Cannabis in Medicine, state-of-the-art research and the work of ICANNA

ICANNA
International Institute for Cannabinoids

University Phayao

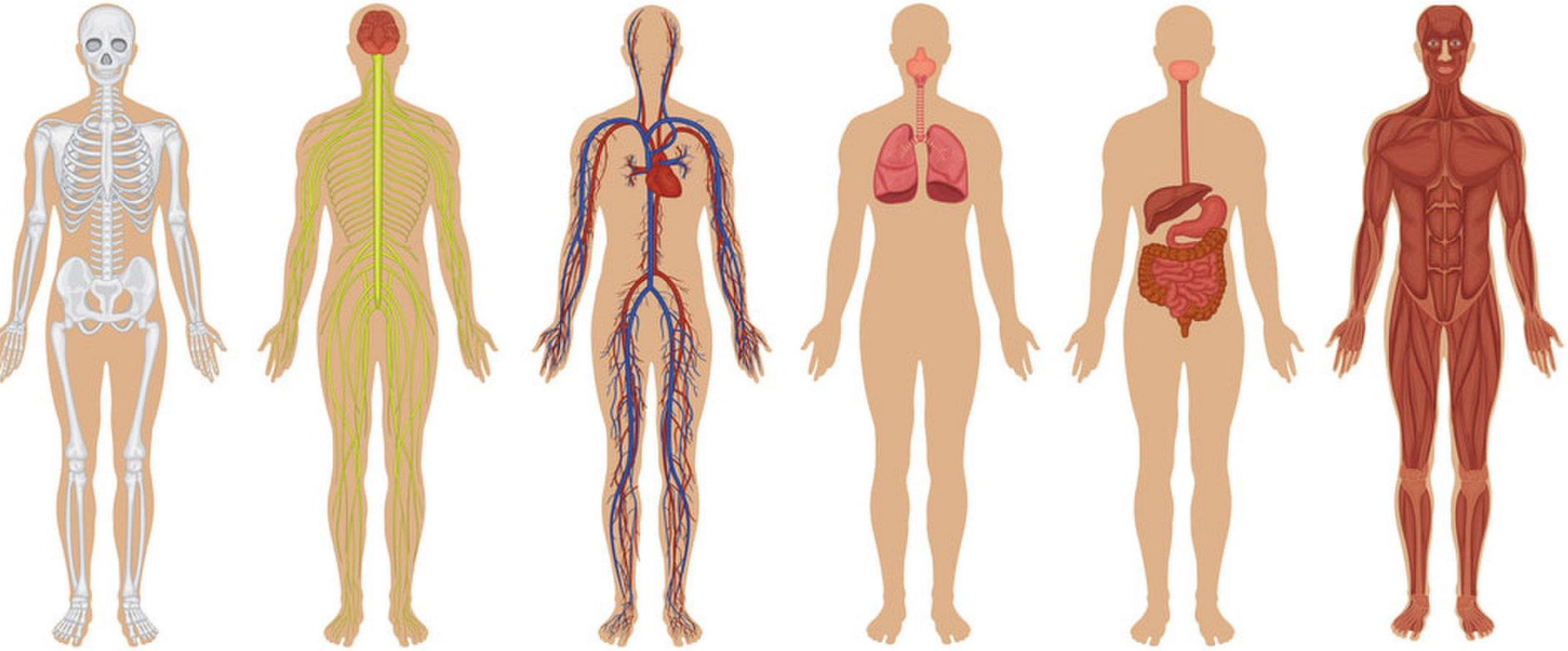
23 and 24 January 2020,Phayao Thailand

Assist. prof. dr. Tanja Bagar

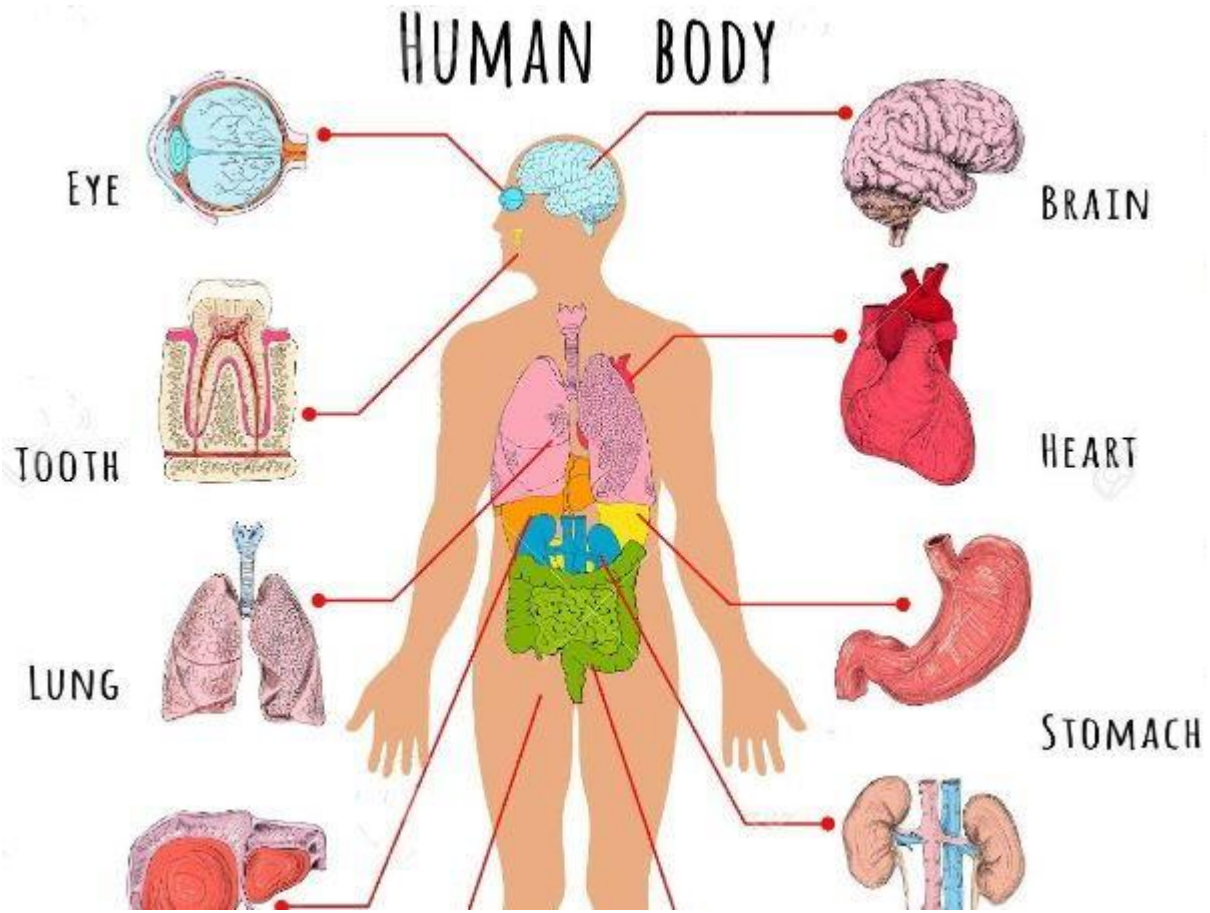
CEO of the Institut ICANNA

The topic of this talk

- How cannabonoids do what they do?
- Basic information about the endocannabinoid system
- Research focus in the filed of cannabinoids
- NGO ICANNA

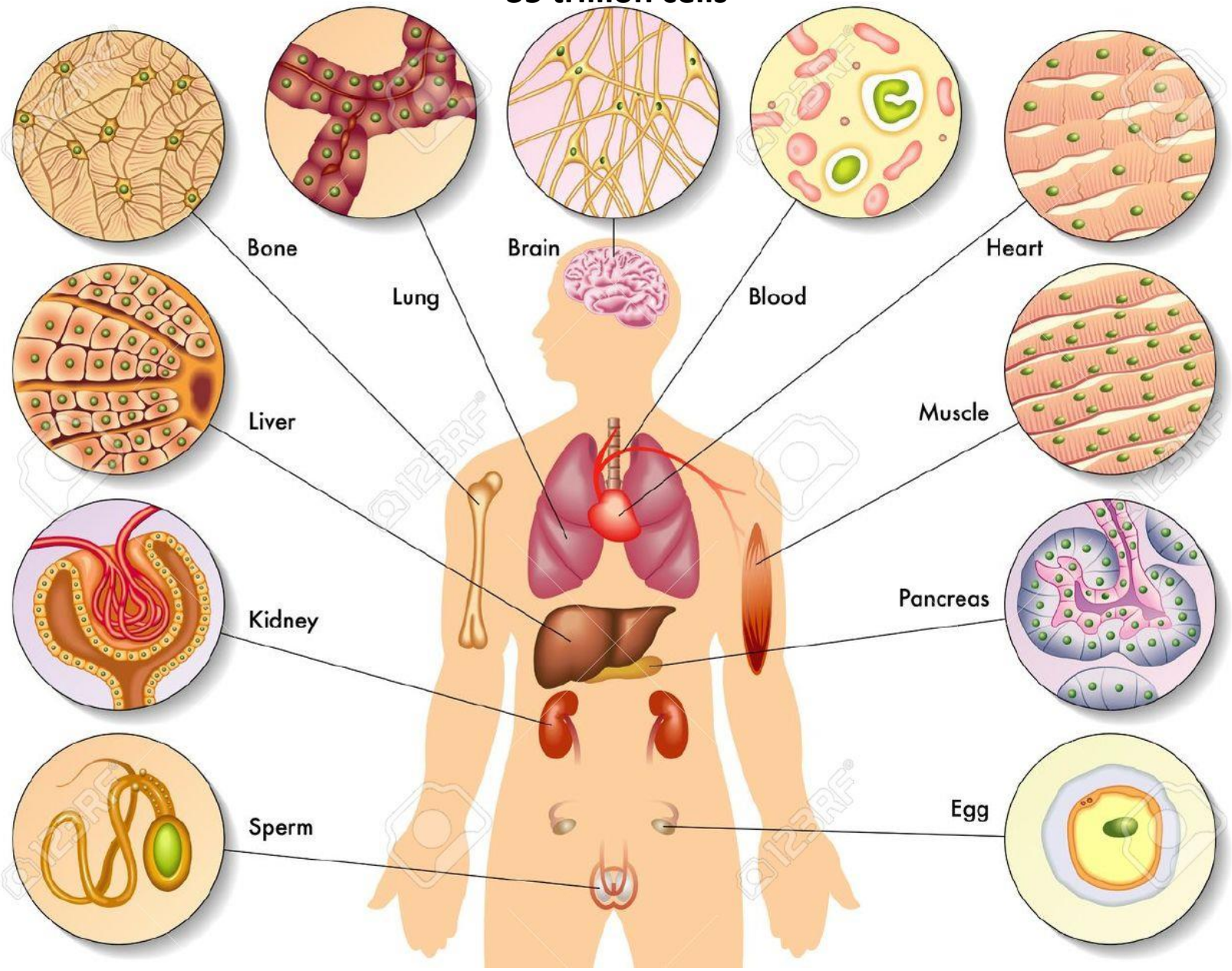


Source: https://www.livescience.com/37009-human-body.html



Source: https://www.tes.com/teaching-resource/human-body-organs-11366454

~ 35 trillion cells



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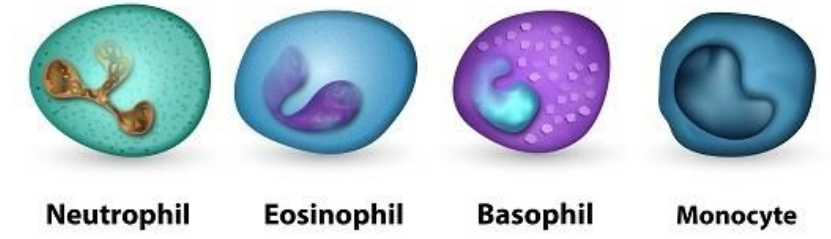
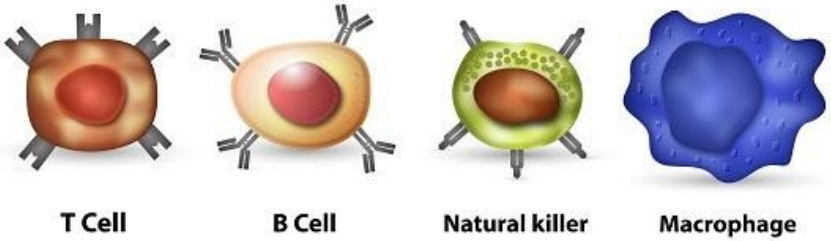
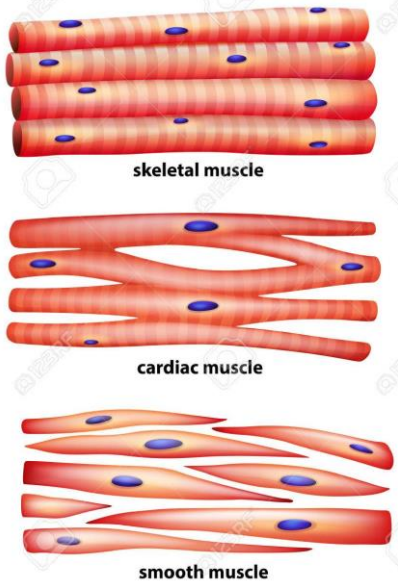
Source: https://www.123rf.com/photo_14776744_human-body-cells.html

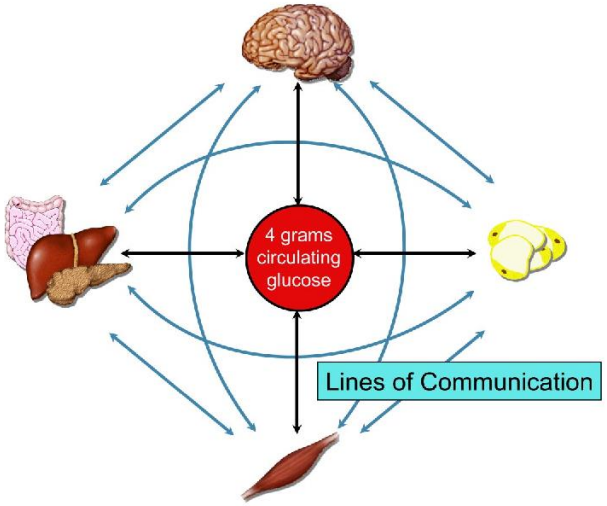

Neutrophil
Eosinophil
Basophil
Monocyte


T Cell
B Cell
Natural killer
Macrophage

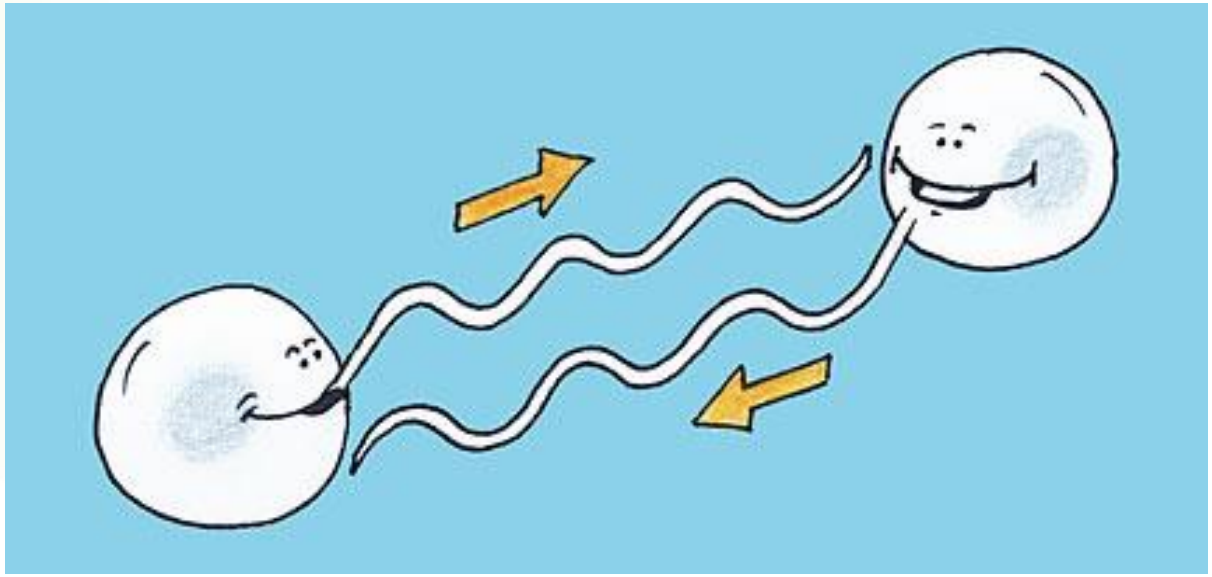

skeletal muscle
cardiac muscle
smooth muscle

Communication in the body

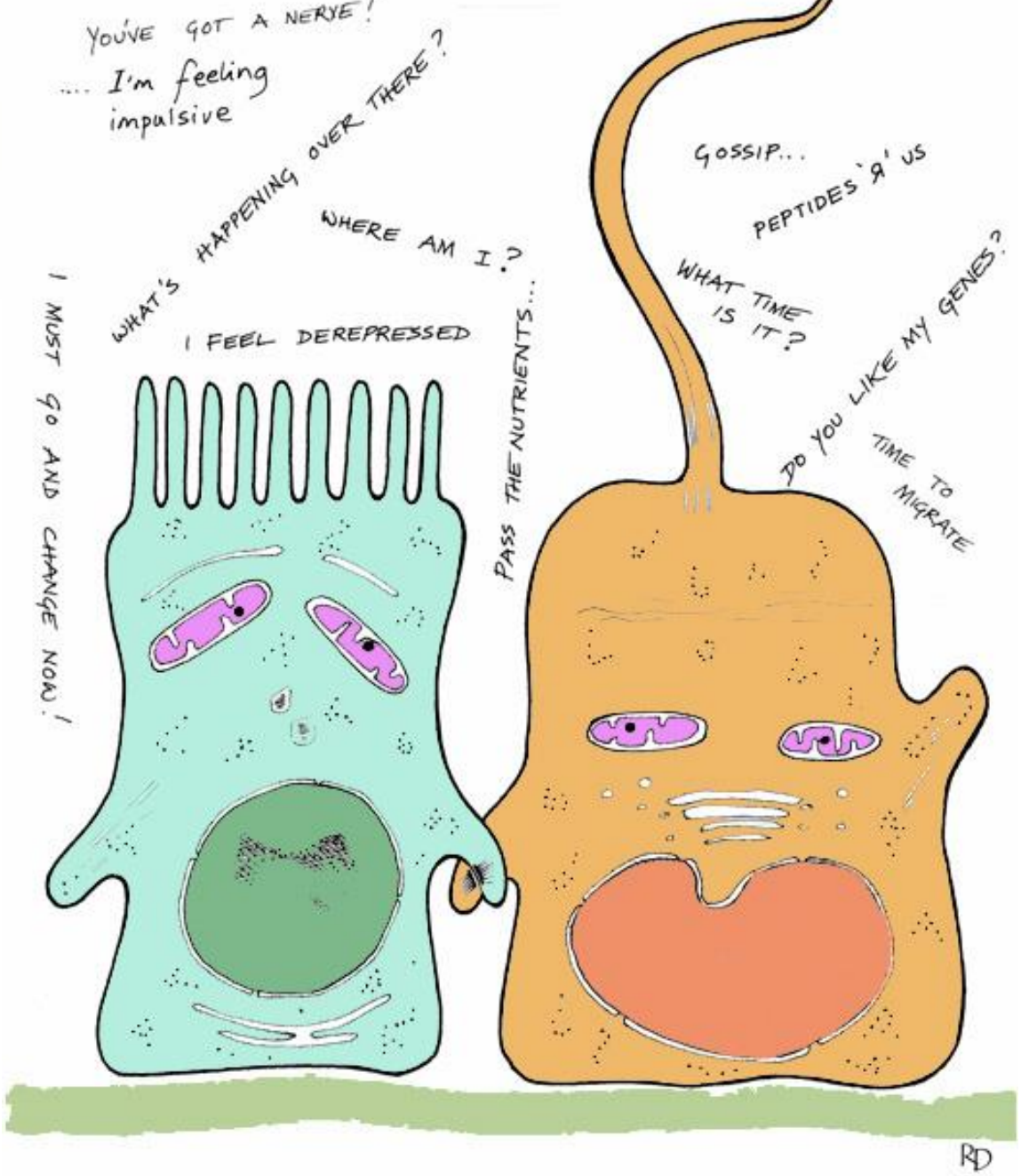
https://maryhartley.com/



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



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

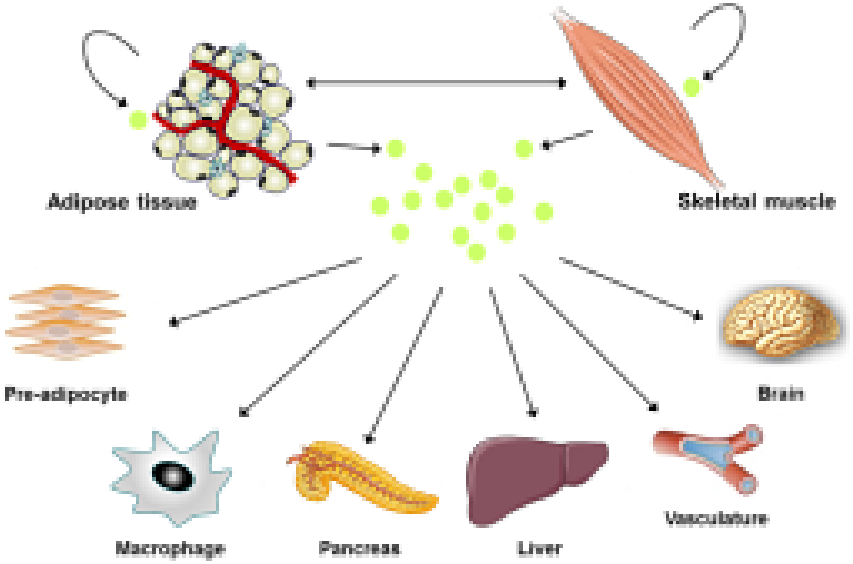


Cell sociology

cells 'talk' to each other, but what do they say?

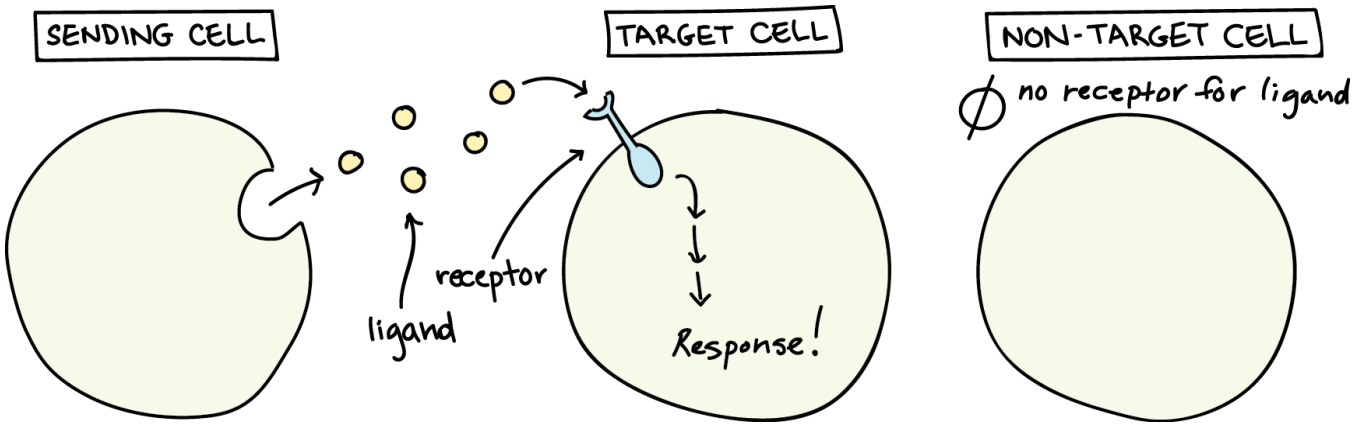
https://nicholasrampersd21.wordpress.com/2013/11/25/cell-cell-communication-long-distance/

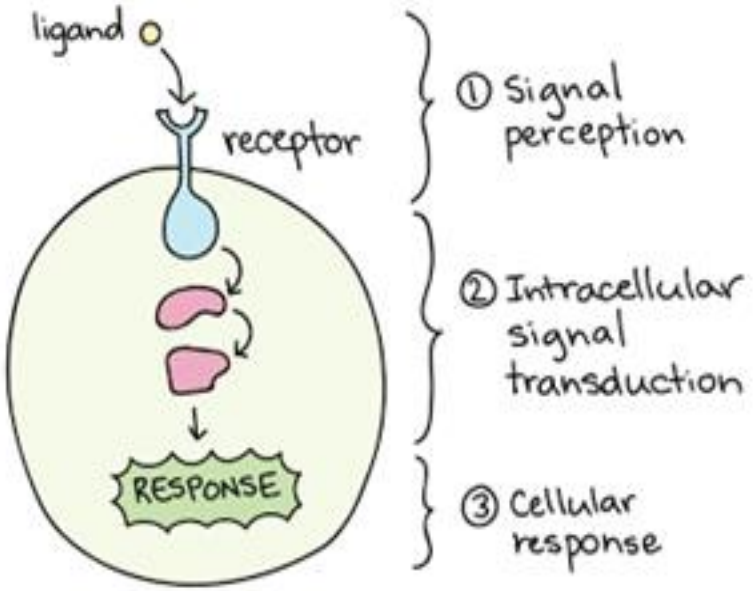
Signaling molecules

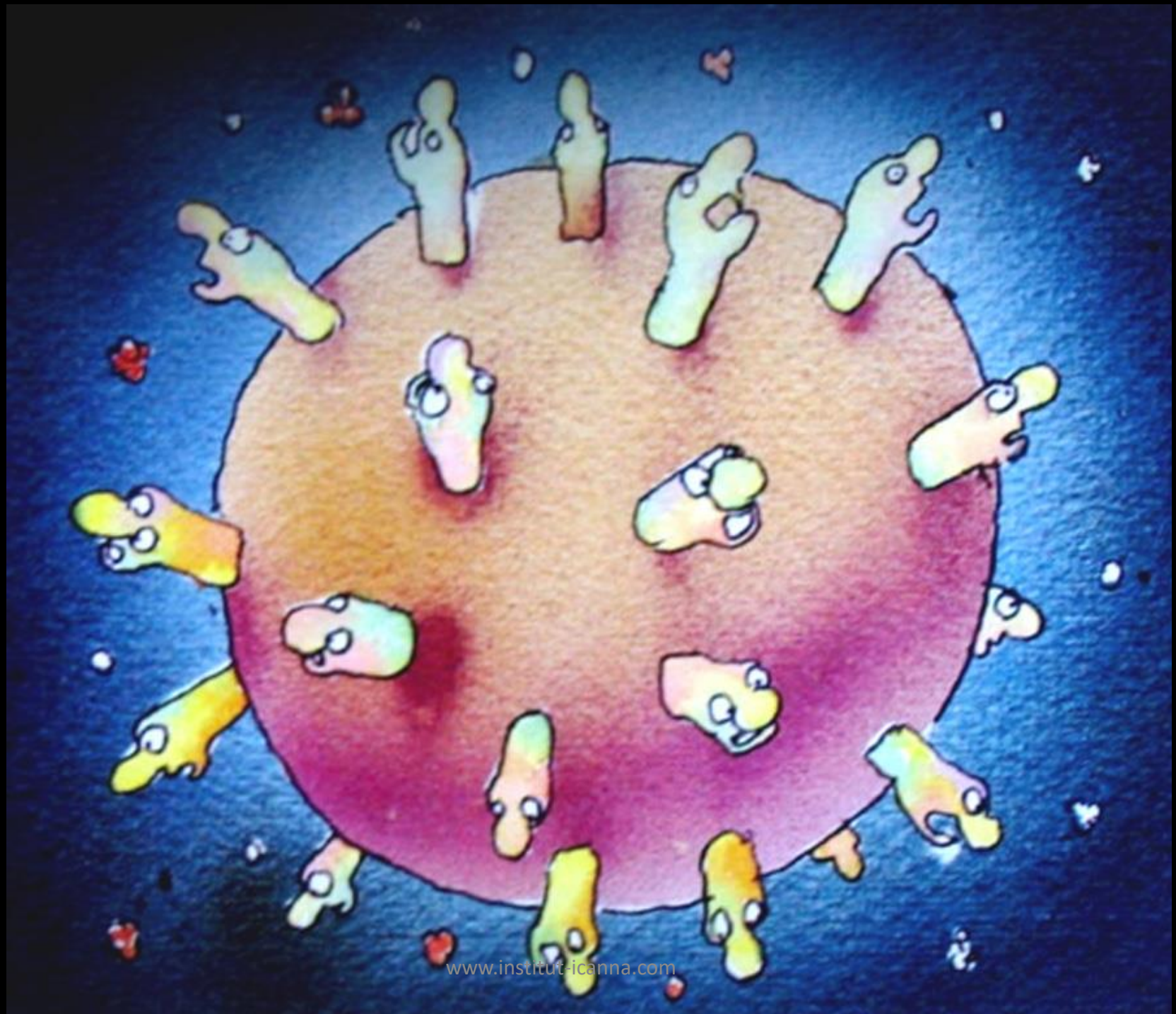


https://aging-matters.com/ampk-a-complicated-metabolic-signalling-pathway/

Cannabinoids as signalling molecules



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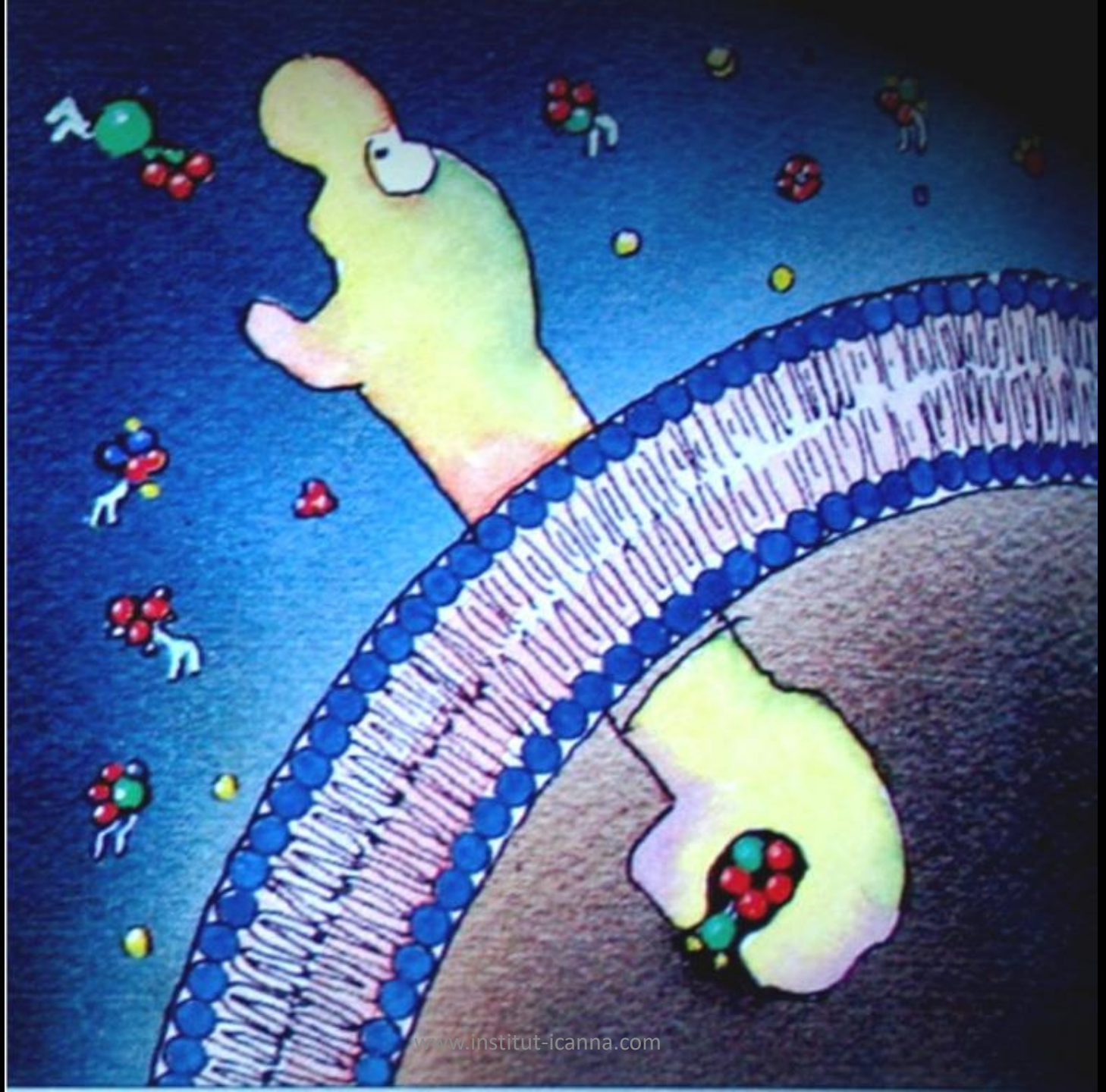
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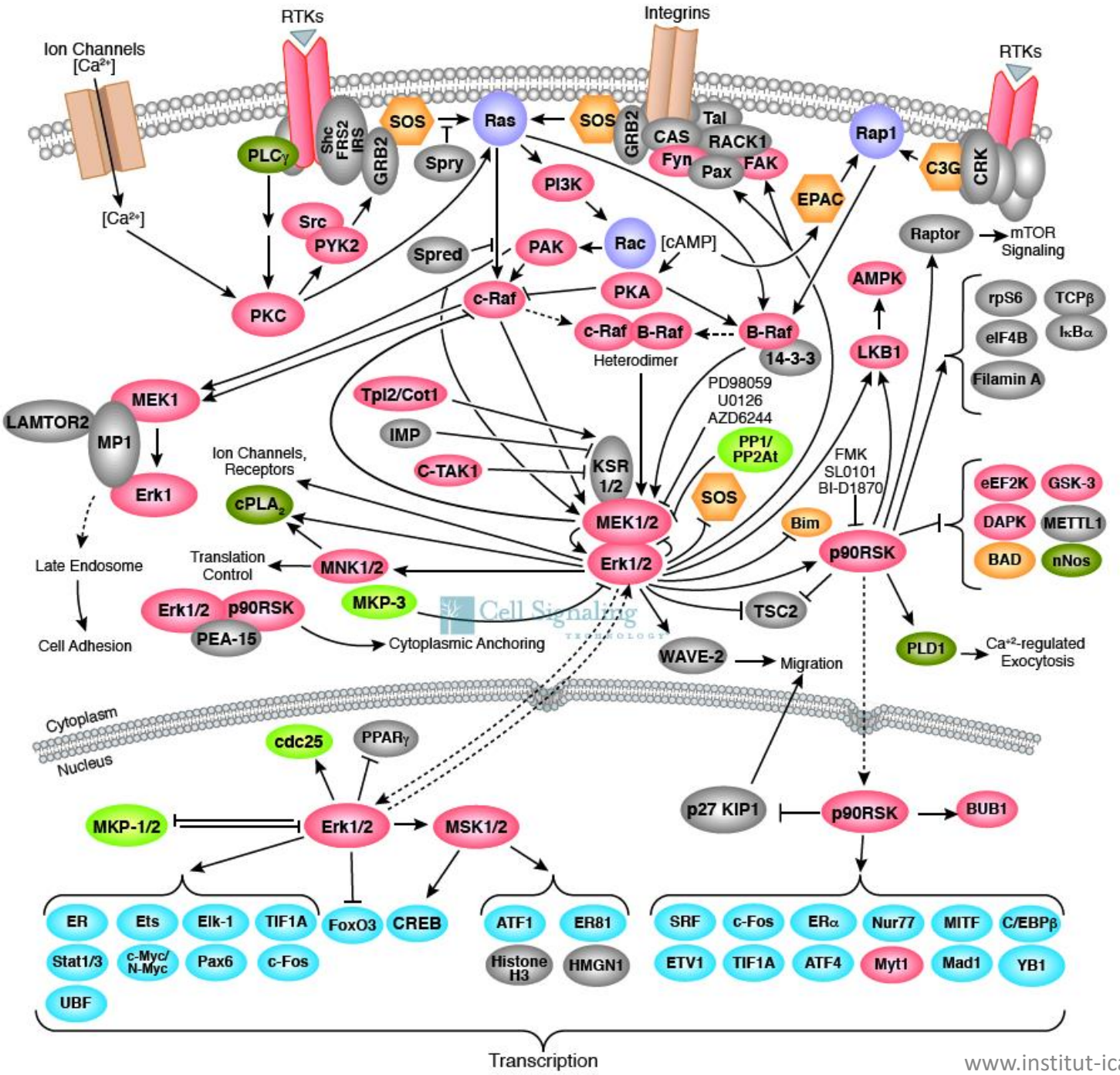
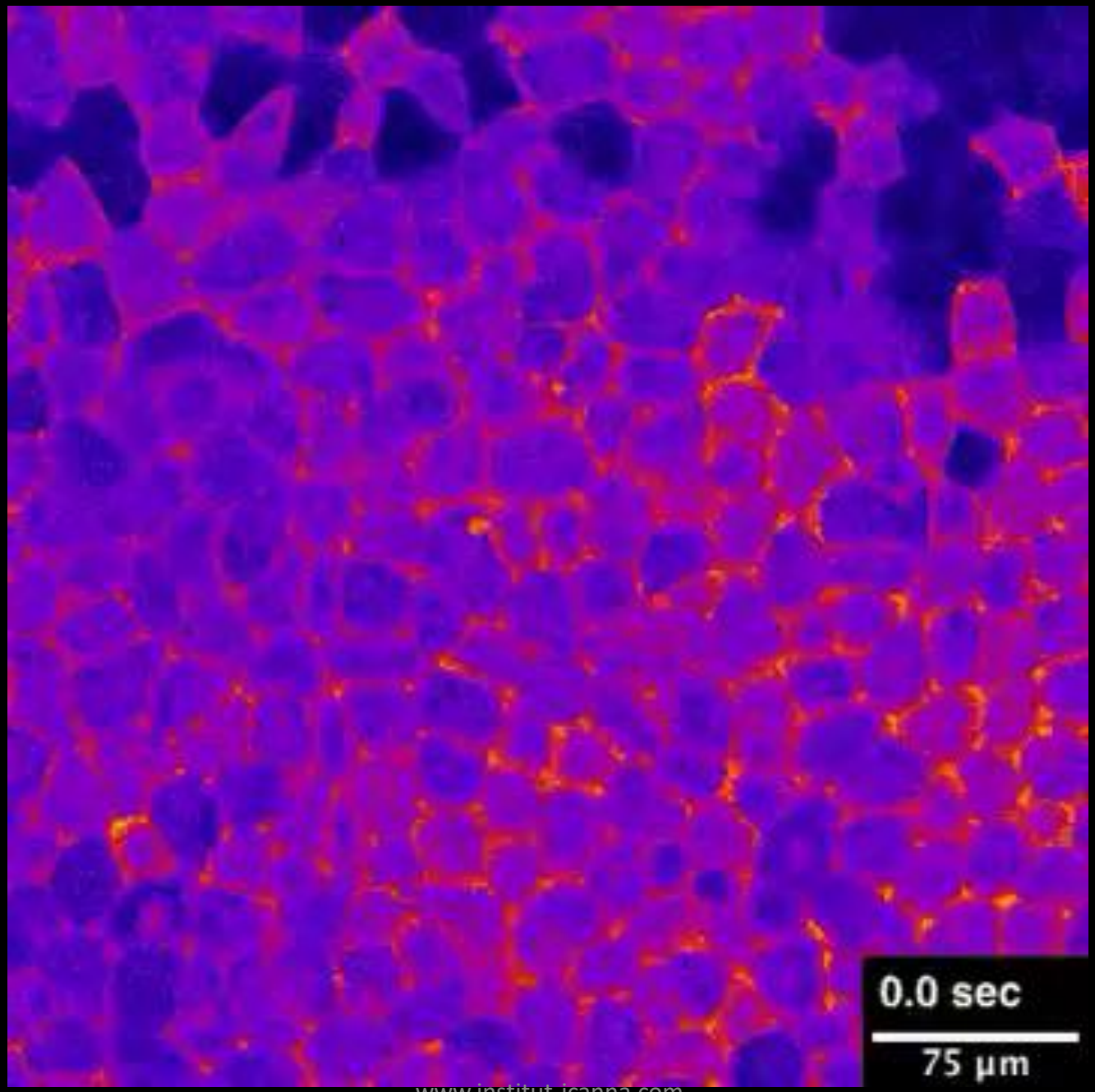
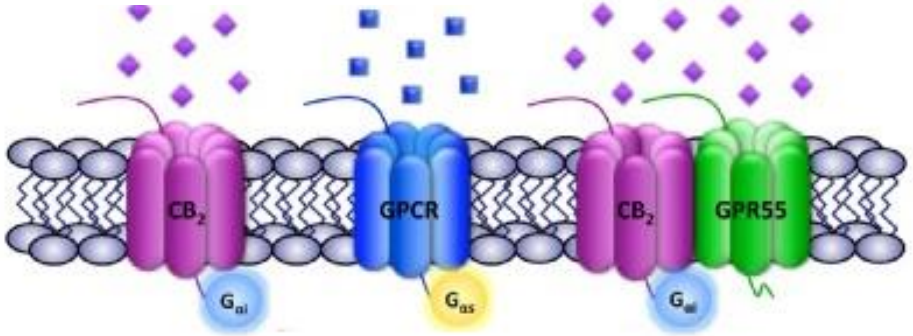


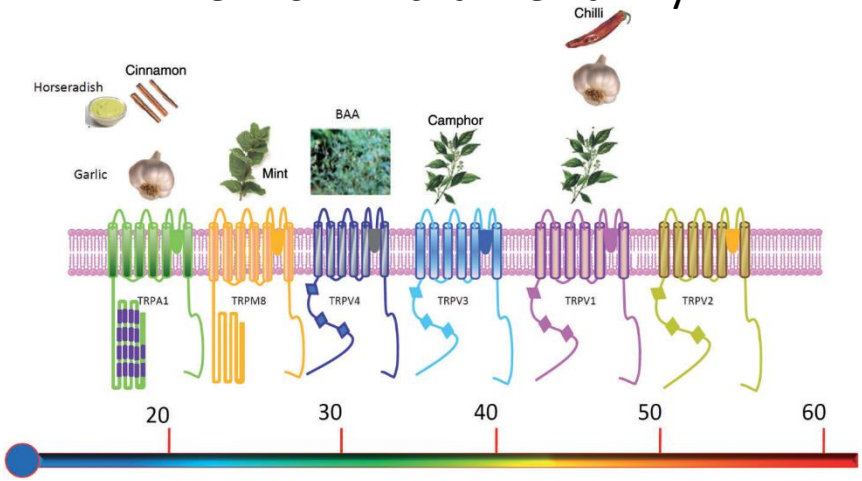


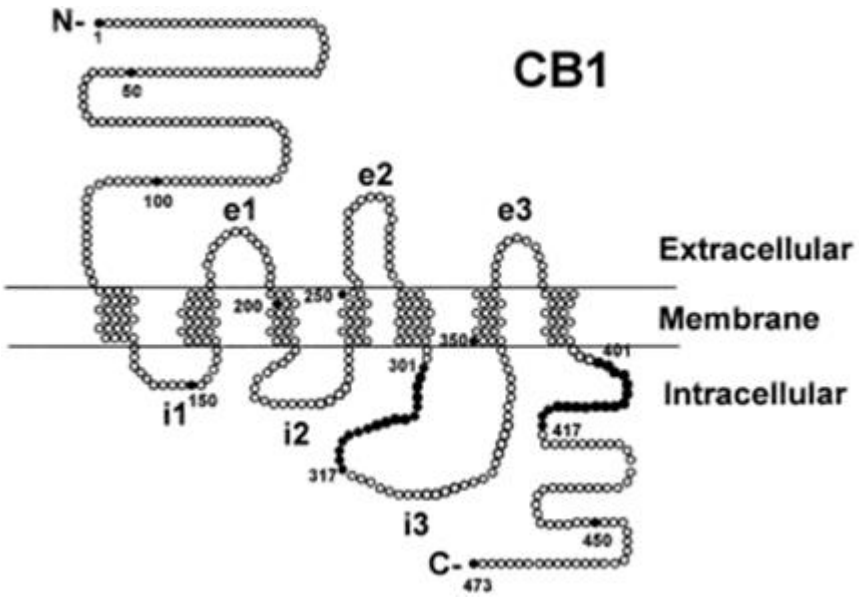
The novel cannabinoid receptor GPR55 mediates anxiolytic-like effects in the medial orbital cortex of mice with acute stress

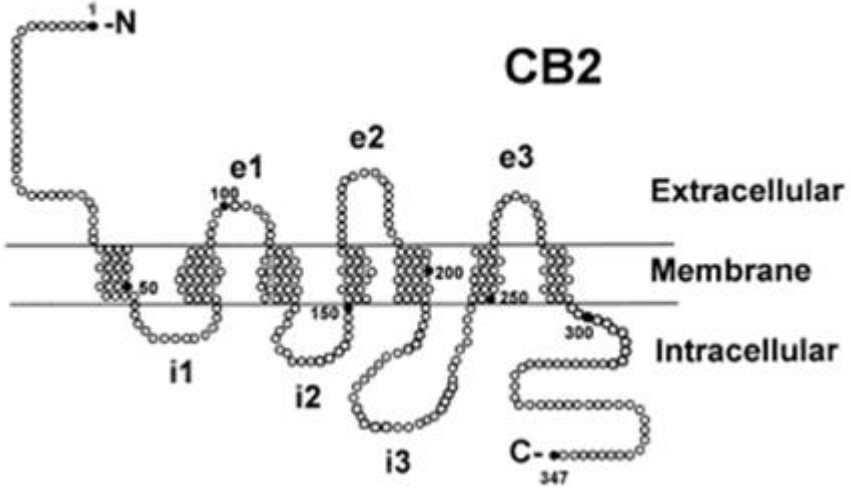
Qi-xin Shi[1†], Liu-kun Yang[1†], Wen-long Shi[2], Lu Wang[1], Shi-meng Zhou[1], Shao-yu Guan[1], Ming-gao Zhao[1] and Qi Yang[1,3*]



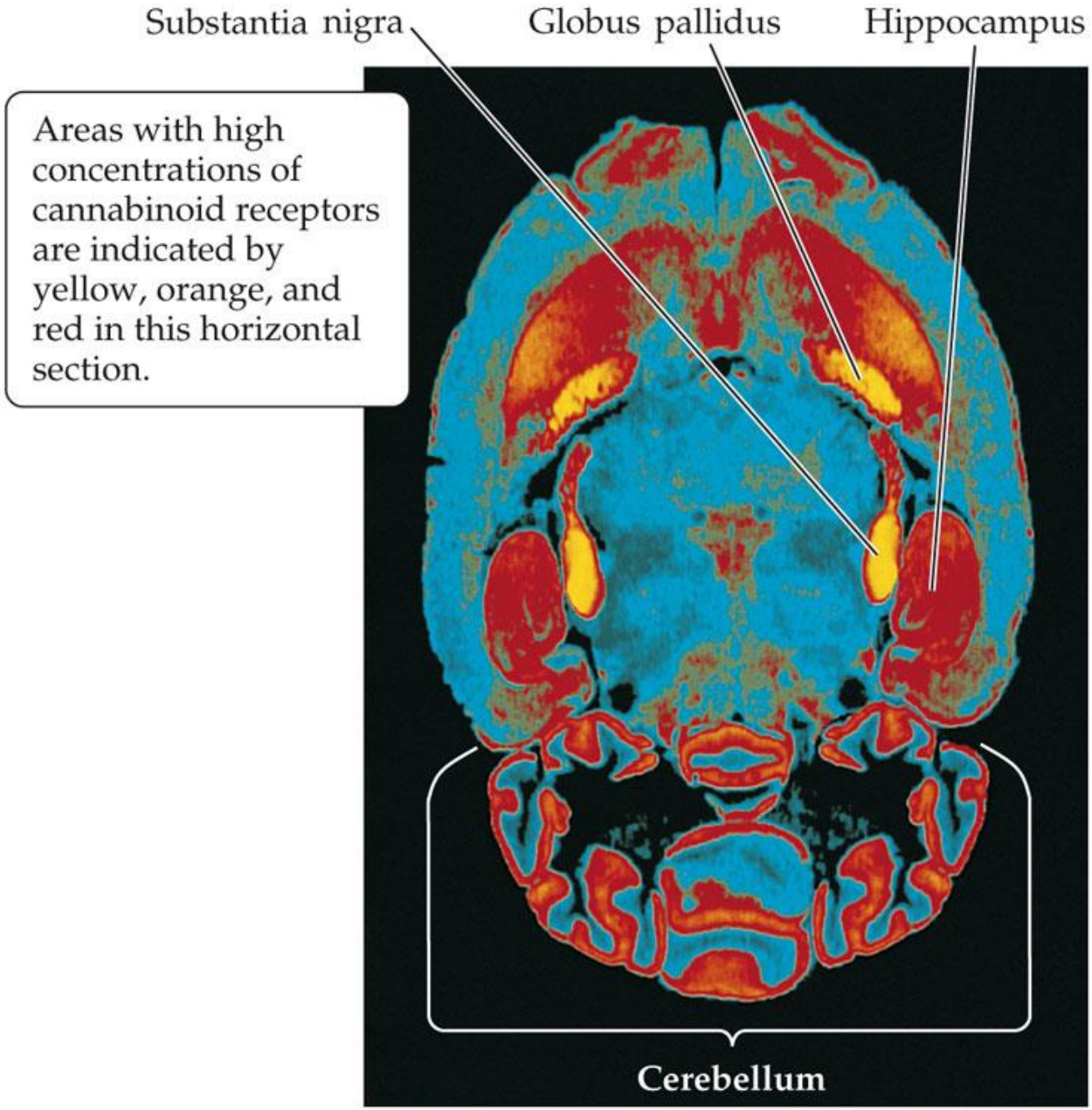
Thermo TRP channel family



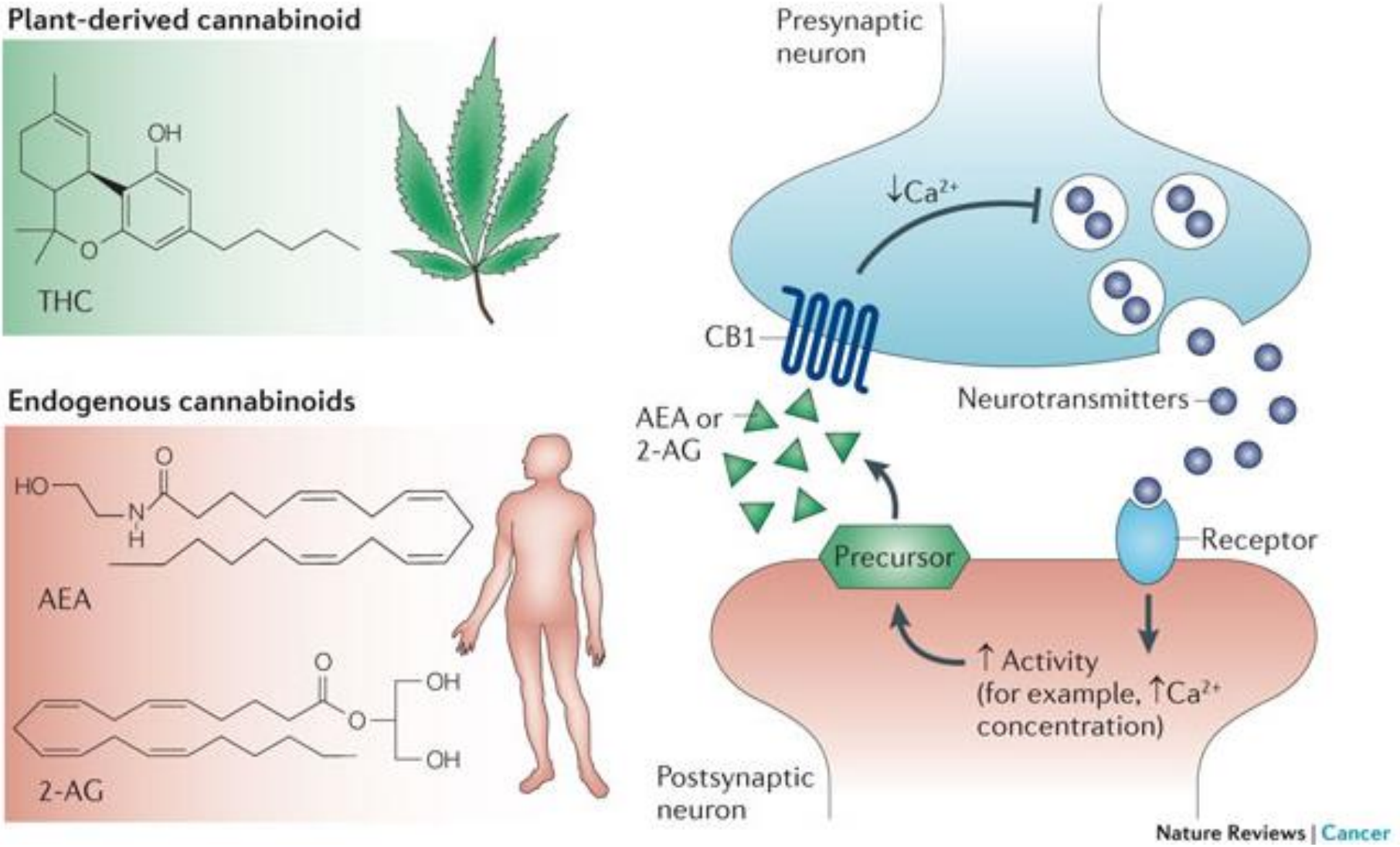





CB1 is found mostly in the brain.
CB2 receptors are mostly found within the immune system.

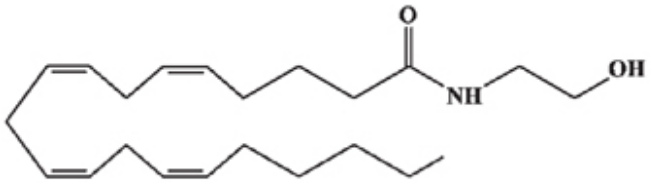


***THE MIND'S MACHINE 2e*, Figure 4.12**

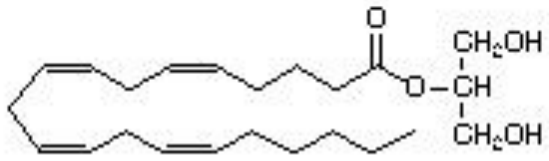


https://www.nature.com/articles/nrc3247

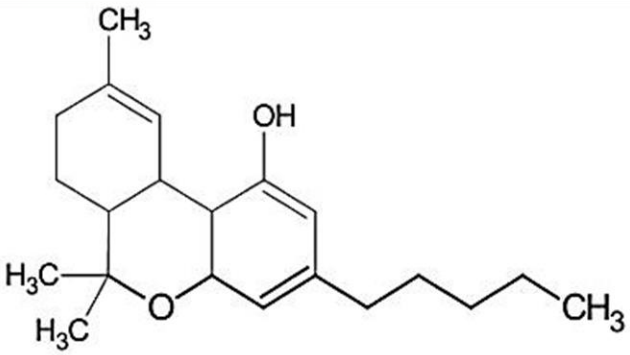
(endo) cannabinoids



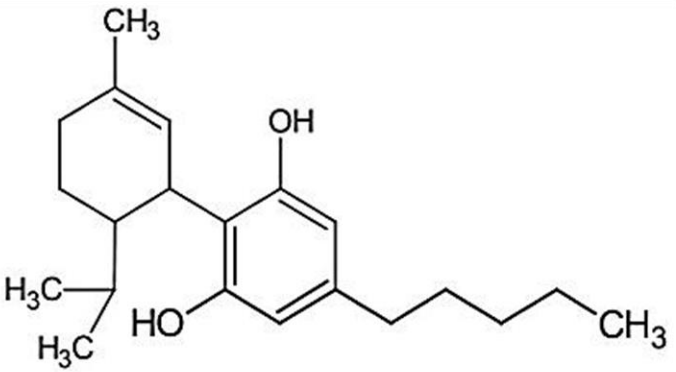
ANANDAMIDE



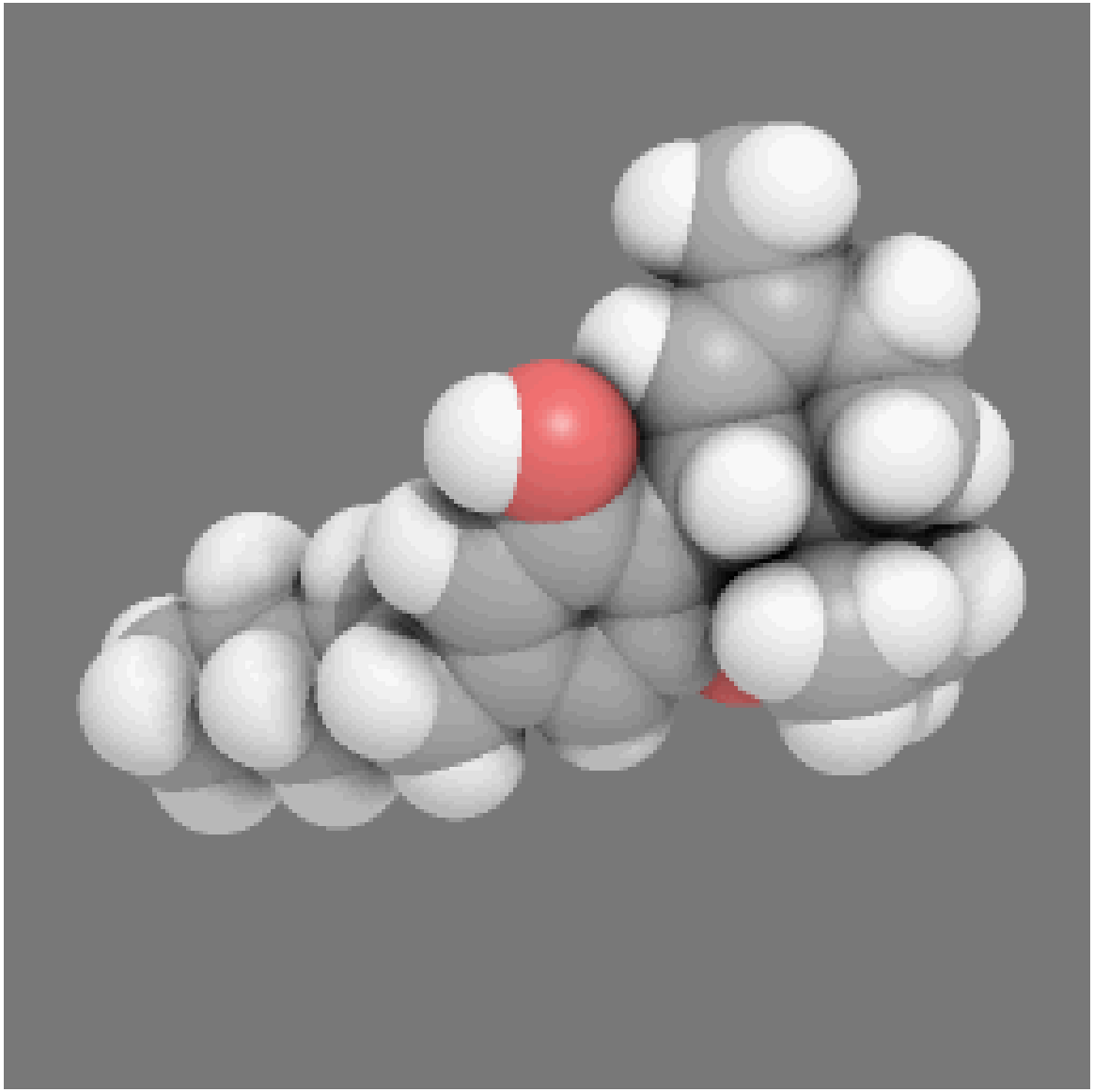
2-ARACHIDONOYL- GLYCEROL



Tetrahydrocannabinol (THC)



Cannabidiol (CBD)

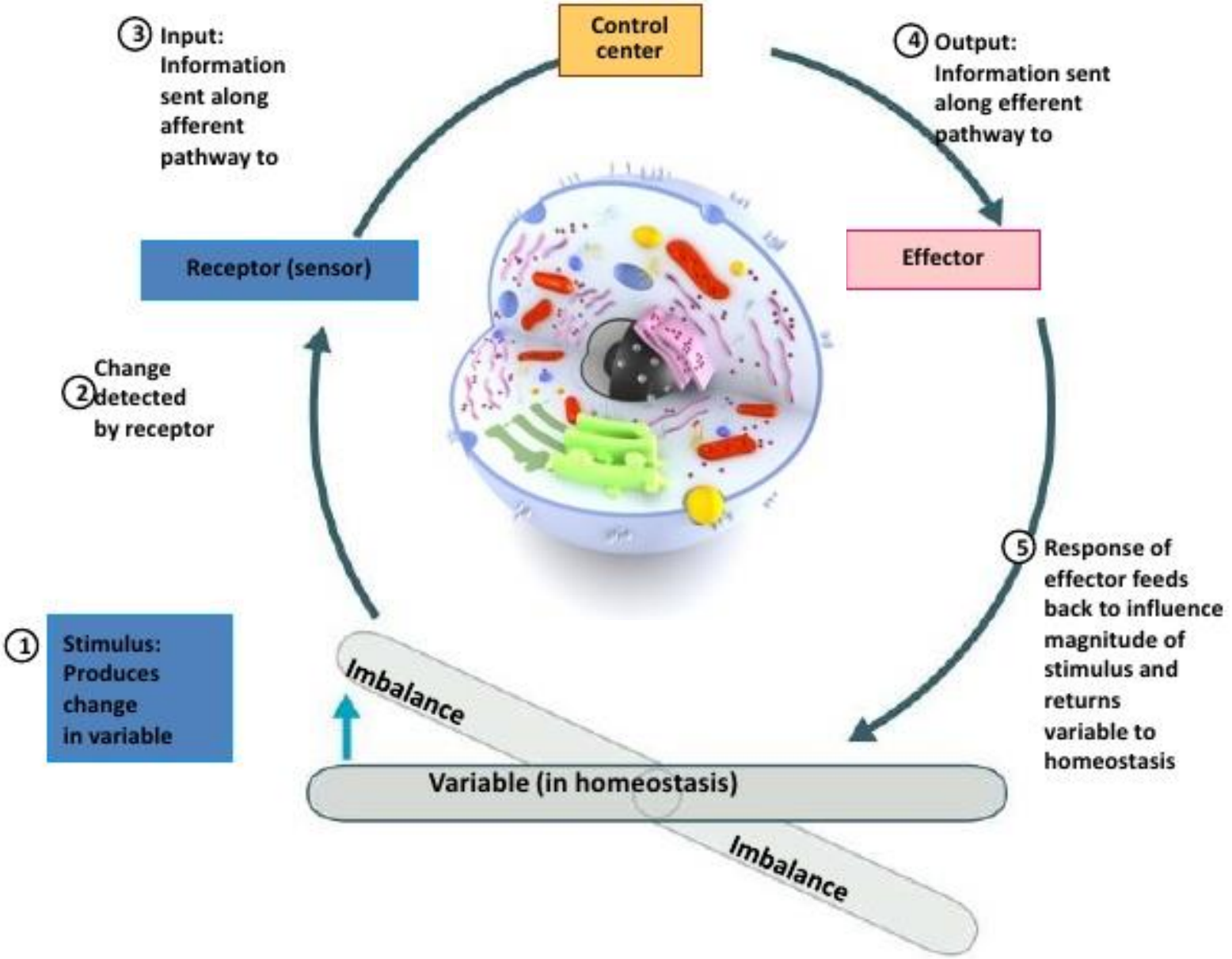


The endocannabinoid system is essential to life and it relates messages that affect how we eat, sleep, relax, forget and protect.

VINCENZO DI MARZO, Ph.D

RAPHAEL MECHOULAM, Ph.D

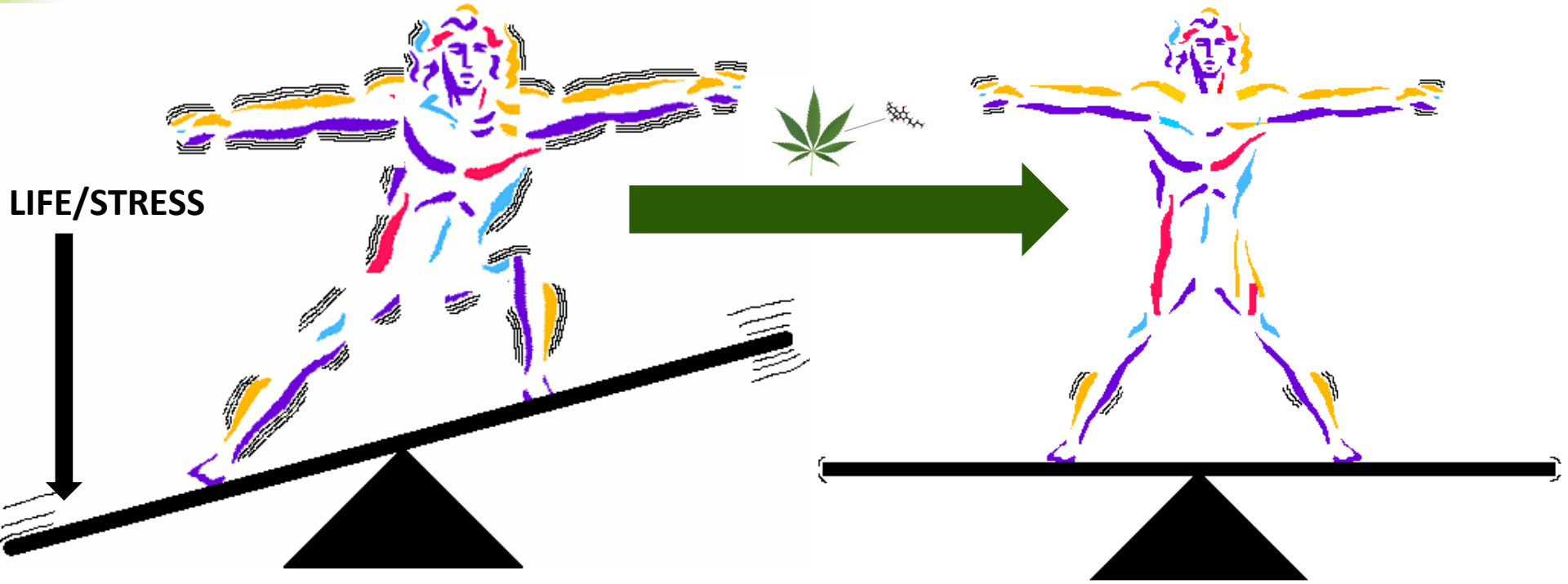
Homeostatic Control Mechanisms



HOMEOSTASIS

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

cells, tissue, organs, body, emotions, LIFE



Research in the filed of medical cannabis and cannabinoids

- **Effects of individual cannabinoids**

THCA	CBDA
• anti-inflammatory • neuroprotective • anti-emetic • anti-proliferative • analgesic • antiepileptic	• anti-nausea • decreased intestinal motility • reduced stress • anti-tumoral effect • anticonvulsant • analgesic • anti-inflammatory • antibacterial • antioxidant • cancer-preventing

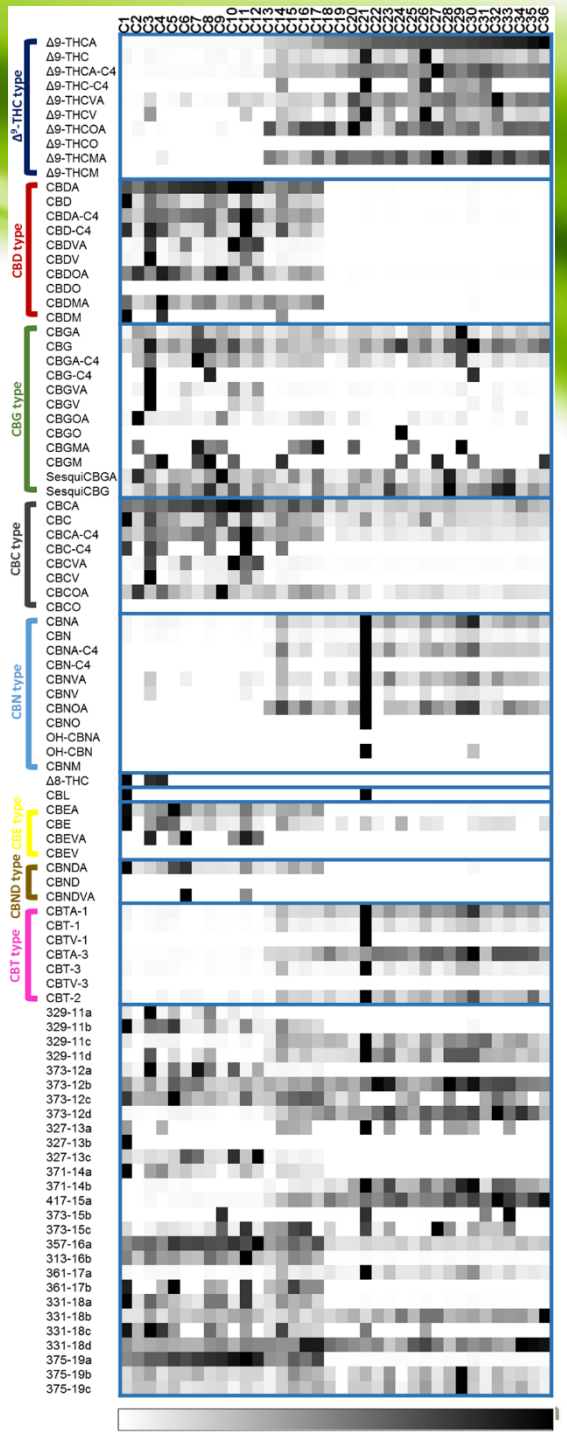
- **CBG**
- **CBC**
- **CBN**
- **THCV**

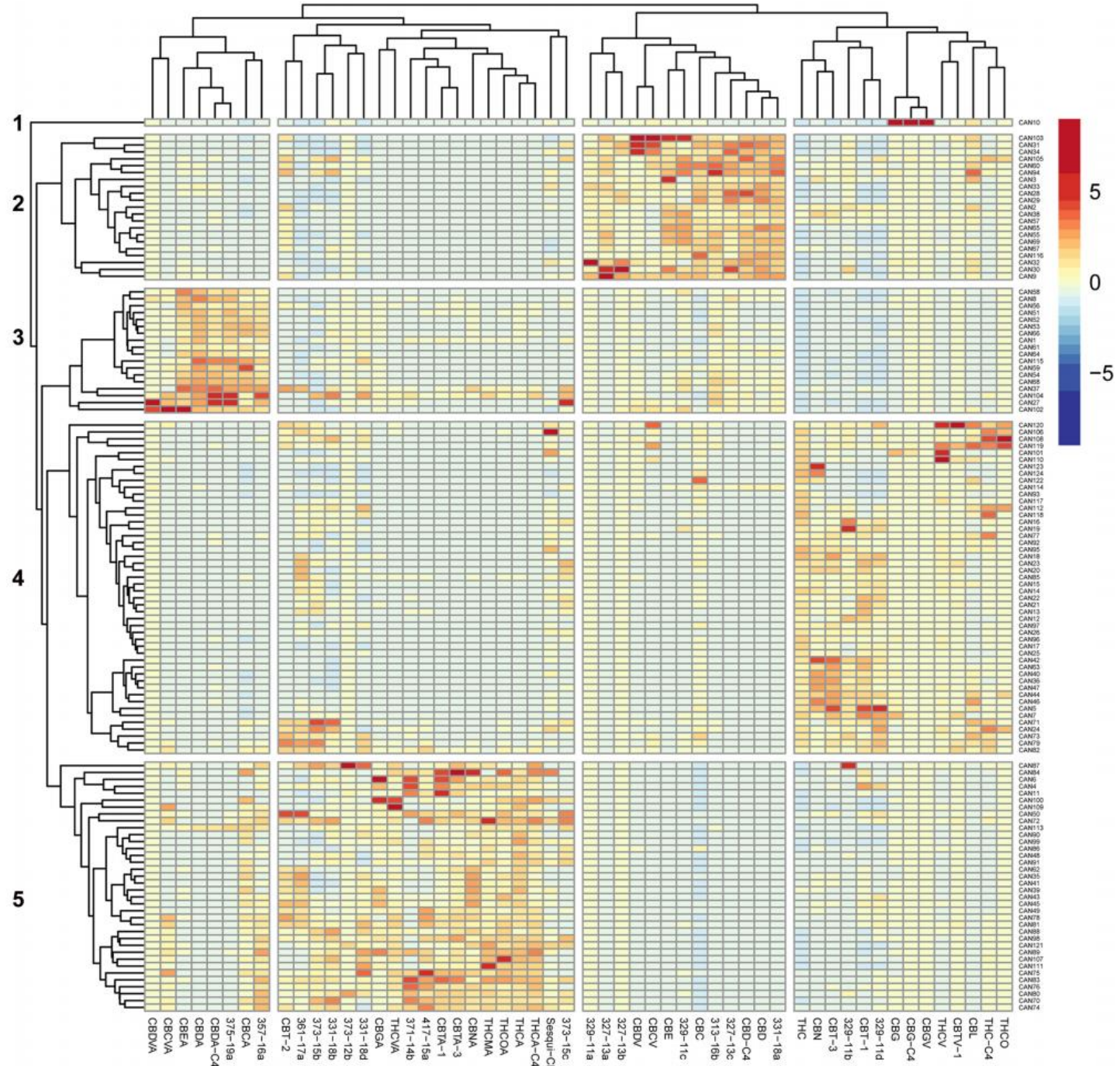
Researching effects of isolated cannabinoids

- Antimicrobial
- Antifungal
- Antioxidant
- Neuroprotective
- Immunomodulatory
- Anticancer
- Antidiabetes
- ….

Whole plant extracts

- Less researched
- Better medical effeciency
- Less side effects
- Entourage effect




1
2
3
4
5
5
0
−5
CBDVA
CBCVA
CBEA
CBDA
CBDA−C4
375−19a
CBCA
357−16a
CBT−2
361−17a
373−15b
331−18b
373−12b
331−18d
CBGA
THCVA
371−14b
417−15a
CBTA−1
CBTA−3
CBNA
THCMA
THCOA
THCA
THCA−C4
Sesqui−CBG
373−15c
329−11a
327−13a
327−13b
CBDV
CBCV
CBE
329−11c
CBC
313−16b
327−13c
CBD−C4
CBD
331−18a
THC
CBN
CBT−3
329−11b
CBT−1
329−11d
CBG
CBG−C4
CBGV
THCV
CBTV−1
CBL
THC−C4
THCO

www.oncotarget.com Oncotarget, 2019, Vol. 10, (No. 41), pp: 4091-4106

Research Paper

The heterogeneity and complexity of *Cannabis* extracts as antitumor agents

Liran Baram[1], Ella Peled[1], Paula Berman[1], Ben Yellin[1], Elazar Besser[1], Maya Benami[1], Igal Louria-Hayon[1], Gil M. Lewitus[1] and David Meiri[1]

[1]The Laboratory of Cancer Biology and Cannabinoid Research, Department of Biology, Technion - Israel Institute of Technology, Haifa, Israel

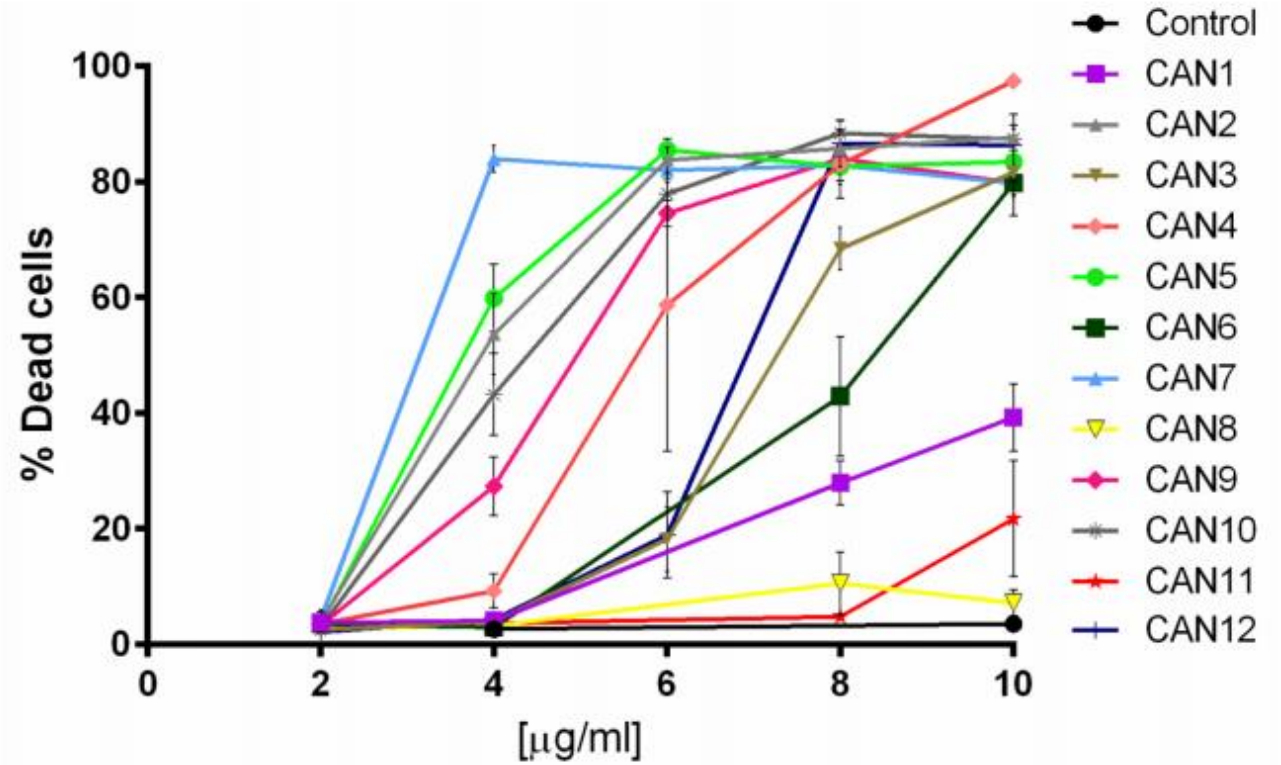
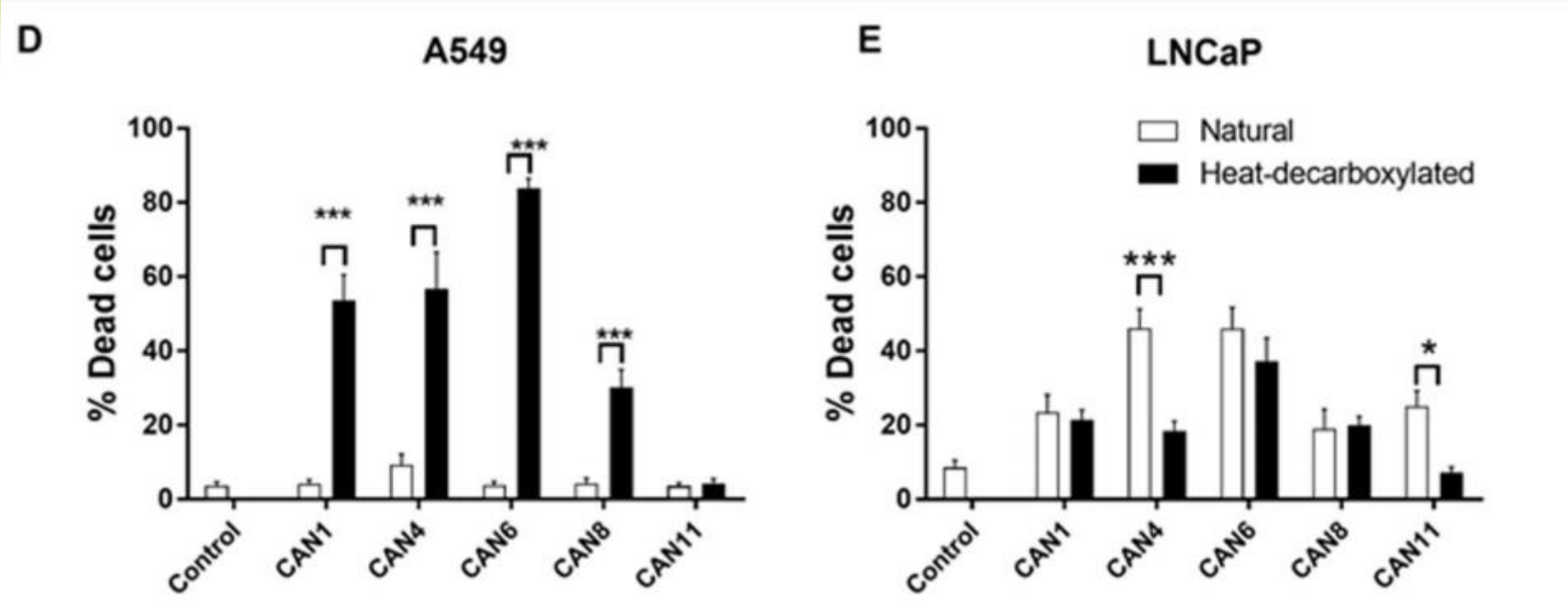


Figure 2: The effect of various *Cannabis* extracts on the survival of cancer cells. A dose-response curve of A549 cells after 24 h incubation with or without (control) 2-10 µg/ml of CAN1-CAN12 calculated from at least 5 independent experiments.

Acid or neutral cannabinoids?



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Individualized medicine

dr. Mechoulam

“I sincerely believe that the plant cannabinoids are a neglected pharmacological treasure trove.”

ICANNA

INTERNATIONAL INSTITUTE FOR CANNABINOIDS

CIVIL SOCIETY

INSTITUTE ICANNA

CONNECTING EXPERTS

NON-BIASED

INDEPENDENT

PATIENT FOCUSED

GOVERMENT SECTOR

ICANNA

International Institute for Cannabinoids

THANK YOU FOR YOUR ATTENTION