



The effect of cannabinoids on the human body and its reward system



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Institut ICANNA



A drug?



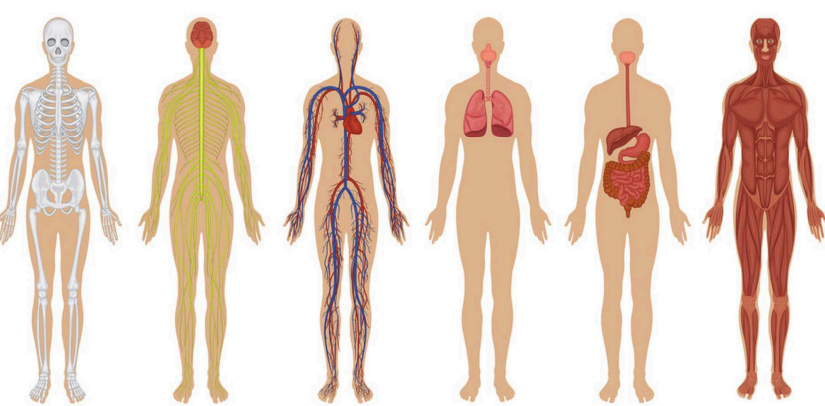
A medicine?



Pleasure/Addiction?

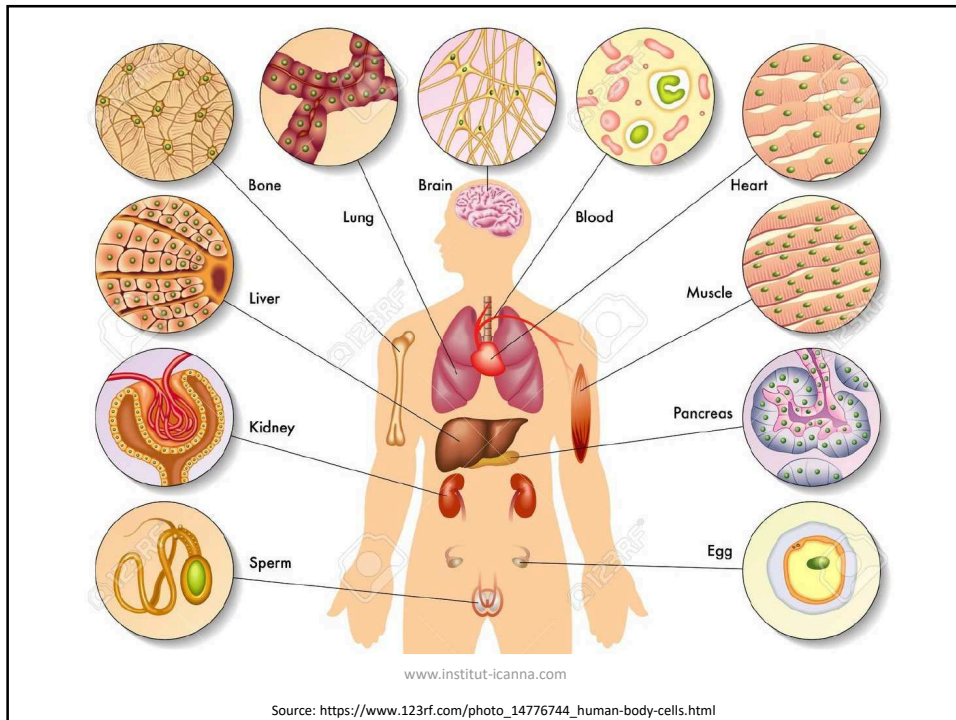
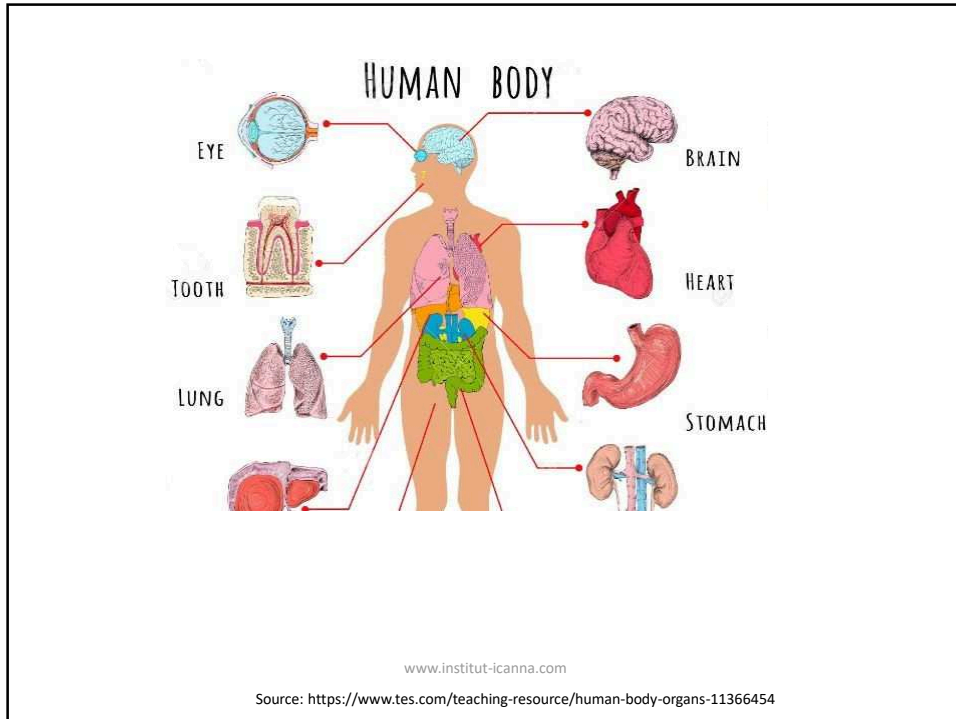
Health?

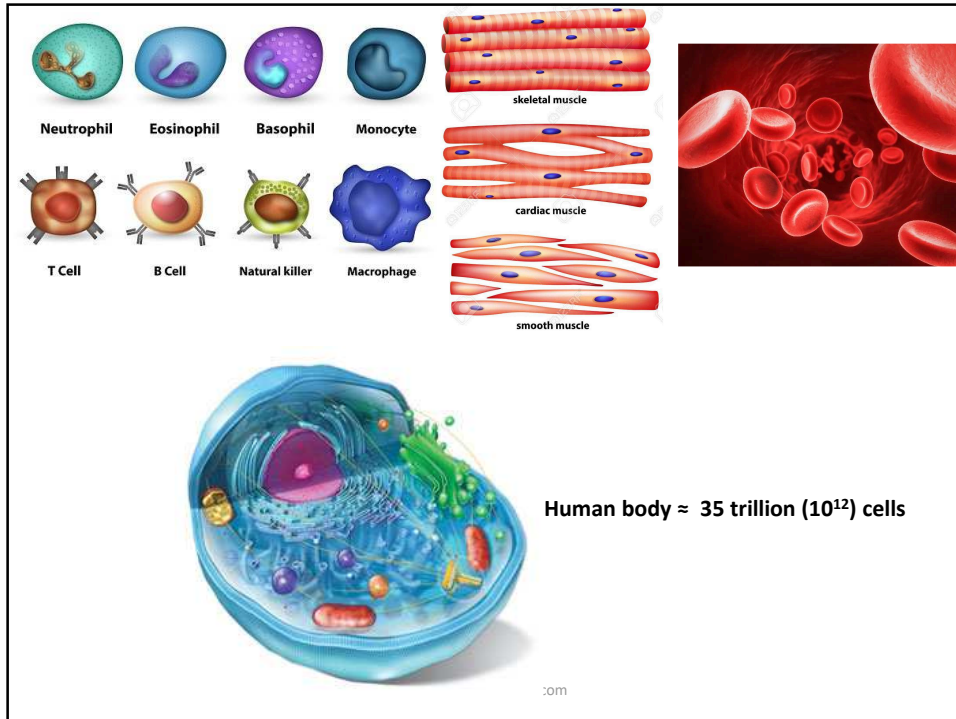
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Source: <https://www.livescience.com/37009-human-body.html>





Communication in the body

<https://maryhartley.com/>

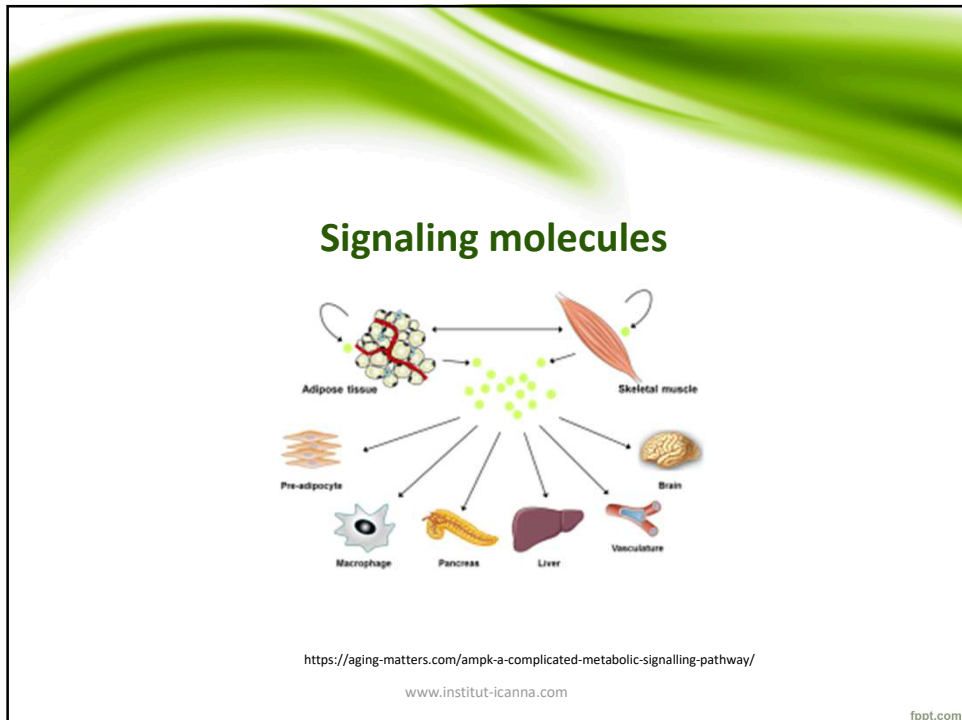
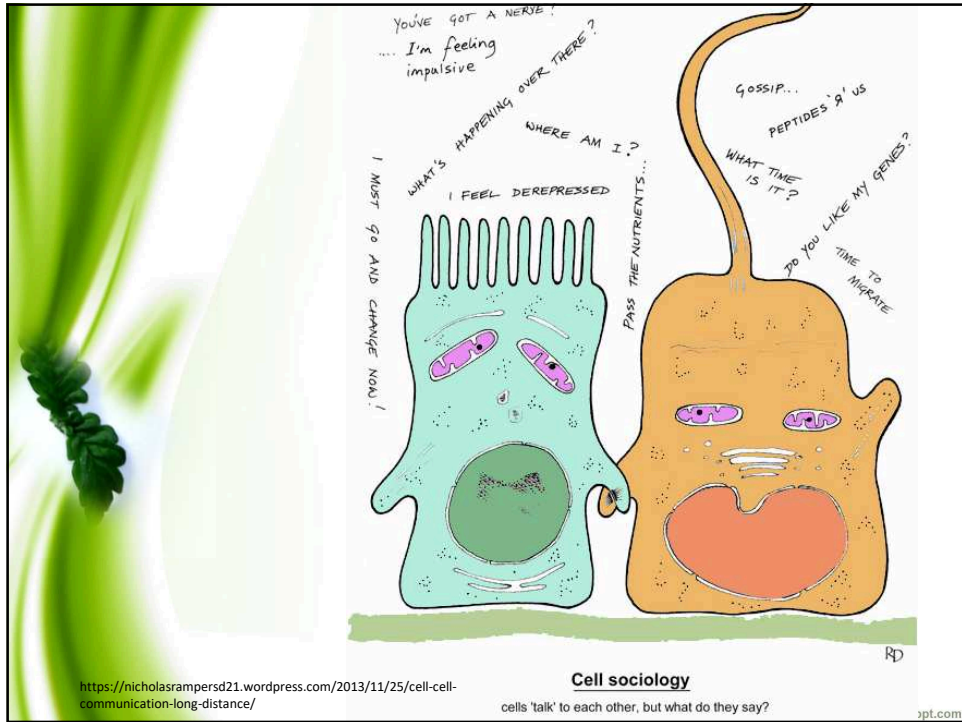
<https://totalhuman.wordpress.com/2014/03/>

<http://www.saferadiotherapy.com/cells-talk-to-their-neighbors-before-making-a-move/>

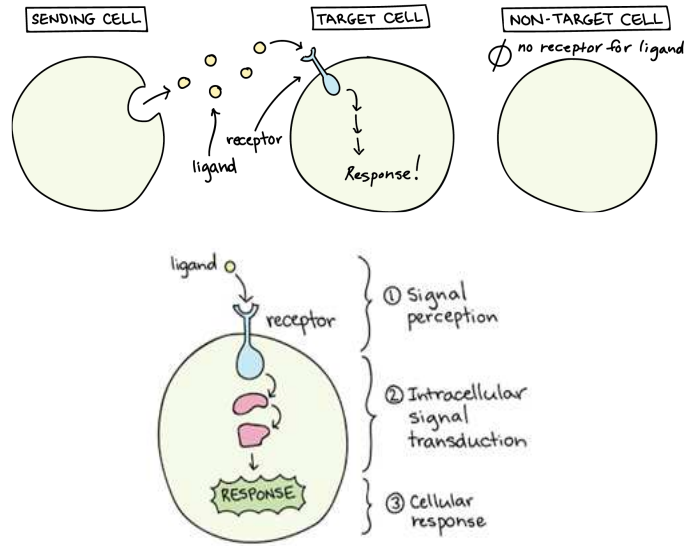
fppt.com

CELL COMMUNICATION

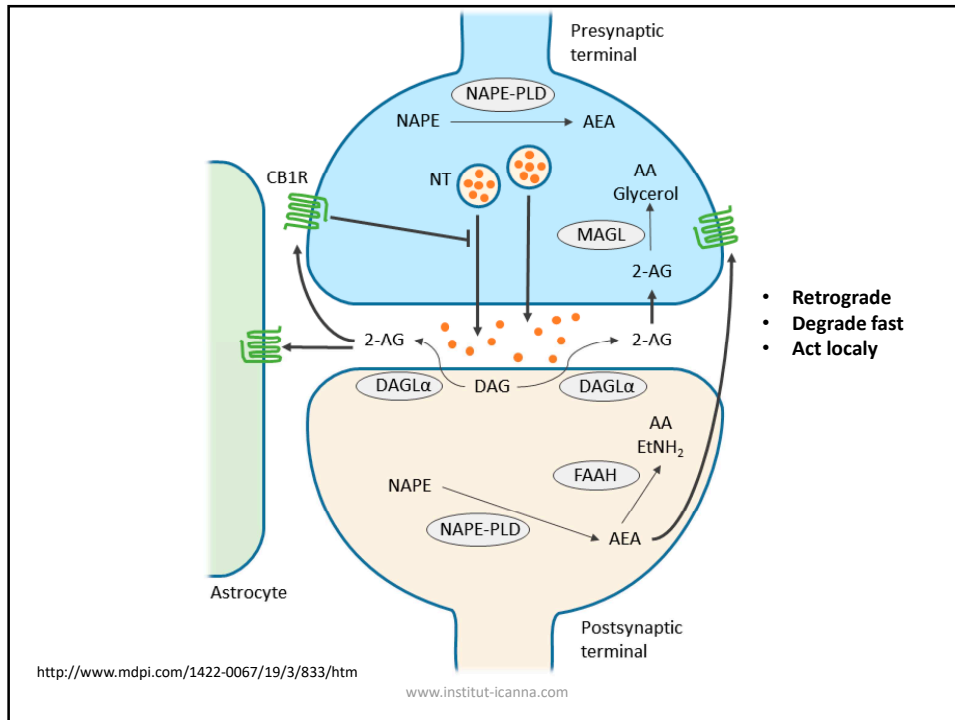
<https://slideslayer.com/slides/264289/>



Cannabinoids as signalling molecules



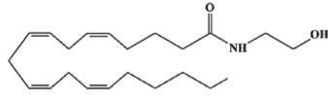
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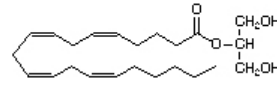
<http://www.mdpi.com/1422-0067/19/3/833/htm>

www.institut-icanna.com

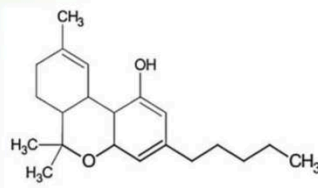
Endo- and phytocannabinoids



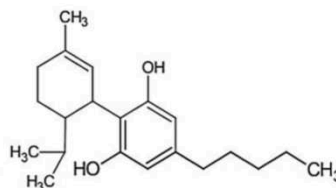
ANANDAMIDE



2-ARACHIDONOYL- GLYCEROL

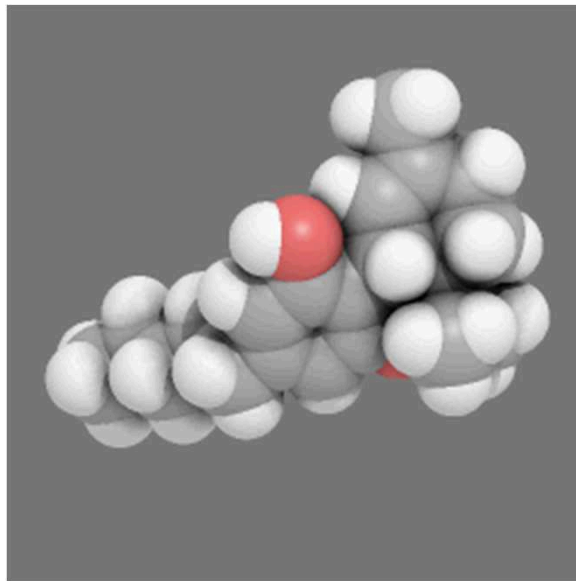


Tetrahydrocannabinol (THC)

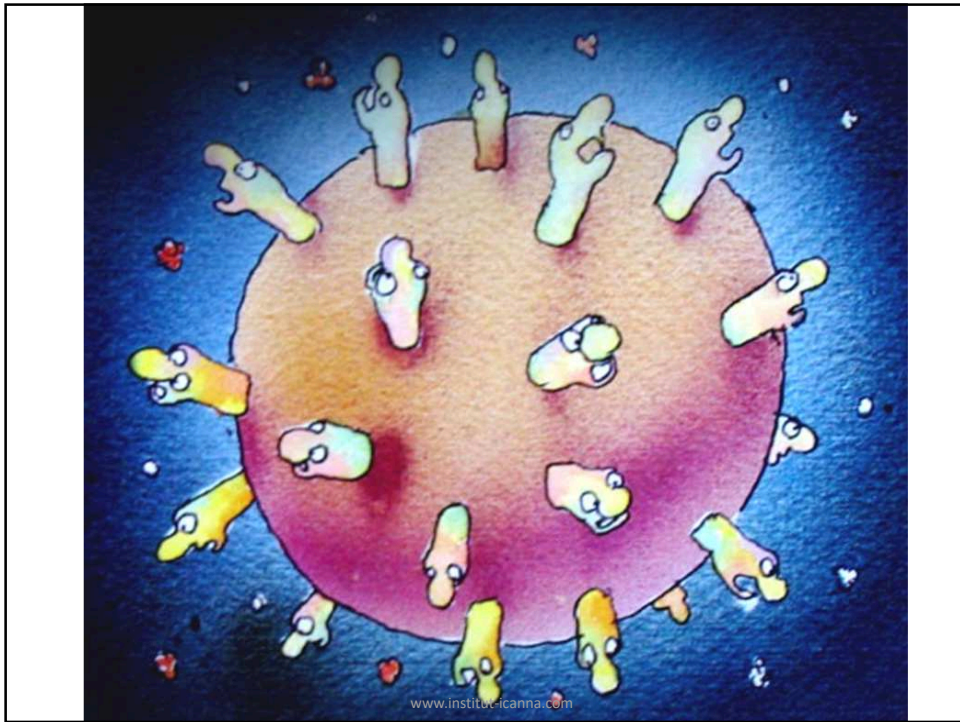


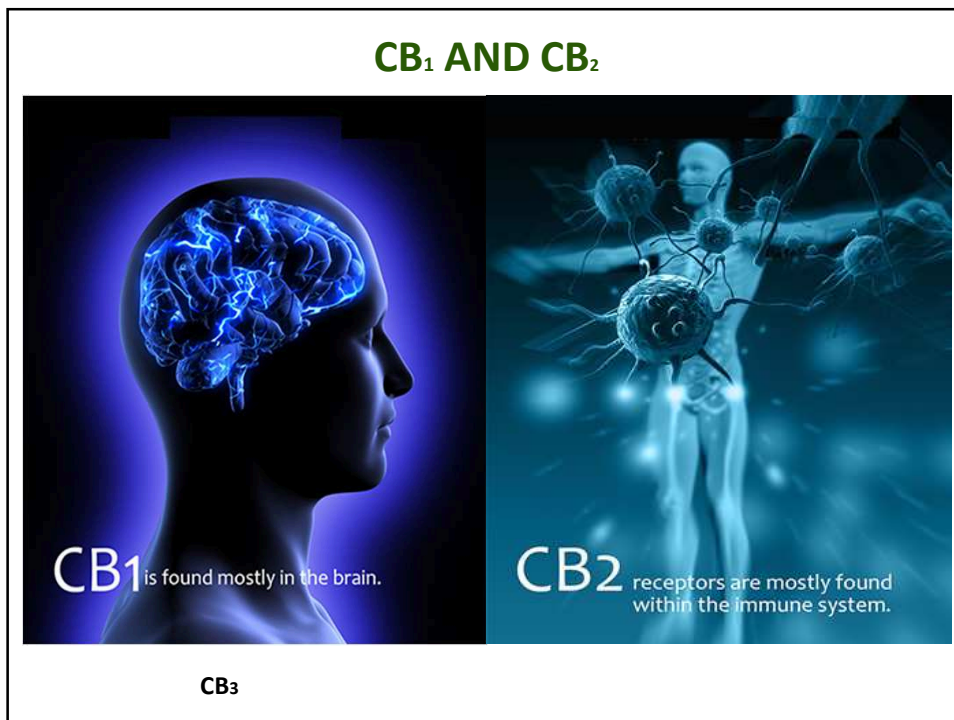
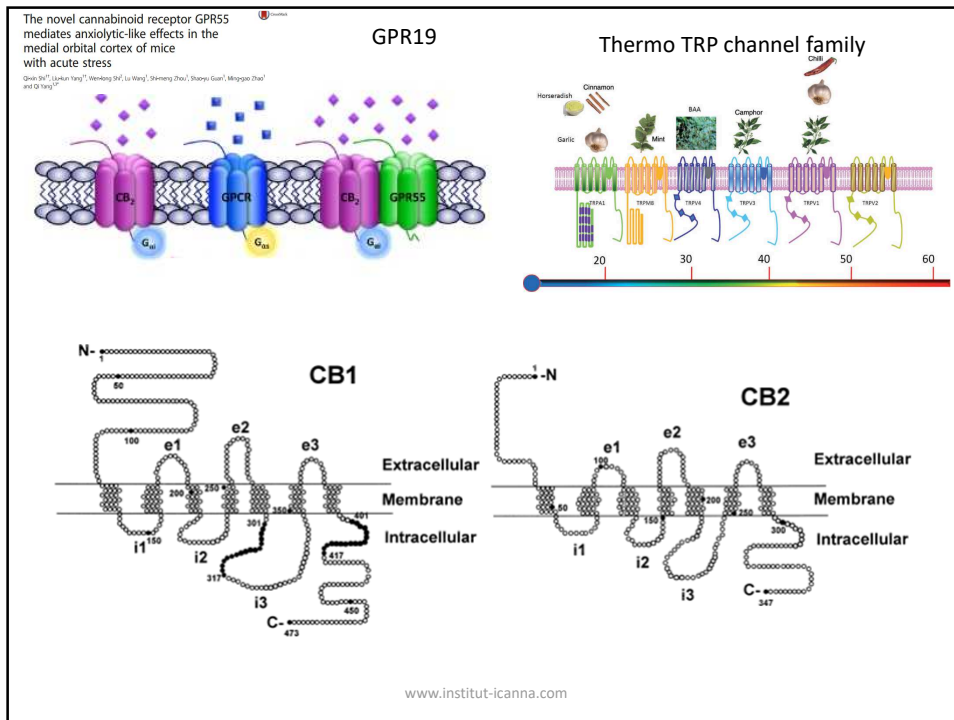
Cannabidiol (CBD)

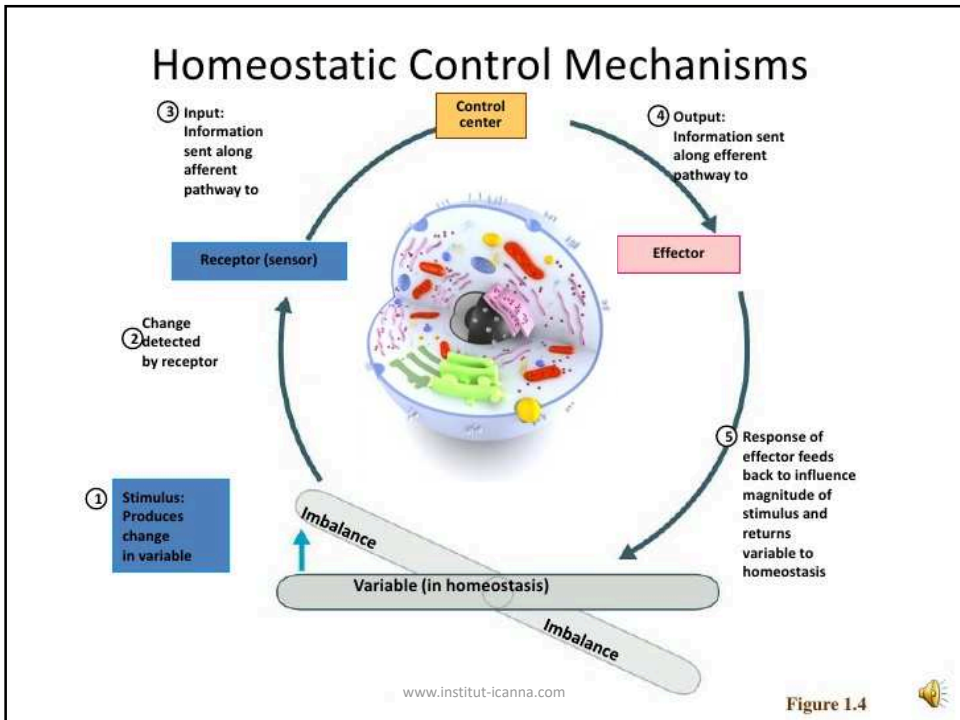
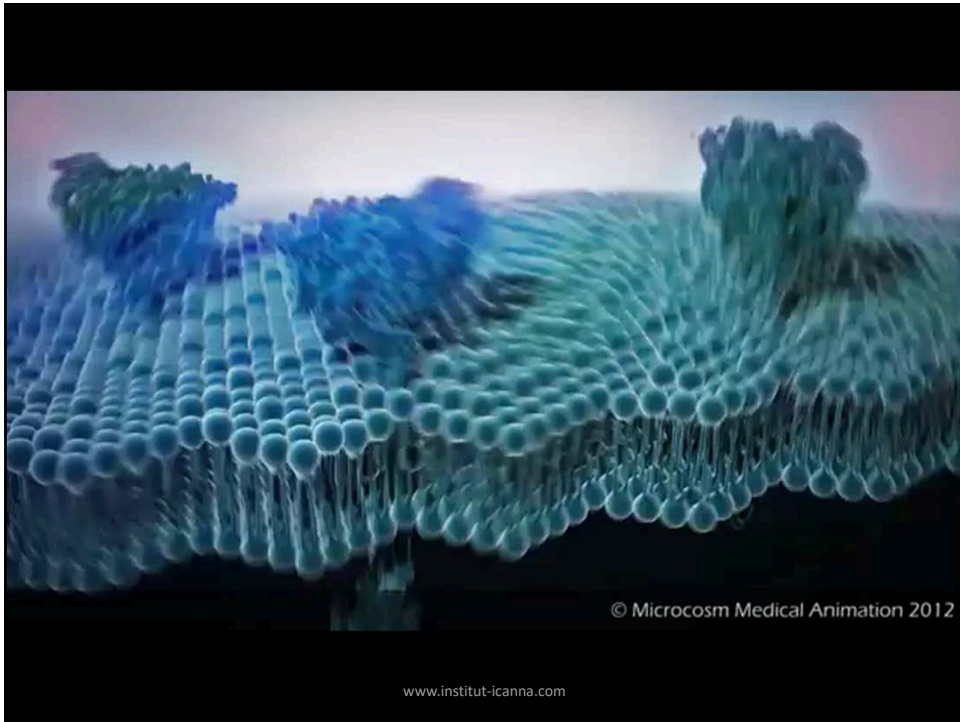
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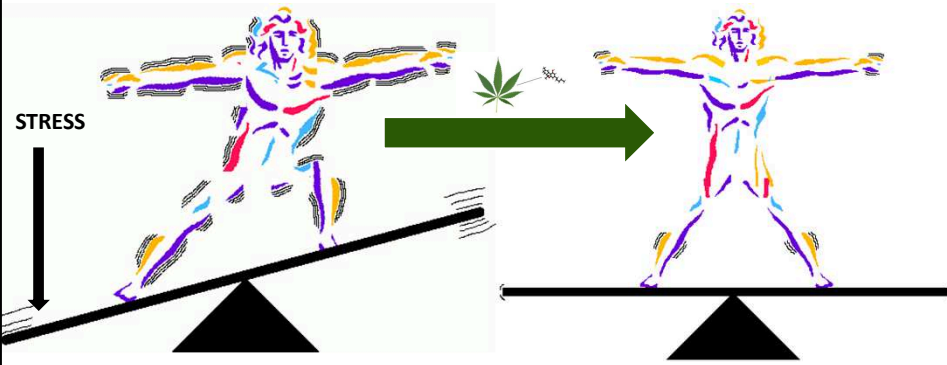




Homeostasis

the tendency of organisms to auto-regulate and maintain their internal environment in a stable state

cells, tissue, organs, body, emotions, life




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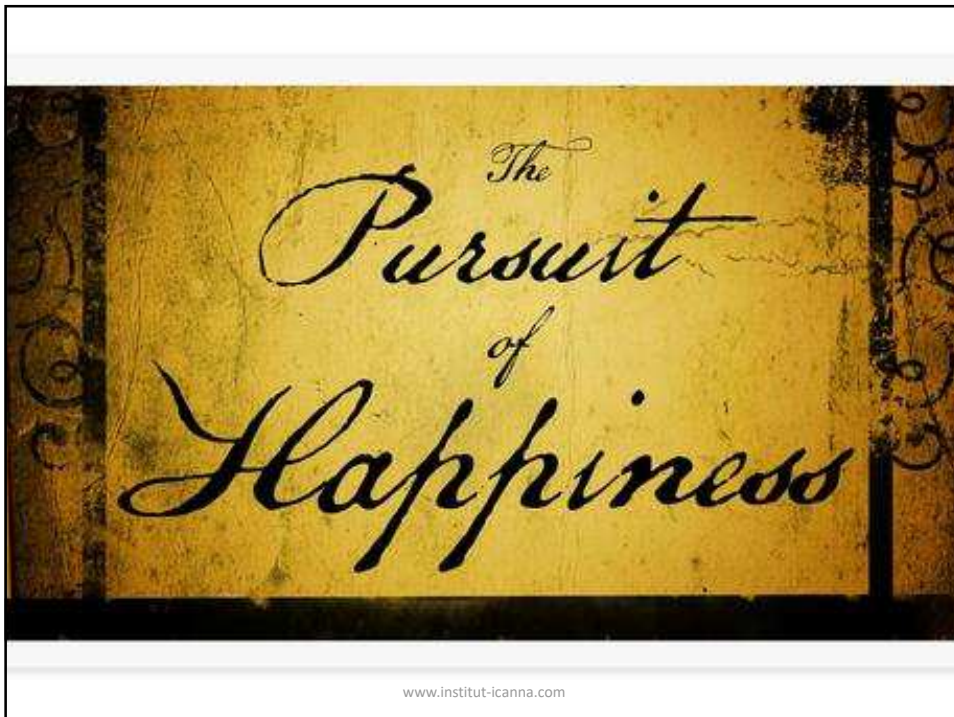
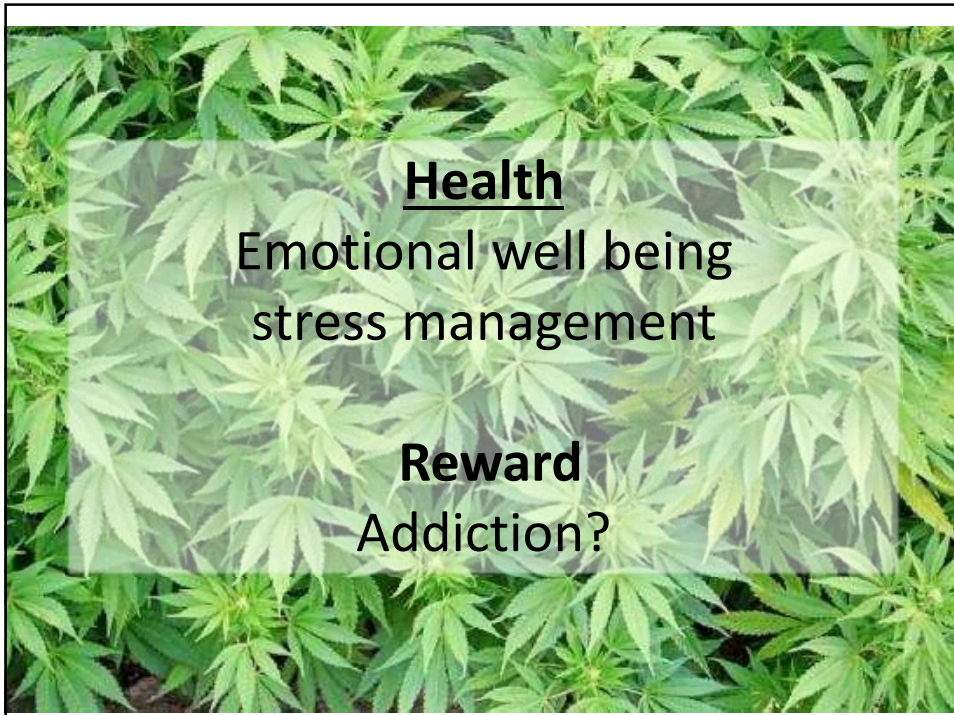
The endocannabinoid system is essential to life and it relates messages that affect how we eat, sleep, relax, forget and protect.

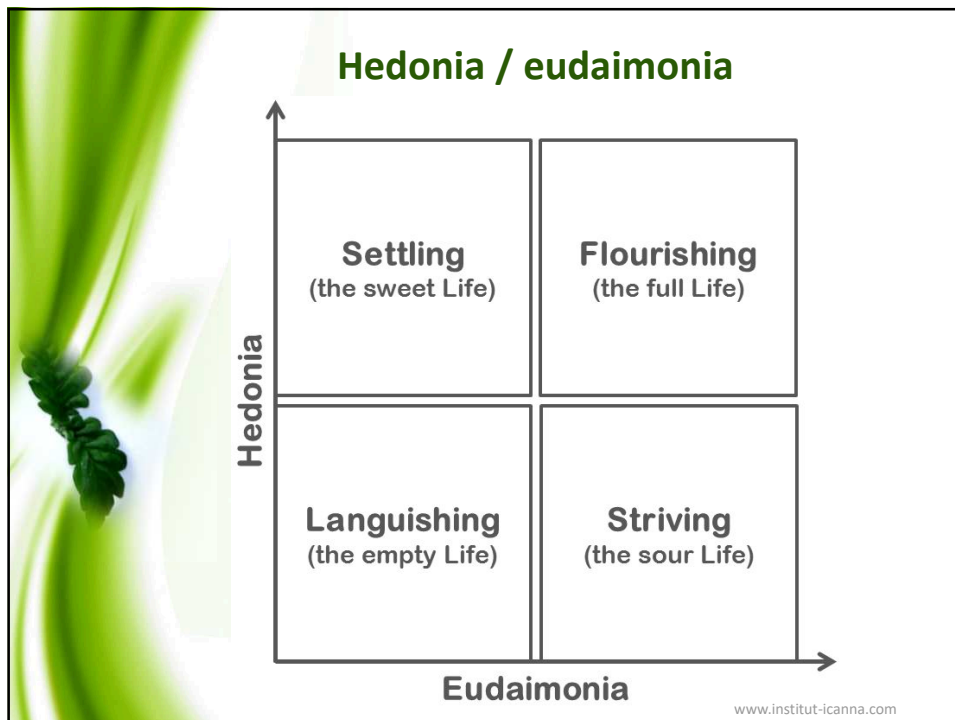
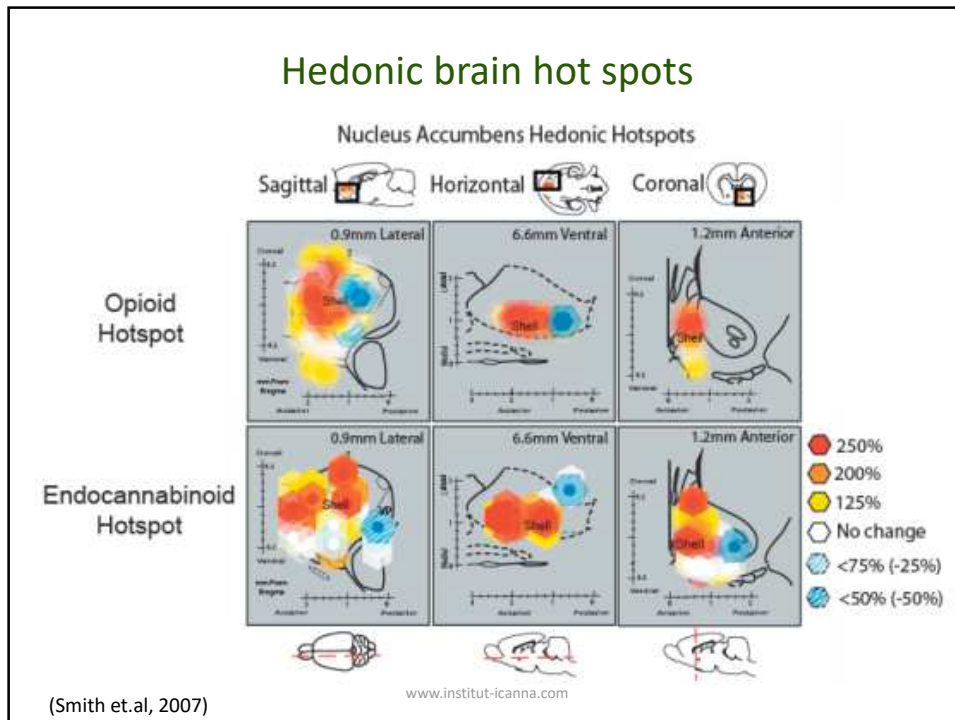
VINCENZO DI MARZO, Ph.D

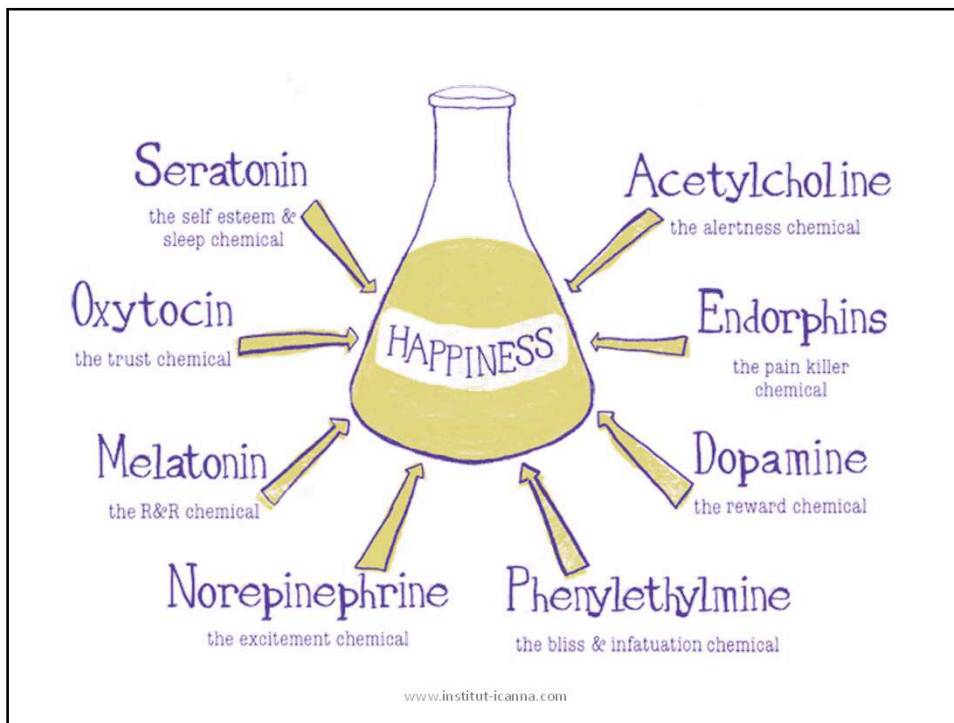
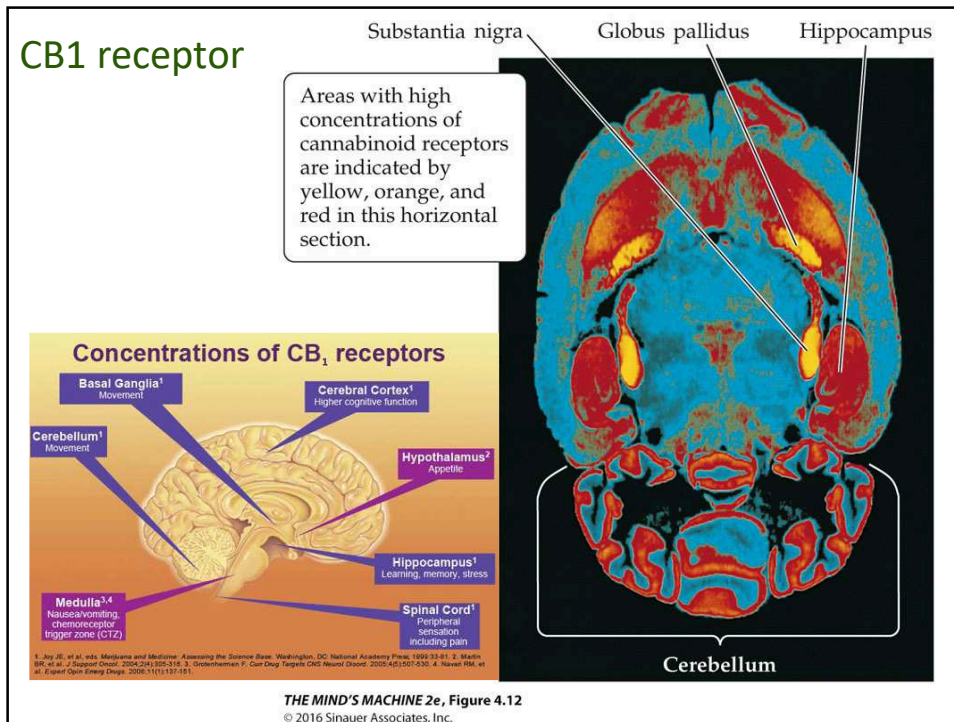
RAPHAEL MECHOULAM, Ph.D

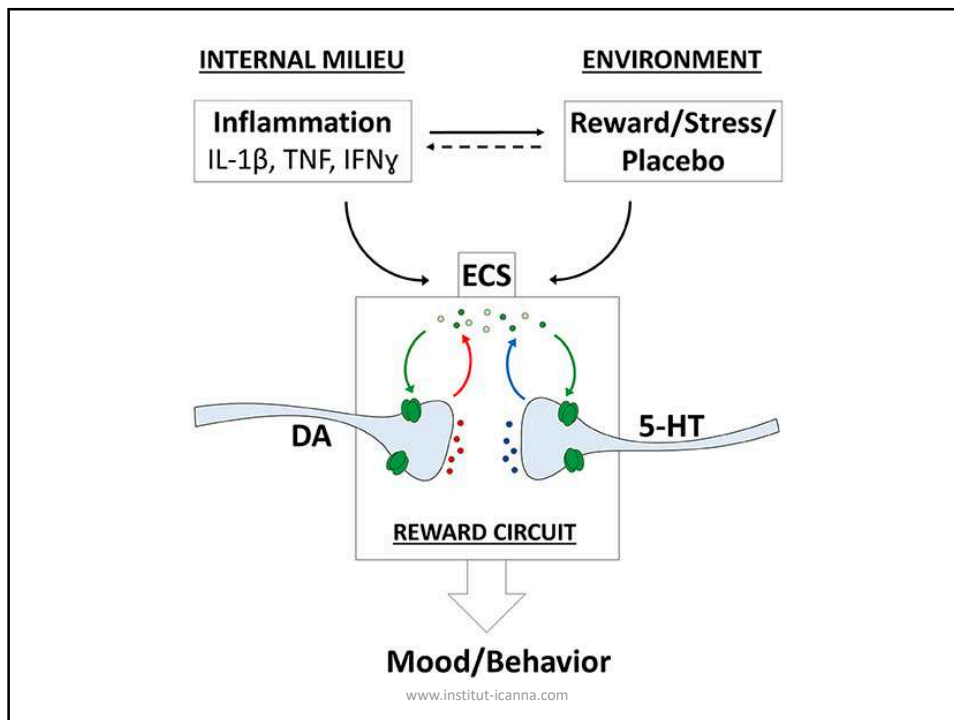
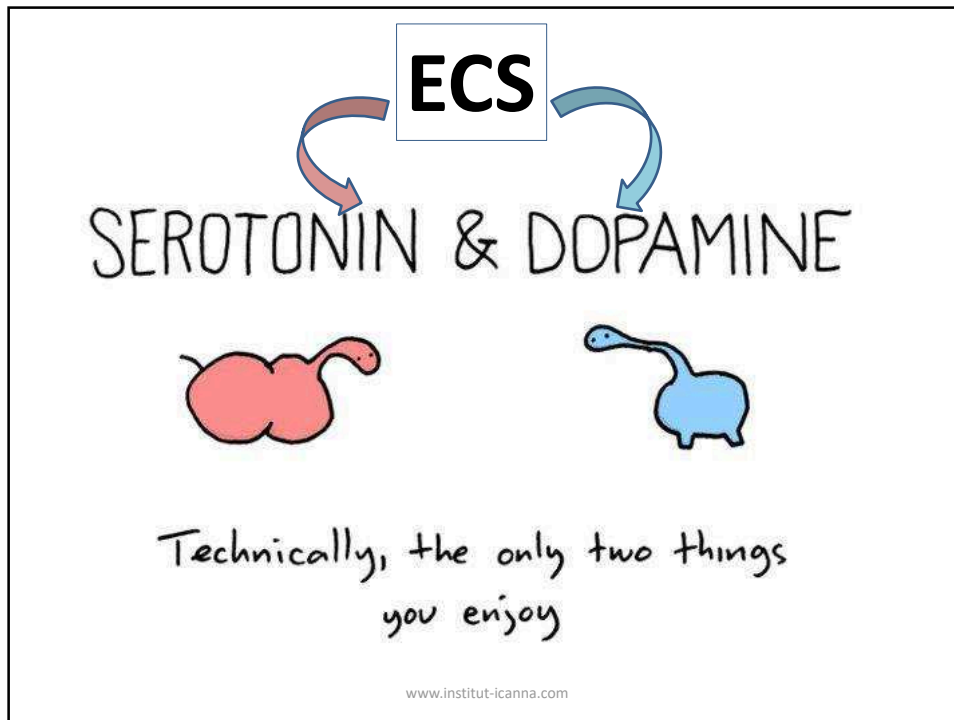


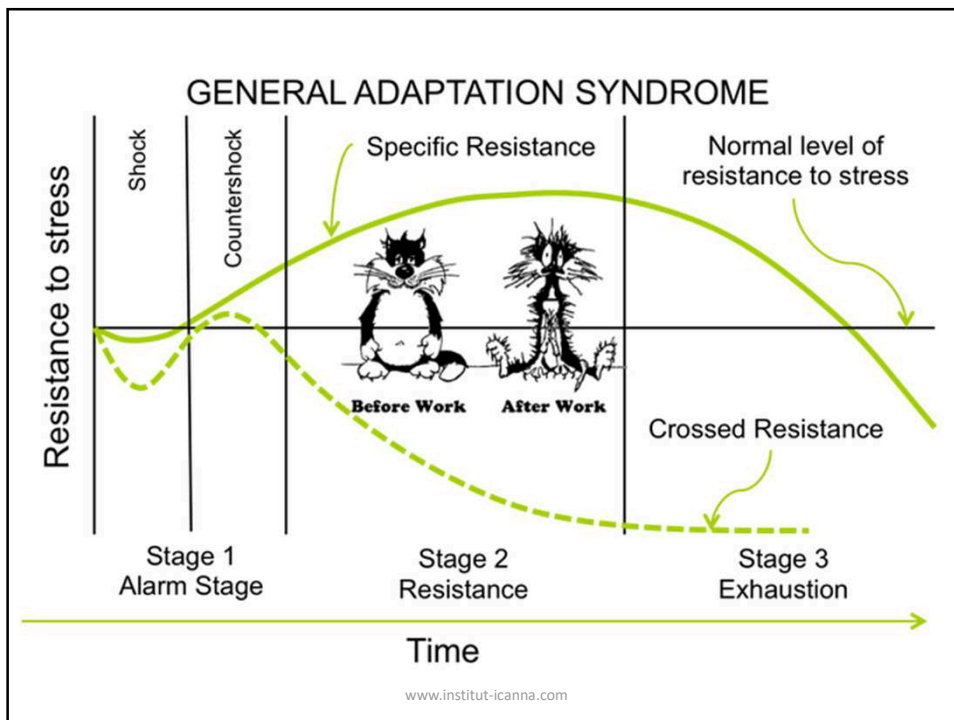
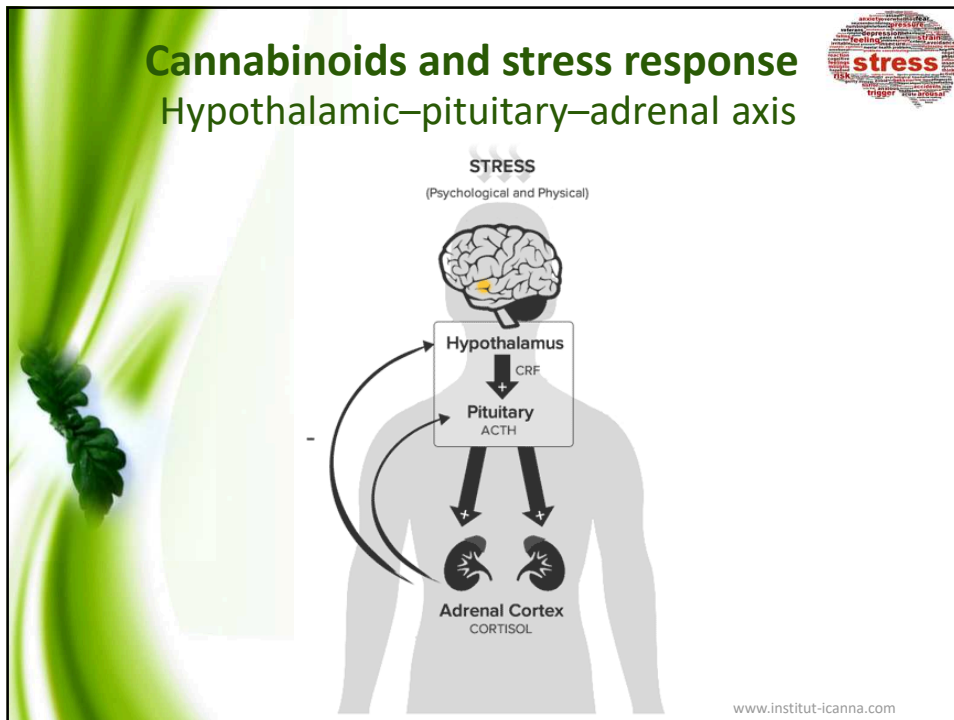
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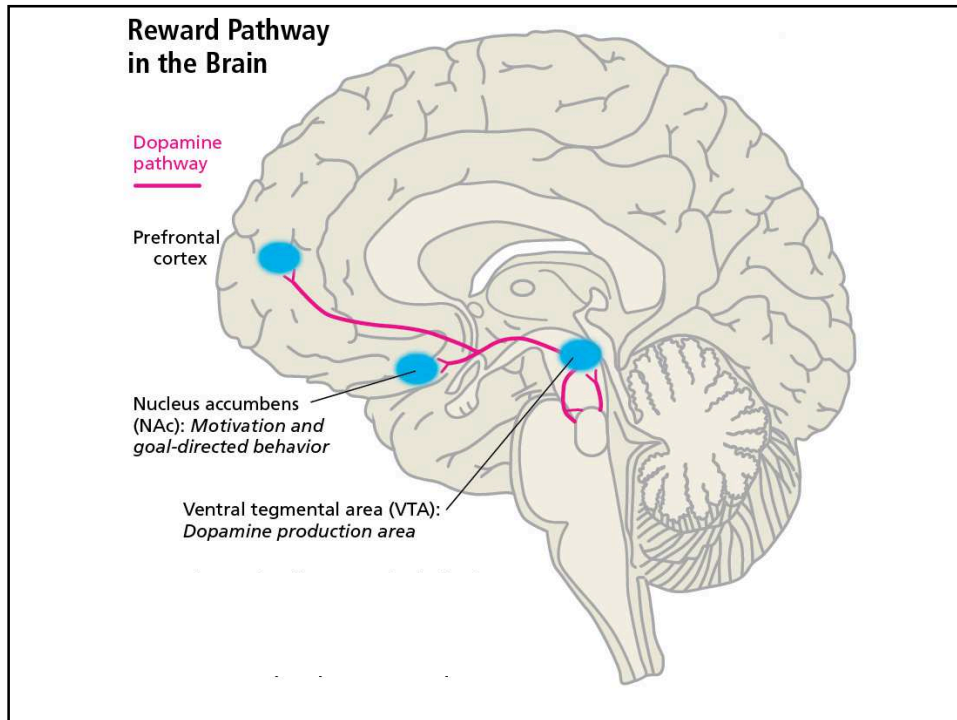
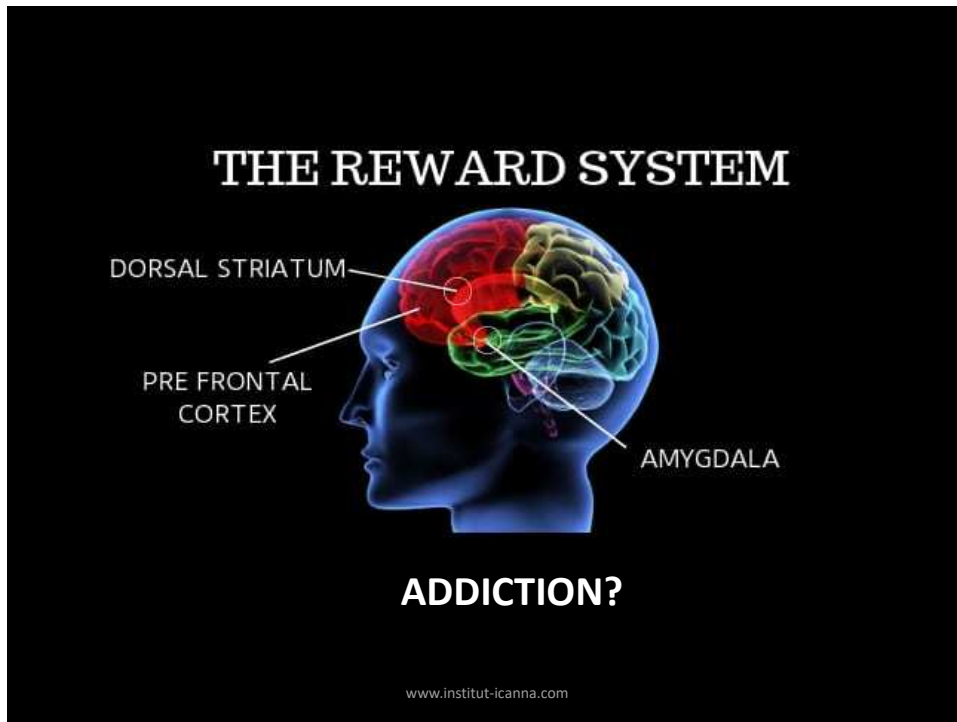


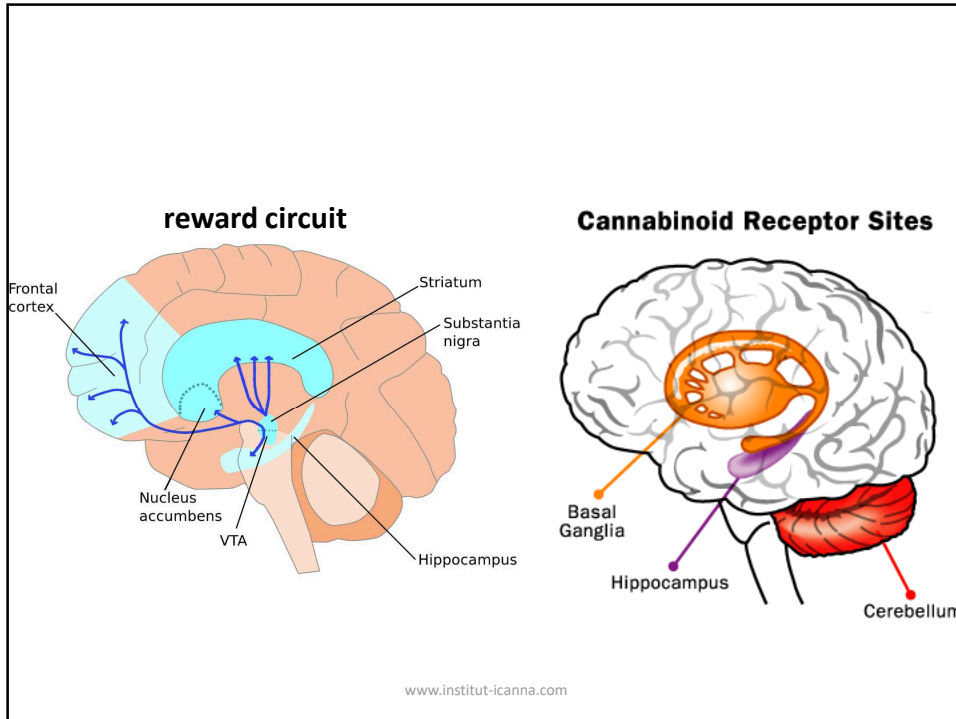












ENDOCANNABINOIDS

ANANDAMIDE


CCCCCCCCC/C=C/C/C=C/C/C=C/C/C=C/C(=O)NCCO

2-AG

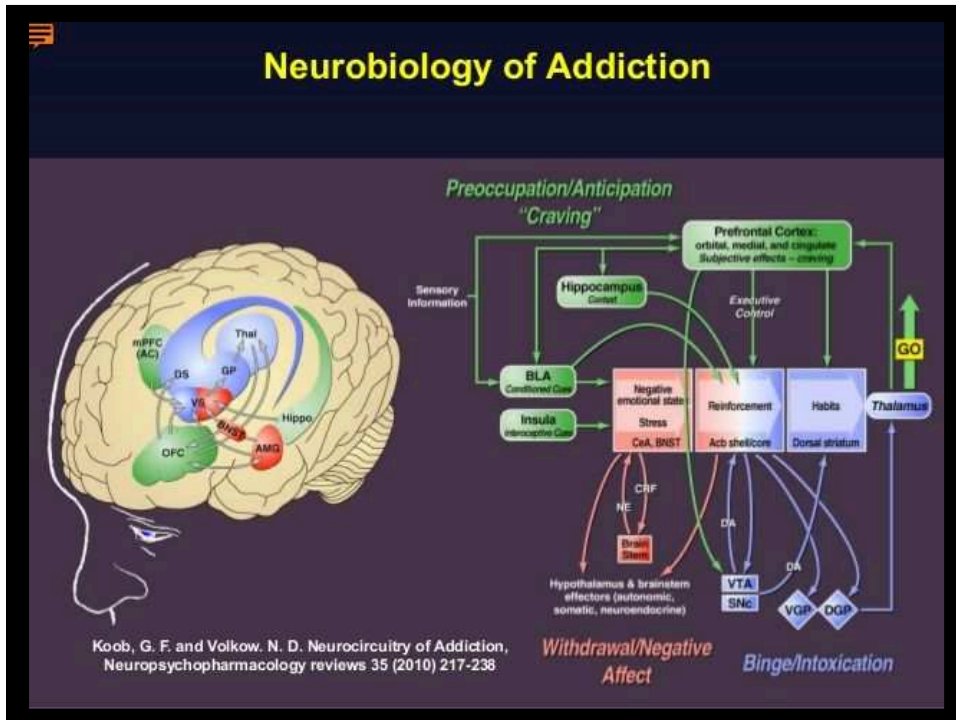
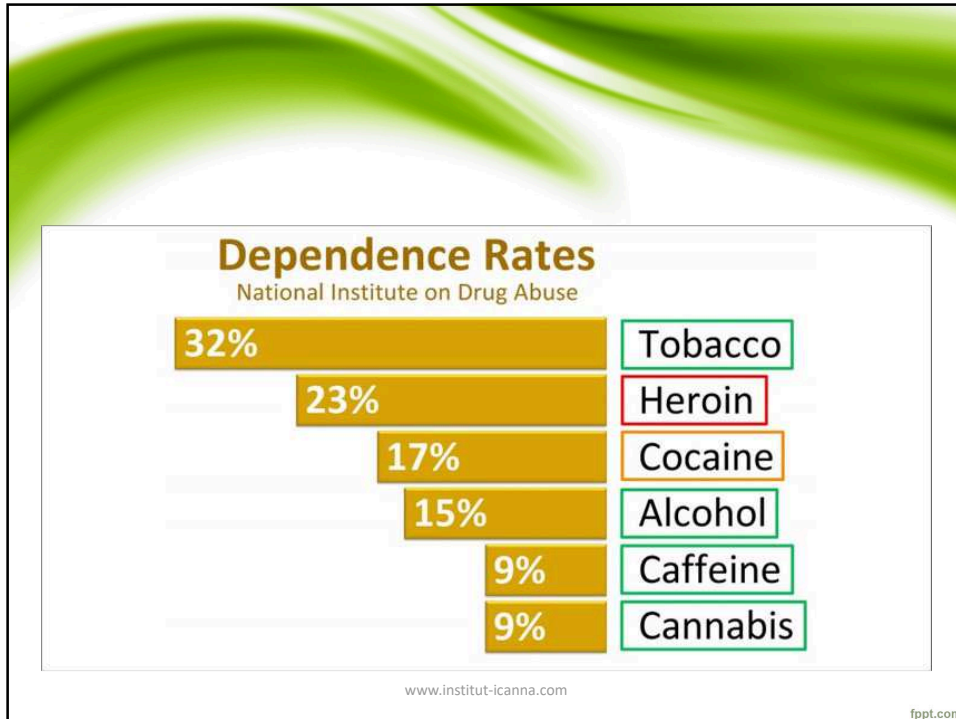
CCCCCCCCC/C=C/C/C=C/C/C=C/C/C=C/C(=O)OC(O)C(O)C

Runner's high

- integral to the survival of our species
- motivating us to exercise and move our bodies
- helps us sustain intensive aerobic activity by reducing pain
- **neurobiological reward that keeps us healthy and, well, alive**



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Koob, G. F. and Volkow, N. D. Neurocircuitry of Addiction, *Neuropsychopharmacology reviews* 35 (2010) 217-238

Cannabis THE GATEWAY DRUG?



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The endocannabinoid system as a target for addiction treatment: Trials and tribulations

Matthew E. Sloan, Joshua L. Gowin, Vijay A. Ramchandani, Yasmin L. Hurd, Bernard Le Foll

Cannabidiol disrupts the reconsolidation of contextual drug-associated memories in Wistar rats.
de Carvalho CR¹, Takahashi RN¹.
Addict Biol. 2017 May;22(3):742-751. doi: 10.1111/adb.12366. Epub 2016 Feb 1.

[Cannabidiol for the Reduction of Cue-Induced Craving and Anxiety in Drug-Abstinent Individuals With Heroin Use Disorder: A Double-Blind Randomized Placebo-Controlled Trial.](#)
Hurd YL, Spriggs S, Alishayev J, Winkel G, Gurgov K, Kudrich C, Oprescu AM, Salsitz E. *Am J Psychiatry.* 2019 May 21;appiajp201918101191. doi: 10.1176/appi.ajp.2019.18101191. [Epub ahead of print]

The Endocannabinoid System and Cannabidiol's Promise for the Treatment of Substance Use Disorder.
Chye Y, Christensen E, Solowij N, Yücel M. *Front Psychiatry.* 2019 Feb 19;10:63. doi: 10.3389/fpsy.2019.00063. eCollection 2019.
PMID: 30837904 [Free PMC article.](#) [Review.](#)

CBD

Opioids

Rimonabant – nikotin

CB1 modulation - alkohol

fppt.com

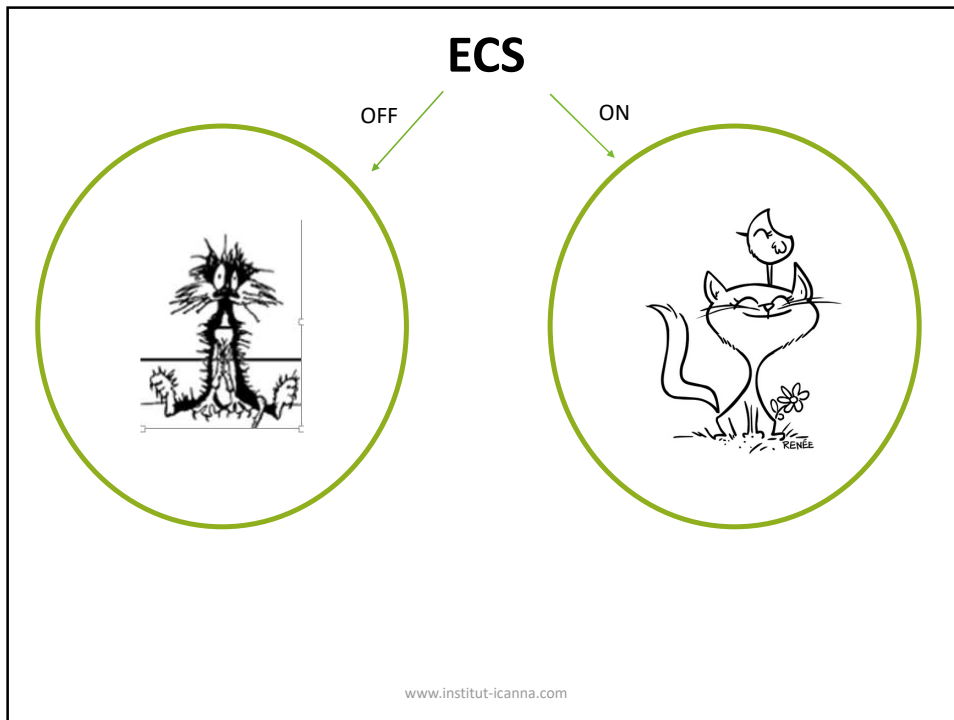
“Marijuana is an Exit Drug”

Quote by Daniel Villanueva
testifying that cannabis helped
him stop using alcohol,
prescription pain killers and
hard street drugs to manage
his PTSD.

mychronicrelief.com

Cannabinoids are interwoven in the very fabric of our lives, since evolution of man kind begun.

Homeostasis at the cellular and biochemical level



**Ignorance
is Bliss**

Bliss is not the problem ~ ignorance is.

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The illustration shows three monkeys. The central monkey is larger and has its hands on its head. To its right is a thought bubble containing three question marks '???'.

