



Welcome to Medical Cannabis Education Day

Hosted by the
Hawai'i State Department of Health
Office of Medical Cannabis Control and Regulation

Disclaimer: The information provided in this webinar is for educational and informational purposes only and is provided as part of OMCCR's public education mandate. It is intended to keep qualifying medical cannabis patients informed about the safe and responsible use of medical cannabis. You should consult a medical doctor to address any health concerns specific to you. While we strive to ensure accurate and up-to-date content, the information may not reflect the most current legal standards or scientific research. The views expressed in this webinar do not necessarily reflect the opinions or policies of the State of Hawaii or the Department of Health.



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Medical Cannabis: History and Science

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Today's Topics

History of Legalization for Medical Use

Hawaii's Medical Program
List of qualifying conditions

Your body's Cannabis
Factories (ECS)

- ENDOCANNABINOID SYSTEM



Medical Use in Hawaii in 1842 ?

Civil beat article (February 19, 2016)

“Pakalolo’s Long History, Regulated Future In Hawaii”

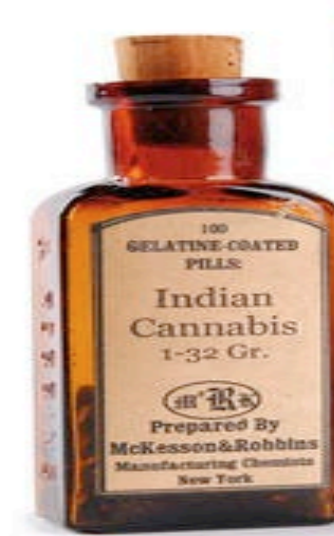
- “The chronicled use of cannabis in the Hawaiian Islands, appearing in the Hawaiian Language Newspaper Ka Nonanona, goes as far back as the year 1842, though cannabis use probably goes back much further”
- “Advertisements for medical cannabis continued in Hawaiian newspapers throughout the 19th century”



HONOLULU
CIVIL BEAT

1850 to 1940: Legal in every state in the U.S.A.
available in all drug stores, very popular

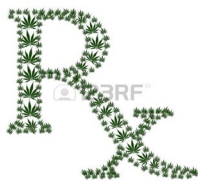
WHOLE PLANT MEDICINE:
Powdered Extract,
Oils, Tinctures &
Cigarettes



In the US Pharmacopeia (USP-pharmacists guide)

Uses included:

- Opiate and Alcohol abuse
- Neuralgia (nerve pain)
- Seizures



First, medical marijuana program in the U.S.A.,
was and is a federal program
IND -- Investigational New Drug Program (1978 - Now)

Robert Randall 1st Patient, (Zero) in the IND.
He had treatment-resistant glaucoma.
Only thing that worked. Arrested for growing.

MD argued for Compassionate Use*

IND was born

Fed. Govt. MAILED 300 rolled, MJ cigarettes each month

Robert and wife Alice O'Leary became activists, helping
others gain access to whole-plant medicines



Investigational New Drug Program (1978 - Now)

1970's: Patients, Doctors and Nurses started paving the way for the States to have Compassionate Use Programs

TODAY States Recognize Accepted Medical Use

Medical Cannabis Programs

39 states and

D.C.

+ 4 US Territories

+ 9 States recognize CBD products

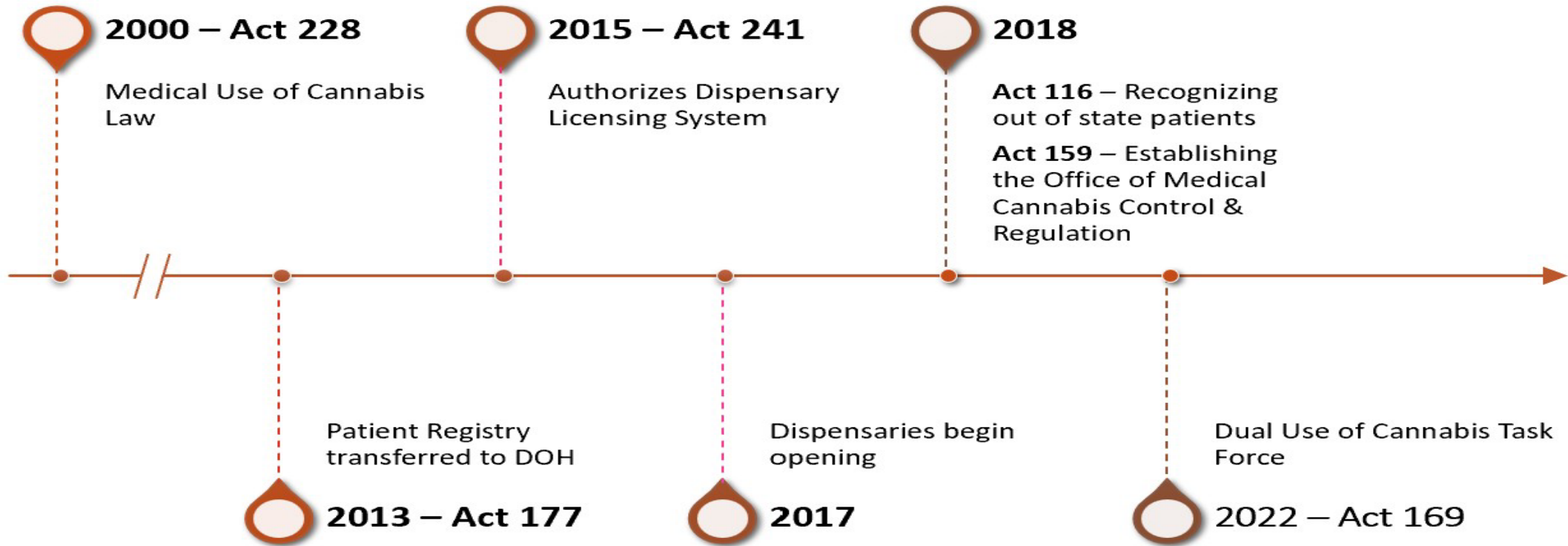
Federal Government – Schedule I still

“NO ACCEPTED MEDICAL USE”



History of Hawaii's Medical Cannabis Laws

Hawaii's Timeline



2022 Hawaii's DOH and Dual Use Task Force Medical Committee Members

SURVEYSAYS :

- 57% Medical Cannabis Patients rely on dispensary workers for health education

Huge Knowledge Gap

- Patients
- Healthcare Professionals
- Education Promotes Public Health and Health Equity (Hahn and Truman 2015)

AT HEALER, WE BELIEVE

Cannabis works best
with education



List of Qualifying Conditions in Hawaii

Chronic- Debilitating diseases & conditions:

- Amyotrophic Lateral Sclerosis)
- Cancer
- Glaucoma
- HIV(+) Status
- Lupus
- Multiple Sclerosis
- Muscle spasms severe & persistent
- Crohn's disease
- Inflammatory bowel disease





- Nausea, Severe
- Pain, Severe (82%)
- PTSD (17%)
- Rheumatoid Arthritis
- Seizures (Epilepsy)
- Wasting syndrome
 - Severe weakness,
 - malnutrition or weight loss

Ways to Add More?

DOH Petition Process

Governor Josh Green said

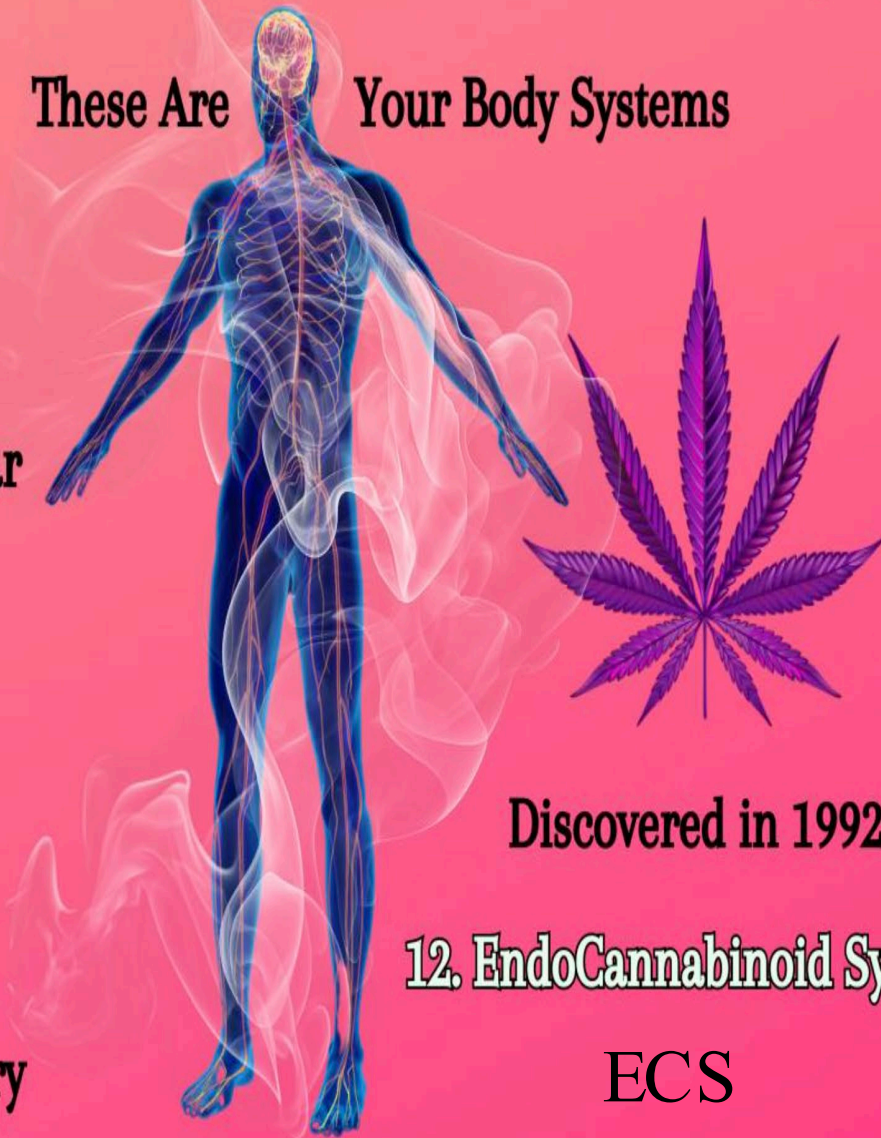
- he would like to get rid of the list
- let certifying physicians
- nurses decide

(Personal conversation May 18, 2024)

How can one plant be used to treat so many different conditions?

- 1 Skeletal
- 2 Muscular
- 3 Nervous
- 4 Endocrine
- 5 Cardiovascular
- 6 Respiratory
- 7 Digestive
- 8 Urinary
- 9 Lymphatic
- 10 Reproductive
- 11 Integumentary

These Are Your Body Systems



Discovered in 1992!

12. EndoCannabinoid System

ECS

Don't get annoyed.

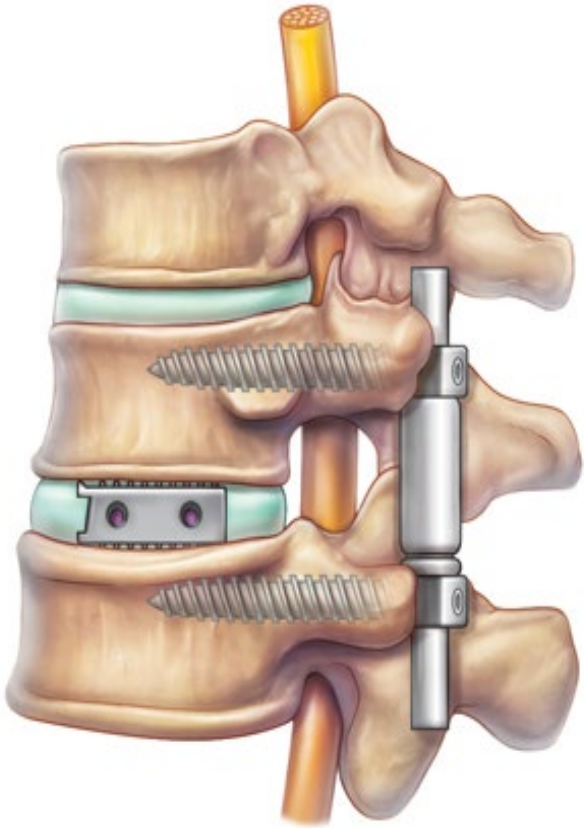
Say: “Endocannabinoid”

ENDO-KAN-NAB-IN-OID

Or

ENDO- CANNA- BinOID

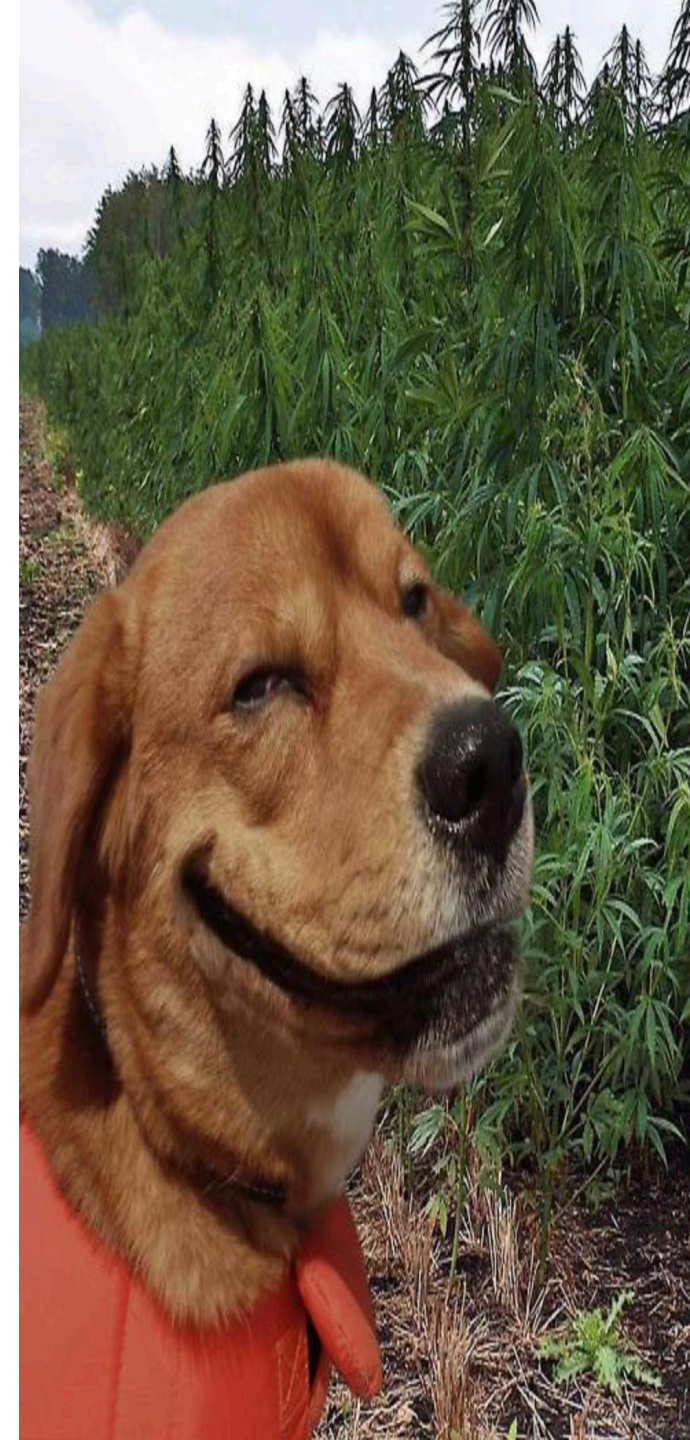
Who has an Endo-cannabinoid System?



Vertebrates

Anything with a spine

- Mammals -- You and your pets
- Amphibians, reptiles
- Birds and Fish

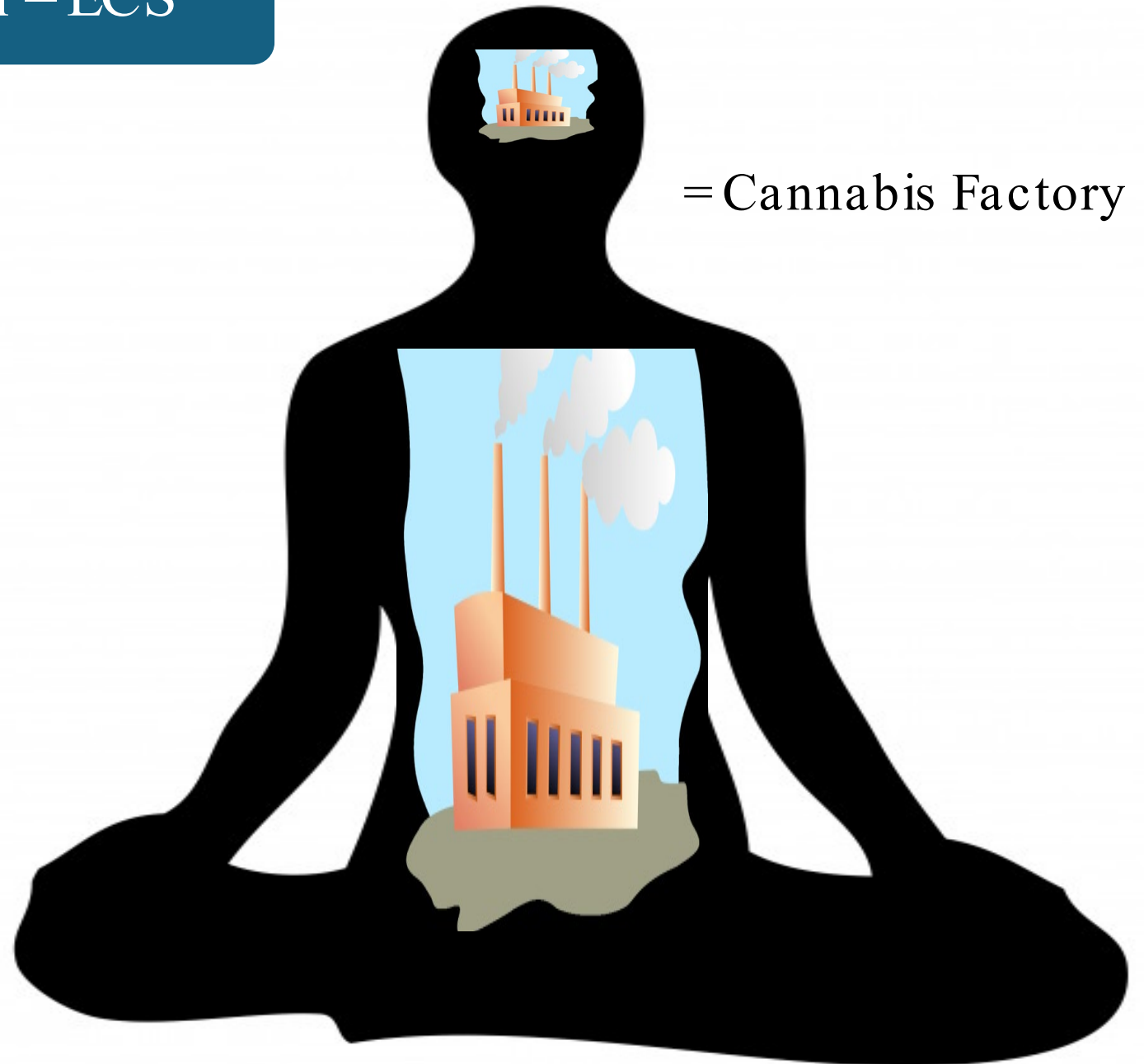


Endocannabinoid System – ECS

Just as your body produces
endogenous opiates

You produce
Endogenous CANNABINOIDS
= ENDO-CANNABINOIDS

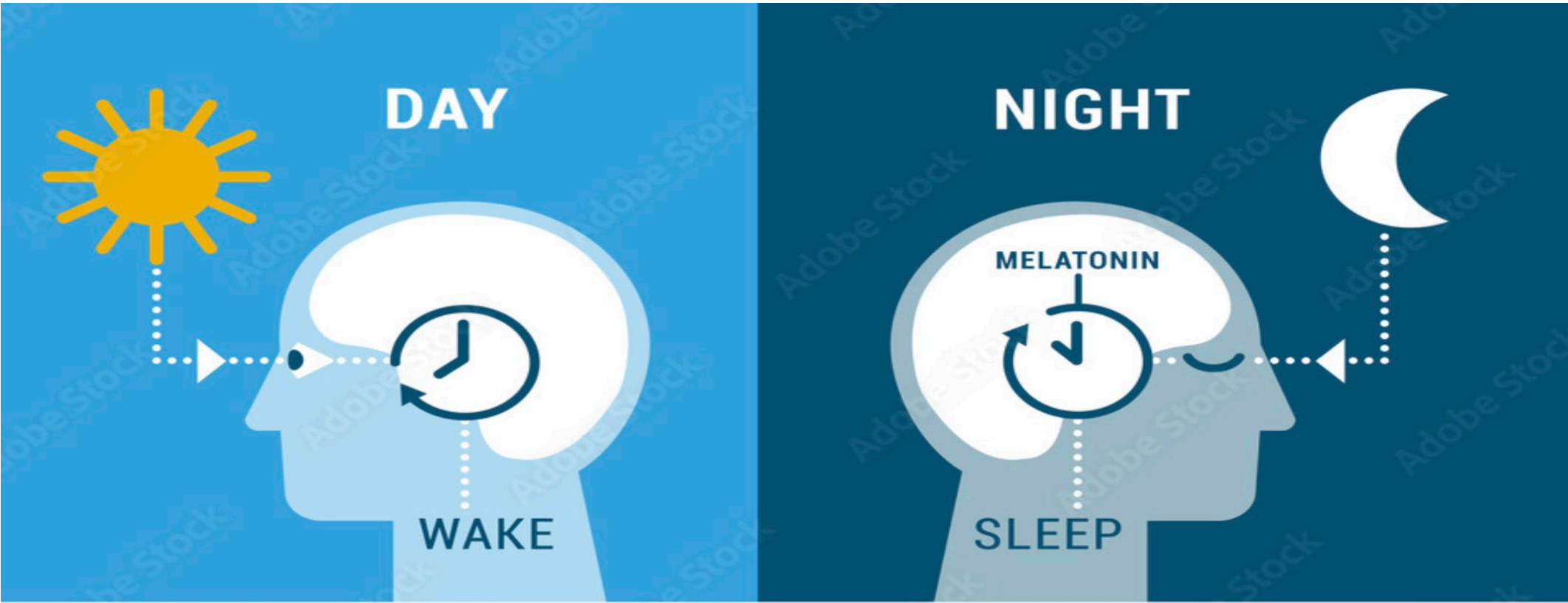
Neurotransmitters
& Receptors =
Endocannabinoid System



Two main chemicals EndoCannabinoids (eCBs)

2-Arachidonylglycerol (2-AG) =
Body's CBD

AEA - Anandamide = Body's THC
Sanskrit for "bliss molecule"



Two main chemicals EndoCannabinoids (eCBs)

2 AG = Body's CBD

Levels higher during day → R/T alertness

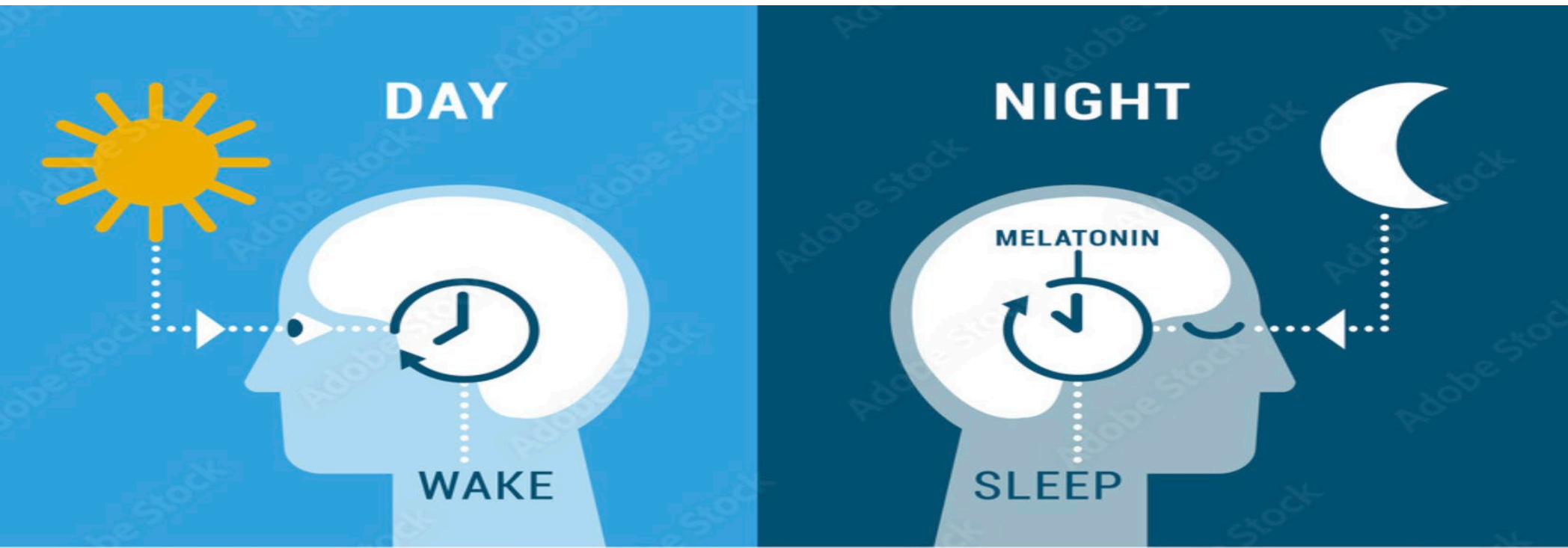
The most abundant in the brain (1Kx >AEA)

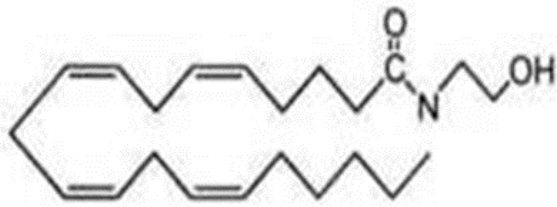
AEA - Anandamide = Body's
THC "bliss molecule" Likely the runner's high

Levels higher at night (Vaughn 2010)

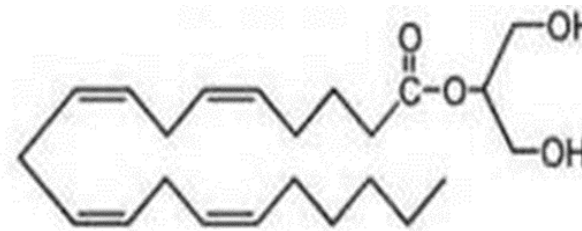
↑ DEEP Sleep –most healing phase of sleep (Murillo-Rodriguez et al 2003)

↓ Pain and inflammation





Anandamide (AEA)



2-Arachidonylglycerol (2-AG)

AEA: fluctuations high/low are essential for implantation of the embryo - into the uterus

Both are found in the early stages of human embryonic development

- At 14 weeks gestation: ECS receptors can be found
- At 20 weeks: acceleration of receptor activity in several areas of the brain
- Likely important in the maturation of the nervous system and Immune function

Two main EndoCannabinoids (eCBs)

2-AG + AEA

Present in mother's breast milk

(Grant & Cahn 2005)

Likely activating oral-motor
(rooting, sucking) reflexes

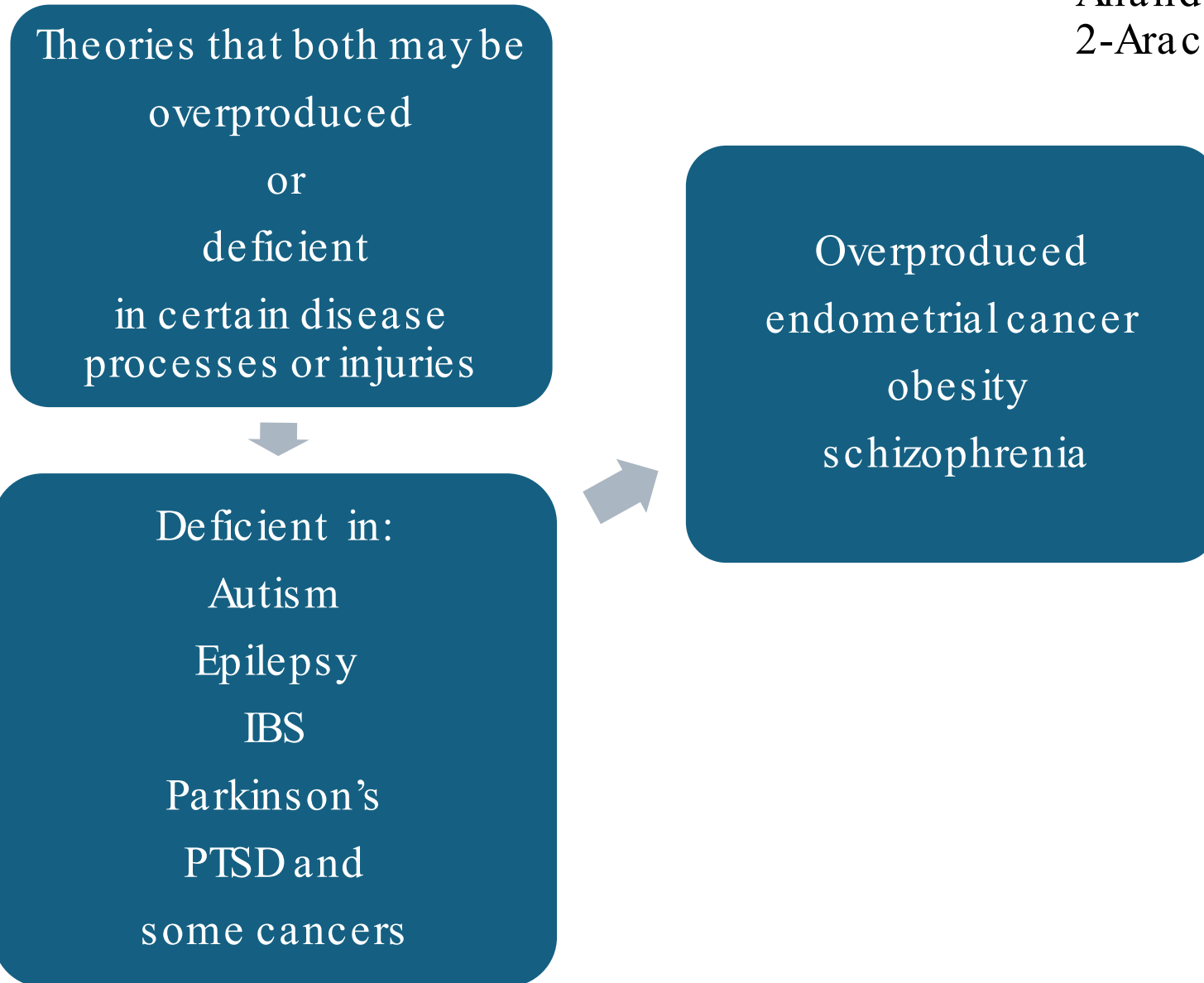
Stimulate a newborn's appetite
→ blissed out baby

(2-AG > AEA)

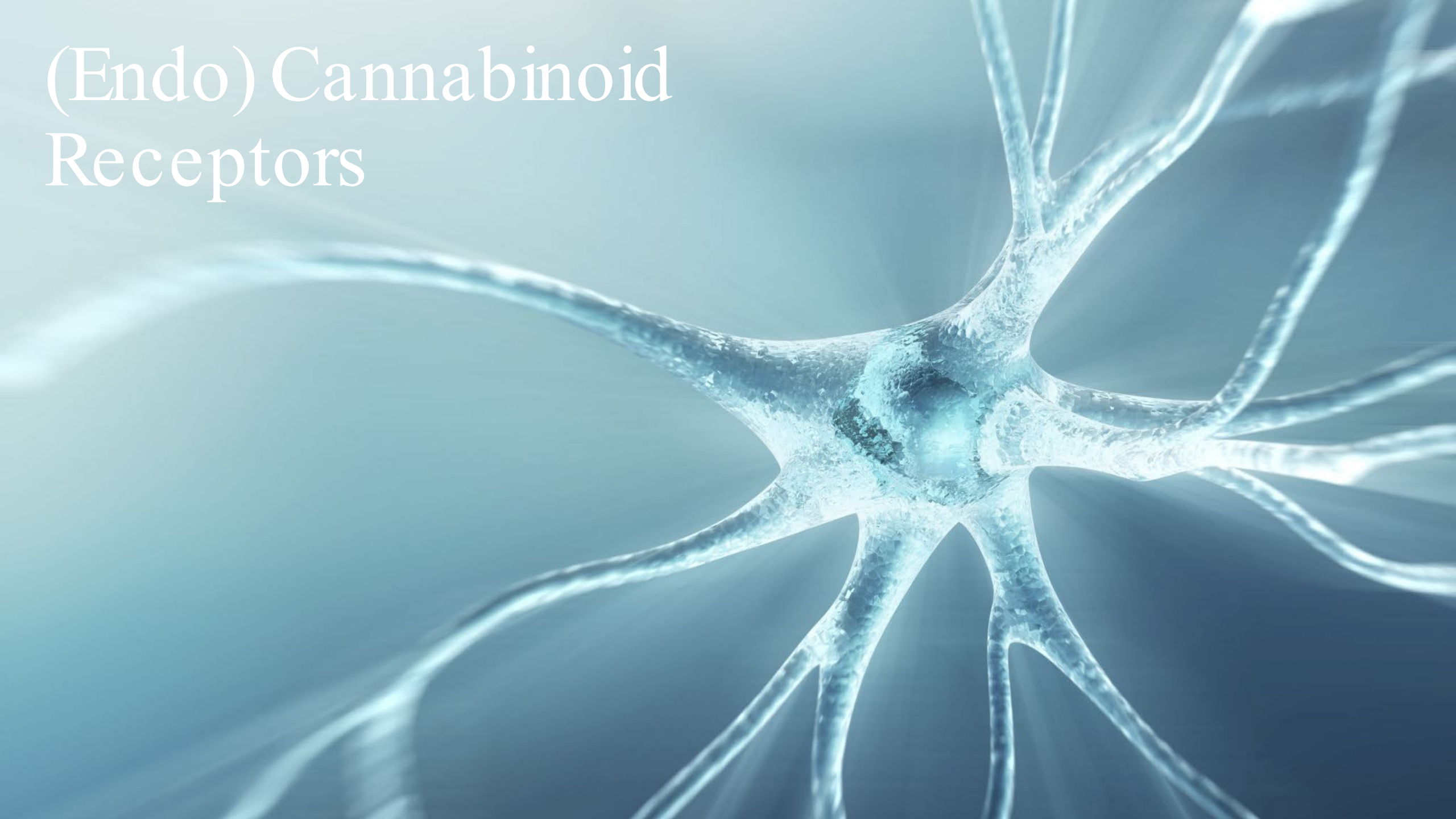


2 Main EndoCannabinoids (eCBs)

Anandamide (AEA)
2-Arachidonylglycerol (2-AG)



(Endo) Cannabinoid Receptors





Two main types of cannabinoid receptors found in nearly all cell walls, neurons and tissues

CB1R

Nervous system

CNS > PNS

Brain + Spinal Cord

+ digestive system

+ Vagus Nerve

One that THC binds to

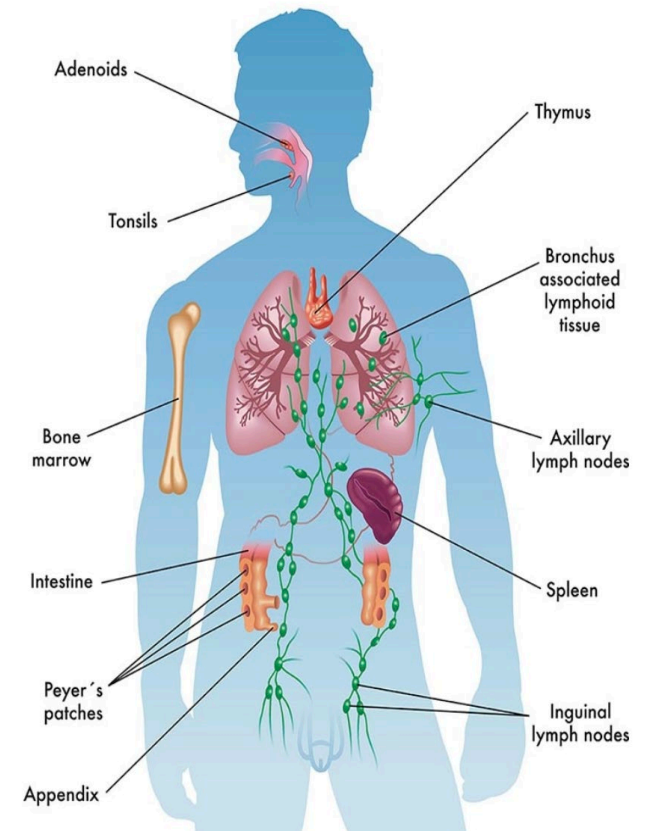
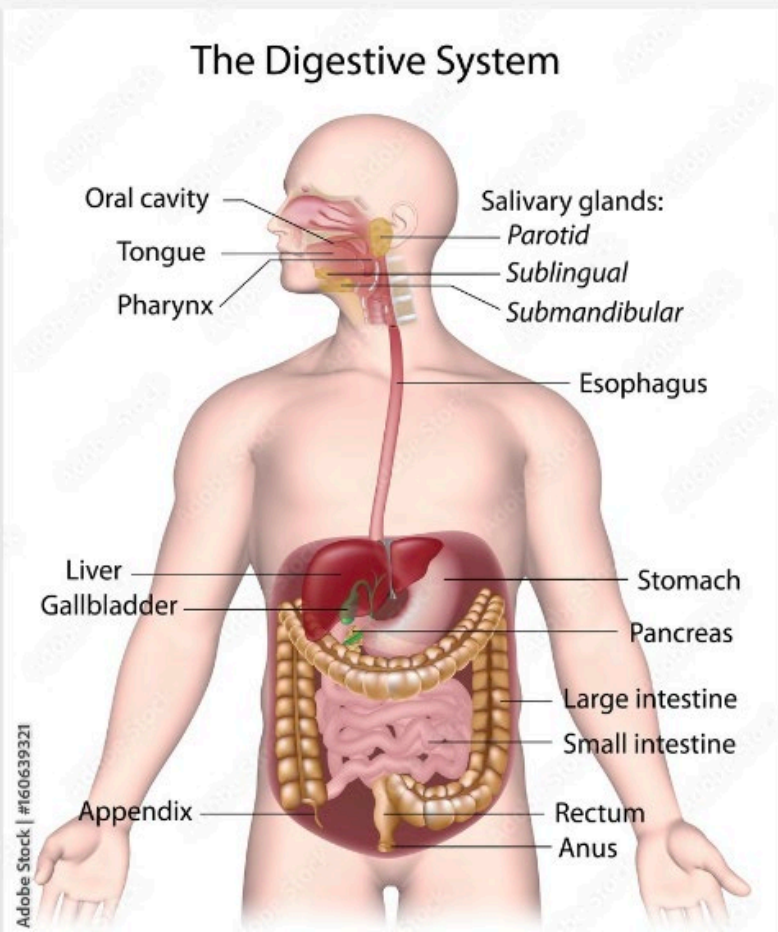
→ Euphoria, High

CB2R

Immune system

Blood (T-Cells), Spleen.

Lymph, Skin



Lowe 2021, Viana et al 2012 (Andradas 2016)
(Ryberg 2007)

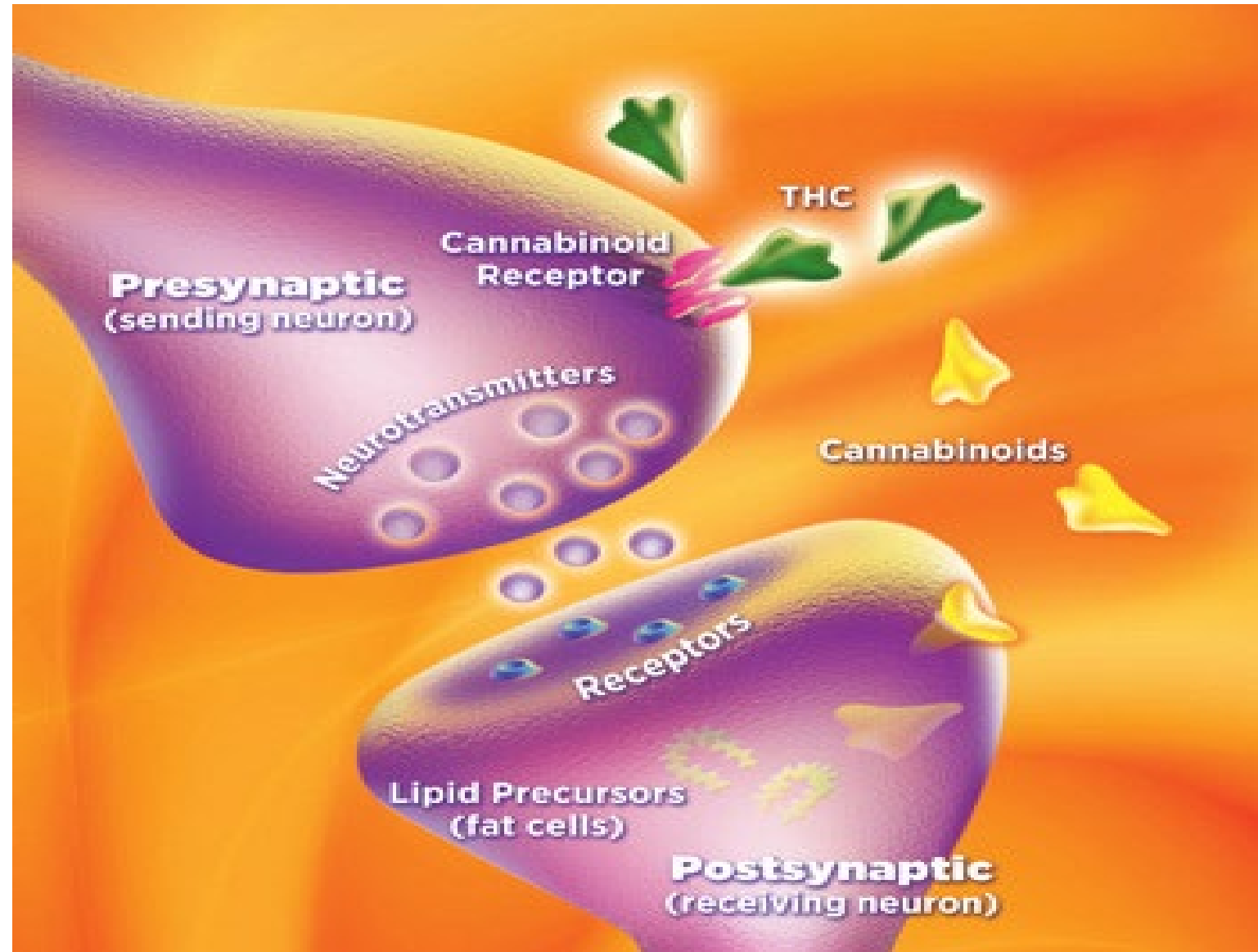
Unique, Retrograde, Neuron-to-Neuron signaling system

Endocannabinoids are produced

UPON-DEMAND by the
POST-synaptic neurons

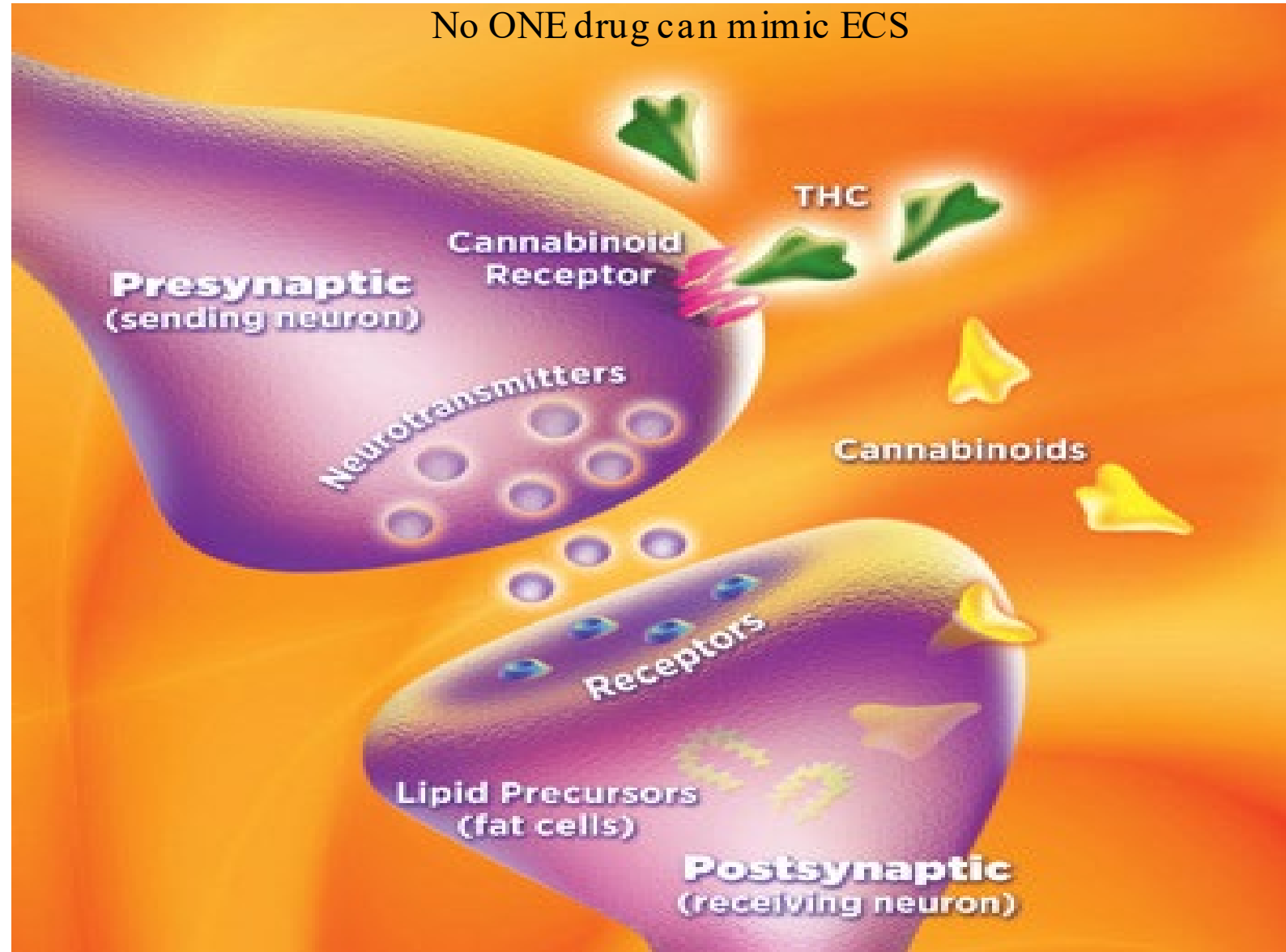
- WHERE they are needed
- WHEN they are needed

→ Homeostasis—every system in
your body



Homeostasis—Think dimmer switches, not ON/OFF. Nudge. Adjusting to your body rhythms.

- Appetite
- Eye (Ocular) Pressure
- Inflammation
- Metabolism
- Mood and Energy
- Motivation and Reward
- Muscle Control
- Pain / Sensation
- Stress Response
- Thermoregulation



Enhance your ECS with Activities

Acupuncture

(MacDonald 2021)



Social Contacts
ECS mediates Oxytocin driven release, social reward.

(Wei et al. 2015)

Yoga

(Sadhasivam et al. 2020)

**Mindful Meditation
& Stress Reduction**

(V. Brugnatelli et al., 2021)



**Increased eCBs and
improved mental health**

Osteopathic bodywork

**Clinical study: Osteopathic
manipulation treatment
(OMT) increased AEA levels
by 168%** (McPartland 2005)



Can enhance your ECS with exercise, singing and getting good sleep



Exercise: 30 min x 5 days/week of moderate

(not high or low intensity) – and it must be ENJOYABLE

- Hiking can ↑ anandamide (AEA)

(Feuerecker, 2012)

- Runner's high – as a reward system?

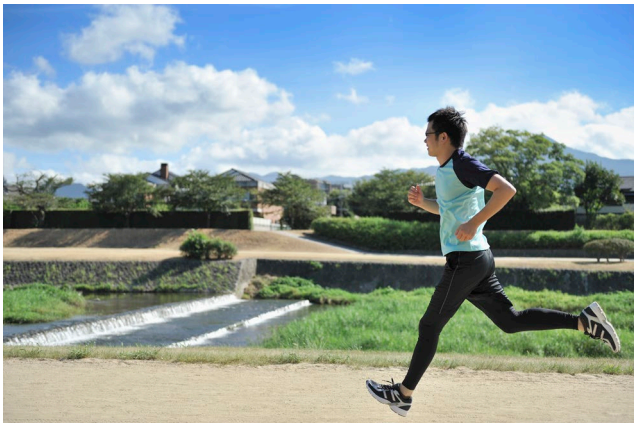
(Siebers, 2021)

- Singing raised AEA levels 42%

(N=9 Stone et al, 2018)

- Good sleep hygiene

(Kander, McPartland/Russo)





“Let food be thy medicine and
medicine be thy food”
Hippocrates, father of medicine (431 B.C.)



ECS Diet – Foods may stimulate production or contain ANANDAMIDE

(AEA) is produced by Omega 6 Fatty Acids, others by Omega 3

an apple
a day

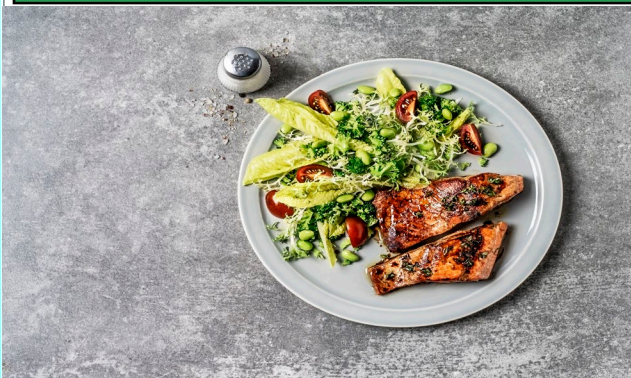


Flax, chia seeds or
oil,
and walnuts

are NOT as efficient as
animal sources



Fish, eggs,
and meat



ratios Omega-6 to
Omega-3
exert

protective effects at
ratios as high as 5:1

but between 2:1 and
3:1
is more powerful



HEMP seed or oil
(Cannabis SATIVA) ratio
2:1 and 3:1

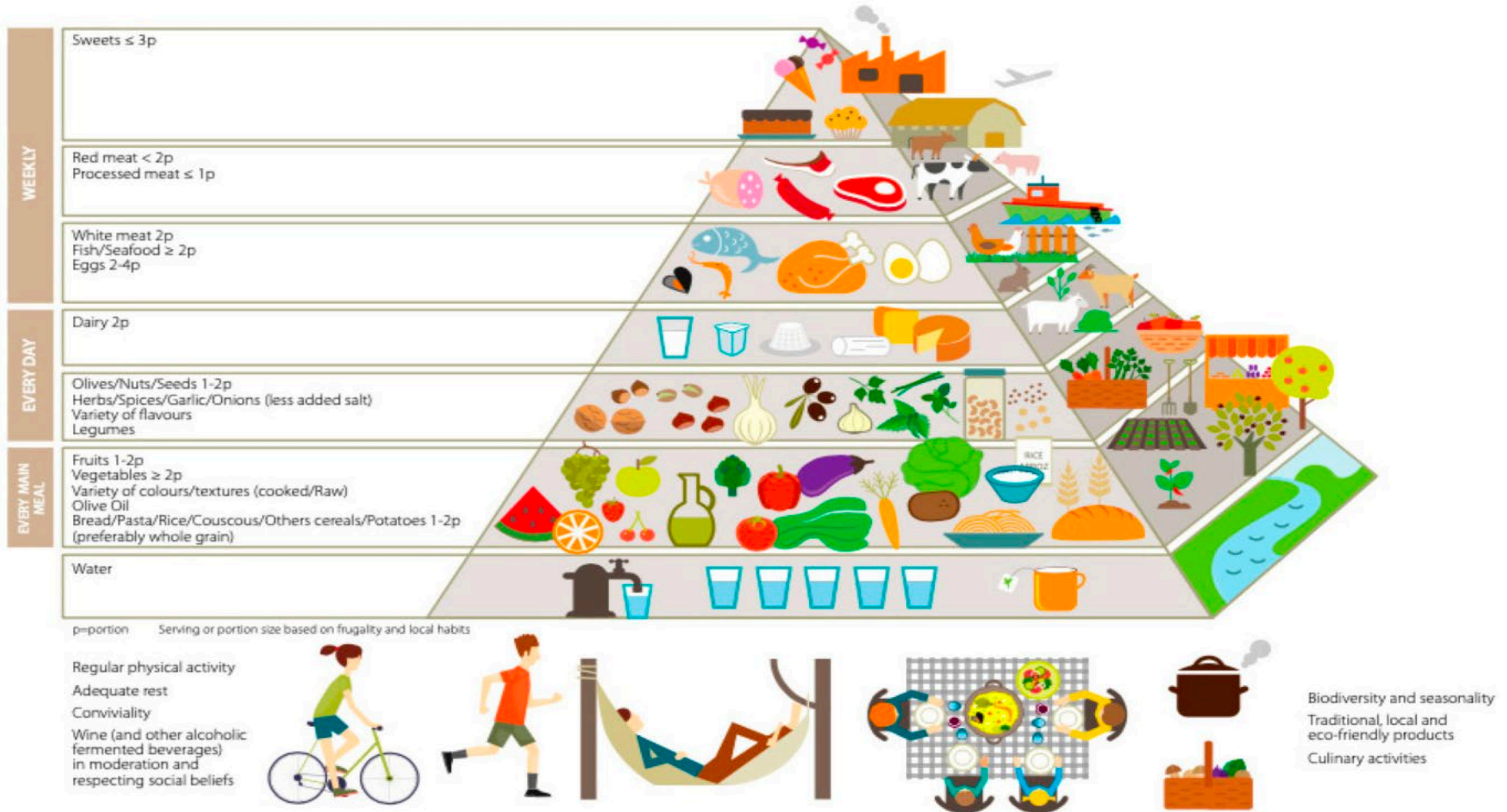


Figure 1. New Pyramid for a Sustainable Mediterranean Diet.

ANY
QUESTIONS ?

