

Using Cannabis from a Medical Perspective

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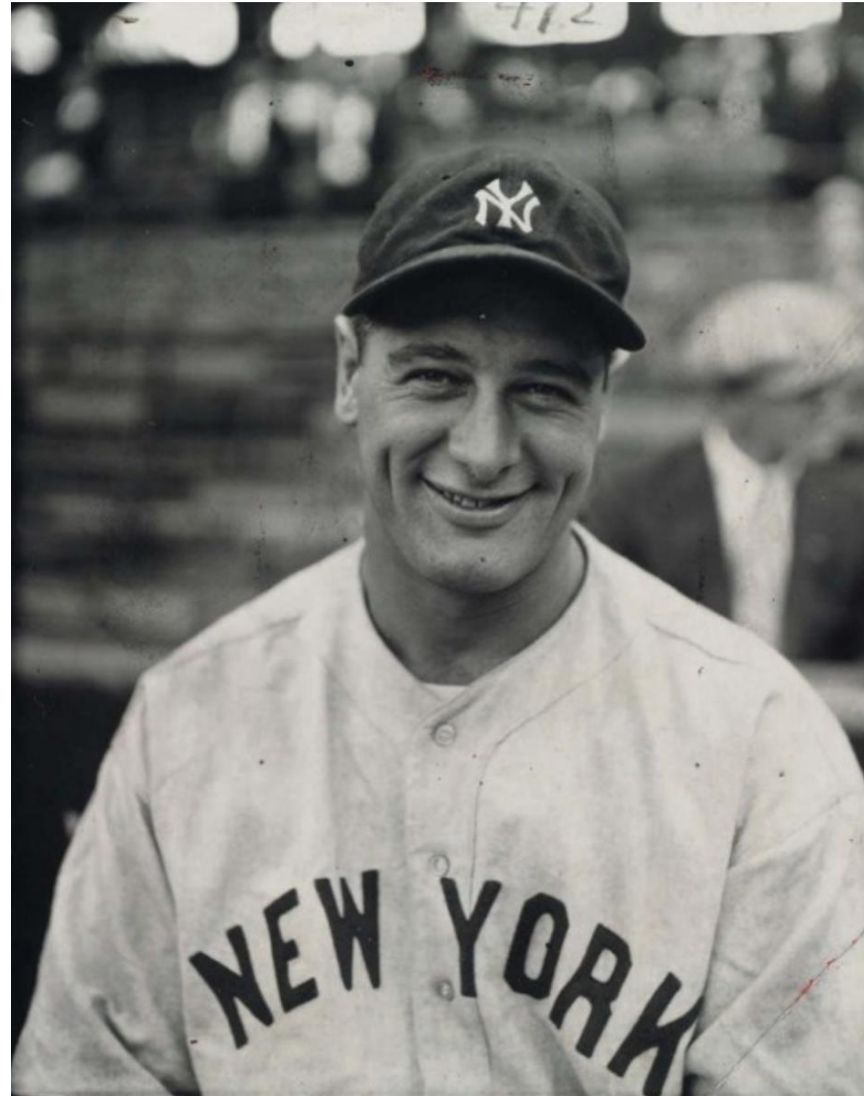
Medical Marijuana - Available Forms

- ▶ Pill
- ▶ Oil
- ▶ Tincture
- ▶ Topical forms - includes transdermal patches, salves, ointments
- ▶ Vaporization and nebulization
- ▶ Suppositories
- ▶ Dry leaf form - just added

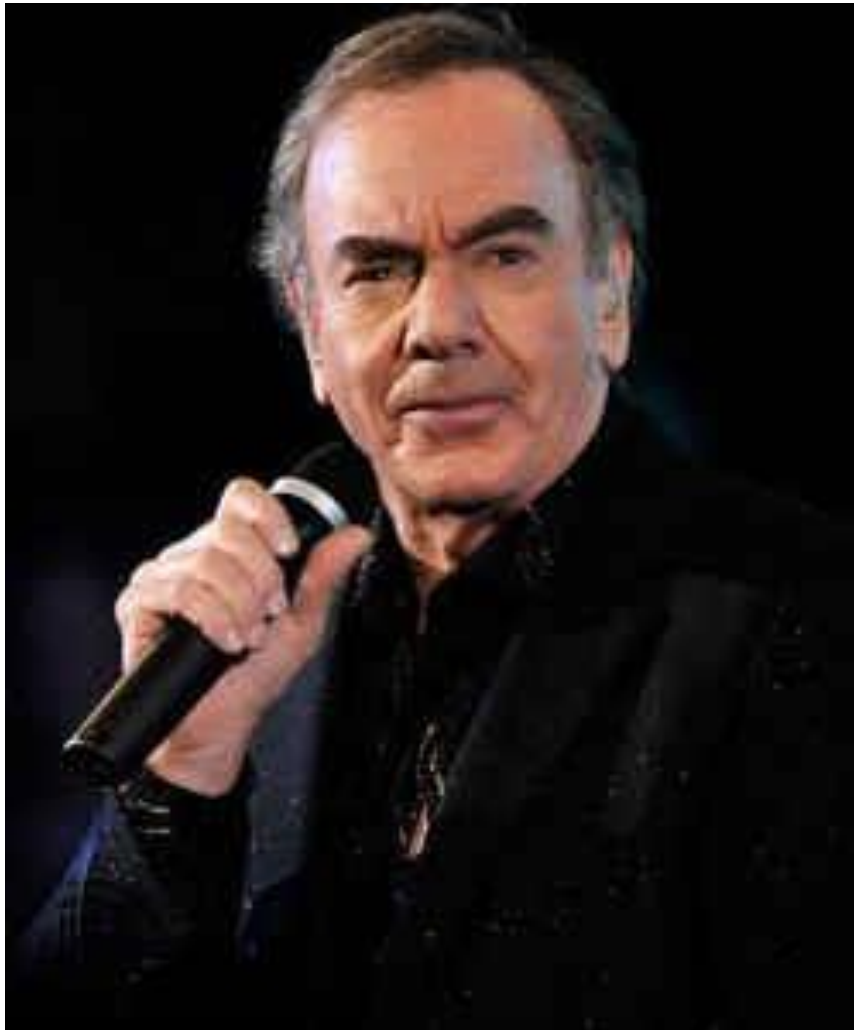
Medical Marijuana

- ▶ Edibles
 - ▶ Functional Wellness Beverages
- ▶ Coca-Cola - Aurora Cannabis
- ▶ Constellation Brands - Canopy Growth
- ▶ Included in market trends forecast:
 - ▶ The Specialty Food Association, Whole Foods Market, FreshDirect, Kind Health Snacks, Restaurant Canada among others.









History of Cannabis

- ▶ Religious rituals
- ▶ 19th Century - United States
- ▶ 1894 - Indian Hemp Drugs Commission
- ▶ 1937 - Marijuana Tax Act
- ▶ 1969 - 16% of US population supported legalization
- ▶ 1969 - MTA overturned
- ▶ 1970 - MTA repealed

History of Cannabis

- ▶ 1970 - Drug Abuse Prevention Act
- ▶ 1971 - National Commission on Marijuana and Drug Abuse
- ▶ 1973 - Drug Enforcement Agency is established
- ▶ 1978 - 38% of HS seniors admit to using within previous 30 days

History of Cannabis

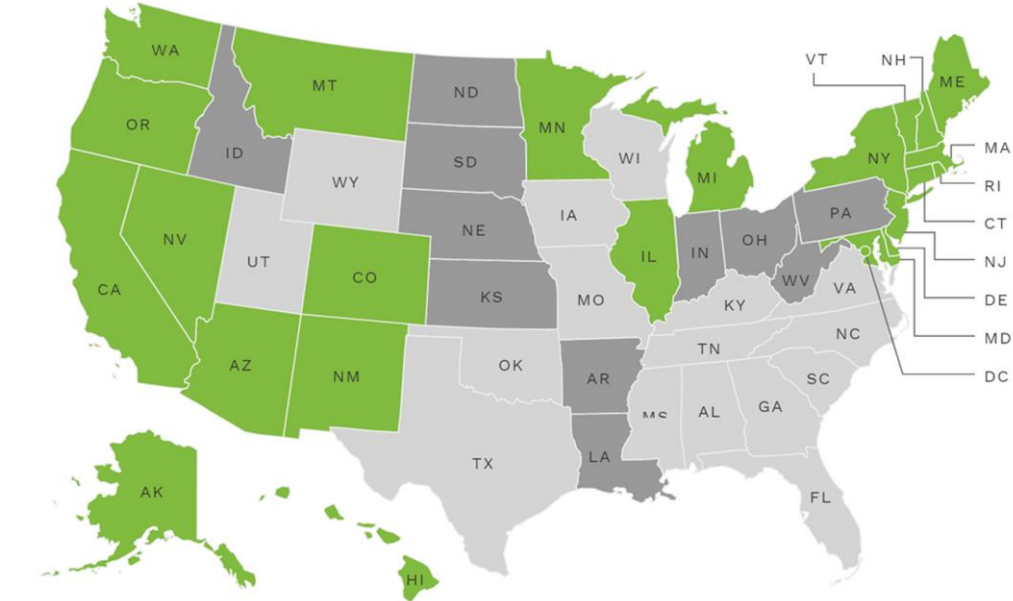
- ▶ 1990 - low profile dispensary established in SF to help those suffering with AIDS
- ▶ 1992 - San Francisco Cannabis Buyers Club established following passage of Proposition P, which had passed during the previous year - 1st public cannabis dispensary in US
- ▶ 1992 - 11% of HS seniors admit to using within previous 30 days

Modern Day History of Cannabis

- ▶ 1996 - California legalizes medical marijuana
- ▶ 2011 - 23% of HS seniors admit to using within previous 30 days
- ▶ 2013 - Colorado legalizes marijuana
- ▶ 2016 - Pennsylvania legalizes medical marijuana
- ▶ 2016 - DEA re-affirms marijuana as Schedule I
 - ▶ A drug or other substance that has high potential for abuse.
 - ▶ The drug or other substance has no currently accepted medical treatment use in the U.S.
 - ▶ There is lack of accepted safety for use of the drug or substance under medical supervision
 - ▶ Heroin, LSD, Ecstasy/MDMA, Methaqualone, among others

33 States and Washington D.C.

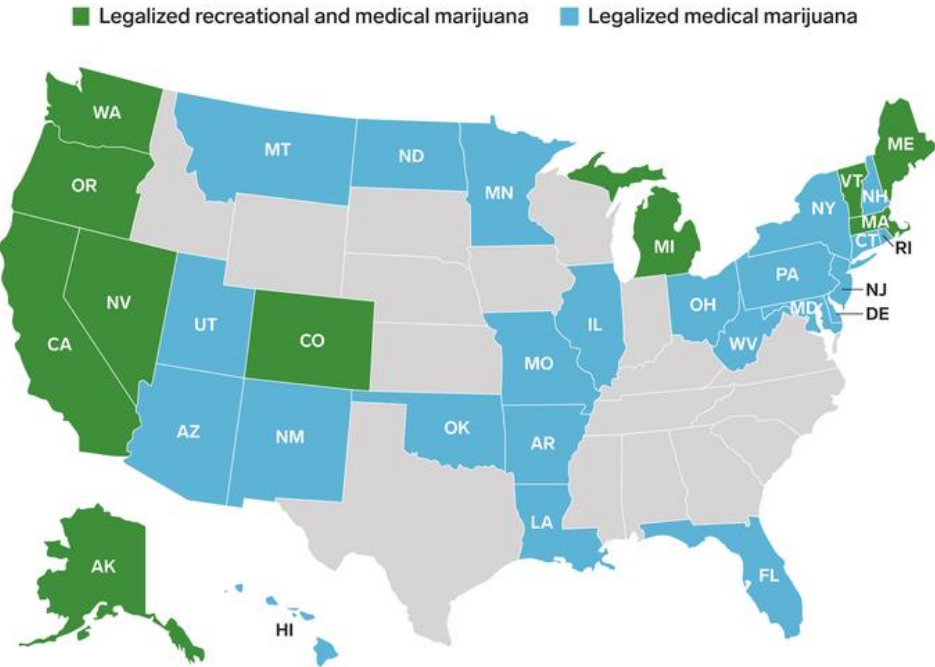
WHERE MEDICAL MARIJUANA IS LEGAL AND ILLEGAL



- MEDICAL MARIJUANA LEGAL
- MEDICAL MARIJUANA ILLEGAL
- ONLY CBD OIL LEGAL

Recreational marijuana use is legal in Alaska, Colorado, Oregon, and Washington. Sales and purchases of marijuana are illegal in D.C., but residents can grow and possess it.

States where marijuana is legal



- Legalized recreational and medical marijuana
- Legalized medical marijuana

Jeff Sessions

**GOOD PEOPLE
DON'T SMOKE
MARIJUANA**

-JEFF SESSIONS

TRUMP'S ATTORNEY GENERAL PICK



MassRoots

Cole Memo - guidance; not a law

- ▶ August 29, 2013
 - ▶ Preventing distribution to minors
 - ▶ Preventing revenue from sale to criminal enterprises
 - ▶ Preventing diversion to states where not legal
 - ▶ Preventing state-authorized MJ activity as a cover or pretext to illicit drug activity
 - ▶ Preventing violence and the use of firearms in the cultivation and distribution
 - ▶ Preventing drugged driving
 - ▶ Preventing growth on public lands
 - ▶ Preventing MJ possession on federal property
- ▶ Rescinded by Jeff Sessions January 4, 2018

House Resolution (H.R.) 2028

▶ Rohrbacher - Blumenauer Amendment

- ▶ Passed in 2014
- ▶ “The DOJ may not use any funds to prevent implementation of medical marijuana laws by various states and territories.”
- ▶ Became law as part of an omnibus spending bill
- ▶ Must be renewed each fiscal year

2003 152-273

2014 219-189

2015 242-186

Cannabis Strains

Indica

- ▶ Relaxing
 - ▶ Sedating
 - ▶ Insomnia
 - ▶ Pain relief
-
- ▶ Grape Ape/Bubba Kush/Northern Lights/Granddaddy Purple

Sativa

- ▶ Uplifting
 - ▶ Creativity
 - ▶ Fatigue
 - ▶ Depression
-
- ▶ Sour Diesel/Jack Herer/Lemon Haze/Blue Dream

Cannabis Constituents

Cannabinoids

- ▶ THC
- ▶ CBD (Cannabidiol)

Terpenoids/Terpenes

- ▶ Aromatic, organic hydrocarbons
- ▶ Present in essential oils manufactured by secretory cells located on the part of the plant called *trichomes*.
- ▶ Scent, taste and medicinal applications
 - ▶ Alpha-, beta-pinene
 - ▶ Limonene
 - ▶ Myrcene
 - ▶ Beta-caryophyllene

Cannabis Constituents - Phytocannabinoids

THC (tetrahydrocannabinol)

- ▶ Delta-9-THCA
- ▶ Manufactured within trichomes
- ▶ Most abundant cannabinoid
- ▶ Intoxicating properties
- ▶ Exposure to heat over time required to convert THCA to THC
- ▶ Interacts with both CB1 and CB2 receptors
- ▶ Anti-inflammatory
- ▶ Analgesia
- ▶ Neuroprotective
- ▶ Appetite stimulant
- ▶ Associated with reduction
 - ▶ Intraocular pressure
 - ▶ Spasticity
 - ▶ Muscle tension

Cannabis Constituents - Phytocannabinoids

CBD (Cannabidiol)

- ▶ One of 113 active cannabinoids
- ▶ Manufactured within trichomes
- ▶ Represents approximately 40% of the cannabis plant extract
- ▶ No definite psychoactive properties
- ▶ Low affinity for CB1 and CB2 receptors
- ▶ CB1 and CB2 antagonist
- ▶ 5-HT partial agonist
- ▶ Neuroprotective
- ▶ Antidepressant
- ▶ Anxiolytic
- ▶ Analgesic (neuropathic pain)
- ▶ Addiction treatment
- ▶ Anti-inflammatory
- ▶ Anticonvulsant

Cannabis Constituents - Terpenoids/Terpenes

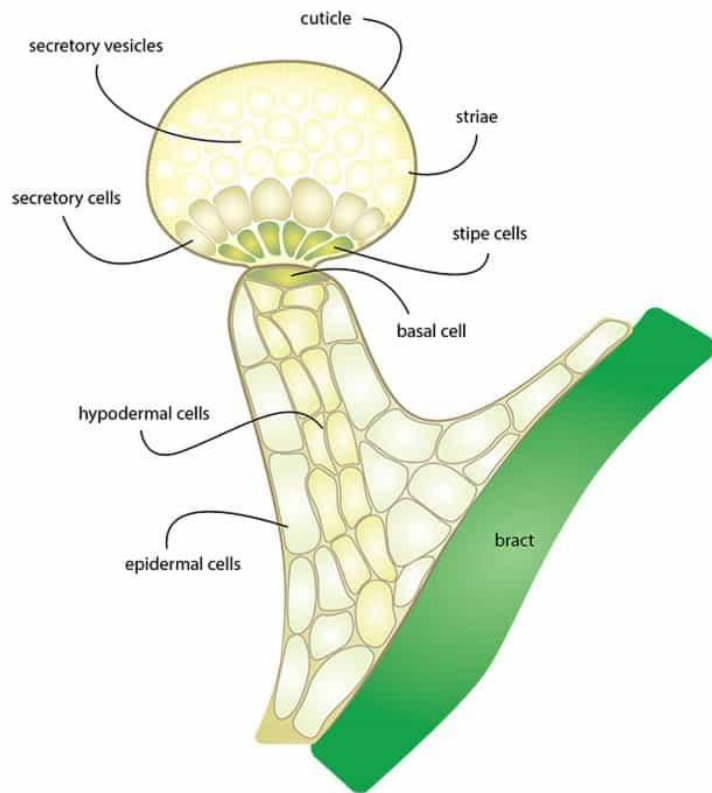
- ▶ Found in all spices, fruits and vegetables
 - ▶ Aromatic source of all essential plant oils
- ▶ FDA: safe (used as additives)
- ▶ Pharmacologically active
- ▶ Synergistic with cannabinoids
- ▶ Manufactured within trichomes



Cannabis Constituents - Terpenoids/Terpenes



Cannabis Constituents - Terpenoids/Terpenes



Terpenoids/Terpenes

Over 200 produced by cannabis

- ▶ Alpha pinene
 - ▶ Beta pinene
 - ▶ Myrcene
 - ▶ Cis-ocimene
 - ▶ Terpinolene
 - ▶ Linalool
 - ▶ Humulene
 - ▶ Limonene
 - ▶ Beta caryophyllene
- ▶ Alpha pinene
 - ▶ Pine
 - ▶ Decreases ST memory loss effects of THC
 - ▶ Antibiotic
 - ▶ Anti-inflammatory
 - ▶ Antitumor

Terpenoids/Terpenes

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- ▶ Terpinolene
- ▶ Linalool
- ▶ Humulene
- ▶ Limonene
- ▶ Beta caryophyllene
- ▶ Myrcene
 - ▶ Hops
 - ▶ Antioxidant
 - ▶ Antispasmodic
 - ▶ Analgesic
 - ▶ Enhances effects of sedative drugs

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- ▶ Terpinolene
- ▶ Linalool
- ▶ Humulene
- ▶ Limonene
- ▶ Beta caryophyllene
- ▶ Linalool
 - ▶ Lavender
 - ▶ Analgesic
 - ▶ Anxiolytic
 - ▶ Sedative
 - ▶ Anesthetic

Terpenoids/Terpenes

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- ▶ Myrcene
- ▶ Cis-ocimene
- ▶ Terpinolene
- ▶ Linalool
- ▶ Humulene
- ▶ Limonene
- ▶ Beta caryophyllene
 - ▶ Black pepper
 - ▶ Acts as cannabinoid
 - ▶ CB2 agonist
 - ▶ Potent anti-inflammatory

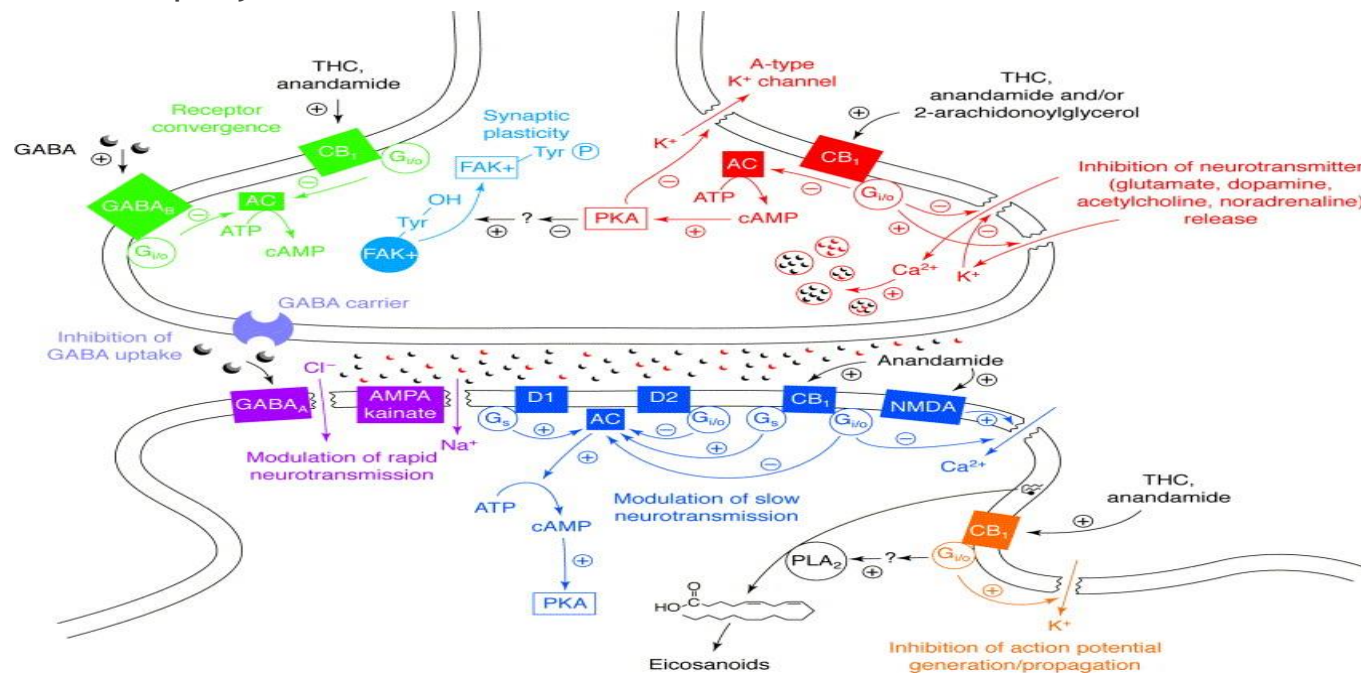
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- ▶ Humulene
- ▶ Limonene
- ▶ Beta caryophyllene
- ▶ Limonene
 - ▶ Lemons
 - ▶ Antidepressant
 - ▶ Anti-inflammatory
 - ▶ Antitumor
 - ▶ Increases the effects of THC and CBD

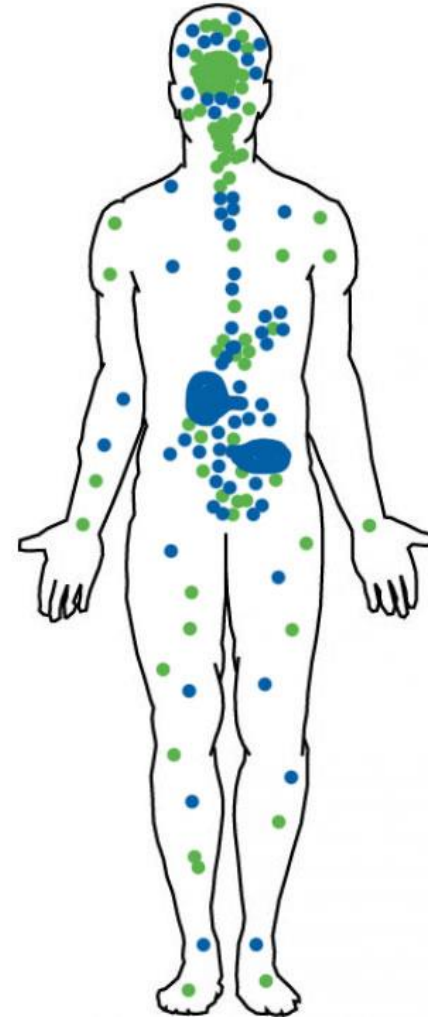
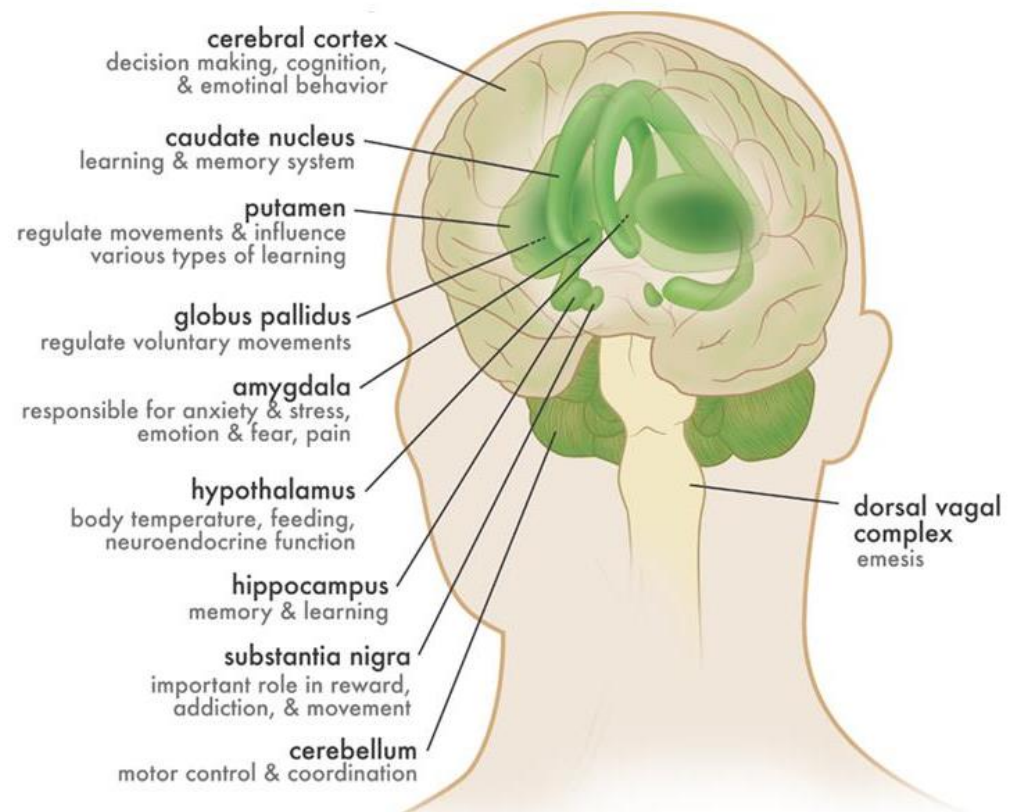
Endocannabinoid System (ECS) - need a basic understanding for MMJ to make sense

- ▶ Endogenous cannabinoids (activators, ligands, stimulators) - Anandamide (AEA) and 2-arachidonoyl glycerol (2-AG)
- ▶ Receptors: CB1 and CB2
- ▶ Additional minor receptors (promiscuous receptors) have been discovered but their associated ligands have not
- ▶ FAAH & MAGL - rapidly break down AEA and 2-AG



Endocannabinoid System (ECS)

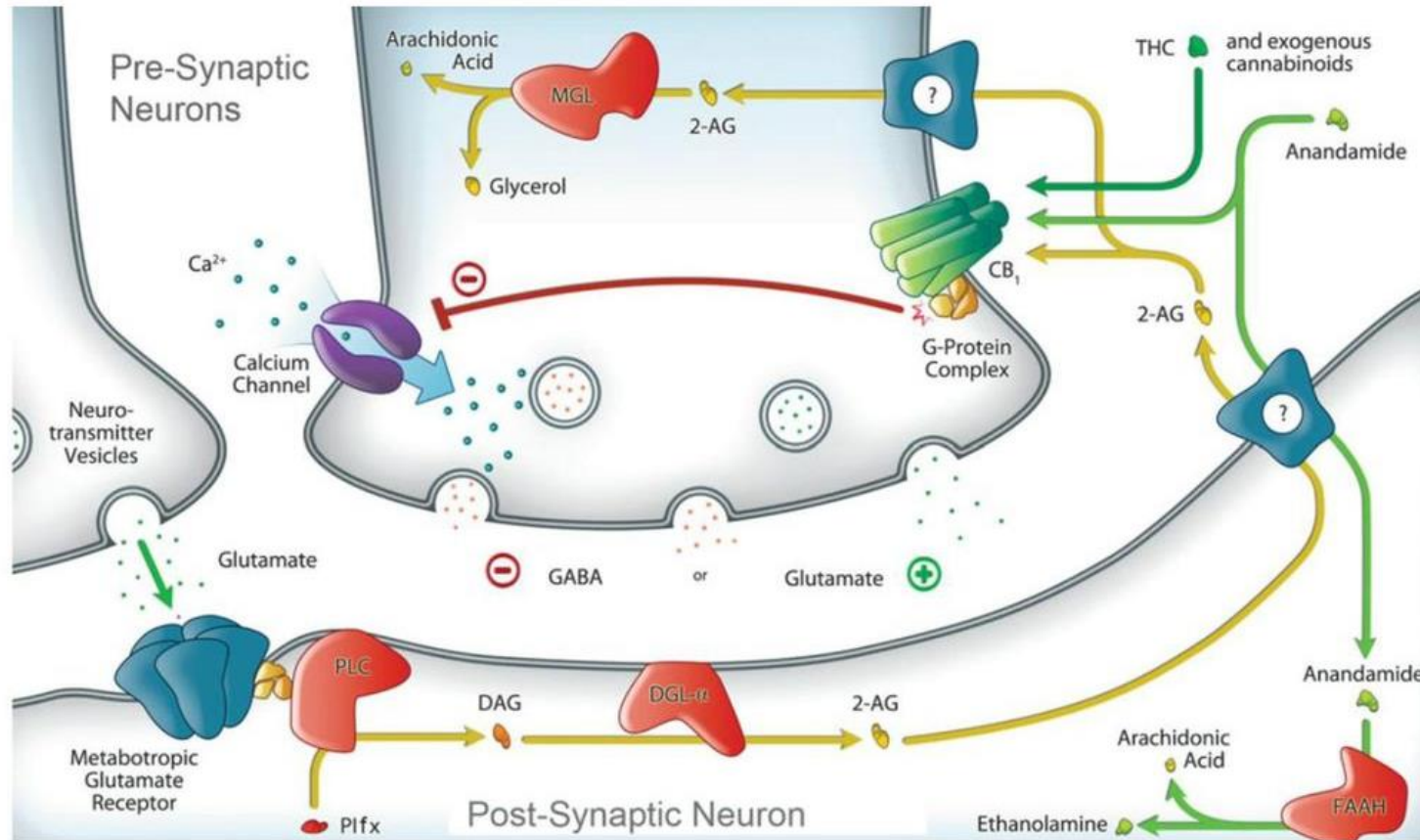
Distribution of CB1 Receptors



CB1

CB2

Most Common: Pain



Role of Cannabinoids in Pain Management, by Ethan B. Russo and Andrea G. Hohmann. T.R. Deer et al. (eds.), Comprehensive Treatment of Chronic Pain by Medical, Interventional, and Integrative Approaches.



Growth is the only evidence of life.

(John Henry Newman)

izquotes.com

GROWTH

OR

EXCUSES?



The background features abstract, overlapping geometric shapes in various shades of green, ranging from light lime to dark forest green. These shapes are primarily located on the left and right sides of the frame, leaving a large white central area. The shapes are layered, creating a sense of depth and movement.

Thank you!