

Chemical Dependency
Relapse Pathways
Relapse Prevention Medications

“Understanding the how, why,
where and when.”

Acknowledgements

- La Hacienda Treatment Center
- American Society of Addiction Medicine
- National Institute on Drug Abuse

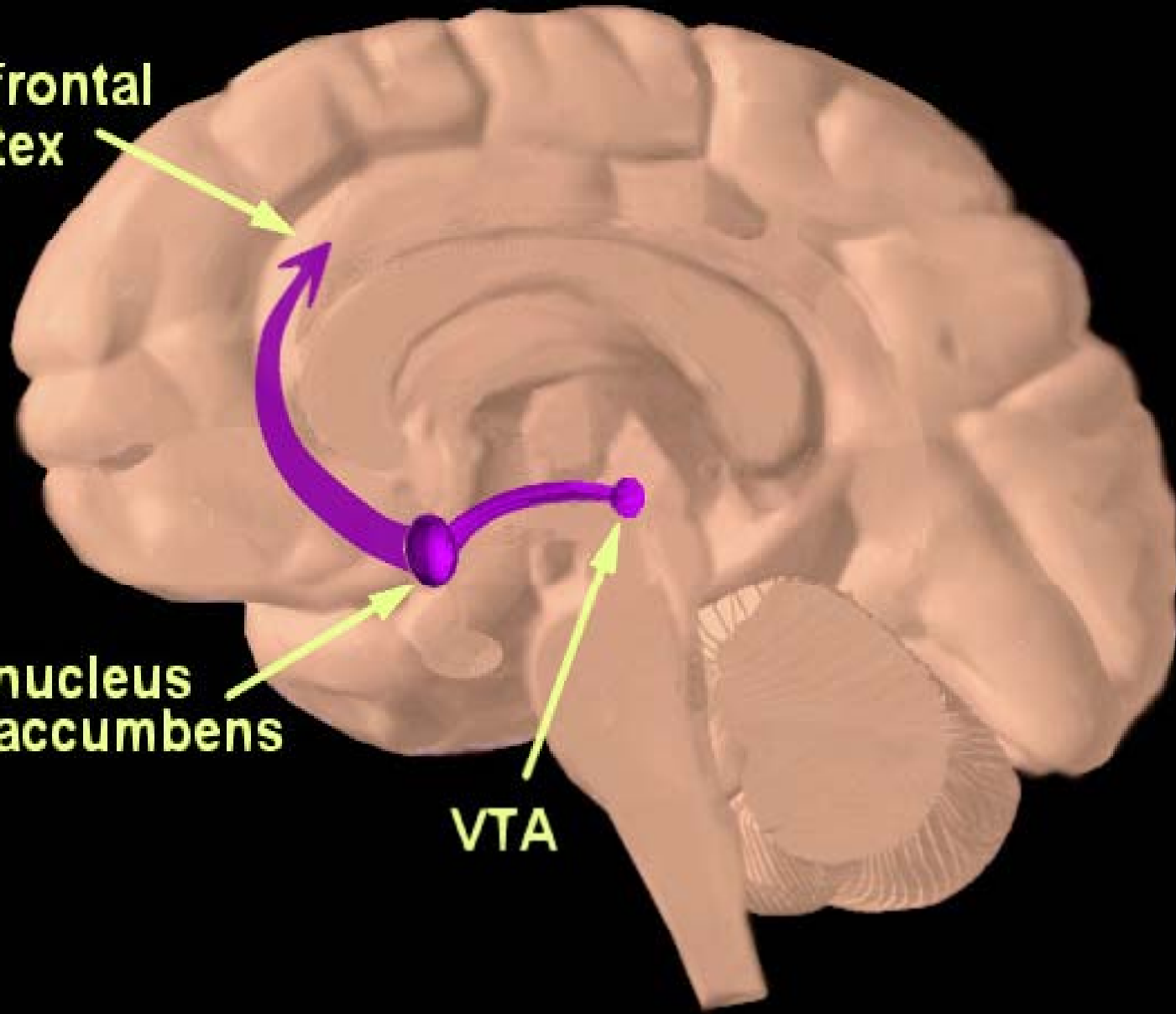
Definition of Dependency

- A primary, progressive biochemical, psychosocial, genetically transmitted chronic disease of relapse who's hallmarks are denial, loss of control and unmanageability.

prefrontal cortex

nucleus accumbens

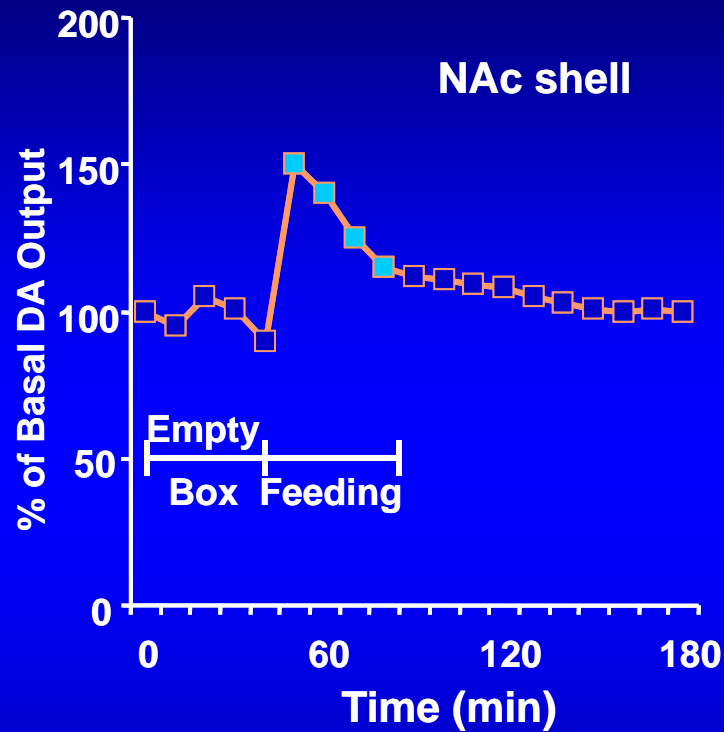
VTA



Natural Rewards Elevate Dopamine

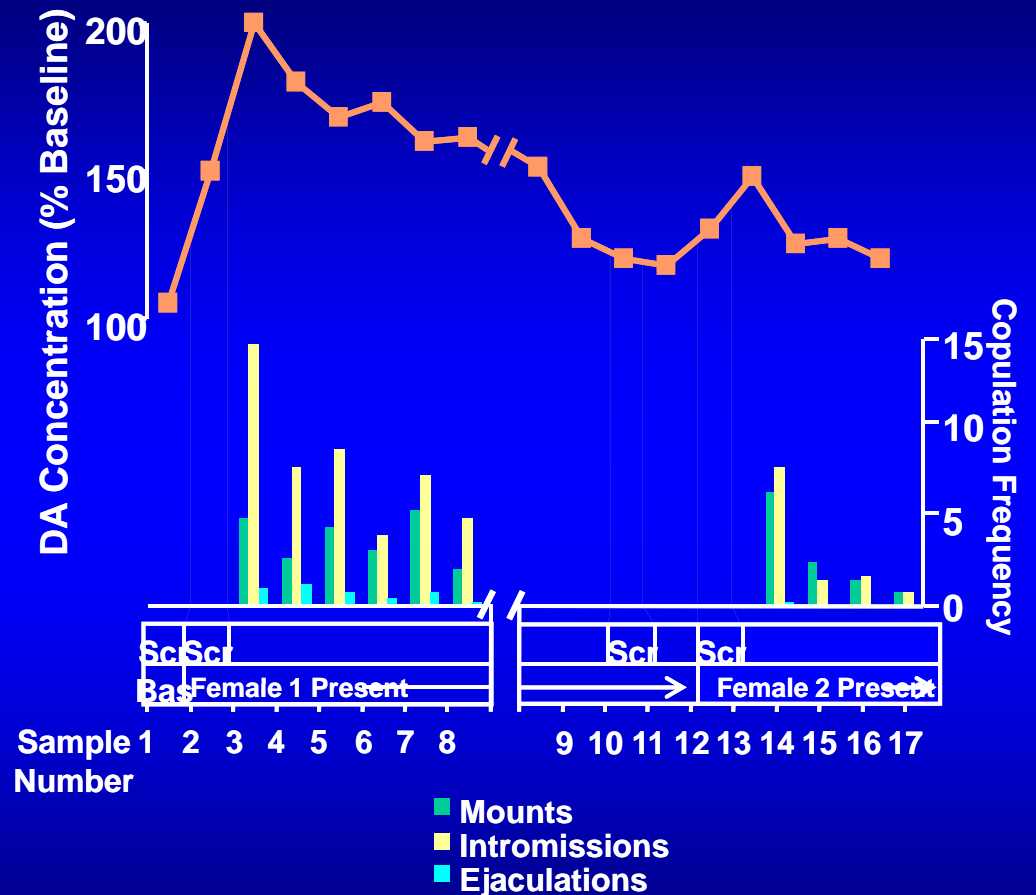
Levels

FOOD



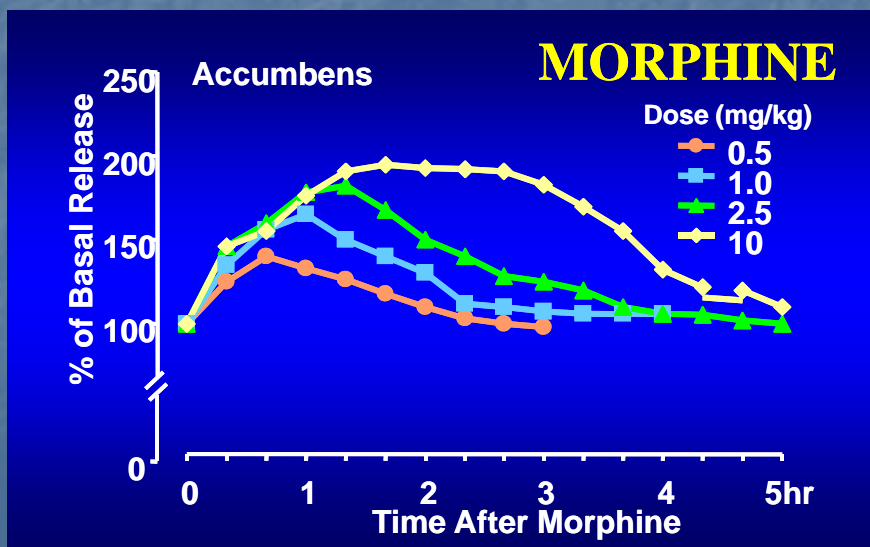
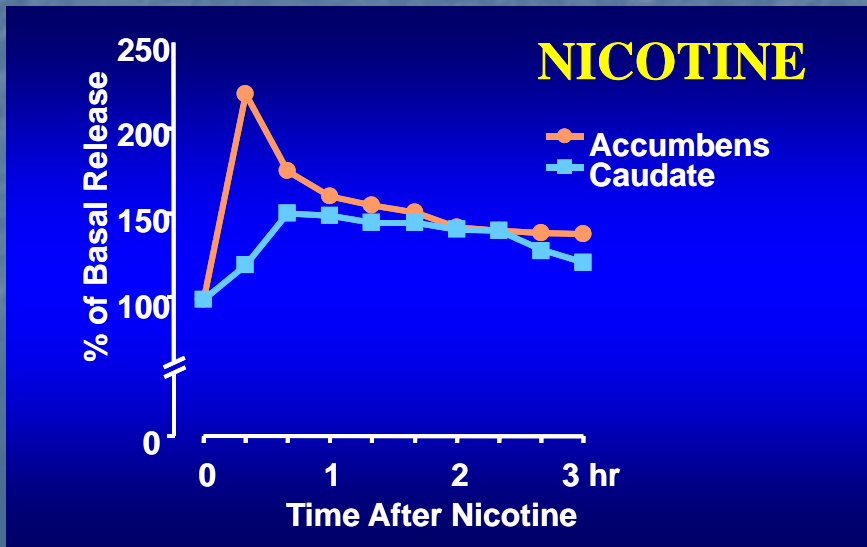
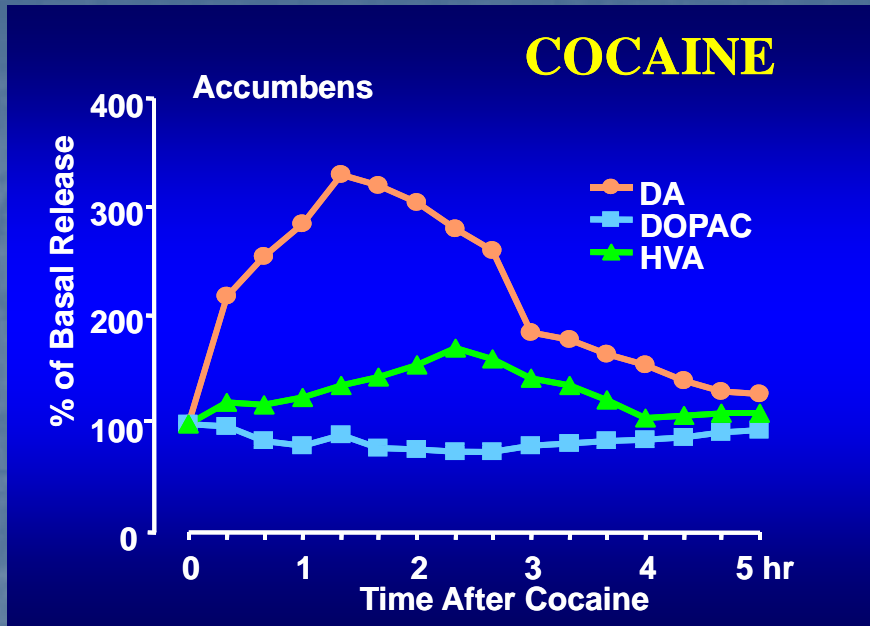
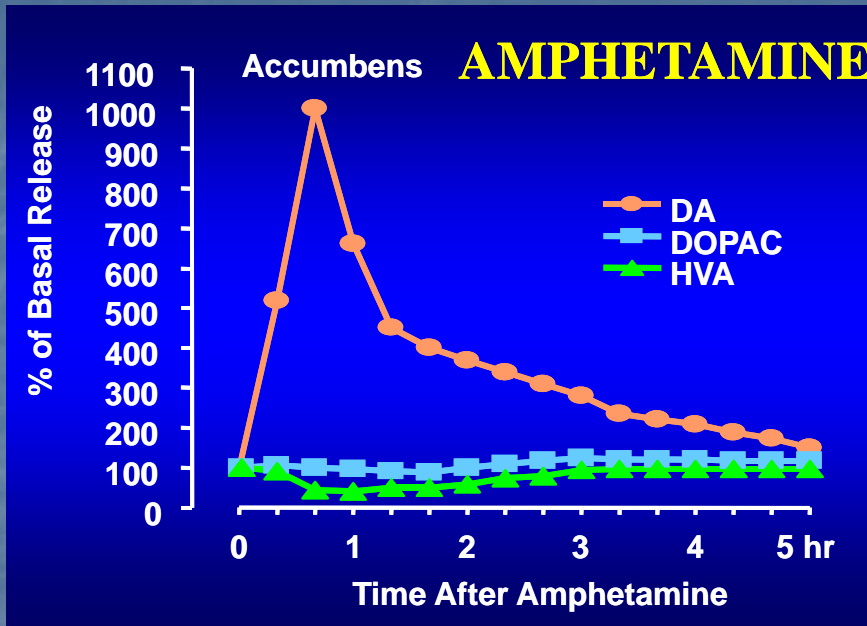
Source: Di Chiara et al.

SEX



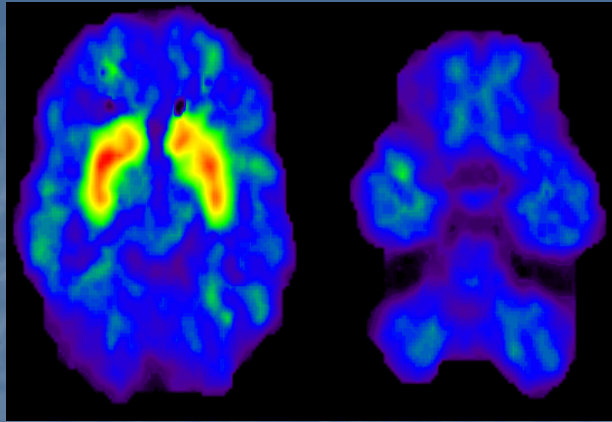
Source: Fiorino and Phillips

Effects of Drugs on Dopamine Levels

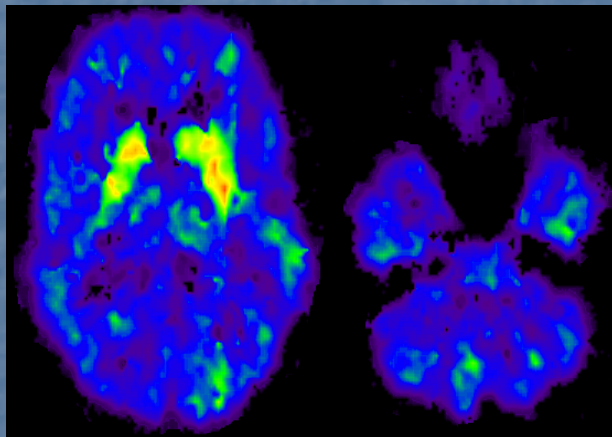


Source: Di Chiara and Imperato

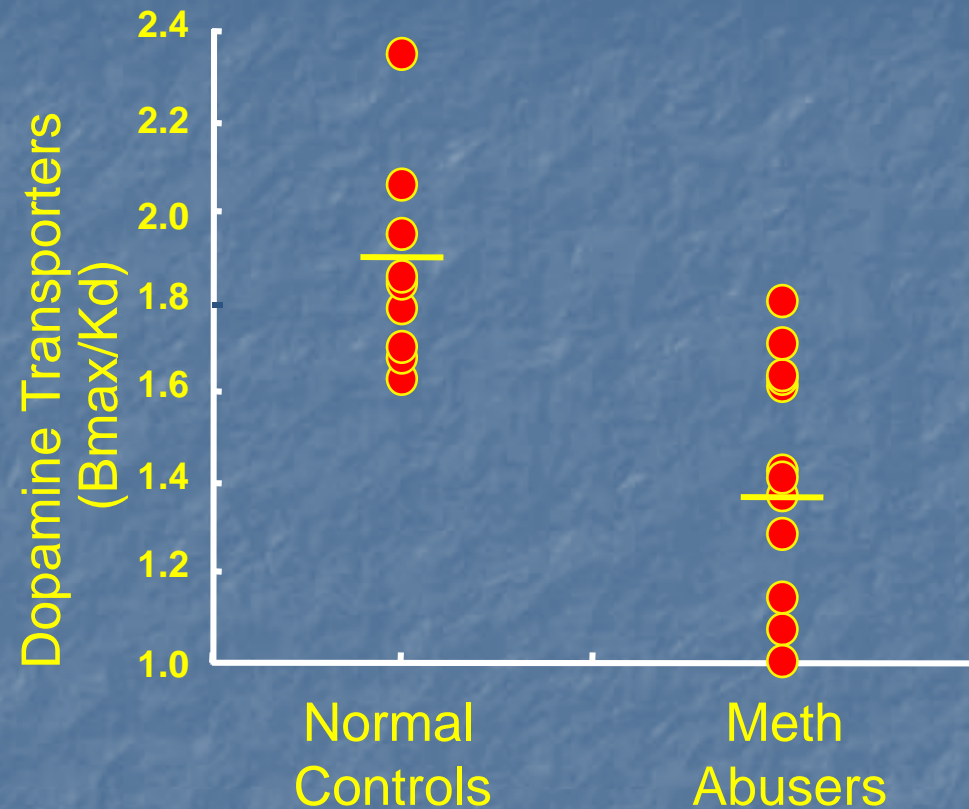
Dopamine Transporters in Methamphetamine Abusers



Normal Control



Methamphetamine Abuser



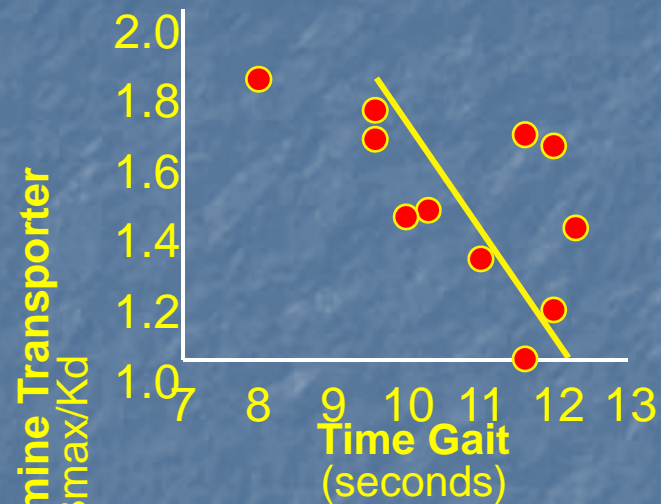
$p < 0.0002$

Methamphetamine abusers have significant reductions in dopamine transporters.

Dopamine Transporters in Methamphetamine Abusers

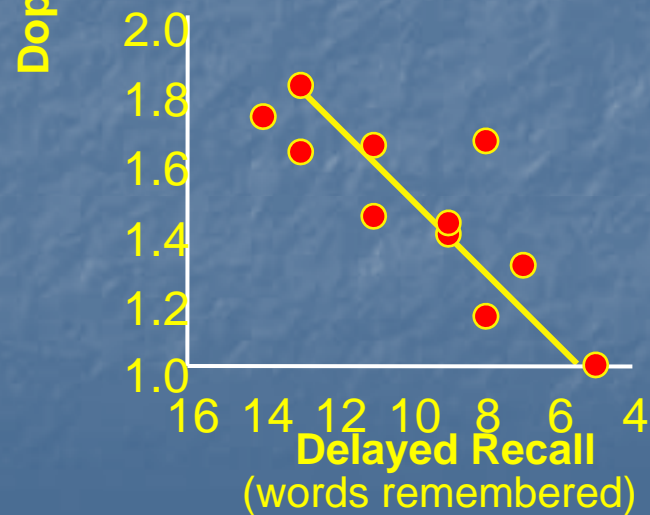
Motor Task

Loss of dopamine transporters in the meth abusers may result in slowing of motor reactions.



Memory Task

Loss of dopamine transporters in the meth abusers may result in memory impairment.

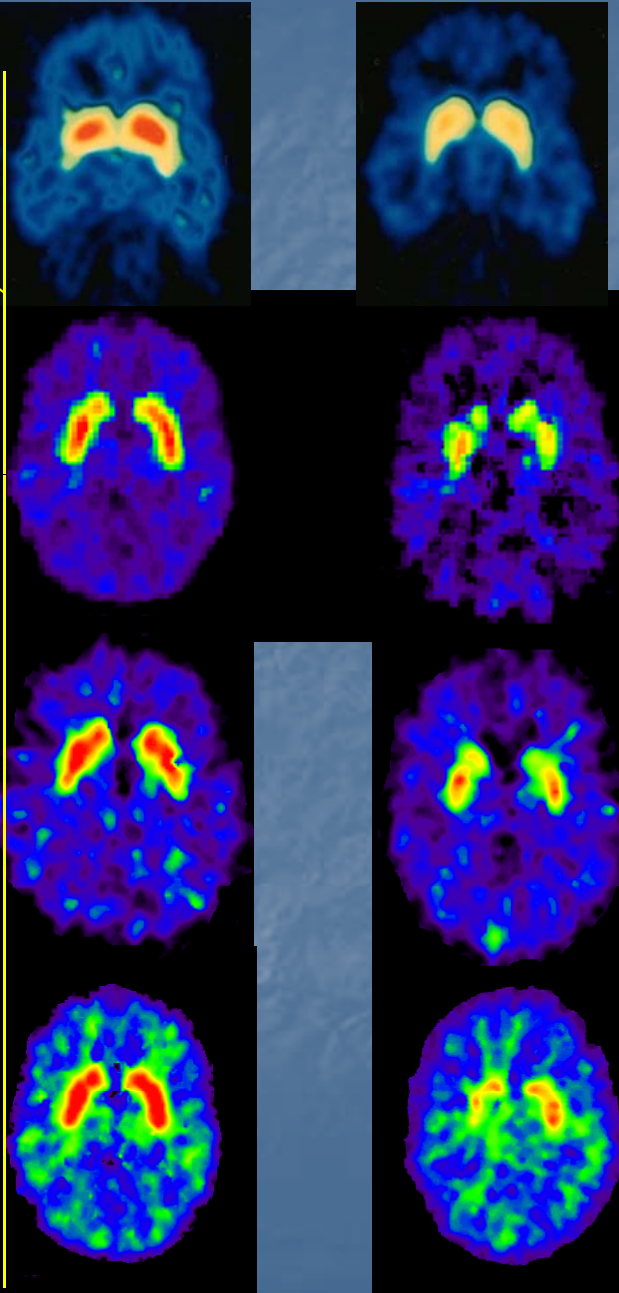


Dopamine D2 Receptors in Addiction

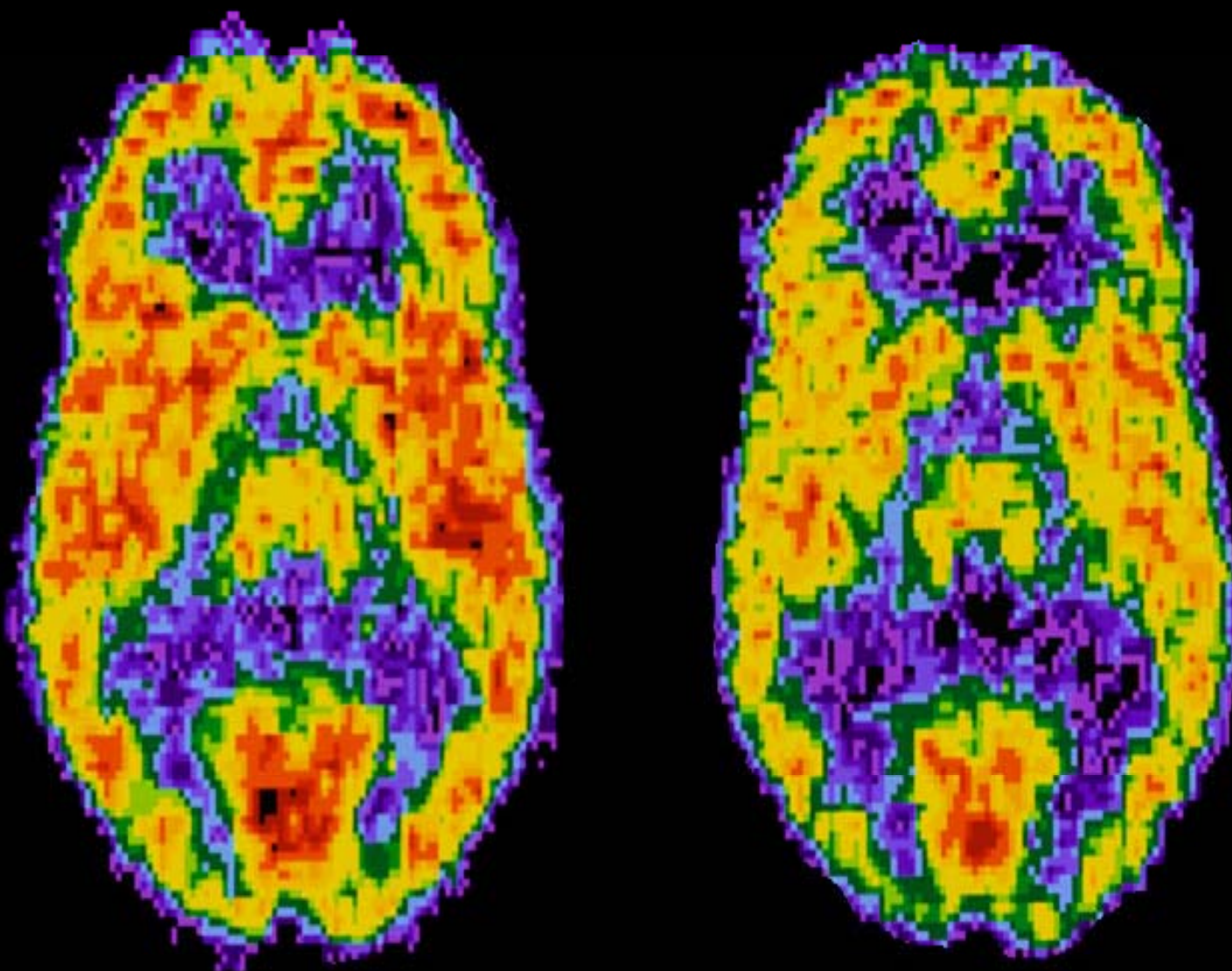


Control groups

Experimental groups

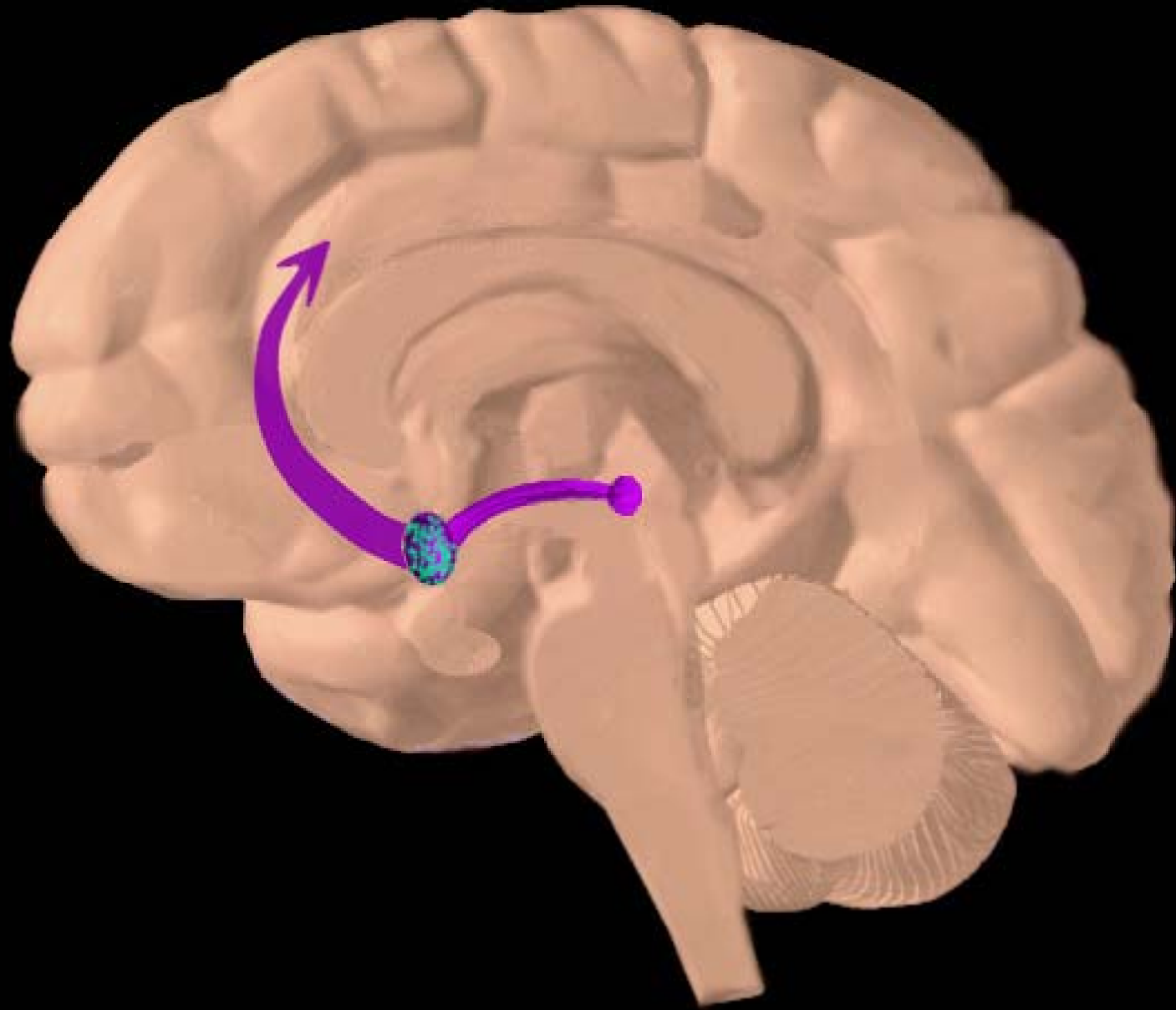


on cocaine



Addictions

- Hypothalamic Dysregulation
- Impacts other areas of the brain including the Prefrontal Cortex, Cingulate and Pre-cingulate Gyrus, the Hippocampus, and the Amygdala.



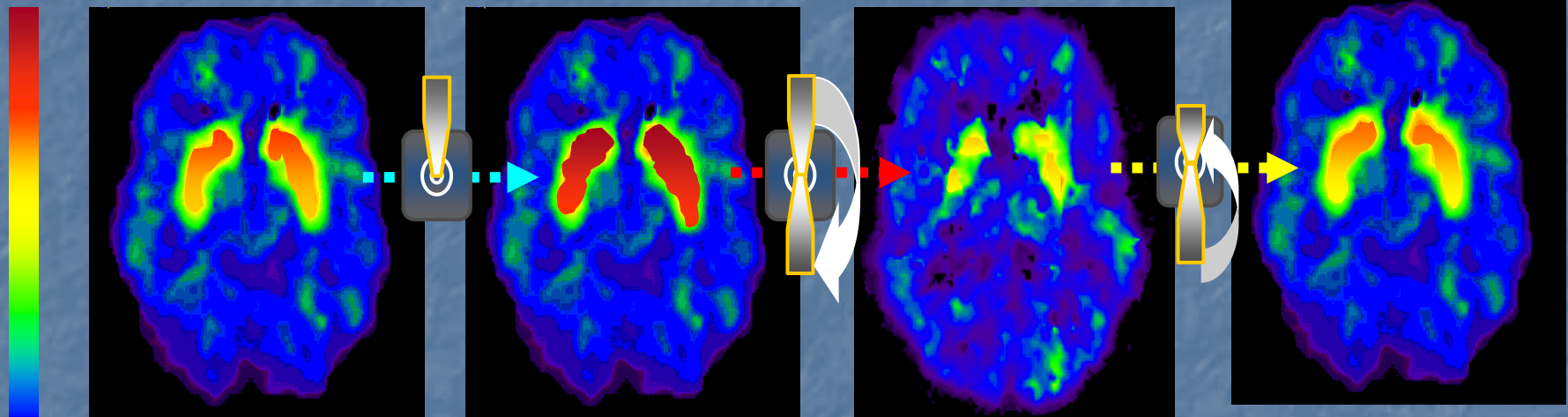
Challenge:

Normal

Drug Use

Addiction

Treatment



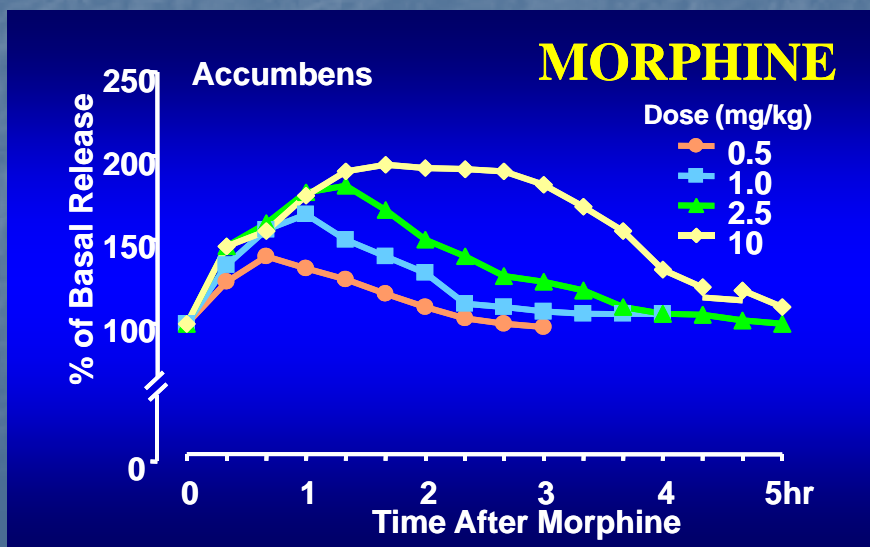
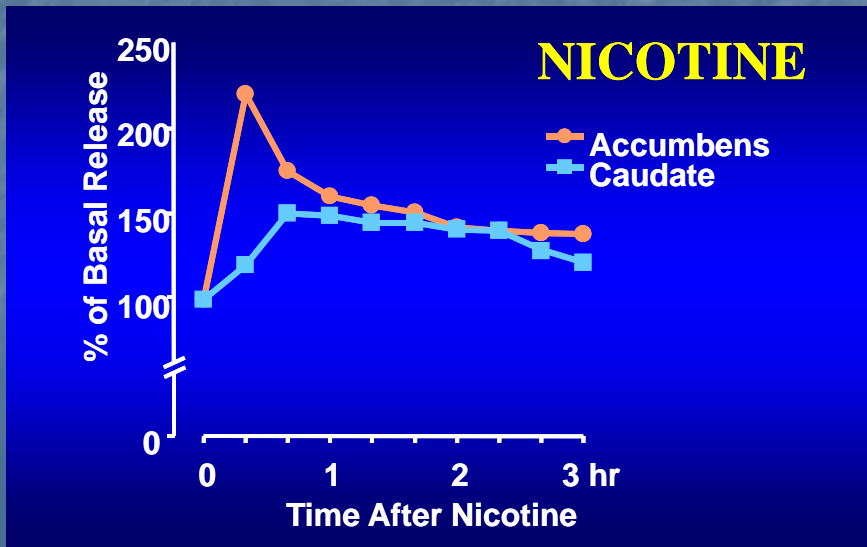
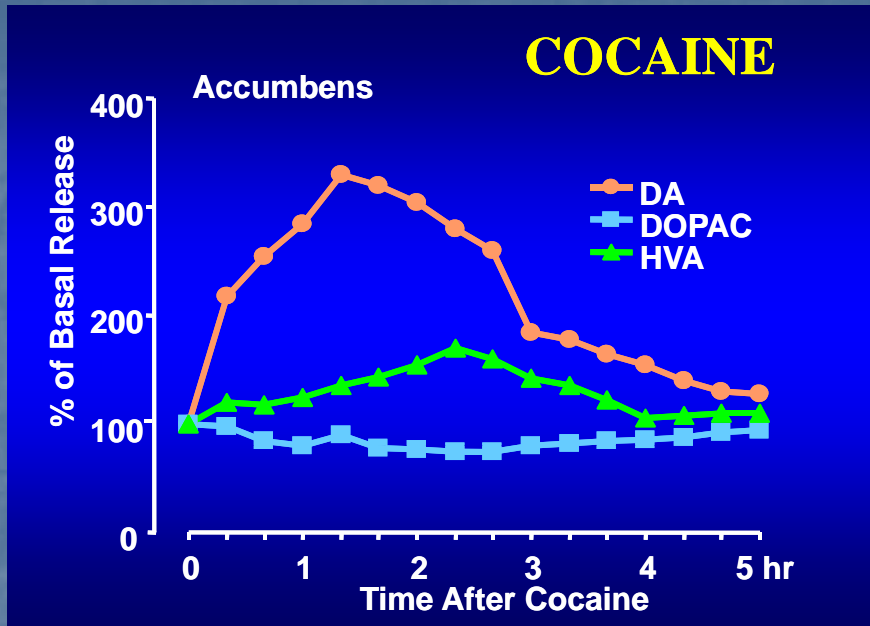
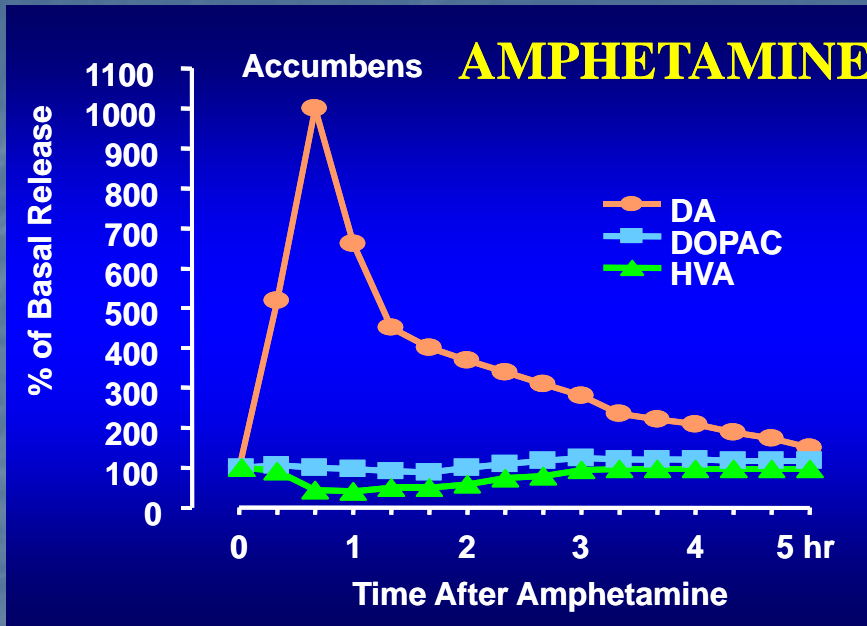
Three Major Relapse Pathways

- I. Cross Addicting Drugs
- II. People/Place/Things
- III. B.H.A.L.T.

Cross Addicting Drugs

- a. Chemical of choice
- b. Related drugs
- c. Tobacco
- d. Life long relapse pathway

Effects of Drugs on Dopamine Levels



Source: Di Chiara and Imperato

Cross Addicting Drugs

- a. Chemical of choice
- b. Related drugs
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Chemicals of Choice

- Cannot be a social or recreational user
- Cannot use in a different form or method
- Cannot use “just on special occasions”
- Cannot use PERIOD

Cross-Addicting Chemicals

- Impact on the hypothalamus as the drug of choice
- Usually leads back to the drug of original dependency
- Life long relapse pathway

Pain Control in Addiction

- Opiates are high risk in addictions
- Non Steroidal Anti-inflammatories are safe
- Some skeletal muscle relaxers are safe
- Physical therapy, stretching, exercise and massages are helpful
- Having a target for pain control or reduction

Anxiety in Addictions

- Benzodiazepines are rarely safe to use
- SSRI's can be used for Anxiety Disorders
- Other Anti-Depressant Classes can also be helpful in Anxiety Disorders
- Meditation and Relaxation Techniques
- EXERCISE

Sleep in Addictions

- Do not recommend hypnotic agents
- Go to bed at the same time every night
- No caffeine within 6 hours of bedtime
- No meals within 3 hours of bedtime
- No exercise within 3 hours of bedtime
- Use the bed only for sleep.

Tobacco

- 23% of Americans are addicted to tobacco
- >90% of the addicted population use tobacco
- Tobacco Cessation **MUST** be encouraged
- Relapse rates vary from 2 times to 5 times greater in addicts who continue to use tobacco

People/Place/Things

- a. History of discovery
- b. Three month limit for relapse

Dopamine Pathways

Serotonin Pathways

Frontal cortex

Striatum

Substantia nigra

Functions

- Reward (motivation)
- Pleasure, euphoria
- Motor function (fine tuning)
- Compulsion
- Perseveration

Nucleus accumbens

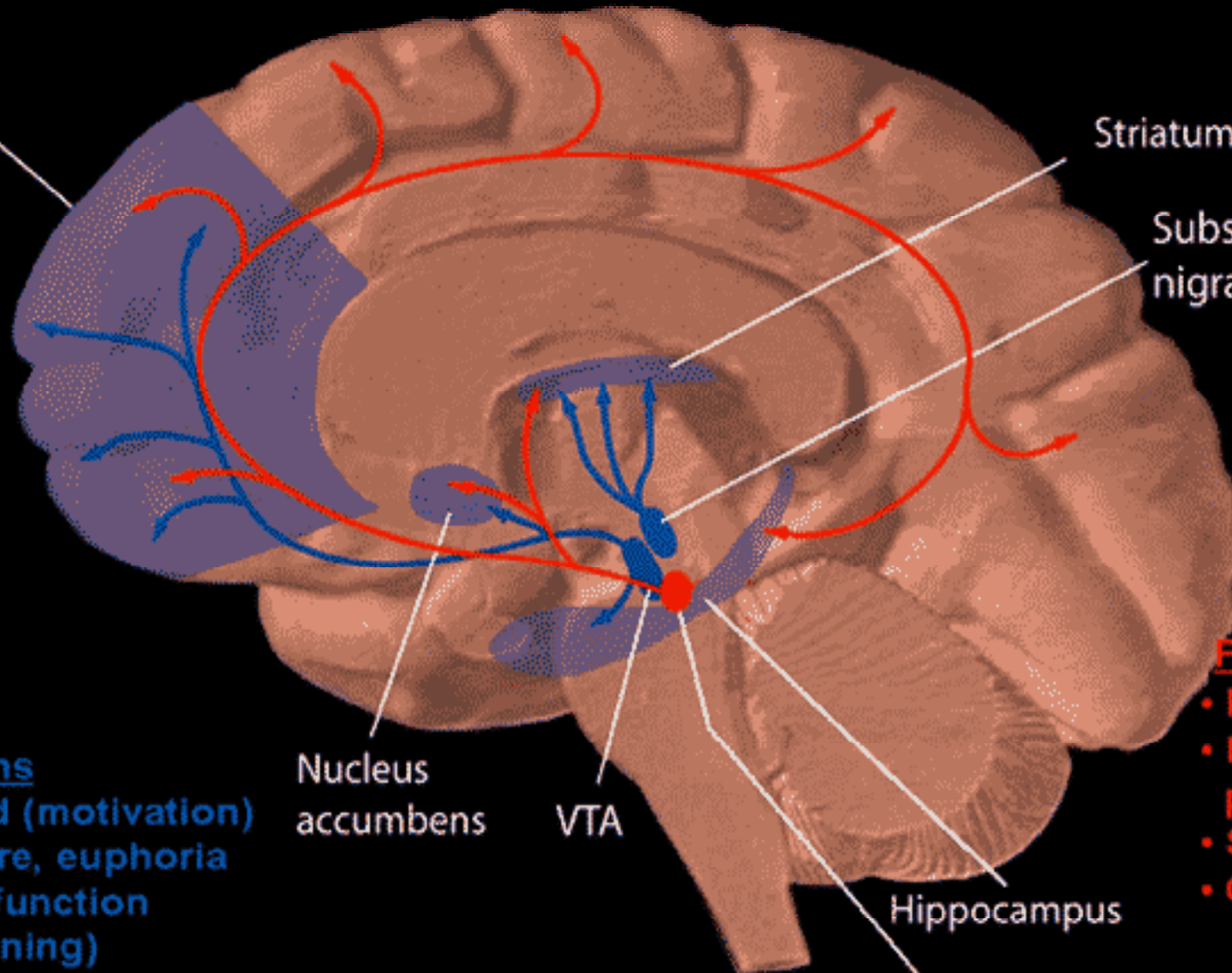
VTA

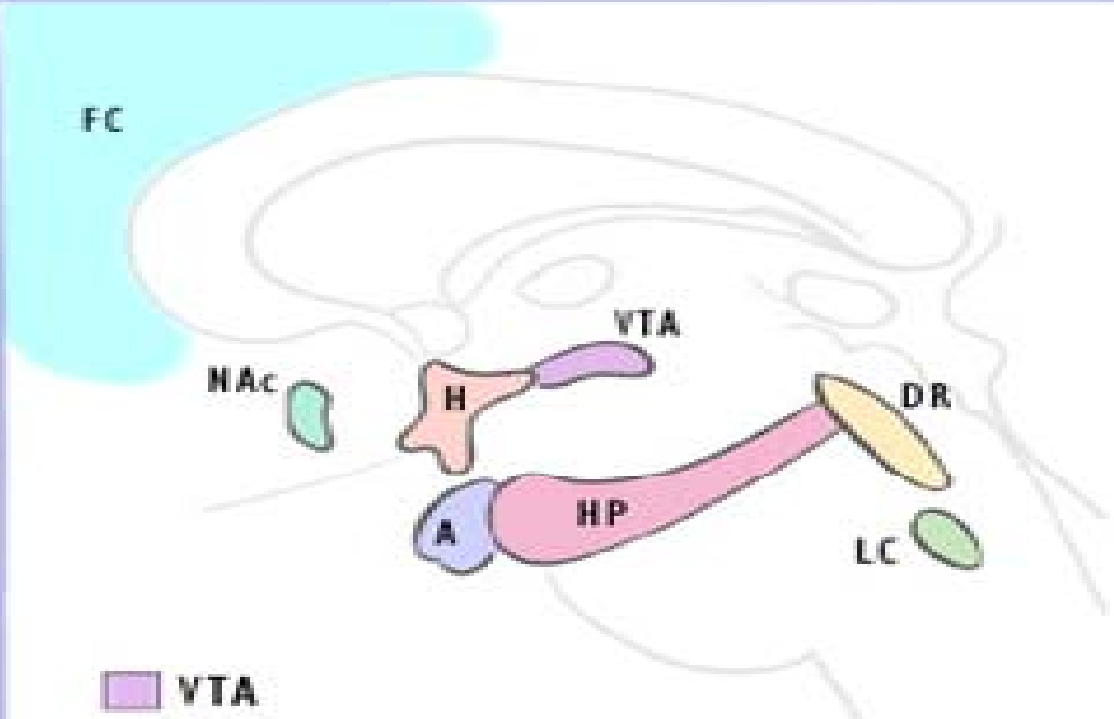
Hippocampus

Raphe nucleus

Functions

- Mood
- Memory processing
- Sleep
- Cognition



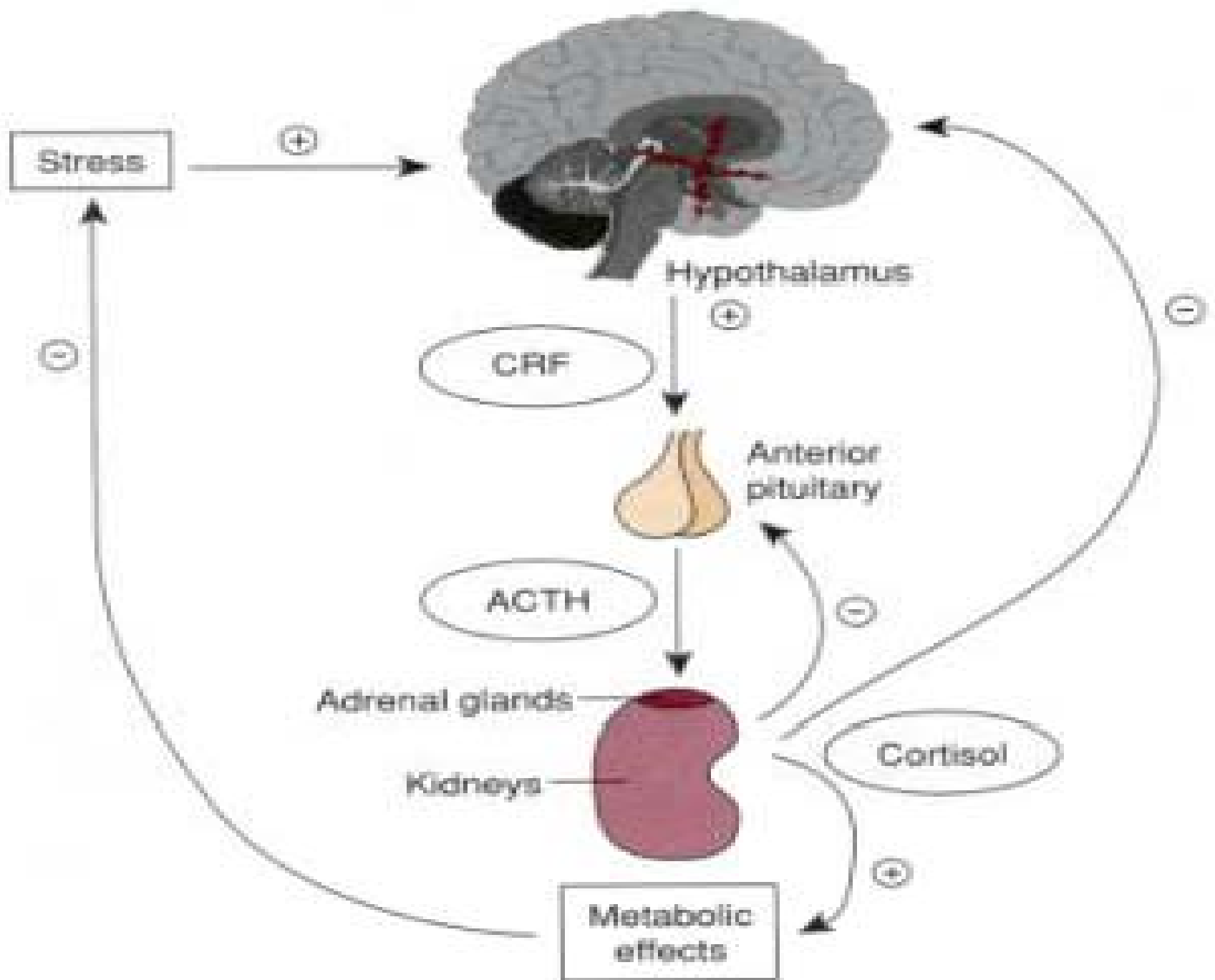


- VTA
- NAc
- Amygdala
- Hippocampus
- Hypothalamus
- Locus Coeruleus
- Dorsal Raphe
- Frontal Cortex



B.H.A.L.T.

- All appear to be stress mediated
- Relation to the Amygdala, the H-P-A Axis, and the release of CRF
- Reduces with time as well



B.H.A.L.T.

- a. Boredom
- b. Hunger
- c. Anger/emotions
- d. Loneliness
- e. Tiredness

Relapse Prevention Medications

- i. Antabuse
- ii. Campral
- iii. ReVia
- iv. Vivitrol
- v. Off label

Antabuse

- a. Mechanism of action
- b. Dosing
- c. Side Effects
- d. Efficacy

Campral

- a. Mechanism of action
- b. Dosing
- c. Side Effects
- d. Efficacy

ReVia

- a. Mechanism of action
- b. Dosing
- c. Side Effects
- d. Efficacy

Vivitrol

- a. Mechanism of action
- b. Dosing
- c. Side Effects
- d. Efficacy

Off label

Dual Diagnosis

1. Prevalence
2. Testing
3. Treatment

Spiritual Component of Recovery

Dr. Daniel Boone

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