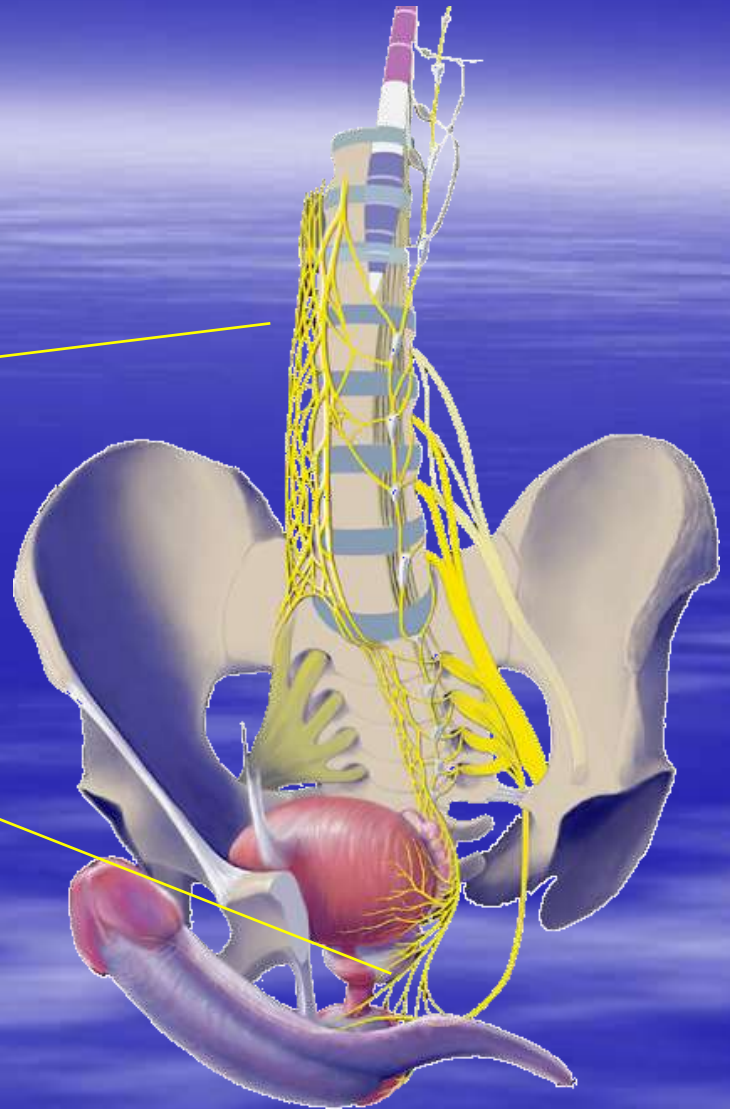
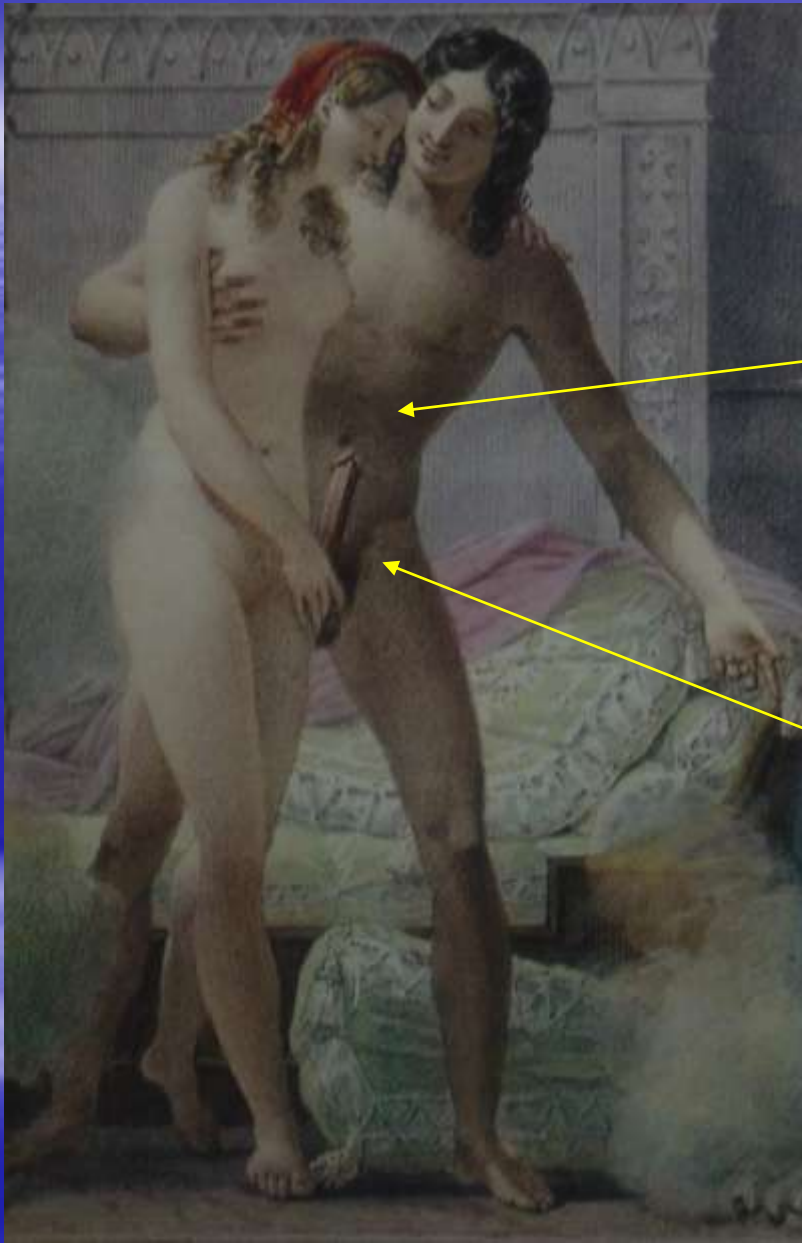
# Neurophysiology

- **Cavernous nerves**
  - Parasympathetic nitrenergic
  - Sympathetic adrenergic
    - control of the blood flow (rigidity- flaccidity)
- **Pudendal nerves**
  - Sensitive (positive feed-back)
  - motors : contraction of perineal muscles (ischio- and bulbocavernous)

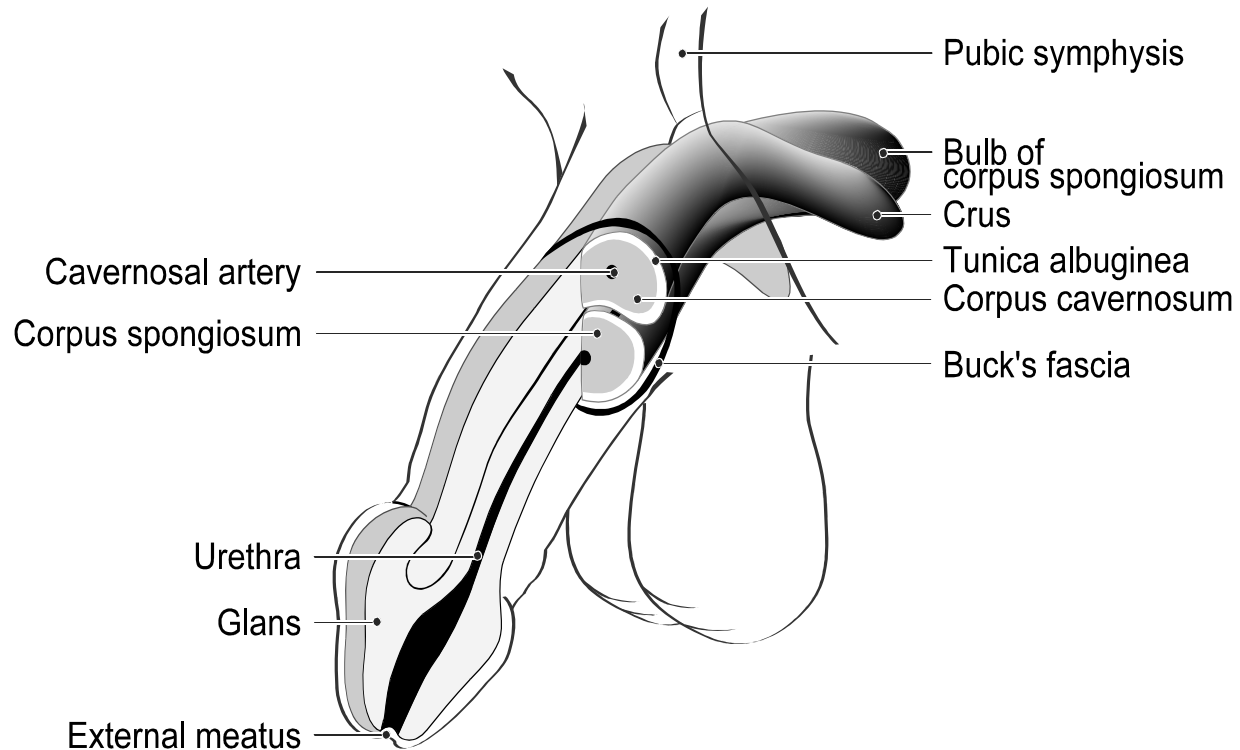


# Functional neuroanatomy of erection

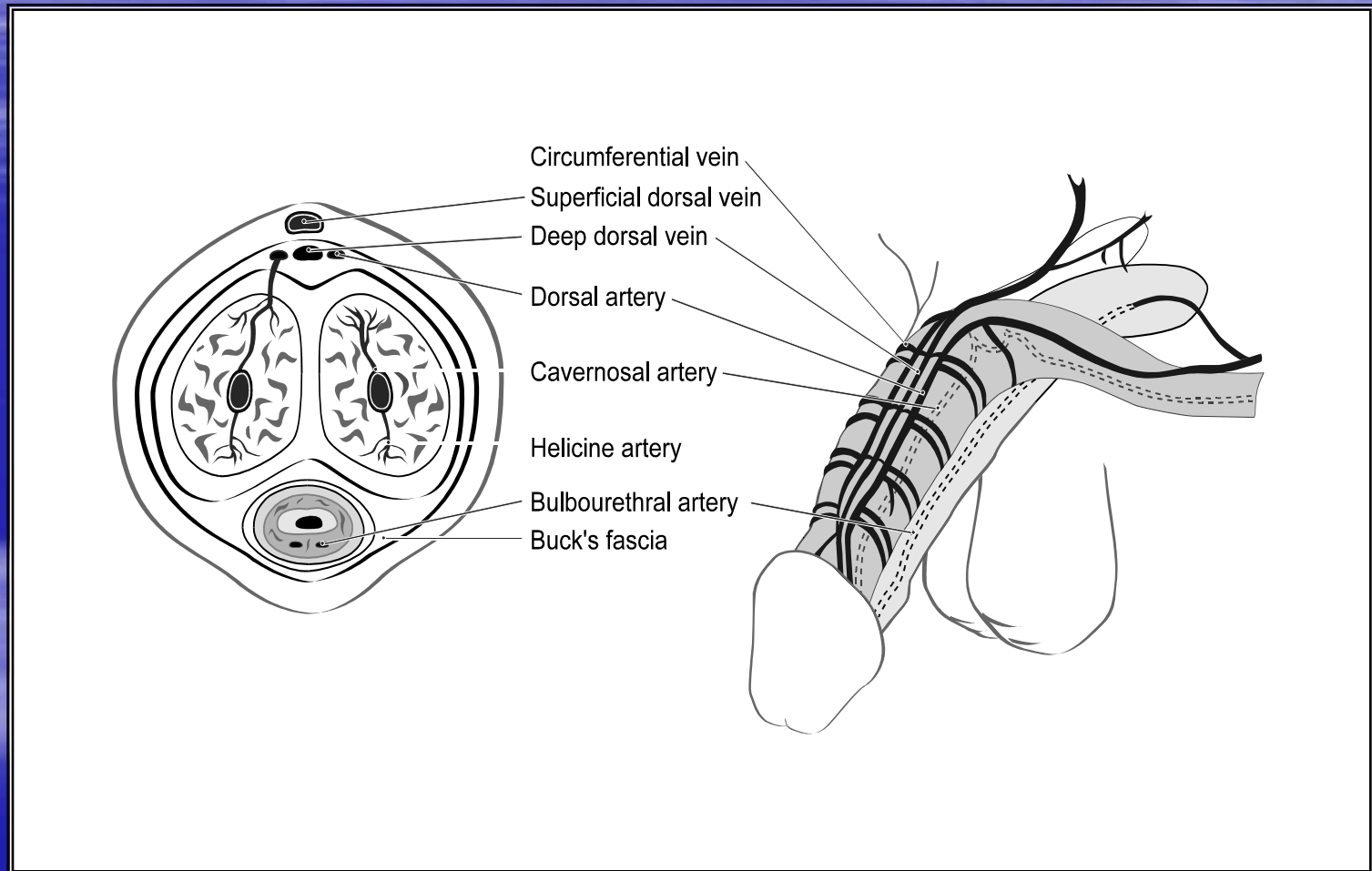




# Penile anatomy



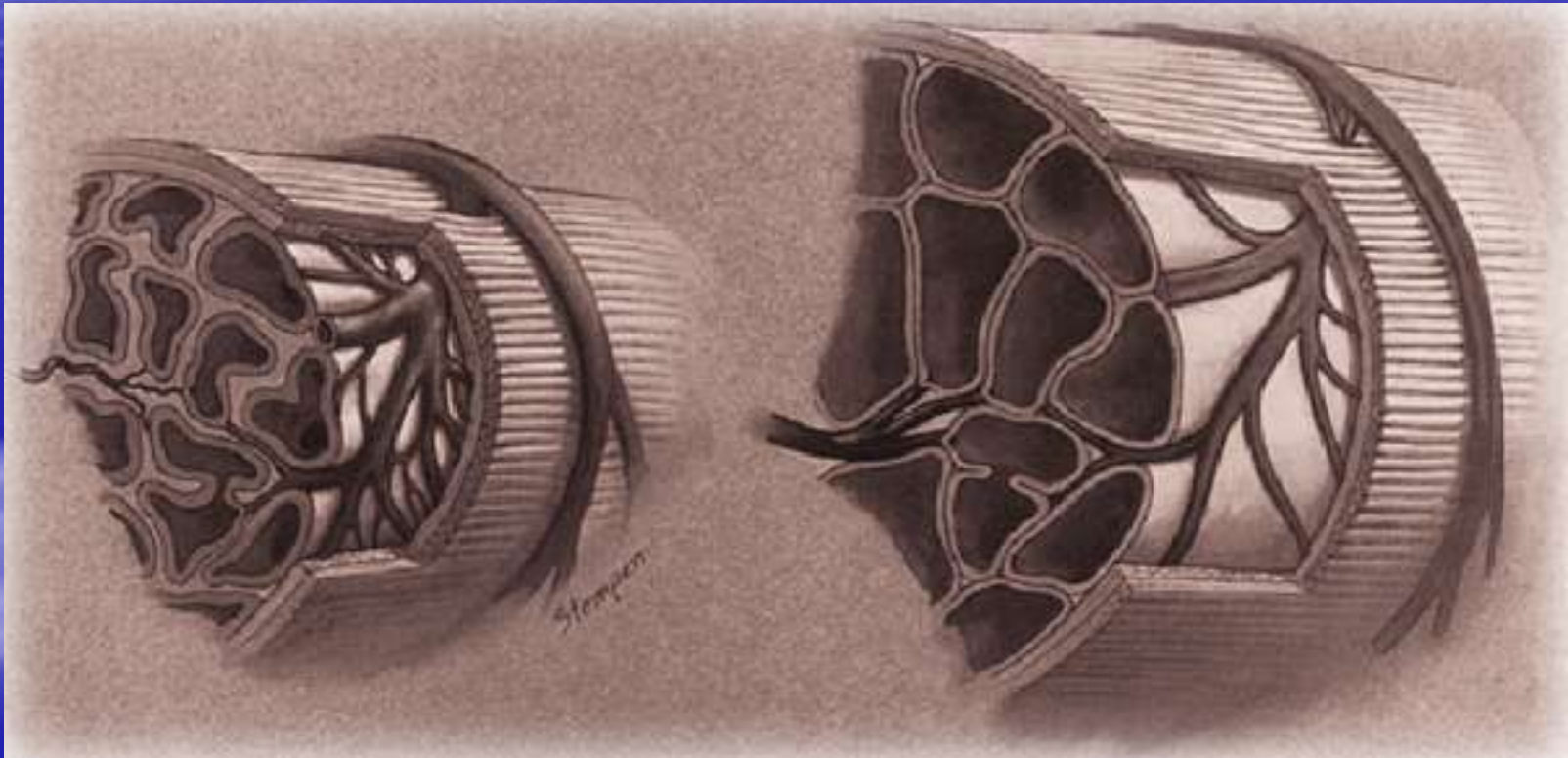
# Vascularisation



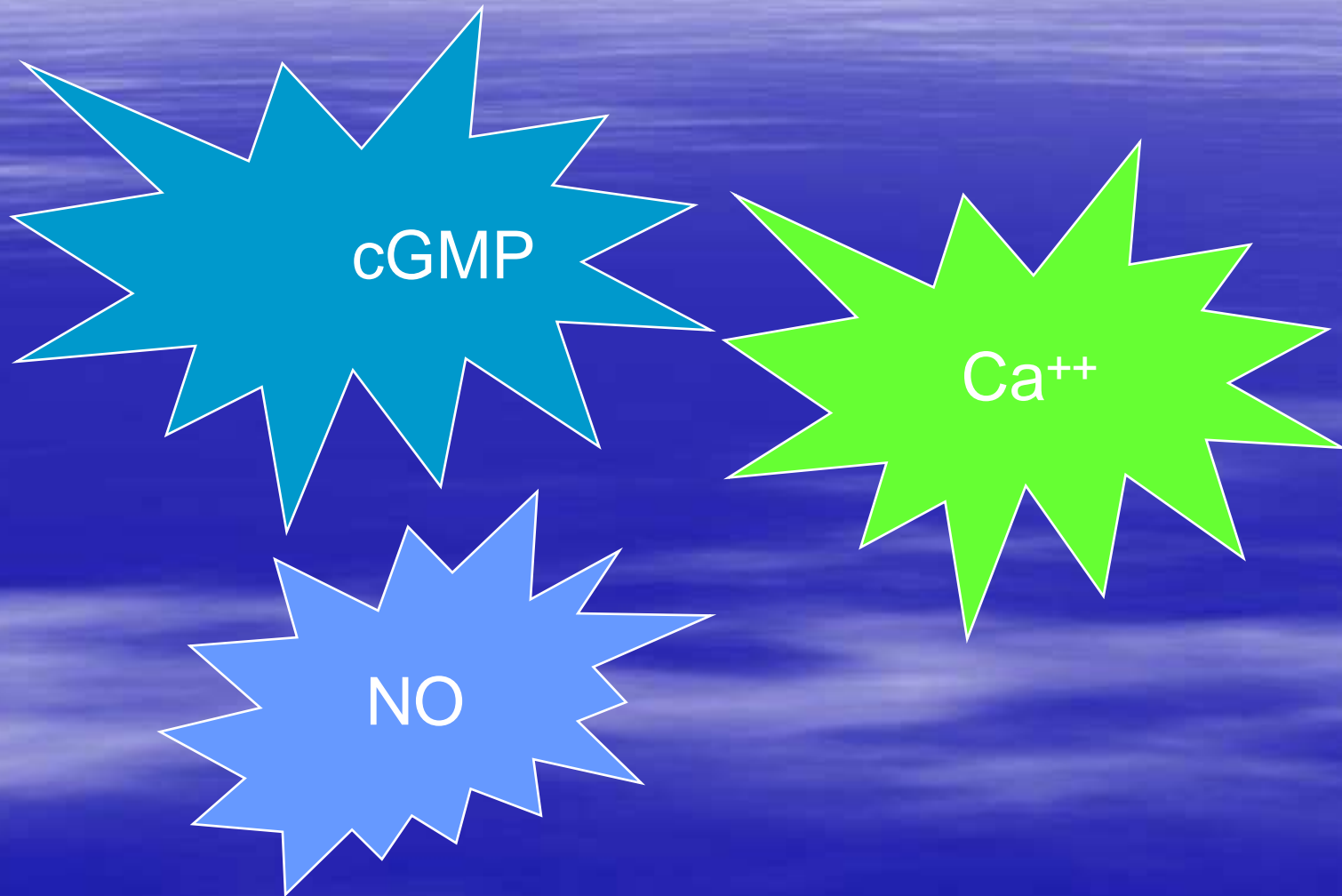
# Anatomy of corpus cavernos

Flaccidity

Erection

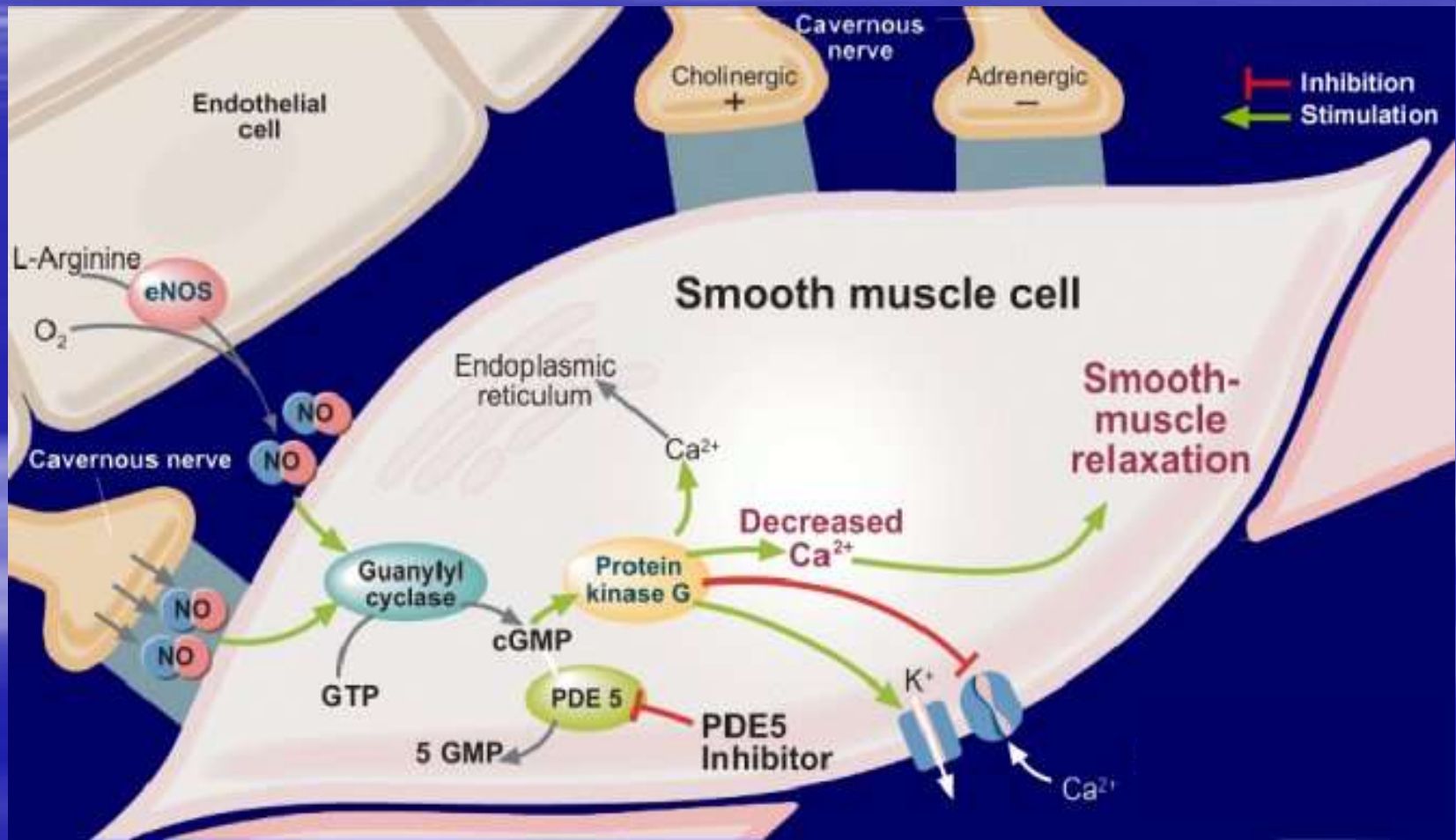


# Erectile Physiology



# NO - cGMP

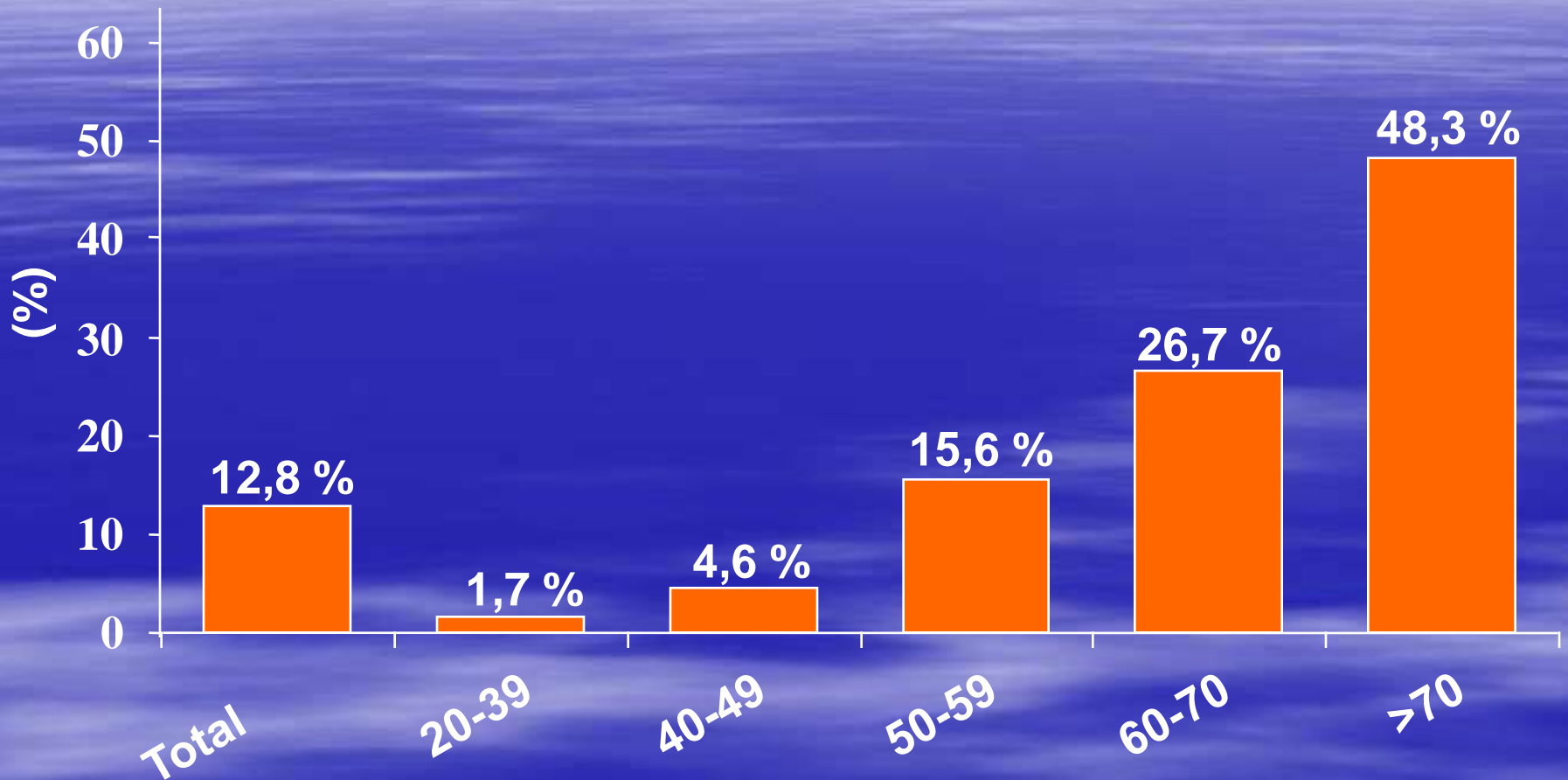
relaxation of the cavernous smooth muscle inducing erection



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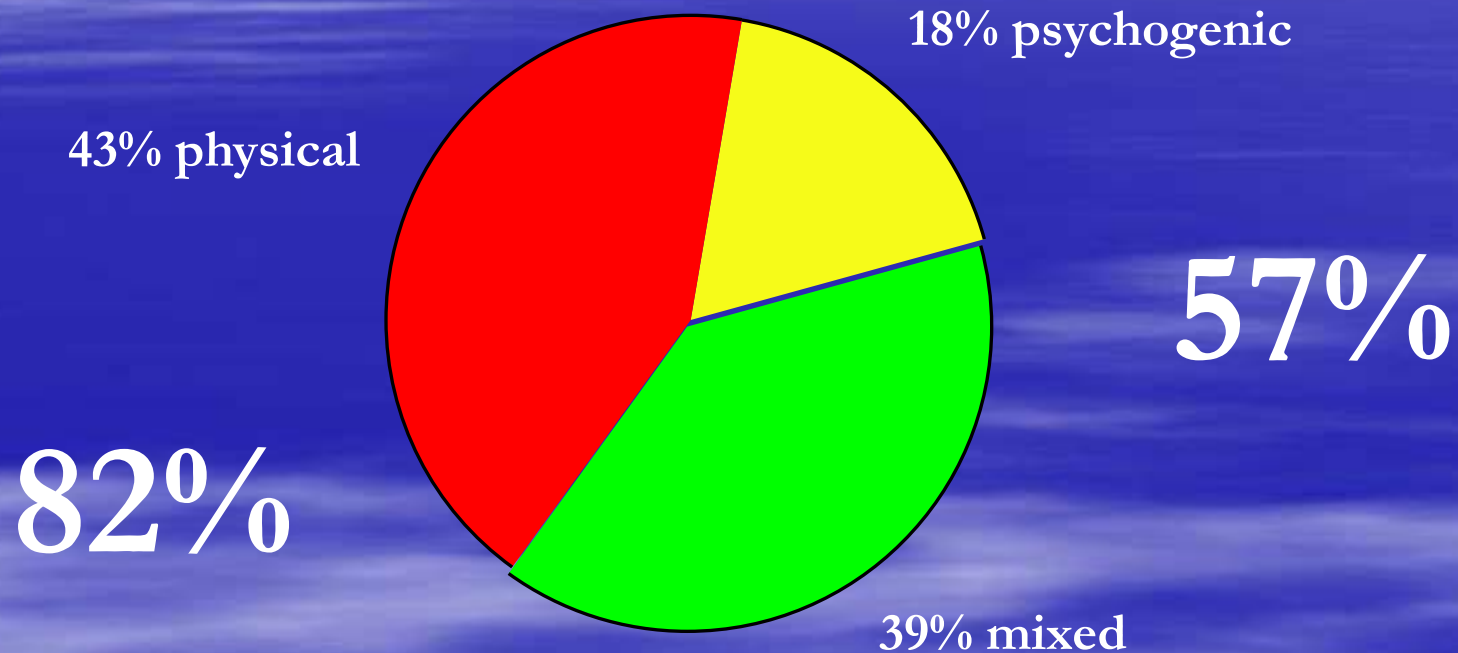
# Incidence of erectile dysfunction in Europe



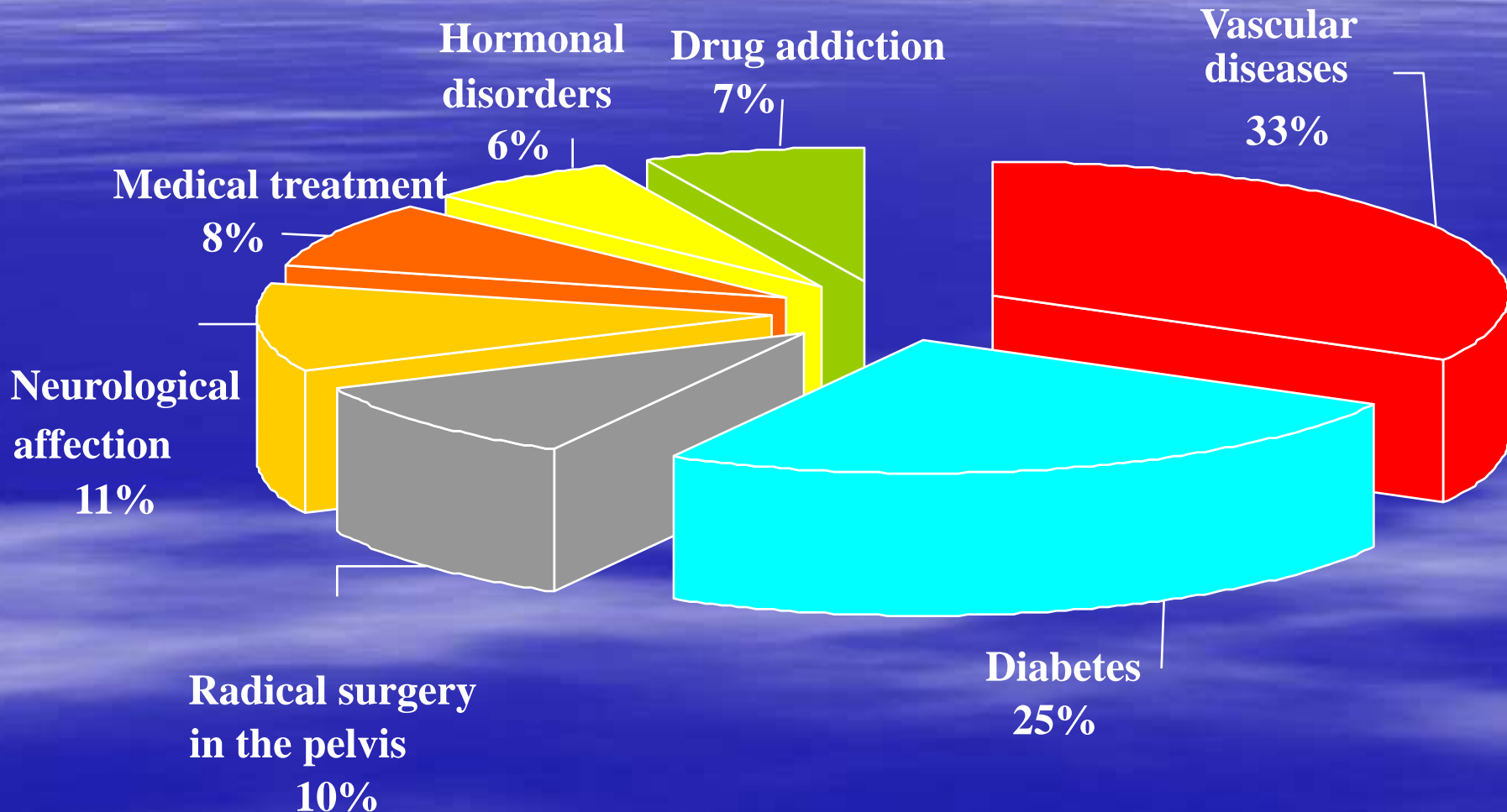
S.I.M.G. Epidemiologic Study, 1997

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3. **Causes of erectile dysfunctions**
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# Causes of erectile dysfunctions



# Causes of erectile dysfunctions



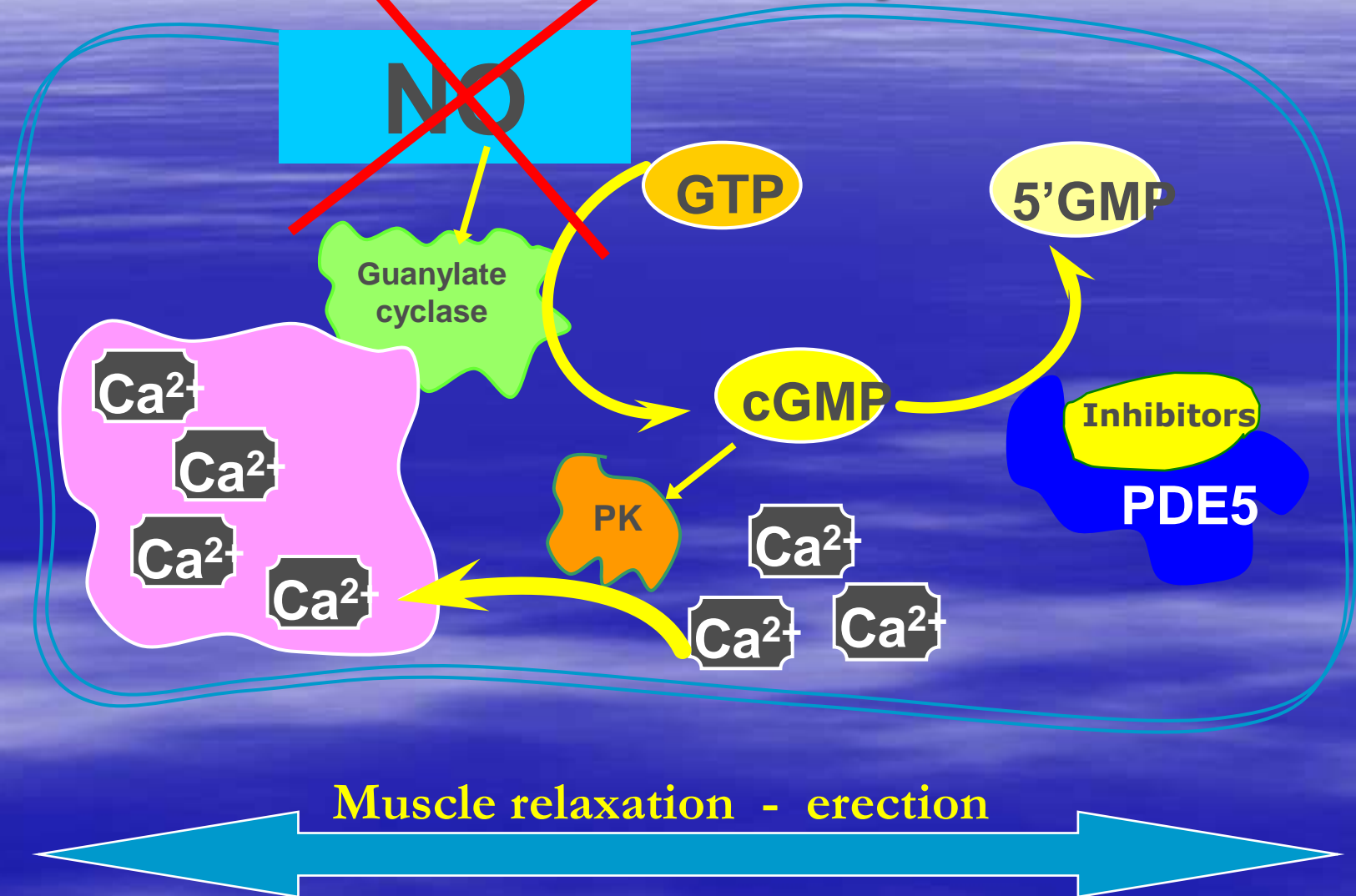
# Causes of erectile dysfunctions

## Role of the vascular endothelium

Any condition that induces a lack of NO production from the vascular endothelium may be a cause of erectile dysfunction.

Since NO secretion is centrally modulated (brain), any relational disturbance will negatively affect the corpus cavernous, the same way as a vascular or neurological disorder.

# Causes of erectile dysfunctions





# Hormones and aging



Pituitary

GH ↓



IGF-1 ↓

Somatopause

LH / FSH ↓



E<sub>2</sub> ↓ / T ↓

Menopause / Androclysis



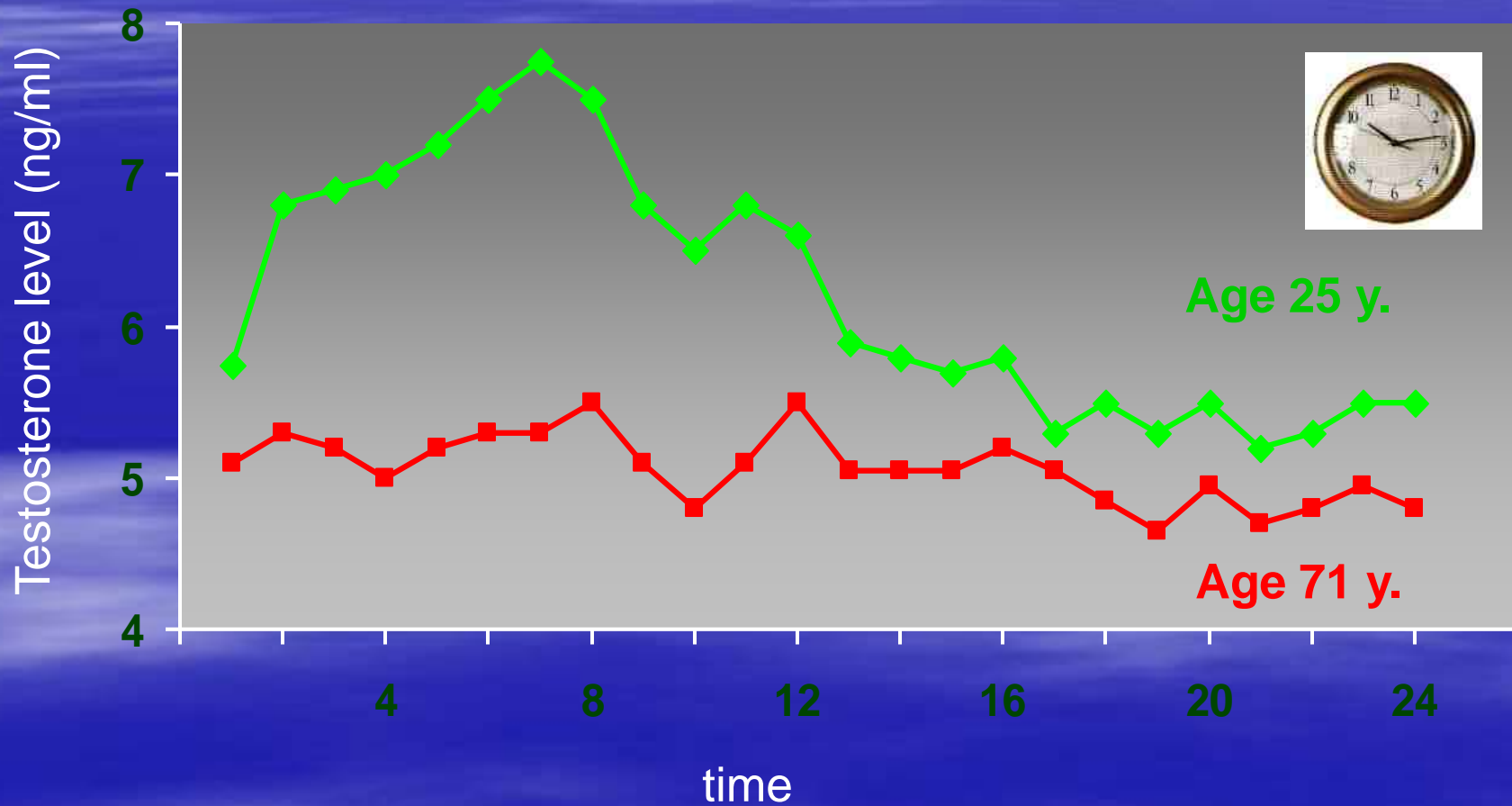
ACTH =



DHEA ↓

Adrenopause

# Day-night testosterone levels





# Penile curvature

- Peyronie's disease
  - 6% of male population
  - Unknown etiology
  - Related with Dupuytren
  - Uncertain evolution
  - Uncertain treatment
    - Corticoids
    - Verapamil
    - Surgery



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3. Causes of erectile dysfunctions
4. **Diagnostic tools**
5. Climax
6. Treatments

# Diagnostic tools

**Special investigations**

**Duplex sonography  
with pharmacostimulation**

**Intra cavernous injection test**

**Lab. Blood and hormonal status**

**Physical examination**

**History**

# History

- Onset, nature, duration
- Rigidity, shape of the penis
- External factors (psych. or prof. stress)
- Associated diseases
- Former therapies
- Expectations regarding the treatment

# Physical examination

- General condition
- Blood pressure, pulsations
- External genitals
- Inflammatory diseases (teeth)
- DRE
- Neurological evaluation

# Lab tests

- Fasting glycaemia (HbA1c)
- Lipidic profile
- Blood formula
- Liver enzymes
- Hormones
  - Testosterone (free)
  - (PRL – TSH – T4)
- PSA
  - % free PSA
- Urine

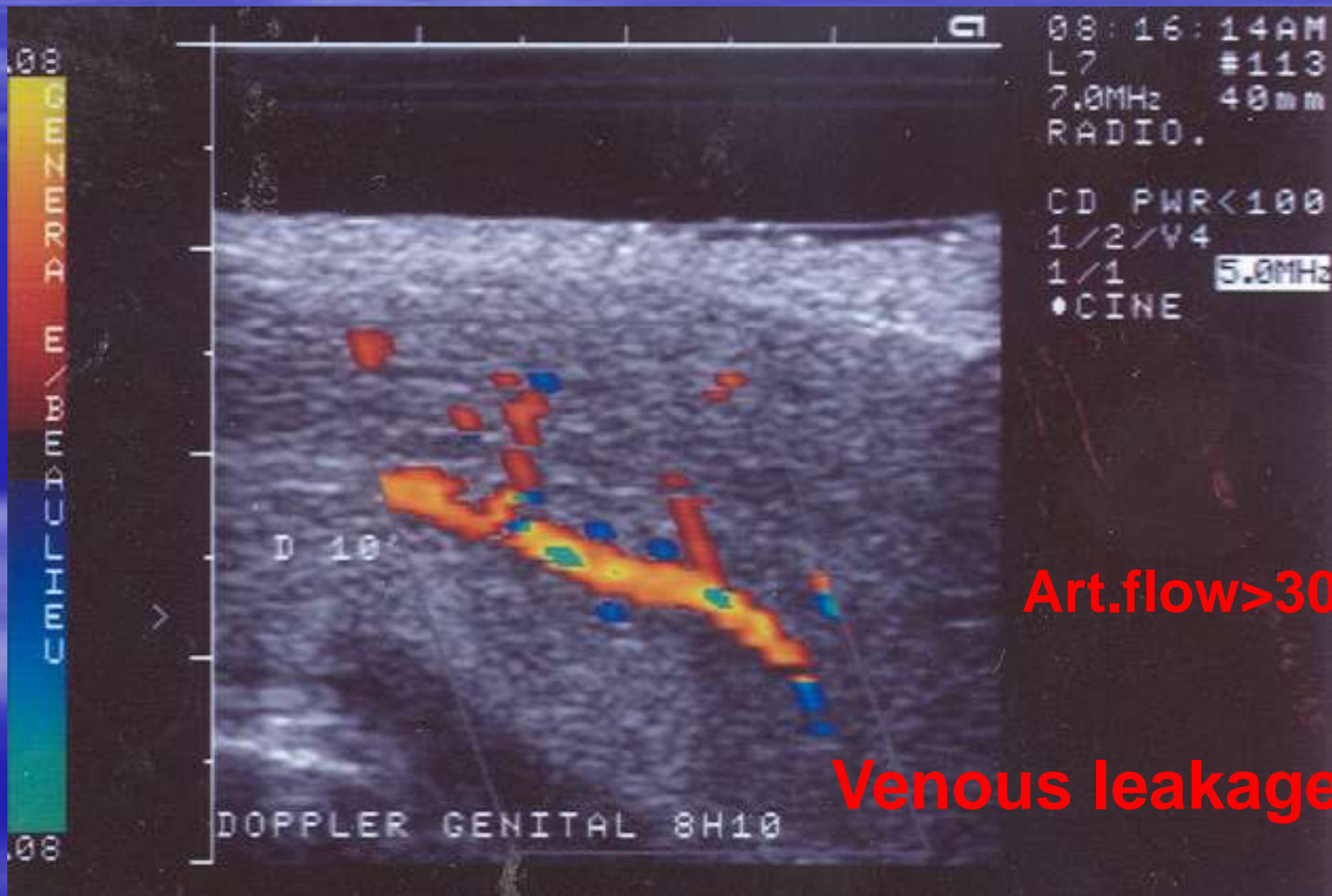
# Specific tests

- **Duplex sonography + intracavernosal prostaglandin**

- Nocturnal penile tumescence test
- Vascular imaging
- Neurological testing

# Duplex sonography

PGE1 injection



Art.flow > 30cm/s

Venous leakage

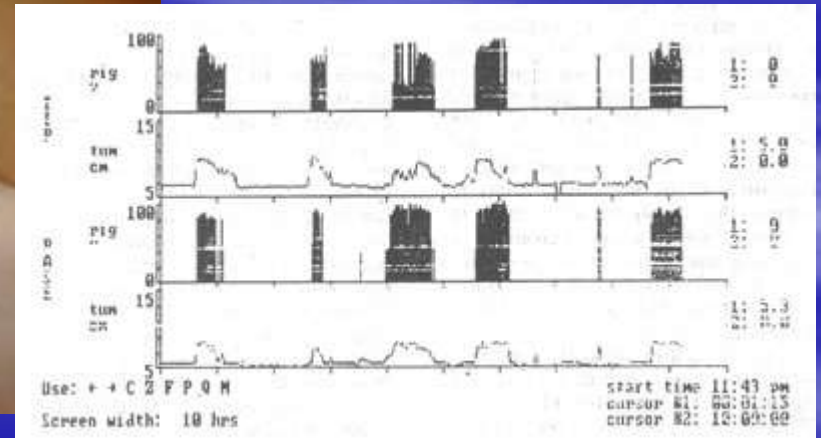


# NPT



REM sleep phases

History



# Vascular radiology

arteriography



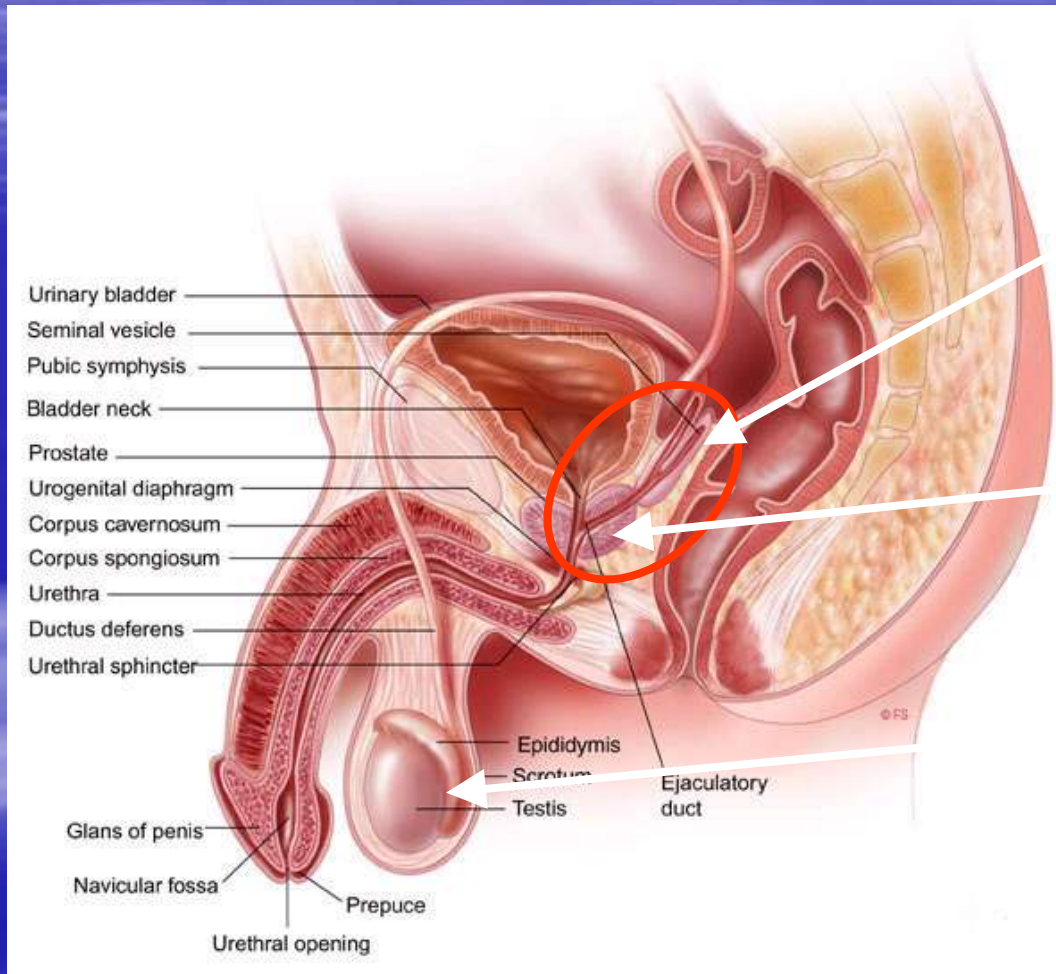
cavernosography



**Anxiety / fibrosis**

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# Sperm production Anatomy

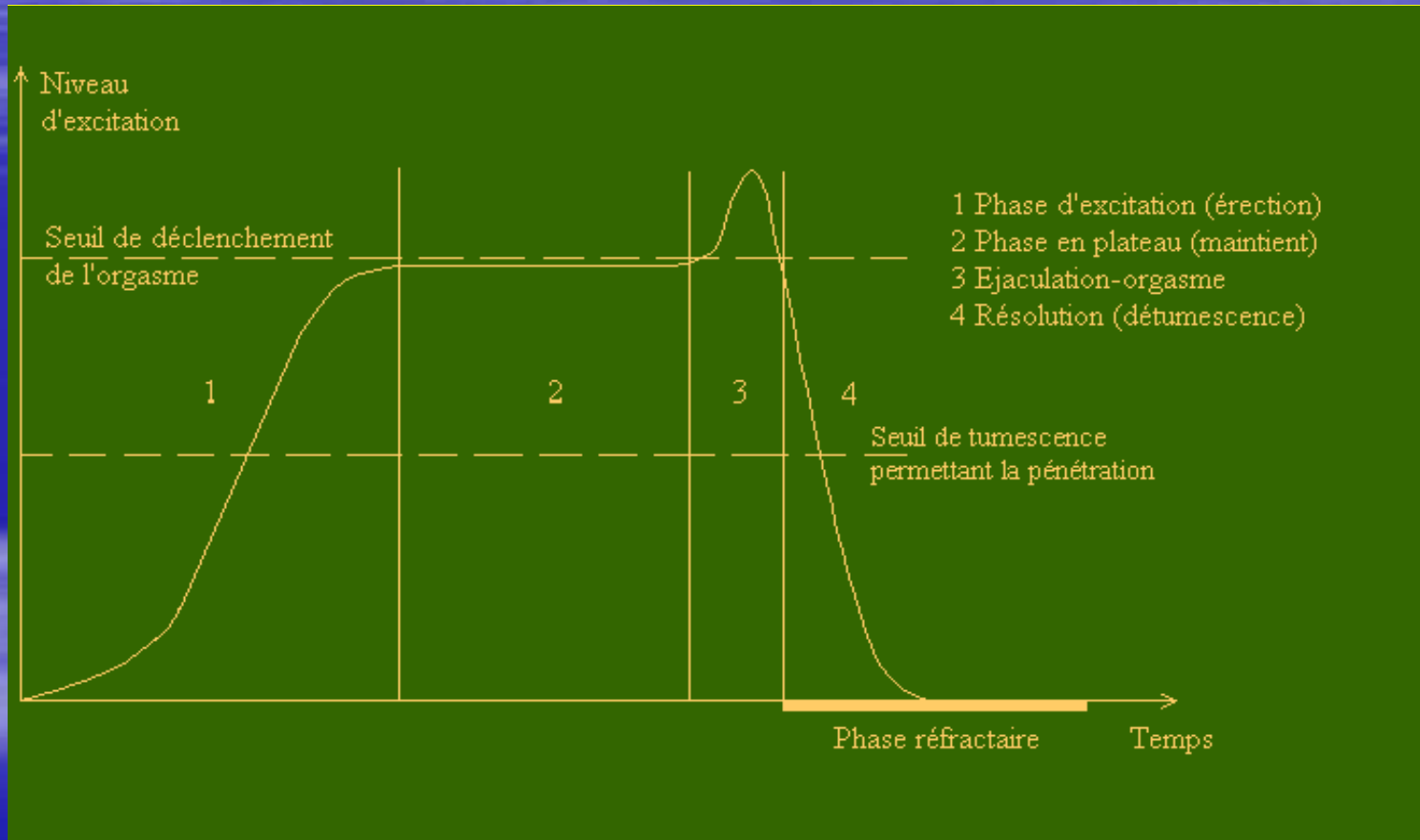


2/3 seminals

1/3 prostate

One drop from testis

# Male excitation curve



# Neuroanatomy

## Cavernous nerve

Parasympathetic (nitrous)

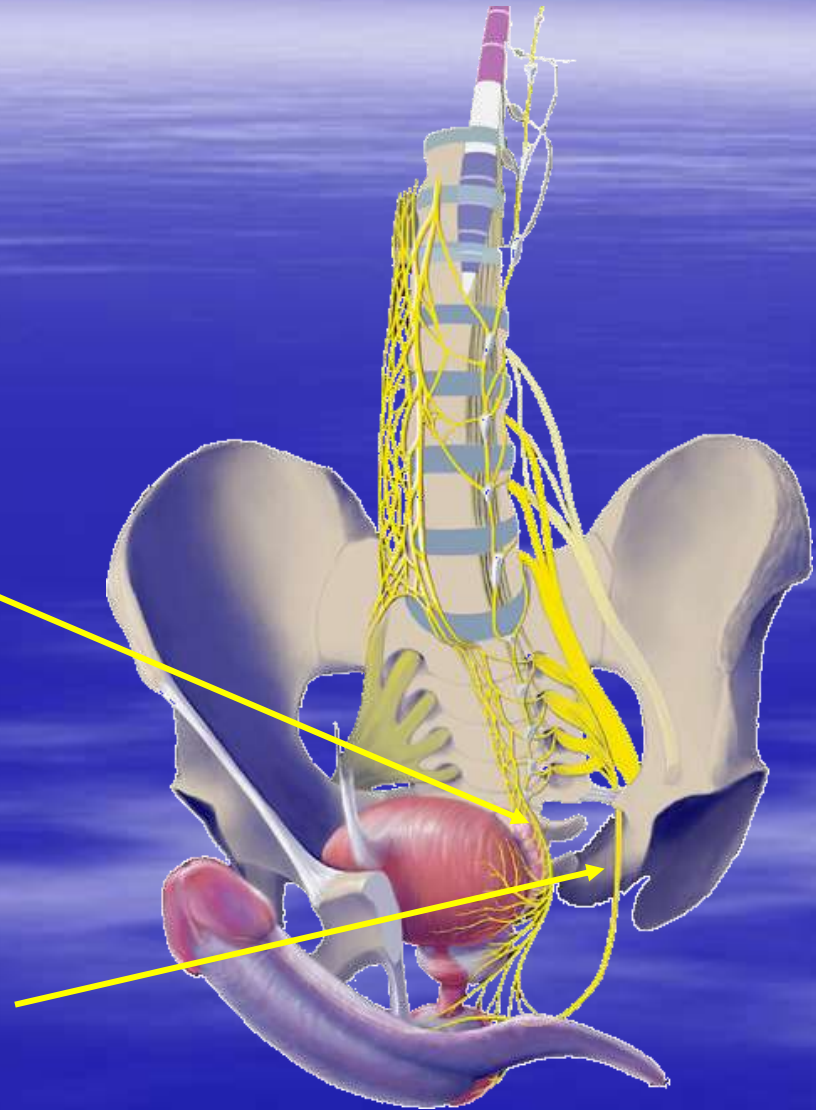
Sympathetic (adrenergic)

Trigger of ejaculation

## Pudendal nerve

Sensitive: positive feed-back

Effective : contraction bulbo  
cavernous muscles



# Déroulement de l'éjaculation

- Remplissage des canaux éjaculateurs
- Contraction prostatique
- Émission dans l'urètre bulbaire
- Saccades bulbo caverneuses



# After climax

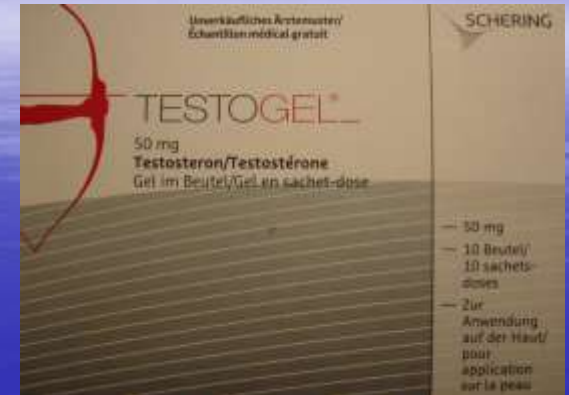
- Persisting adrenergic tonus
- Penile retraction
- Latency variation depending upon
  - Age
  - Stimulation



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# Hormonal treatment

- Testosterone injection
- Testosterone oral
- Testosterone transdermal



Testosterone gel

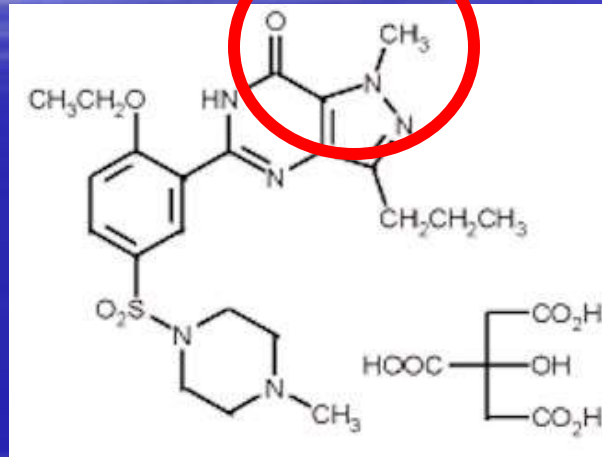
testosterone enanthate



testosterone undecanoate

# PDE5 inhibitors

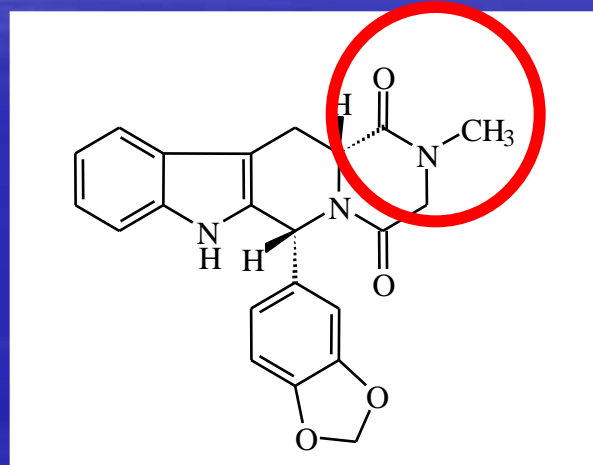
## Sildenafil



Viagra<sup>®</sup>

Pfizer

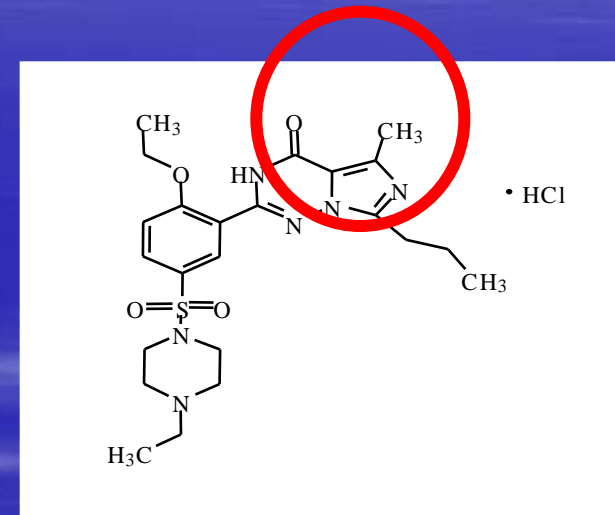
## Tadalafil



Cialis<sup>®</sup>

Lilly-Icos

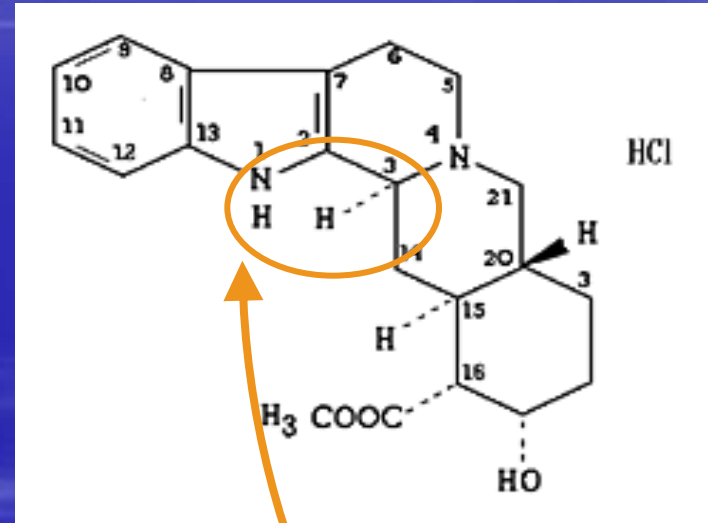
## Vardenafil



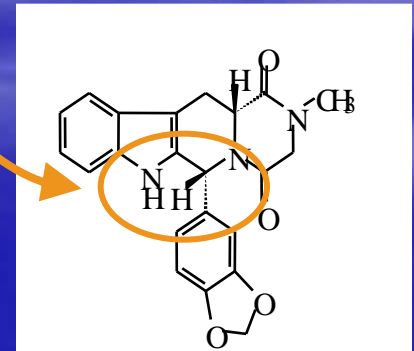
Levitra<sup>®</sup>

GSK-Bayer

# Yohimbini



**Tadalafil (Cialis)**



# MACA (Lepidium Meyenii)



**Gonzales G. & al. 2002. Effect of Lepidium Meyenii (MACA) on sexual desire and its absent relationship with serum testosterone levels in adult healthy men. Andrology 34, 367-372.**

# PDE5 inhibitors, what dosage?

- Occasional treatment
  - 1 tabl. 30 to 60 min before planned intercourse
- Long term treatment
  - Tadalafil (Cialis): 1-2 x 20 mg per week during 2-8 weeks
  - Vardenafil (Levitra): 2-3x 5 or 10 mg per week during 2-8 weeks
  - Sildenafil (Viagra): 2-3x 25 or 50 mg per week during 2-8 weeks

# PDE5 inhibitors, tips

- It is important to separate the intake of the pill from the intercourse in order to avoid a medically generated performance anxiety.
- The medication shall not necessarily induce a rigid erection.
- It should facilitate an erection following a normal love process.

# PDE5 inhibitors: warning

- Simultaneous treatments with NO donors (nitro-glycerine etc.) that will induce a possibly dangerous hypotension
- Contraindication to sexual activity
- Cardiovascular diseases like
  - Recent myocardial infarction or angina
  - Ictus
  - Arrhythmia, uncontrolled hypertension



# Muse

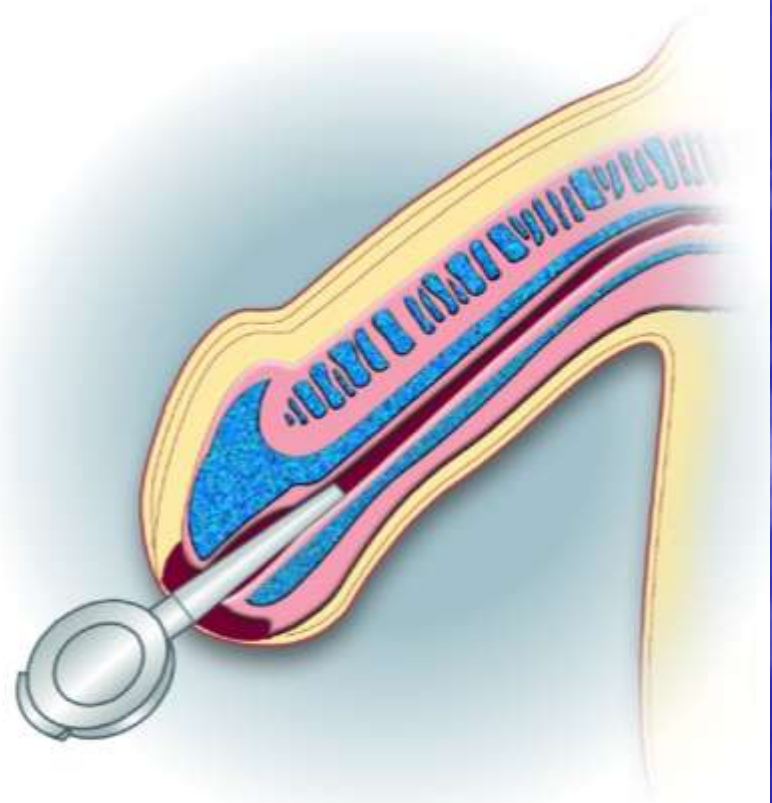
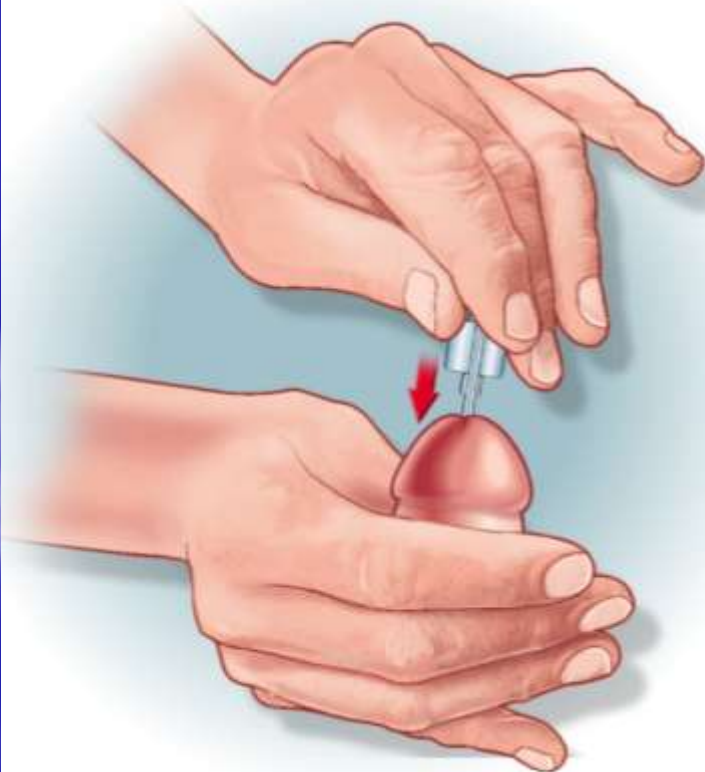
## Alprostadil



# MUSE

## Alprostatil

**MUSE (= Medical Urethral System for Erection):**



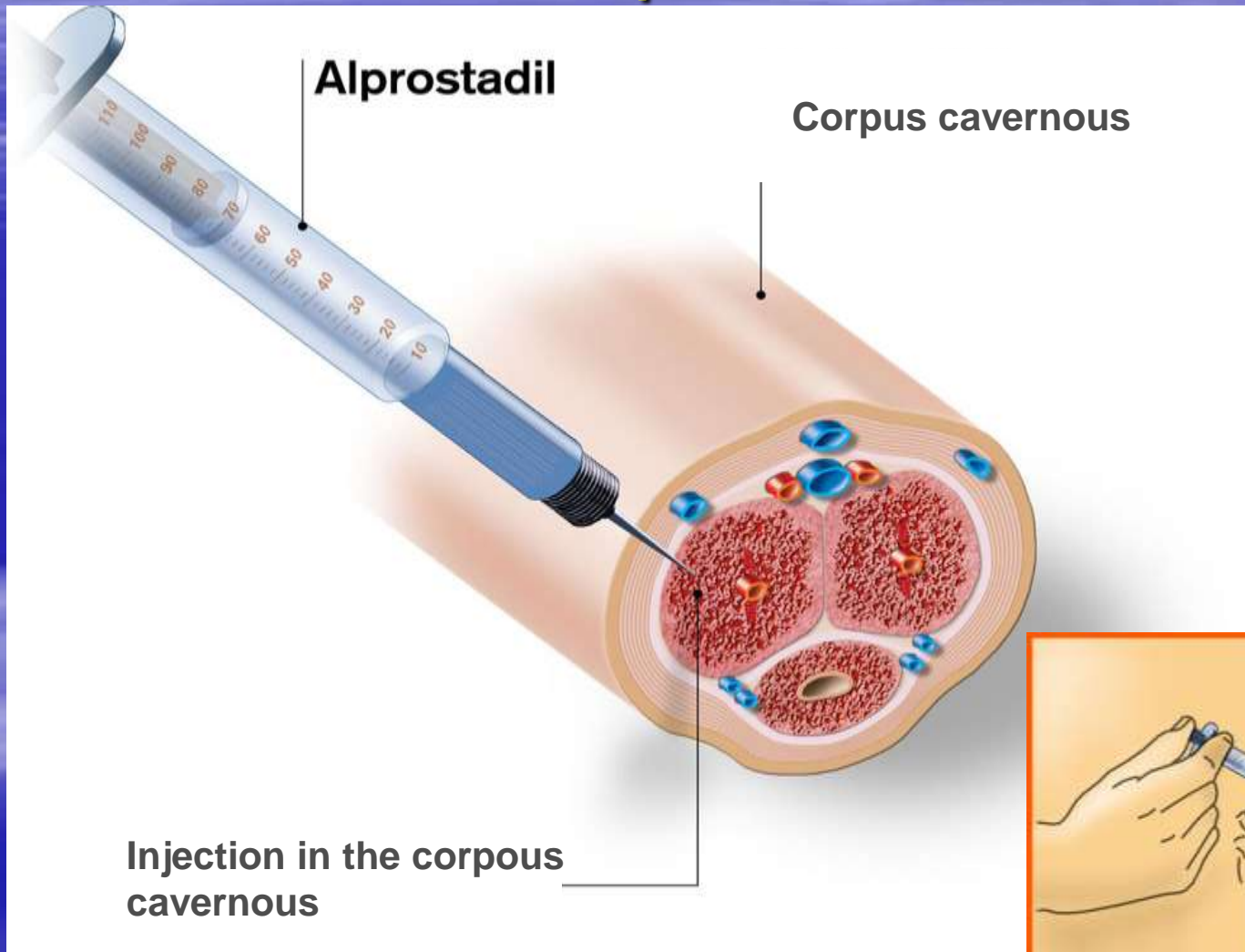
# Caverject

## Alprostatil



# Caverject

## Alprostadil



# Semi rigid implant Acuform (Mentor)

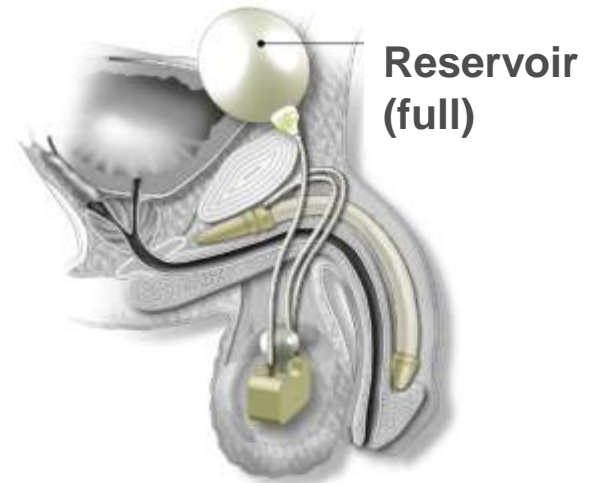
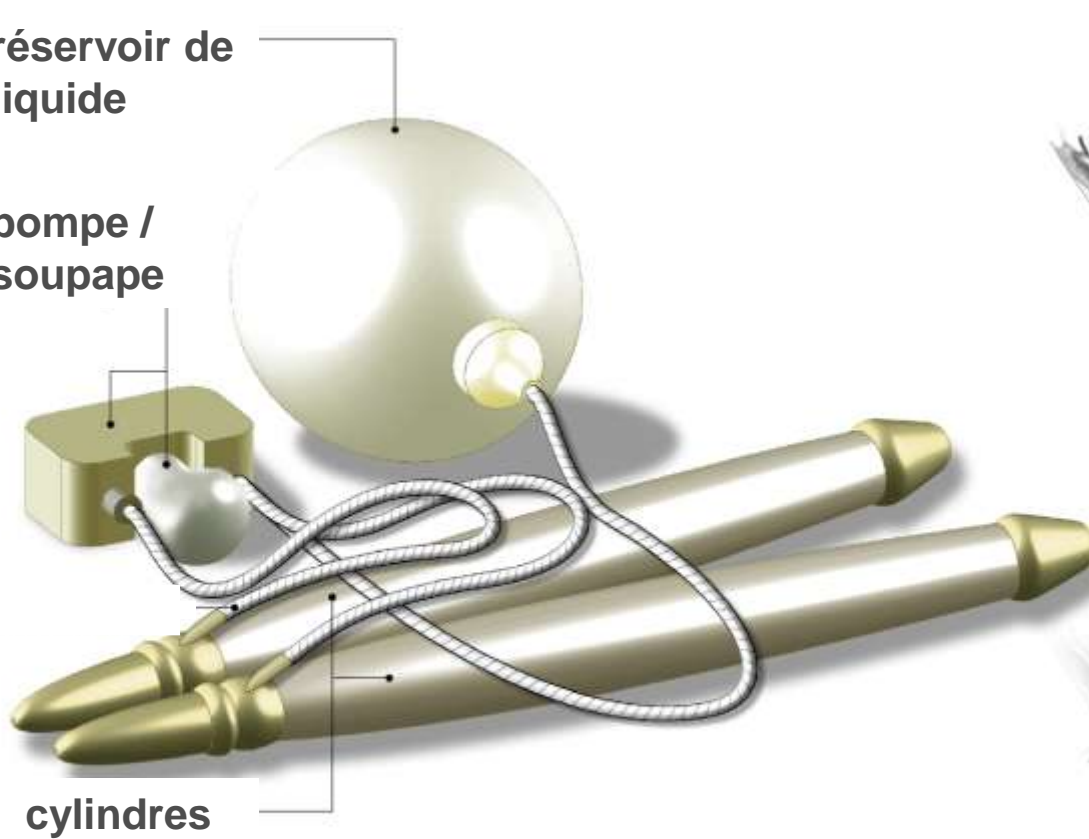


# Inflatable implant (AMS 700)

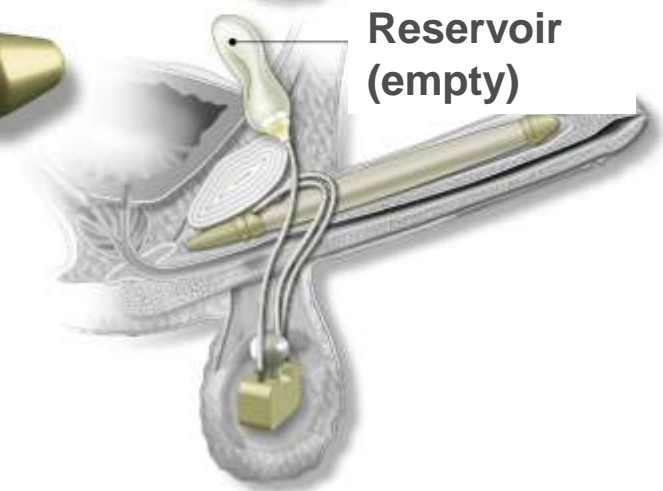
réservoir de  
liquide

pompe /  
soupape

cylindres



Reservoir  
(full)



Reservoir  
(empty)

# What's in a man's mind



Dr Georges-A. de Boccard

*February 21<sup>st</sup>, 2008*