

CANNABIS CONSIDERATIONS: SEEKING BETTER PATIENT OUTCOMES



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“NURTURING NATURE®” GROUP CONSULTANTS**

ATTESTATIONS

Please indicate your understanding of and willingness to comply with each statement below. If you have any questions regarding your ability to comply, please contact the activity coordinator as soon as possible.

Agree	Disagree	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	I have disclosed all relevant financial relationships (relevant relationships are those with companies whose products or services may be mentioned during my presentation). This information will be disclosed to learners on promotional materials distributed prior to the activity.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	The content and/or presentation of the information with which I am involved will promote quality or improvements in healthcare and will not promote a specific proprietary business interest of a commercial interest. Content for this activity, including any presentation of therapeutic options, will be well-balanced, evidence-based and unbiased.

I have no commercial ties with any company or individuals regarding the compounds to be presented and discussed.

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	their indications and contraindications in the care of patients. All scientific research referred to, reported or used in CME in support of justification of a patient care recommendation will conform to the generally accepted standards of experimental design, data collection and analysis.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If I am discussing specific health care products or services, I will use generic names to the extent possible. If I need to use trade names, I will use trade names from several companies when available, not just trade names from any single company.

All Schedule 1 substances are by definition: “off-label”

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If I have been trained or utilized by a commercial entity or its agent as a speaker (e.g. speaker's bureau) for any commercial interest, the promotional aspects of that presentation will not be included in any way with this activity.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If I am presenting research funded by a commercial company, the information presented will be based on generally accepted scientific principles and methods, and will not promote the commercial interest of the funding company.

I have carefully read and considered each item in this form, and have completed it to the best of my ability.

Jeffrey Block, M.D.

Print Name

Signature



OBJECTIVES

Participants should be better able to:

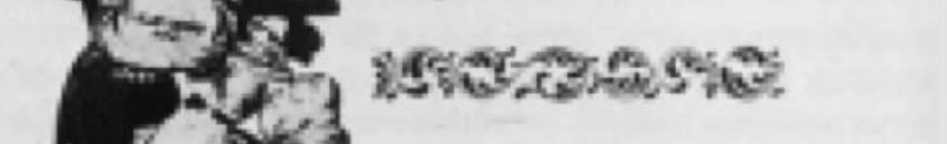
- **Discuss cannabis' therapeutic efficacy for specific healthcare indications having the support of evidence-based data;**
- **Understand the unique mechanism of action of endocannabinoid receptors and their essential role in modulating human physiology.**



A GRAND EXHIBITION

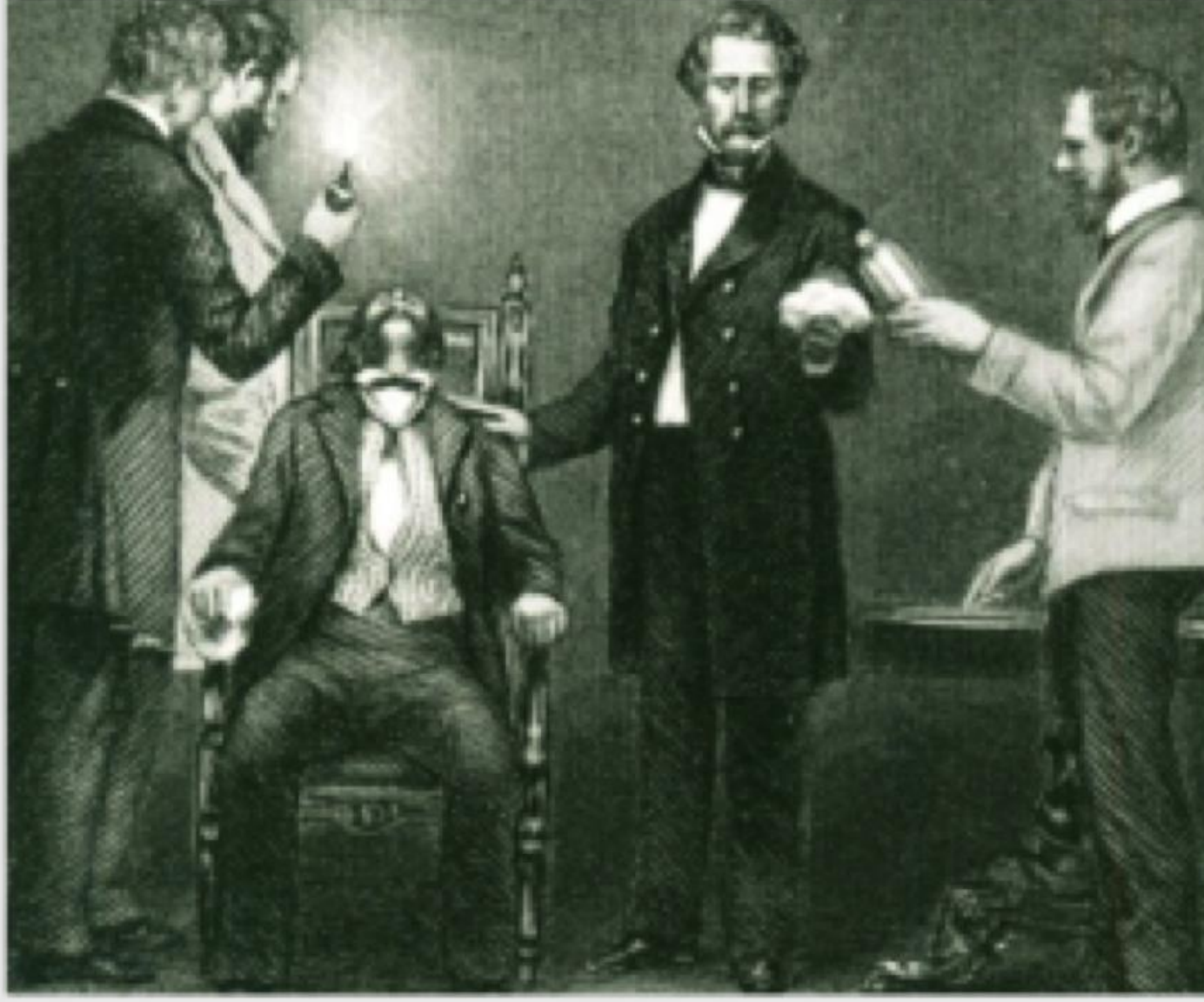
OF THE GIGGETS PRODUCED BY INHALING
NITROUS OXIDE, EXHILERATING, OR
LAUGHING GAS!

WILL BE GIVEN AT *the Masonic Hall*
Monday EVENING, 1877



10 GALLONS OF GAS
will be
prepared and administered
to all in the audience
who desire to inhale it.

MEN will be invited from the audience, to
protect those under the influence of the Gas from in-
sulting themselves or others. This course is adopted
as no apprehension of danger may be entertained,
probably no one will attempt to fight.



"ETHER FROLICS"

LIVING MADE EASY.



"LAUGHING GAS"



THE BIOCHEMICAL POWER OF PLANTS

THEY NOURISH US,
AND POISON US;

THEY DELIGHT OUR SENSES OF
SIGHT, SMELL, AND TASTE;

THEY CALM OUR NERVES,
OR AWAKE US UP;

THEY EVEN CHANGE THE CONTENT OF OUR MINDS,
AND THE EXPERIENCE OF OUR CONSCIOUSNESS.

MICHAEL POLLAN

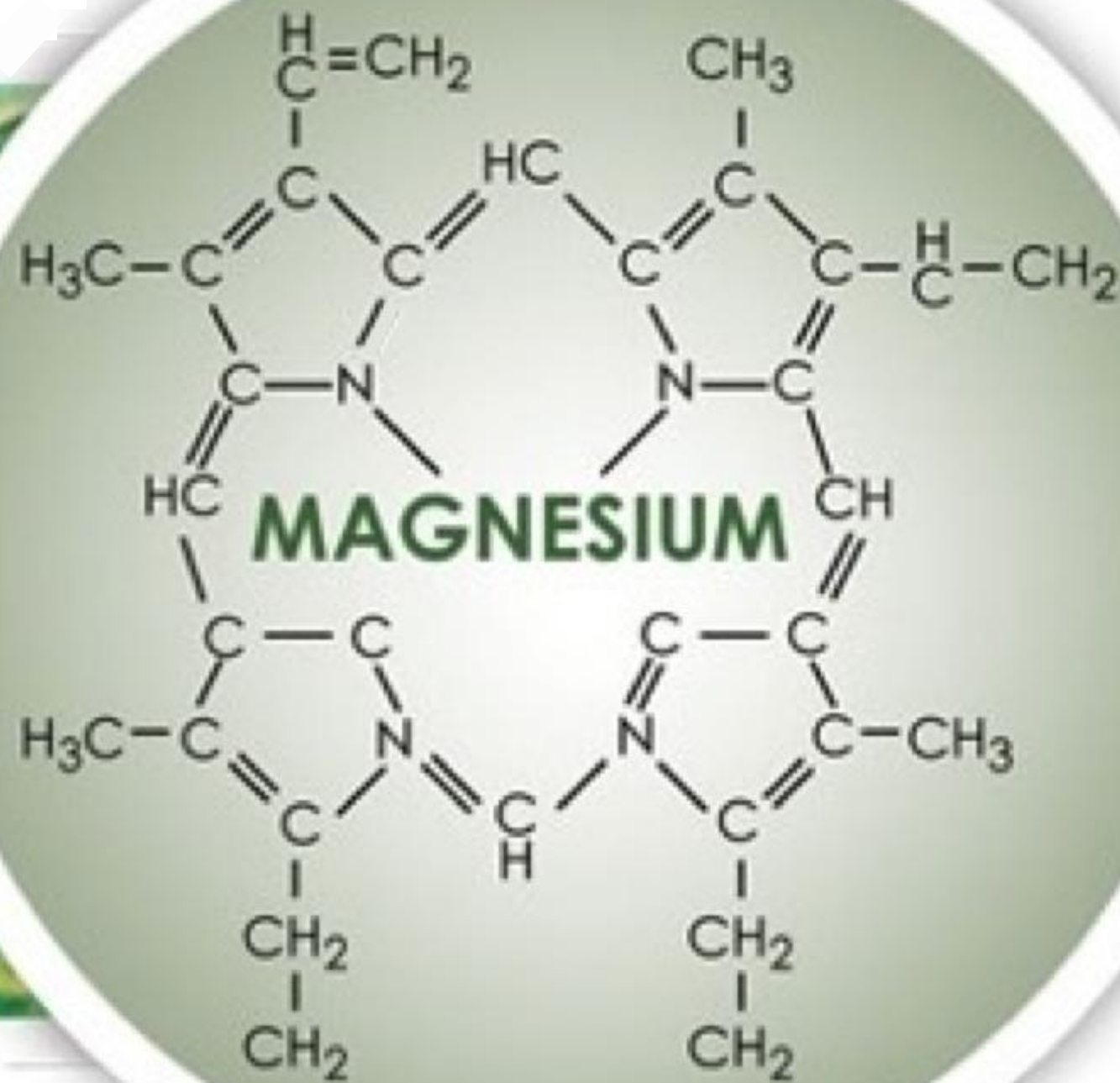


Common "Life Source" Molecules

Chlorophyll & Hemoglobin

Plant Blood
(Chlorophyll)

Human Blood
(Hemoglobin)



Plants & Human Beings
share remarkably similar biochemistry



THE POPPY, CANNABIS, AND CHILI PEPPER PLANTS' BIOACTIVE CHEMICALS REDUCE PAIN PERCEPTION THROUGH IMPACT ON THREE RECEPTOR SYSTEMS:

- MORPHINE -
Phyto-Opioids

- THC & CBD -
Phyto-Cannabinoids

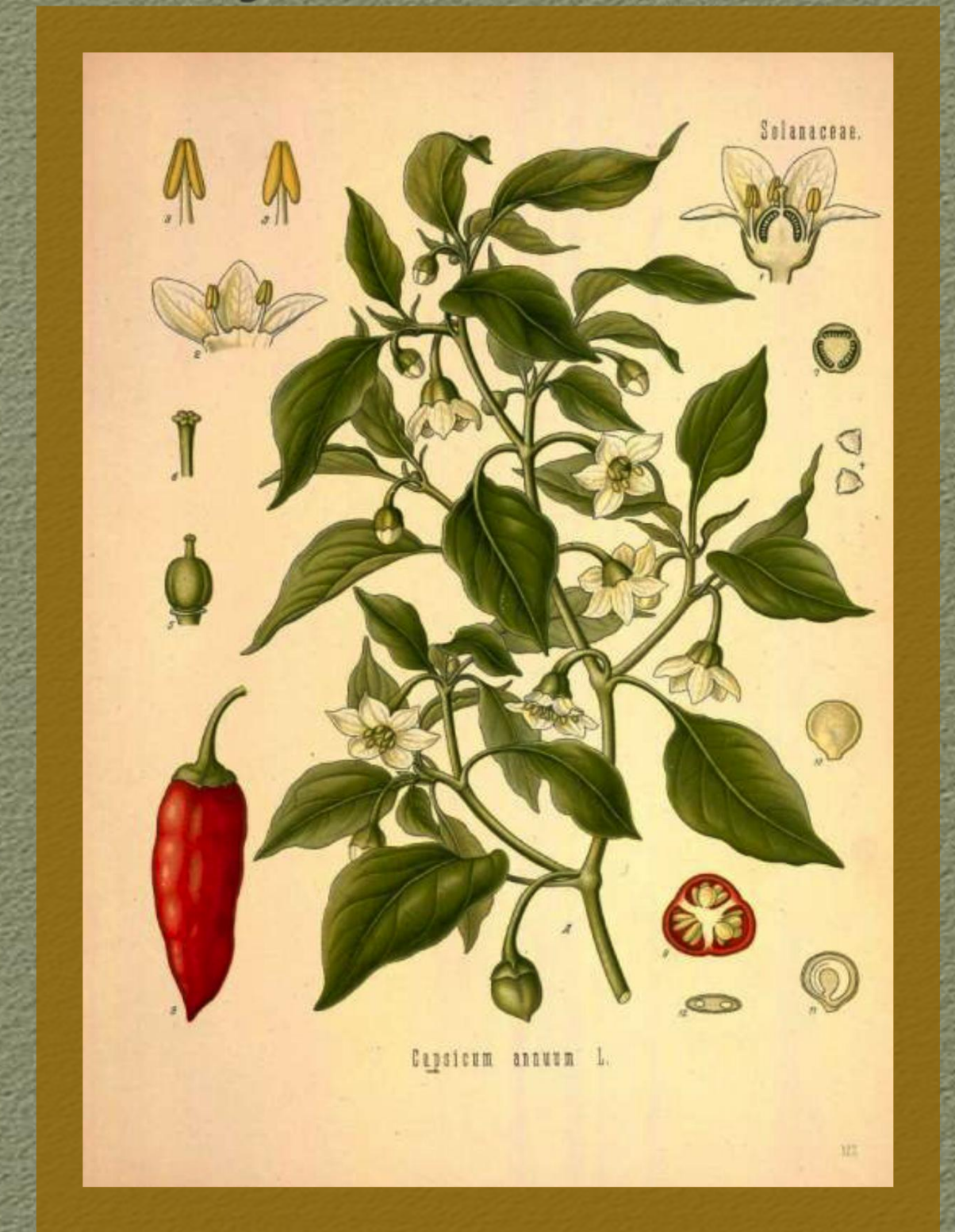
- CAPSAICIN -
Phyto-Vanilloids



ENDORPHINS
(1974)



ENDOCANNABINOIDS
(1992 & 1994)



ENDOVANILLOIDS
(1997)



WELL-DOCUMENTED IN THE 19TH & 20TH CENTURY AS BEING EFFECTIVE FOR PAIN, CHLORODYNE WAS ALSO ABUSED.

BOTANICAL PLANT EXTRACTS IDENTIFIED FOR PAIN

ENDOGENOUS RECEPTORS IDENTIFIED FROM PLANTS

Morphine

Cannabis

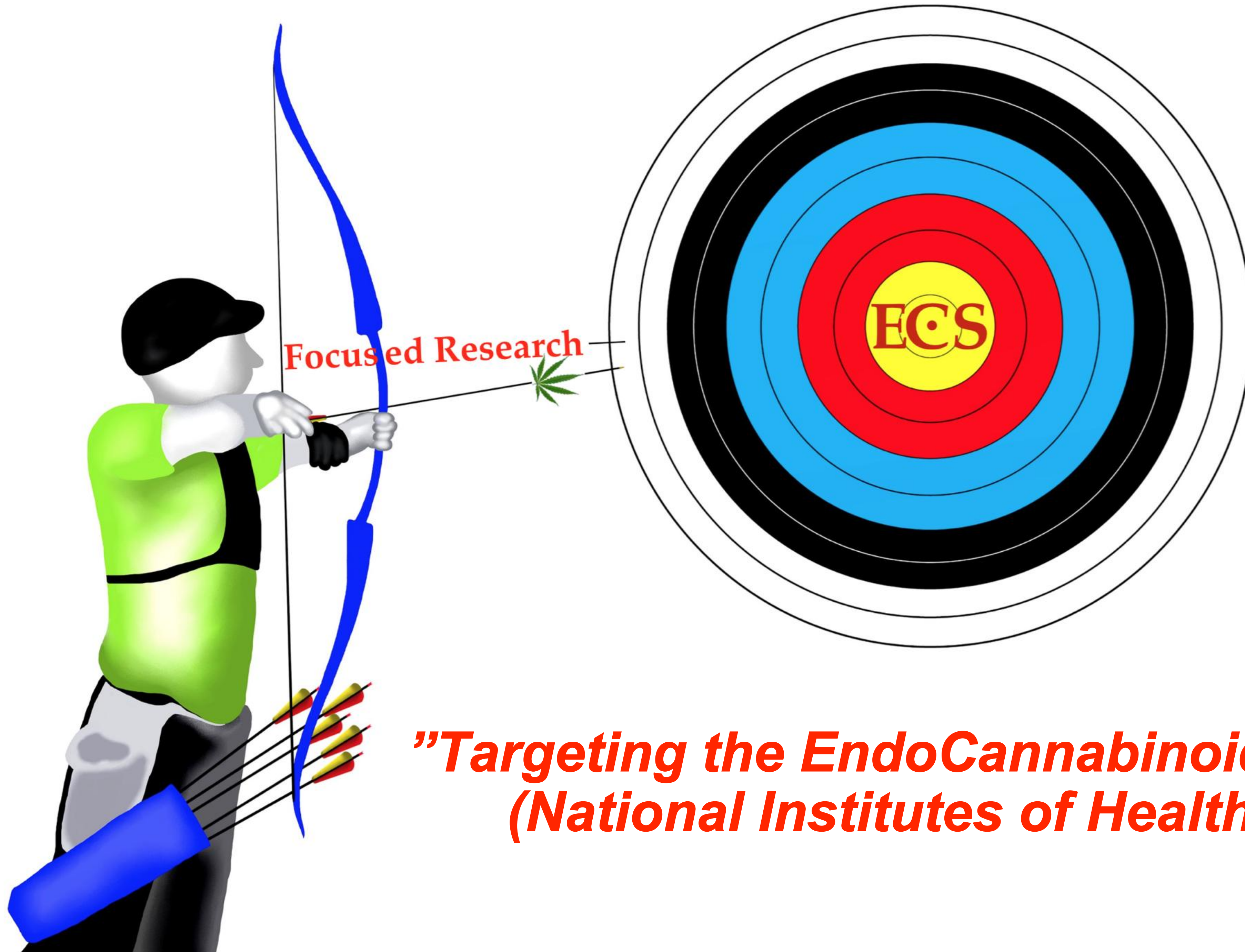
Capsicum

Endorphins

Endocannabinoids

Endovanilloids



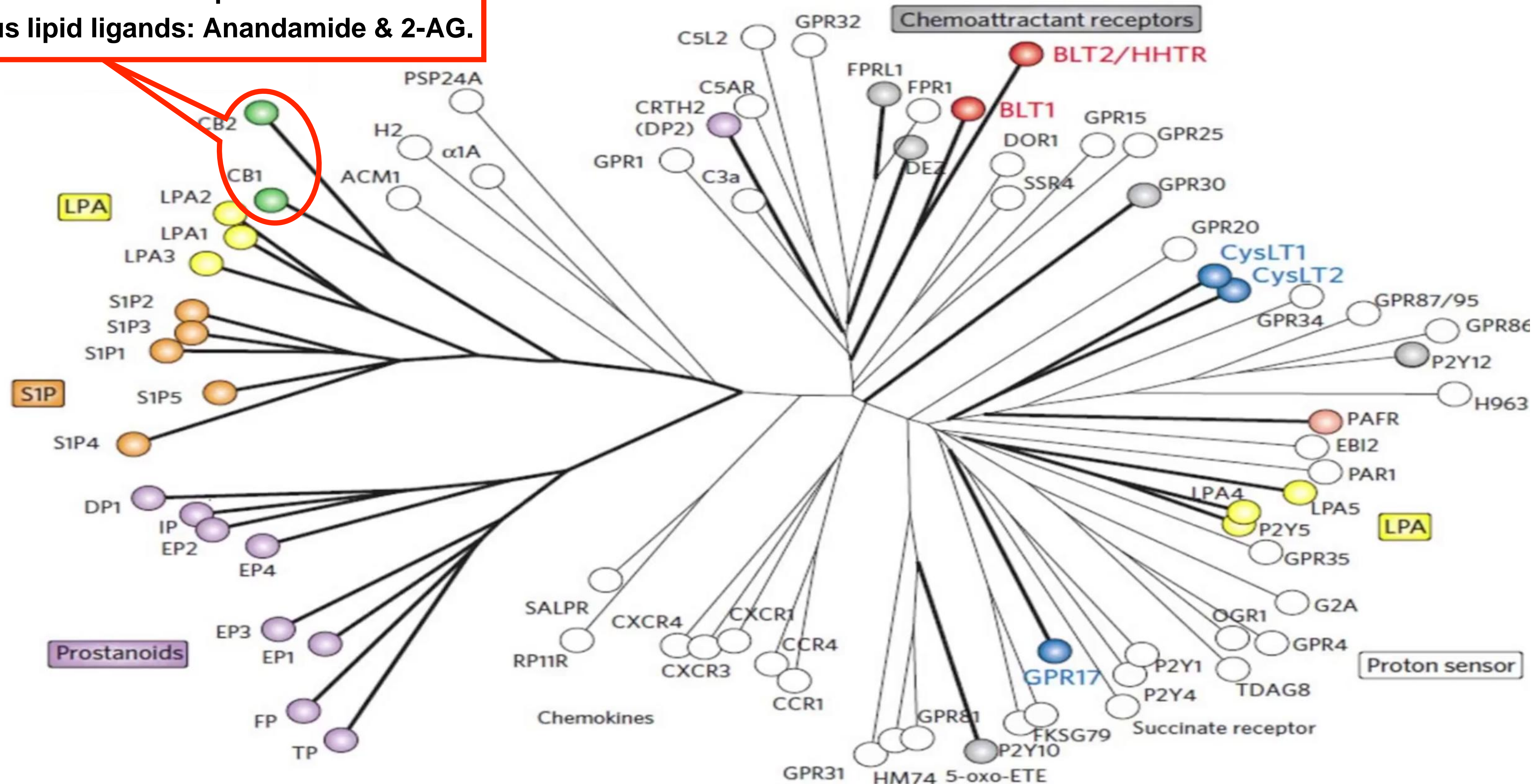


***“Targeting the EndoCannabinoid System”
(National Institutes of Health 2013)***



Endocannabinoid receptor system functions influence all other known physiologic systems.

CB1 & CB2 Cannabinoid Receptors interact with two endogenous lipid ligands: Anandamide & 2-AG.



Human Receptor Systems (2013)





CANNABINOID FORMULARY (2020)

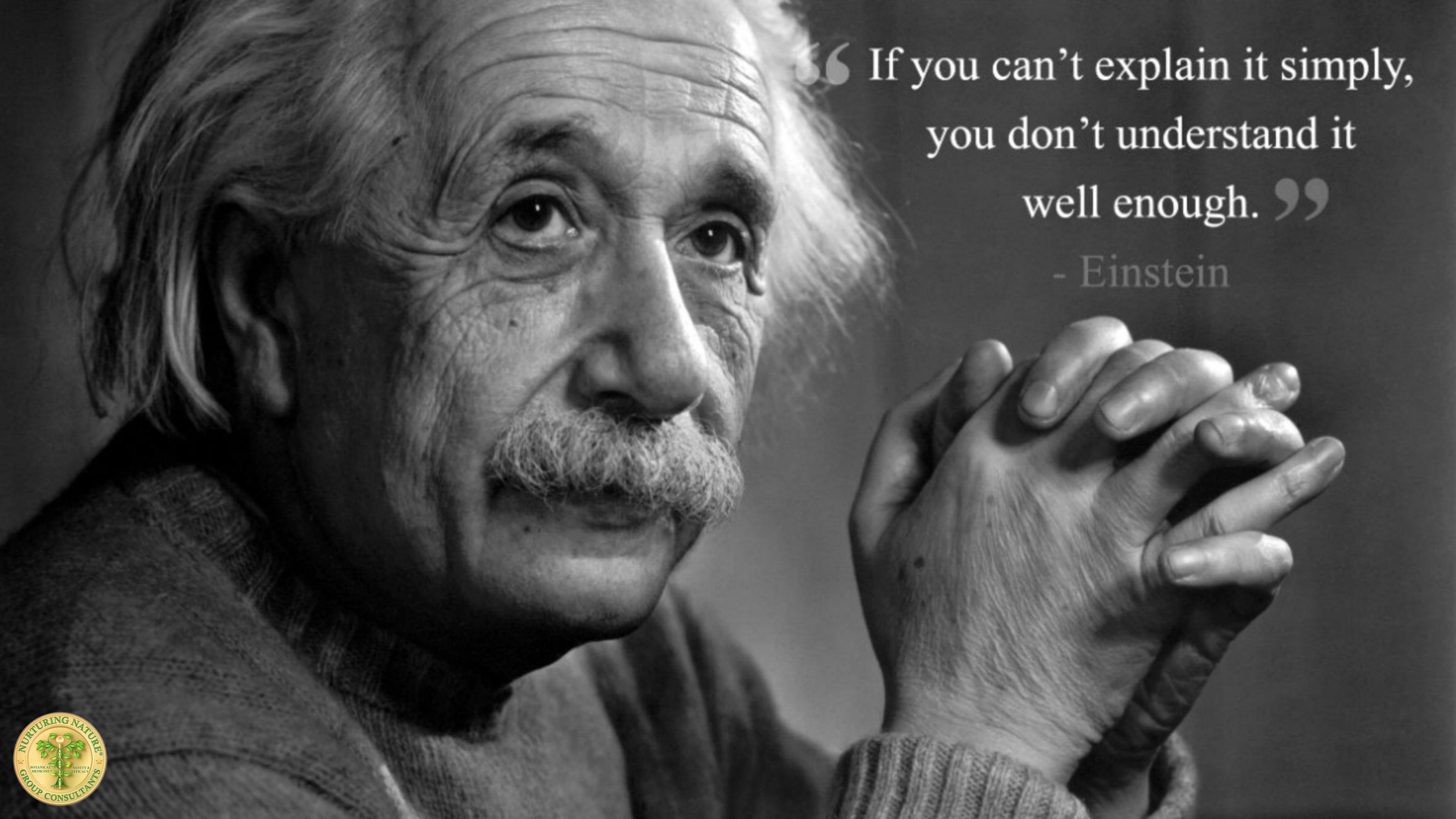


Generic Name and Delivery Route	Brand Name	Components and/or Doses	Dosages Used in Selected Trials	DEA (USA) Schedule
Cannabis species plant (Multiple routes)	Marijuana hybrids Sativa / Indica	THC 4% - >28%? CBD 0% - >15%?	1% - 8% THC self-titrated	Schedule I (1970)
Cannabis species plant (capsule extract)	<i>Cannador</i> (Germany)	THC 2.5% CBD 1.25%	Max 1.25 mg/kg/d Max 25.0 mg/kg/d	Schedule I (1970)
Nabilone (capsule)	<i>Cesamet</i>	1.0 mg synthetic cannabinoid	1.0 mg BID 0.5 -1.0 mg hs	Schedule II (2006)
Dronabinol (liquid)	<i>Syndros</i>	5.0 mg synthetic THC analog	2.1 mg/BID 4.2 mg/m ²	Schedule II (2010)
Dronabinol (tablets)	<i>Marinol</i>	2.5 mg synthetic THC analog	1.25 mg/BID 10.00 mg/BID	Schedule III (1998)
Nabiximols (oral spray extract)	<i>Sativex</i> (England)	THC 2.7 mg CBD 2.5 mg	Max THC 65/d Max CBD 120/d	Under FDA evaluation
Cannabidiol (oral oil extract)	<i>Epidiolex</i> (England)	(98% CBD)	2 - 25 mg/kg/d	Descheduled (2020)

CONTRAINDICATIONS TO CANNABIS USE

- ▶ Existing disease or genetic predisposition to psychotic disorders (schizophrenia).
- ▶ Pre-existing significant cardiac disease.
- ▶ Pregnancy.



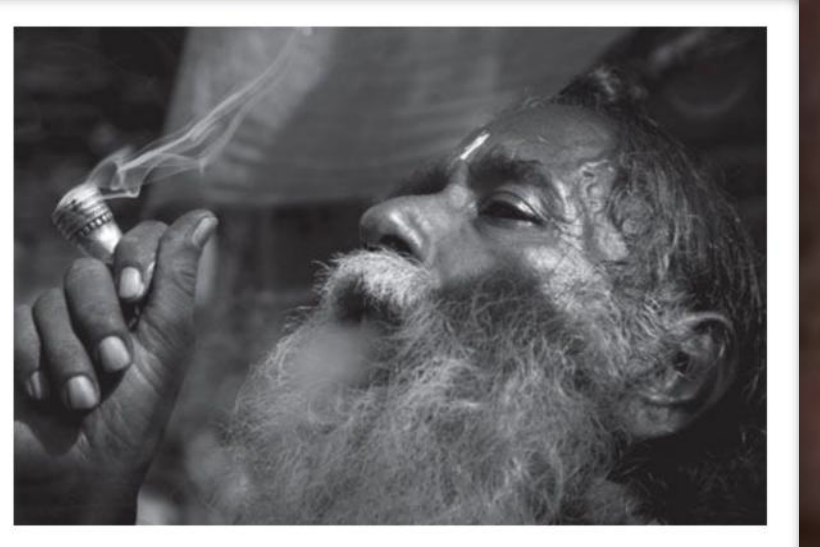
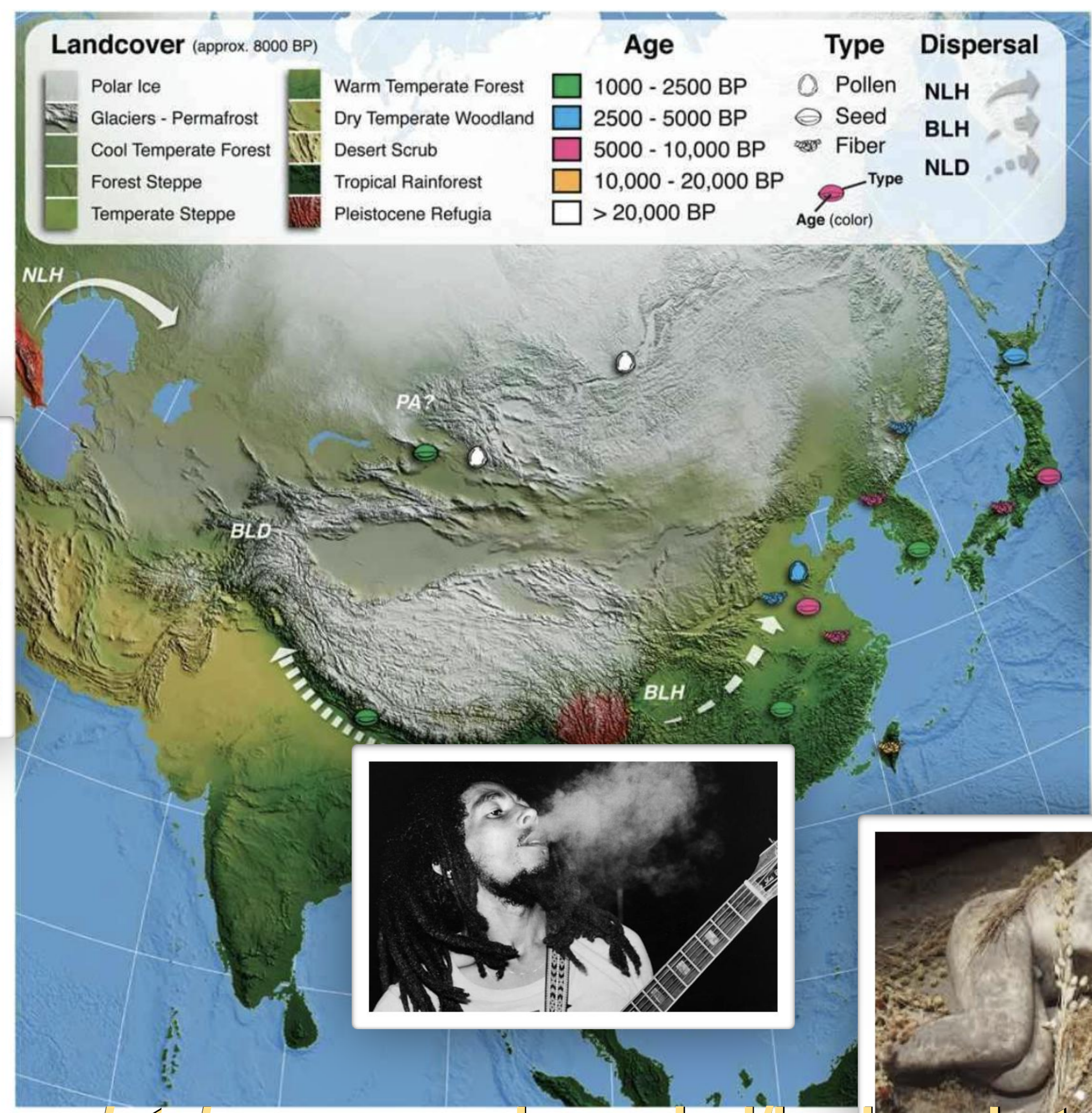
A black and white portrait of Albert Einstein, showing his characteristic wild hair and mustache. He is looking slightly to the right of the camera with a thoughtful expression. His hands are clasped together in front of him, resting on a surface. The background is a plain, light color.

“ If you can't explain it simply,
you don't understand it
well enough. ”

- Einstein



During the Pleistocene Ice Age Adaptable Human Beings and Cannabis Plants Survived in Cannabis' Current "Refugia" Distribution



China (700 BCE)

s tomb.

Drug varieties were used as mind/body substances.
Hemp varieties were used as textiles.

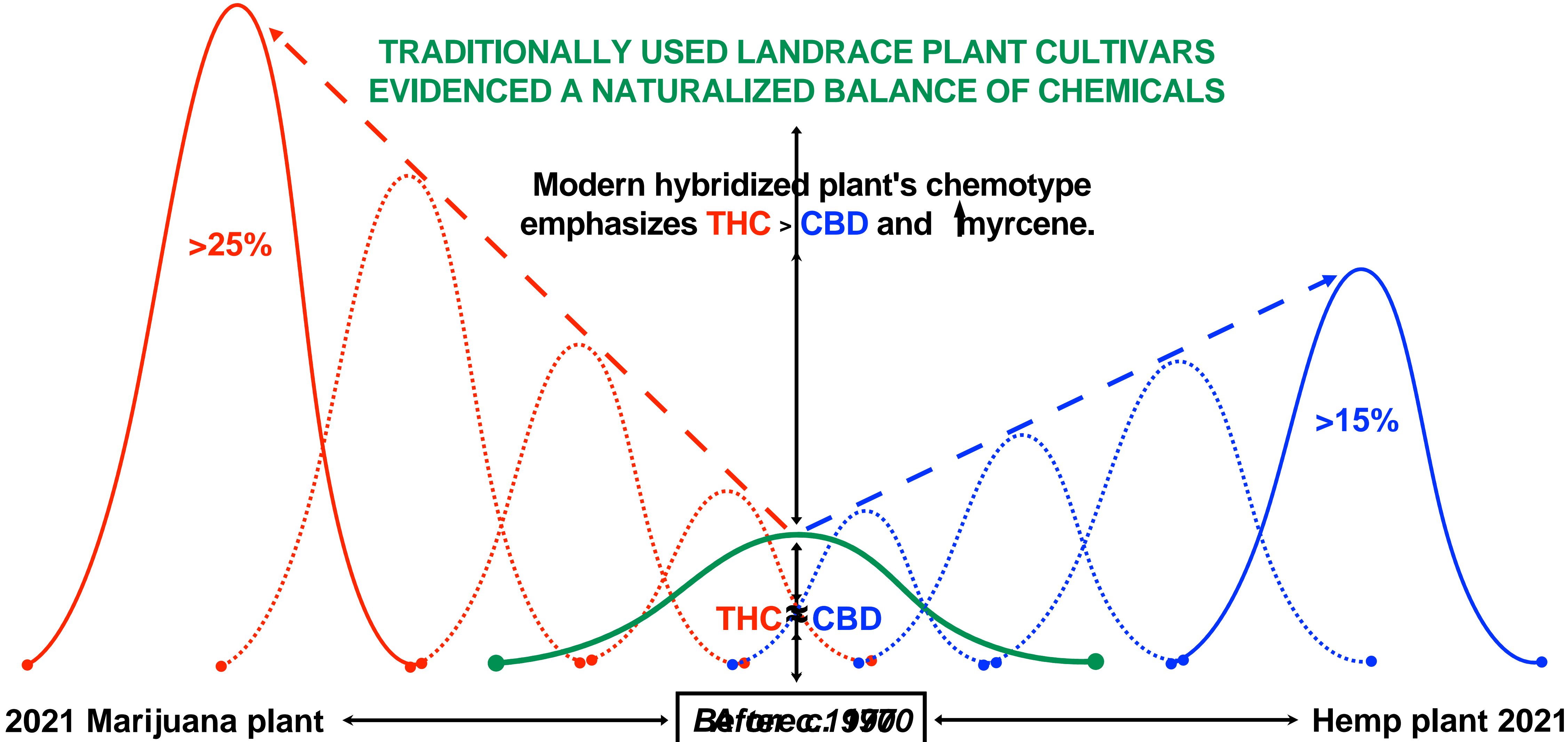


UNBALANCED "MODERN" PLANTS *DEVOLVED* FROM TRADITIONALLY BALANCED PLANTS

Afghani 'Kush' & 'Skunk #1' dominant traits create short Indica hybrids with ↑**THC** > **CBD** and ↑**Myrcene**

TRADITIONALLY USED LANDRACE PLANT CULTIVARS EVIDENCED A NATURALIZED BALANCE OF CHEMICALS

Modern hybridized plant's chemotype emphasizes **THC** > **CBD** and ↑**myrcene**.



2021 Marijuana plant

Before c. 1970

Hemp plant 2021

Unbalanced THC has side-effects

CANNABIS PLANTS CO-EVOLVED ALONG WITH HUMANS TO HAVE BALANCES OF BIOACTIVE CHEMICALS : $THC \approx CBD$

Unbalanced CBD (no side-effects)





**A traditional Eastern healer's perspective
regarding the whole plant's therapeutic potential:**

**“Isolating an active constituent from
a plant is an affront to nature....
It is like taking the intelligence;
and leaving the wisdom behind.”**

Deepak

Chopra





Evaluated by F.D.A.
Food & Drug Administration
Safety & Efficacy
Use - Abuse

“Marijuana”
Cannabis sativa



Substances
Scheduled by D.E.A.
Drug Enforcement Administration
Risks & Benefits
Prohibited - Controlled

The Controlled Substances Act (CSA)

“Chocolate” Defined a “Scheduling” of Drugs”

Theobroma cacao
“Schedule 1” substances are designated as “prohibited” when:
Papaver somniferum

1 - The drug or other substance has a high potential for abuse.

2 - The drug or other substance has no currently accepted medical use in treatment in the United States.
“Cocaine”
Erythroxylum coca

3 - There is a lack of accepted safety for use of the drug or other substance under medical supervision.
“Tobacco”
Nicotiana tabacum

Reference.: Schedules of controlled substances - [Pub.L. 91-513](#), 84 [Stat. 1236](#), enacted October 27, 1970, codified at [21 U.S.C. § 801](#) et seq. [21 U.S.C. § 812](#)



ETHICAL CHALLENGE:

Should a physician offer compassionate access to Cannabis for use as a medicine while it remains under Federal prohibition?

MEDICAL RATIONALES

The AMA Principles of Medical Ethics states: *“Seeking relief from the intolerable physical, psychological or spiritual symptoms of disease is a natural instinct that contributes to a substance’s therapeutic use.”*

“A physician, in the treatment of intolerable symptoms, is also recognized as having a responsibility to provide humane relief that all interests of the patient.”

Source: AMA Physician’s Code of Ethics: <http://www.ama-assn.org>

JSB



CANNABINOID SIGNALING AT THE SYNAPSE

ENDOCANNABINOID RECEPTORS AND THEIR LIGANDS

TWO NATURAL LIGANDS' RETROGRADE FEEDBACK CONSTANTLY MODULATES THE RELEASE OF ALL NEUROTRANSMITTERS

PRESYNAPTIC NEURON

Calcium channel

Calcium ion flow

Neurotransmitter vesicle

Metabotropic glutamate receptor

POSTSYNAPTIC NEURON

SYNTHESIS

PIP2

Arachidonic acid

Ethanolamine

DAGL- α

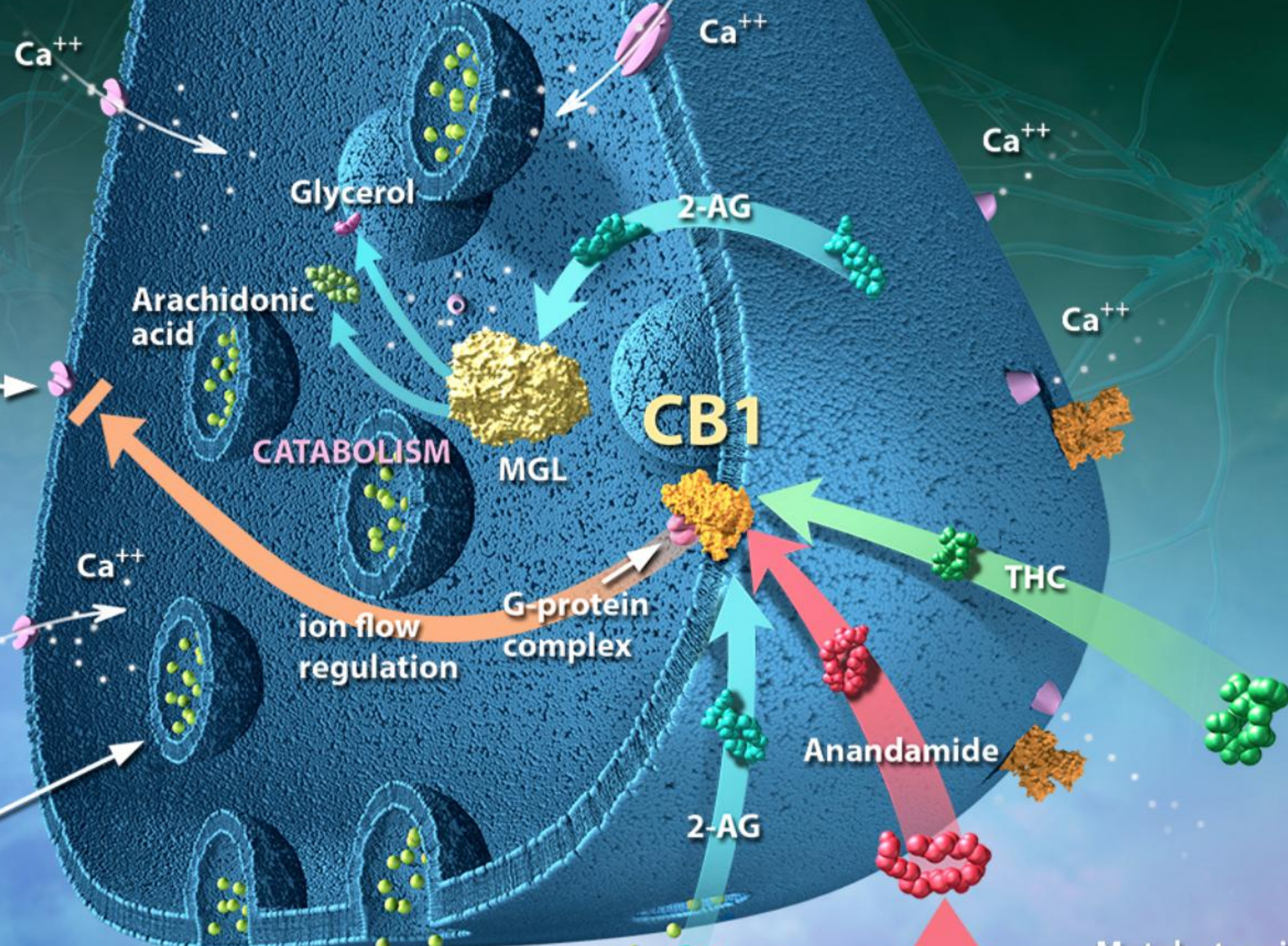
DAG

FAAH CATABOLISM

SYNTHESIS

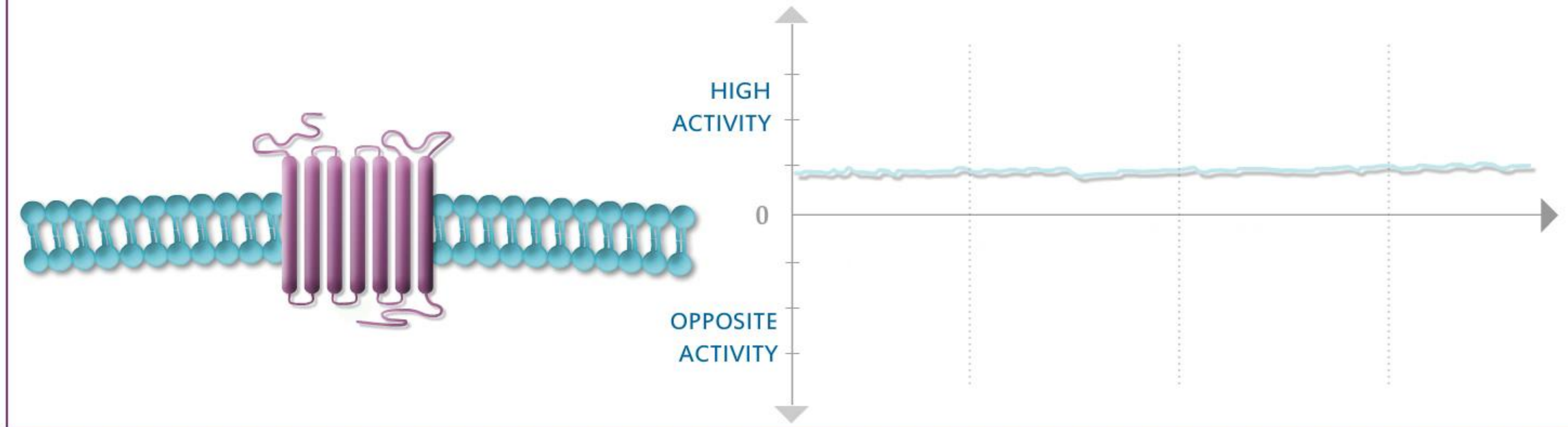
NAPE-PLD

NAPE



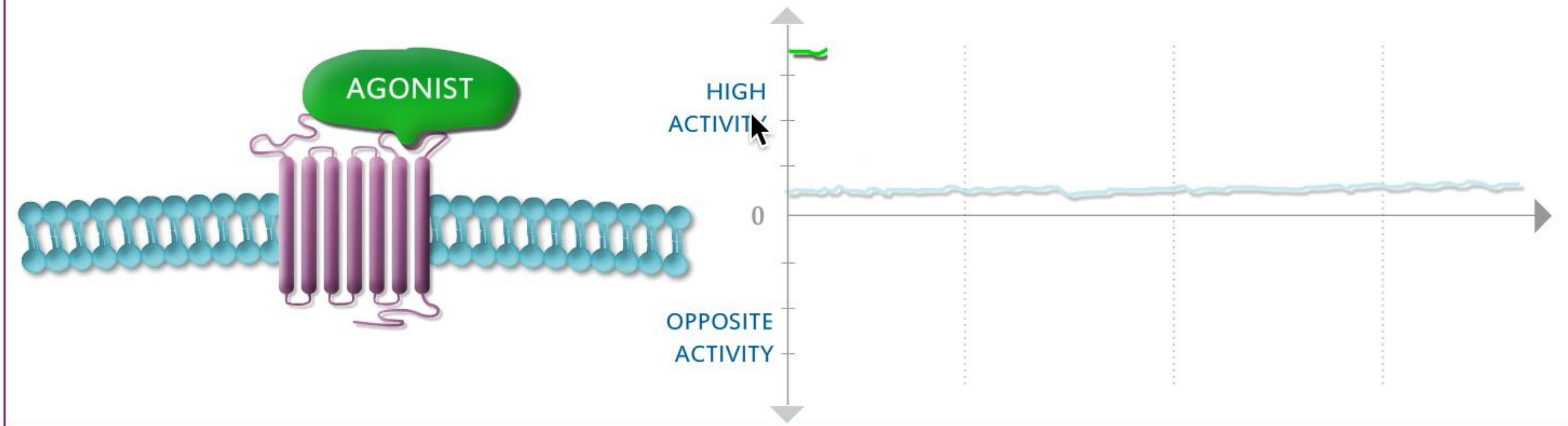
This animation differentiates full agonists (usually synthetic compounds) and partial agonists (especially useful in systems such as the ECS which are under tonic control):

CANABINOID RECEPTORS HAVE A CONSTITUTIVE (BASAL) ACTIVITY



This animation illustrates the difference between inverse agonism and neutral antagonism at a constitutively active receptor:

AGONISM OF THE RECEPTOR INCREASES ACTIVITY FROM THE BASAL LEVEL



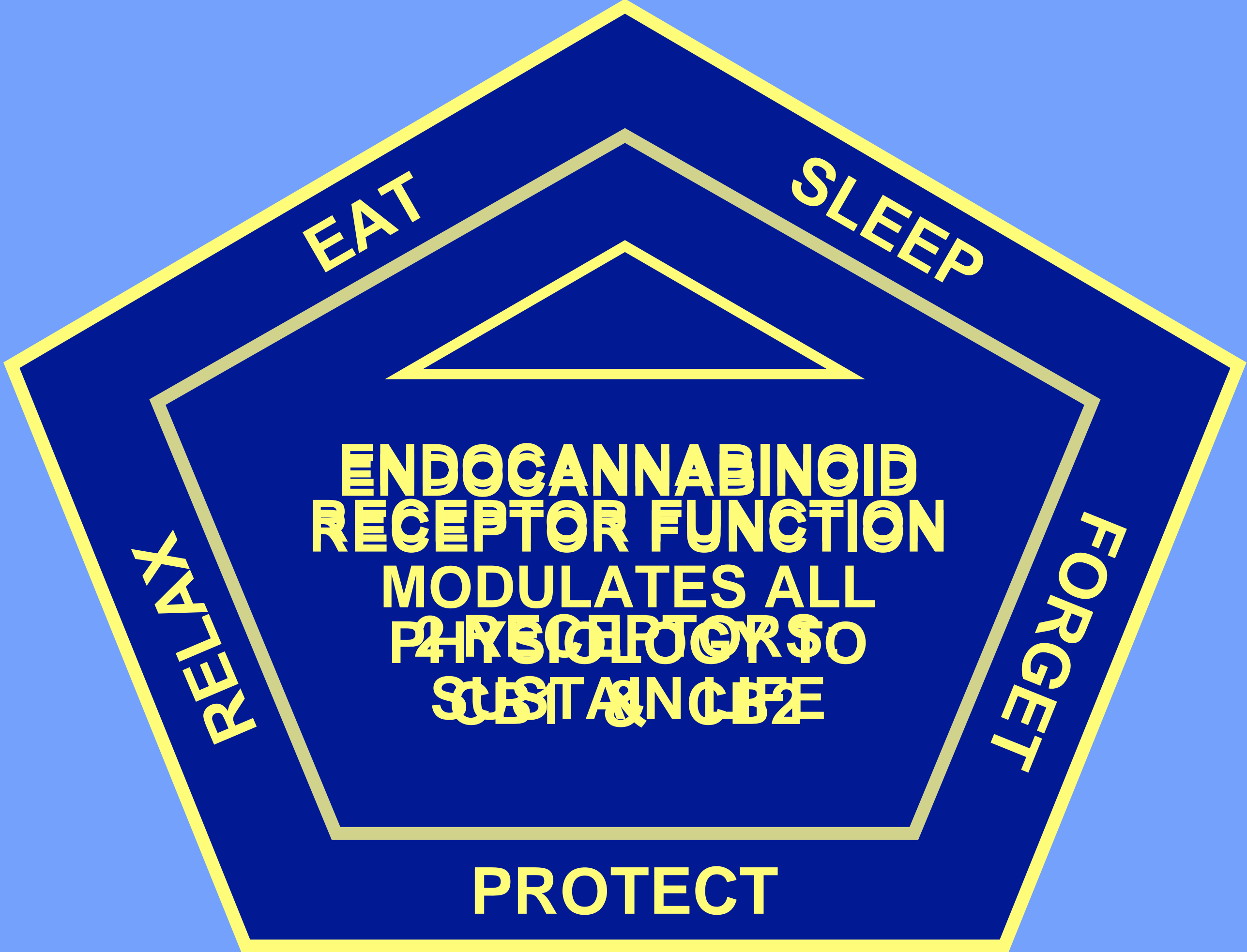
**POSITIVE
REGULATION:**

CANNABINOID RECEPTOR ACTIVITY

**NEGATIVE
REGULATION:**



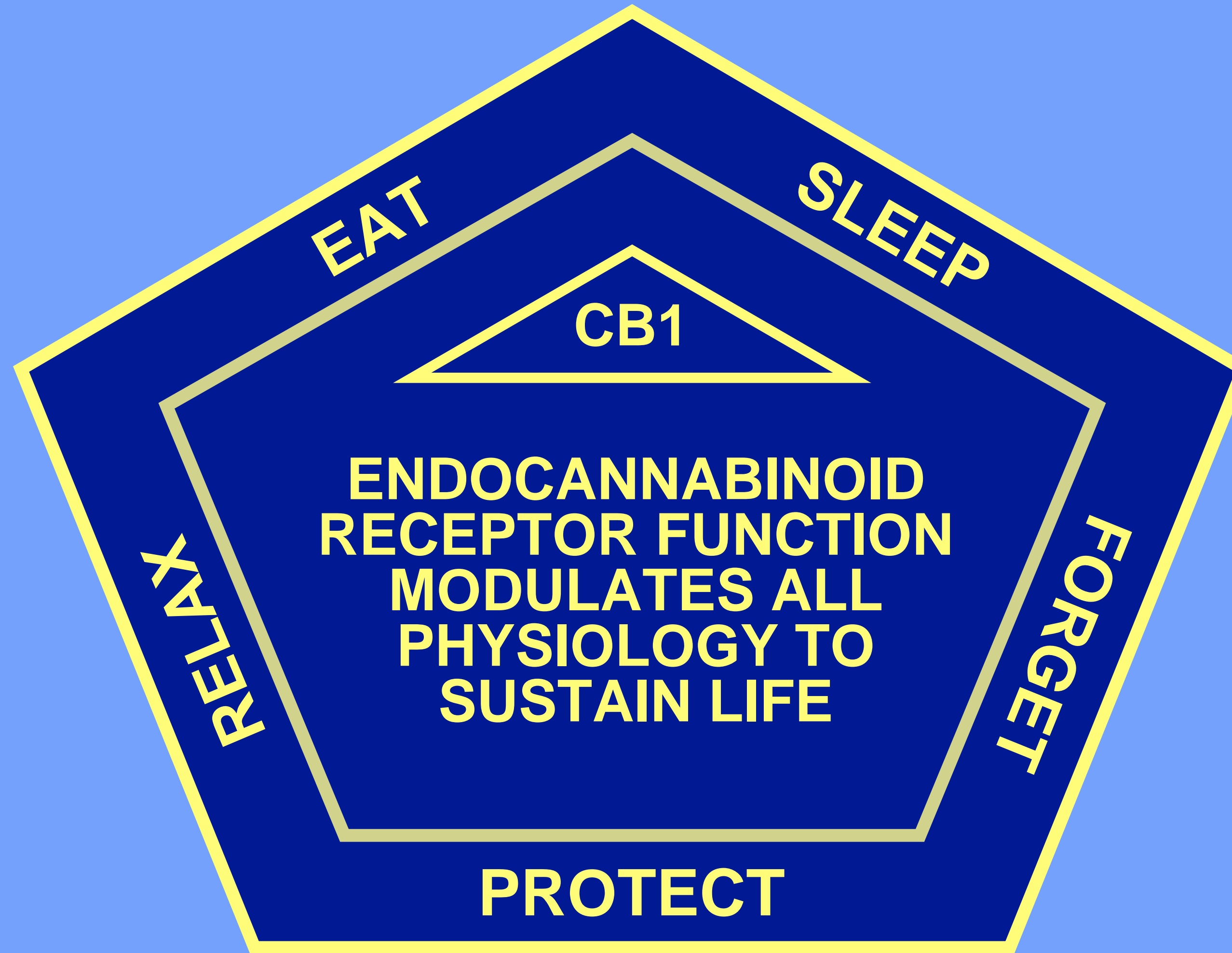
CONCEPTION



DEATH



CONCEPTION



DEATH



CB1:



EAT



SLEEP

Eating & sleeping are essential for growth and reproduction.

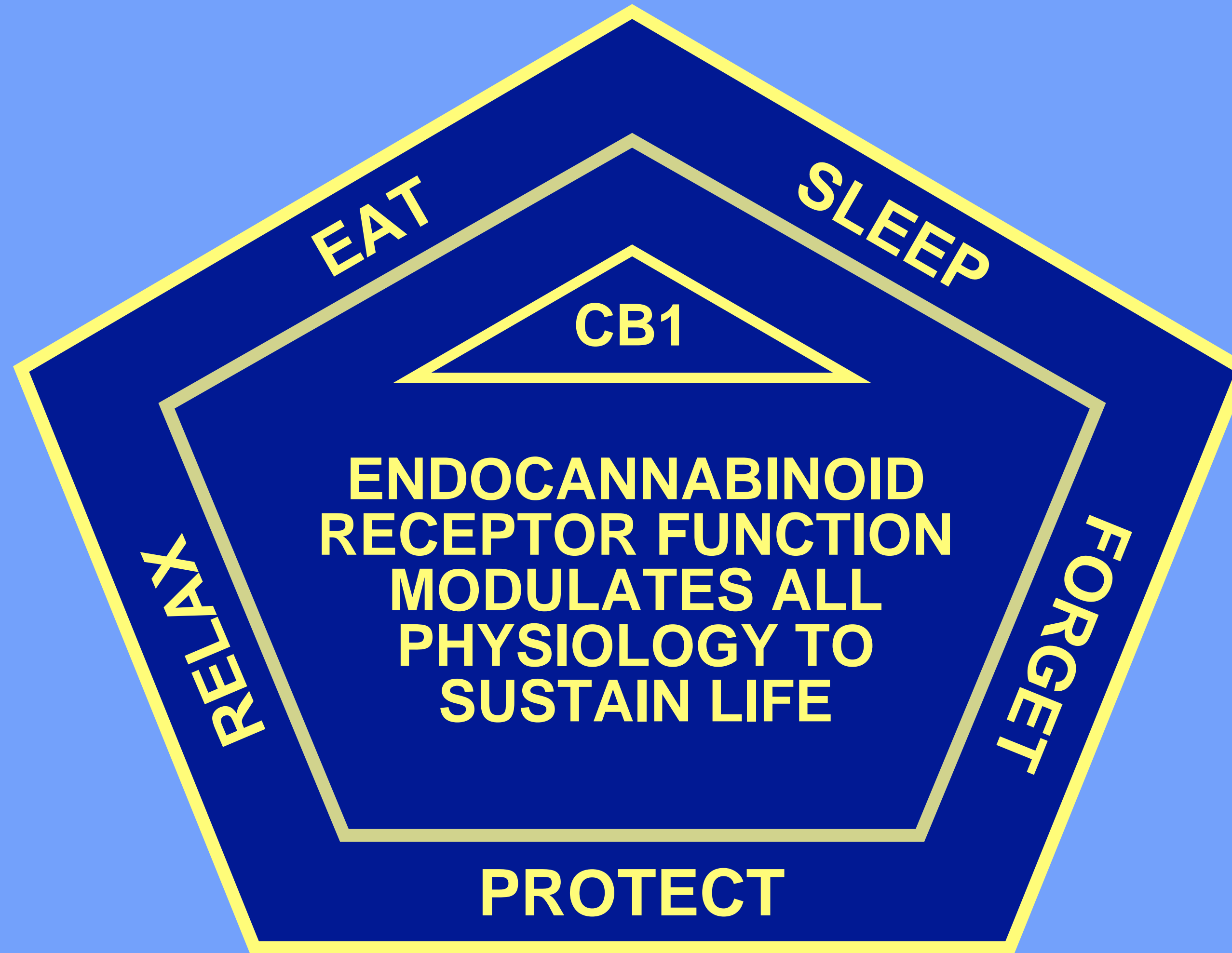


The coordinated systemic functions of endocannabinoids explain a holistic but scientifically elusive

“Brain : Gut Connection”



CONCEPTION



DEATH

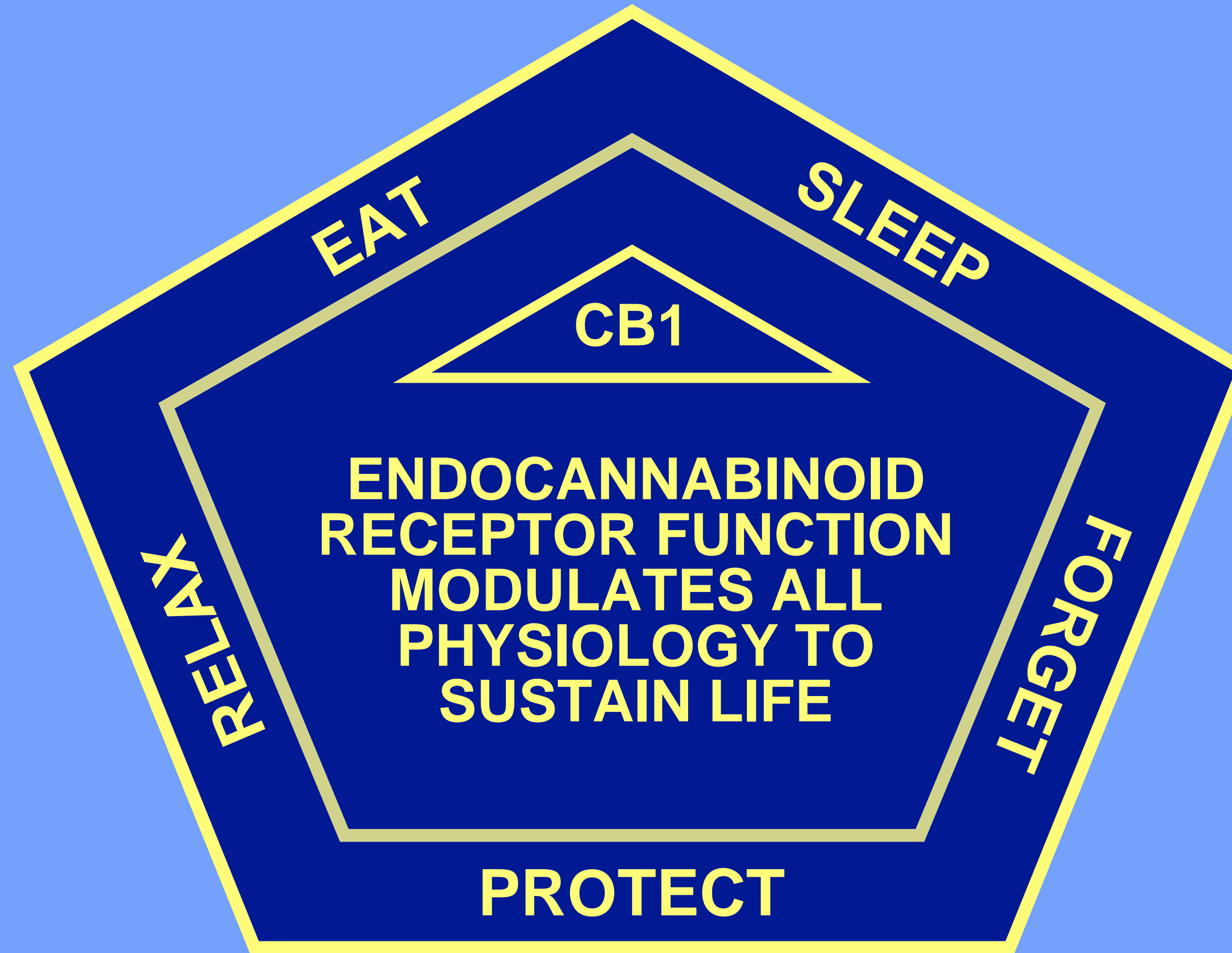


The need to relax is essential to
recover from life's relentless
stressors.

CB1: RELAX



CONCEPTION



DEATH



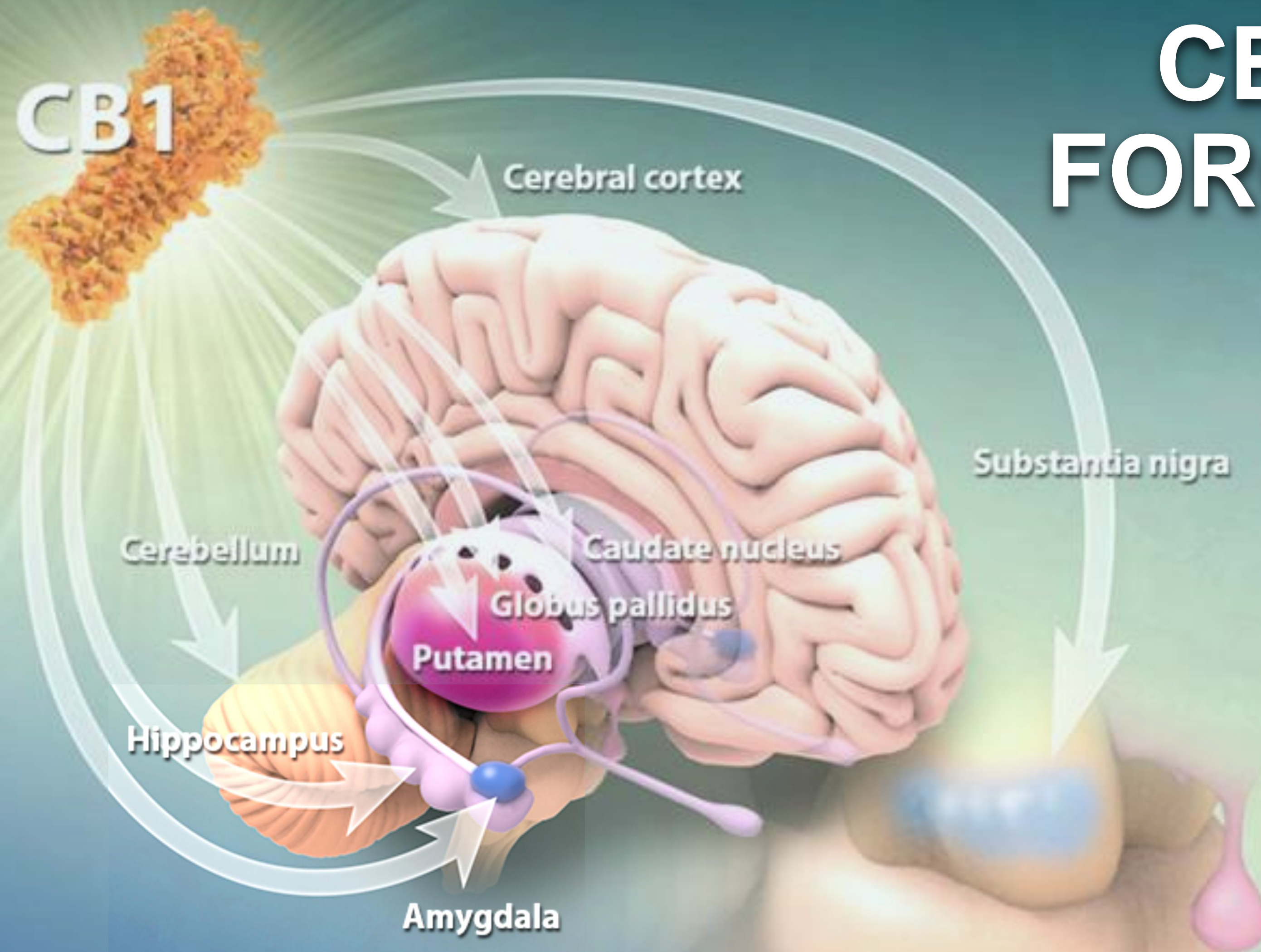
CB1: FORGET



More than an inconvenience:
The *ability* to forget is essential for survival.



CB1 FORGET



The hippocampus processes memories.



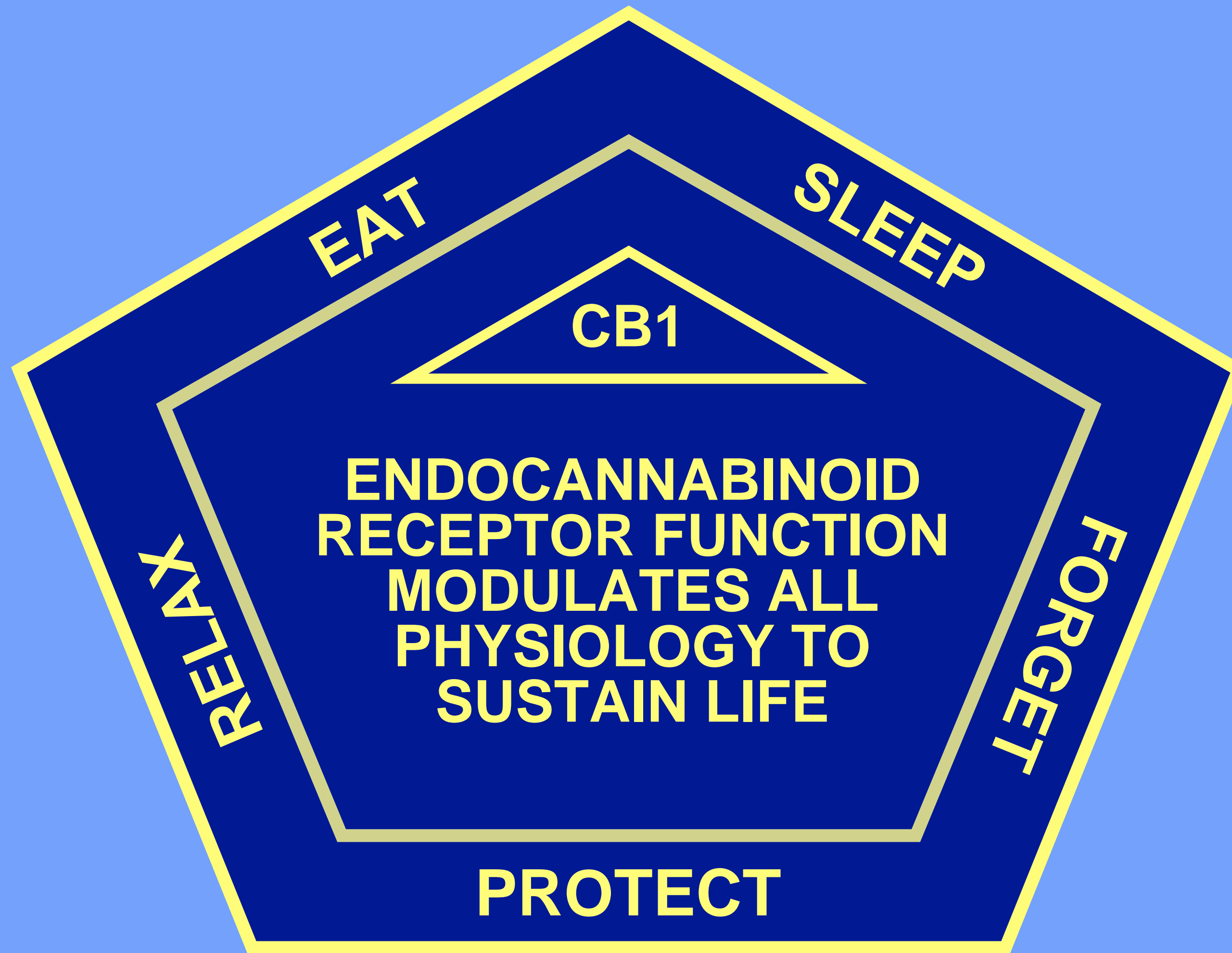
Memories are selectively filtered by cannabinoids.



CB1: FORGET



CONCEPTION



DEATH



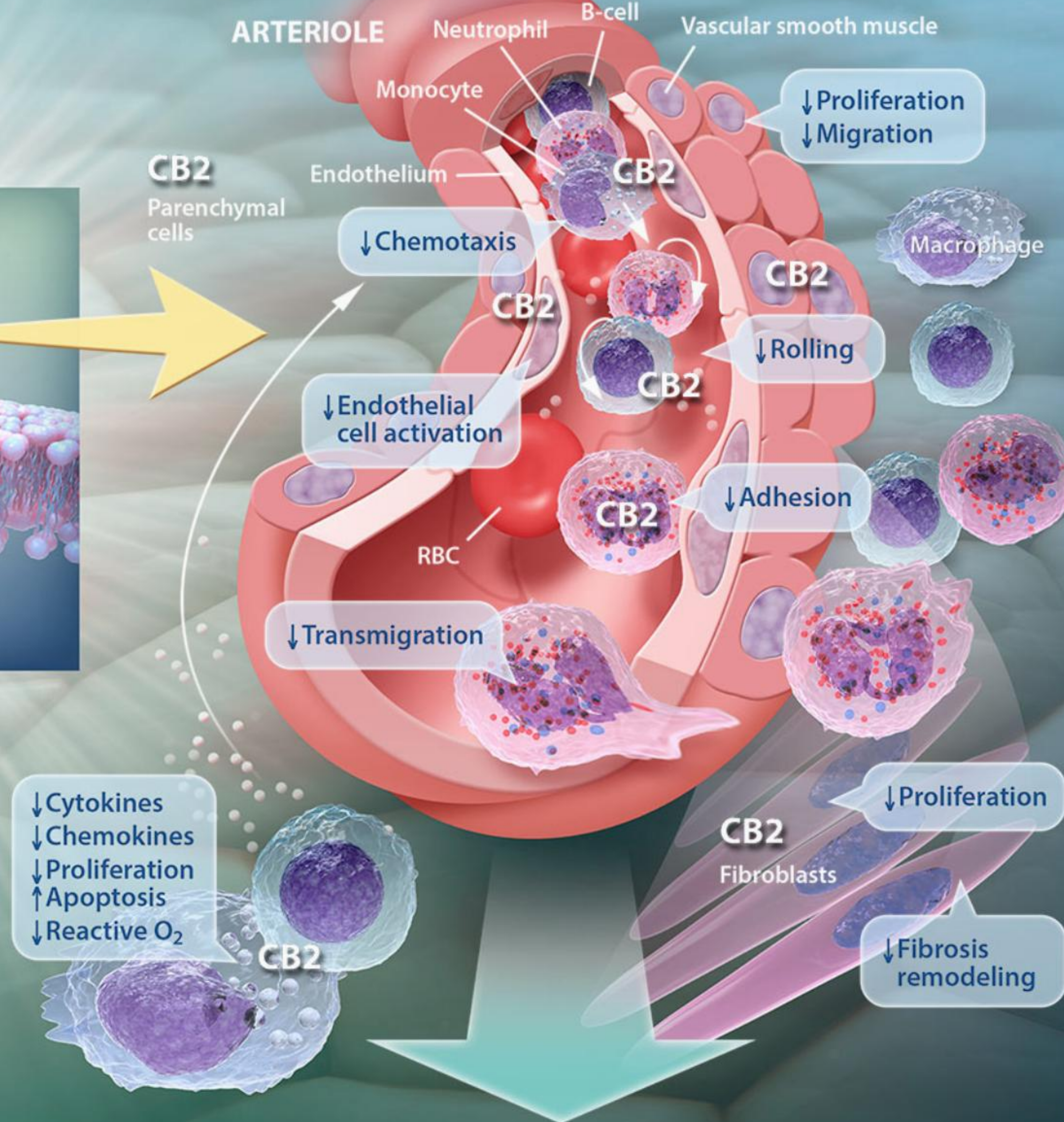
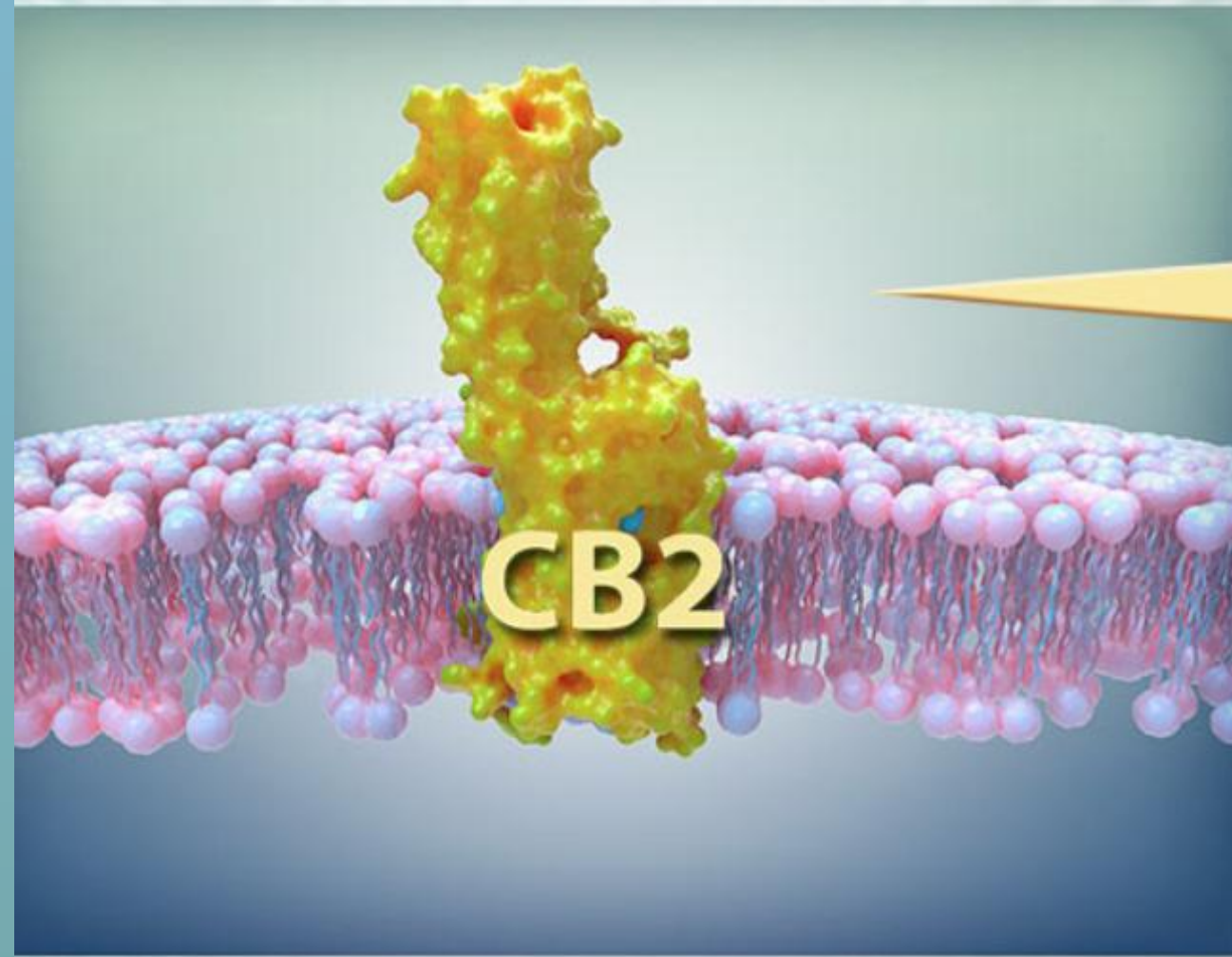
CB2: PROTECT



Cannabinoids respond to mitigate the progression of disease.



Inflammation & Tissue Injury



ATTENUATION OF INFLAMMATION / DECREASED INJURY

In Vivo PET Scan
Ahmad, et al
2013 AD

Cannabinoid
Receptor (CB2)
Locations

Acupuncture
Point
Locations

灸取穴参考



Western Medicine's New Science Future Meets Eastern Medicine's Traditional Past

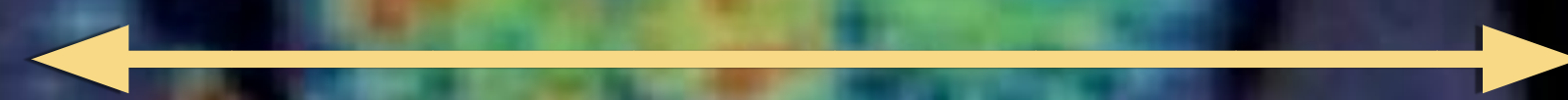
INTEGRATIVE MEDICINE

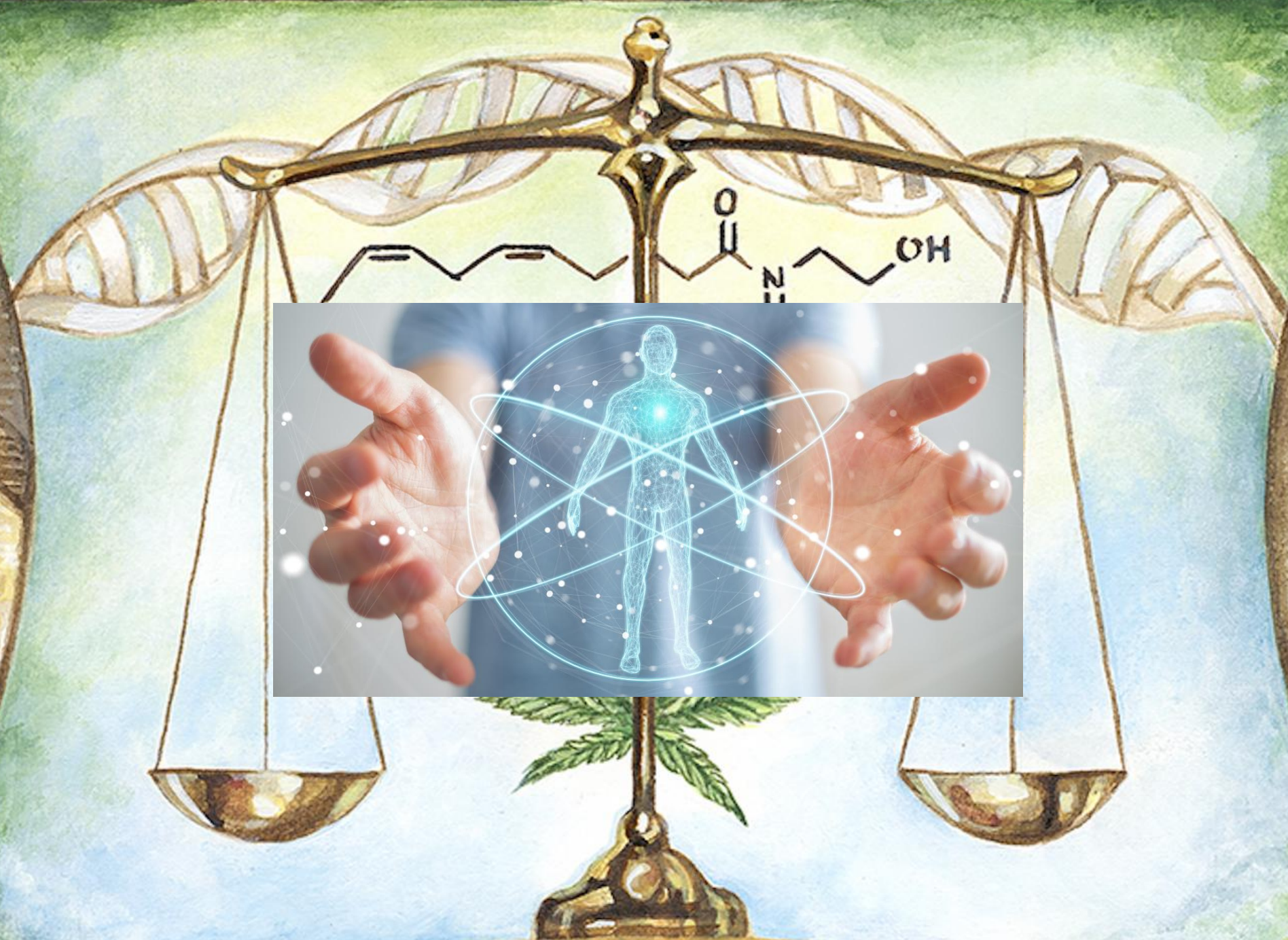
“Health”

“Qi”

Immunity ↔ Life

Flow
↔
Life





Imhotep

Mind ∞ Body

Acharya Charaka



"Reefer
Madness"
(1936 Trailer)

"REEFER MADNESS"

Formerly "TELL YOUR CHILDREN"

An G and H PRODUCTION

Amusement



U.S. House
CC

Dr. William Wooc
Association, public
opinions sponsorec
He further emphasi:
and that Cannabis'



the
ys and Means
'937.

ie American Medical
or enlightened medical
research & education;

MISSION STATEMENT:

**“TO BRING TOGETHER PHYSICIANS AND COMMUNITIES
TO IMPROVE THE NATION’S HEALTH.”**

Side-effects of 2021 prohibition have
undermined i and education.









Take home
message....

A temptation's indulgence offers choices....
that caution us to be careful with what we wish
for,
because science & reason matter.

JSB 2014





Jeffrey S. Block, M.D.

www.NurturingNature.com