



Liga Acadêmica de Farmacologia

Fisiologia do Sistema
Endócrino e o papel da
Melatonina

Prof. Dr. Luiz Carlos dos Reis

Melatonin, human aging, and age-related diseases

M Karaseka

Experimental Gerontology 39 (2004) 1723–1729

The basic physiology and pathophysiology of melatonin

B Claustrata, J Bruna, G Chazotb

Sleep Med Rev (2005) 9, 11–24

Melatonin as a hypnotic: Pro

IV Zhdanova

Sleep Med Rev (2005) 9, 51–65

Melatonin

R Hardeland, SR Pandi-Perumal, DP Cardinali

The Int J Biochem Cell Biol 38 (2006) 313–316

Circadian rhythms, sleep, and the menstrual cycle

FC Baker and HS Driver

Sleep Medicine 8 (2007) 613–622

Anti-oxidant strategies

G Buonocore and F Groenendaal

Semin Fetal Neonat Med (2007) 12, 287-295

How to assess circadian rhythm in humans: A review

WA Hofstra and Al W de Weerd

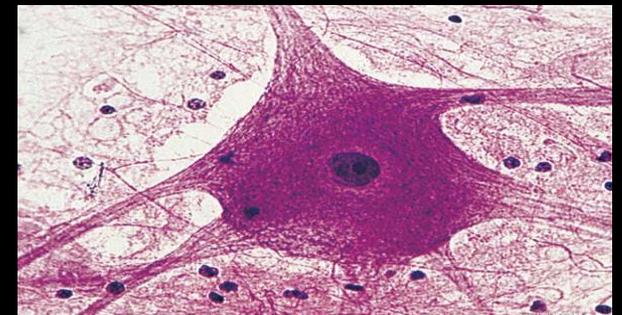
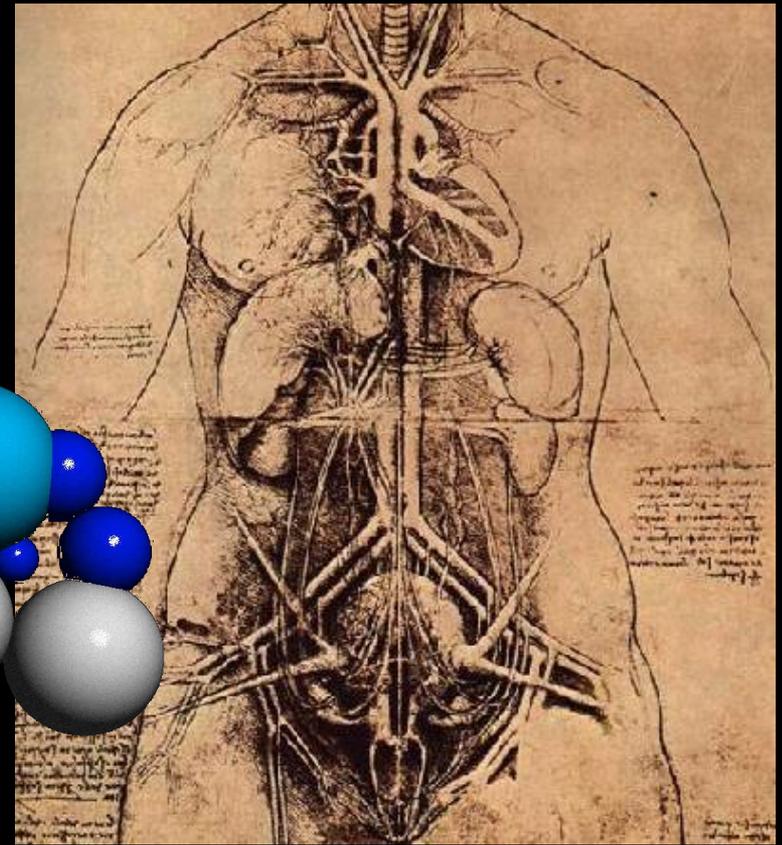
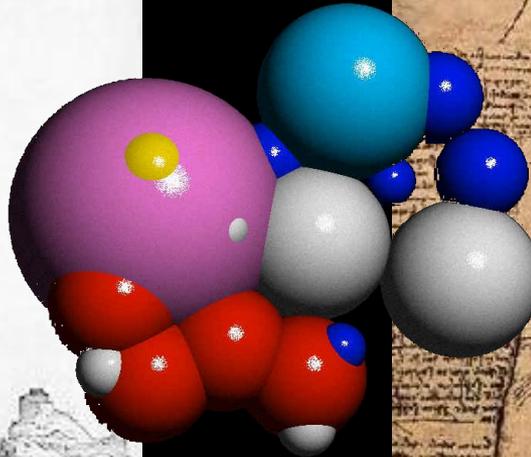
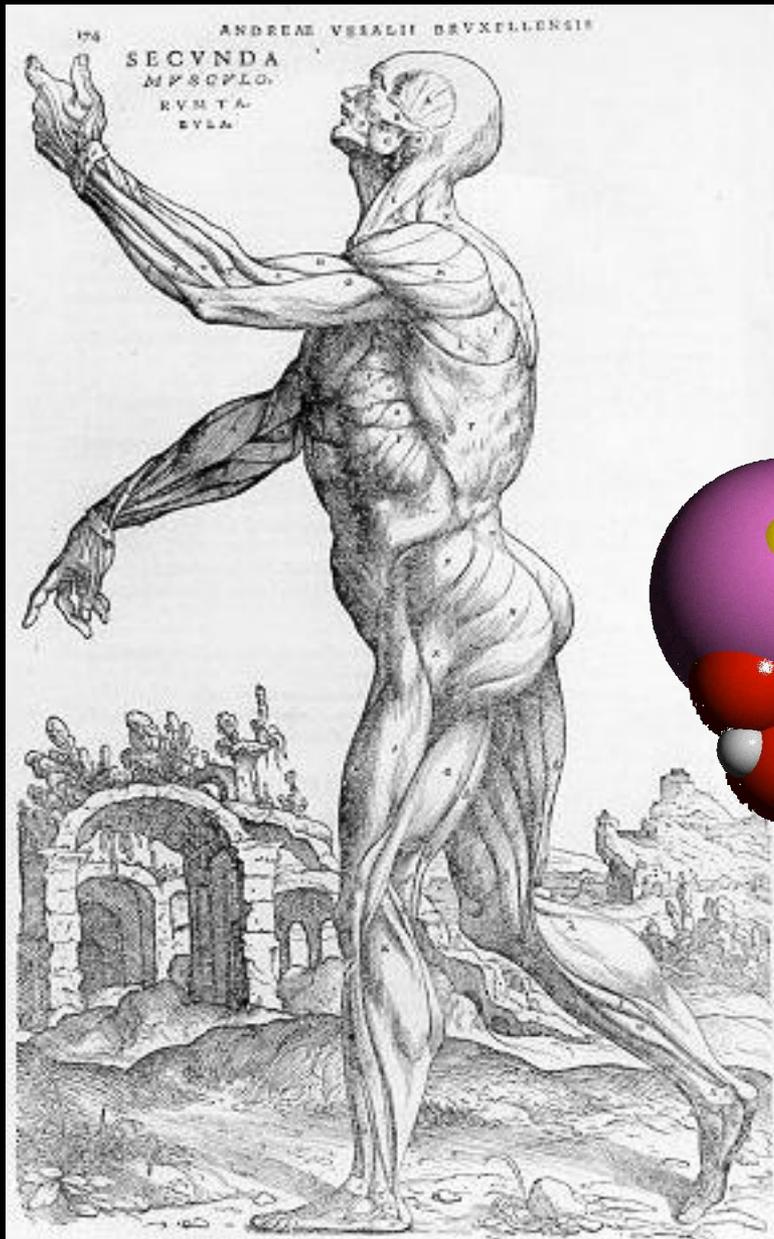
Epilepsy & Behavior 13 (2008) 438–444

Neuroendocrine features in extreme longevity

E Ferrari, L Cravello, F Falvo et al

Experimental Gerontology 43 (2008) 88–94

MOLÉCULAS <<>> ORGANISMO



HOMEOSTASE

Equilíbrio do Meio Interno

Gases Respiratórios

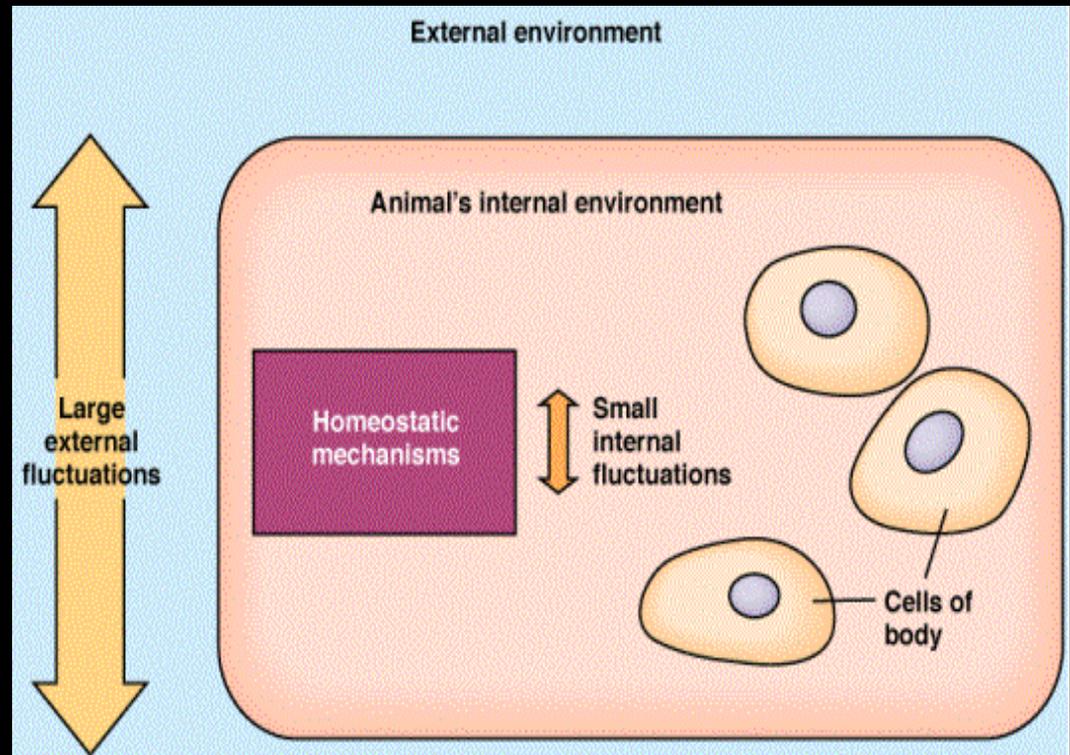
Osmolaridade

Temperatura

Nutrientes

Íons

pH



DESAFIOS

Alterações Ambientais

Claro/Escuro

Temperatura

Umidade

Pressão

Atividade Física

Crescimento

Reprodução

INTEGRAÇÃO

Sistemas Orgânicos em Atividade

Muscular

Esquelético

Circulatório

Respiratório

Neural

Endócrino

Digestório

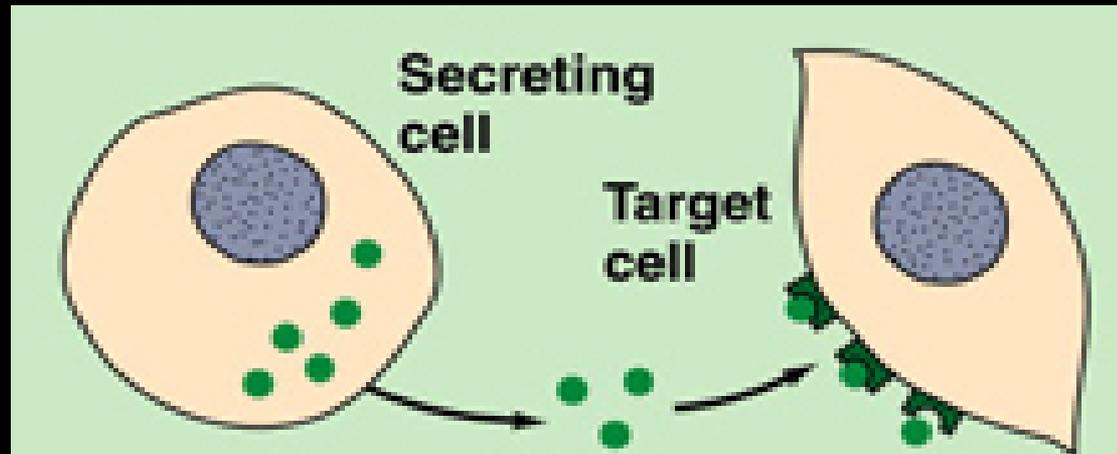
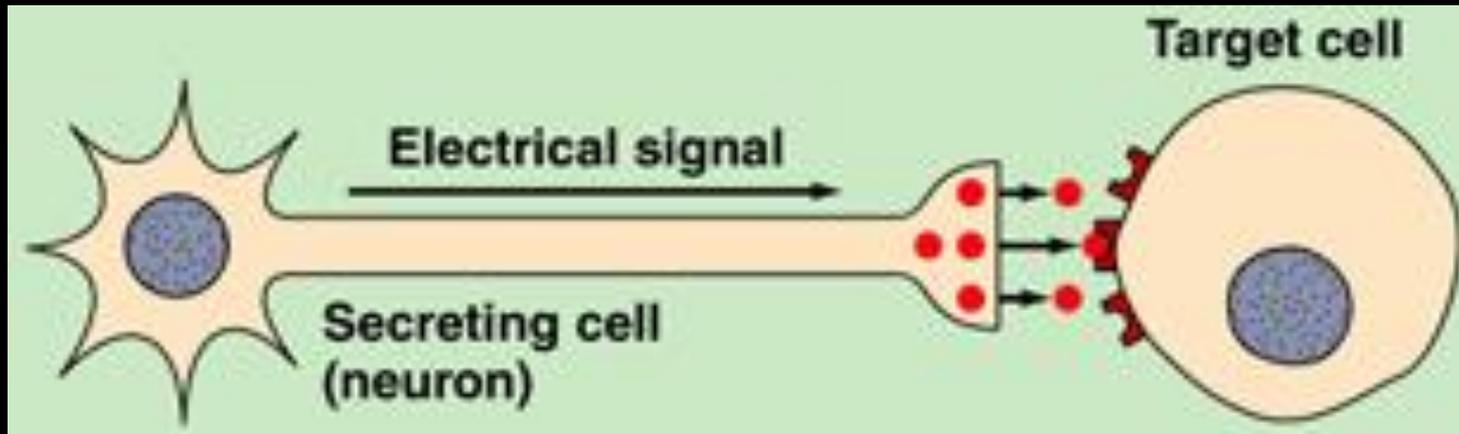
Urinário

Imunológico

Reprodutor

COMUNICAÇÃO CELULAR

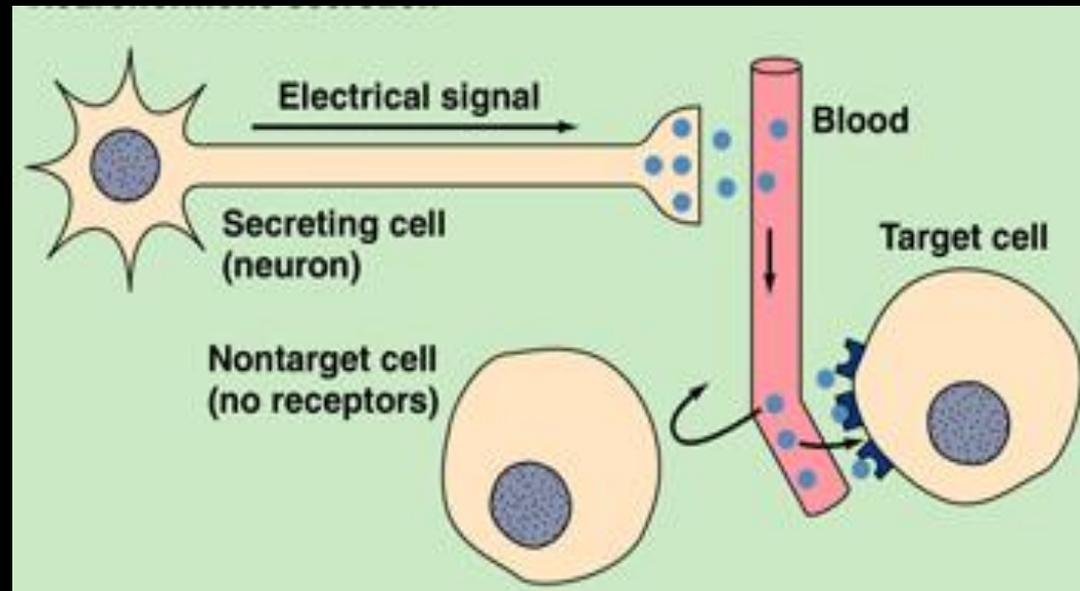
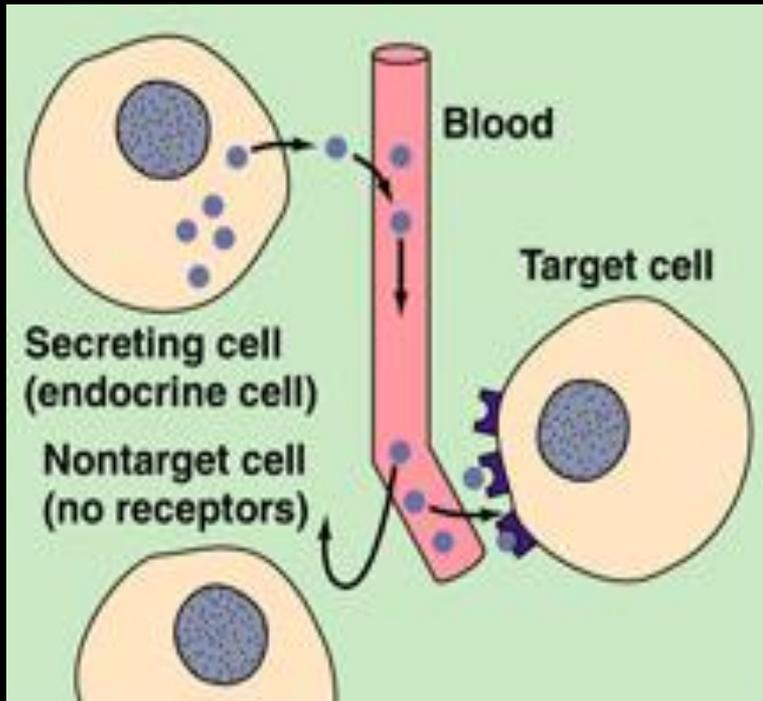
Sinalizadores químicos



HORMÔNIOS

Informação

Controle



HORMÔNIOS

Substâncias químicas produzidas por grupos de células e que influenciam a atividade de outras células, sendo transportadas pelo sangue, importantes para a manutenção da homeostase do meio interno em condições normais e sob situações de desafios.

HORMÔNIOS

Classes Químicas

LIPÍDICOS (Esteróides)

colesterol

Lipossolúveis

PROTEÍCOS (Peptídeos / Proteínas)

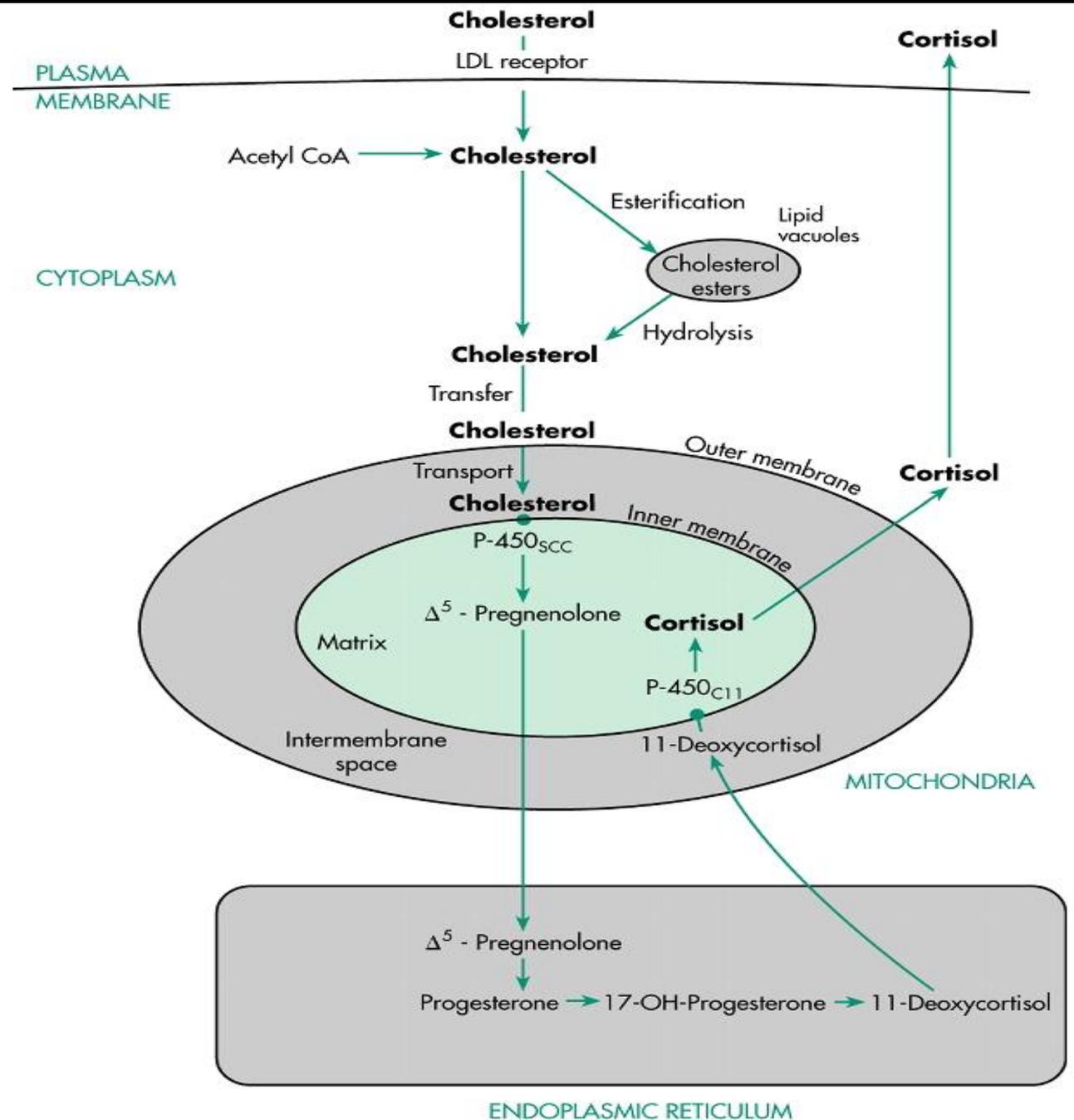
aminoácidos

Hidrossolúveis

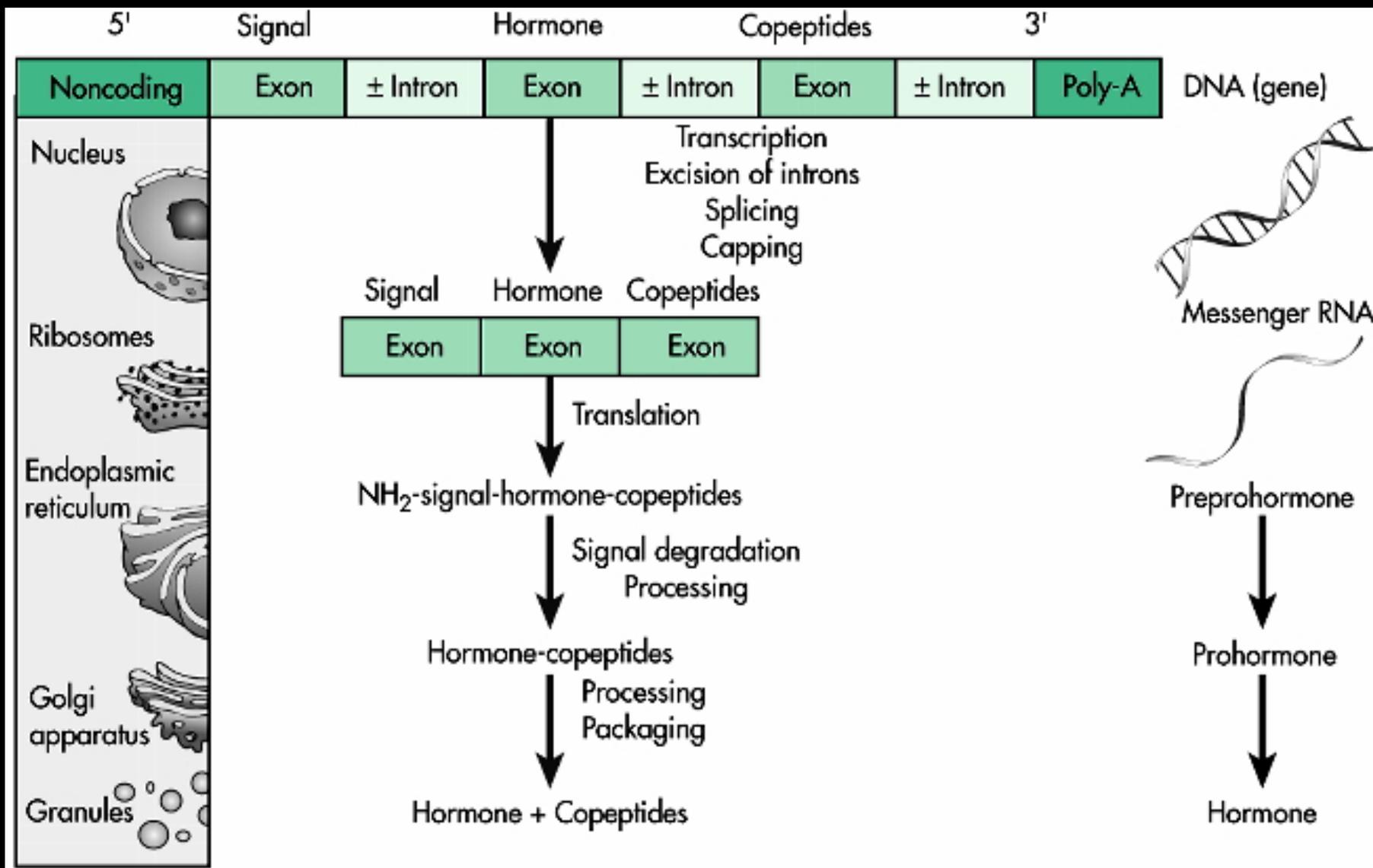
AMINOÁCIDOS MODIFICADOS

tirosina / triptofano

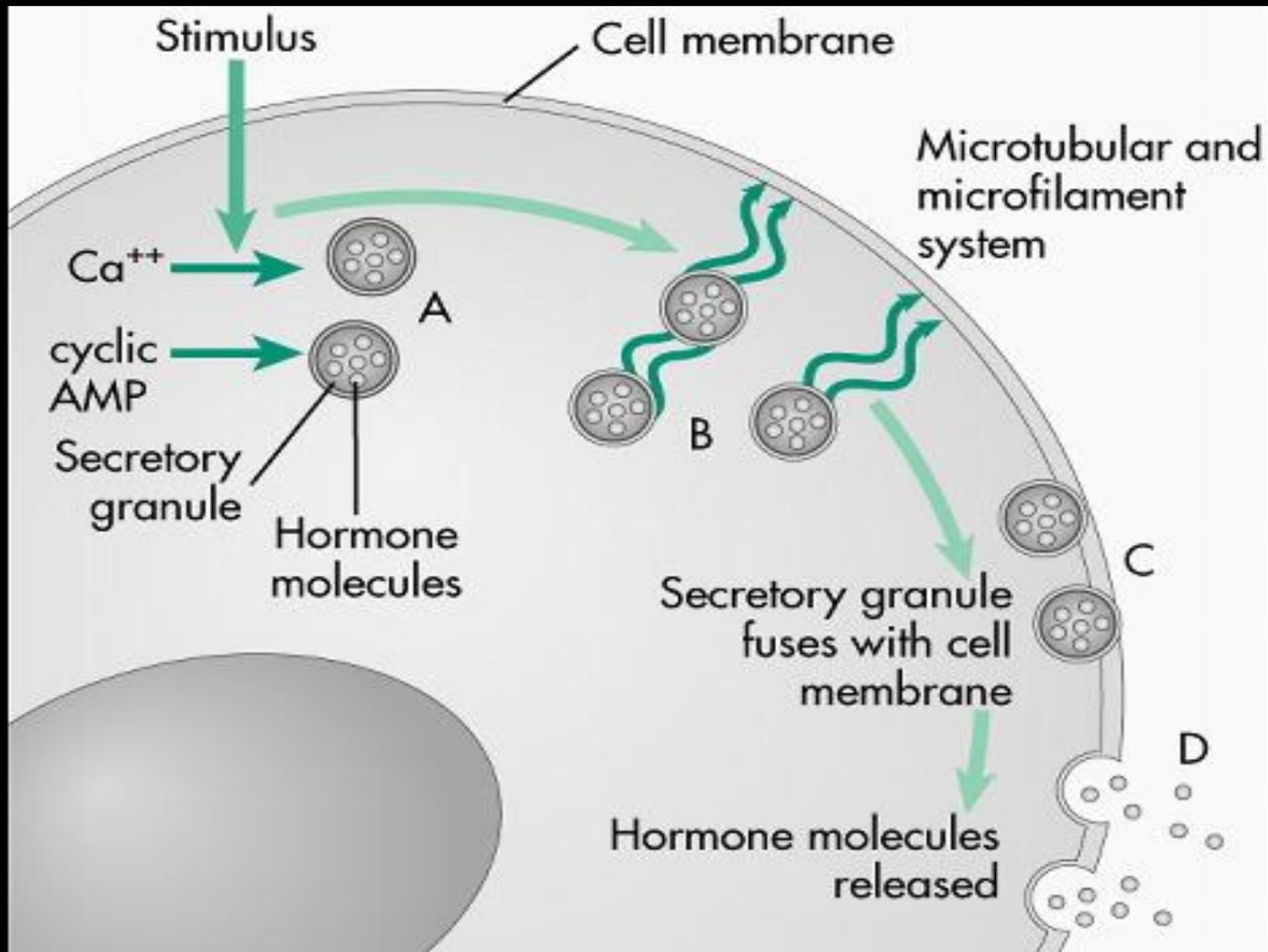
Síntese Hormônios Esteróides



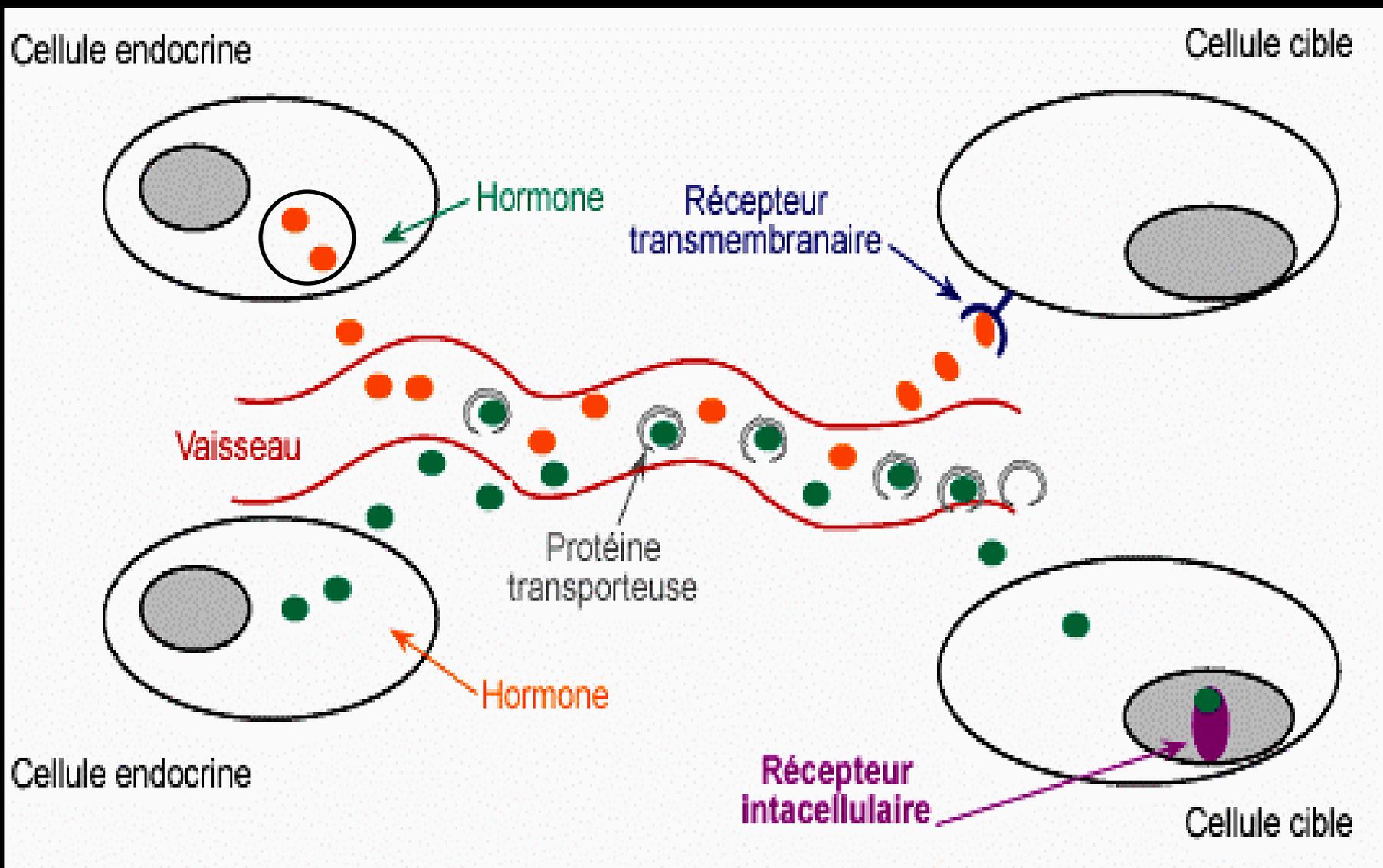
Síntese de Hormônios Protéicos



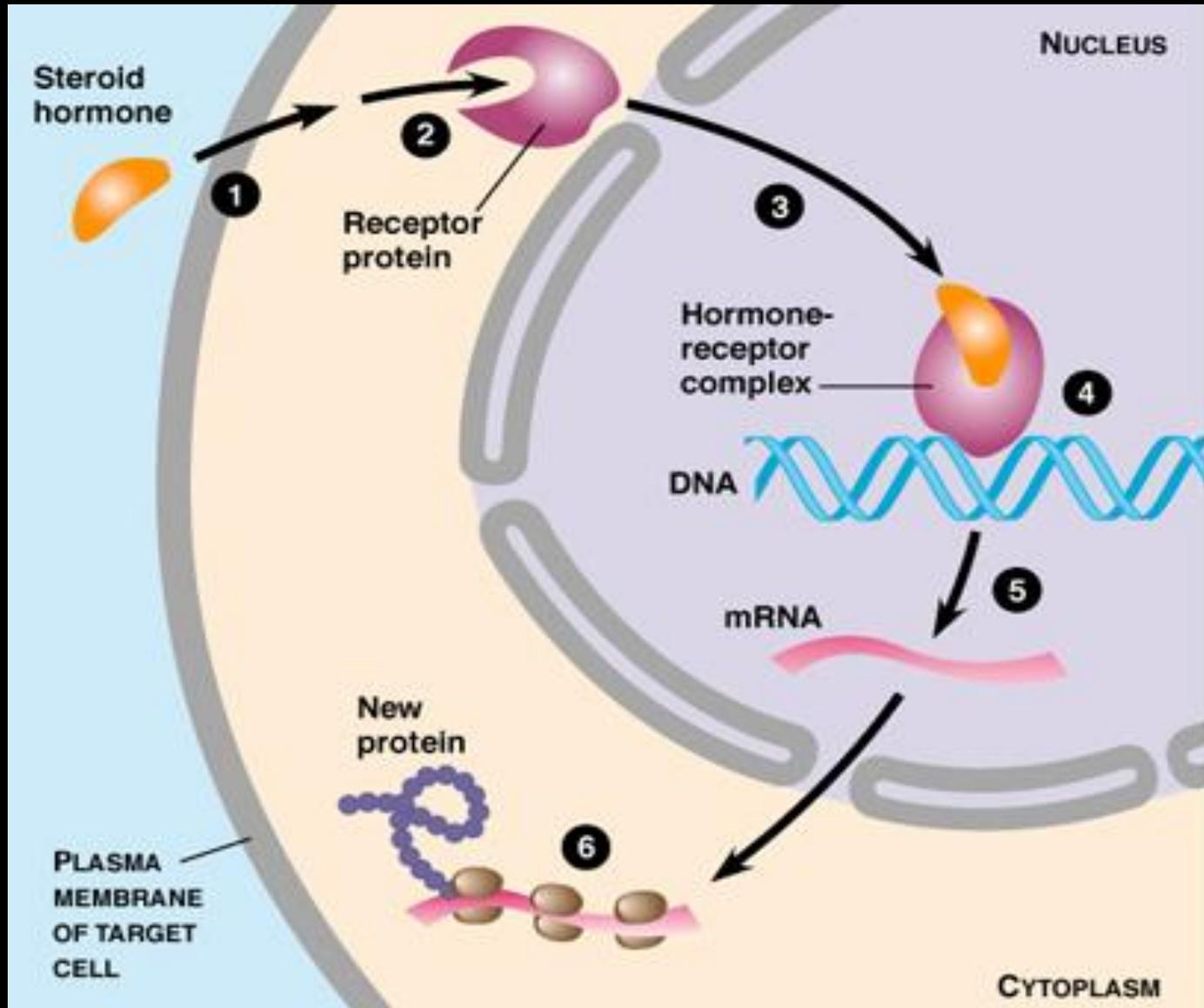
Síntese e Secreção Hormonal



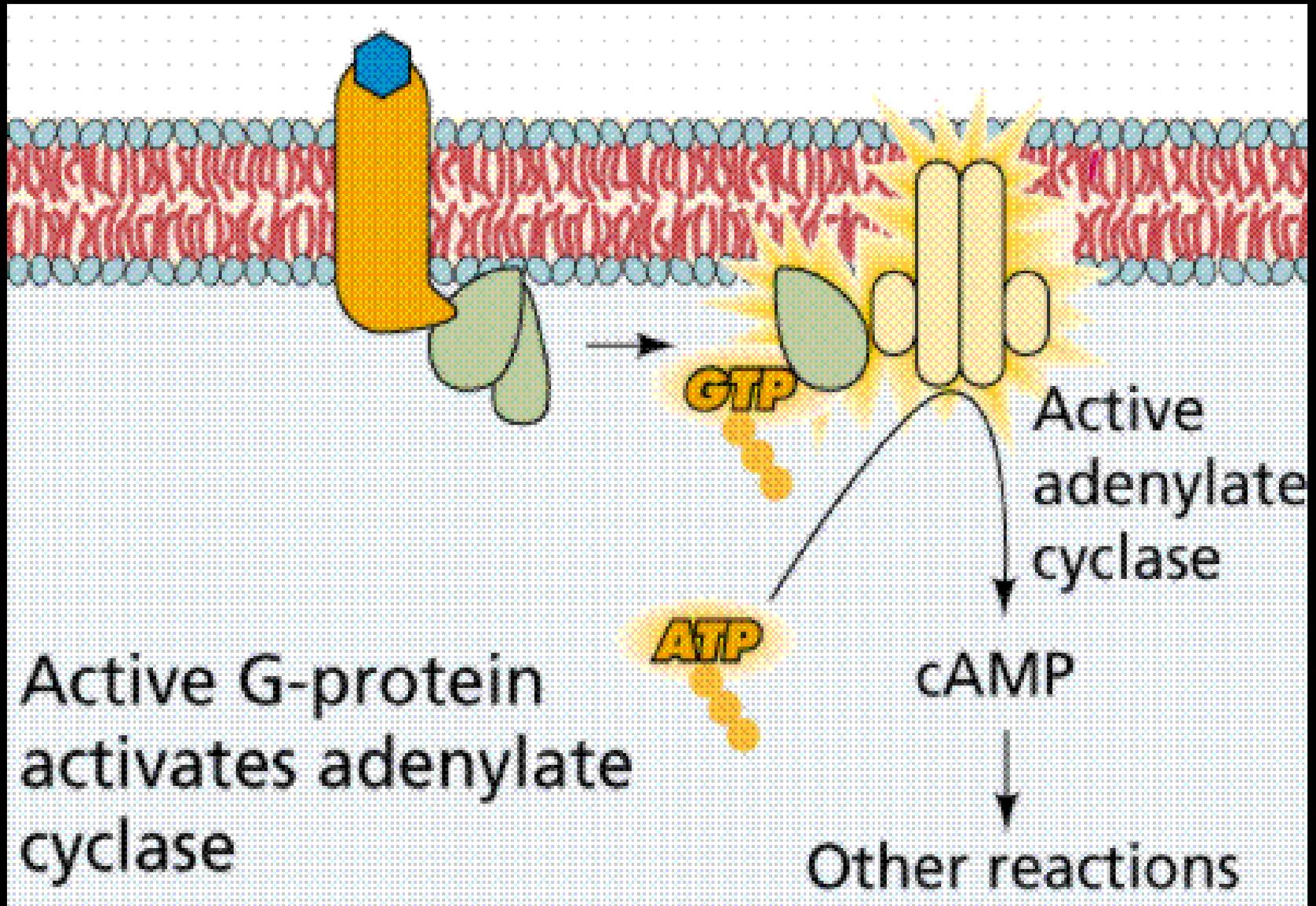
Transporte e Ação Hormonal



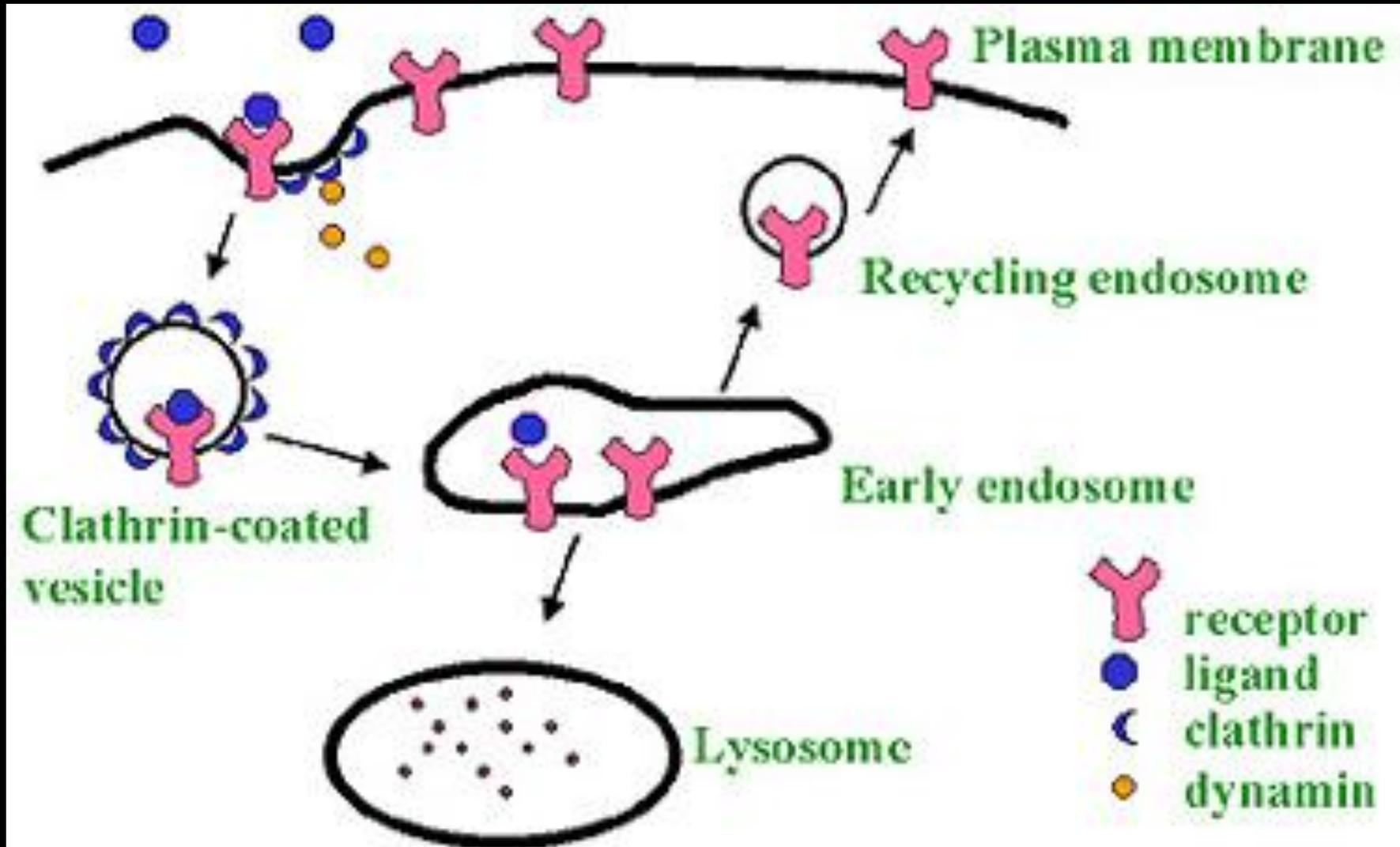
Mecanismo de Ação - Esteróides



Mecanismo de Ação – Protéicos



Metabolização de Hormônios



Controle da Secreção Hormonal

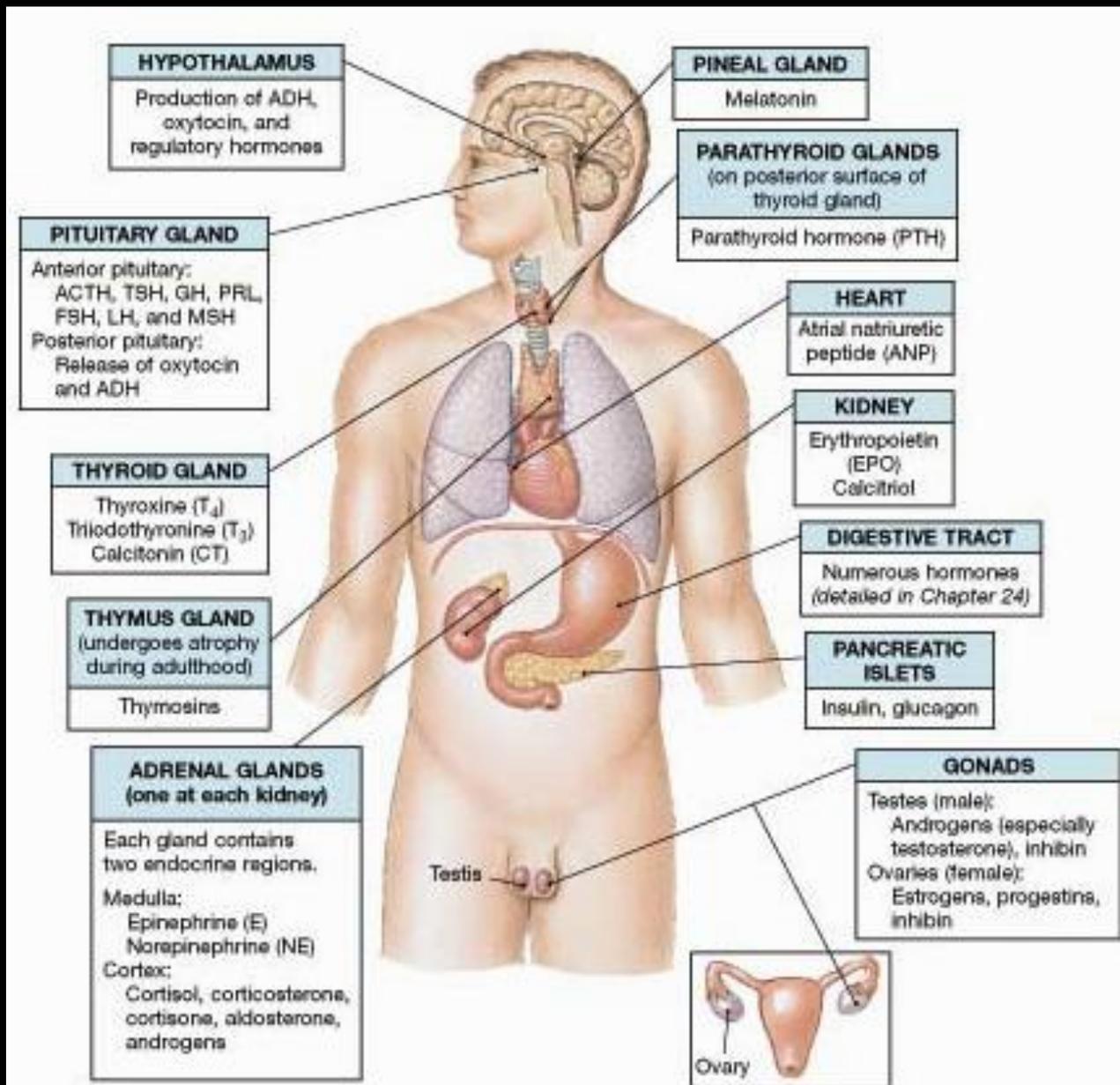
- **Controle Neural**
- **Controle Cronotrópico**
- **Controle por Feed-Back**

Hormônio - Hormônio

Mineral - Hormônio

Substrato Metabólico - Hormônio

SISTEMA ENDÓCRINO



CRESCIMENTO

Somatotrofina

Adeno-hipófise

Somatomedinas

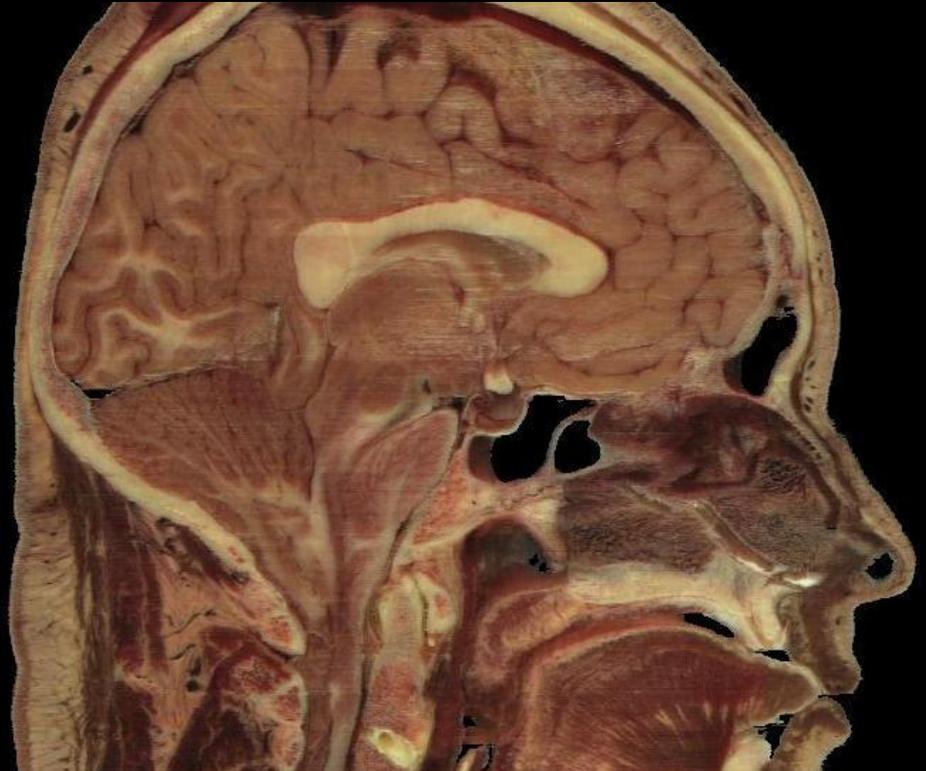
Fígado

Insulina

Pâncreas

Andrógenos/Estrógenos

Gônadas



CÁLCIO CORPORAL

Paratormônio

Paratireóides

Calcitonina

Tireóide

Vitamina D

Rins



EQUILÍBRIO ENERGÉTICO

Insulina - Glucagon

Pâncreas

Cortisol

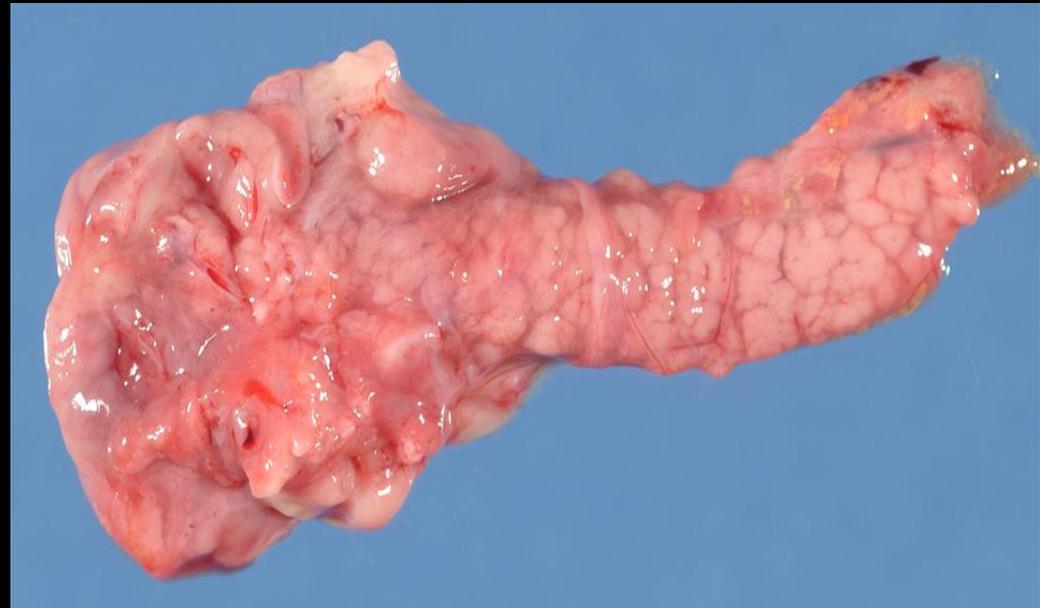
Córtex Adrenal

GH

Adenohipófise

Adrenalina

Medula Adrenal



METABOLISMO

TEMPERATURA CORPORAL

Tiroxina

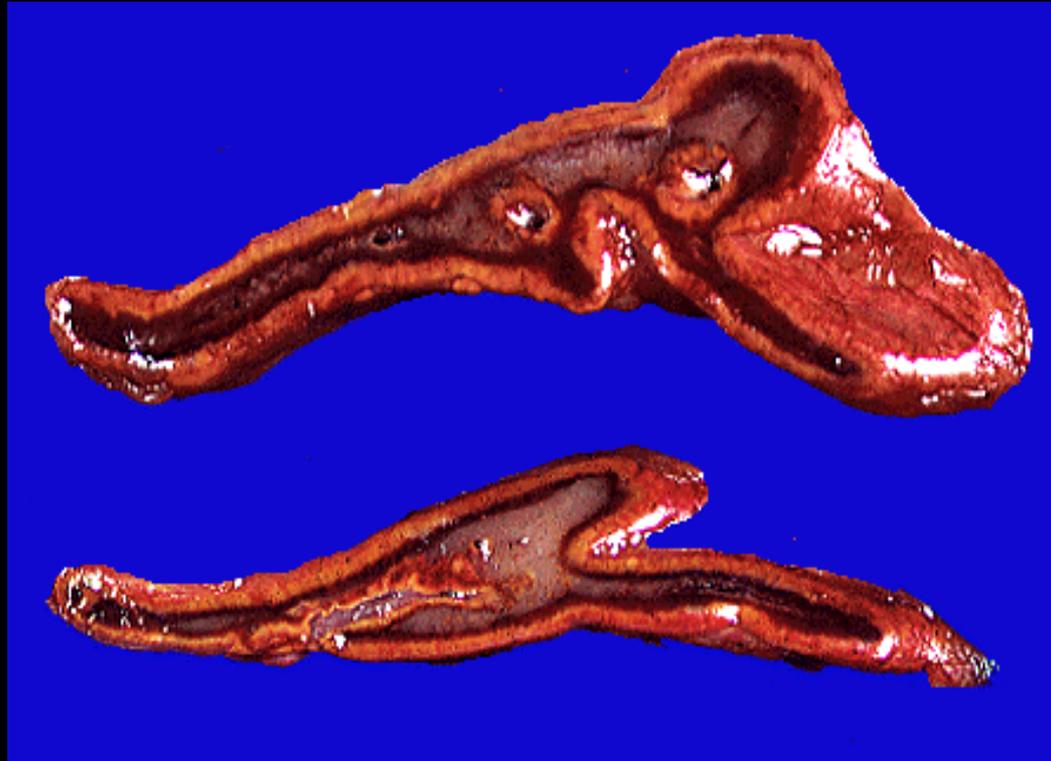
Tireóide

Cortisol

Adrenal
(córtex)

Adrenalina

Adrenal
(medula)



EQUILÍBRIO HIDROELETROLÍTICO

ADH

Neurohipófise

Aldosterona

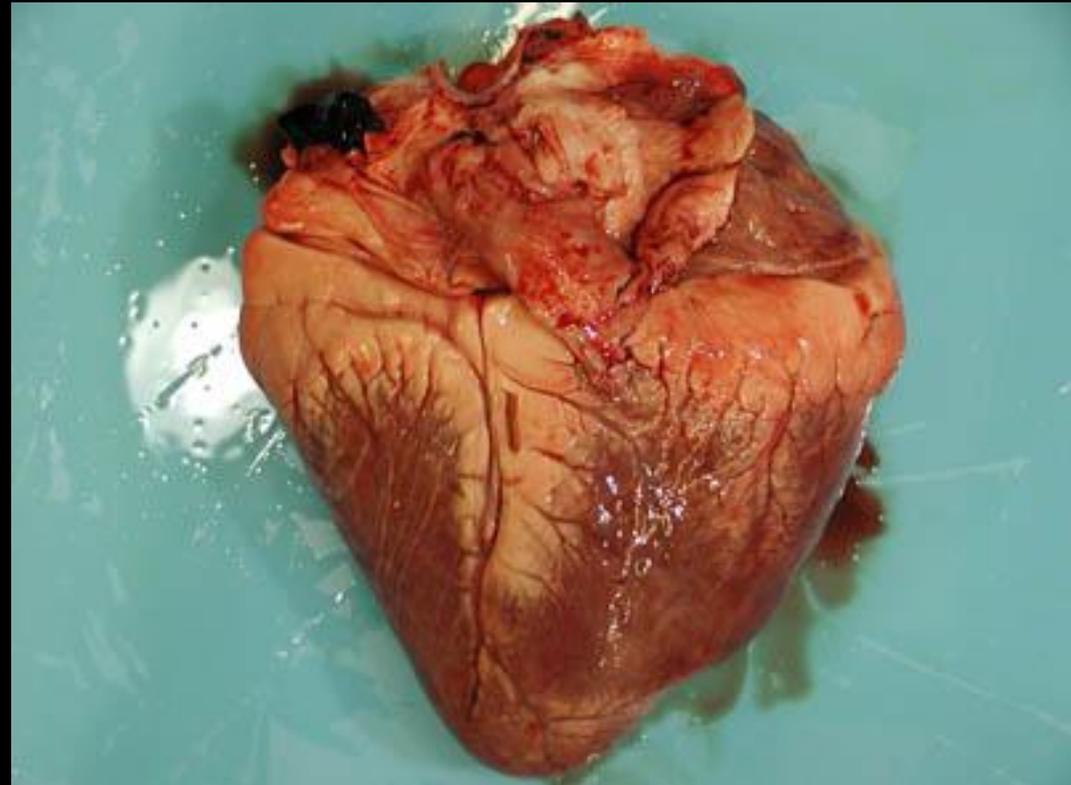
Adrenal

ANP

Coração

BNP

Cérebro



REPRODUÇÃO

Estrogênios

Ovários

Androgênios

Testículos

Prolactina

Adenohipófise

Ocitocina

Neurohipófise



PESO CORPORAL

GHrelina

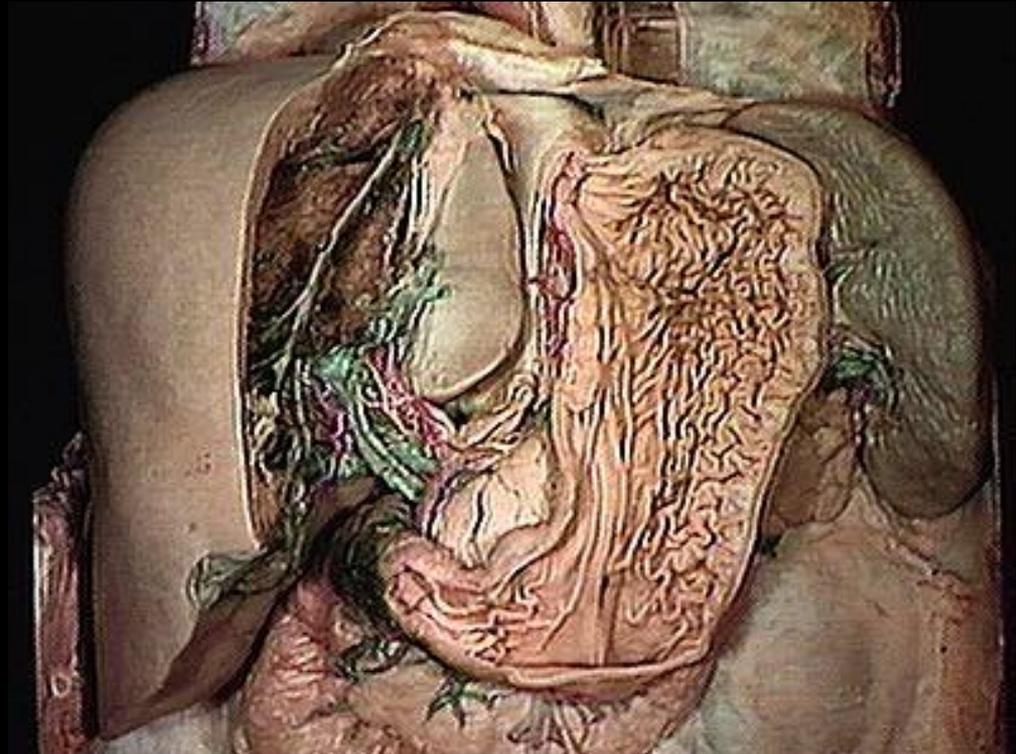
Estômago

NPY

Hipotálamo

Leptina

Tecido Adiposo



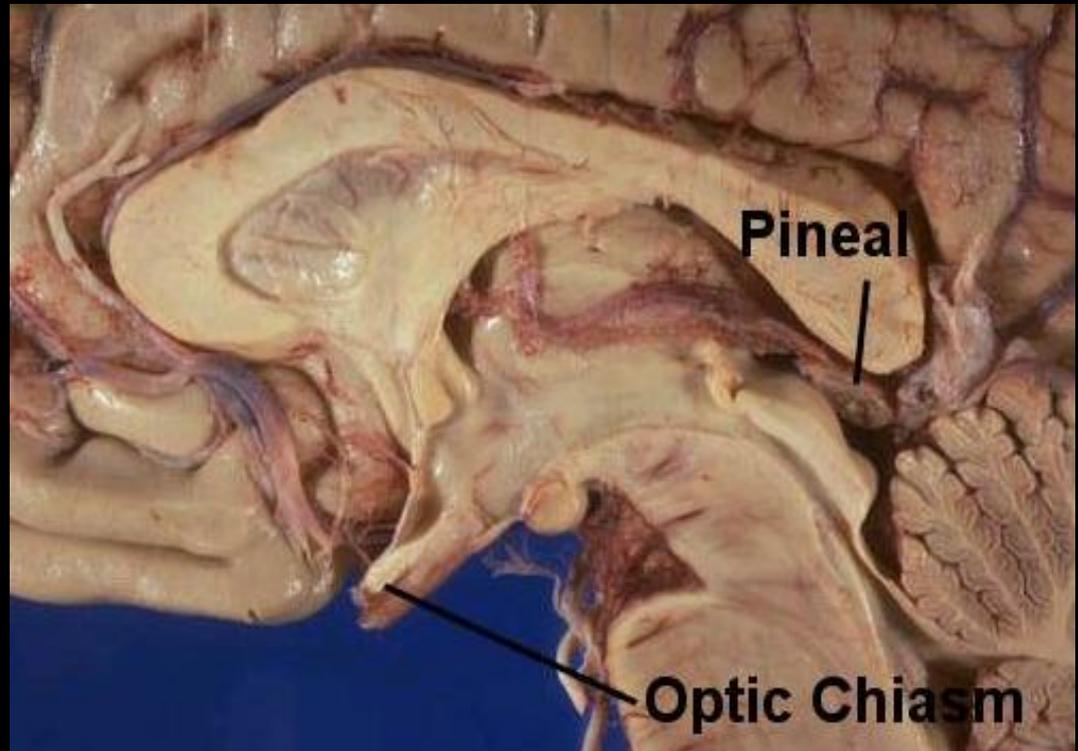
RITMOS BIOLÓGICOS

Melatonina

Pineal

Cortisol

Adrenal





melatonin



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[Compre Melatonina | melatoninaportugal.com](#)

Links Patrocinados

Key Night 60 comprimidos Indicada Para: Insônia, Depressão
www.melatoninaportugal.com

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[Melatonina – Wikipédia, a enciclopédia livre](#)

A **melatonina** (N-acetil-5-metoxitriptamina) é um hormônio produzido por diversos animais e plantas. Em animais superiores, é o produto de secreção da ...
pt.wikipedia.org/wiki/Melatonina - [Em cache](#) - [Similares](#)

[Melatonin - Wikipedia, the free encyclopedia](#)

In mammals, **melatonin** is secreted into the blood by the pineal gland in the brain. Known as the "hormone of darkness," it is secreted in darkness in both ...
en.wikipedia.org/wiki/Melatonin - [Em cache](#) - [Similares](#)

[Melatonin](#)

Melatonin is a hormone secreted by the pineal gland in the brain. It helps regulate other hormones and maintains the body's circadian rhythm. The circadian ...
www.umm.edu/altmed/articles/melatonin-000315.htm - [Em cache](#) - [Similares](#)

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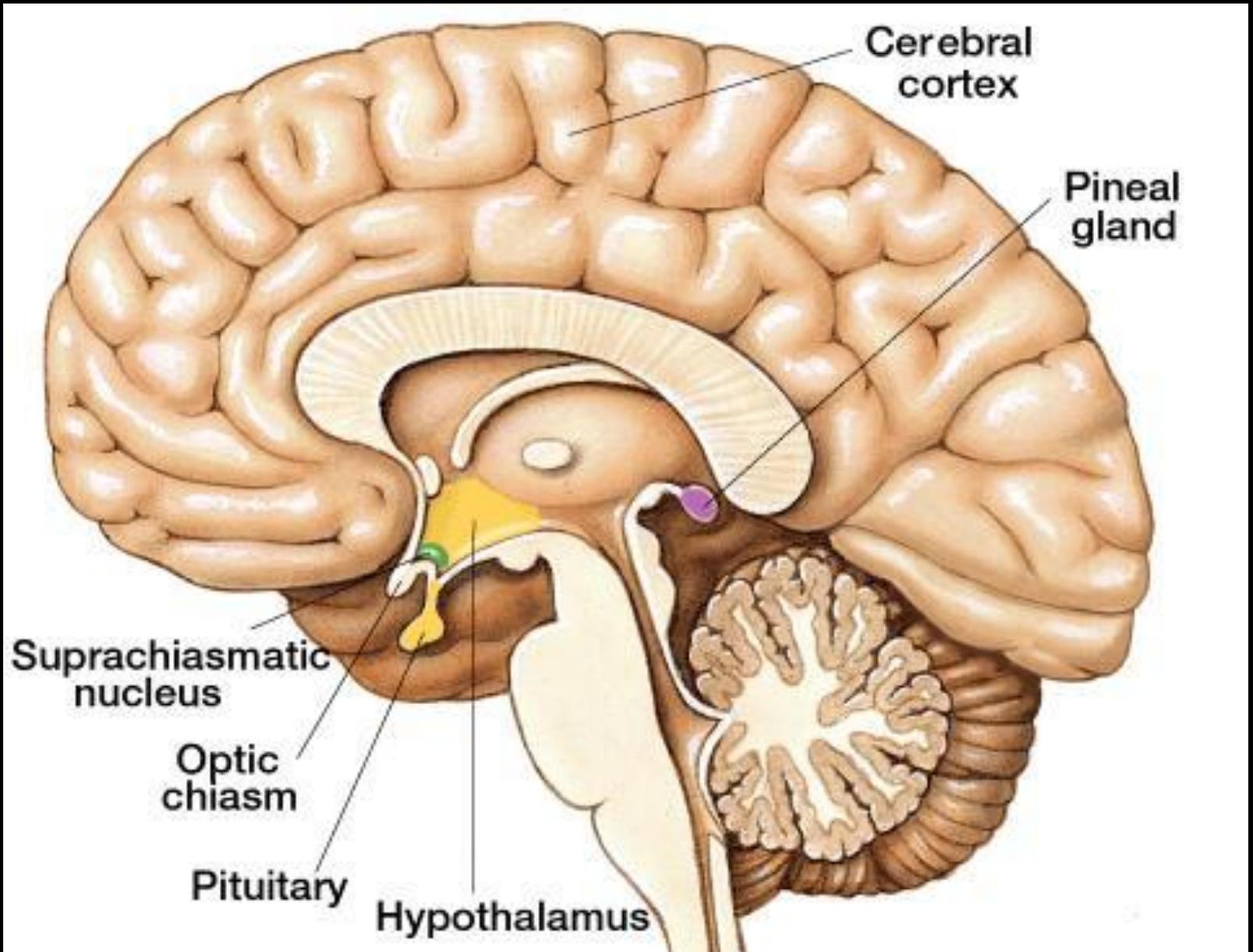
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 Encontre **Melatonina**
www.ask.com

Pineal - Aspectos Anatômicos



Pineal - Aspectos Filogenéticos

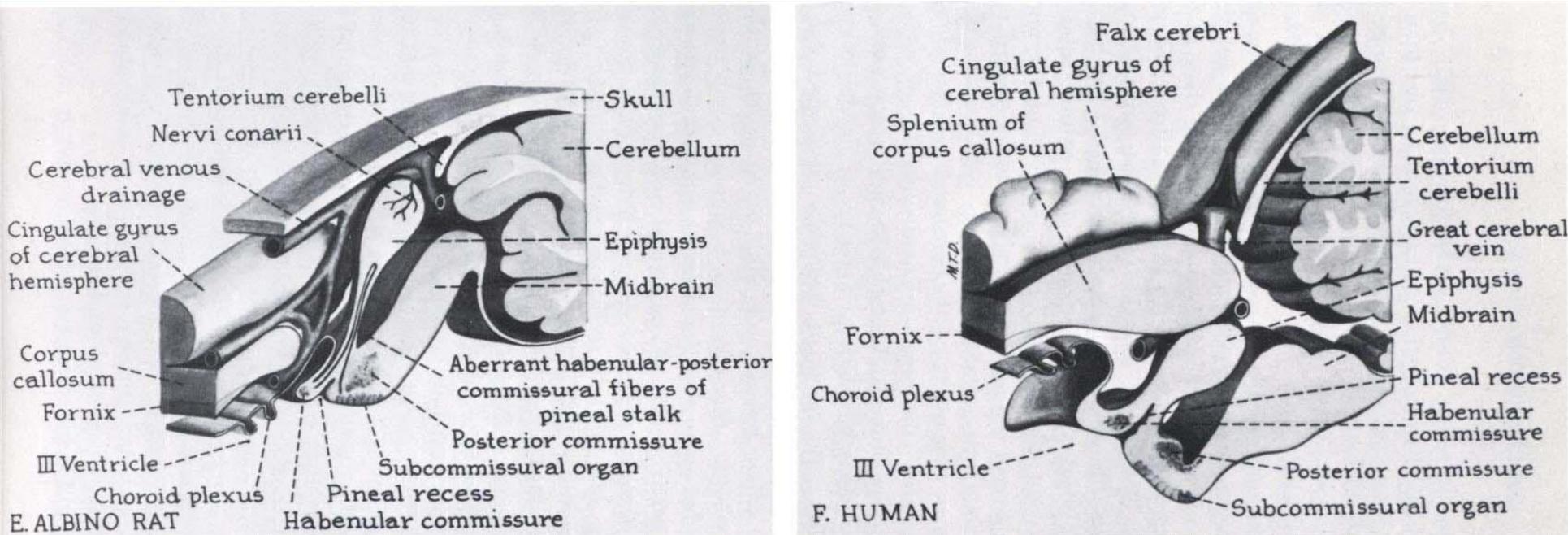
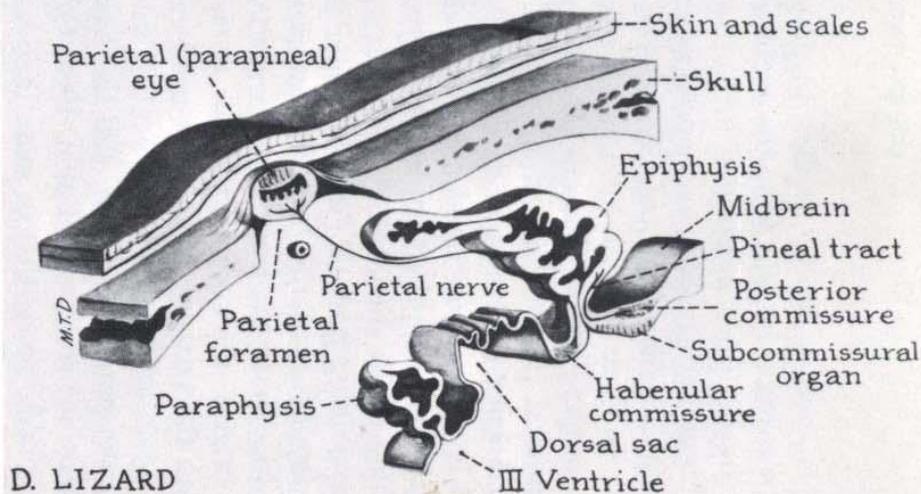
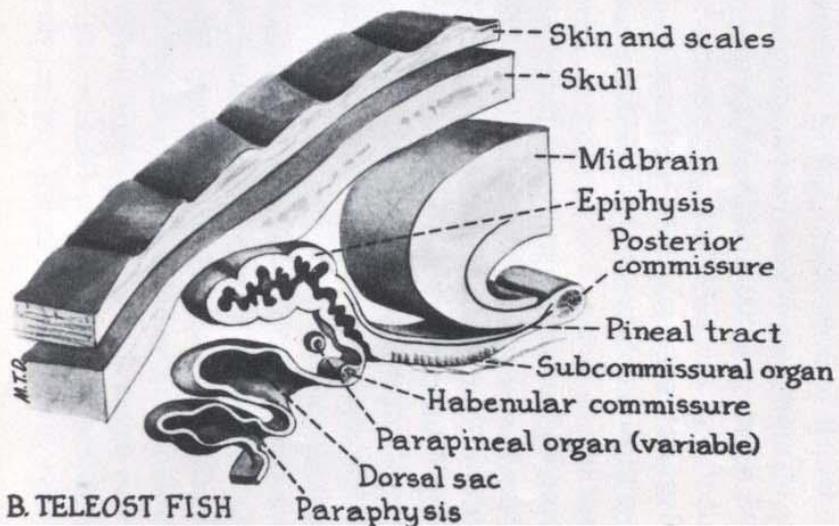
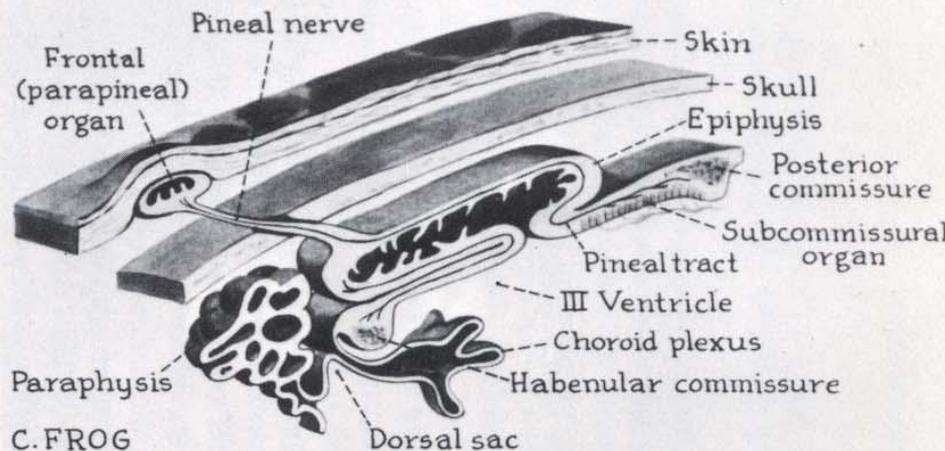
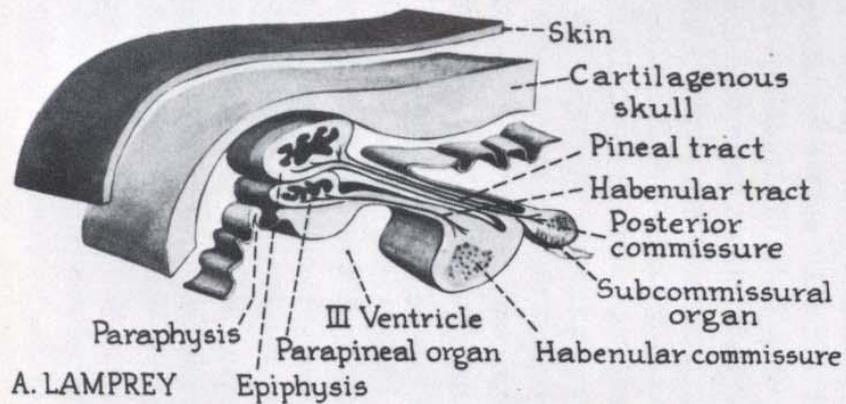
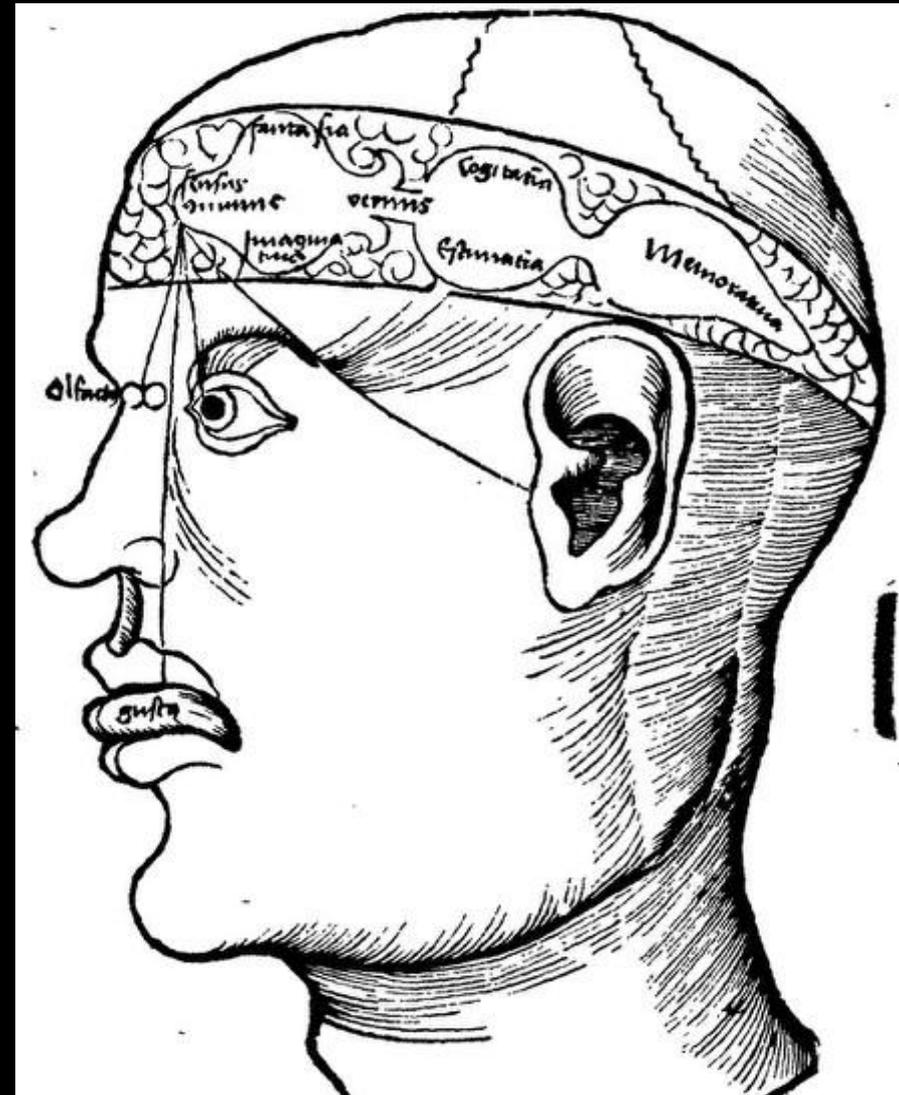
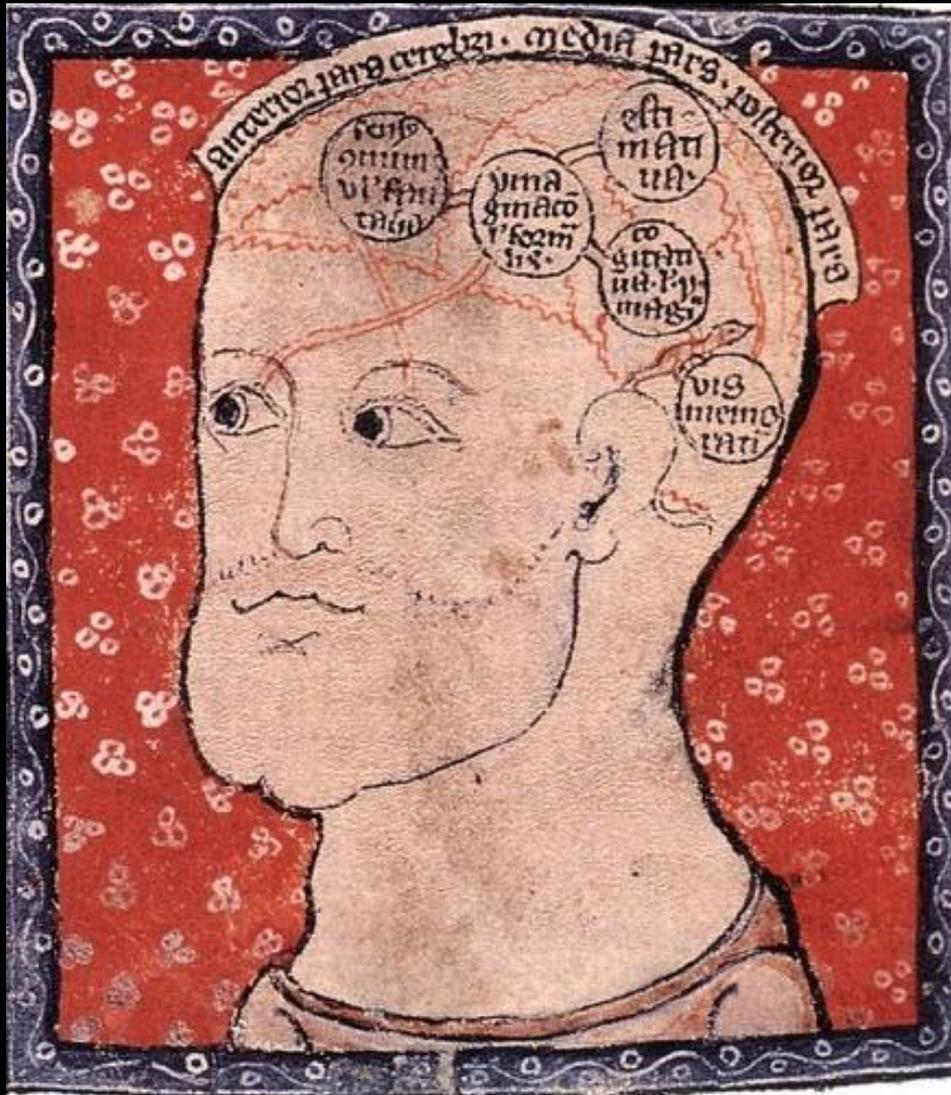


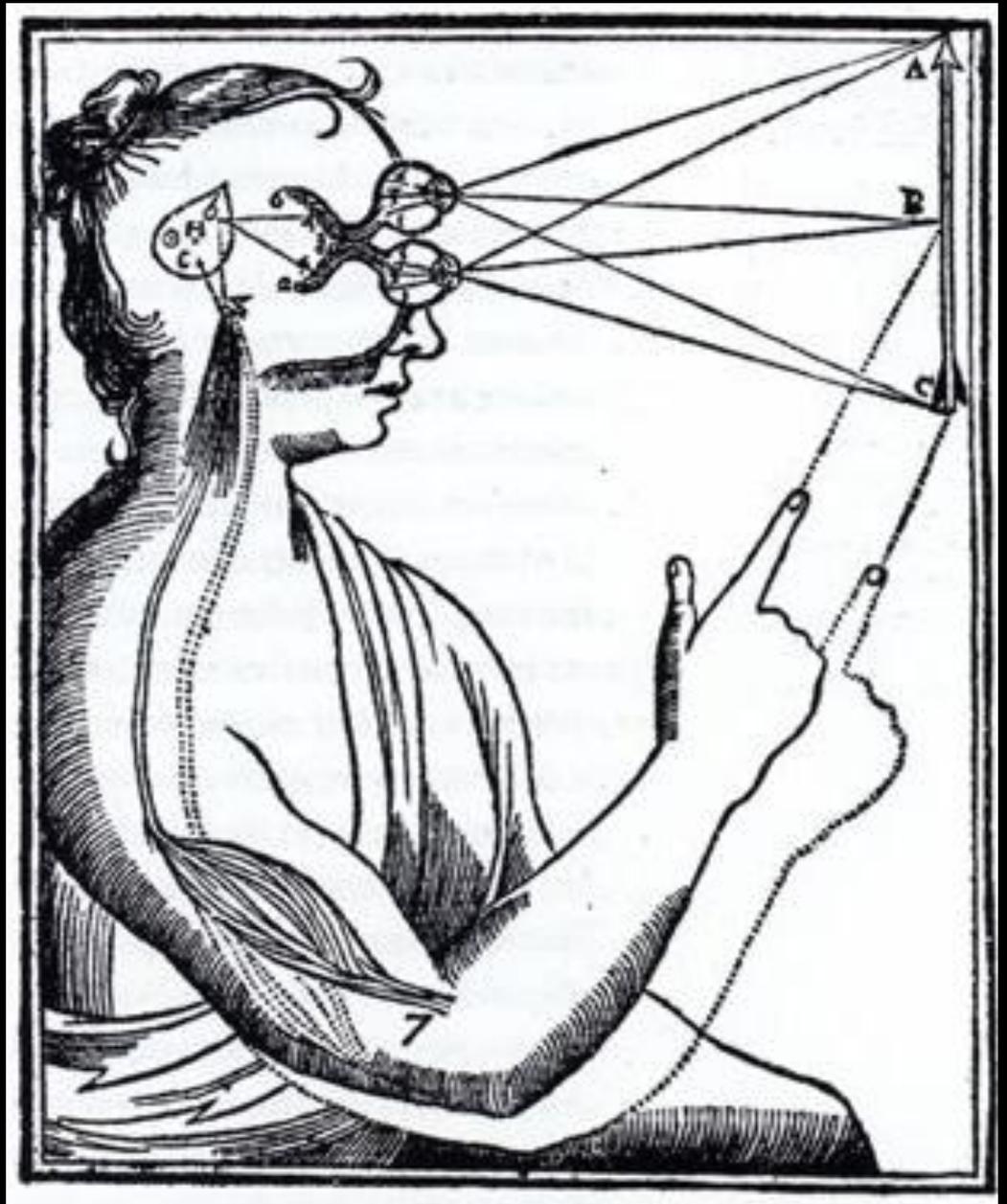
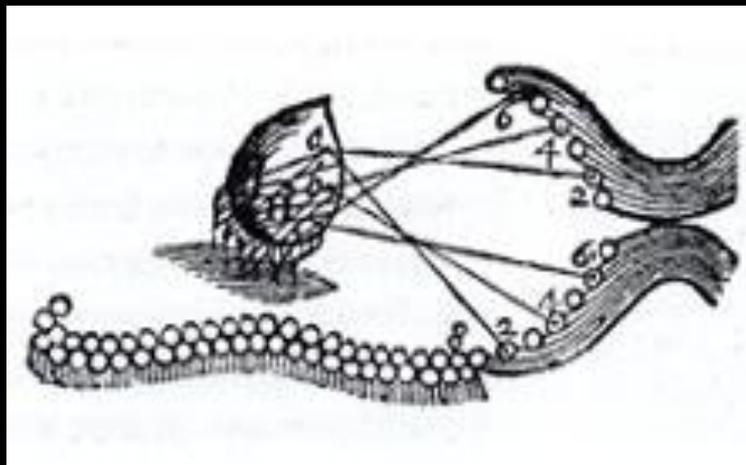
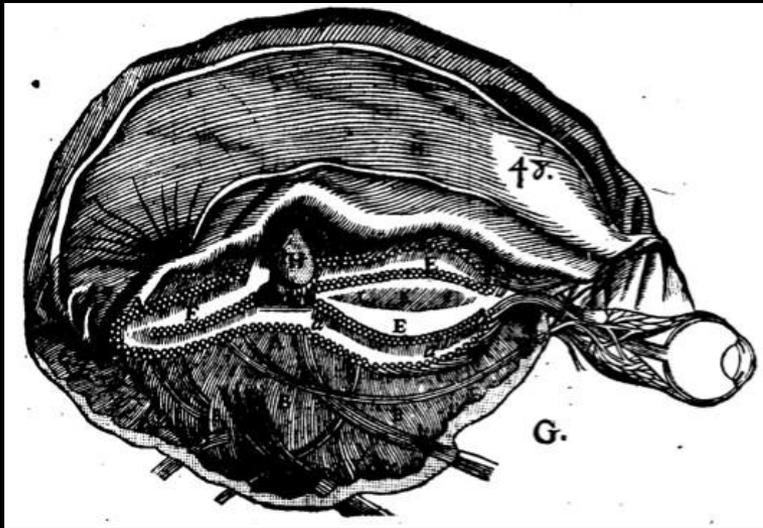
FIG. 1. A through F. Diagrammatic representations depicting longitudinal slices from the diencephalic roof region of the brains of several vertebrates. The facing surface of each slice has been taken at or near the median sagittal plane of the brain. Overlying cranial and/or integumental components are shown, particularly in relation to several pineal derivatives. These diagrams serve to illustrate the various pineal components as they appear in different species, their innervation, their vascularization, and their relationship to other diencephalic circumventricular organs. The significance of these anatomical features is discussed in the text.



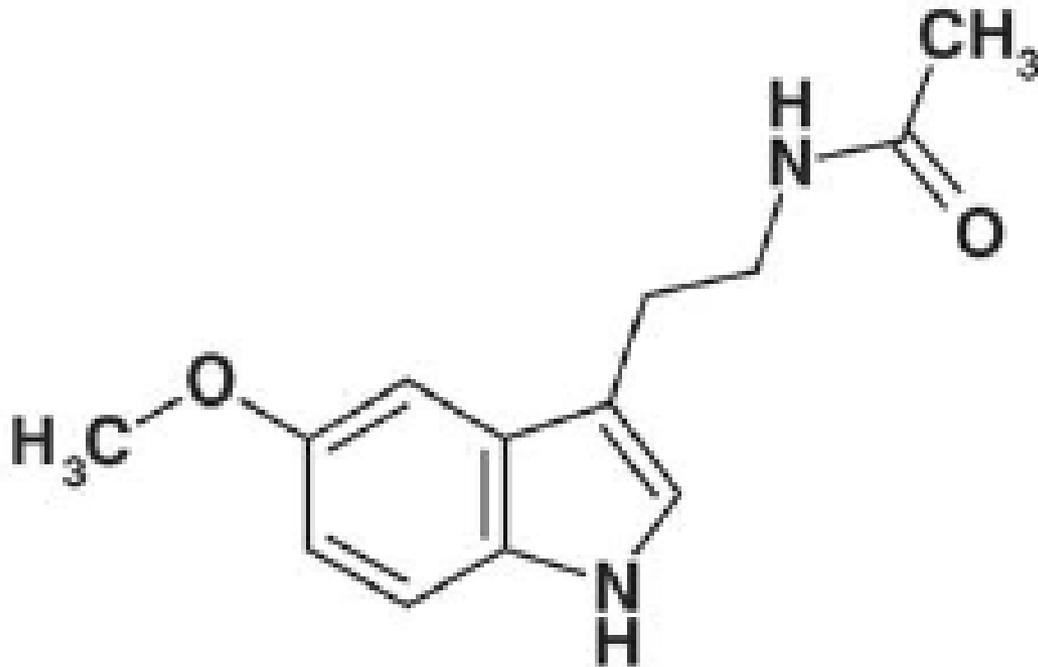
Pineal - Aspectos Históricos



Vermis Pineal – controle de fluxo de pensamento (1300-1306)



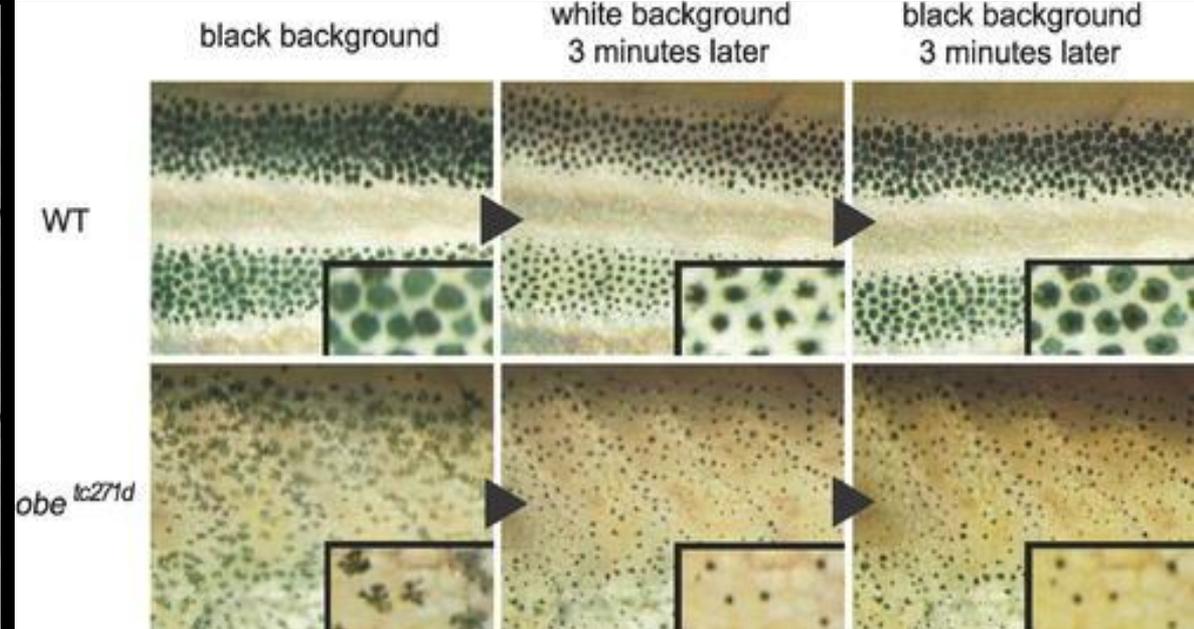
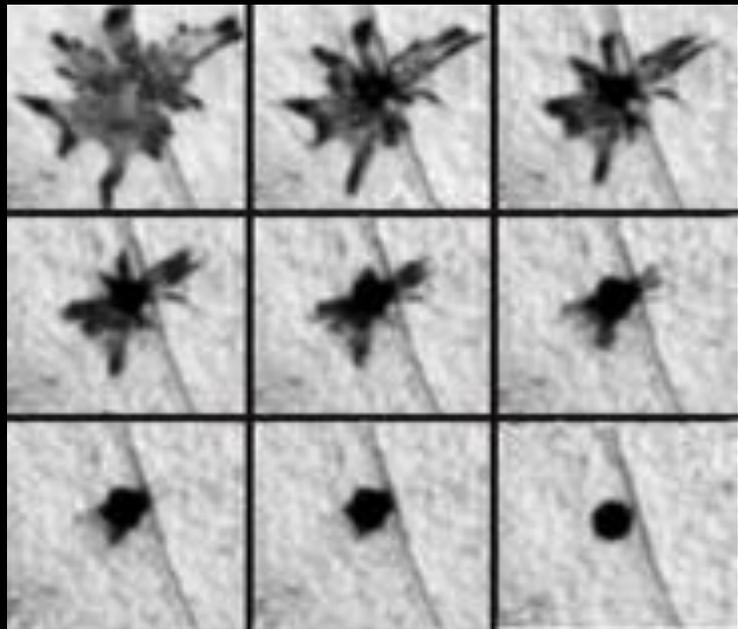
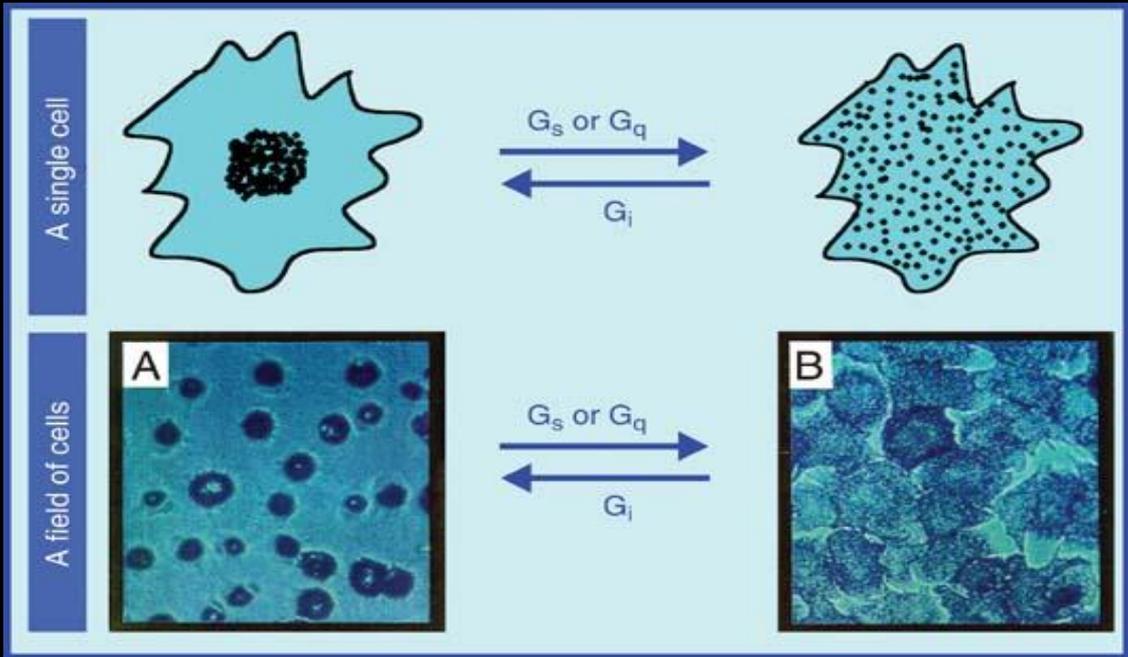
René Descartes - 1664



Melatonin (N-acetyl-5-methoxytryptamine)

Aaron Lerner – 1958

Melanophore-contracting (melatonin)



MELATONINA

Classe Química: Indolamina

derivado de aminoácido (Triptofano)

Característica

hidro e lipossolúvel (não há armazenamento)

Transporte no plasma

livre (30%) e combinado com albumina

Receptores

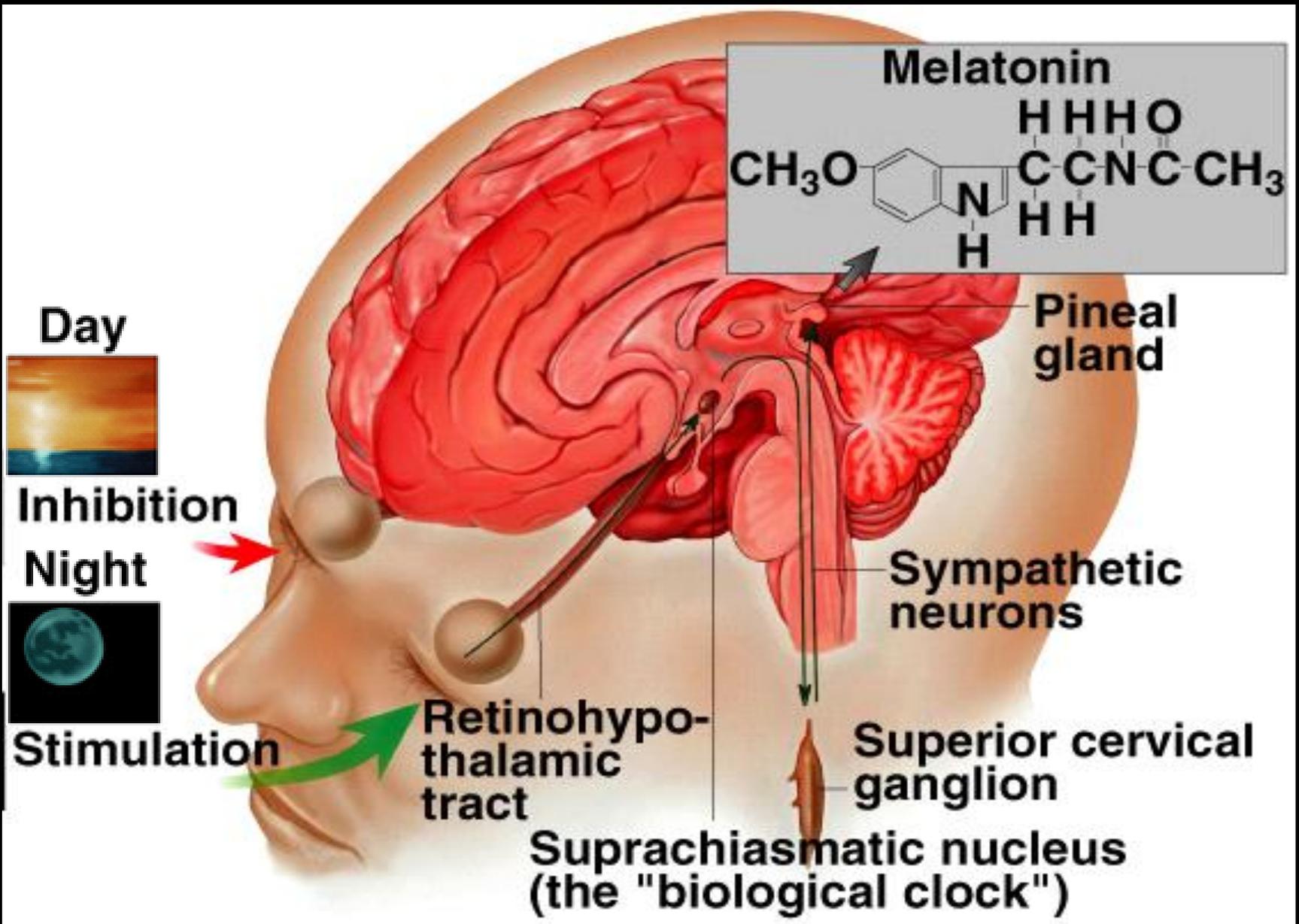
na membrana e intracelulares

Controle da secreção

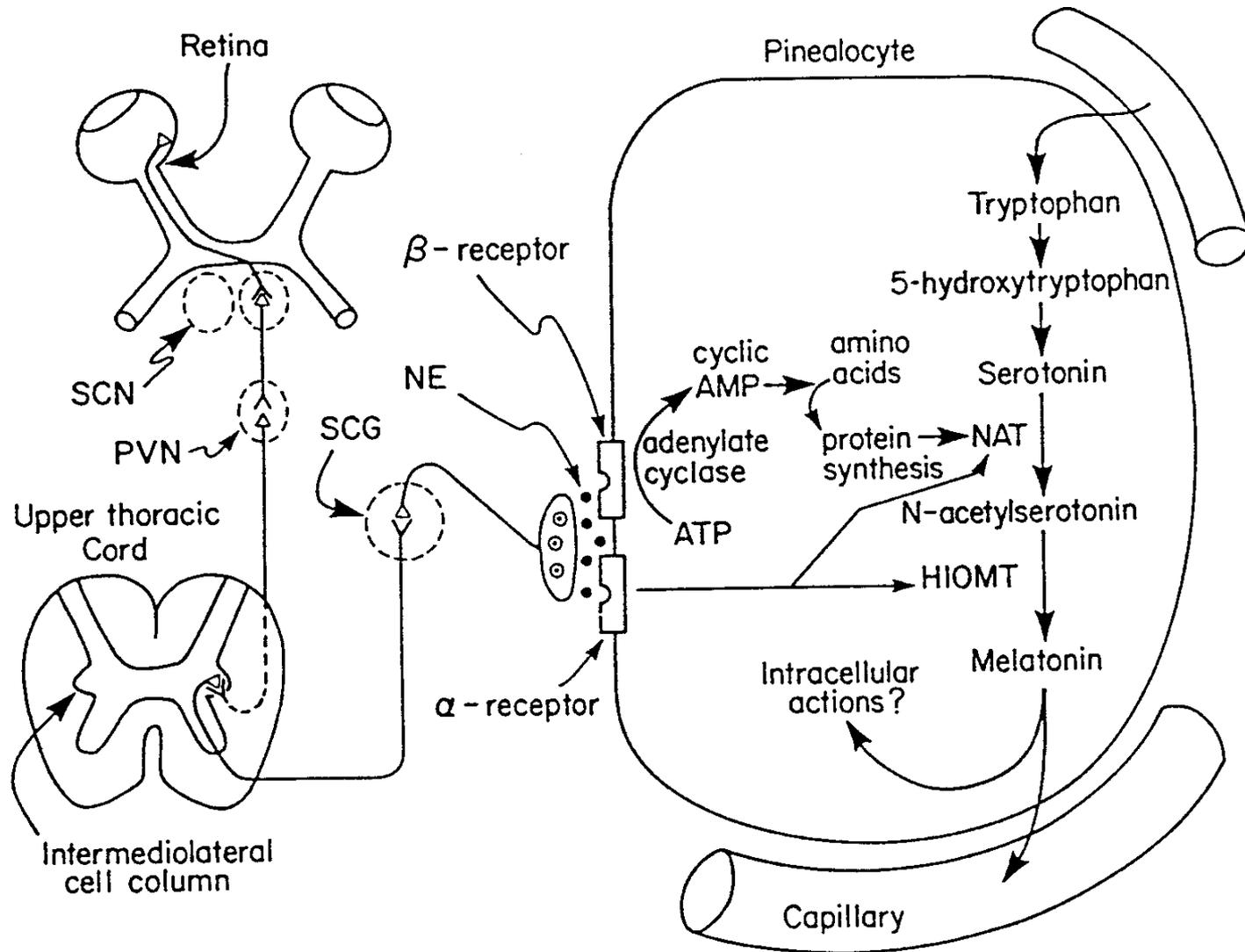
cronotrópico – ritmo claro/escuro

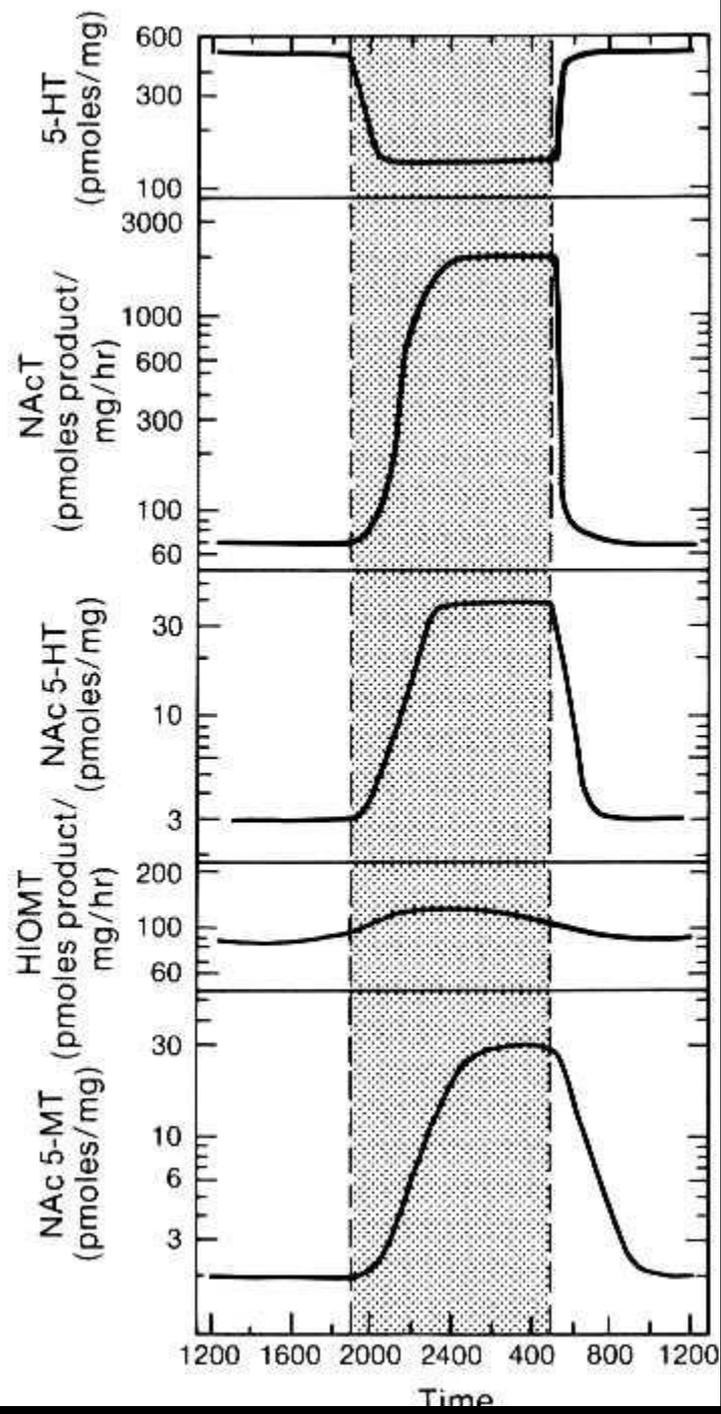
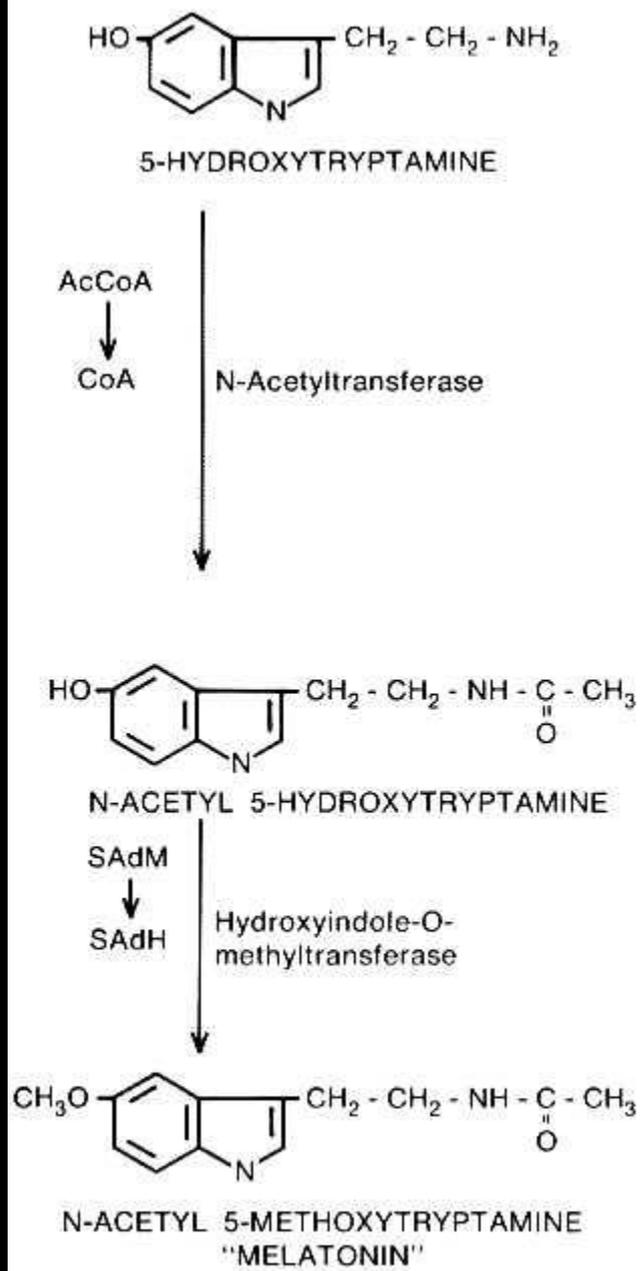
Metabolização / eliminação

fígado (glicuronídeos/sulfato) – bile e urina

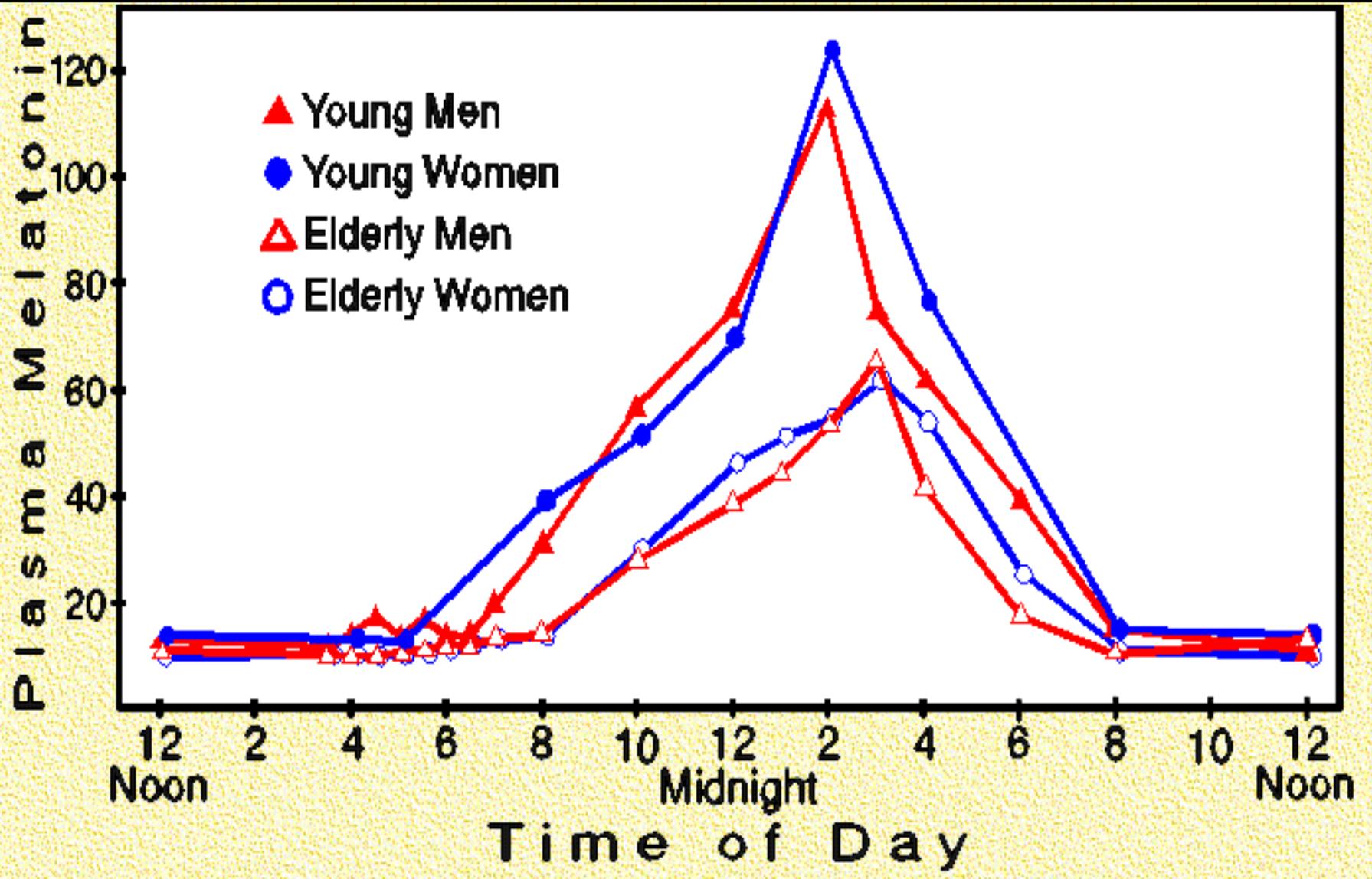


Melatonina – controle da secreção

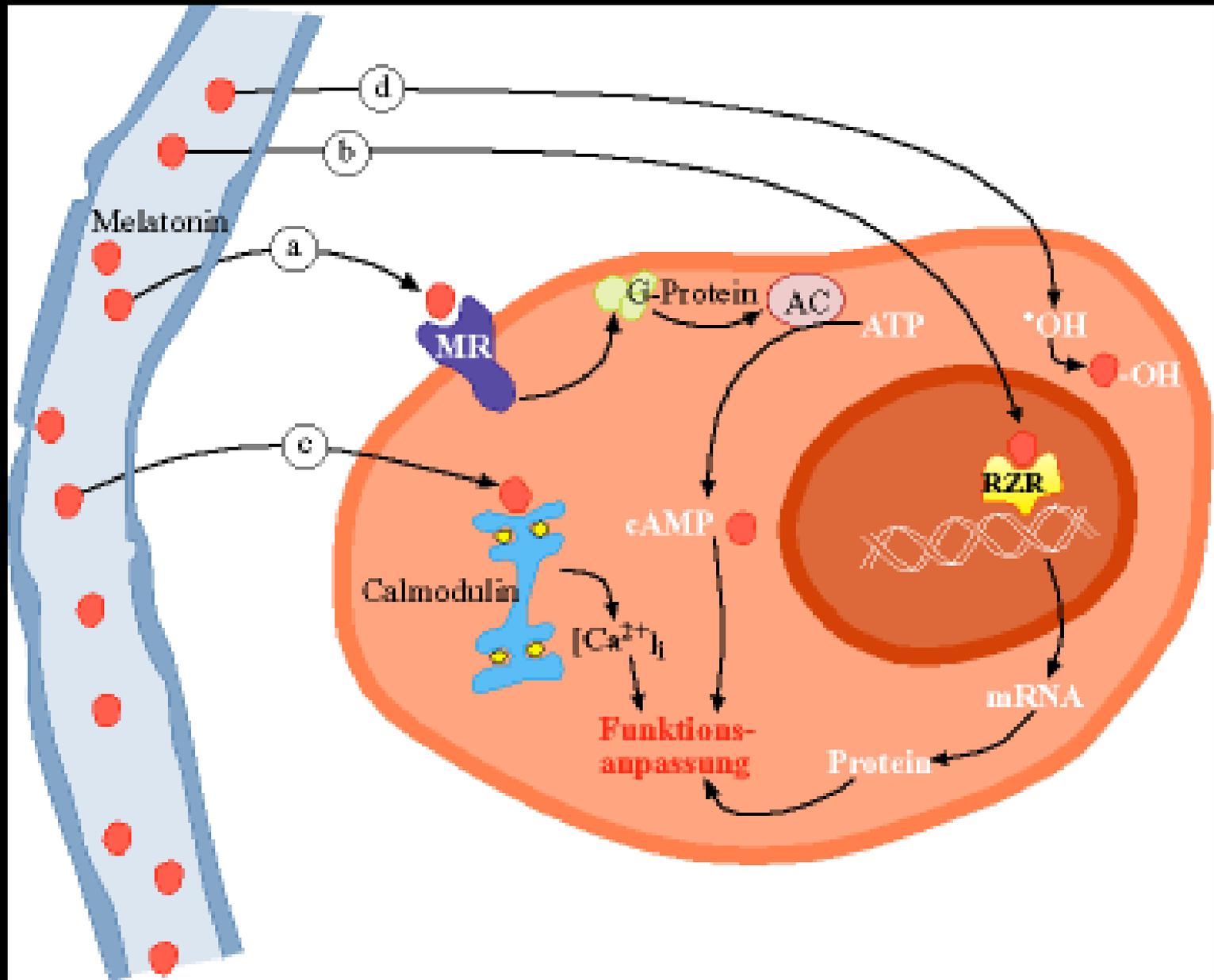




Melatonina - Ritmo de secreção

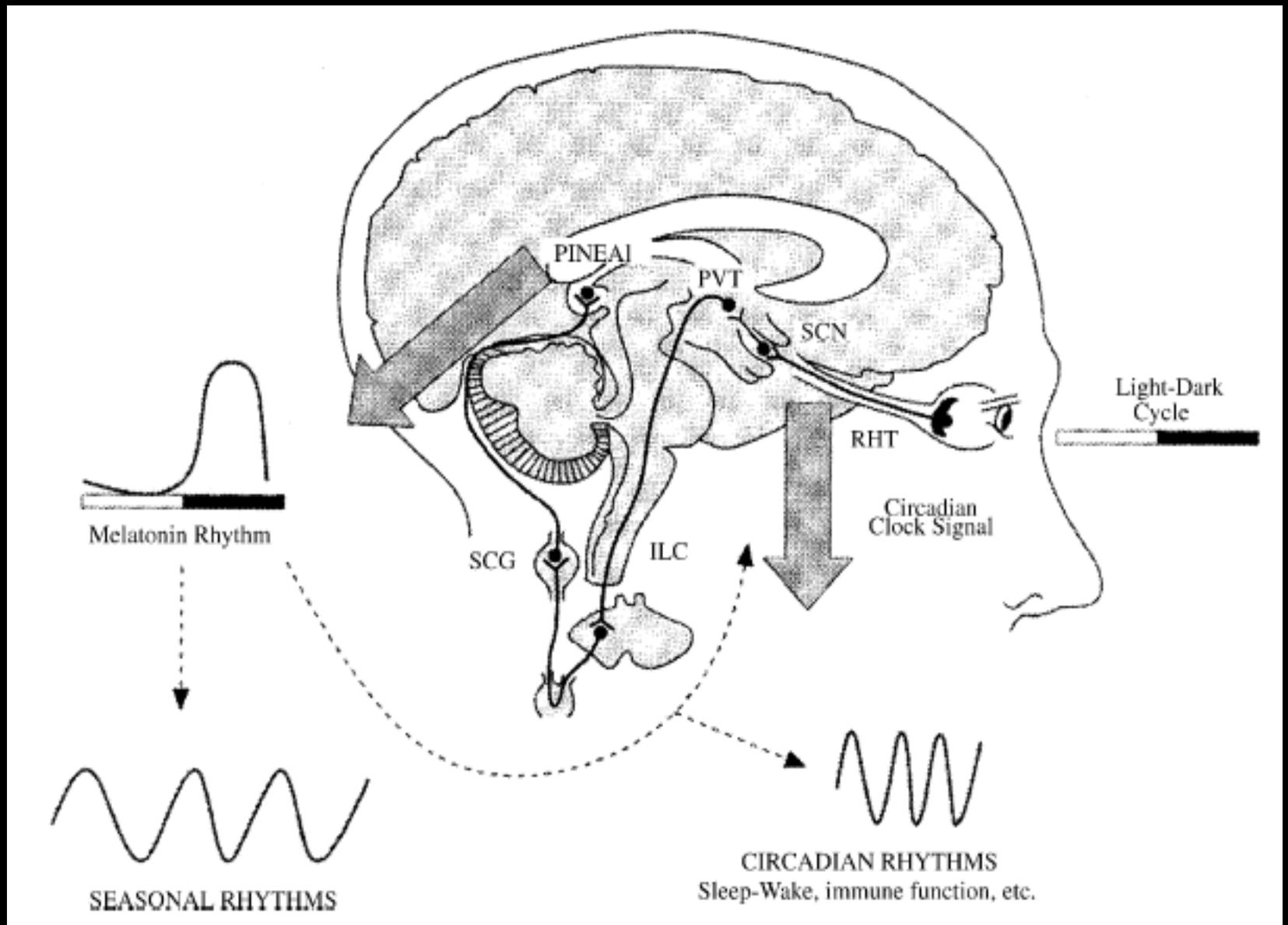


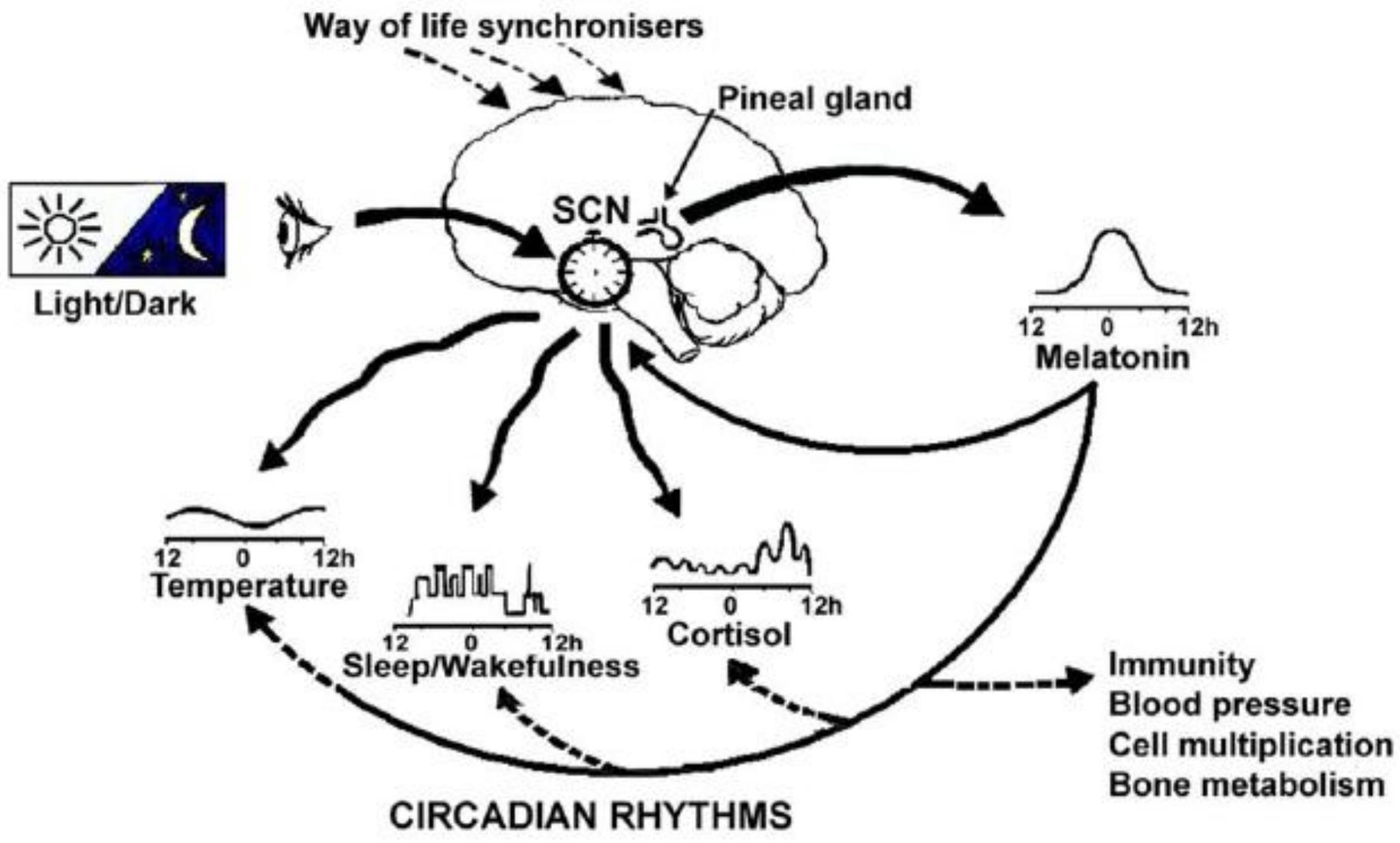
Melatonina - Mecanismo de Ação



Efeitos da Melatonina

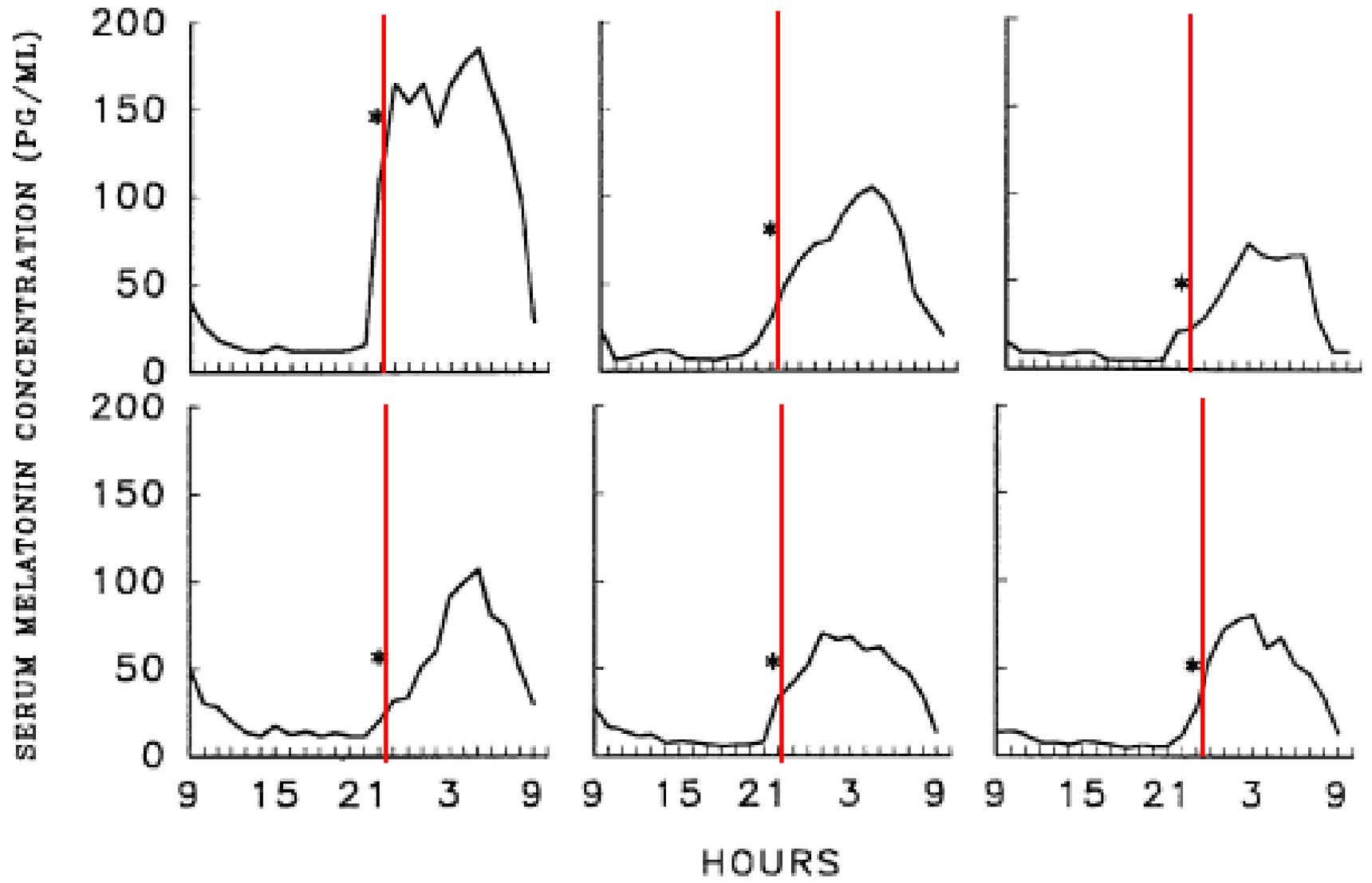
- sincronização de ritmos biológicos

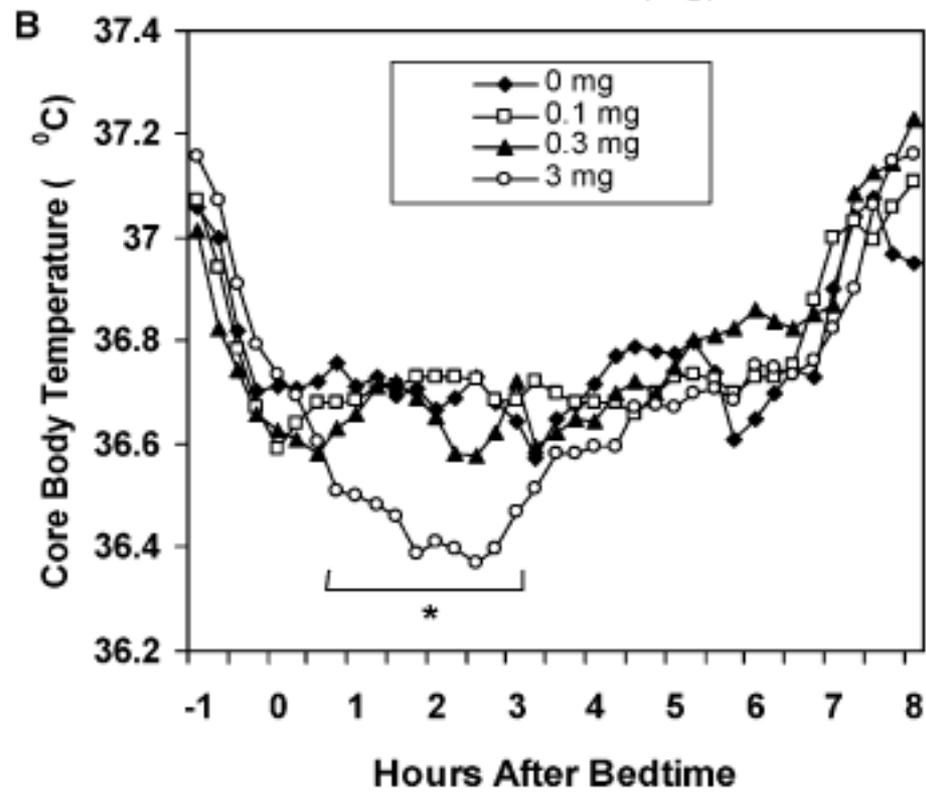
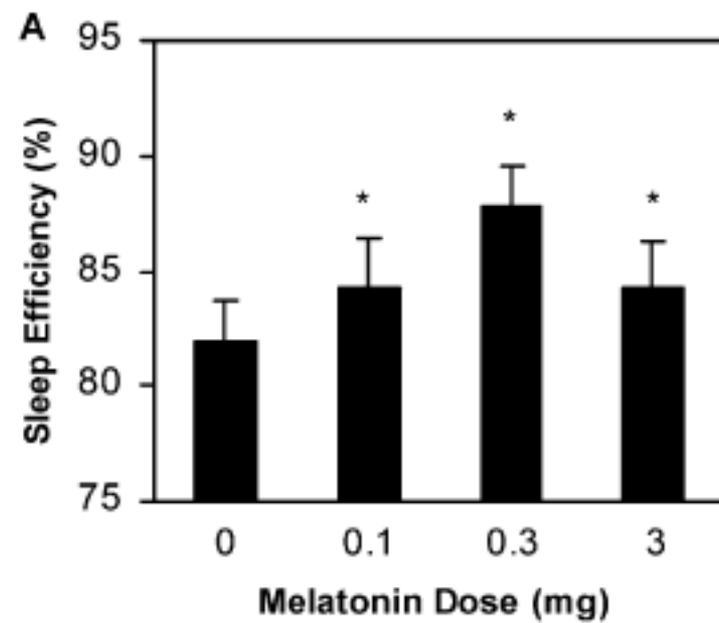


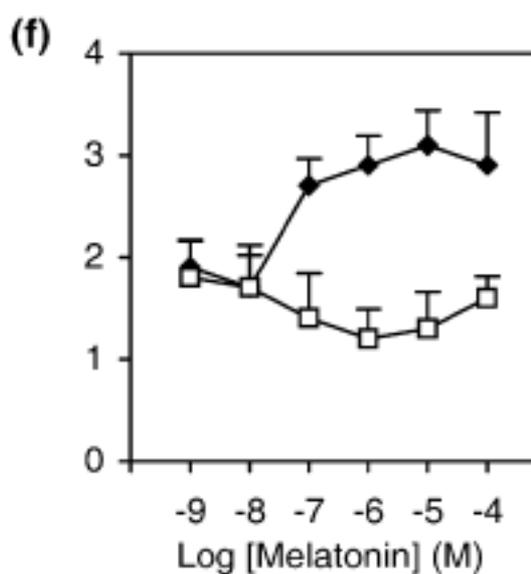
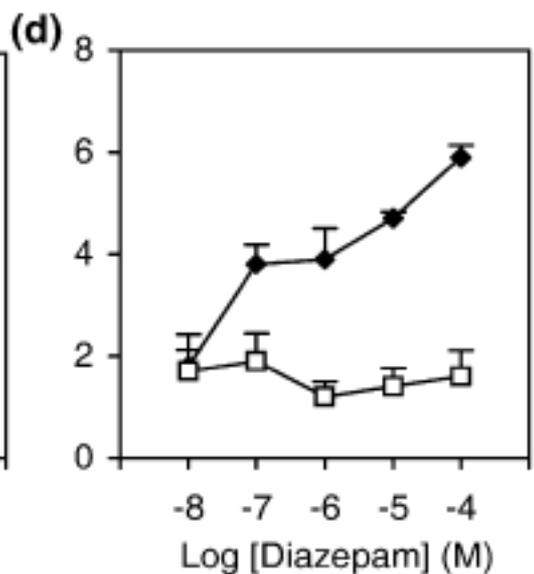
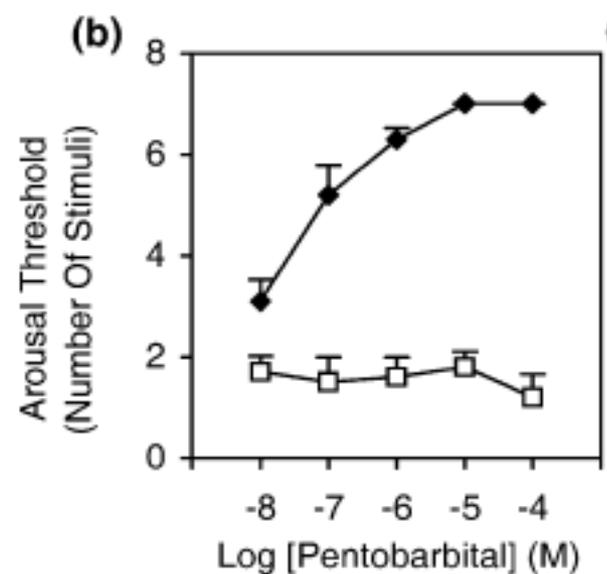
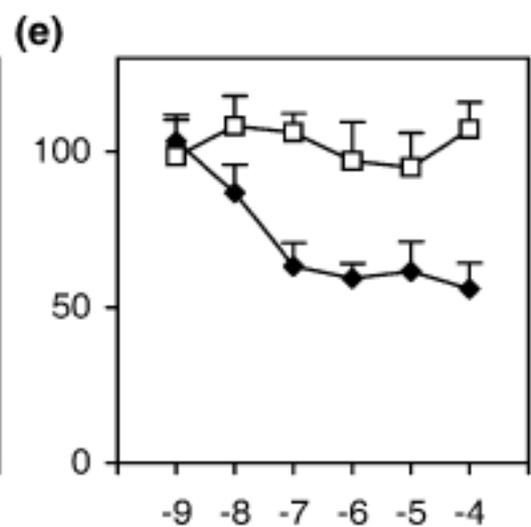
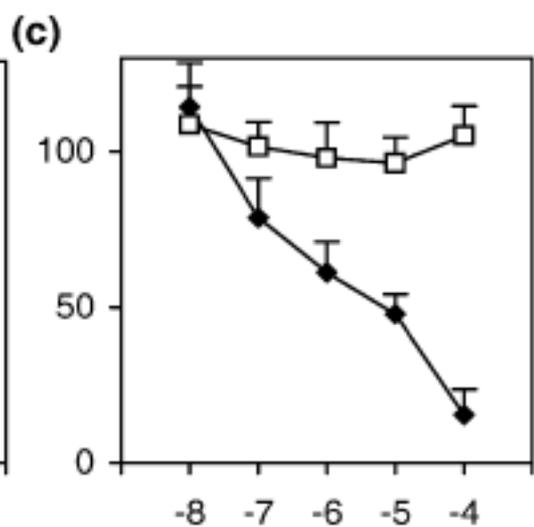
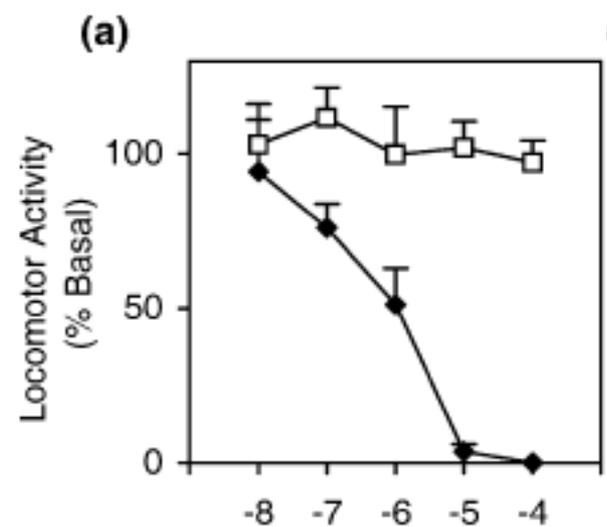


Efeitos da Melatonina

- sincronização de ritmos biológicos
- indução do sono



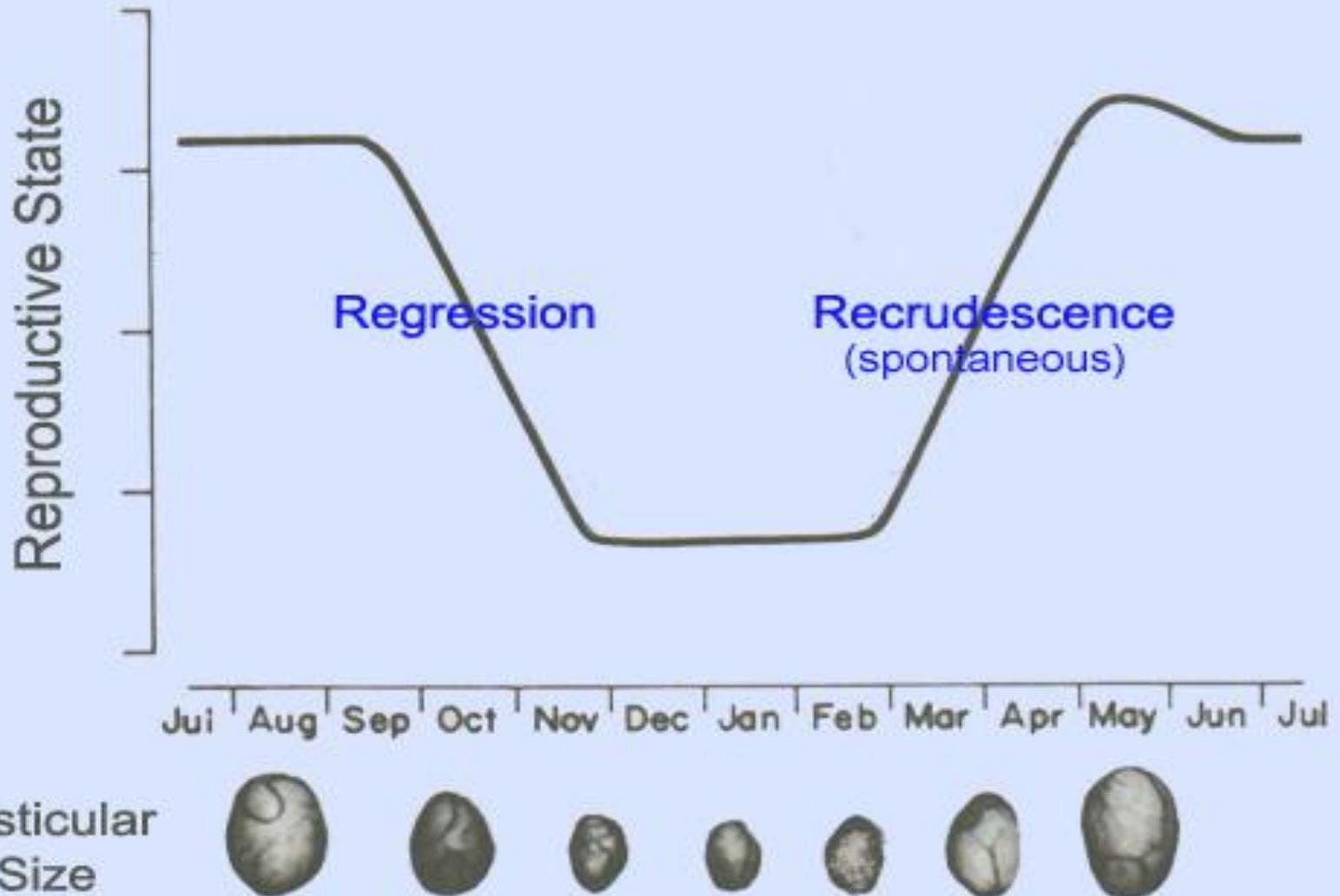


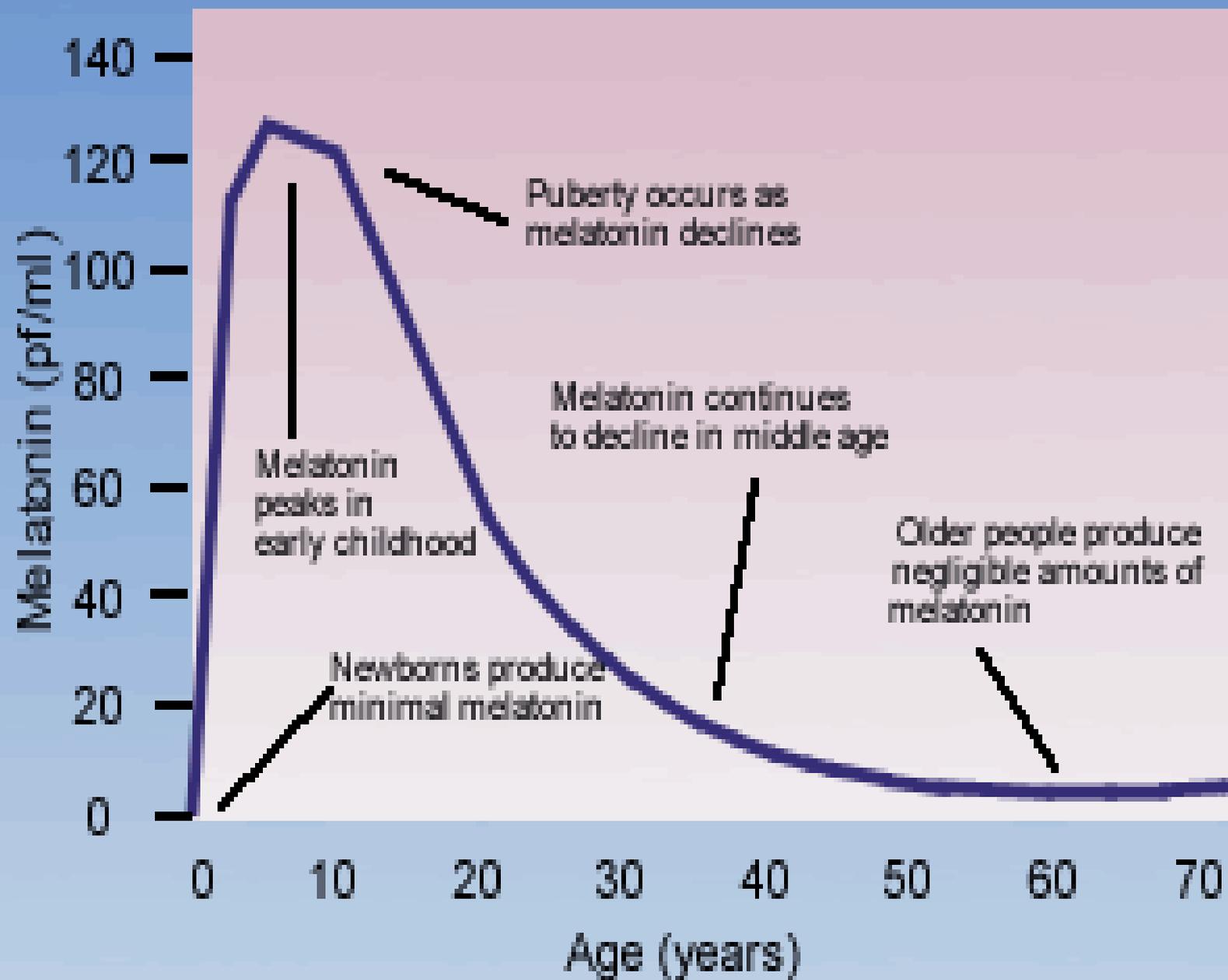


Efeitos da Melatonina

- sincronização de ritmos biológicos
- indução do sono
- atividade antigonadotrófica

Seasonal Cycle of a Long Day Breeder





Efeitos da Melatonina

- sincronização de ritmos biológicos
- indução do sono
- atividade antigonadotrófica
- anti-envelhecimento

Efeitos da Melatonina

- sincronização de ritmos biológicos
- indução do sono
- atividade antigonadotrófica
- anti-envelhecimento
 - ação antioxidante
 - ação imunoestimulante
 - auxilia na prevenção de câncer

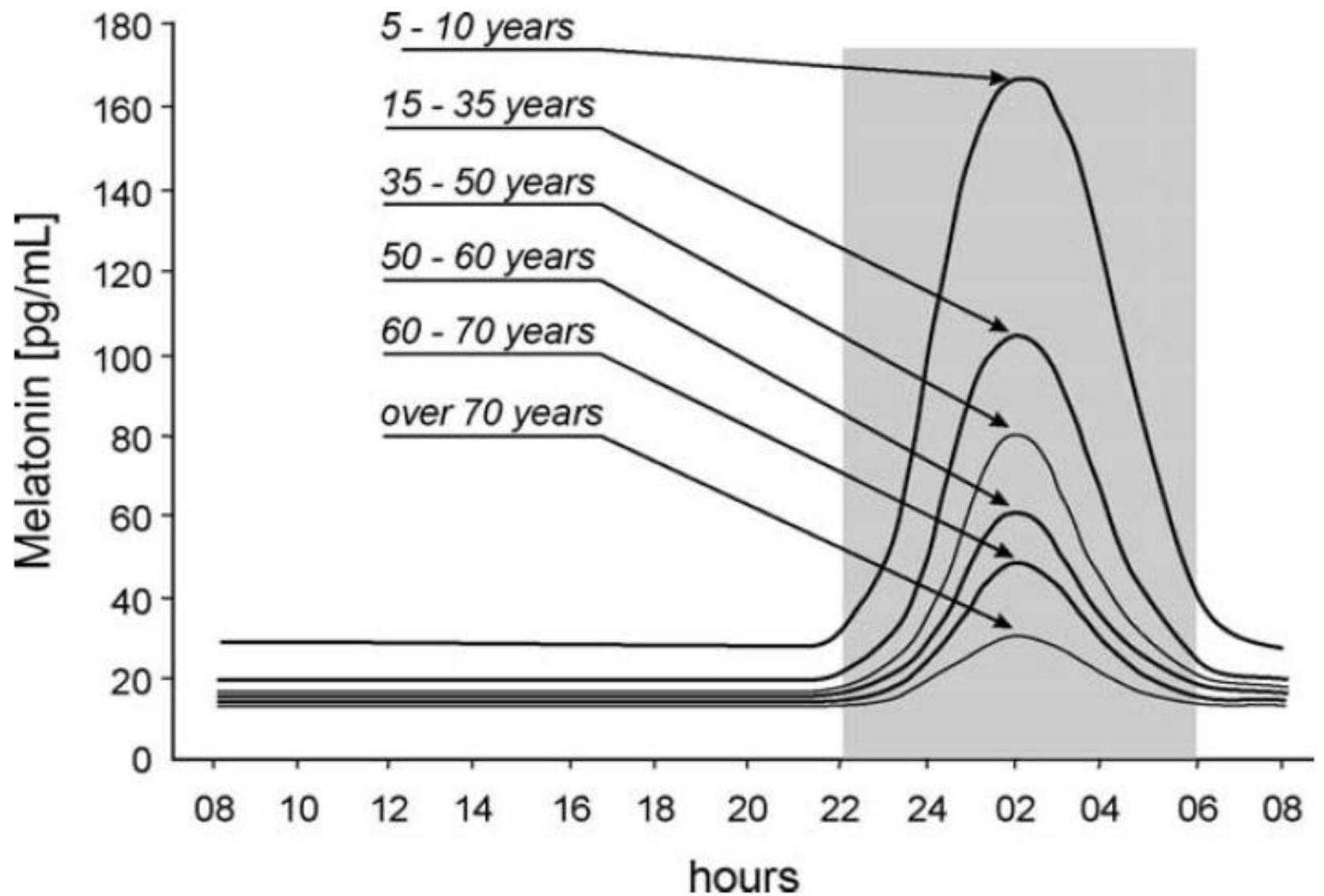
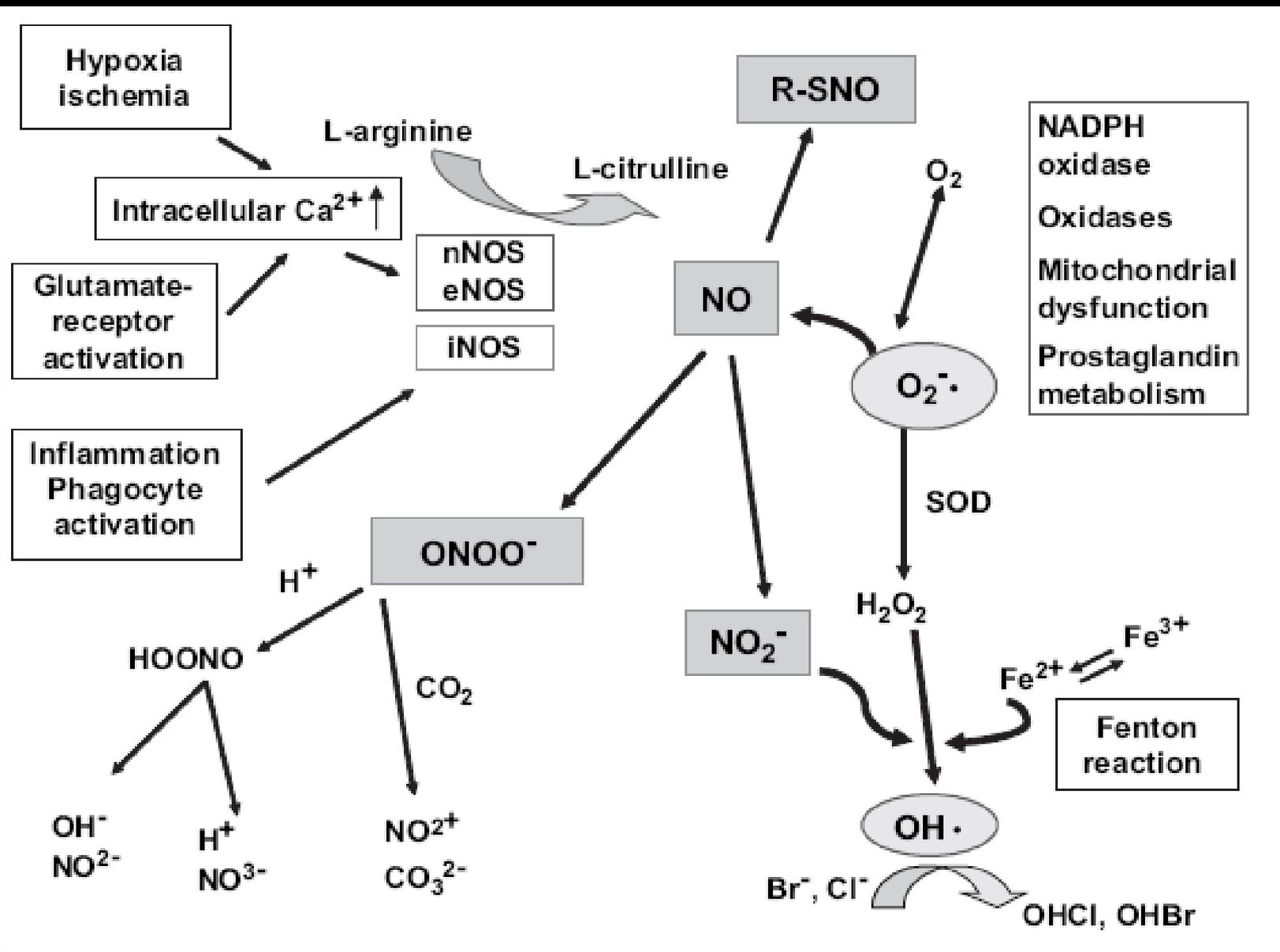
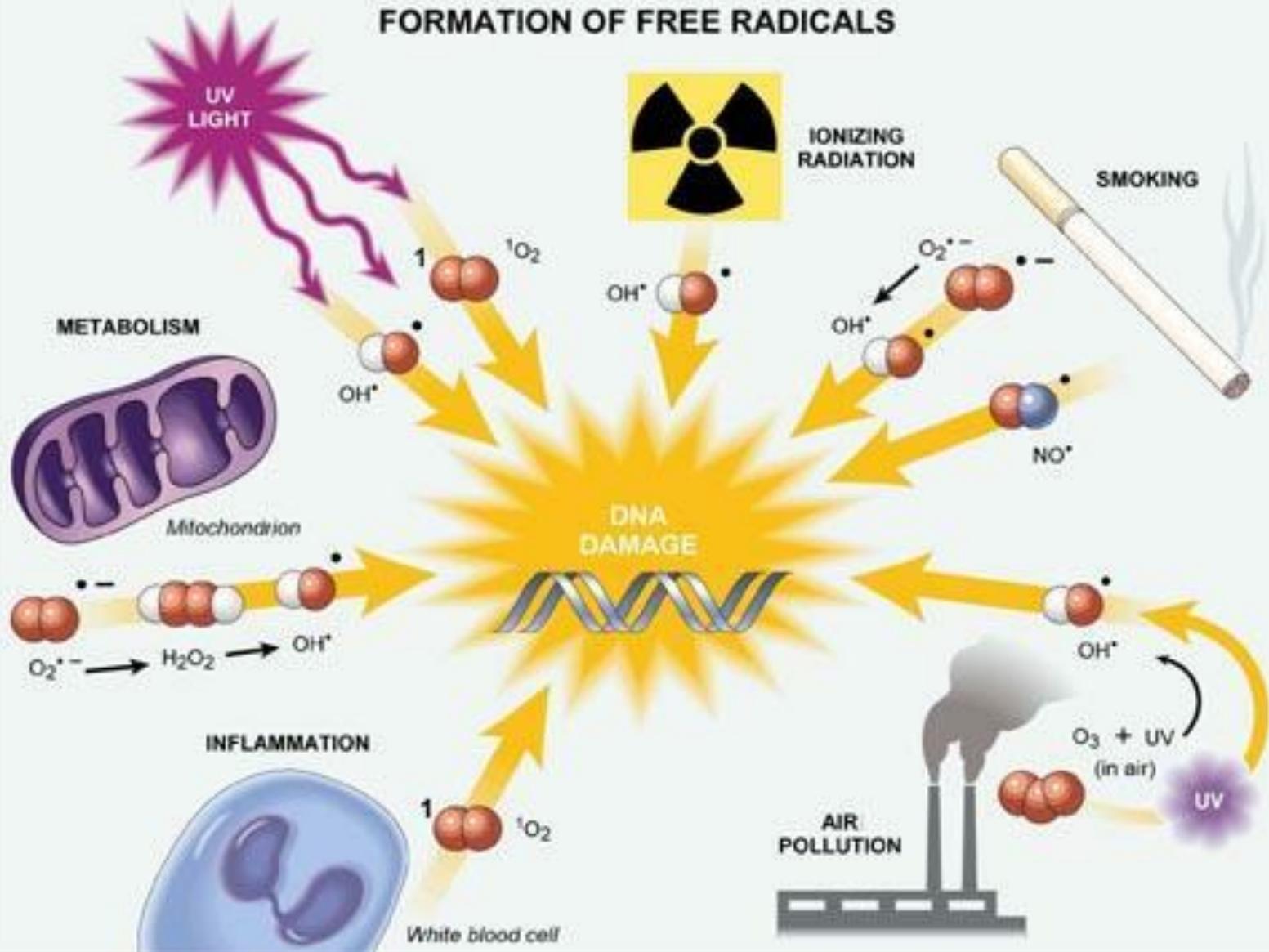
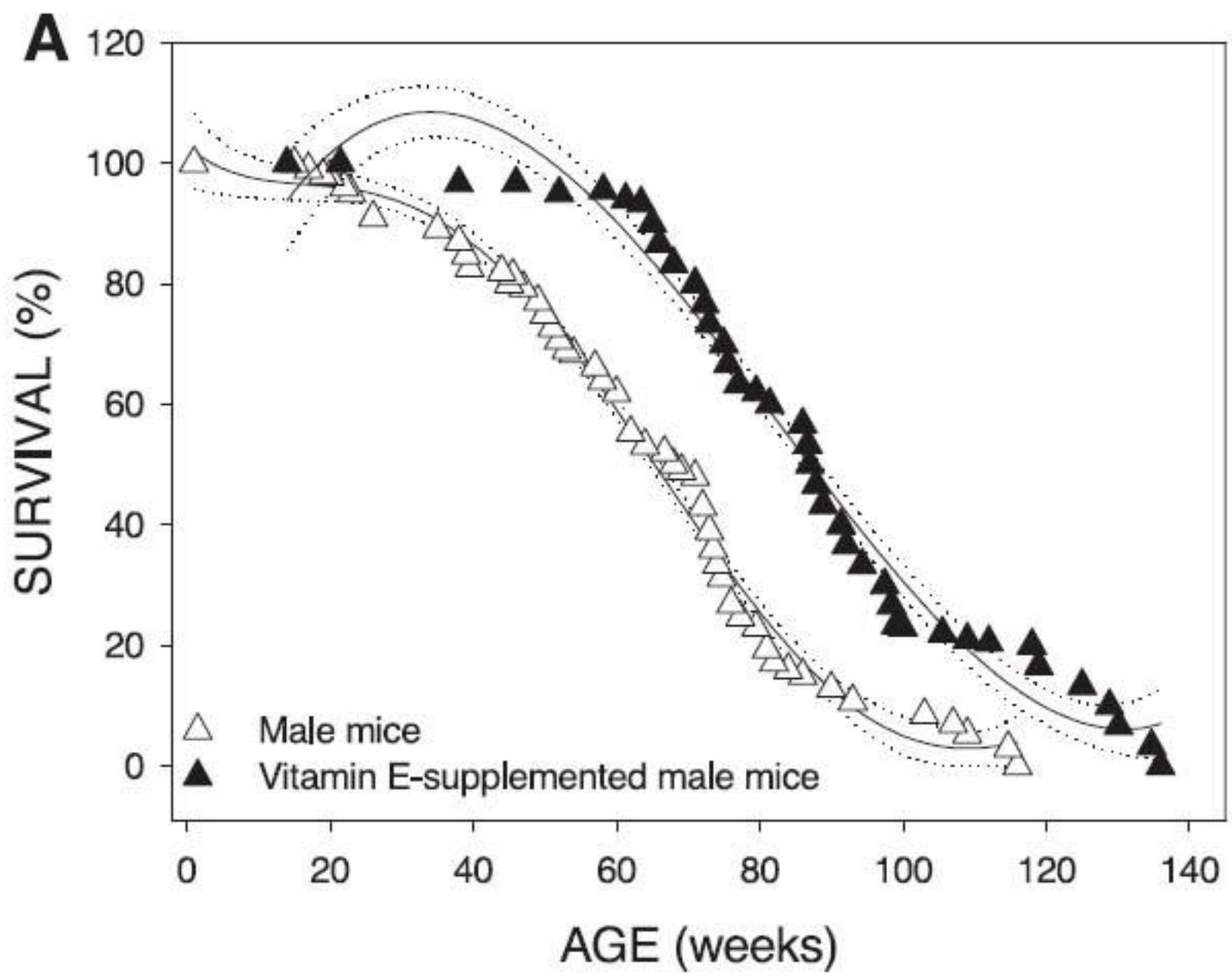


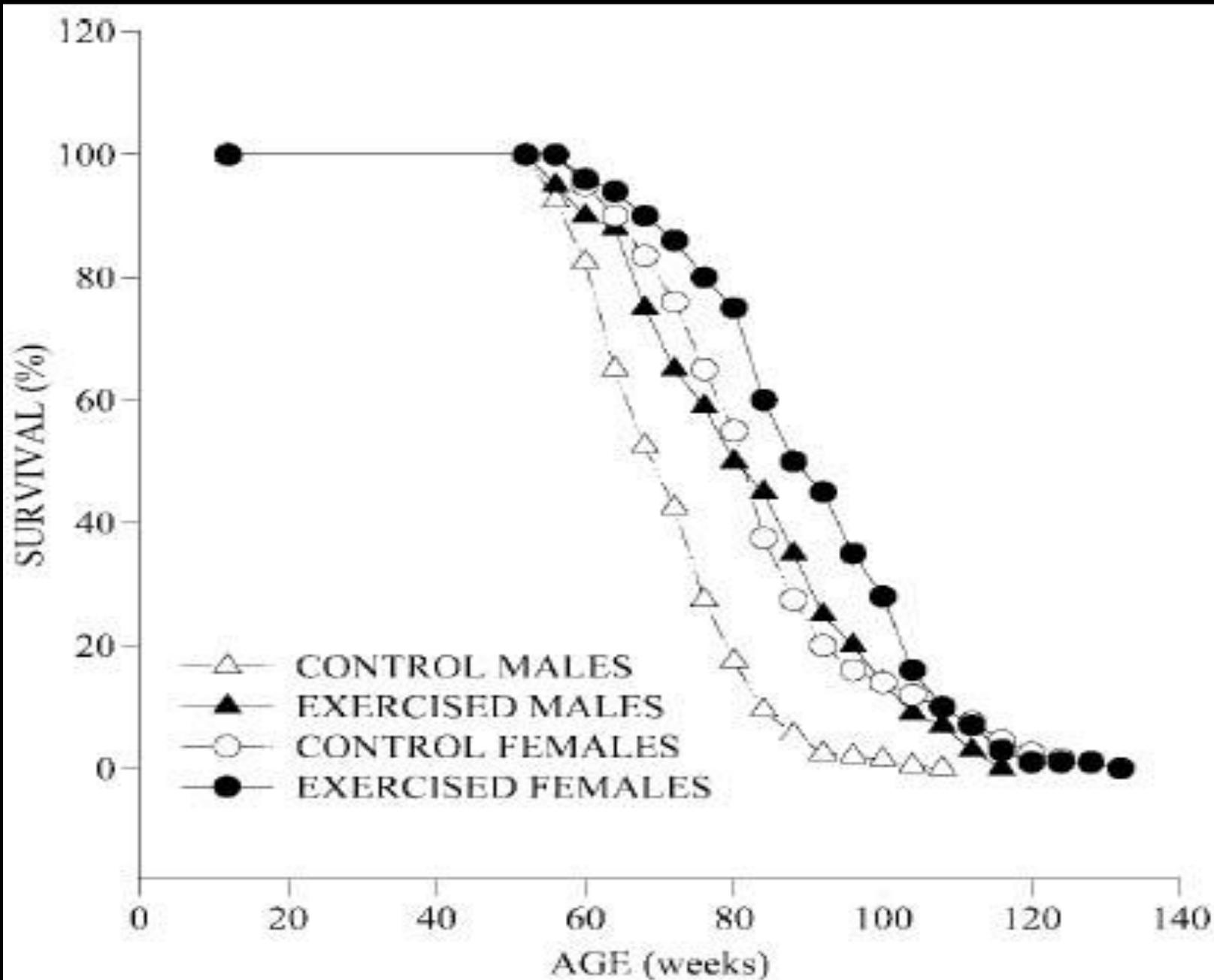
Fig. 1. Circadian profiles of serum melatonin concentrations at various age;



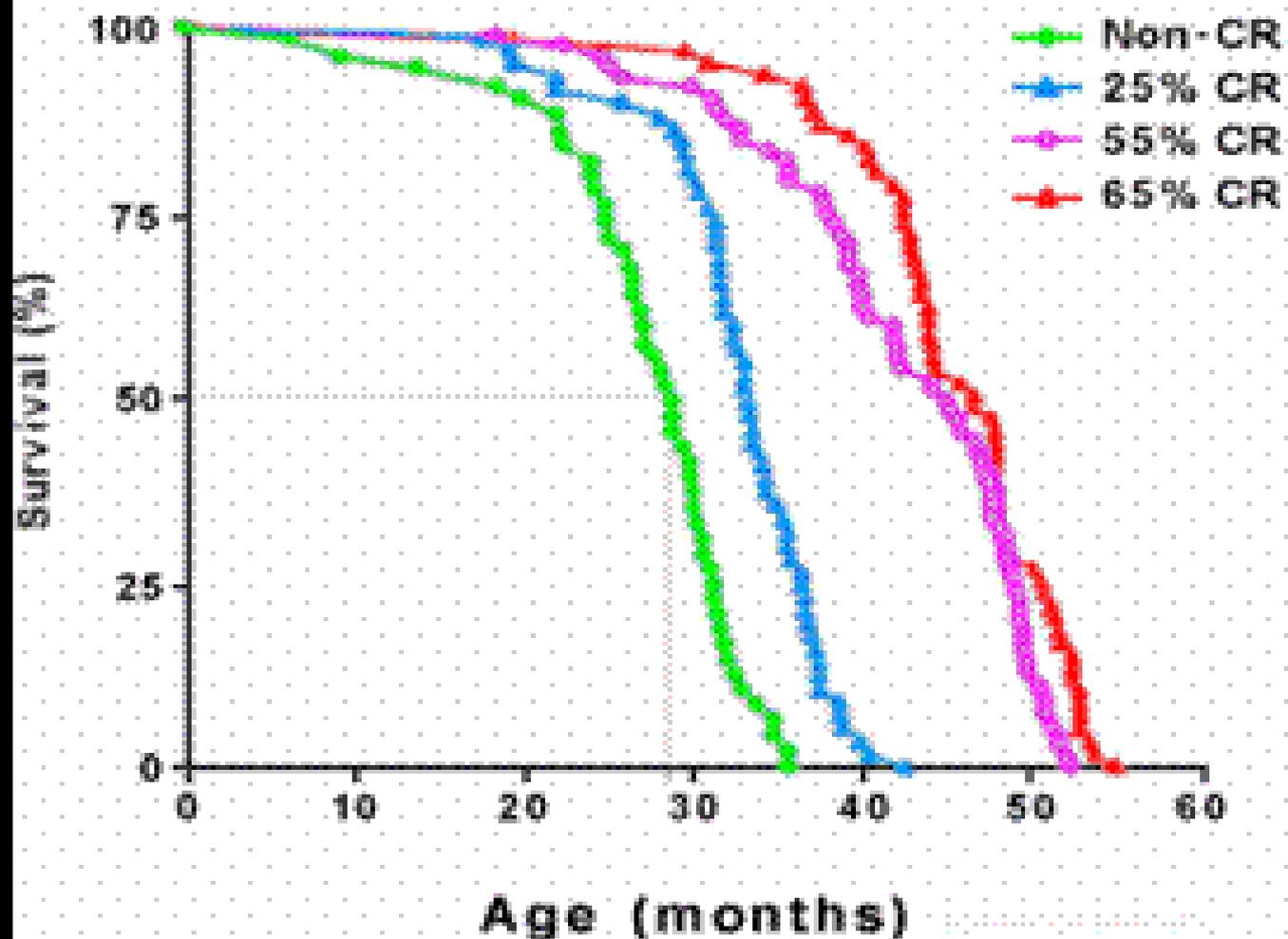
FORMATION OF FREE RADICALS





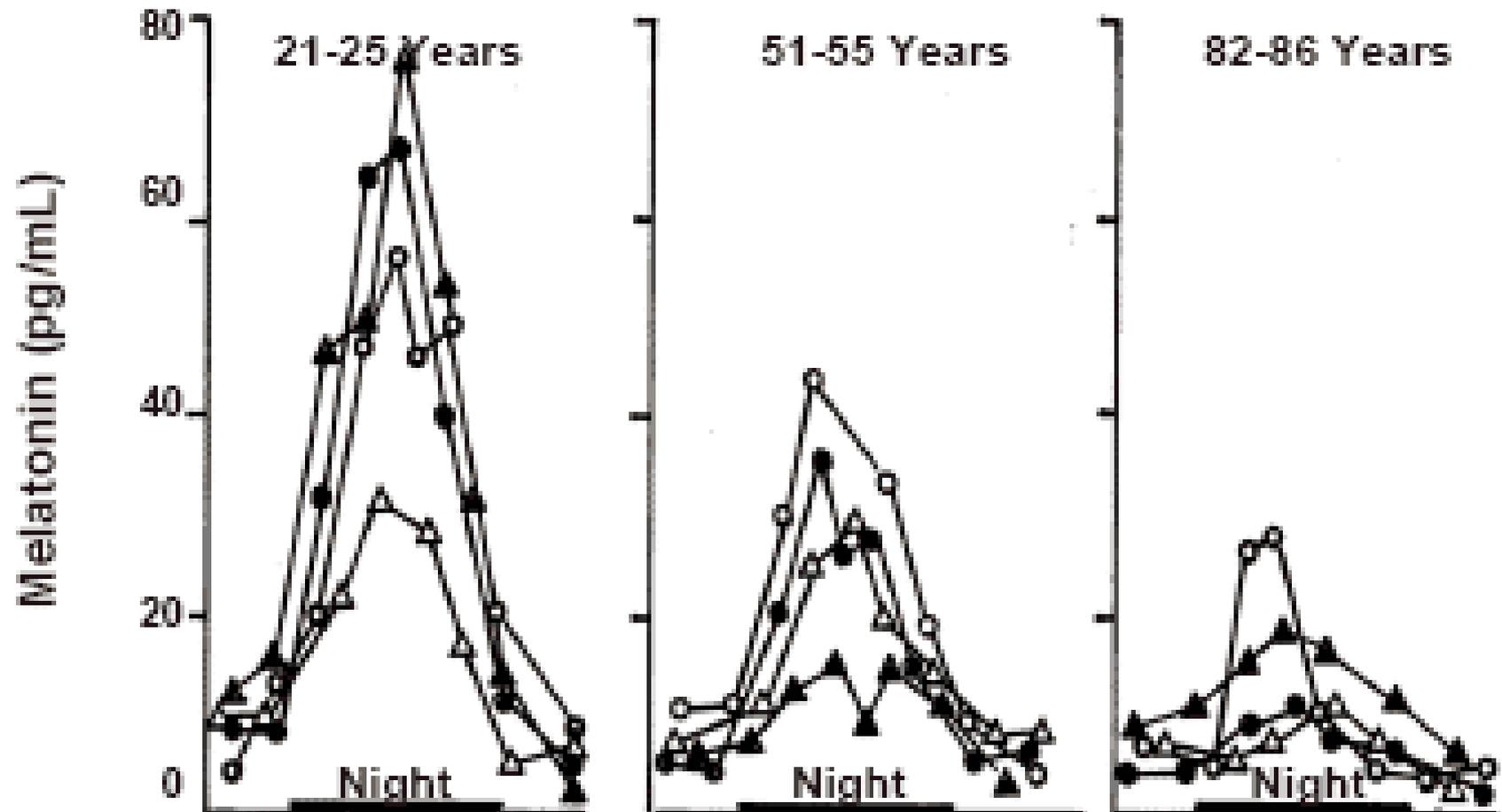


LIFESPAN OF CR MICE vs NON-CR MICE



(B)

Age-related diminution of night MT rise



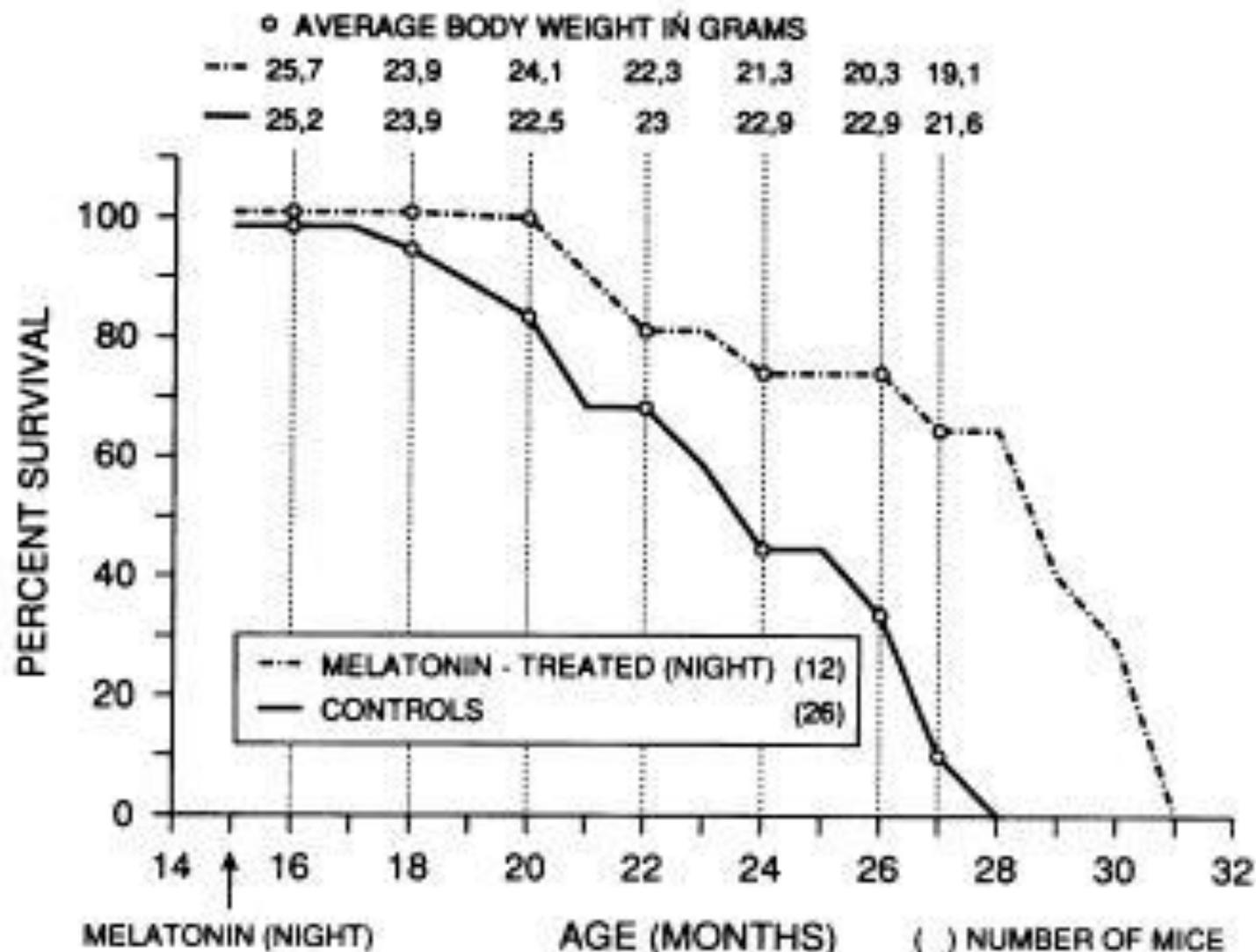
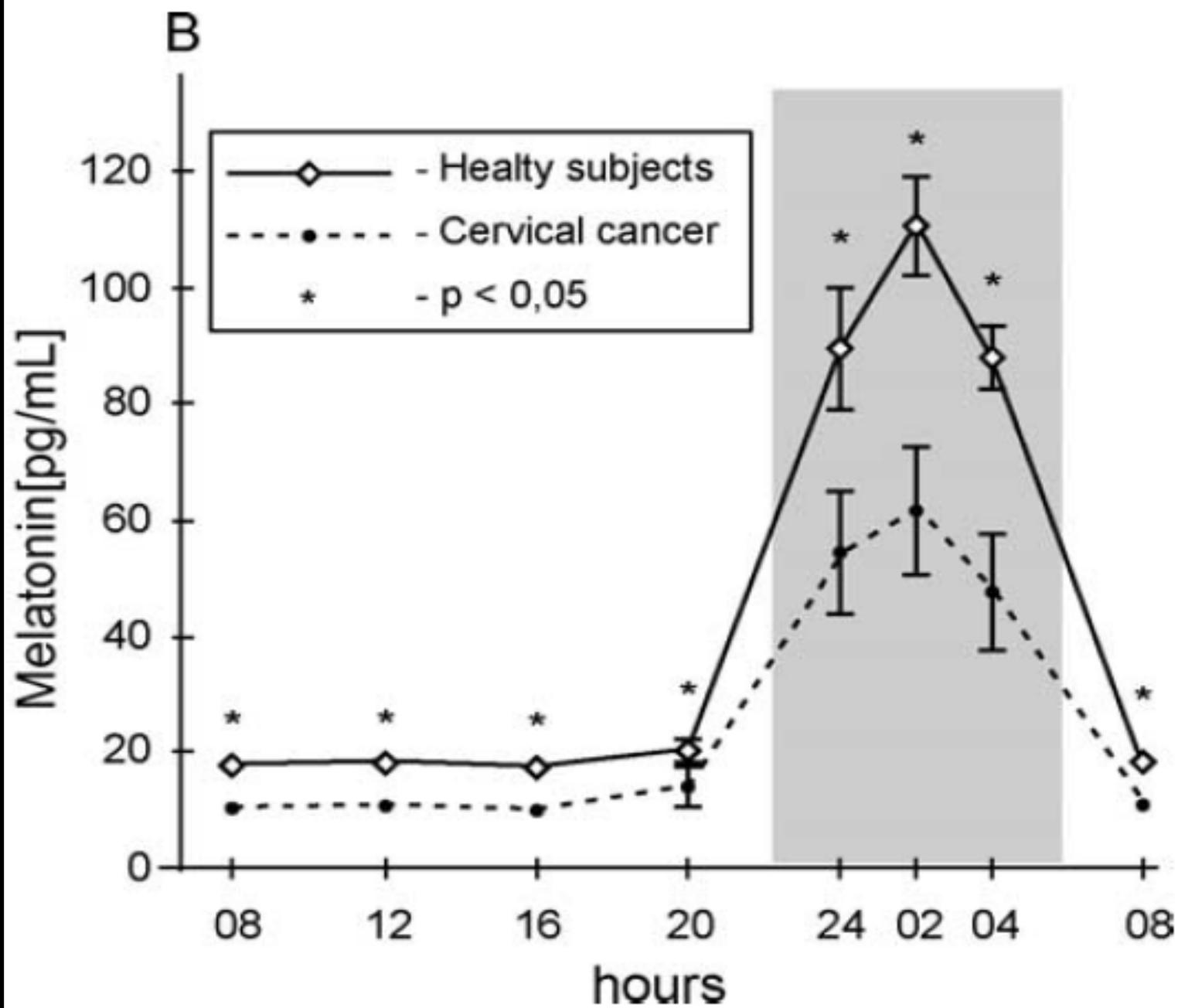


FIG. 1. Aging postponement and/or life prolongation in BALB/c female mice consequent to night administration of melatonin.

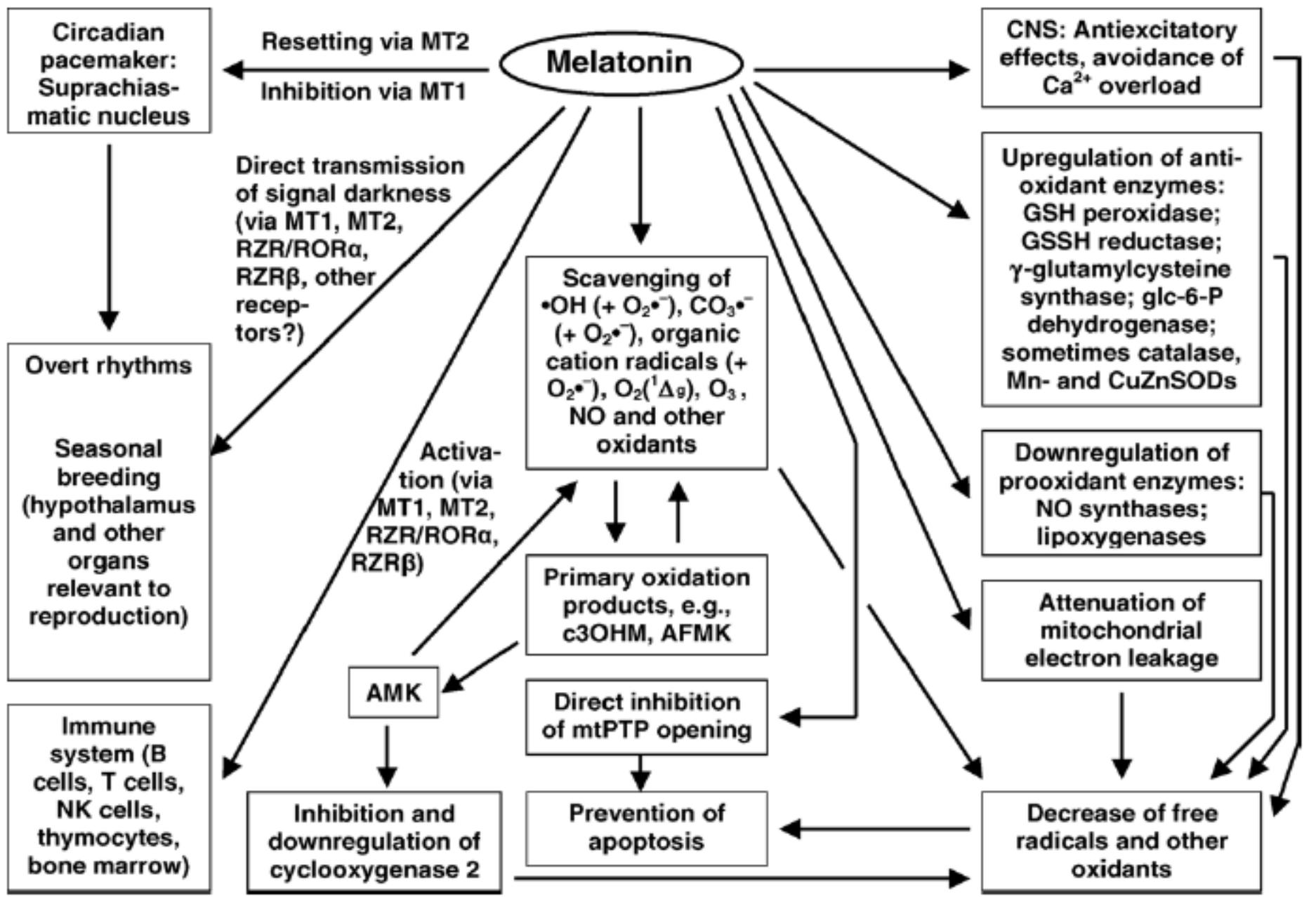


Efeitos da Melatonina

- sincronização de ritmos biológicos
- indução do sono
- atividade antigonadotrófica
- anti-envelhecimento
 - ação antioxidante
 - ação imunoestimulante
 - auxilia na prevenção de câncer
- ativa secreção/ação de insulina

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"THE ONE TO READ IF YOU JUST READ ONE."

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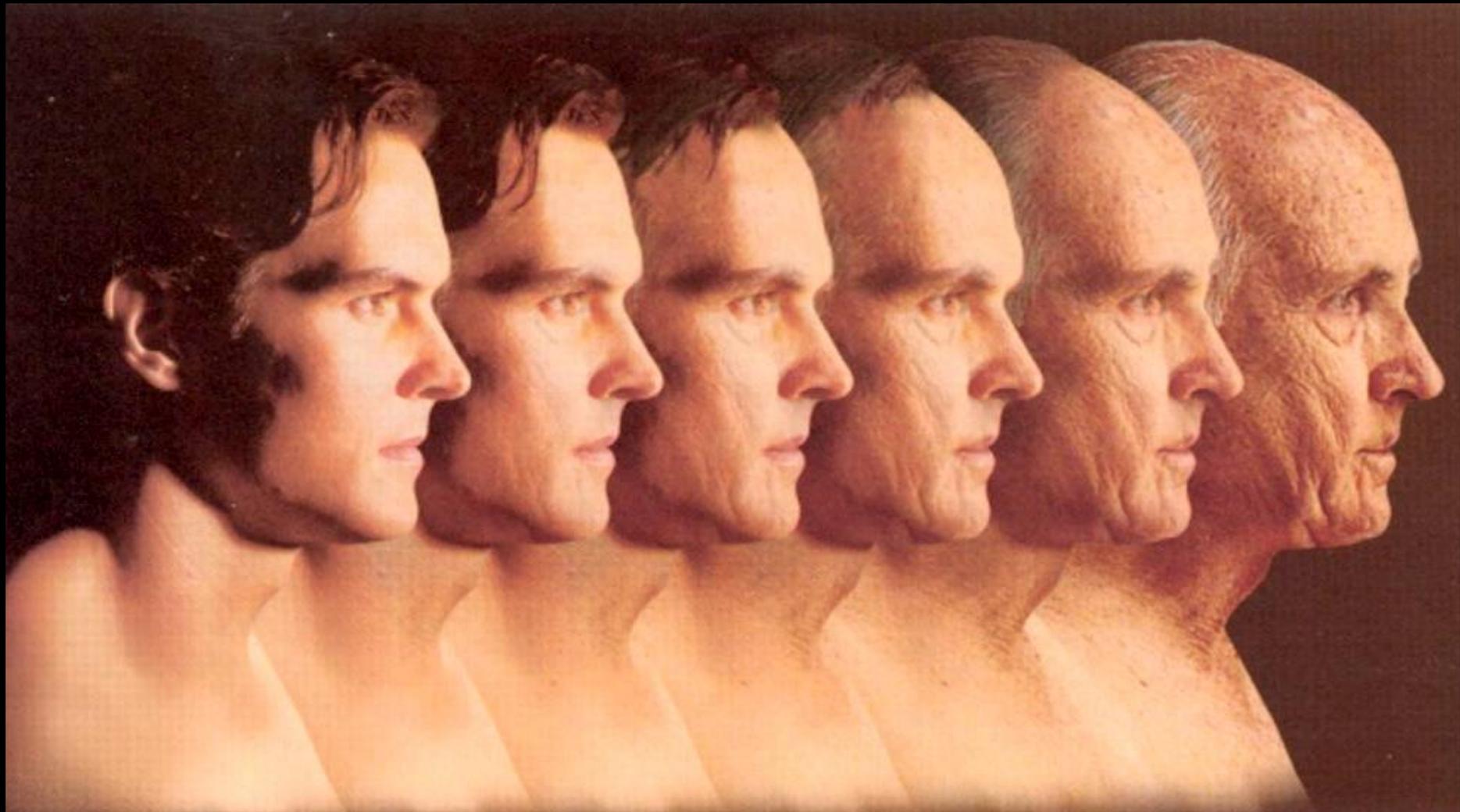
MELATONIN

THE ANTI-AGING HORMONE

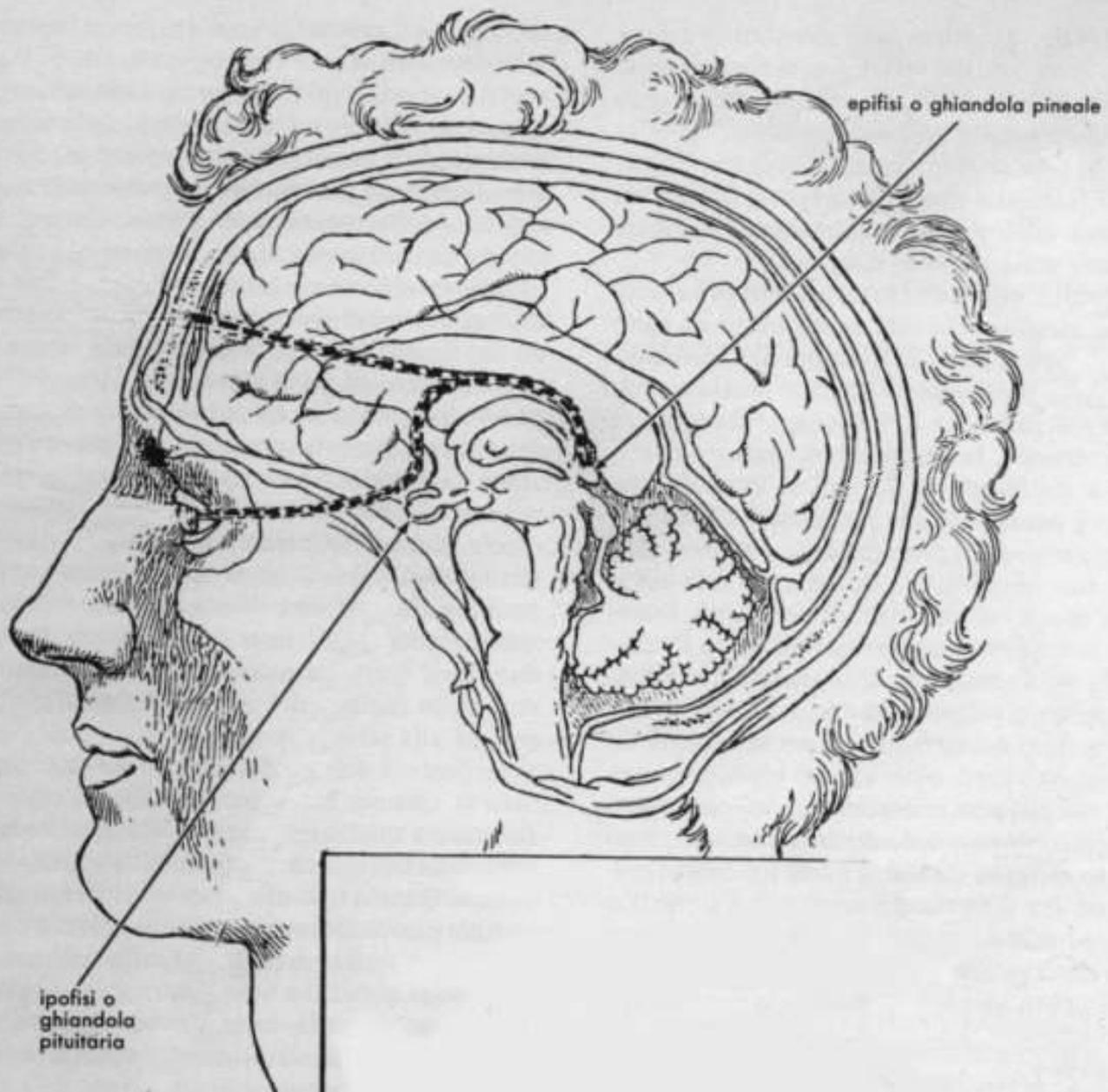


SUZANNE LeVERT









epifisi o ghiandola pineale

ipofisi o
ghiandola
pituitaria

