



# Stimulants

Presented by Steve Hanson  
Senior Treatment Consultant



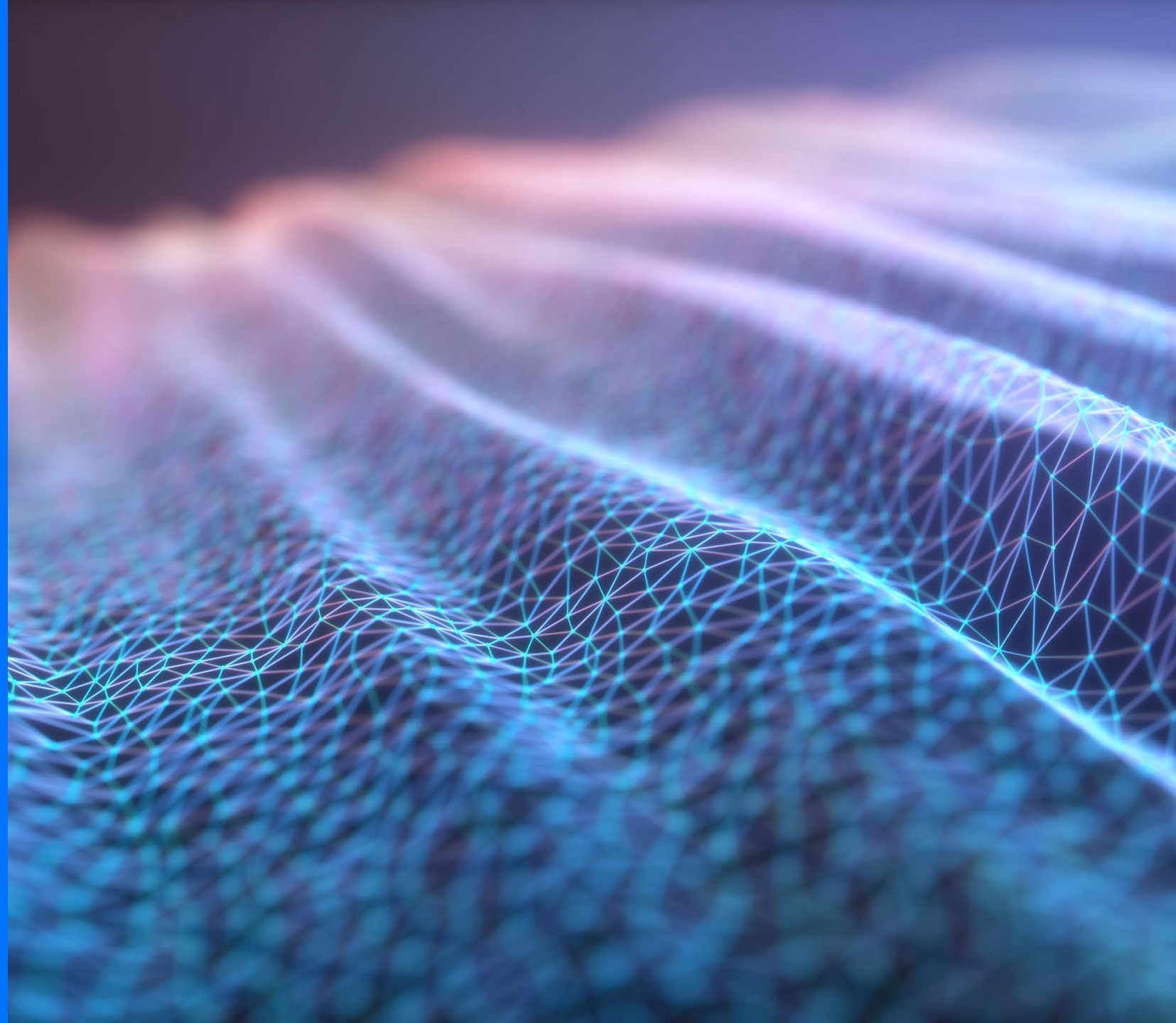
# Disclosure



- This project was supported by Grant Number DCT9924C0001-00, which was awarded by the Office of National Drug Control Policy (ONDCP) of the Executive Office of the President. Points of view or opinions in this document are those of the author and do not necessarily represent the official position of the Executive Office of the President.



# Drug Patterns Occur in Waves



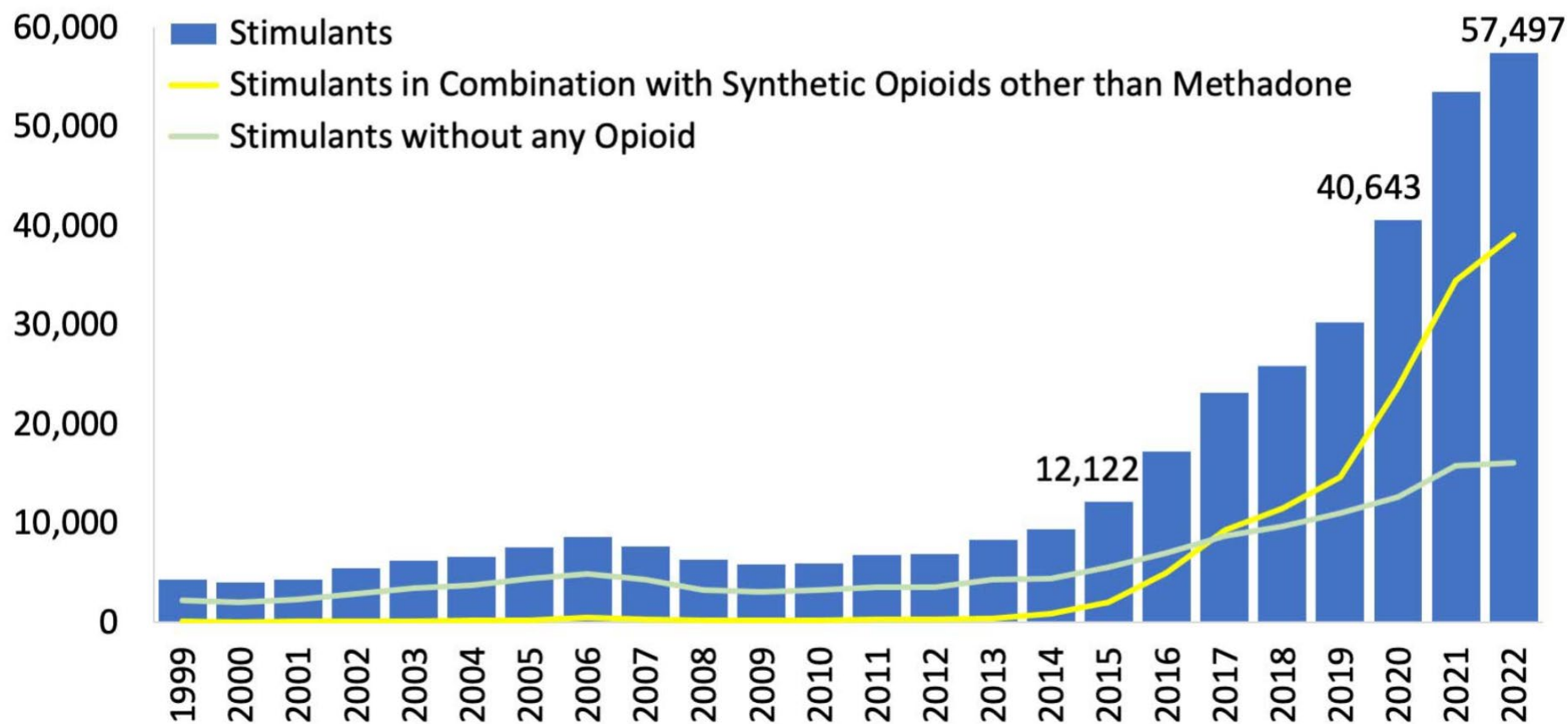
# Drug Trends

- 1890's – Alcohol, Opium and Cocaine
- 1900's – Alcohol, Cocaine, Heroin
- 1920's – Marijuana
- 1930's – Alcohol, some cocaine
- 1950's – Alcohol, prescription anti-anxietyals
- 1960's – Alcohol, Marijuana, Heroin, RX Amphetamine, LSD

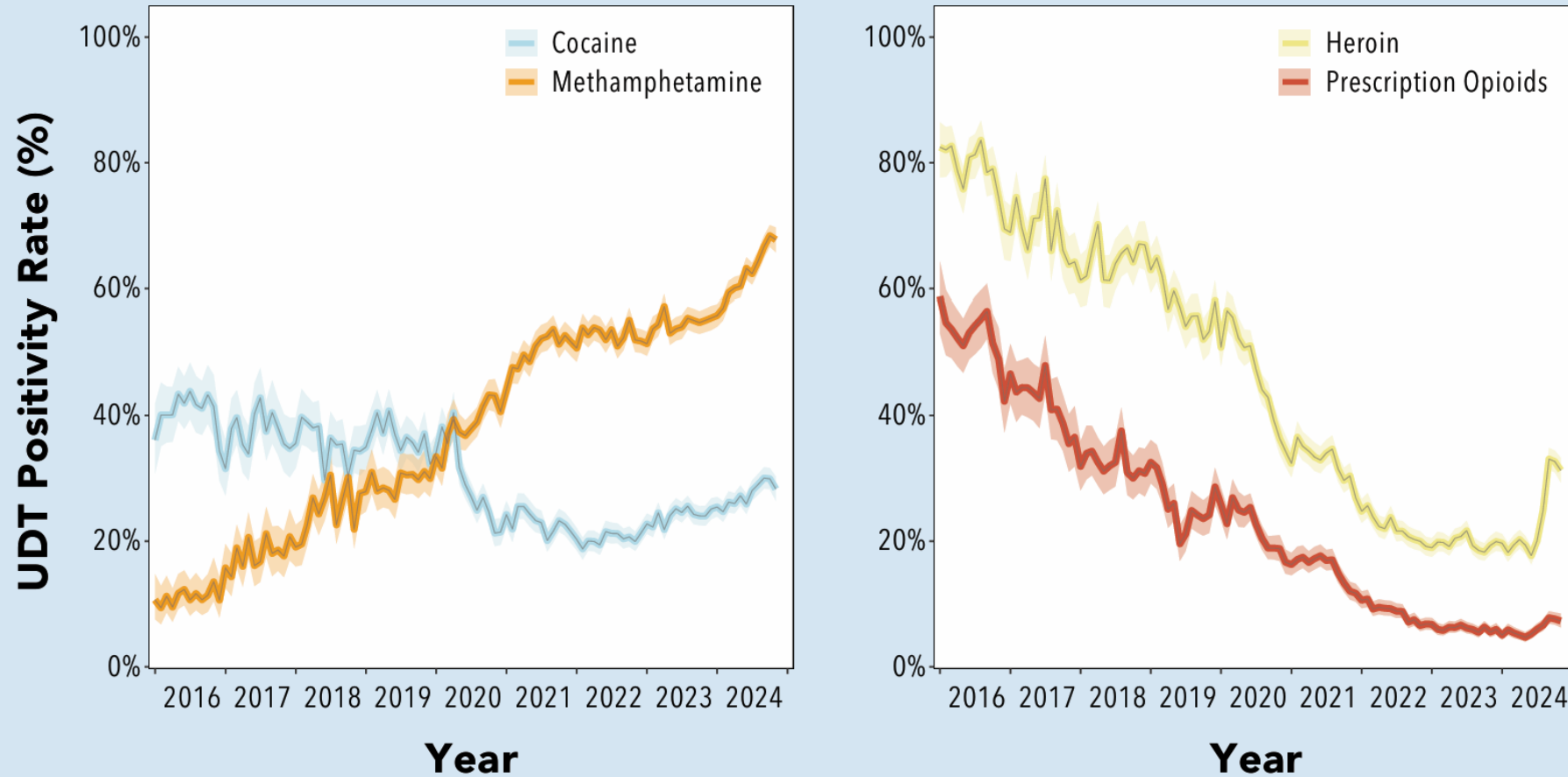
# Drug Trends

- 1970's – Alcohol, Heroin, Cocaine, MJ, Valium
- 1980's – Alcohol, Crack, marijuana, Designer Drugs
- 1990's – Alcohol, Crack, Methamphetamine
- 2000's – Alcohol, Methamphetamine, RX Opioids, Synthetic Cannabinoids/Bath Salts
- 2010's – Alcohol, Heroin, Fentanyl, Carfentanil, RX Opioids, Synthetics
- 2020's – Alcohol, Marijuana, Heroin, Methamphetamine, LSD, etc.?

Figure 6. National Overdose Deaths Involving Stimulants (Cocaine and Psychostimulants\*), by Opioid Involvement, Number Among All Ages, 1999-2022



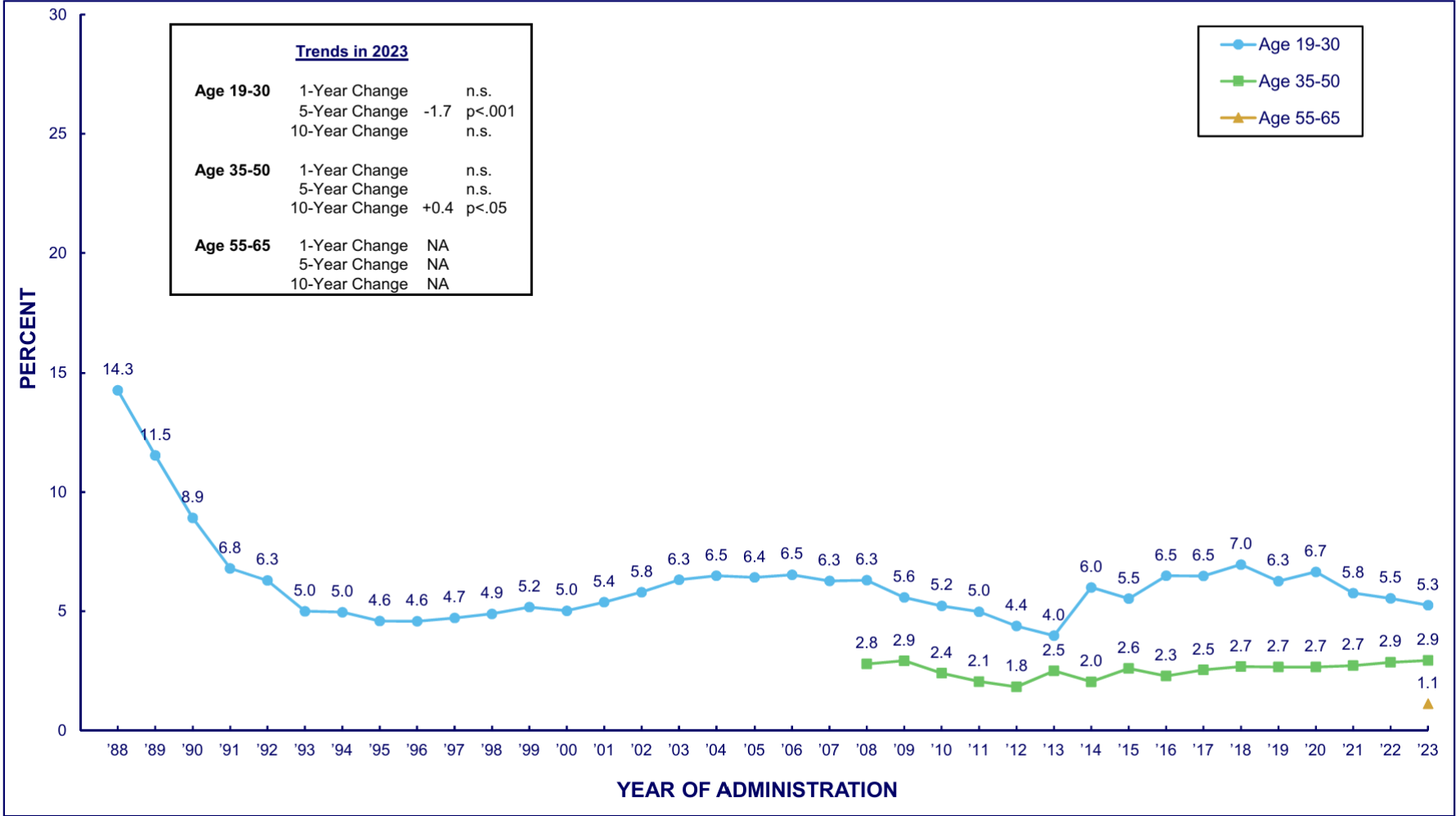
**Figure 2. Co-Detection of Methamphetamine, Cocaine, Heroin, and Prescription Opioids in the Population Using Fentanyl**



TABLE/FIGURE 71

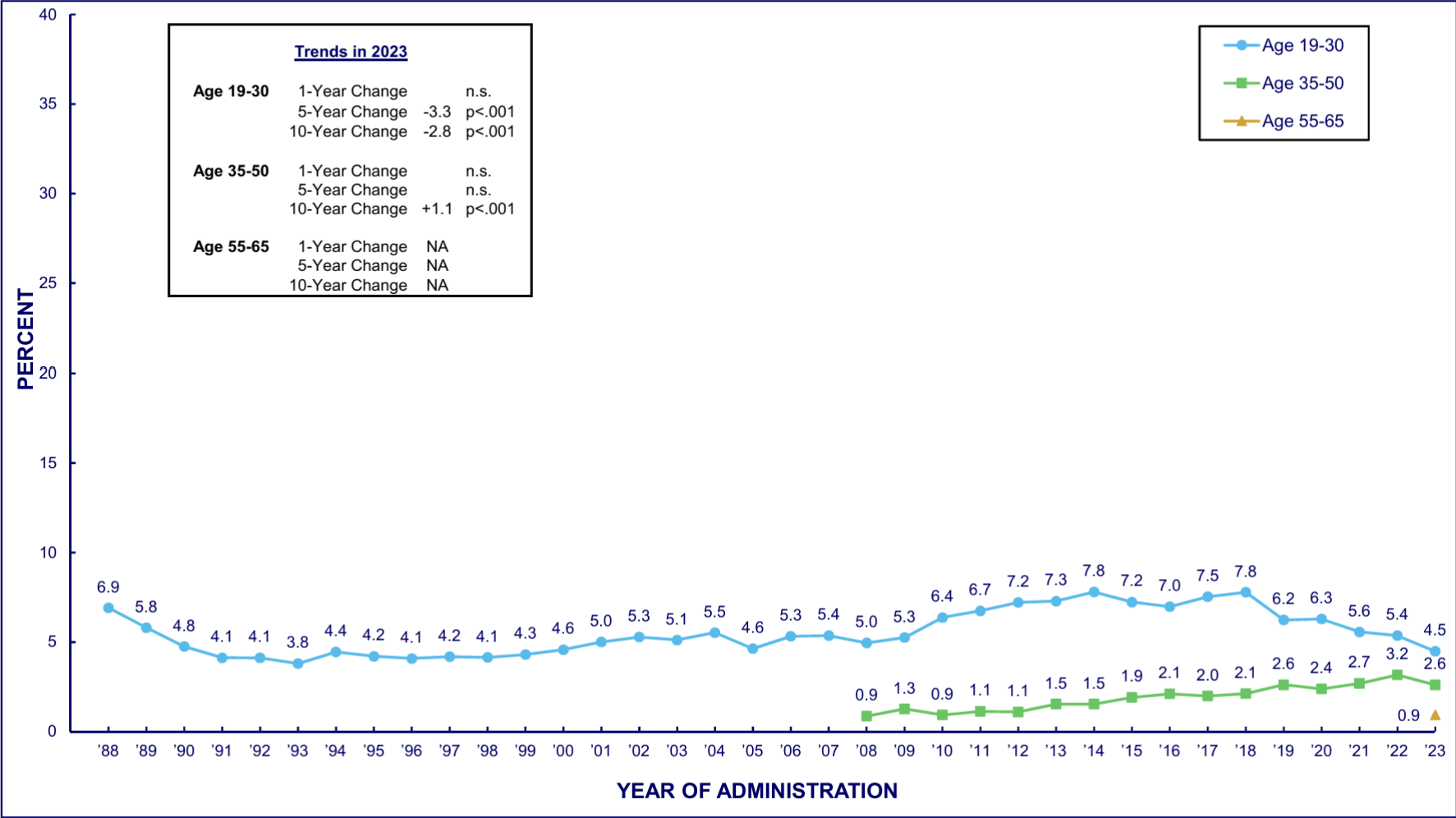
COCAINE

Trends in 12-Month Prevalence among Respondents of Modal Ages 19 through 65, by Age Group



TABLE/FIGURE 65  
AMPHETAMINES

Trends in 12-Month Prevalence among Respondents of Modal Ages 19 through 65, by Age Group



(Age-specific data provided in the following table.)

# Amphetamines



- Synthesized in 1867
- First marketed in 1927
- Used during World War II – awake, increased alertness, reduced appetite
- Benzedrine inhalers used to treat asthma – misused

# Amphetamines



Used for:

- Asthma
- Narcolepsy
- Depression
- Weight Loss
- Truck Drivers
- College Students

# Amphetamines

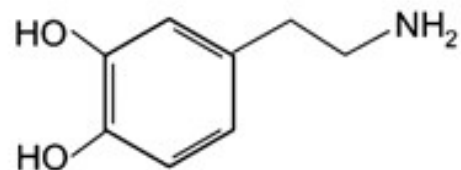


## Variations

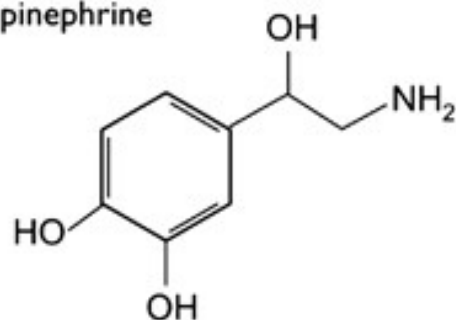
- Dextroamphetamine – Dexys
- Benzedrine – Bennies
- Methamphetamine – Crystal, ICE
- Methylenedioxymethamphetamine – MDMA – Ecstasy/ Molly
- Adderall – Combo of 4 Amphetamine salts
- Ritalin – Cousin used to treat ADHD

# Molecular Structures

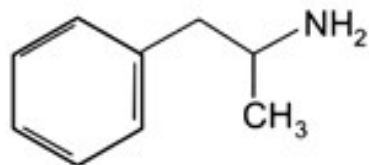
Dopamine



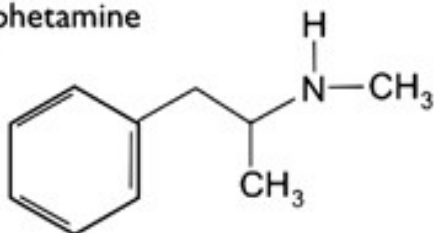
Norepinephrine



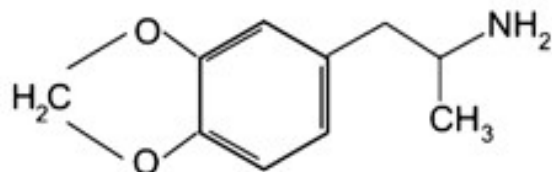
Amphetamine



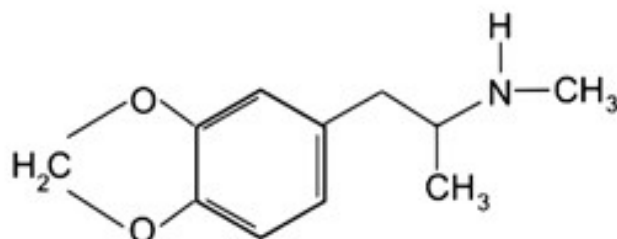
Methamphetamine



3,4-Methylenedioxyamphetamine (MDA)



3,4-Methylenedioxymethamphetamine (MDMA)





# Methamphetamines

- First made in 1930's
- World War II
- Popular in 1960's - Hell's Angels
- Crystal / Crank - snortable - 1980's
- Ice - smokeable form -1990's
- Epidemic- 2000's – Outside of New York/New England
- Recently Southern Tier/Western NY and spreading

# Forms of Methamphetamine



## **Methamphetamine Powder**

**Description:** Beige/yellowy/off-white powder



## **Base / Paste / Peanut Butter**

**Description:** 'Oily', 'gunky', 'gluggy' gel, moist, waxy



## **Crystal / Ice / Tina**

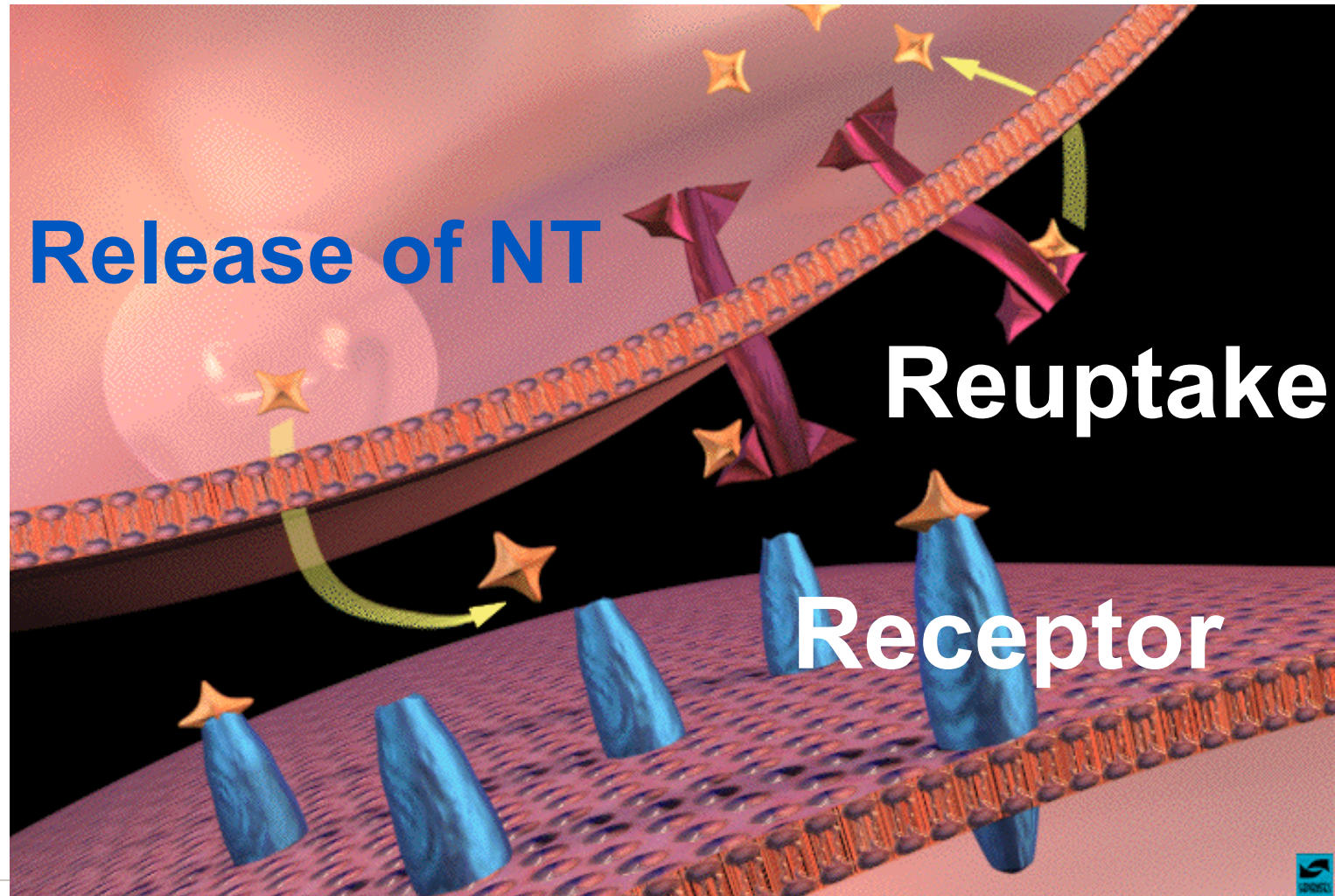
**Description:** White/clear crystals/rocks; 'crushed glass' / 'rock salt'

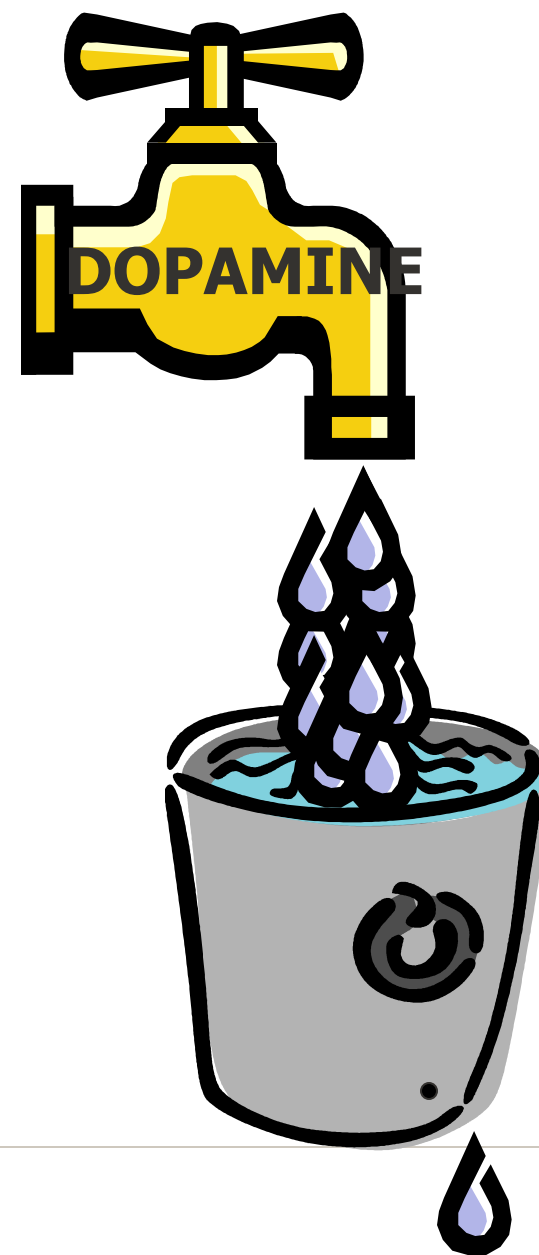
# Methamphetamine Effects



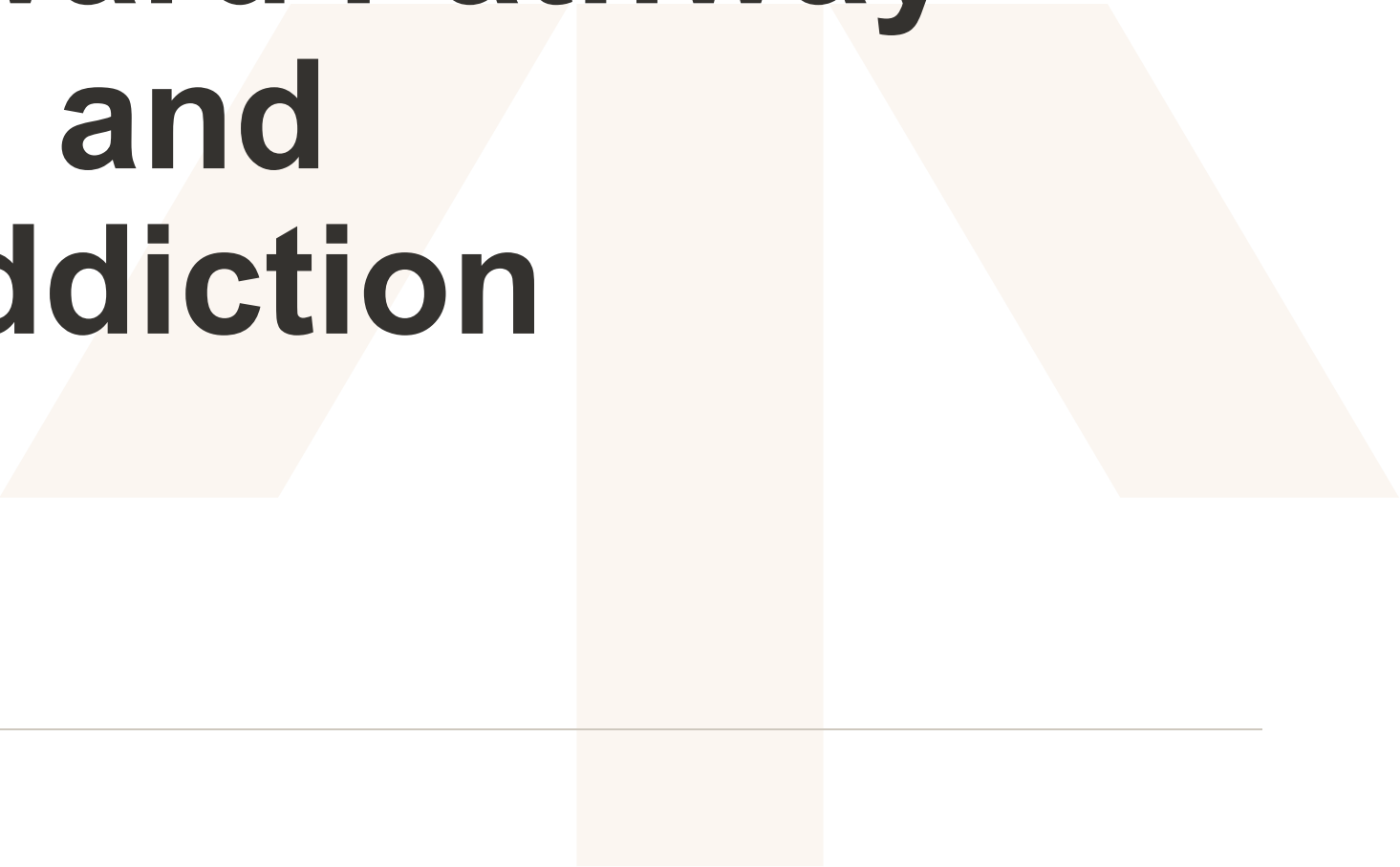
- Rapid Absorption
- Increases release of Norepinephrine (energy) and Dopamine (euphoria)
- Blocks Reuptake
- Significant tolerance

# Neurotransmitter Action





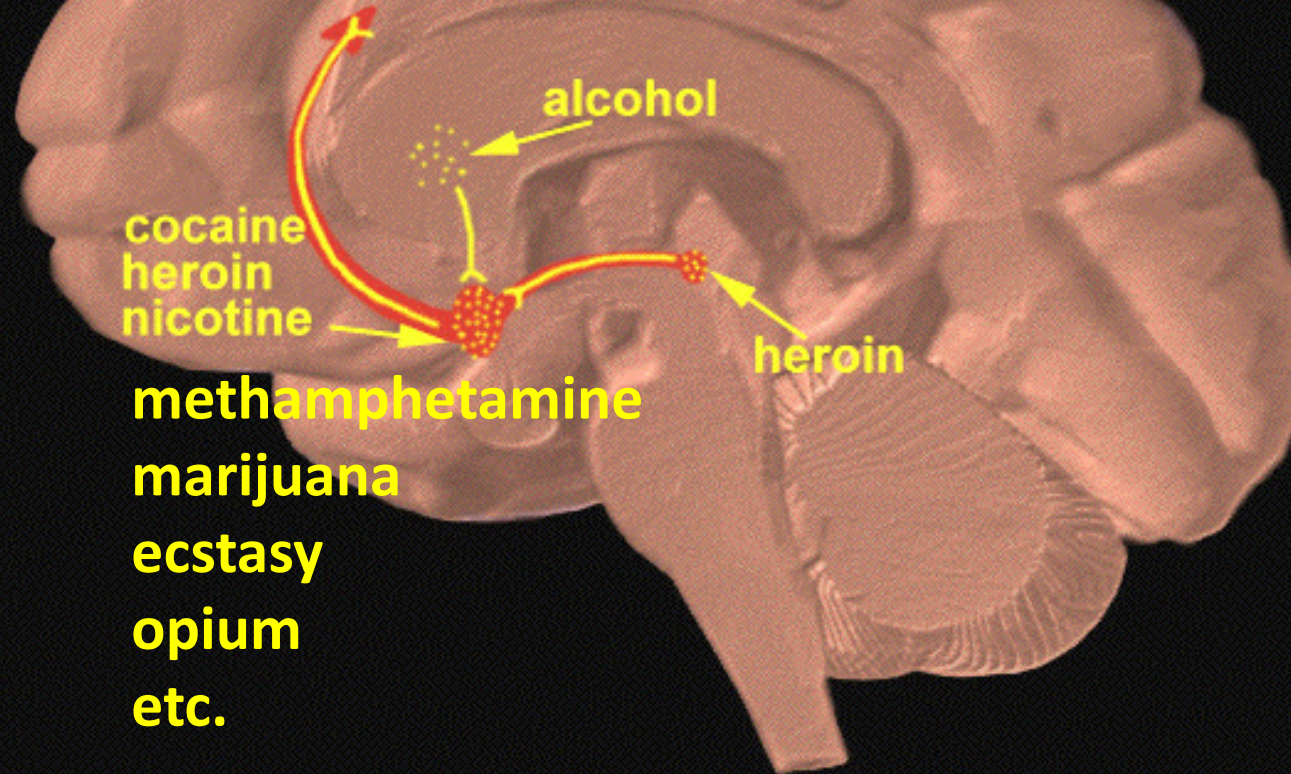
# The Reward Pathway and Addiction



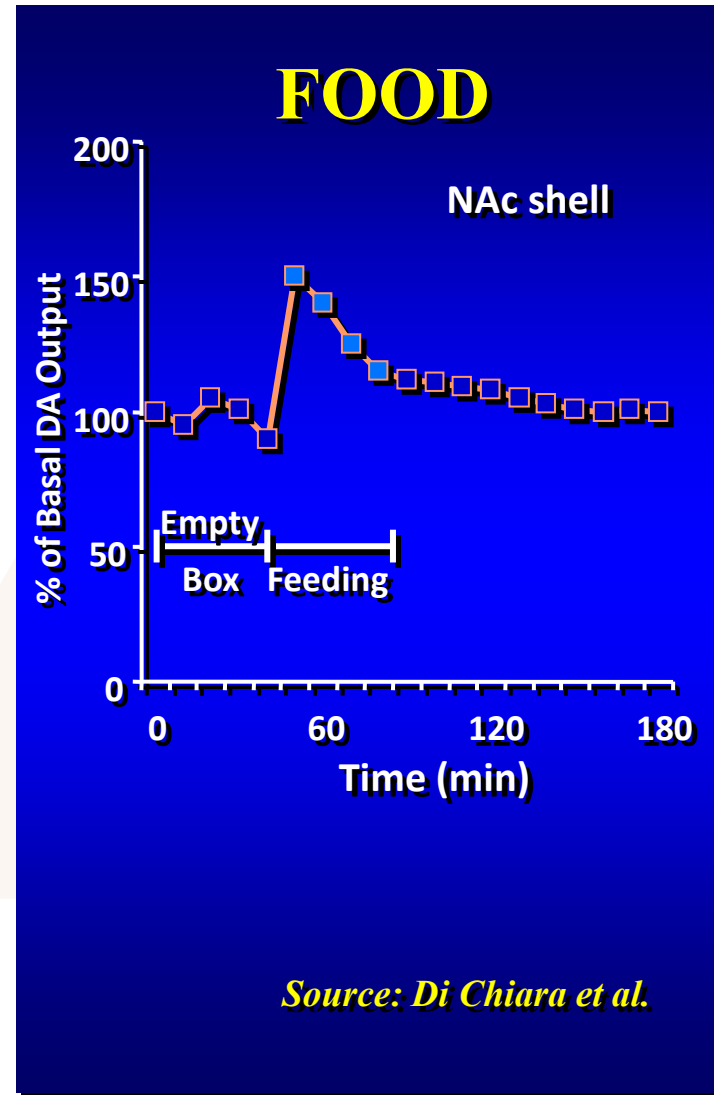
# Natural Rewards



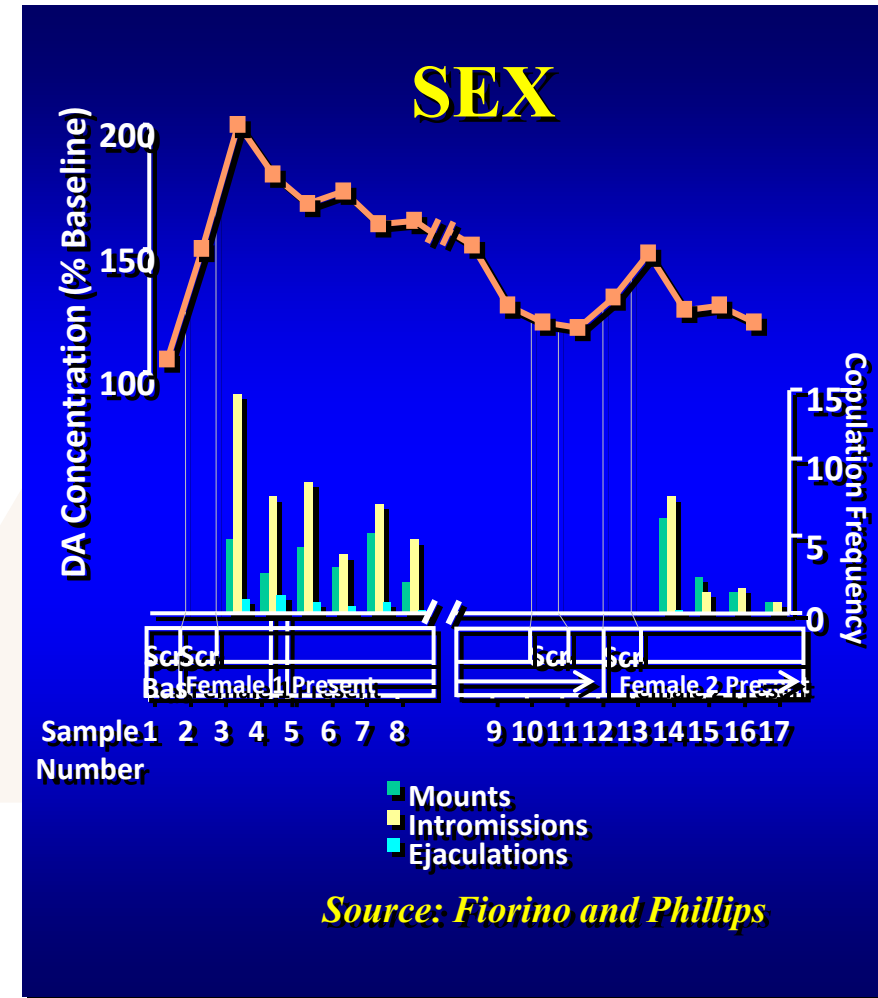
# Activation of the reward pathway by addictive drugs



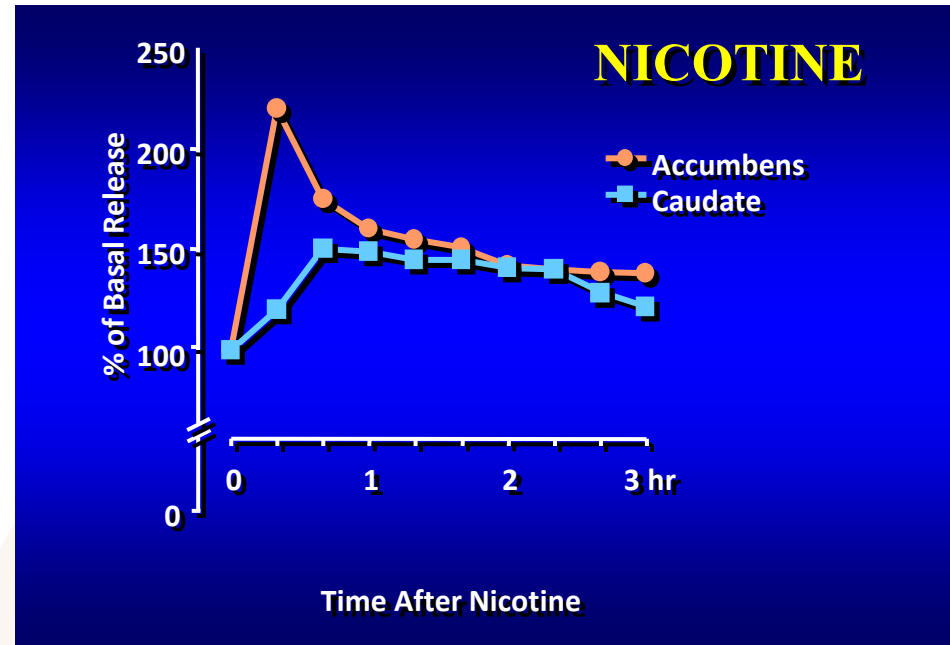
# Food



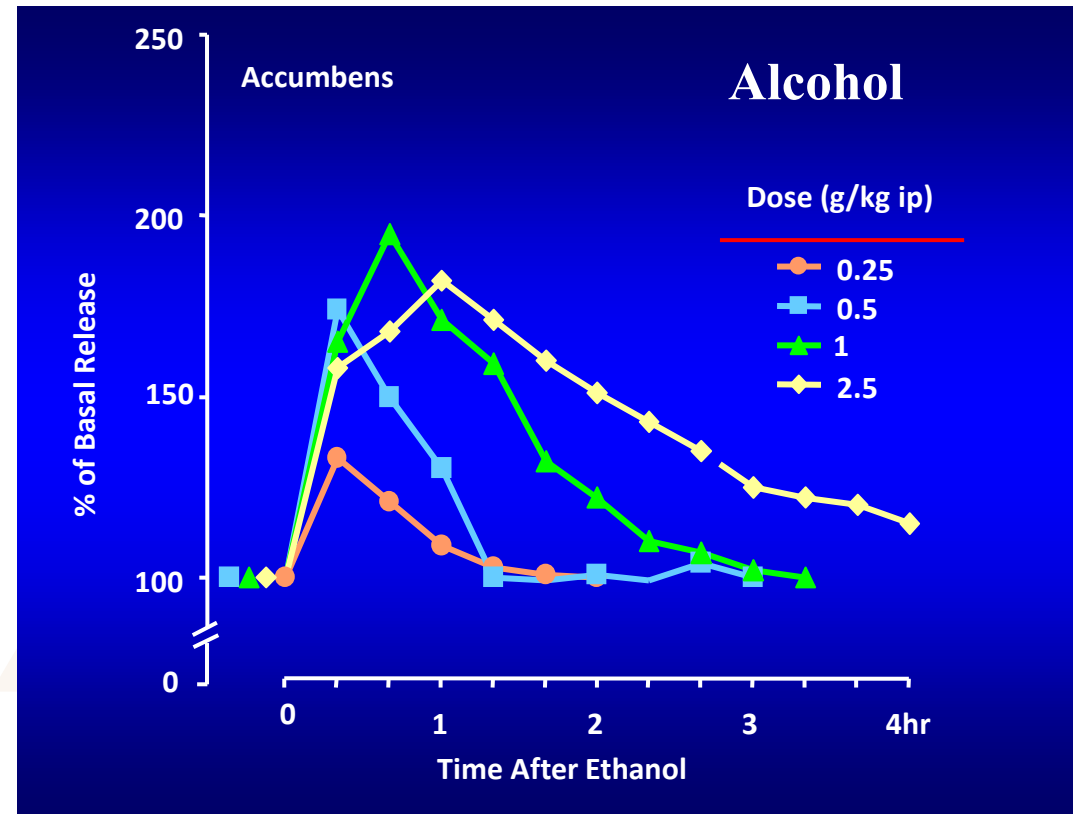
# Sex



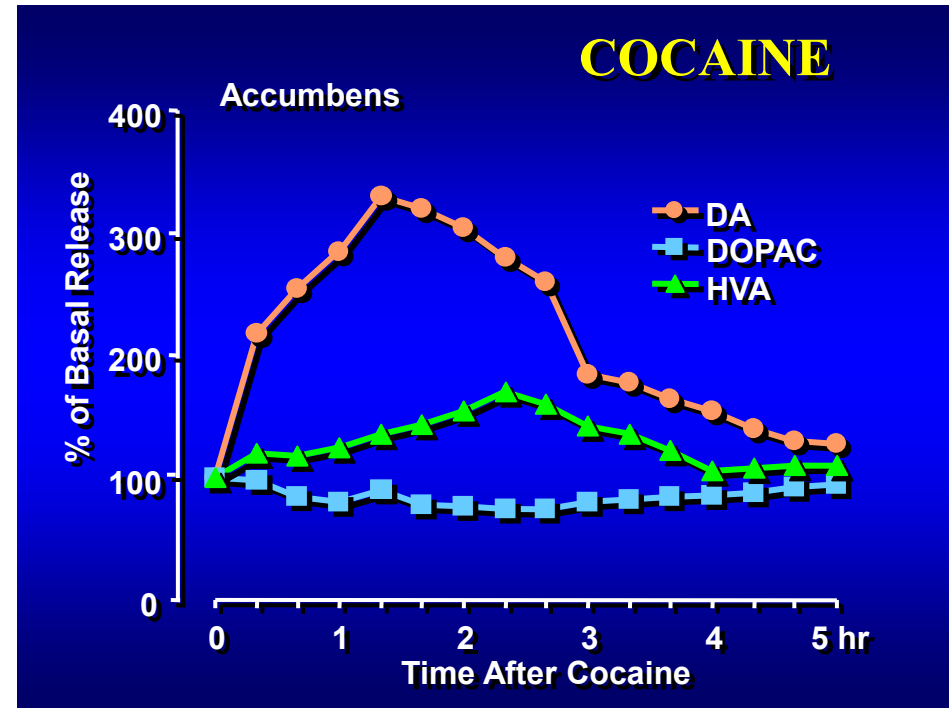
# Nicotine



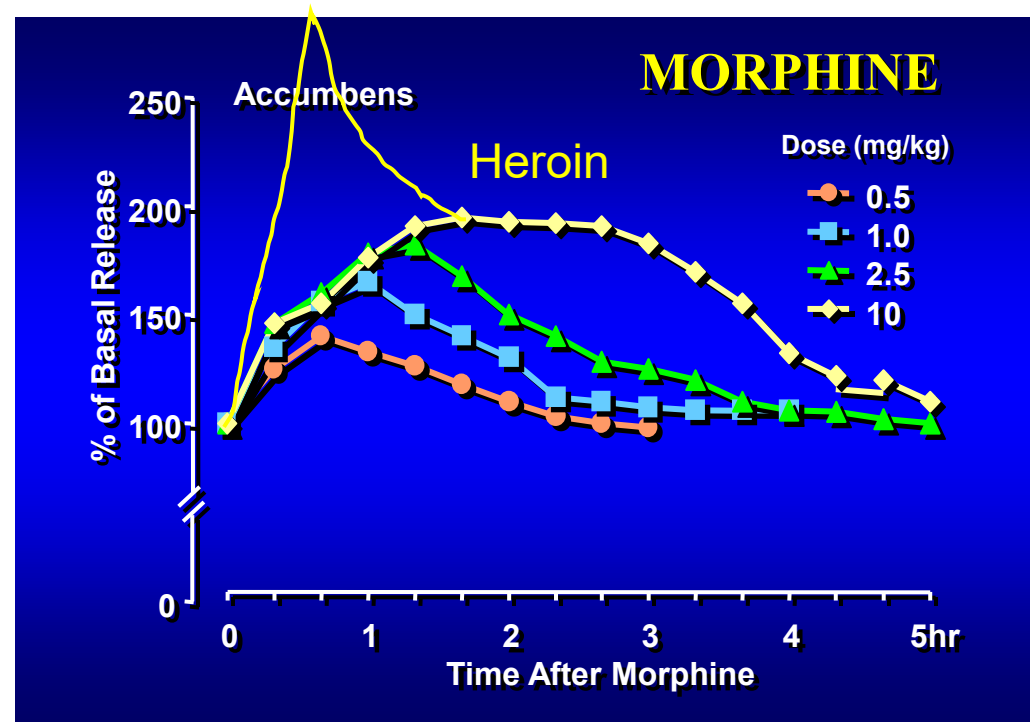
# Alcohol



# Cocaine

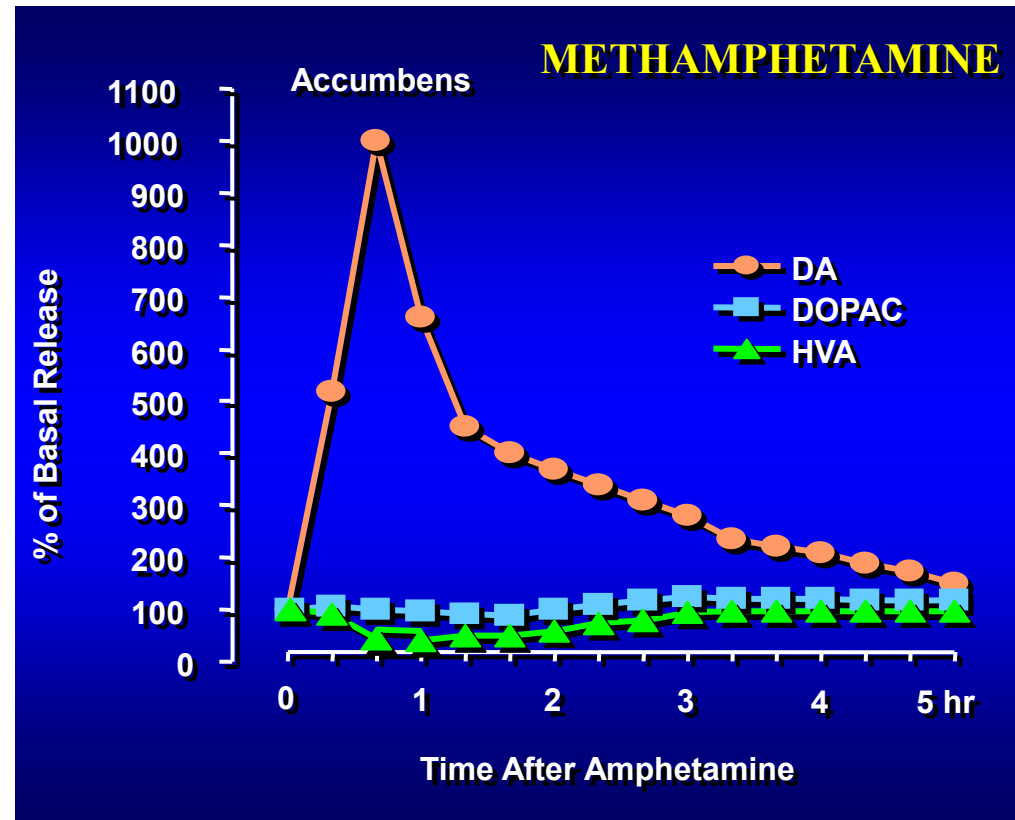


# Morphine



Source: Di Chiara and Imperato

# Methamphetamine



# Homer Says...



If it felt good,  
do it again...  
and again

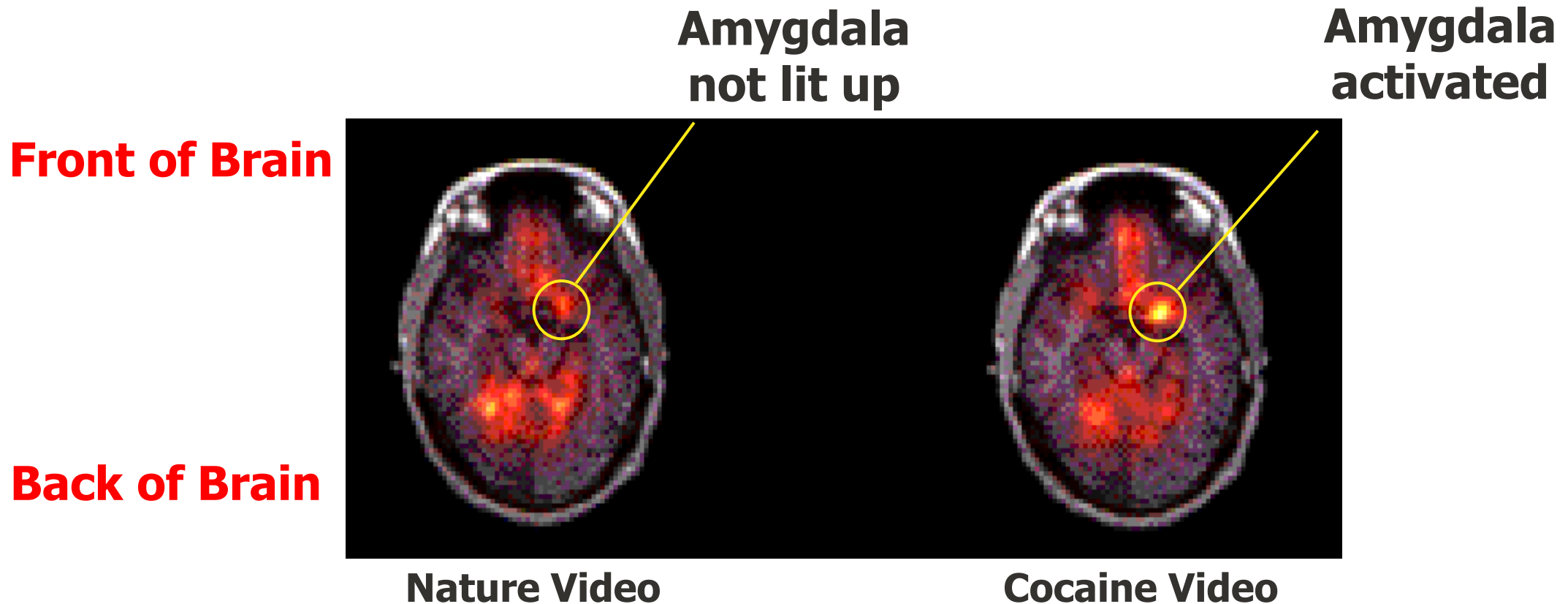
# Methamphetamine Signs of Abuse

- Rapid weight loss
- Nervous energy
- “Tweaking”
- No “need” for sleep
- Aggressive
- Mean temperament
- Compulsive
- Excited talk
- Meth Mouth

# Methamphetamine – Withdrawal

- Long crash
- Apathy
- Depression
- Fatigue
- Anxiety
- Suicidal ideation
- Cravings

# Memory of Drugs



# Cocaine

- Natural Stimulant - South America
- 7,000'-11,000' ABS
- 100" Rain/year
- Grows 6'-8' high
- Harvested 3-4 times year
- Animals and insects don't eat it

# Cocaine

- The Drug of the '80's- 1880's and 1980's
- 2500 B.C. –first documented use
- Incan culture –Gift from God
- Chewed the leaves

# Cocada

- The wad of leaves that is chewed
- Unit of Time
- Unit of Distance
- “To use cocaine is to be a human”

# 1800's

- Cocaine isolated/ syringe invented
- Much more potent
- Robert Louis Stevenson
- Arthur Conan Doyle
- Sigmund Freud

# Vin Mariani

- Wine and Coca leaf extract
- Pope Leo XII
- Queen Victoria
- William McKinley
- Thomas Edison

# Patent Medicines



- 1890's
- Morphine
- "Medicine Show"
- SEARS catalog

# Coca-Cola



- Medicinal tonic
- Contained cocaine until 1906

# 1900's

- Harrison Narcotic Act 1914
- 1970's - Amphetamines scarce
- Cocaine use increases
- 1978-1988 "Epidemic"
- 3000-5000 new users/day
- 1985 –crack
- Miami Vice and Scarface



|                     |                     |                    |
|---------------------|---------------------|--------------------|
| <b>Leaves</b>       | <b>500 kilos</b>    | <b>\$1200</b>      |
| <b>Cora Paste</b>   | <b>2.5 Kilos</b>    | <b>\$5,000</b>     |
| <b>Cocaine Base</b> | <b>1k</b>           | <b>\$11,000</b>    |
| <b>CocaineHCL</b>   | <b>1k</b>           | <b>\$20,000</b>    |
| <b>Cocaine U.S.</b> | <b>1k</b>           | <b>\$60,000</b>    |
| <b>50%</b>          | <b>2k</b>           | <b>\$120,000</b>   |
| <b>25%</b>          | <b>4k</b>           | <b>\$250,000</b>   |
| <b>12%</b>          | <b>8k</b>           | <b>\$500,000</b>   |
| <b>6%</b>           | <b>16k</b>          | <b>\$1,000,000</b> |
| <b>\$100/gram</b>   | <b>16,000 grams</b> | <b>\$1,600,000</b> |

# Cuts

- Sugars - Milk sugar
- Talc
- Papein – meat tenderizer
- Caines – lido-, pseudo-, nova-

# Smoking Cocaine

- Users wanted purer cocaine
- Reverse the cutting process
- Free-basing - Cocaine HCL
- Dangerous –Richard Pryor
- Crack-simple, less dangerous
- Epidemic



# Cocaine - Anesthetic

- Medical use-Topical anesthetic
- EENT
- Lidocaine/Novocain-no Euphoria- little abuse

# Cocaine Effects - Vasoconstriction

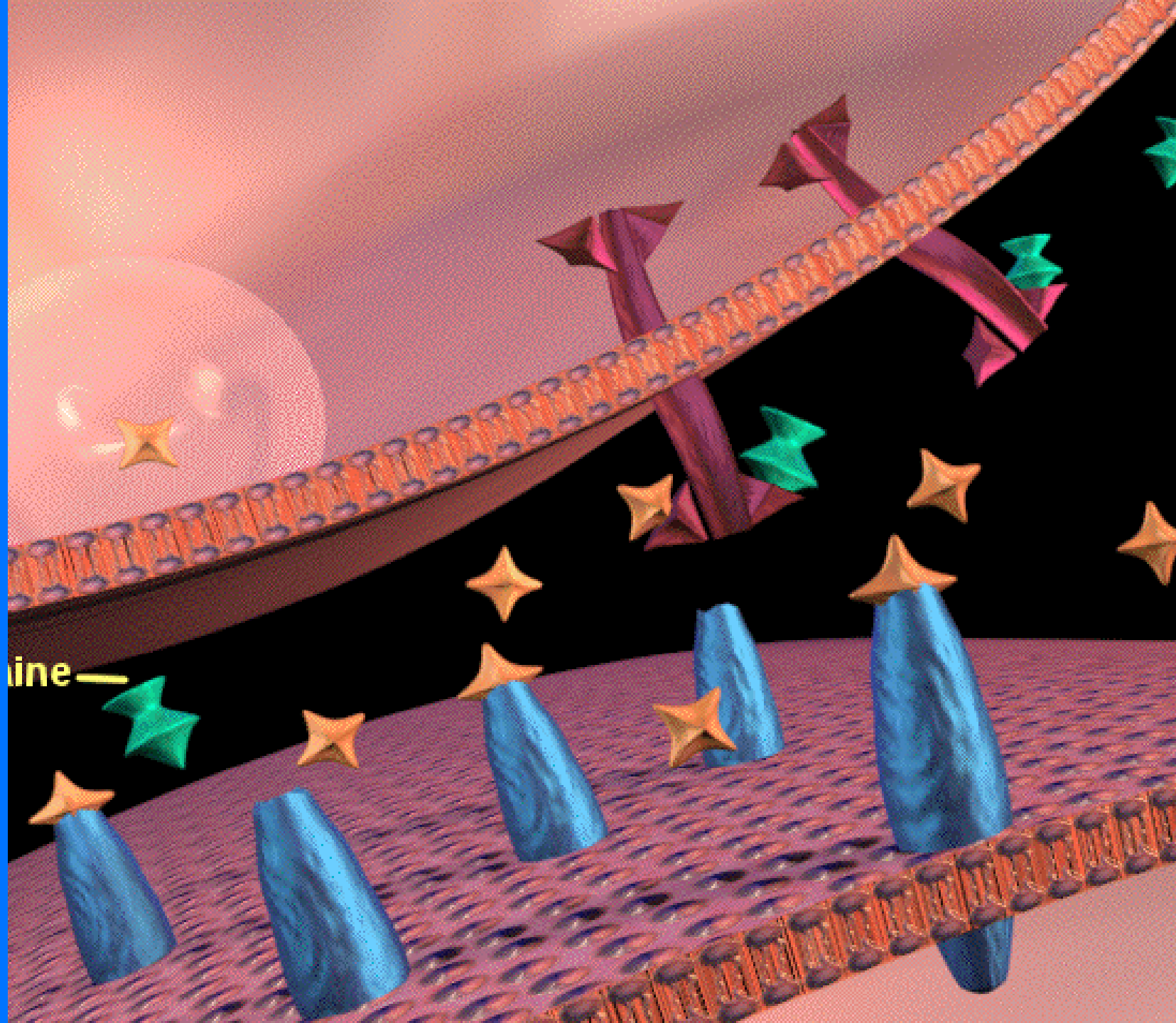
- Blood vessels narrow
- Restricts blood flow – EENT
- Inhibits absorption on nasal mucosa- need more drug for re-dosing

# Cocaine Effects - Euphoria

- Blocks Reuptake of DA and NE – increases activity
- Peripheral NS - NE Fight/Flight
  - HR, BP, Temp, bronchodilation, dilates pupils



# Cocaine's Synaptic Action

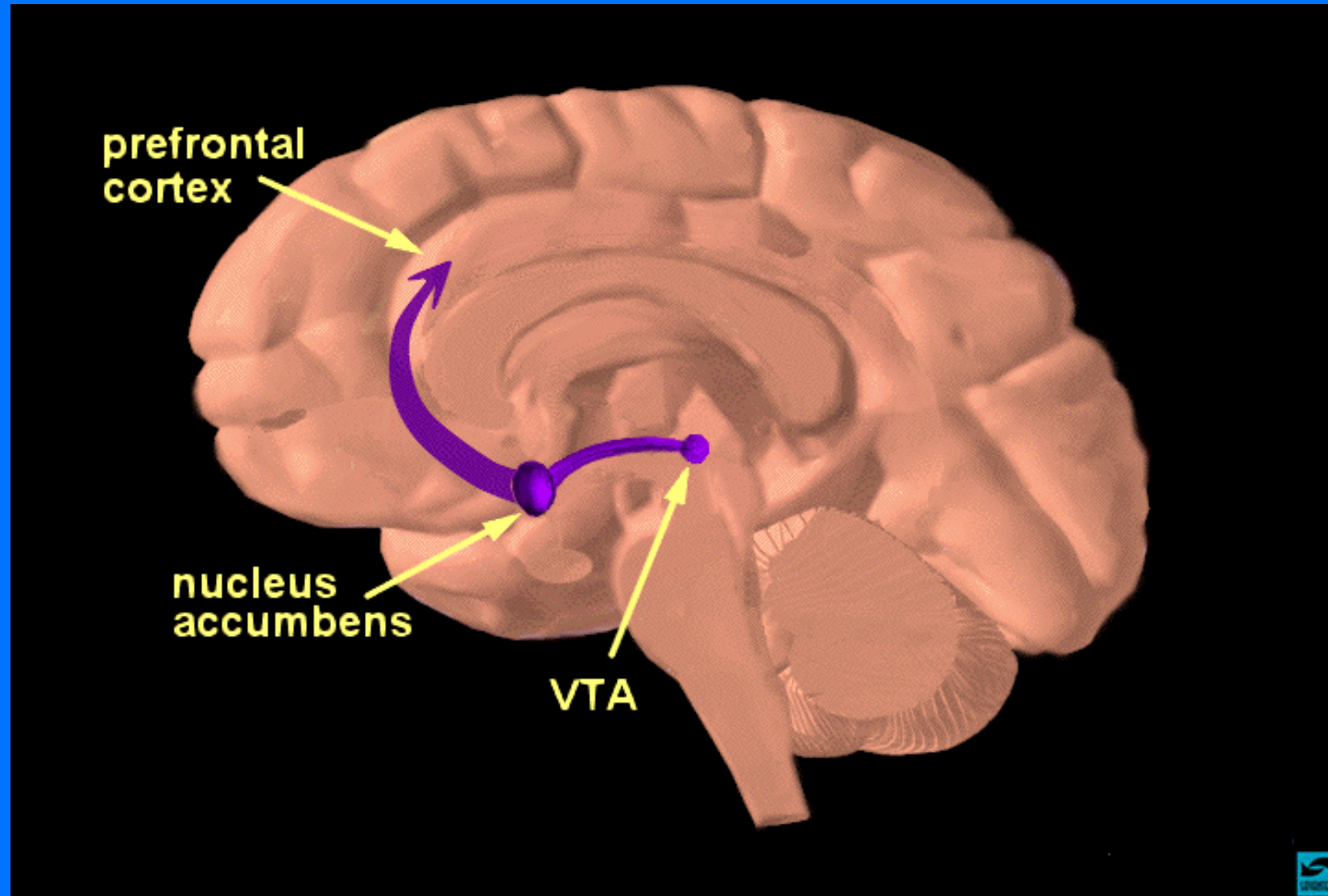


# Cocaine Effects - Euphoria

- CNS - ↑NE/DA – Cortex, limbic system, and brainstem
- Euphoria-unique to cocaine as a re-uptake inhibitor

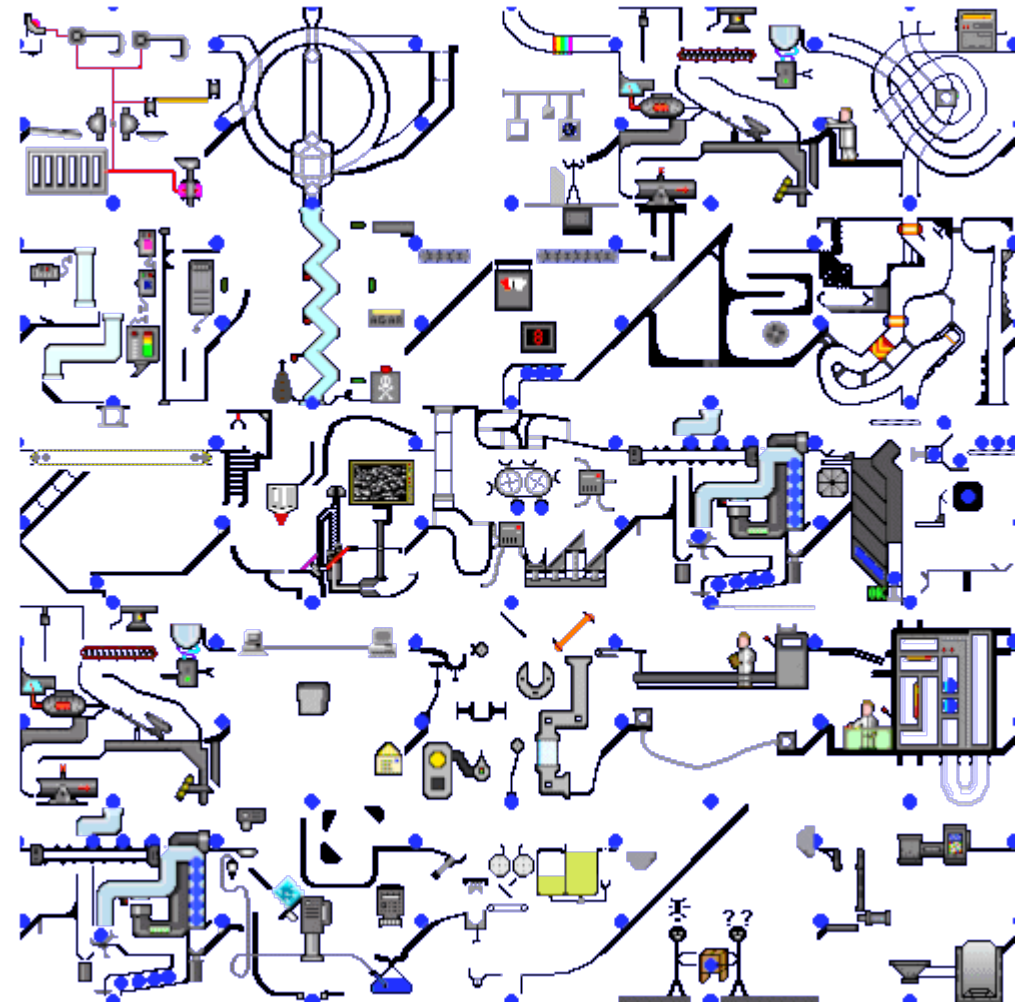


# Reward Pathways



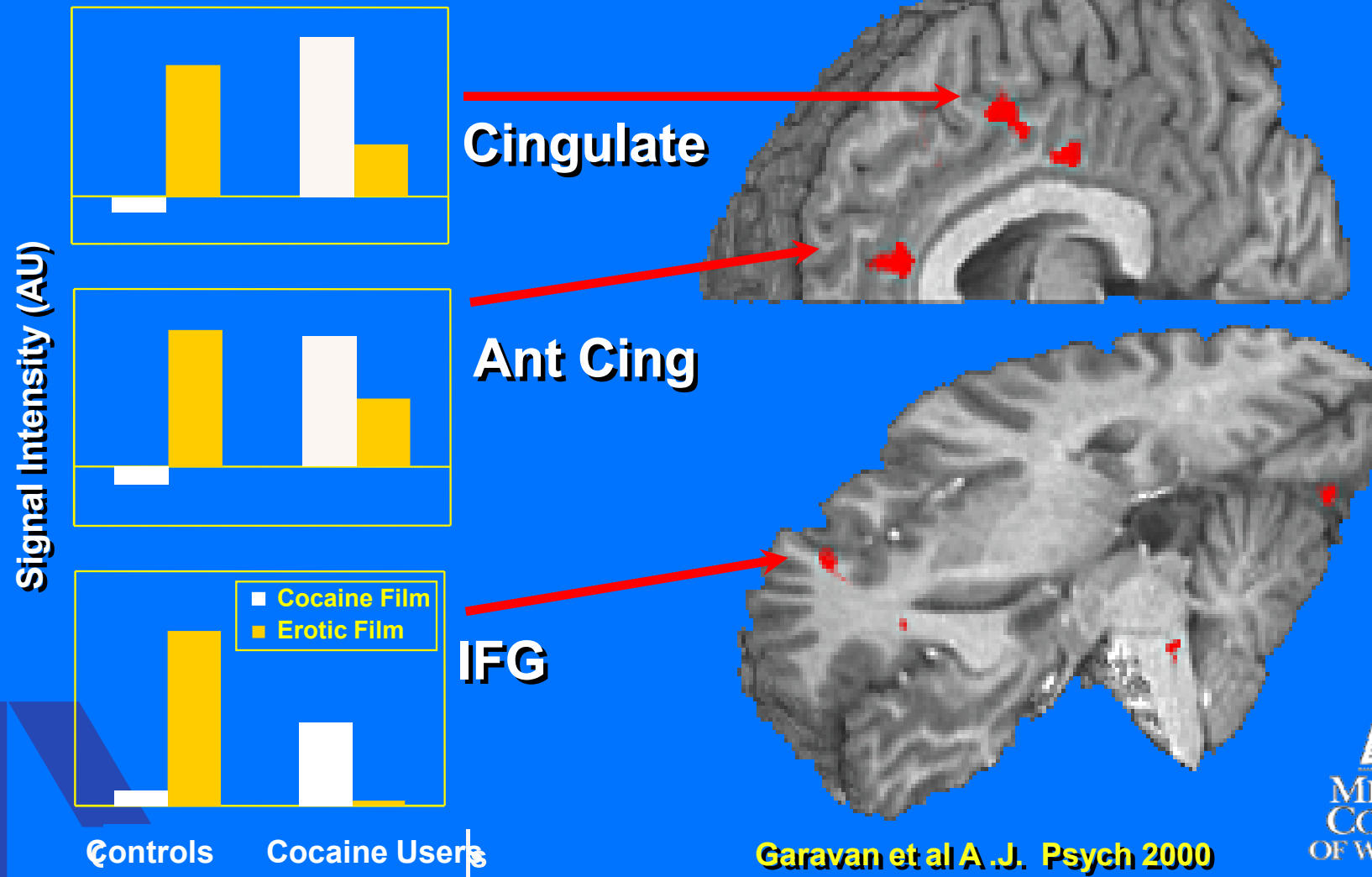
# Dopamine

- Initially – Dopamine identified as the main NT involved in pleasure
- Currently – It's more complicated 😊
- Several NT's and systems involved
- Liking vs. Wanting



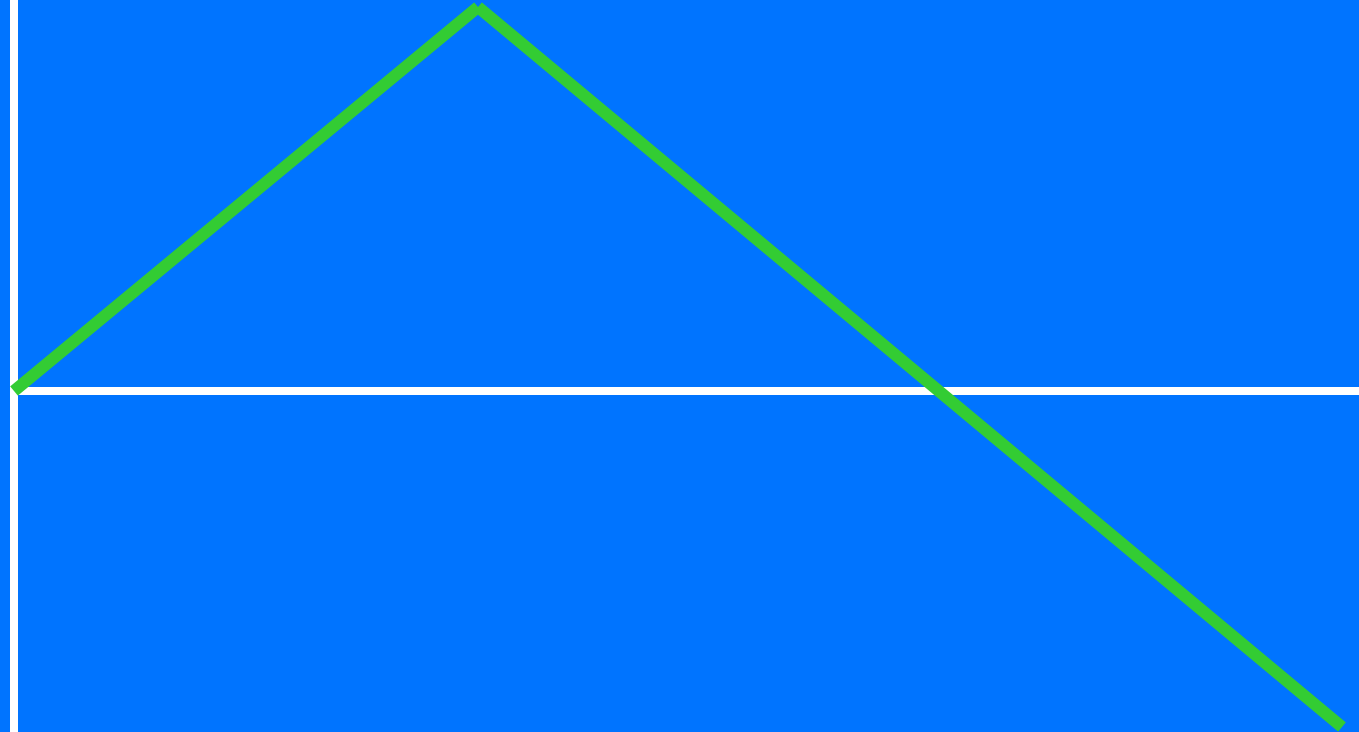
# Cocaine Craving:

**Population (Cocaine Users, Controls) x Film (cocaine, erotic)**



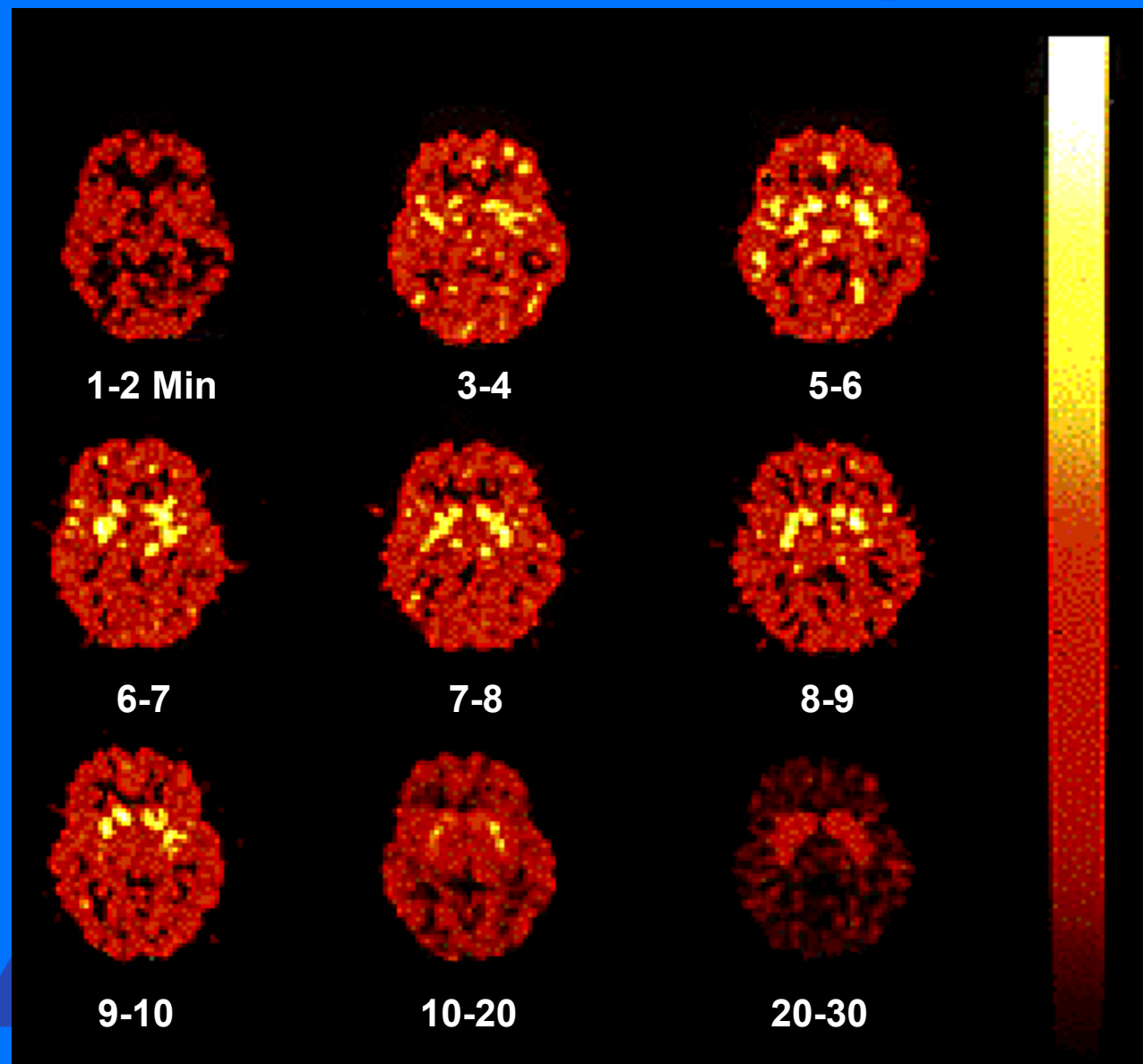
Garavan et al A.J. Psych 2000

Alert, Awake, Powerful, Confident

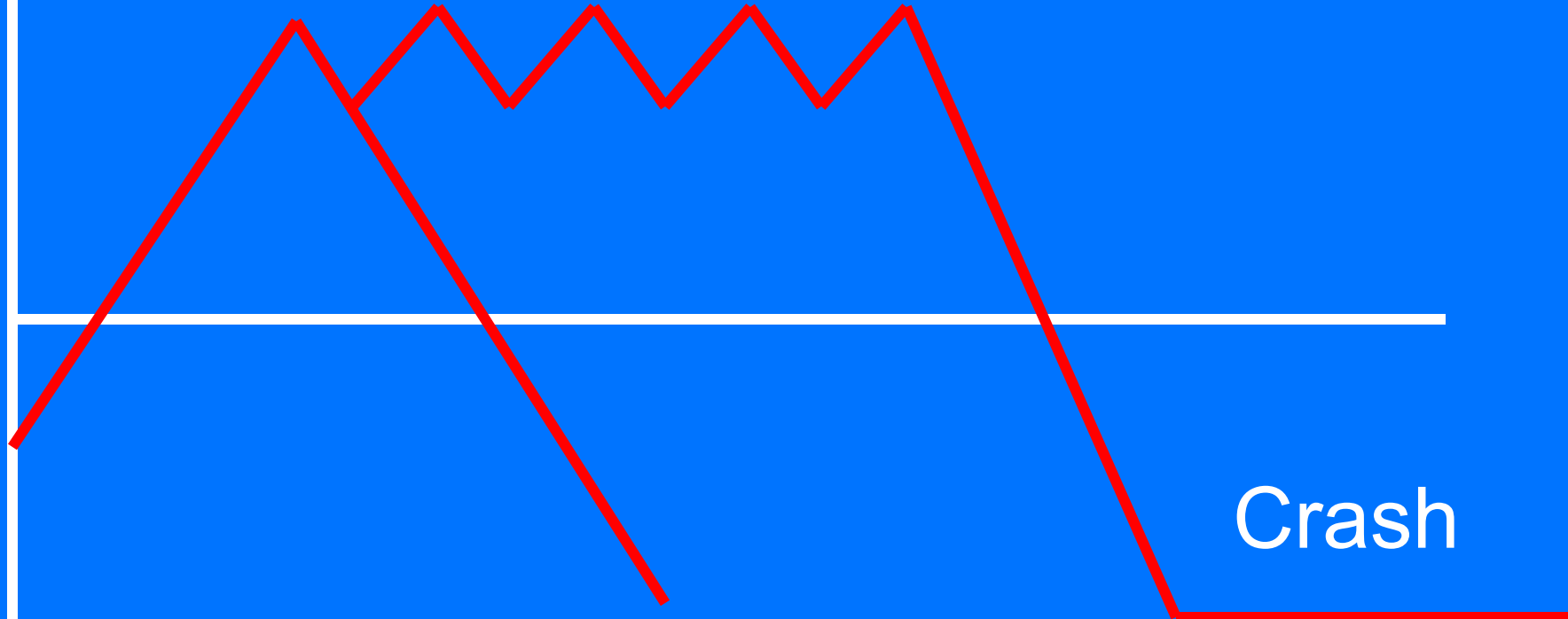


Drowsy, Powerless,  
Low Self esteem, Depression

# Your Brain on Drugs



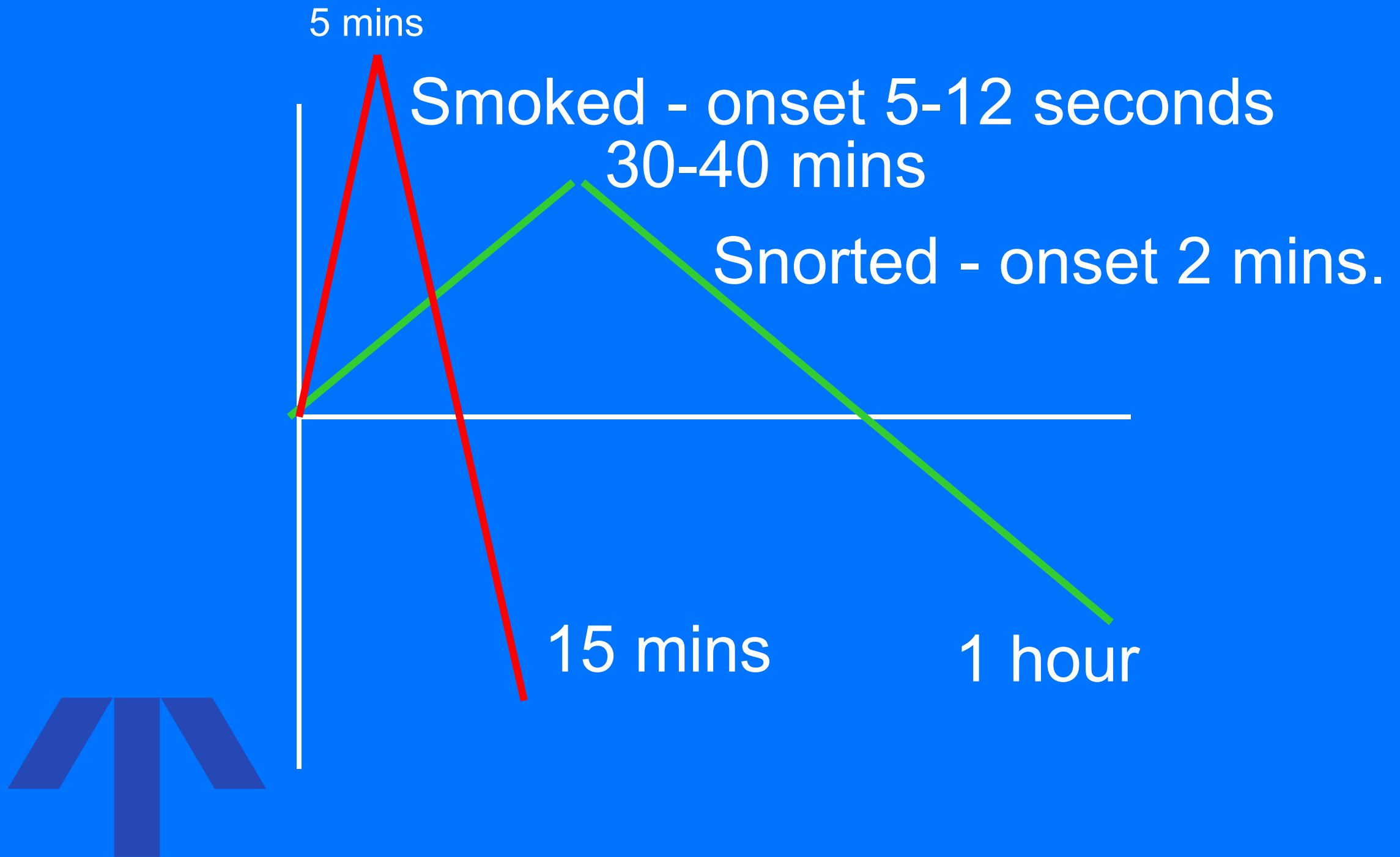
Awake, Powerful, Euphoric, Sexy

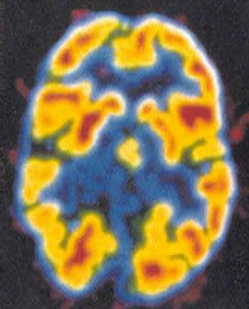
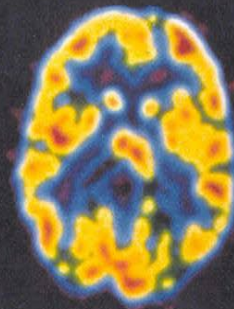
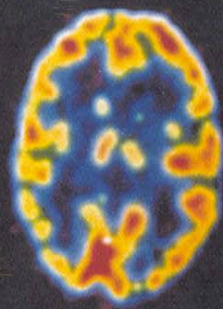


Crash

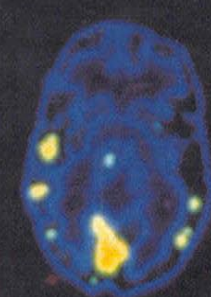
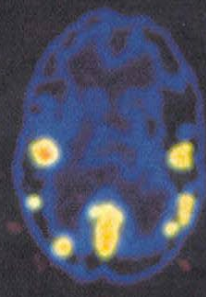
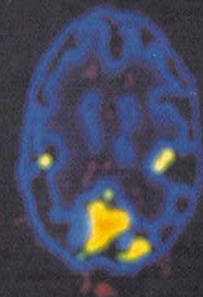
Depressed, Powerless



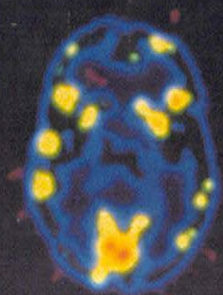
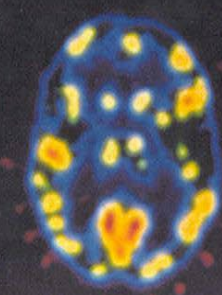
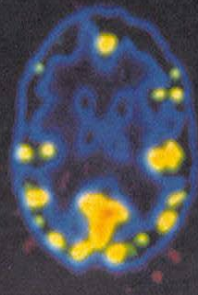




NORMAL



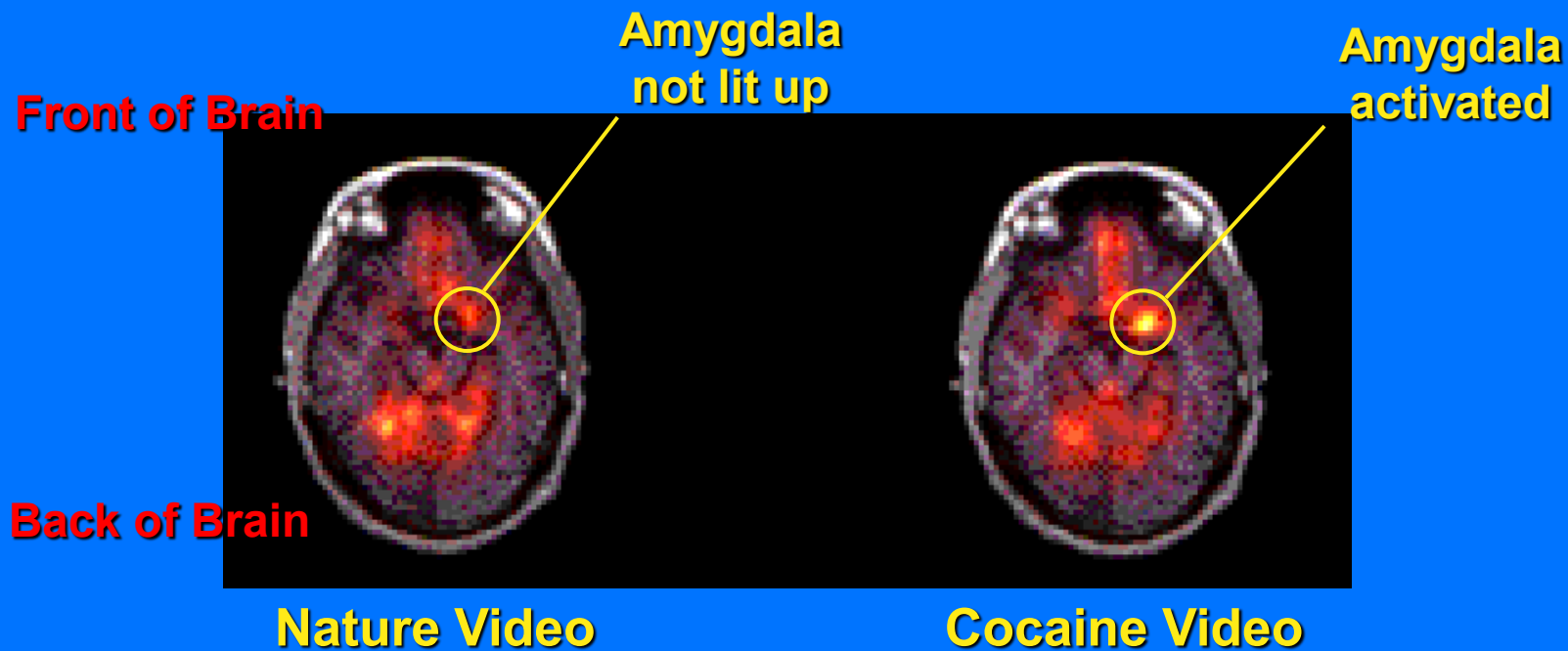
COCAINE ABUSER (10 DA)



COCAINE ABUSER (100 DA)



# The Memory of Drugs



# Treatment Implications

- Intense Cravings
- Anhedonia
- No approved FDA medications for Stimulant Use Disorders
- Cognitive Behavioral approaches – Matrix
- Risk of mixture with fentanyl

# Effective Treatment

- Motivational Interviewing
- Contingency Management
- Cognitive Behavioral approaches – Matrix
- Community Reinforcement

EVIDENCE-BASED RESOURCE GUIDE SERIES

## Treatment of Stimulant Use Disorders



**SAMHSA**  
Substance Abuse and Mental Health  
Services Administration

# Ask the Expert

<https://allrise.org/trainings/ask-the-expert/>

## Office Hours

Scheduled times with experts on various key topics

## Submit a Question

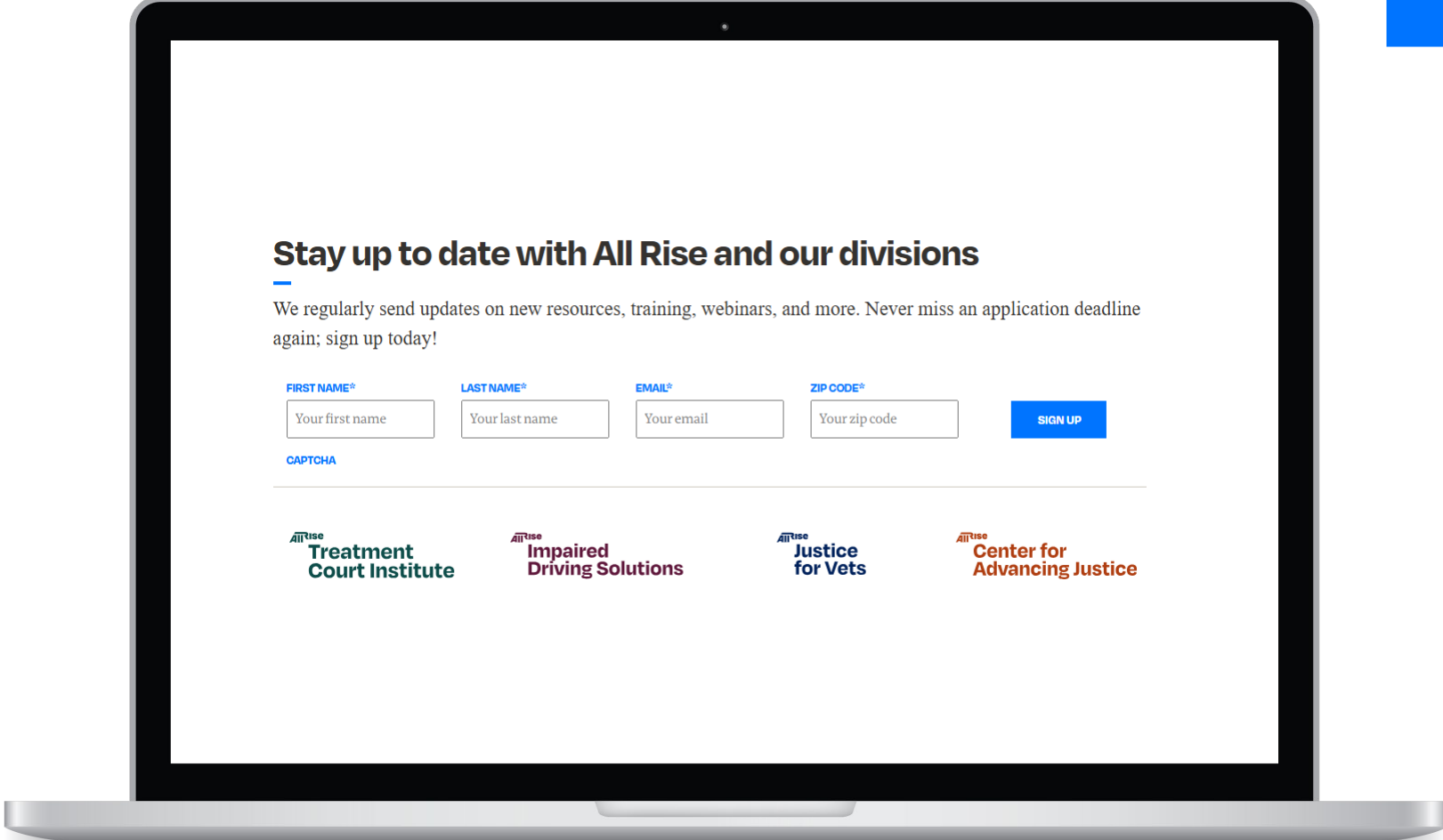
Submit a question to the All Rise team

## Schedule a Consultation

Schedule a consultation with the All Rise team

# All Rise Email Blast

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bottom of  
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CAPTCHA

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# Evaluations



1. On your compatible phone or tablet, open the built-in camera app.
2. Point the camera at the QR code.
3. Tap the banner that appears on your phone or tablet.
4. Follow the instructions on the screen to complete the evaluation.
5. After completion, you will be provided with a certificate that can be saved and printed.



Thank  
You

Steve Hanson

**SR. TREATMENT CONSULTANT,  
ALL RISE**

[shanson@allrise.org](mailto:shanson@allrise.org)

# ATIRise

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Court Institute**  
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