



# Avoiding Chemical Slavery

# Introduction



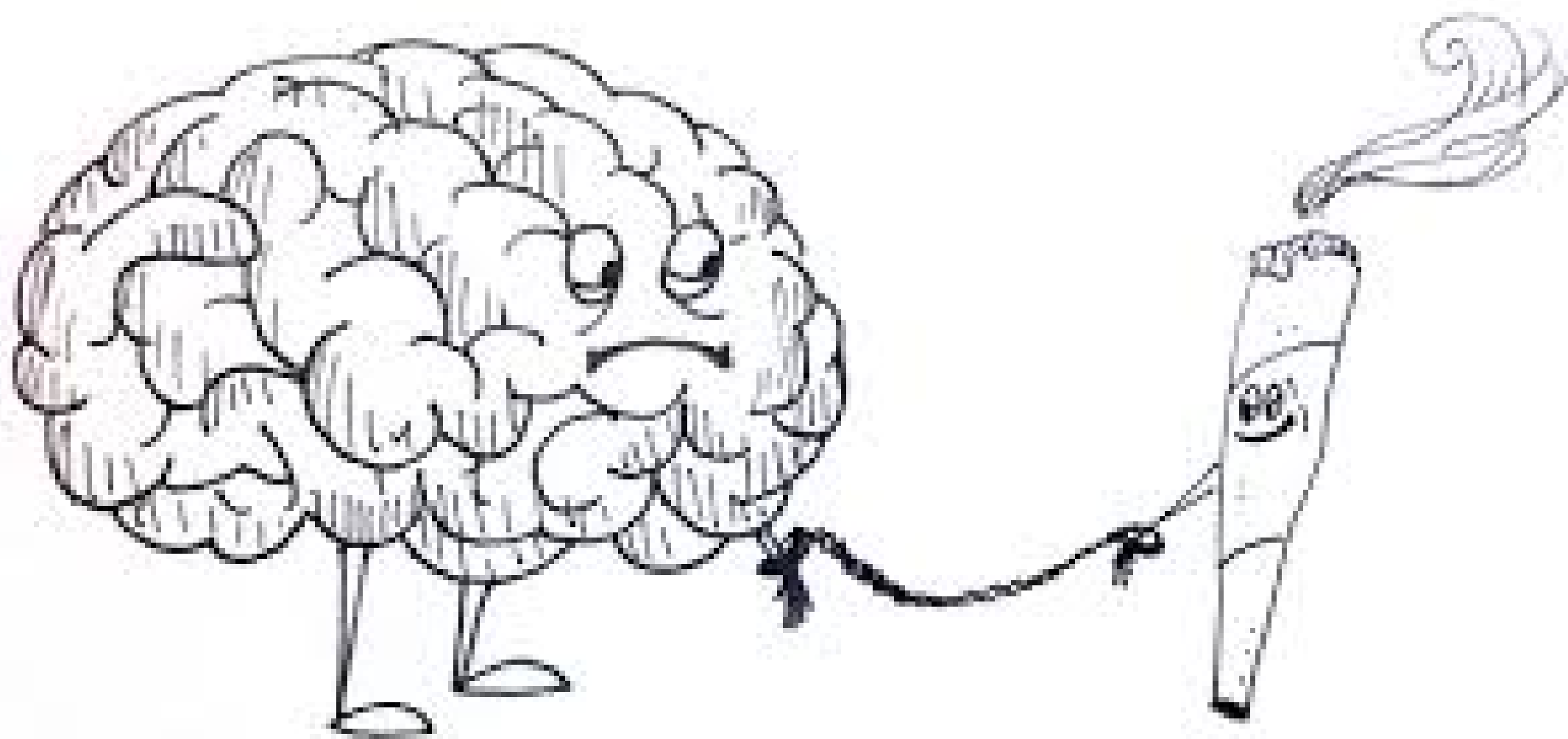


## Objectives

1. Understand basic definitions of substance dependence/abuse
2. How substance dependence works
3. How substance dependence affects learning
4. Specific on marijuana

# Substance dependence:

- Tolerance:
  - You need more of the substance to get the same effect
  - If you use the same amount, you don't get the same effect
- Withdrawal:
  - Each substance has its own characteristic withdrawal symptoms
  - Taking the substance relieves withdrawal symptoms
- Taking the substance often in larger amounts or over a longer period than was intended
- Having a persistent desire or unsuccessful efforts to cut down or control substance use



# Substance addiction

- Recurrent substance use resulting in a failure to fulfill major role obligations at work, school, or home (e.g. repeated absences or poor work performance related to substance use; substance-related absences, suspensions, or expulsions from school; neglect of children or household)
- Recurrent substance use in situations in which it is physically hazardous (e.g. driving an automobile or operating a machine when impaired)
- Recurrent substance-related legal problems (e.g. arrests for substance-related disorderly conduct)
- Continued substance use despite persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the substance (e.g. arguments with family about consequences of intoxication, physical fights, etc.)





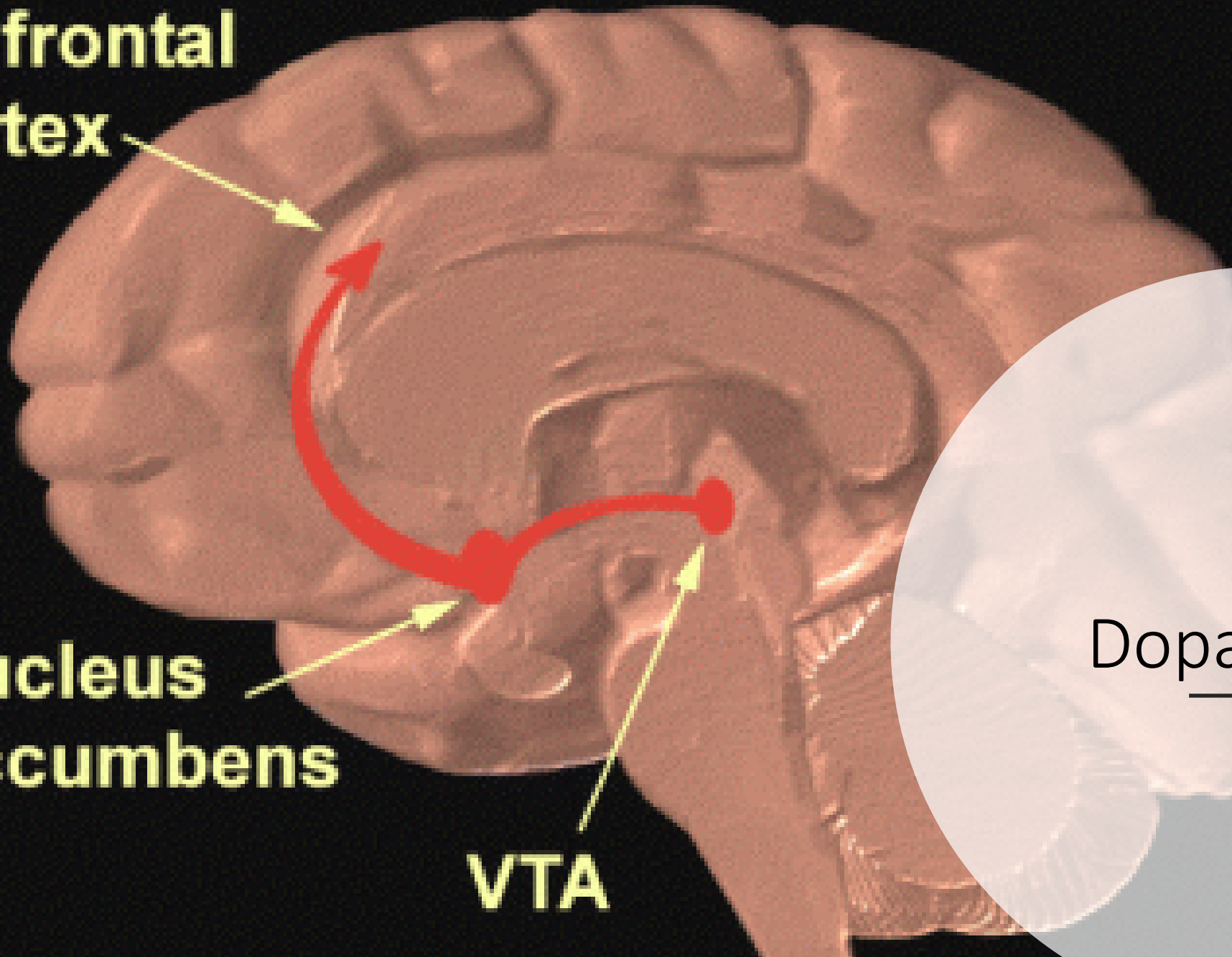


**prefrontal  
cortex**

**nucleus  
accumbens**

**VTA**

Dopamine





# Natural Rewards Elevate Dopamine Levels

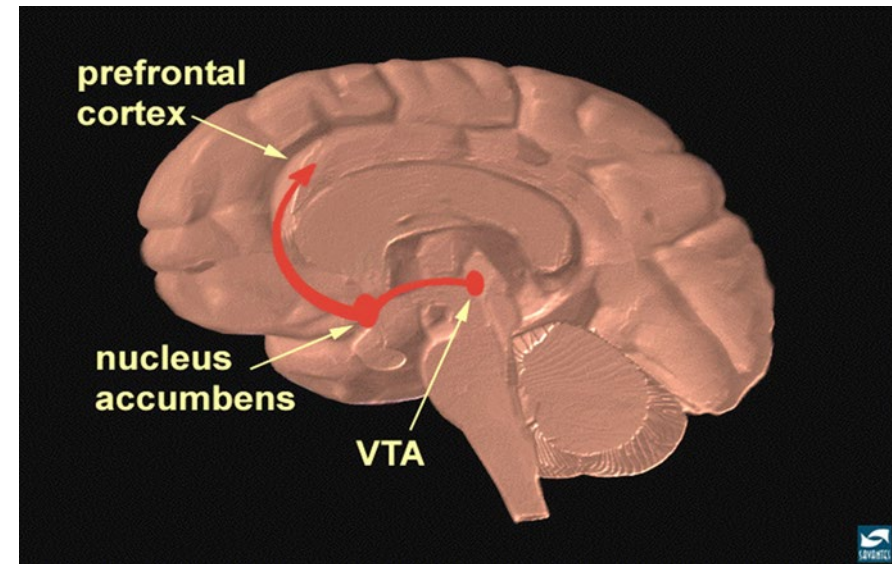


Dopamine says to your body 'I like this, do it again'

# How Does Addiction Happen?

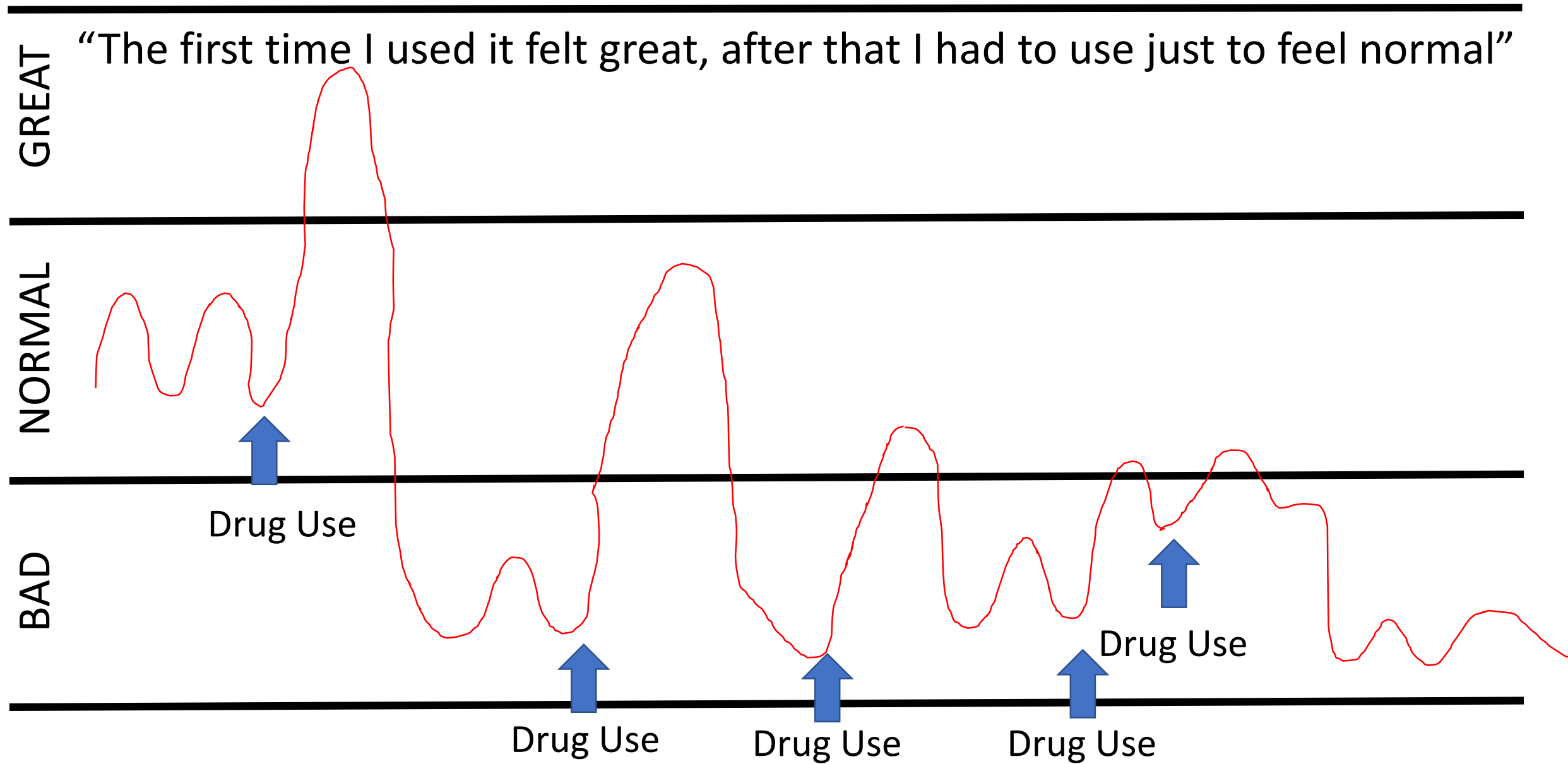
## Hijacked Dopamine System

Addictive drugs or activities produce large surges of dopamine, reinforcing the connection between drug use and the resulting pleasure. Large surges of dopamine "teach" the brain to seek drugs at the expense of other, healthier goals and activities.





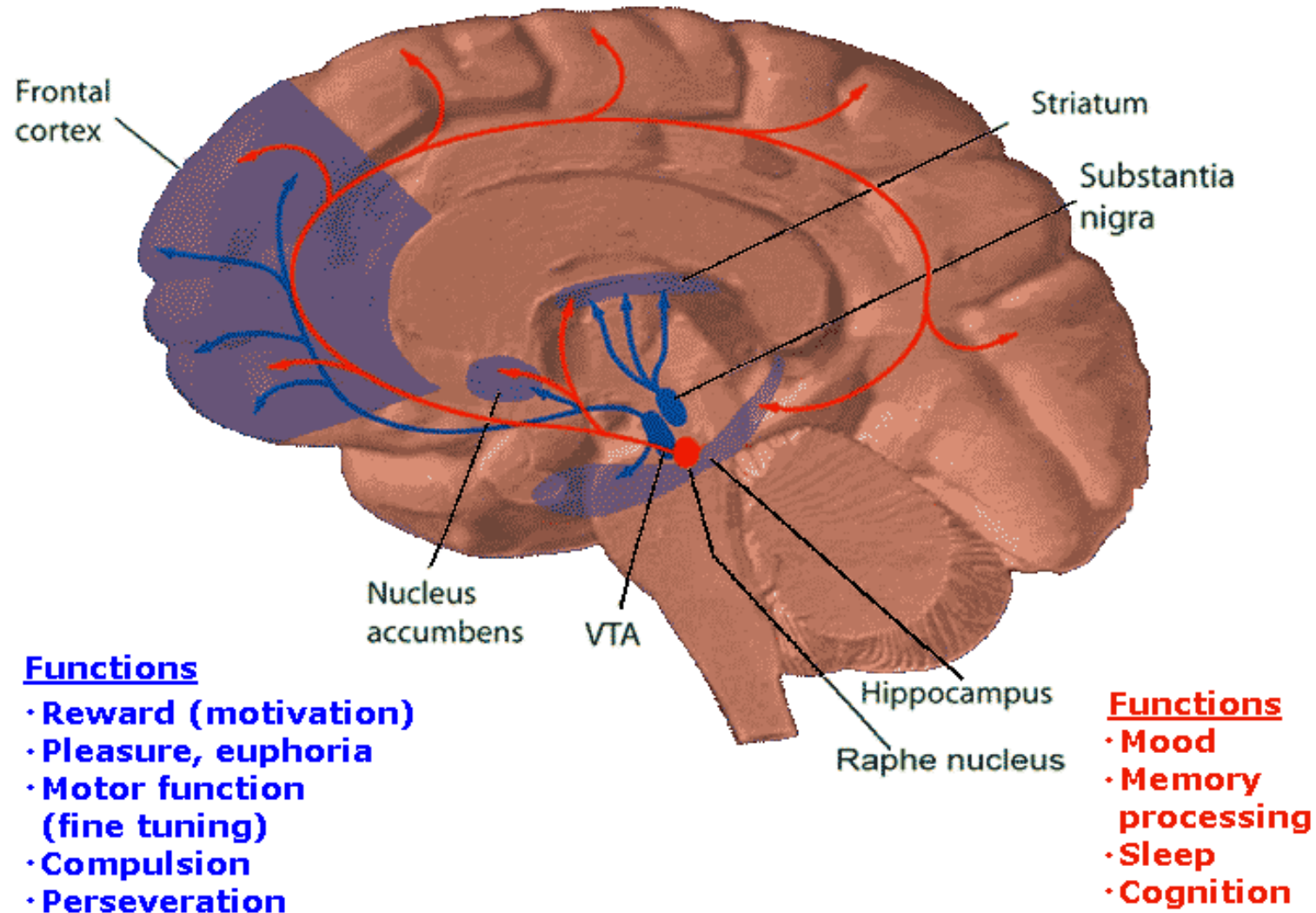
# BRAIN DOPAMINE LEVELS IN ADDICTION



# The brain is hard wired to remember and control things

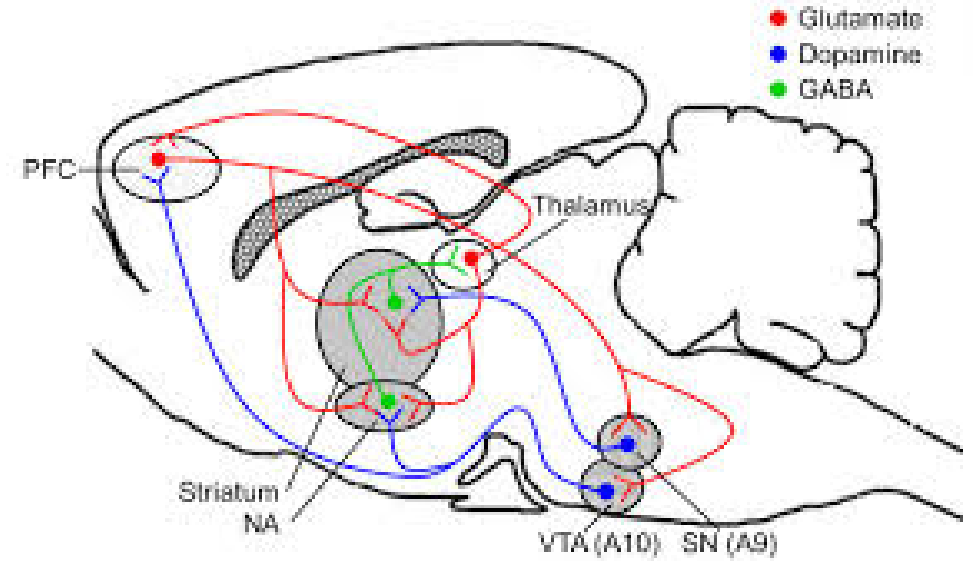
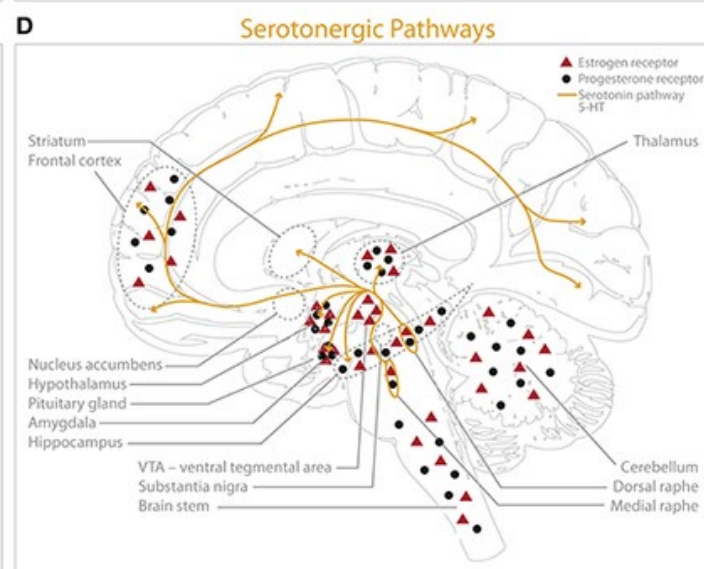
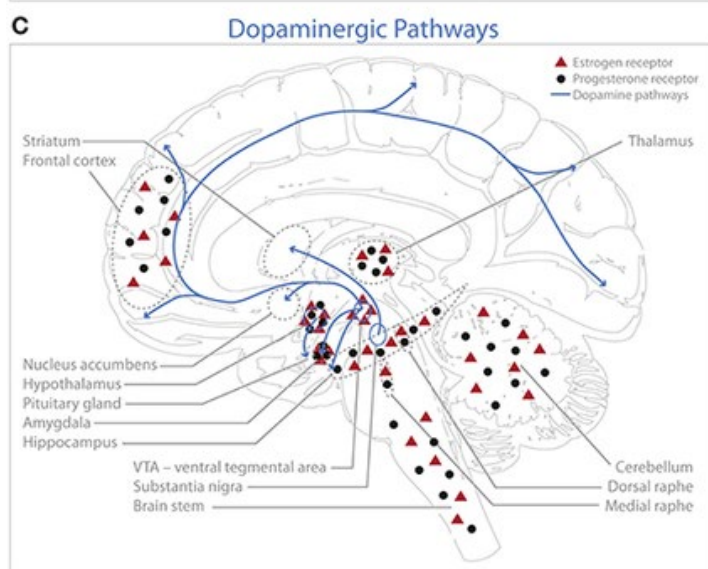
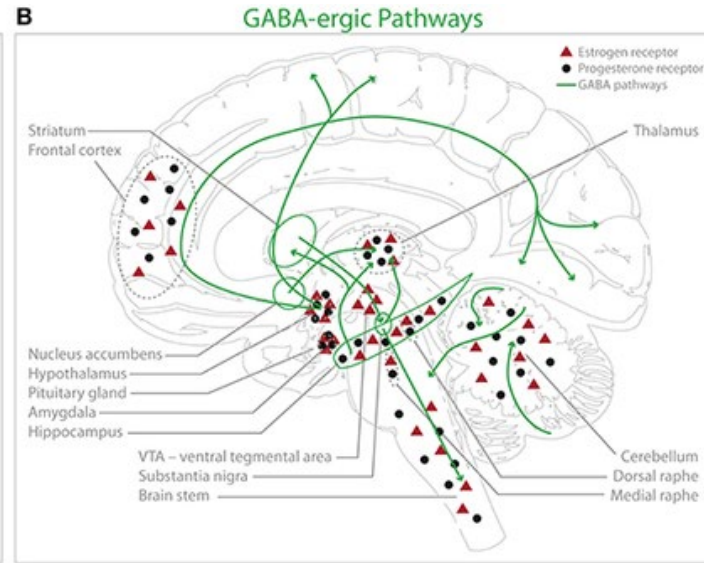
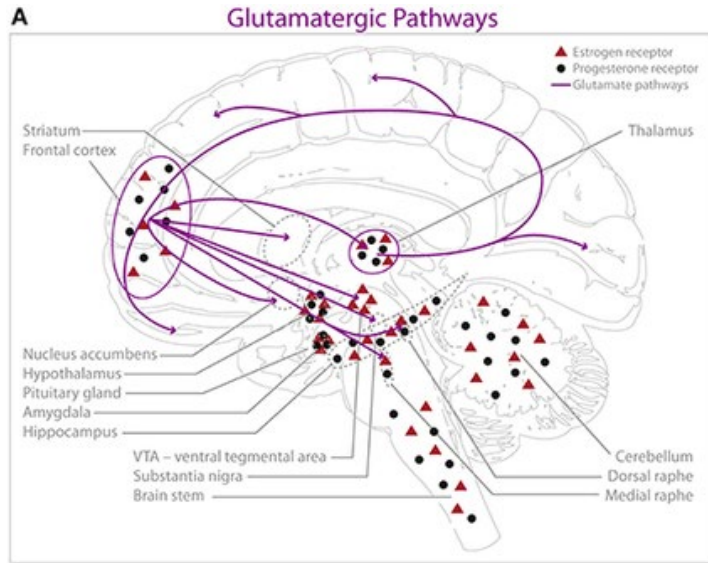
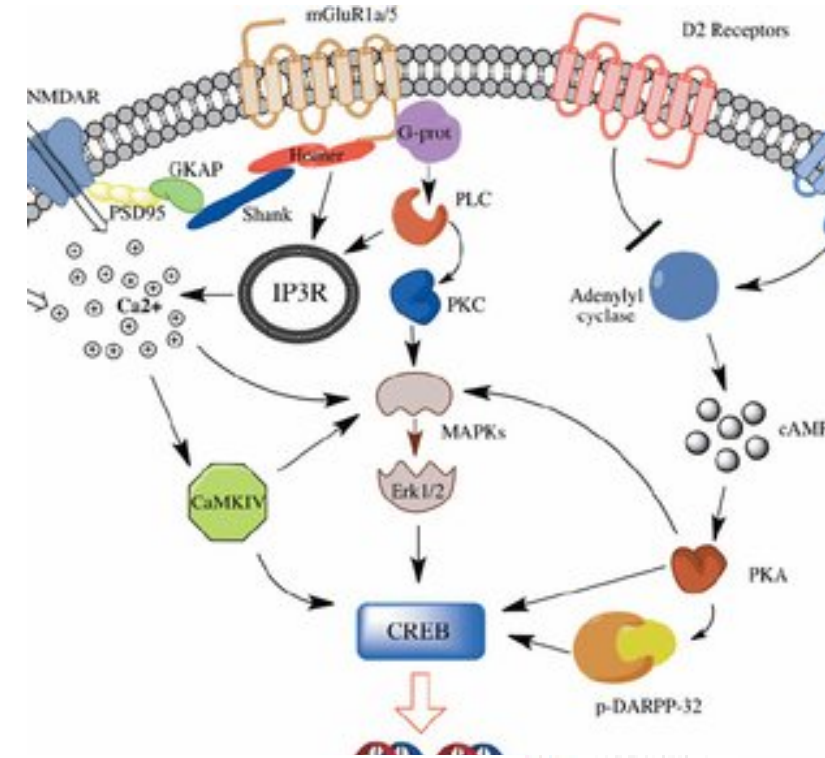
## Dopamine Pathways

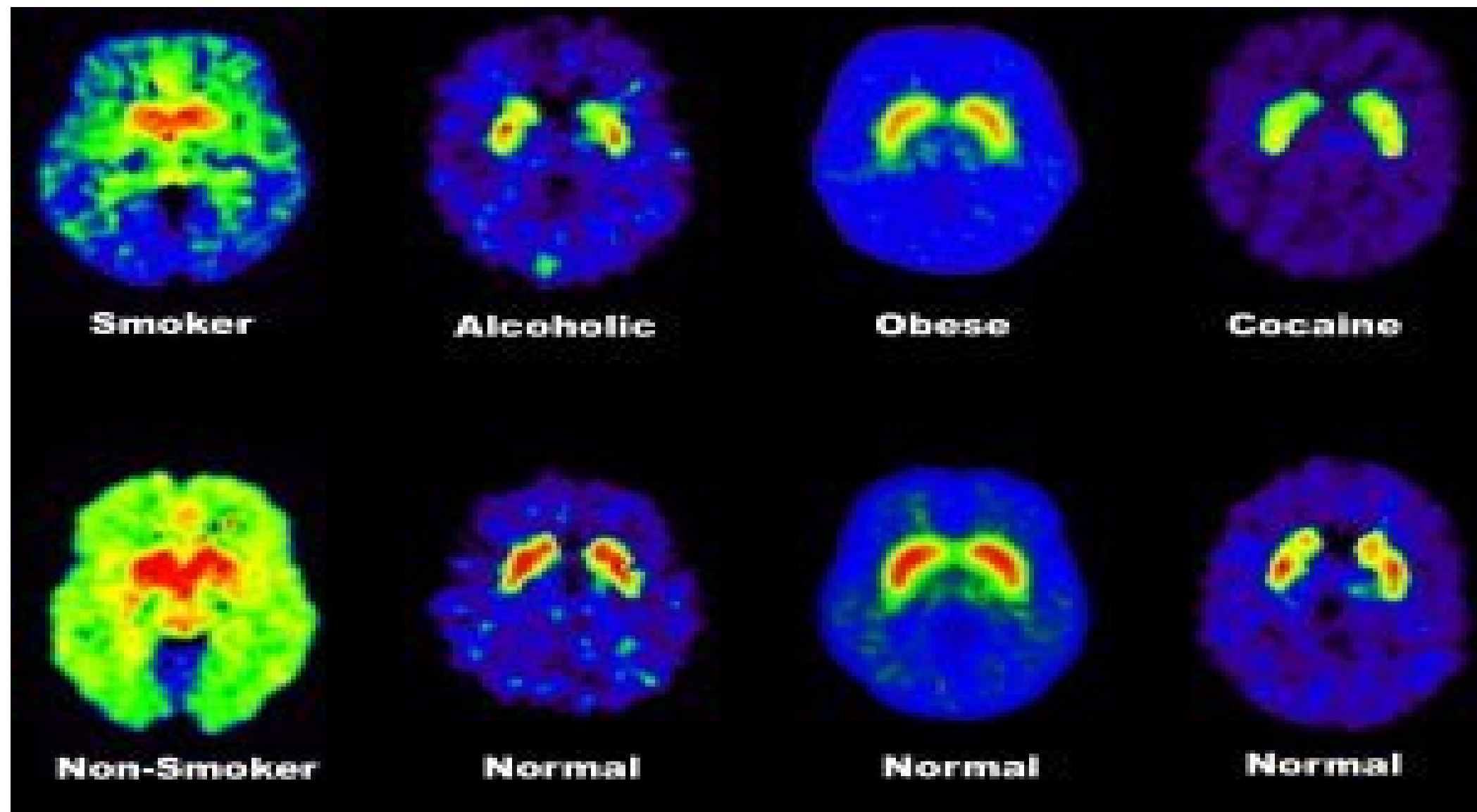
## Serotonin Pathways





# Just so you're aware- yes its more complicated than that...





YOU are business- every time you use,  
you lose money and they make money

GREAT

NORMAL

BAD

Drug Use

Drug Use

Drug Use

Drug Use

Drug Use

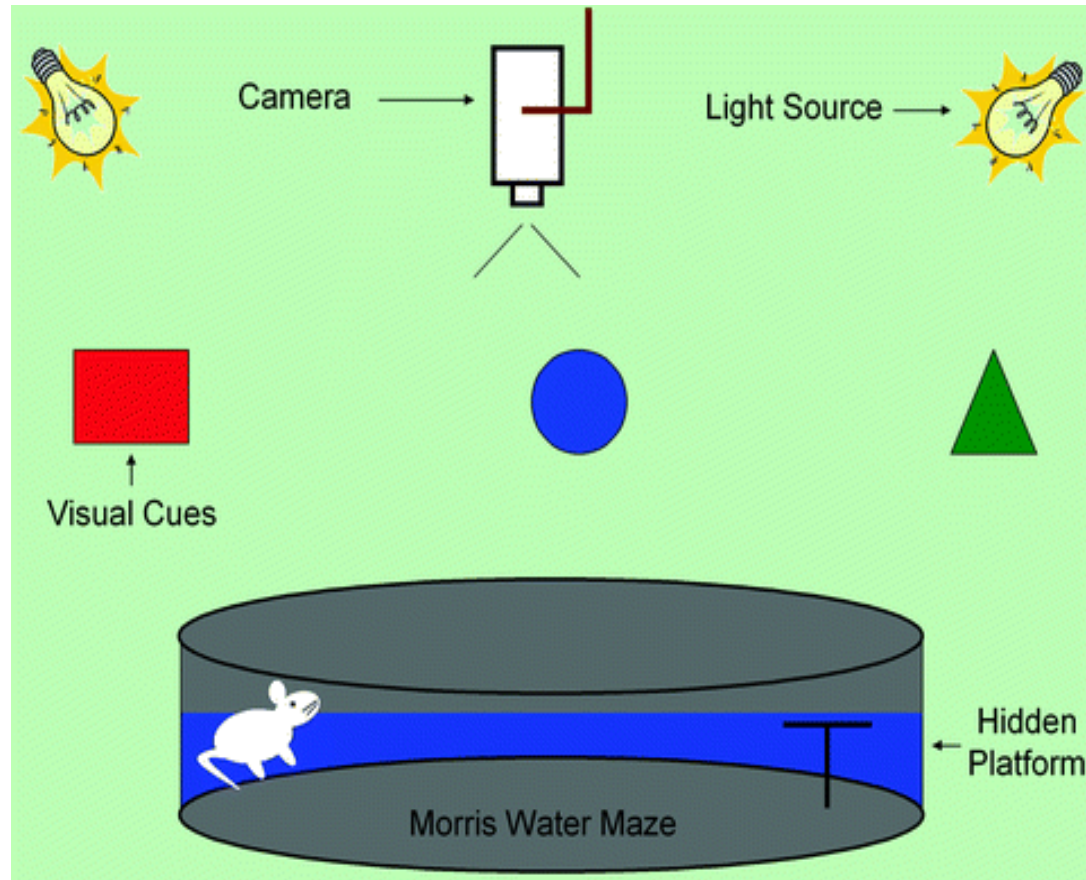






Effects on  
Learning

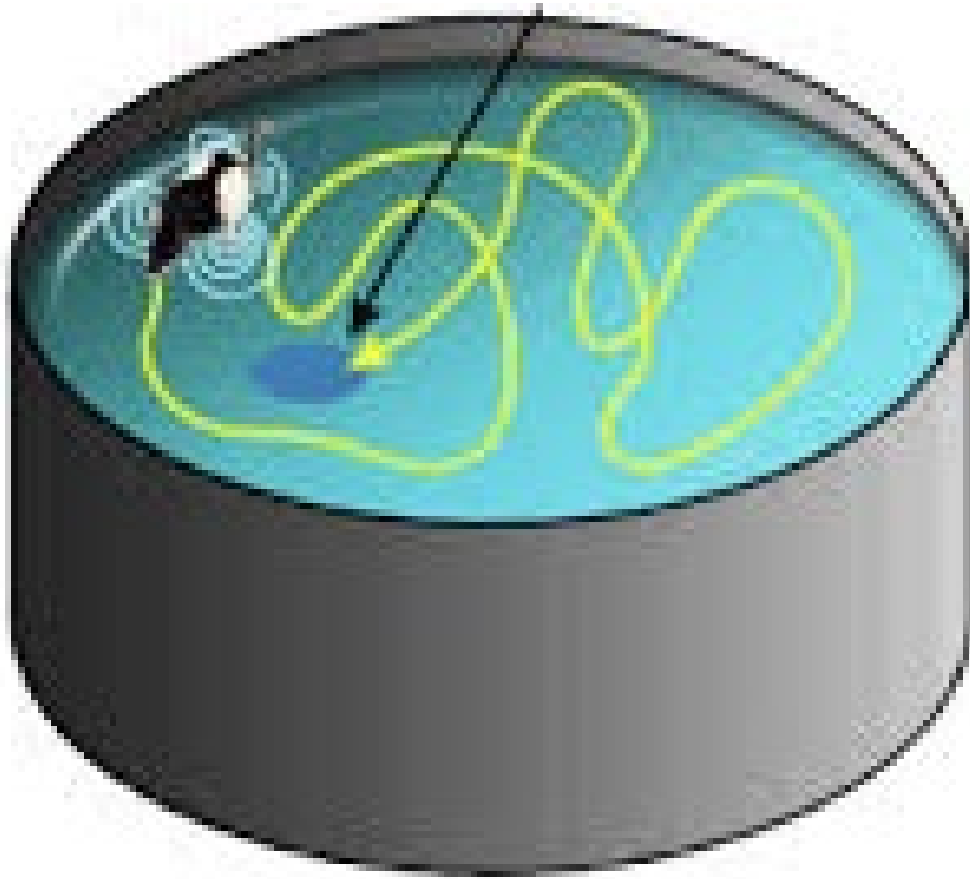
# Learning Test



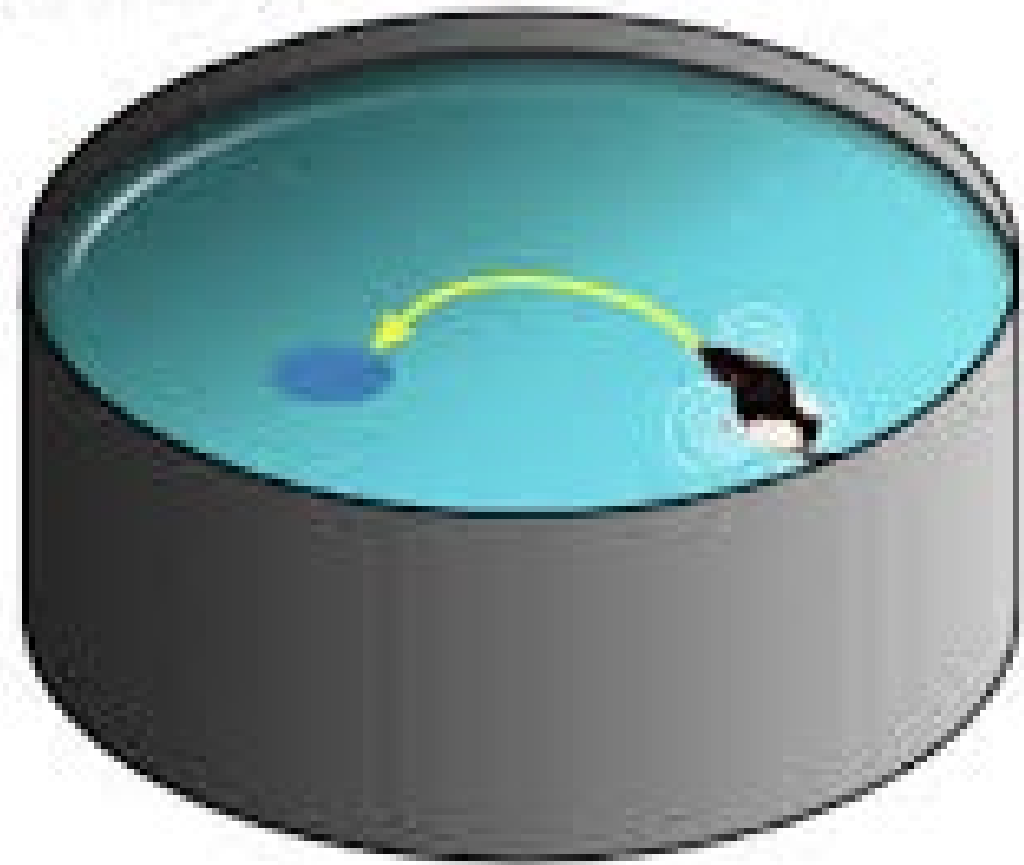


# Learning Test

Platform



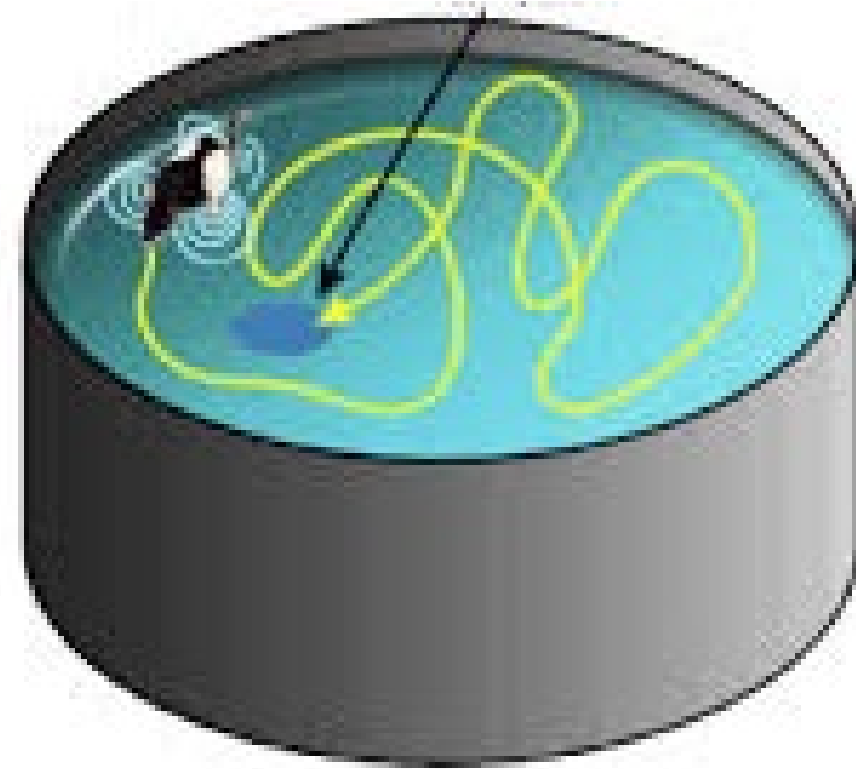
First Time



Second Time



Drugs and  
Learning

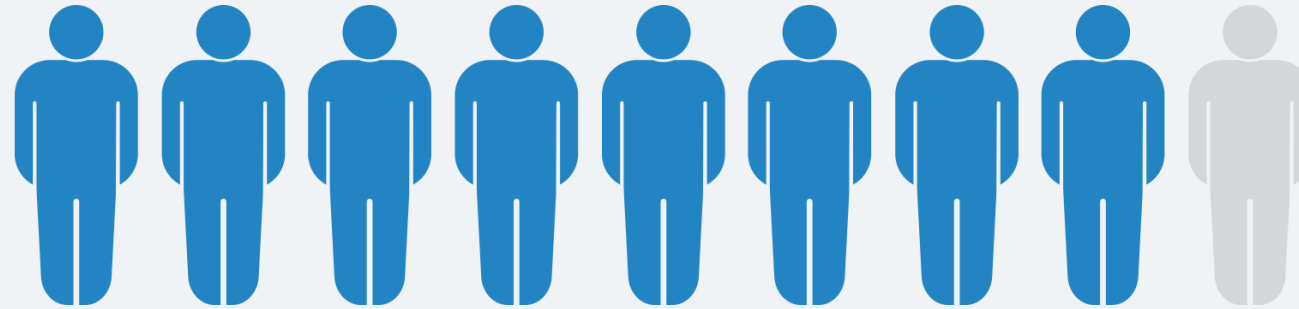


After drug use, 1<sup>st</sup>, 2<sup>nd</sup>, every time,  
they can't find the platform



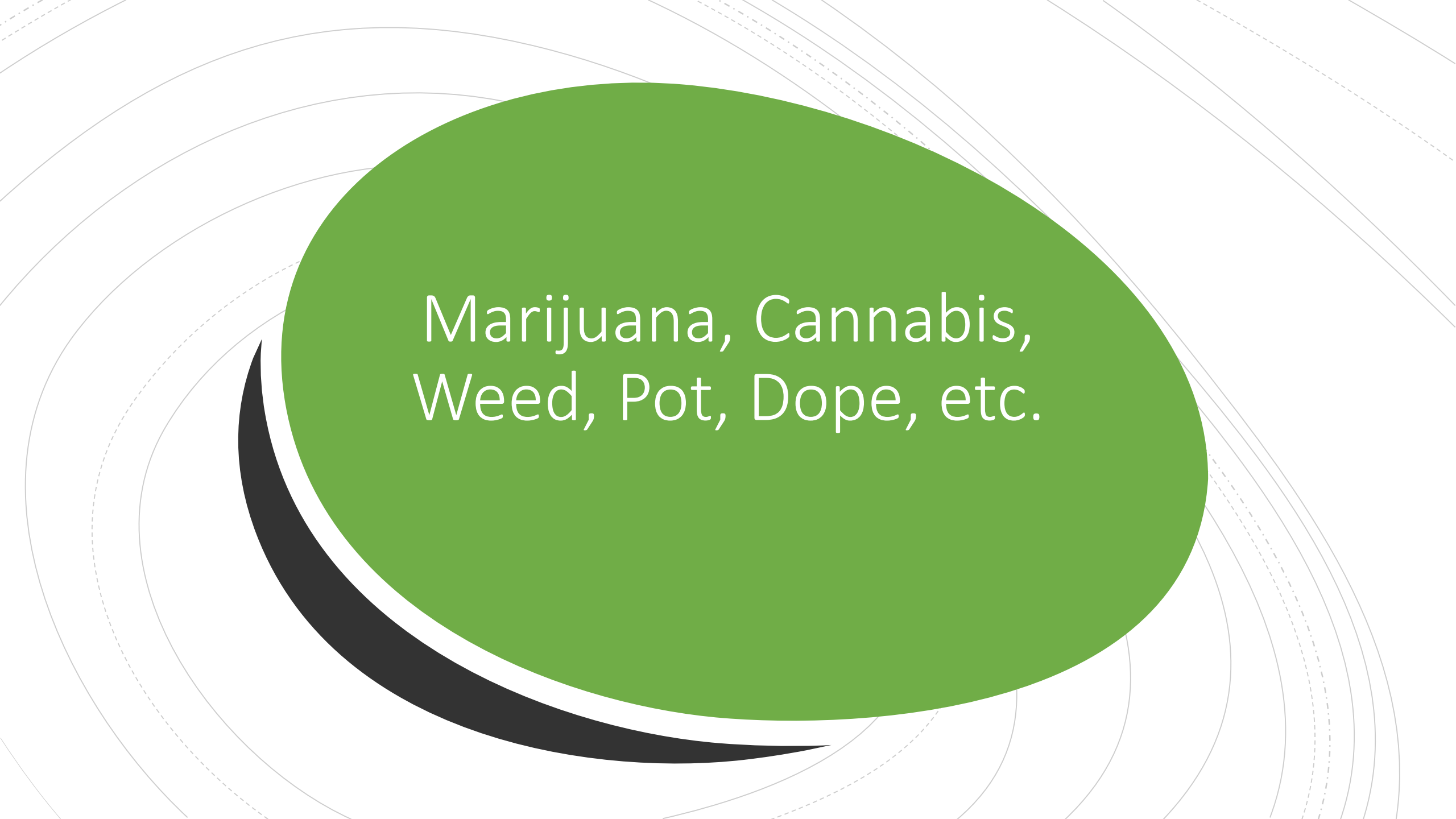
## **Hippocampus and Neurogenesis (making new nerves in the brain)**

Alcohol, cocaine, methamphetamines, marijuana, heroin, and nicotine negatively effect the Hippocampus, decrease neurogenesis and impair the ability to learn new things



9 OUT OF 10

PEOPLE WITH SUBSTANCE PROBLEMS  
STARTED USING BY AGE 18

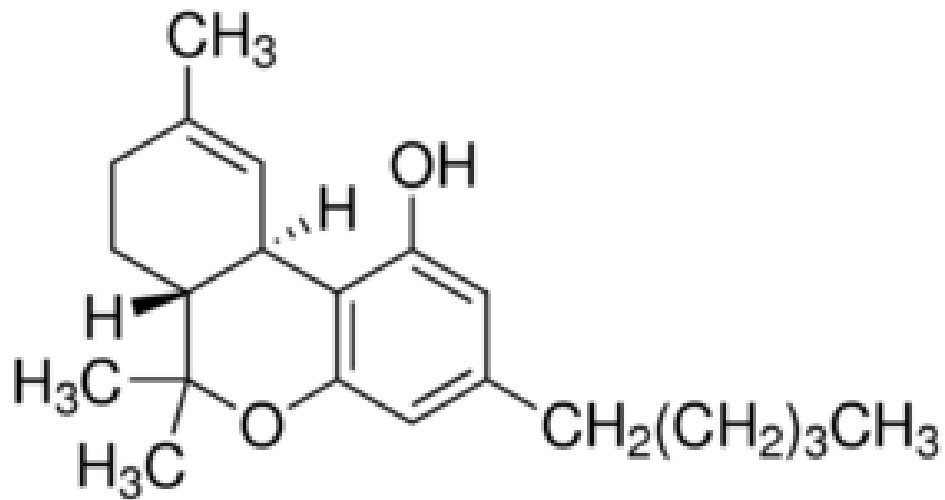
The background features a series of concentric circles in light gray, some solid and some dashed, creating a ripple effect. A large, solid green oval is positioned in the center-right of the frame. A thick, dark gray curved line sweeps from the bottom left towards the green oval.

Marijuana, Cannabis,  
Weed, Pot, Dope, etc.

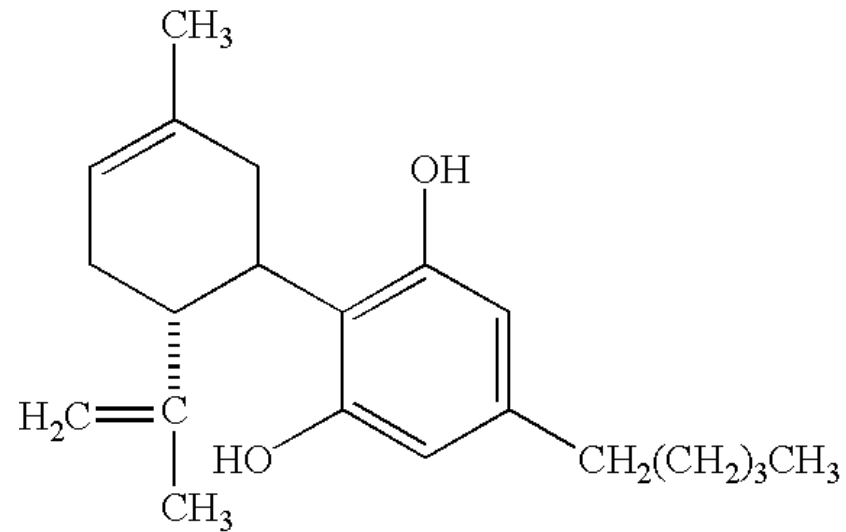


# Cannabis- a complex plant.

- Cannabis has over 483 known compounds in it
- The most commonly known are tetrahydrocannabinol or THC and cannabidiol or CBD



Tetrahydrocannabidiol



Cannabidiol (CBD)



# Cannabis Plant Strains



## Indica

**Morphology:** Short and bushy; suitable for indoor gardens

**Geographical Origins:** Areas between 30 to 50 degrees latitude.

**Effects:** Tend to be sedating and relaxing with full-body effects

**Symptom Relief:** Anxiety, insomnia, pain, muscle spasms



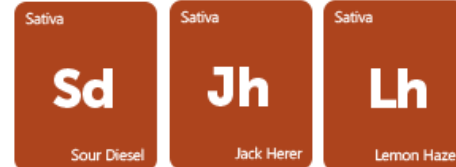
## Sativa

**Morphology:** Tall and thin; suitable for outdoor gardens

**Geographical Origins:** Areas between 0 and 30 degrees latitude

**Effects:** Tend to be uplifting and creative with cerebrally-focused effects

**Symptom Relief:** Depression, ADD, fatigue, mood disorders



Indica plants tend to have **high THC:CBD** ratios

Sativa plants tend to have **high CBD:THC** ratios.



# Cannabinoid Receptors in the Human Body

- Cannabinoid molecules bind to receptors in our body that are part of a broader endocannabinoid system.
- There are receptors throughout the body- in the brain, gastrointestinal system (stomach, intestines), reproductive system, and immune tissues. The 2 main known receptors are the CB1 and CB2 receptors. CB1 receptors are mainly located in the brain and CB2 in the rest of the body. THC binds with greatest affinity to CB1 receptors.
- Our body produces its own natural molecule that utilizes this system receptors- “Anandamide”.
- As with other systems within the body, when you modulate this system you can create physical effects. This is both by targeting the receptor and with blocking the receptor.



# Cannabis potency has dramatically increased

- Current commercialized cannabis is near 20% Tetrahydrocannabinol
- In the 1980's concentration was <2%. This 10-fold increase in potency does not include other formulations such as oils, waxes, and dabs which can reach 80-90% THC



2-3% to 20% in plant growth THC  
Decreasing amounts of CBD



# Formulations

Joint



Bong



Vaping



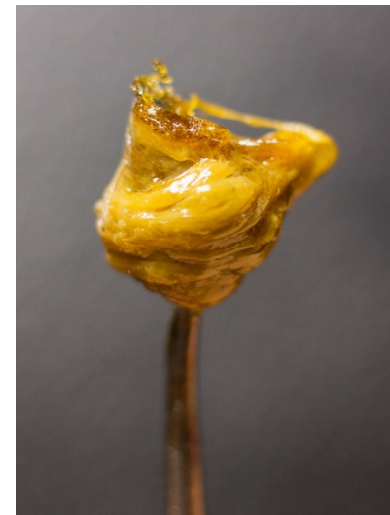
Oil



Shatter



Dabbing



You can make stuff with the oil...





# Advertising?

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-------------------------------------------------------------------	----------------------------------------------------------------	---------------------	--------------------------------------------

**RECREATIONAL SALES**

15% OFF SPREAD HEADZ	15% OFF SELECT LIVE RESIN	15% OFF LOVE'S OVEN EDIBLES
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# Well established adverse health effects of cannabis use

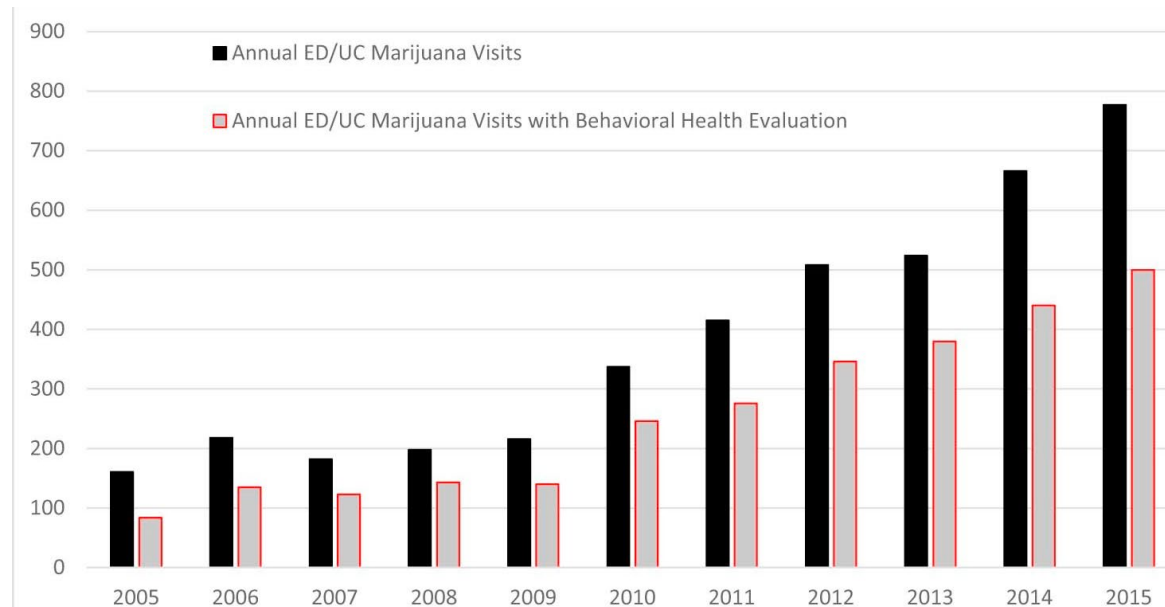
- ➡ • Psychosis
- ➡ • Suicide
- Adverse effects on brain structure/function
  - Decreased decision making capacity, learning, memory, social interaction, IQ, increases in impulsivity, anxiety, depression, abnormalities in habits/routines
- ➡ • Links to other substance abuse
- Dependence/Withdrawal
- ➡ • Cannabinoid hyperemesis syndrome
- Poor respiratory and Cardiovascular outcomes
- Low birth weight/growth restriction, preterm labor, developmental problems in baby if used during pregnancy
- Decreased ability to operate a motor vehicle
- Burn injuries in preparation of concentrates
- Still others... (pediatric exposures, contaminants/pesticides, epigenomics, ...)

# Quick summary

- Marijuana damages your brain- it can make you become psychotic, make it difficult to think and make good decisions, and make you more likely to kill yourself
- Marijuana can prime your brain to make you more likely to experience addiction
- Marijuana can make you throw up- a lot. Medications can't fix it either
- Marijuana makes it so you can't react as soon and makes you less aware of what is happening around you- marijuana users are more likely to hurt themselves or somebody else in a car accident
- Marijuana use costs the healthcare system (everybody who pays taxes) a lot of money

# Majority of visits with cannabis get a behavioral health evaluation

Number ED/UC visits with cannabis associated ICD codes or positive urine drug screens by adolescents aged  $\geq 13$  and  $< 21$  by year to a tertiary care children's hospital system in Colorado by year



Wang GS, Davies SD, Halmo LS, Sass A, Mistry RD. Impact of marijuana legalization in Colorado on adolescent emergency and urgent care visits. *Journal of Adolescent Health* 2018. Available online 30 March 2018.

Table 1

Percentage and prevalence of the top ten primary diagnoses of emergency department (ED) visits with marijuana-related billing codes<sup>a</sup> compared to ED visits without marijuana-related billing codes in Colorado from 2011 through September 2015 (N = 7,432,254).<sup>c</sup>

	Prevalence of primary diagnoses of ED visits, N (%)					
Primary diagnosis categories	With marijuana- related codes <sup>a</sup>		Without marijuana- related codes		Prevalence ratio (95% CI)	
Mental illness	17,802	(29.1)	432,161	(5.8)	5.03	(4.96–5.09)
Symptoms, signs, and ill-defined conditions and factors influencing health status	8472	(13.9)	1,083,907	(14.5)	0.95	(0.93–0.97)
Injury and poisoning	7032	(11.5)	1,473,427	(19.8)	0.58	(0.57–0.59)
Marijuana-associated codes <sup>b</sup>	5087	(8.3)	0	(0.00)	–	–
Diseases of the nervous system and sense organs	4251	(7.0)	739,970	(9.9)	0.70	(0.68–0.72)
Diseases of the respiratory system	3508	(5.7)	1,003,357	(13.5)	0.43	(0.41–0.44)
Diseases of the digestive system	3533	(5.8)	459,355	(6.2)	0.94	(0.90–0.96)
Diseases of the circulatory system	2914	(4.8)	426,082	(5.7)	0.84	(0.80–0.86)
Diseases of the musculoskeletal system and connective tissue	2612	(4.3)	496,555	(6.7)	0.64	(0.61–0.66)
Diseases of the genitourinary system	1995	(3.3)	436,173	(5.8)	0.56	(0.53–0.58)
Unclassified codes and E codes	1075	(1.8)	62,688	(0.8)	2.09	(1.97–2.22)

<sup>a</sup>Marijuana-related ICD-9-CM codes included 304.3, 305.2, 969.6, and E854.1 in any of the listed 30 diagnosis codes.

<sup>b</sup>Marijuana-related ICD-9-CM codes included 304.3, 305.2, 969.6, and E854.1 in the primary diagnosis. These ED visits were excluded prevalence ratio calculations.

<sup>c</sup>Data details: Colorado Hospital Association (CHA), 2015 data is January 1, 2015 through September 30, 2015. NA = data not available. An individual can be represented more than once in the data; therefore, the rate is hospitalizations or ED visits with marijuana-related billing codes per 100,000 hospitalizations or ED visits.

# My personal psychosis cases...



- 22 yo M, no previous past medical/psychiatric history presents after reportedly trying to hang himself by a ceiling fan with his bedsheet at a motel
- Manager found him, called 911, police/EMS brought him in
- Stated was smoking weed 'all day every day' in his motel room and that he was seeing ghosts that told him to kill himself
- No prior psychiatric history, no other medical problems, only relevant finding on urine drug screen (UDS) was positive for cannabis only

# My personal psychosis cases



- 18 yo M who was smoking marijuana was at an inspirational camp prior to getting ready to play college football on scholarship
- No other past medical/psychiatric history
- Rapidly left the conference in his car driving over 100 mph until relative caught up to him after car had a mechanical issue
- Brought in to PW ED speaking nonsensical, could not answer questions. After a week of inpatient psychiatric treatment, staff could still not get him to keep his clothes on
- Only positive on lab work was UDS positive for cannabis. (Family stated was also previously using magic mushrooms and dealing with anxiety issues)

# My personal psychosis cases

- 16 yo M smoking marijuana brought in after he reportedly tried to assault somebody, had then taken a utility knife and made numerous cuts up and down his arm. Took 48 stitches and well over another 50 steri strips to close the number of cuts
- Did not respond to any external stimuli, stared blankly ahead throughout the entirety of the repair
- No prior medical problems, no psychiatric history
- UDS only positive for cannabis





# Numerous more...

- I had never seen cases like this before. Urine drug screens only positive for marijuana. No previous psychiatric history. Seems to span age ranges, gender, ethnicity, socioeconomic circumstances, other medical history. Unifying theme is that they all use marijuana.



“Am I just paranoid or am I just stoned?”- Greenday

- Large reviews including reviews by National Academies of Sciences, Engineering, and Medicine, World Health Organization, and Colorado Department of Public Health and Environment have all independently come to the same conclusion
- “There is substantial evidence of a statistical association between cannabis use and the development of schizophrenia or other psychoses, with the highest risk among the most frequent users.” (NASEM report)



## Colorado kids and teens are dying at a rate higher than the U.S. average — and suicide is to blame

The state ranked poorly in health outcomes and mediocre overall in the latest national report on child well-being by the Annie E. Casey Foundation

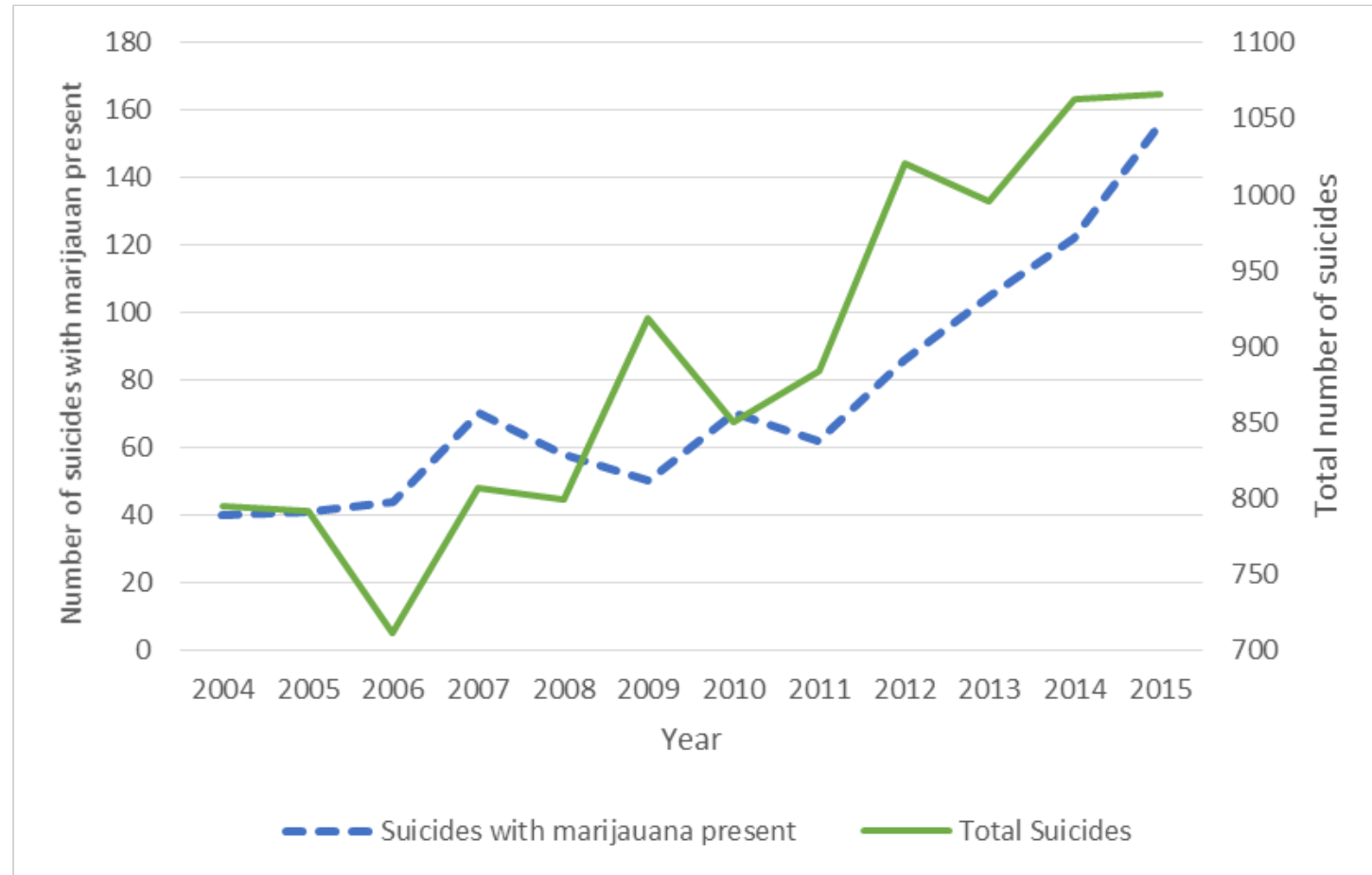
Junior high students walk the hallways of Simla Junior High at Big Sandy School Monday, February 25, 2019. (Mark Reis, Special to The Colorado Sun)



Suicide is the number one cause  
of death in Colorado for  
individuals between the ages of  
10 and 24

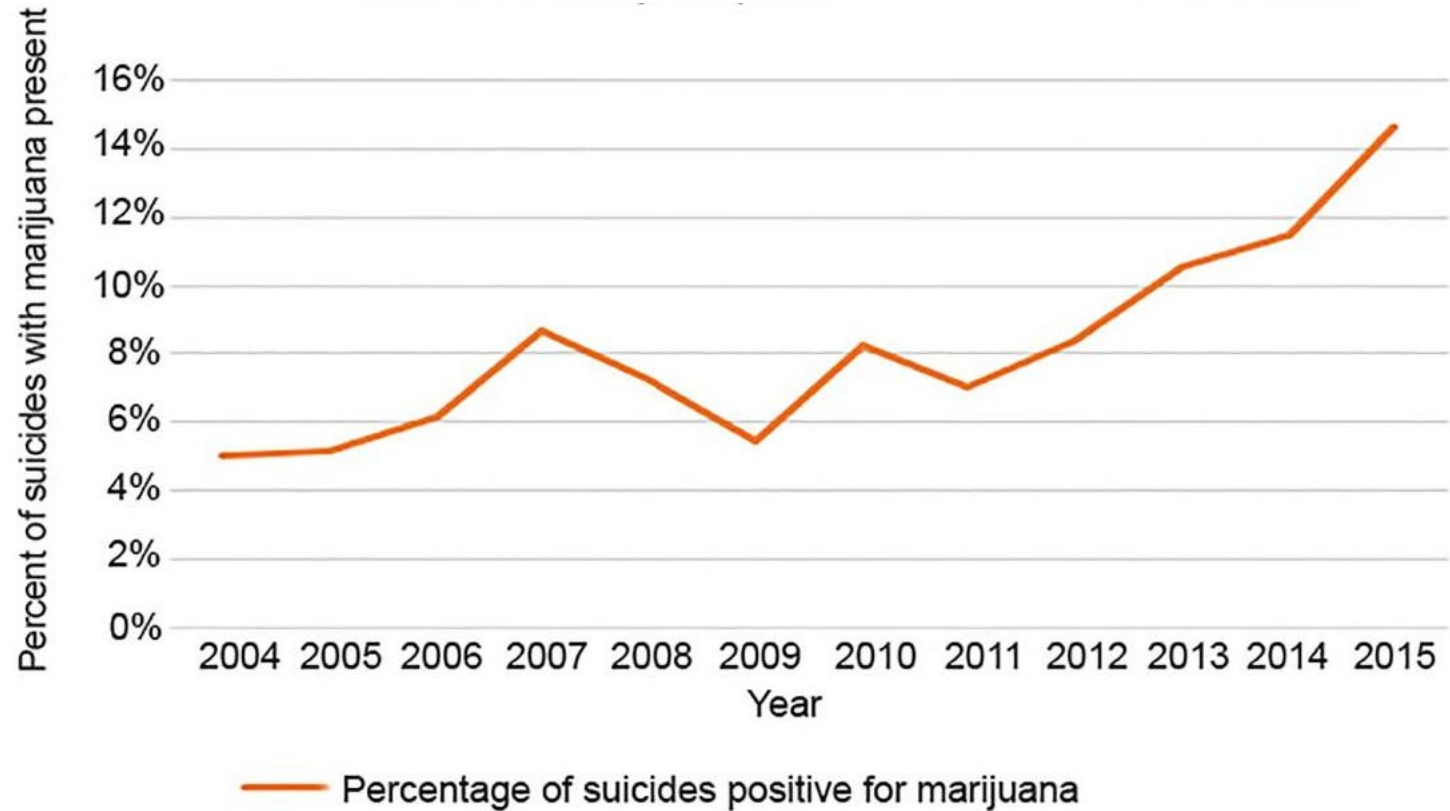
Children's Hospital Colorado has seen the number of patients who have  
attempted suicide soar 600 percent since 2009.

## Suicides with marijuana toxicology by year and total suicides by year in Colorado



Statistically significant 77.5% increase in the proportion of suicide victims with toxicology positive for marijuana (an absolute difference of 5.5%) for which toxicology data was reported (Chi square 77.2884,  $p < 0.0001$ ). 2004-2009 compared with 2010-2015

# Suicides with marijuana by year as percentage





# Suicide and Cannabis Data

- Suicidal ideation OR of 1.43 for any cannabis use, OR of 2.53 for heavy cannabis use
- Suicide Attempts OR of 2.23 for any cannabis use, OR 3.20 for heavy cannabis use
- Suicide Completion OR of 2.56 for any cannabis use

Borges et. al. A literature review and meta-analyses of cannabis use and suicidality. J Affect Disord. 2016 May; 195():63-74. Main paper cited by the NASEM.



# Links to other substance abuse

- NASEM, WHO, and CDPHE report all found evidence of a statistical association between cannabis use and the development of substance dependence and/or substance abuse disorder for substances including alcohol, tobacco, and other illicit drugs.
- Four separate discordant twin studies have found that the twin who used marijuana was more likely to use other substances even after controlling for environmental and genetic influences

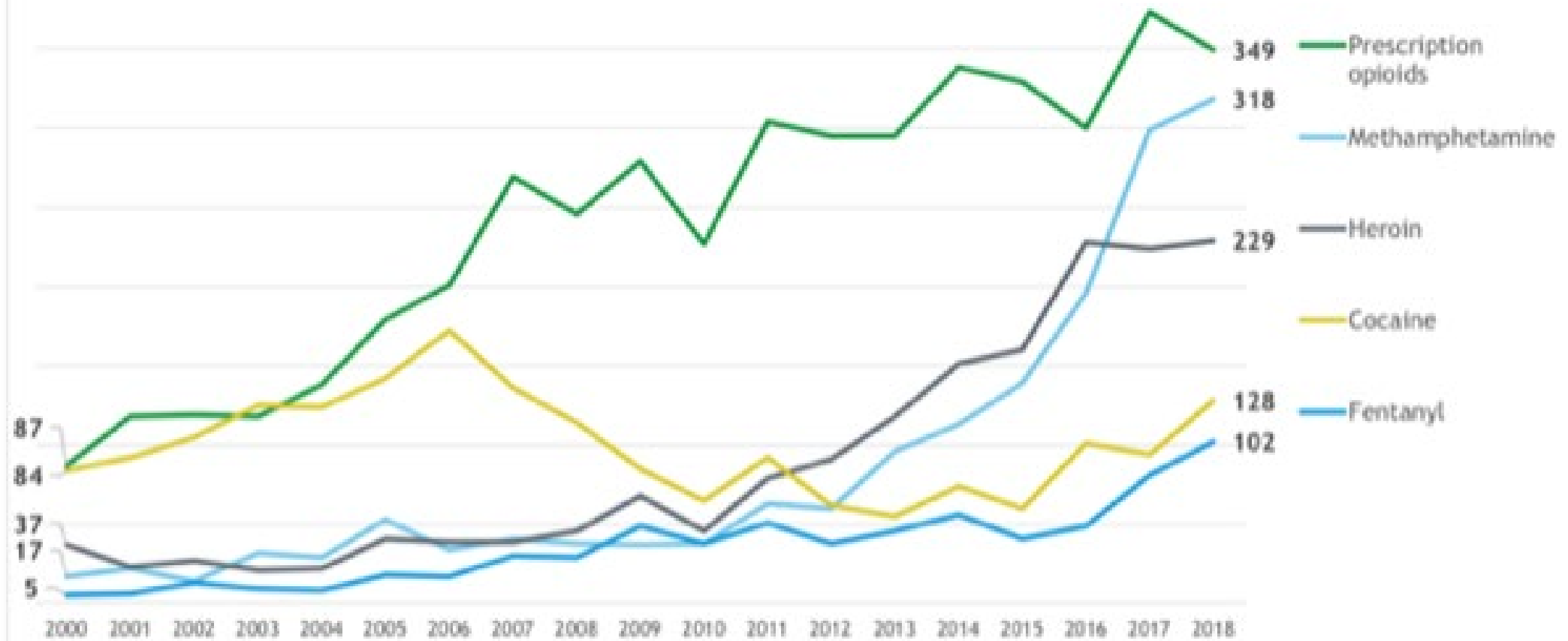


# Links to other substance abuse



- After exposure to THC rats have an increased behavioral sensitization response to not only THC but also opiates and nicotine.
- These behavioral changes in rats correspond to neuronal activity changes in mesolimbic dopamine neurons in the ventral tegmental area and nucleus accumbens and that cross tolerance results with exposure to morphine, amphetamines, and cocaine.
- Repeat morphine self-administration has been shown to be significantly lower in CB<sub>1</sub> knockout mice (CB<sub>1</sub> receptors are among the most predominant G protein-coupled receptors in the brain and mediate most of the psychotropic effects of THC) and opiate withdrawal symptoms significantly less when the knockout mice are administered naloxone.

Number of Drug Overdose Deaths by Substances Mentioned, Colorado, 2000-2018



Source: Vital Statistics Program, Colorado Department of Public Health and Environment, 2000-2018

Medical Marijuana Commercialized  
(Medical Dispensaries)

Recreational Marijuana Commercialized



**COLORADO**  
Department of Public  
Health & Environment

# Increasing drug culture increases drug use

Emergency Department Drug Screens By Year, Parkview Medical Center

2013 (Census 80,185 patients)	2018 (Census 82,025 patients)	Percentage Increase
570 tests/month (11.7 patients per test)	636 tests/month (10.7 patients per test)	
273/month positive (47%)	389/month positive (61%)	42.5% increase
129/month positive for cannabis	202/month positive for cannabis	56.6% increase
133/month positive for opiates	147/month positive for opiates	10.5% increase
53/month positive for amphetamines	129/month positive for amphetamines	143% increase

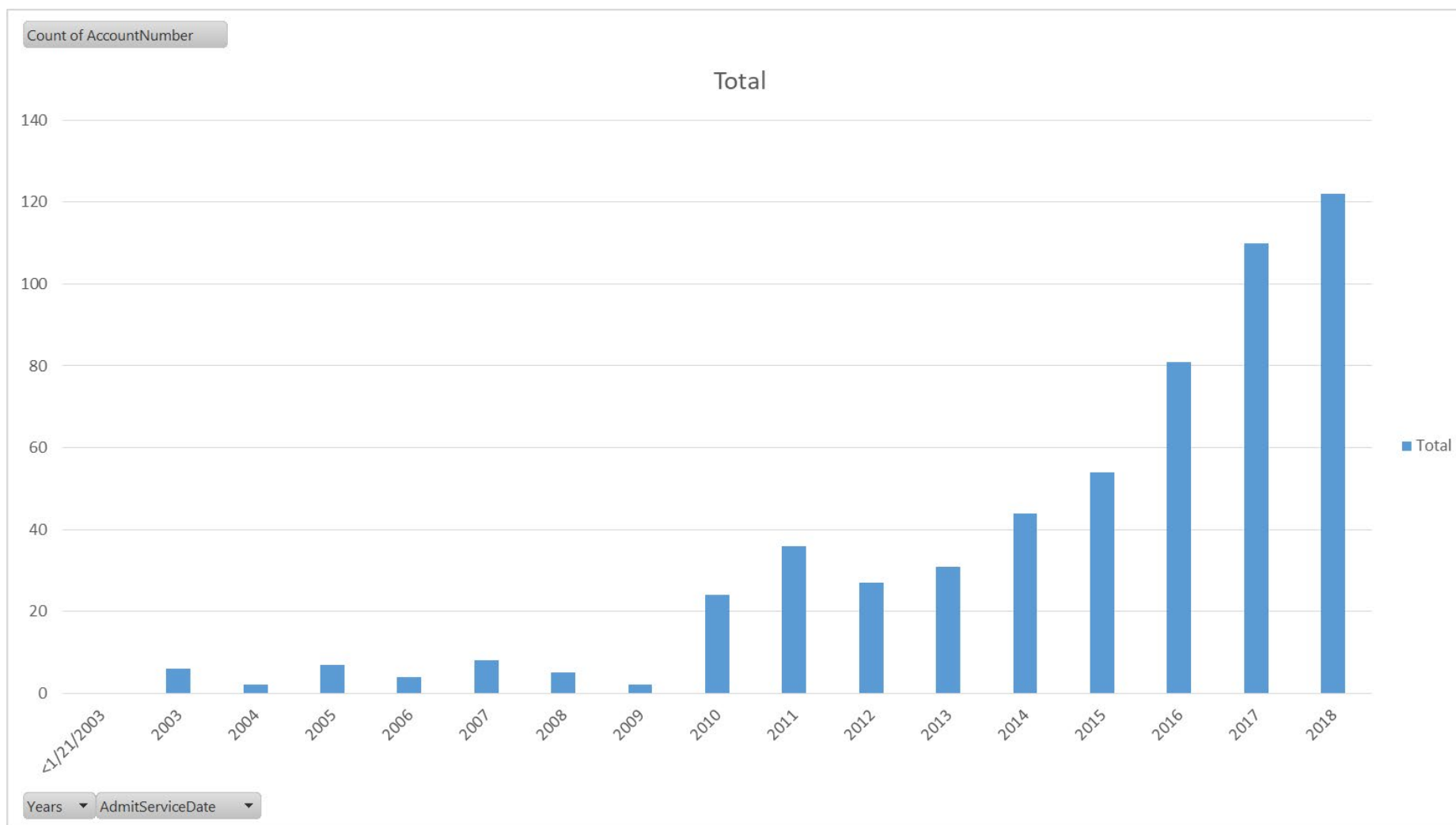
# Cannabinoid Hyperemesis Syndrome (CHS)

- Symptoms of CHS include significant nausea, violent vomiting, and abdominal pain in the setting of chronic cannabis use. Cardinal diagnostic characteristics include regular cannabis use, cyclic nausea and vomiting, and compulsive hot baths or showers with resolution of symptoms after cessation of cannabis use
- Following legalization, the prevalence of cyclic vomiting presentations to Denver Health and the University of Colorado Hospital increased 1.92 fold
- These patients often are evaluated with multiple imaging studies, lab work, endoscopies, and admissions to the hospital as well as antiemetic treatment. These studies are often non-diagnostic and treatment often ineffective.





# Cannabinoid Hyperemesis Syndrome Patients by Year at Parkview Medical Center



# Emergency Department and Radiological Cost of Delayed Diagnosis of Cannabinoid Hyperemesis

David I. Zimmer <sup>1</sup>, Ross McCauley,<sup>1</sup> Varun Konanki,<sup>2</sup> Joseph Dynako <sup>1</sup>,  
Nuha Zackariya,<sup>3</sup> Faadil Shariff,<sup>3</sup> Joseph Miller <sup>4</sup>, Sophia Binz <sup>4</sup>, and Mark Walsh <sup>5</sup>

<sup>1</sup>Indiana University School of Medicine, South Bend, IN 46617, USA

<sup>2</sup>Beth Israel Deaconess Medical Center, Boston, MA 02215, USA

<sup>3</sup>Indiana University Bloomington, Bloomington, IN, USA

<sup>4</sup>Department of Emergency Medicine, Henry Ford Hospital, Detroit, MI 48202, USA

<sup>5</sup>St. Joseph Regional Medical Center, Mishawaka, IN 46545, USA

*Background.* Chronic cannabis use has become prevalent with decriminalization, medical prescription, and recreational legalization in numerous US states. With this increasing incidence of chronic cannabis use a new clinical syndrome has become apparent in emergency departments and hospitals across the country, termed Cannabinoid Hyperemesis (CH). CH has been described as cyclical vomiting and abdominal pain in the setting of chronic cannabis use, which is often temporarily relieved by hot showers. CH presents a diagnostic challenge to clinicians who do not have a high clinical suspicion for the syndrome and can result in high costs and resource utilization for hospitals and patients. This study investigates the expenditures associated with delayed CH evaluation and delayed diagnosis. *Methods.* This is a retrospective observational study of 17 patients diagnosed with CH at three medical centers in the United States from 2010 to 2015, consisting of two academic centers and a community hospital. Emergency department (ED) costs were calculated and analyzed for patients eventually diagnosed with CH. *Results.* For the 17 patients treated, the total cost for combined ED visits and radiologic evaluations was an average of \$76,920.92 per patient. On average these patients had 17.9 ED visits before the diagnosis of CH was made. *Conclusion.* CH provides a diagnostic challenge to clinicians without a high suspicion of the syndrome and may become increasingly prevalent with current trends toward cannabis legalization. The diagnosis of CH can be made primarily through a thorough history and physical examination. Awareness of this syndrome can save institutions money, prevent inappropriate utilization of healthcare resources, and save patients from unnecessary diagnostic tests.

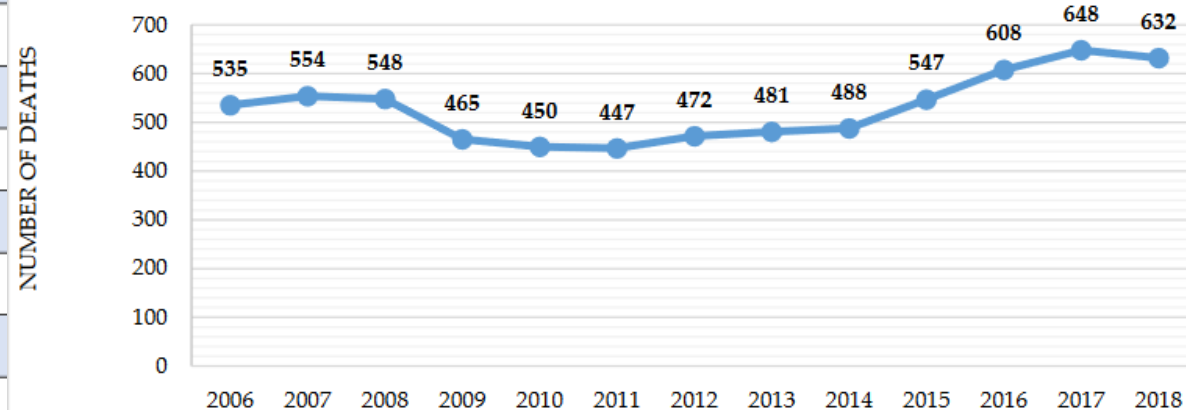
# Motor Vehicle Collisions

**Traffic Deaths Related to Marijuana  
When a DRIVER Tested Positive for Marijuana**

Crash Year	Total Statewide Fatalities	Fatalities with <u>Drivers</u> Testing Positive for Marijuana	Percentage Total Fatalities
2006	535	33	6.17%
2007	554	32	5.78%
2008	548	36	6.57%
2009	465	41	8.82%
2010	450	46	10.22%
2011	447	58	12.98%
2012	472	65	13.77%
2013	481	55	11.43%
2014	488	75	15.37%
2015	547	98	17.92%
2016	608	125	20.56%
2017	648	138	21.30%
2018	632	115	18.20%



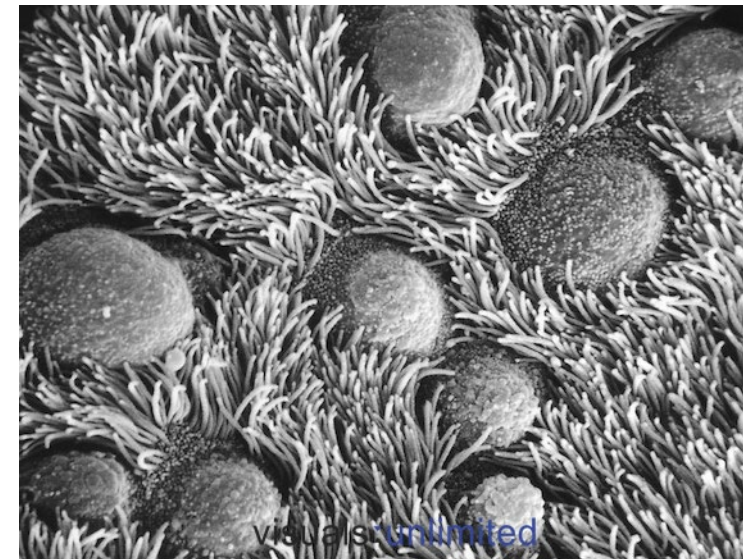
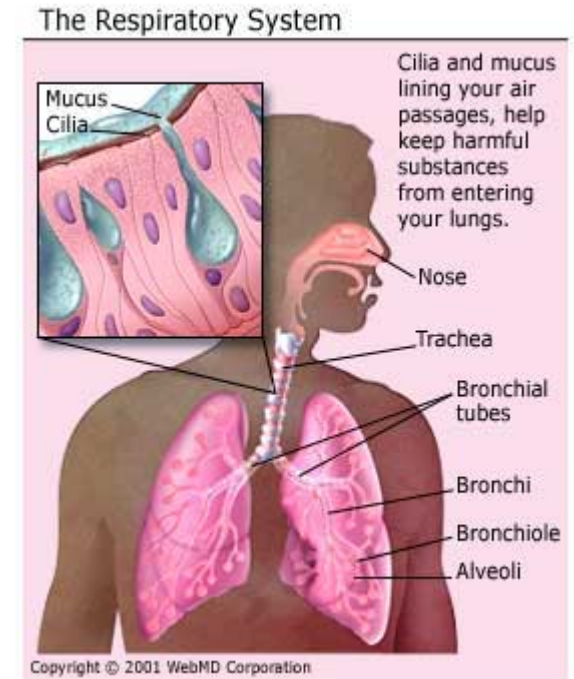
**Total Number of Statewide Traffic Deaths**



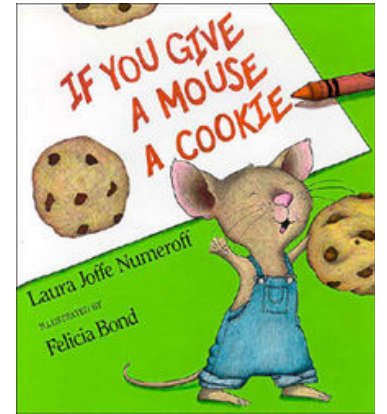


# Cardiopulmonary Effects

- Marijuana smoking leads to chronic bronchitis, increased rates of pneumonia and upper respiratory infections. On histology, this is associated with a reduction in ciliated cells, and subsequent increased mucus secretion from the larger number of mucus-secreting cells.
- Second-hand cannabis smoke has been shown to impair vascular endothelial function greater than second hand tobacco smoke.



# The progression...



- Colorado HB 19-1230
- “the act authorizes marijuana hospitality spaces in which medical and retail marijuana may be consumed on site and retail marijuana hospitality and sales establishments in which retail marijuana, retail marijuana concentrate, and retail marijuana products may be sold and consumed on site. Subject to local approval, the act authorizes a retail food establishment to apply for a marijuana hospitality establishment license for a specified portion of the retail food establishment”
- “The act makes smoking marijuana in the hospitality spaces an exception to the "Colorado Clean Indoor Air Act”



“Show them this...”



# One recent shift...

- Teenage pt running in middle of street through traffic reportedly waving metal rod at cars. Had reportedly assaulted other teenage male. Apprehended by police, extremely combative. Tackled, tazed. Being held down by 3 police officers, EMS arrives and gives 5 mg Haldol, 2 mg Versed, and 50 mg Benedryl IM. No response. They think he tells them he did "acid, chlamydia, and meth". Pt states he was using MJ waxes to me. Punched police officer, spit on police officers and EMS personal. Arrives with 3 police officers, 5 EMS personnel, and 3 security staff to hold him down yelling incoherently. Given 10 mg IM Versed and finally calms down. UDS only positive for MJ. C-spine CT with pneumomediastinum. Hx hemophilia A. During hospital stay develops rhabdomyolysis. Very nice good family in waiting room unaware.
- Pt apprehended by police, had psychogenic seizure, police state high suspicion to escape arrest after shoplifting. UDS positive for opiate, meth, cannabis. Returned second time after trying to flee, tackled to the ground by police and brought back
- Pt w/laceration to L leg, dropped wine glass that broke and cut leg- drinks 10 beers daily and smokes cannabis daily
- Pt in bar fight, reported part of Arian brotherhood. Presented with odd episodes of unresponsiveness. Eventually intubated for airway protection. Positive for EtOH (relatively low level) and cannabis
- Pt w/ hx PTSD, OD on trazodone/Seroquel, trying to self treat PTSD from fireworks. UDS positive for amphetamines, cannabis
- Pt drank EtOH to unresponsive, only grunted to painful stimuli. Children taken in custody of police as nowhere else to go. Daily cannabis user.
- Pt w/ SI, life not worth living, plan to OD on pills. Hx cocaine use, snorting heroin, and cannabis use. UDS positive for amphetamines/opiates (neg cannabinoids)

# Continued...

- Pt at lake. States person approached her to sell her MJ products while she was at the lake. She states she refused and was punched multiple times in the face and kicked on the ground. Large eyebrow/forehead lac repaired. CT head/facial bones neg. Pt with hx of daily cannabis use.
- Pt presents with L knee pain. Crashed on motorcycle 2 days prior, no helmet/pads. Tried treating pain at home by smoking large amounts of marijuana without relief. X-rays with midline patella fracture. No UDS drawn, smokes 2 PPD cigarettes, smokes MJ multiple times per day
- Pt with undifferentiated abdominal pain, vomiting, diarrhea (labs normal, CT neg, stool studies neg). Hx diabetic ulcers not healing for last 7-8 months. Hx daily MJ use, states quit 3 months ago
- Pt w/ L scapular pain, chest pain, and chronic back pain. Smokes MJ daily, states for pain. Never had PT for back/shoulder.
- Teenage pt, R testicular pain, dx epididymitis. Smokes cigarettes, uses MJ 2-3 times per week, drinks EtOH occasionally.
- Pt punched through glass window, cut radial artery. Hypotensive, O- blood transfusion. Taken to OR for repair. EtOH- negative cannabis.

# Next day...

- Pt presents after 'bad trip' seeing demons that he felt were going to kill him after wanting to try psychedelic mushrooms. "I saw they legalized them in Denver so I wanted to try them". Daily cannabis user.
- Pt assaulted in park. Hit numerous times by fists and kicked. Odd historian, did not want police involved. Daily cannabis user. Numerous anterior and posterior scalp lacerations needing suture/staple repair.
- Pt went to state hospital yelling on grounds he was 'going to blow his brains out'. During eval, pt with blanket over head, will not interact. Later states uses meth and cannabis daily. UDS positive for amphetamines, cannabinoids. DC'd to detox.
- Pt presents for SI after argument with son. Homeless. Uses cannabis, EtOH, and methamphetamine daily. Denied SI later, DC'd. Returned less than 12 hours later after yelling at gas station. DC'd to detox.
- Pt involved in argument with friends. Punched in jaw, lip laceration. Running in traffic trying to get hit by cars for SI. UDS positive for cannabis, cocaine, EtOH.
- Pt with intractable N/V. Hx Hep C, IVDA. Multiple attempts at peripheral IV unsuccessful. Ultimately central line placed. No improvement. CT with antral wall thickening, EGD with superficial ulcer. Daily cannabis user.

# Next day...

- Pt presents with sudden onset dizziness, headache. Dx BPPV. Smokes MJ daily
- Pt hx COPD, CHF called complaining of SOB. Seen at beginning of night and refused admission, left AMA. Returned early morning after staying in the waiting room. Hit nurses hand as she tried to place IV. Uses cannabis, methamphetamine, and heroin daily. Homeless. Accepted for admission but left AMA again.
- Pt presents after threatening to use gun to kill himself to roommates. Intoxicated by alcohol, endorses daily cannabis use. Charging up to nurses and myself, ?to intimidate?



# Next day...

- Pt presents for medical clearance for detox for meth dependence. UDS positive for amphetamines, cocaine, and cannabinoids
- Pt found sitting on side of curb with erratic uncoordinated movements by bystanders, not able to provide history. Blanket over head not responding. When blanket removed, pt flails widely around room, then lies back down and curls up in ball, does not respond further. UDS positive for amphetamines, cannabinoids. After 10 hours observation in ED patient wakes up and leaves, refuses case management assistance, refuses detox.
- Pt presents following intentional overdose on metformin, Abilify, benztropine, and lamotrigine in SI attempt. States uses cannabis occasionally on social history, UDS negative.
- Pt presents for auditory hallucinations, voices telling him to stab self and others with knives. States having visual hallucinations of 'tiny trolls' eating his legs. UDS only positive for cannabis, states daily cannabis use
- Pt with low back pain, R sided chest pain concerned lung collapsed, and concern poke from trash bag may have been a needle. Smokes 2 PPD cigarettes, smokes cannabis multiple times daily
- Pt with asthma exacerbation. Ran out of inhaler, not refilled. Smokes cigarettes and cannabis daily.
- Pt states picked up by car, raped, then forced to call boyfriend in other state who called police and then was brought for SANE evaluation. UDS positive only for cannabinoids.

# A few things 'extras' noticed

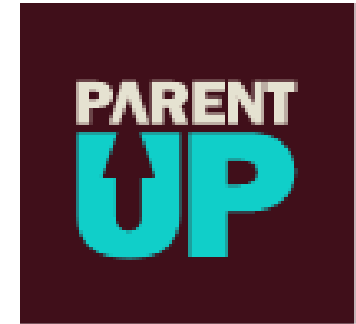
- All or nearly all cannabis presentation patients have Medicaid or are uninsured
- Cannabis often co-occurring with other substance abuse
- Noted nearly 2/3 of patients seen drug related (including alcohol). Cannabis most common overall drug (more than alcohol, meth, and opiates). Last shift 10 of 15 patients drug related (including alcohol).
- Estimated ED average cost around \$5,000 (with labs, CT). Cost **per night, single shift** of substance use to primarily Medicaid/uncompensated care well over \$50,000 (not even including inpatient and ICU stays, endoscopies, EMS/police cost, etc.)

# We discussed... (summary)

- Substance dependence hijacks the brains natural reward system leading to addiction
- Cannabis potency has dramatically increased- today's marijuana is not the same as the Woodstock marijuana
- Cannabis use can lead to multiple adverse mental health outcomes (psychosis, suicide, changes in judgement/complex decision making)
- Cannabis use can lead to recurrent vomiting- cannabinoid hyperemesis syndrome
- Cannabis use primes the brain to suffer from substance dependence

# What can you do?

- Get involved- write your legislators
- Get educated:
  - <https://www.healthvermont.gov/alcohol-drugs/lets-talk-cannabis>
  - ParentupVT.org
  - Legalized Cannabis in Colorado Emergency Departments
  - Healthylamoillevalley.org
- Educate Others



# Your Coalition Staff – Here to serve



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