Overview of Contingency Management: Evidence Based Practice

February 2025

AGENDA

What is addiction?

- Dopamine
- Pleasure/Pain balance
- Triggers

What is CM?

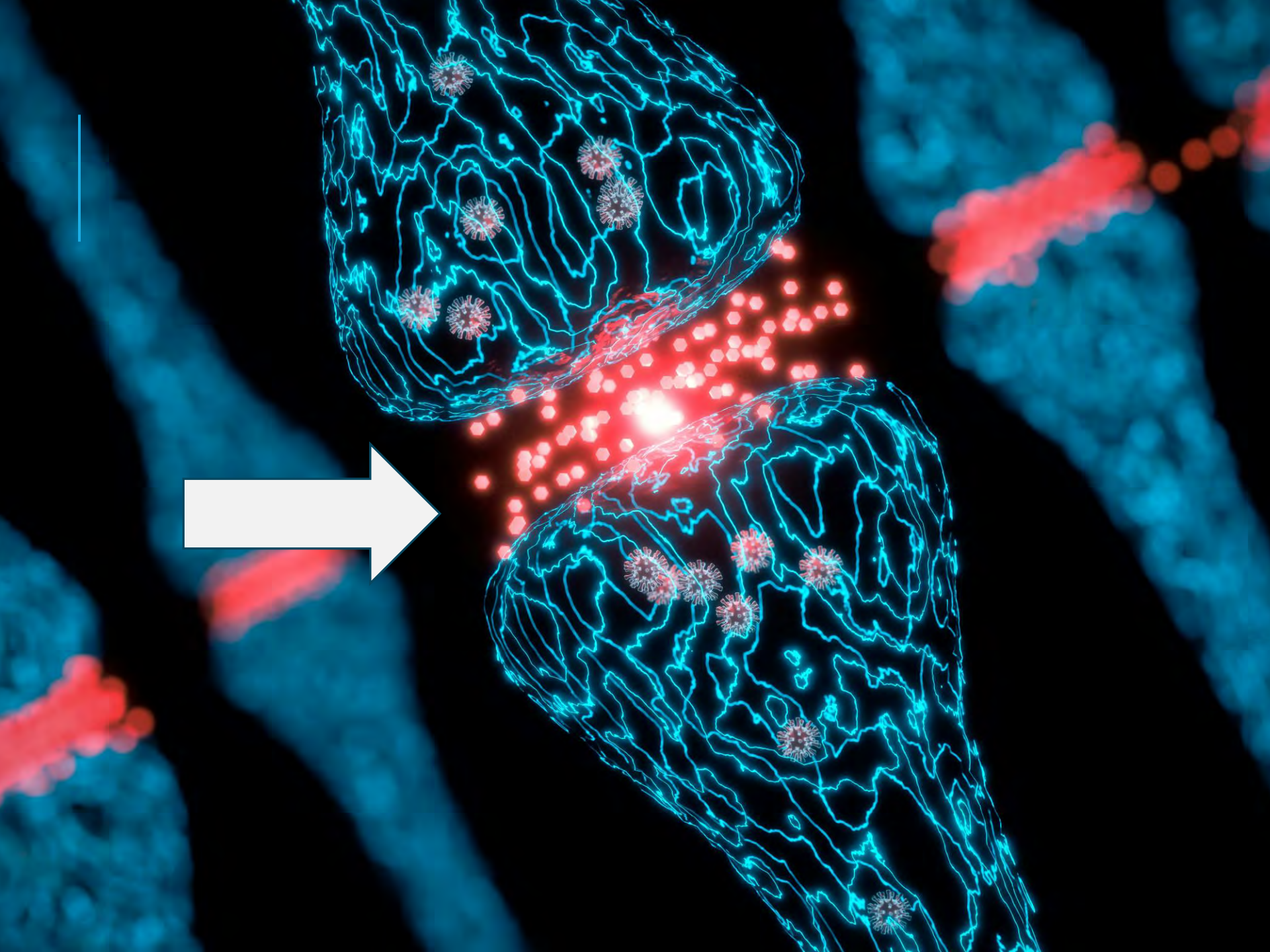
- Brief overview of CM
- Stages of Intervention
- Why it is effective

HOW DOES OUR BRAIN WORK?

Billions of neurons

Organized into networks

Turn on and off to control the flow of information



DOPAMINE: "FEEL GOOD HORMONE"

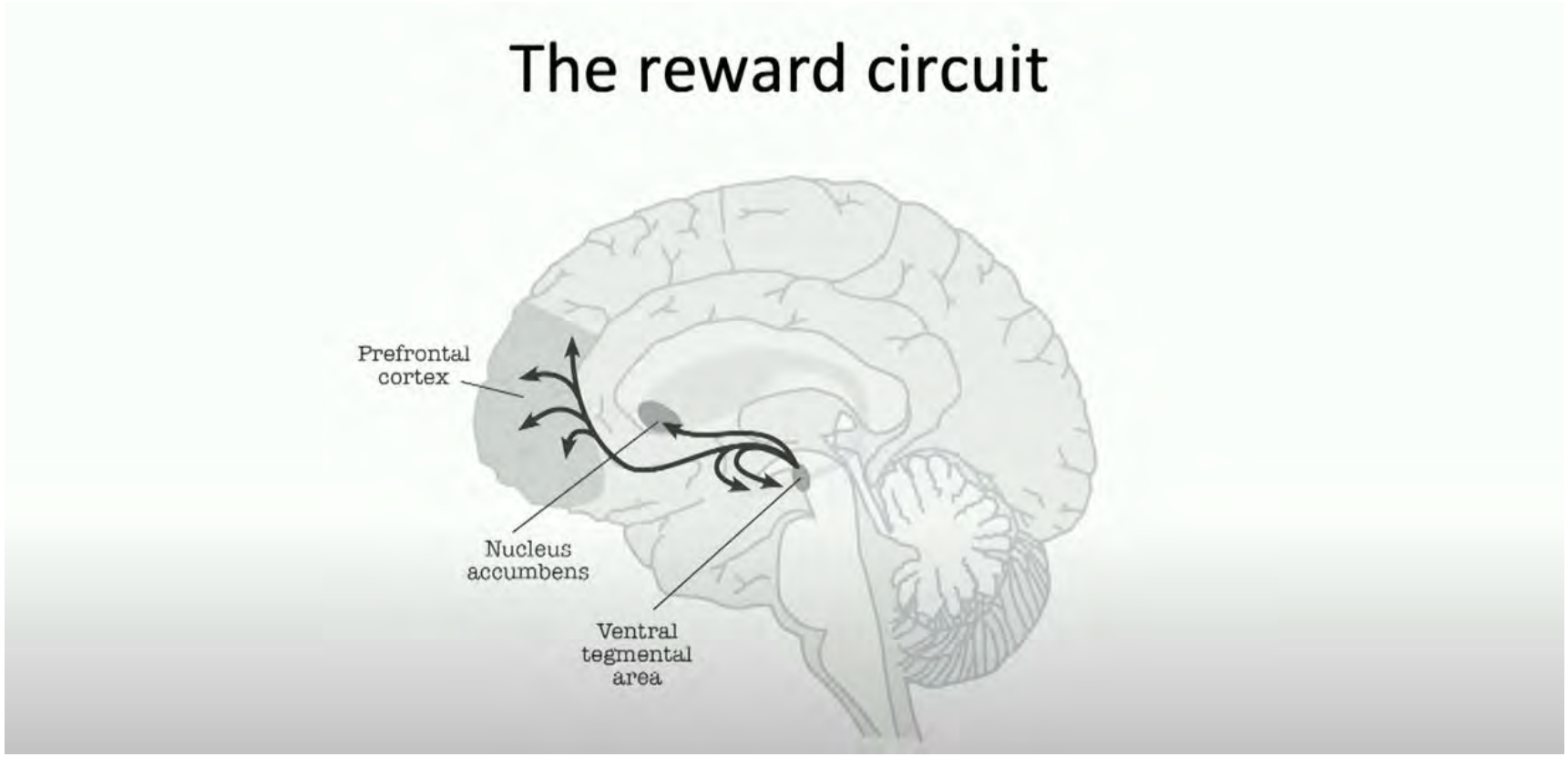
- One of the chemical messengers in the brain helping communication between nerve cells in the brain and the rest of your body

- It plays a role in the "reward center" and in many body functions, including memory, movement, motivation, mood, attention and more.

- Gives you the sense of pleasure and the motivation to do something when you are feeling pleasure.

WHY DOPAMINE?

- Dopamine is there to reward you when you're doing the things you need to do to survive — eating, drinking, socializing…
- Our brains are hard-wired to seek out behaviors that release dopamine in our reward system.
- When you're doing something pleasurable, your brain releases a large amount of dopamine.
- You feel good and you seek more of that feeling!



REWARD CENTER?

Image: Lembke, Anna. Dopamine Nation: Finding Balance in the Age of Indulgence, Dutton Penguin Random House, 2021

WE REMEMBER WHAT REWARDS US!

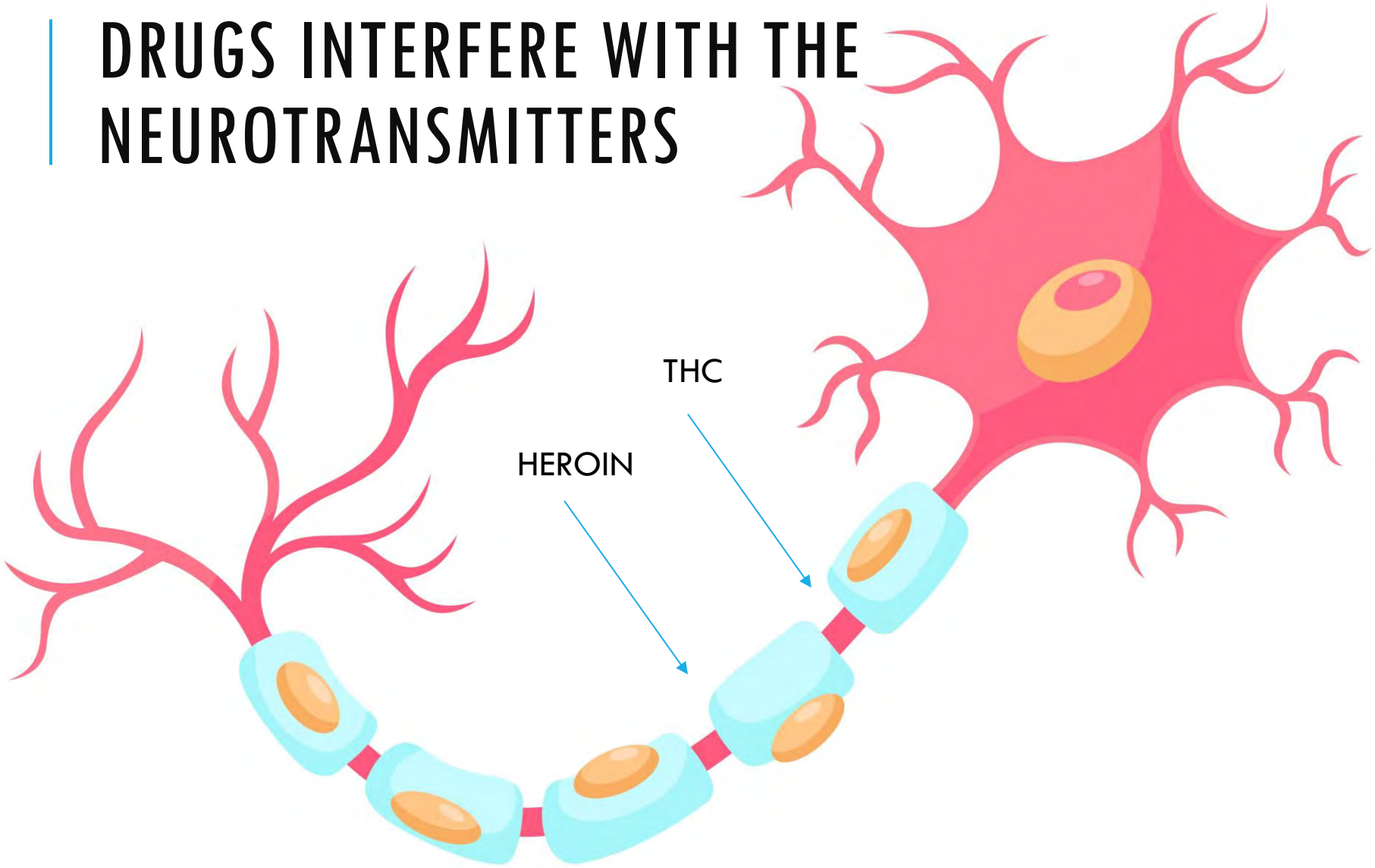
The feeling of pleasure is how a healthy brain identifies and reinforces beneficial behaviors

Our brains are wired to increase the odds that we will repeat pleasurable activities. The neurotransmitter dopamine is central to this.

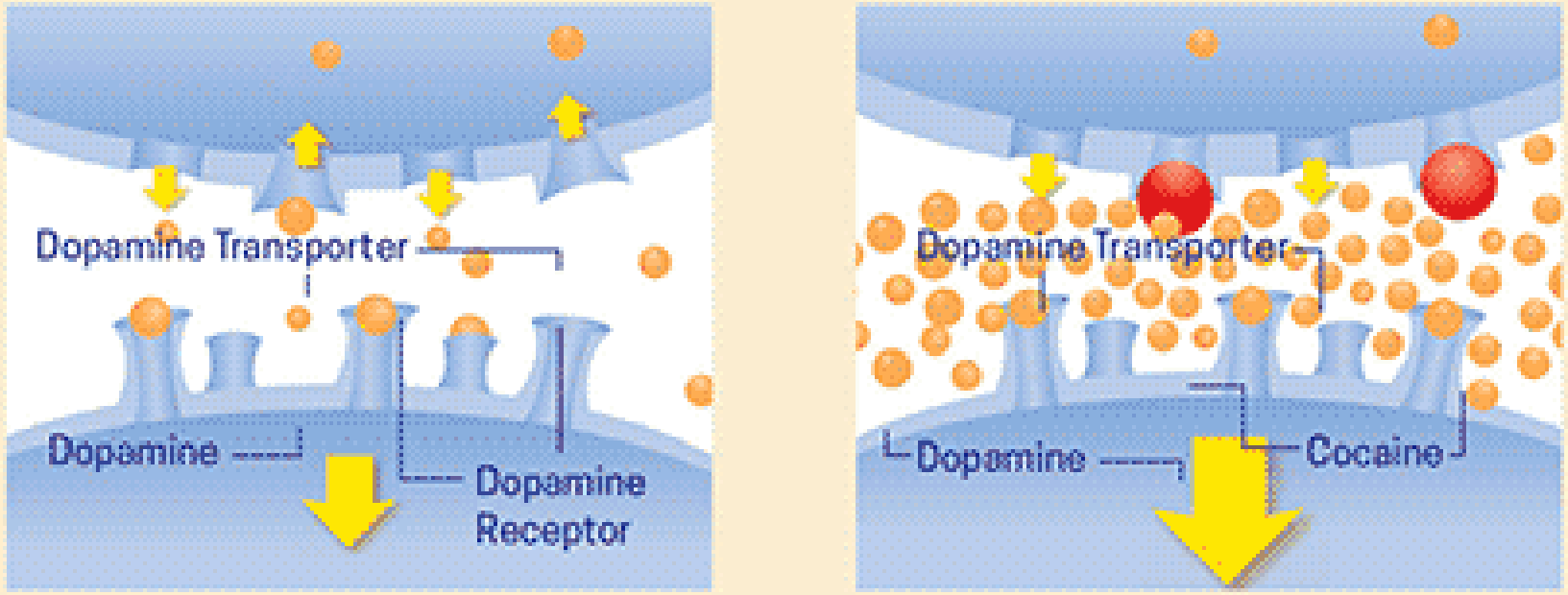
Whenever the reward circuit is activated by a healthy, pleasurable experience, a burst of dopamine signals that something important is happening that needs to be remembered.

This dopamine signal causes changes in neural connectivity that make it easier to repeat the activity again and again without thinking about it, leading to the formation of habits.

DRUGS INTERFERE WITH THE NEUROTRANSMITTERS

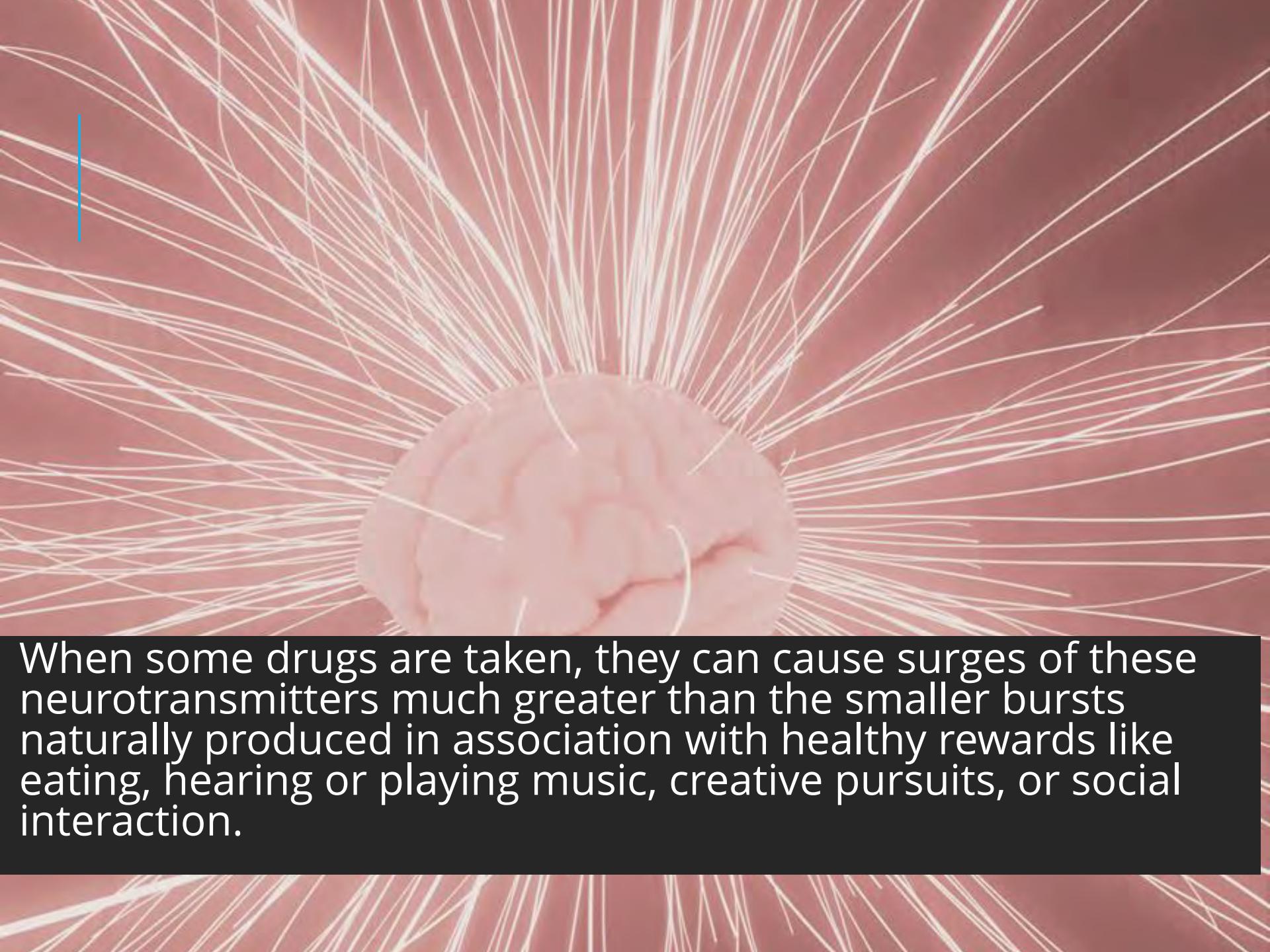


How drugs can increase dopamine



While eating food

While using cocaine



When some drugs are taken, they can cause surges of these neurotransmitters much greater than the smaller bursts naturally produced in association with healthy rewards like eating, hearing or playing music, creative pursuits, or social interaction.

Dopamine

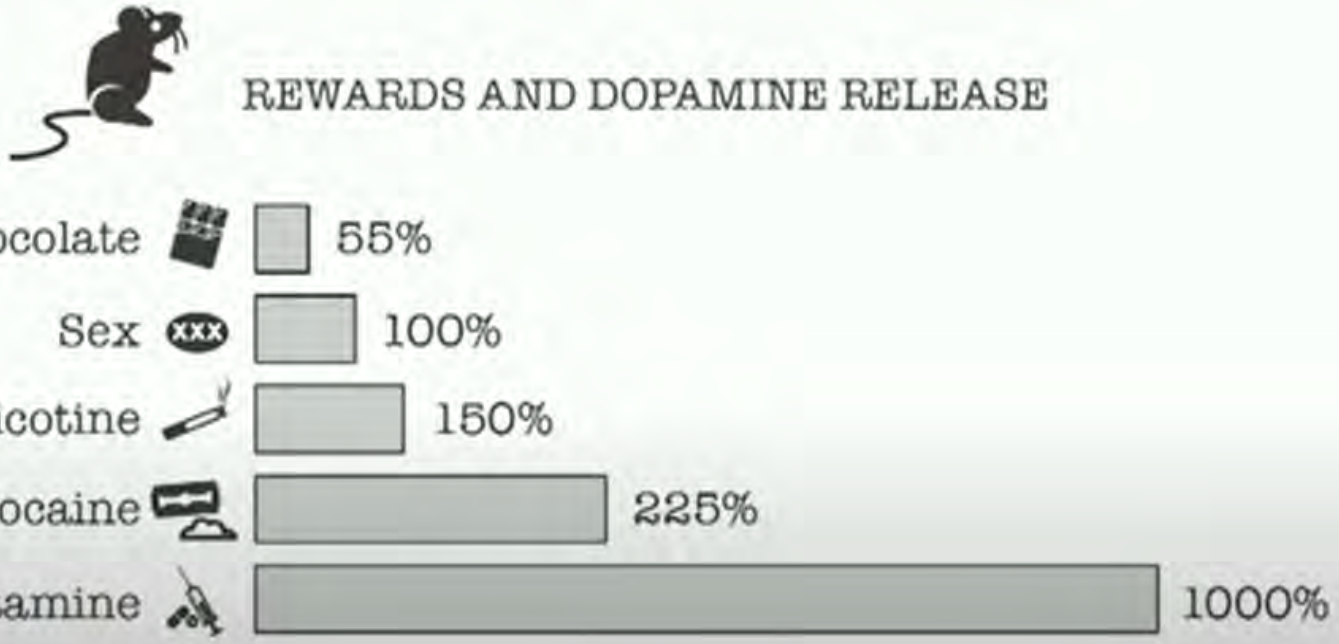


Image: Lembke, Anna. Dopamine Nation: Finding Balance in the Age of Indulgence, Dutton Penguin Random House, 2021

Just as drugs produce intense euphoria, they also produce much larger surges of dopamine

This reinforces the connection between consumption of the drug, the resulting pleasure, and all the external cues linked to the experience.

Large surges of dopamine “teach” the brain to seek drugs at the expense of other, healthier goals and activities.

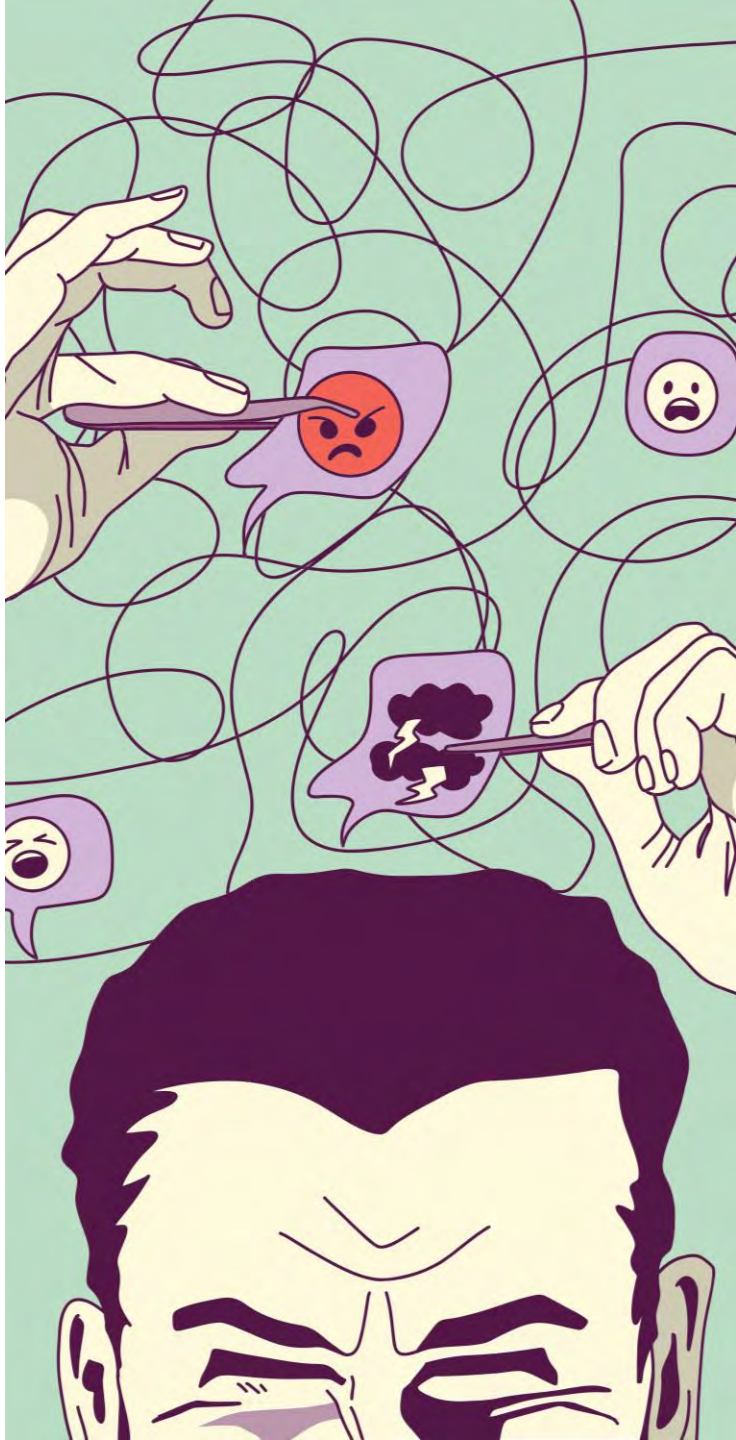
For the brain, the difference between normal rewards and drug rewards can be likened to the difference between someone *whispering into your ear* and someone **SHOUTING INTO A MICROPHONE!**

WE ALSO REMEMBER THE TRIGGERS OR CONTEXT

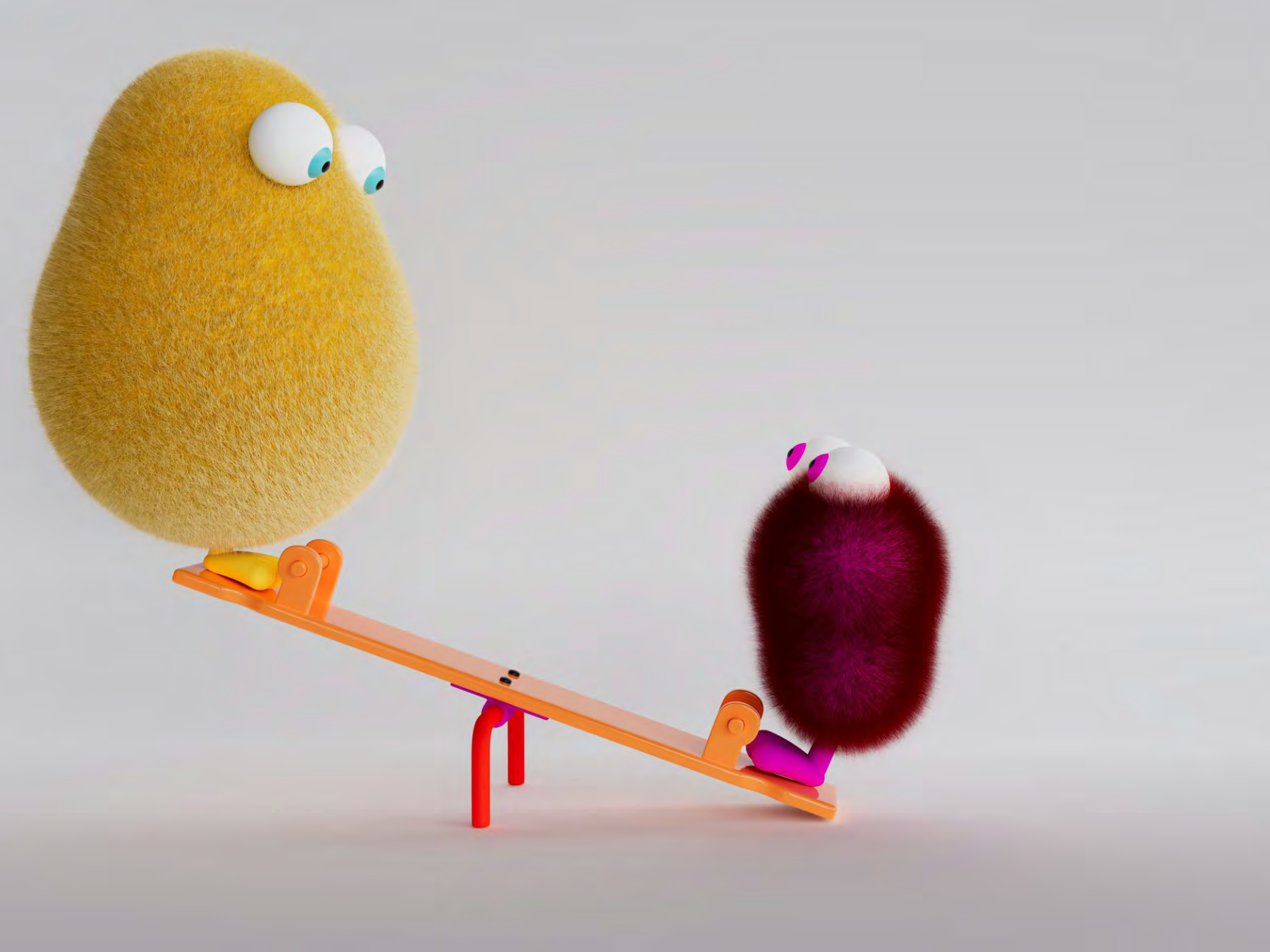
Cues in a person's daily routine or environment become linked with drug use because changes to the reward circuit can trigger uncontrollable cravings whenever the person is exposed to these cues, even if the drug itself is not available.

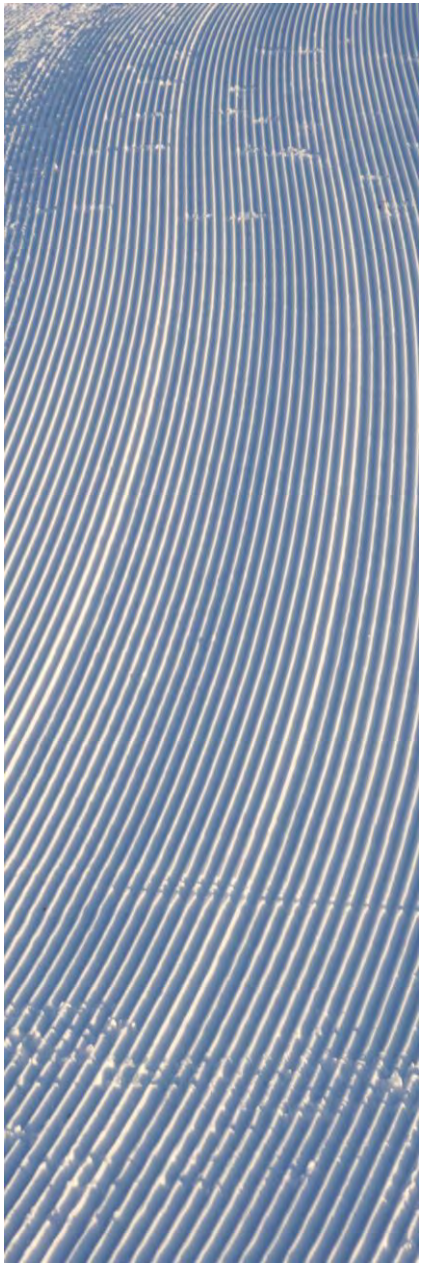
TOLERANCE

- A person who misuses drugs eventually feels flat, without motivation, lifeless, and/or depressed, and is unable to enjoy things that were previously pleasurable.
- Now, the person needs to keep taking drugs to experience even a normal level of reward—which only makes the problem worse, like a vicious cycle.
- Also, the person will often need to take larger amounts of the drug to produce the familiar high—an effect known as *tolerance.*



LET'S TALK ABOUT HOMEOSTASIS





FEELING THE PAIN

With initial exposure to a drug, we get a huge increase in dopamine.

Then we get a huge drop in dopamine past our personal baseline level into a deficit (here is the pain)

Enter the cravings.

But if we fend off the cravings we will return to baseline

WHAT IF WE DON'T SIT WITH THE PAIN?

Sometimes the pain is too uncomfortable.

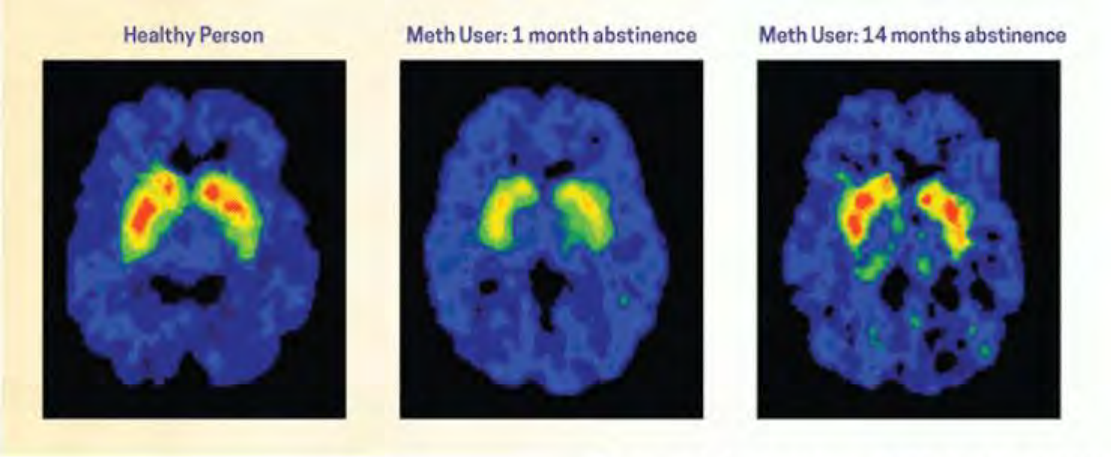
We jump back to pleasure before we have created an equal balance.

This is when we move into addiction. We continue to feed the pleasure without sitting through the discomfort long enough for the homeostasis to return.

Now we need more and more of the drug of choice, not to feel the pleasure, but to just live and stop feeling the pain.

CAN ADDICTION BE CURED?

Like treatment for other chronic diseases such as heart disease or asthma, addiction treatment is not a cure, but a way of managing the condition. Treatment enables people to counteract addiction's disruptive effects on their brain and behavior and regain control of their lives.



The Journal of Neuroscience, 21(23):9414-9418. 2001

These images showing the density of dopamine transporters in the brain illustrate the brain's remarkable ability to recover, at least in part, after a long abstinence from drugs—in this case, methamphetamine.51

HOW LONG UNTIL WE RETURN TO BASELINE?

It takes about 4 weeks for our bodies to return to our baseline level of firing and begin to reconnect our pleasure to things in our natural world.

ONCE WE CORRECT OUR BASELINE DOPAMINE IS IT FIXED FOREVER?

Unfortunately, the data tells us its unlikely.

Our bodies have long memories.

Once something has been placed in your “toolbox” it will always be there.

It may become rusty and make its way to the bottom of the box, but it is still there, ready to be pulled out under the right circumstances.

Meaning, someone with severe addiction can relapse with a single exposure to the drug or even a reminder of the drug.

HOW CAN WE KEEP THIS "TOOL" LOCKED IN THE BOX?

- Help clients insulate themselves from the drug.
- Rearrange their environment to minimize exposure to triggers: make actual changes to the environment.
- Develop skills to manage those triggers that are unavoidable.
- Reconnect to natural, healthy rewards.

Let's Change Gears

TREATMENTS

- **Cognitive-behavioral therapy** seeks to help clients recognize, avoid, and cope with the situations in which they're most likely to use drugs.
- **Contingency management** uses positive reinforcement such as providing rewards or privileges for remaining drugfree, for attending and participating in counseling sessions, or for taking treatment medications as prescribed.
- **Motivational enhancement therapy** uses strategies to make the most of people's readiness to change their behavior and enter treatment.
- **Family therapy** helps people (especially young people) with drug use problems, as well as their families, address influences on drug use patterns and improve overall family functioning.

WHAT IS CONTINGENCY MANAGEMENT (CM)?

CM is a highly effective treatment for substance use and related disorders. 12-16 weeks.

CM is a type of cognitive and behavioral therapy in which individuals are ‘reinforced’, or rewarded, for evidence of positive behavioral change.

These interventions have been widely tested and evaluated in the context of substance misuse treatment

50+ YEARS AGO, SUBSTANCE ABUSE RESEARCHERS BEGAN TO WONDER:

If we think of drug use as a behavior…

Can we can harness behavior principles to stop drug use?

- If we link rewards to abstinence, can we change the way individuals think about their drug use?
- If we can show the link between consequences and substance use, can we motivate change?
- Can we reset the reward center by reconnecting individuals to naturally occurring rewards?

Goal to undermine how reinforcing the drug use is by creating ambivalence with these immediate rewards and consequence

WHAT IS THE ROLE OF REINFORCEMENT IN ADDICTION?

Reinforcement plays a really big role in drug abuse/addiction.

Drugs themselves are hugely powerful reinforcers.

Drugs hijack the normal body systems that naturally produce reinforcement when people sleep, eat, exercise, experience joy.

By hijacking our normal systems, drugs can provide immediate and potent reinforcement – a magnet drawing you back.

This creates a clinical ambivalence. You have the magnet of the drug pulling one way and the desire of abstinence pulling the other way.

THE PROBLEM:

Abstinence is not as immediate or as powerful as the perceived benefits of the drugs.

Drugs are easy to take and give immediate relief and pleasure, so drug use is reinforced over and over.

Reach eventual tolerance and/or dependence.

WE KNOW THAT WITH SUBSTANCE USE…

There are often consequences (personal, family, legal, educational, social, physical)

There are also powerful rewards (social, physical, emotional)

Unfortunately…

- The rewards for using are often immediate and tangible.
- The natural consequences are often very delayed and not always obvious.
- *In fact, the consequences of NOT using are often very powerful (rejection from social group, withdrawal, unmanaged MH symptoms)*

WHY IS THIS SUCH A PROBLEM?

WHEN I USE DRUGS:

- Rewards are immediate!
- Refusing to use is immediately punishing!
- Consequences are delayed and therefore meaningless in the moment!

WHEN I ABSTAIN:

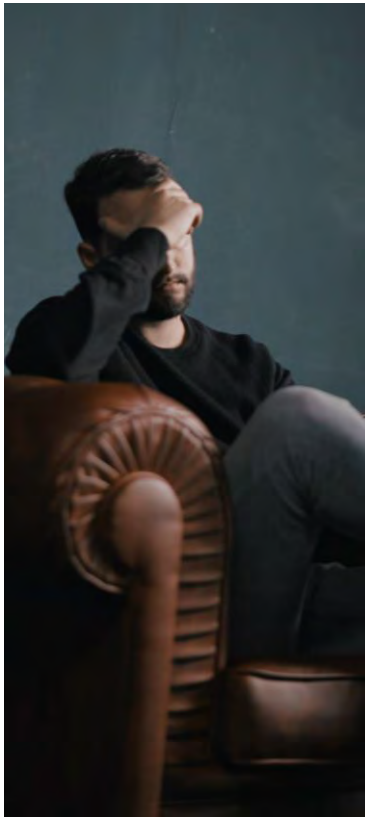
- Rewards/benefits ARE NOT immediate and not always obvious
- Consequences ARE immediate

So, in the moment, when I am feeling pressure, what am I going to do....

The CM interventions jump into the middle of this drug using pattern to try to weaken the magnetic pull of the drugs.

By managing triggers and providing rewards we can create ambivalence.

With this approach we give the client a reason to refuse drugs and an incentive to use their new skills.



AT ITS CORE, CM RESEARCH HAS SHOWN:

If a behavior is reinforced or rewarded it is more likely to occur in the future

Negative Screen = immediate reward (Fishbowl/Point and Level/Vouchers)

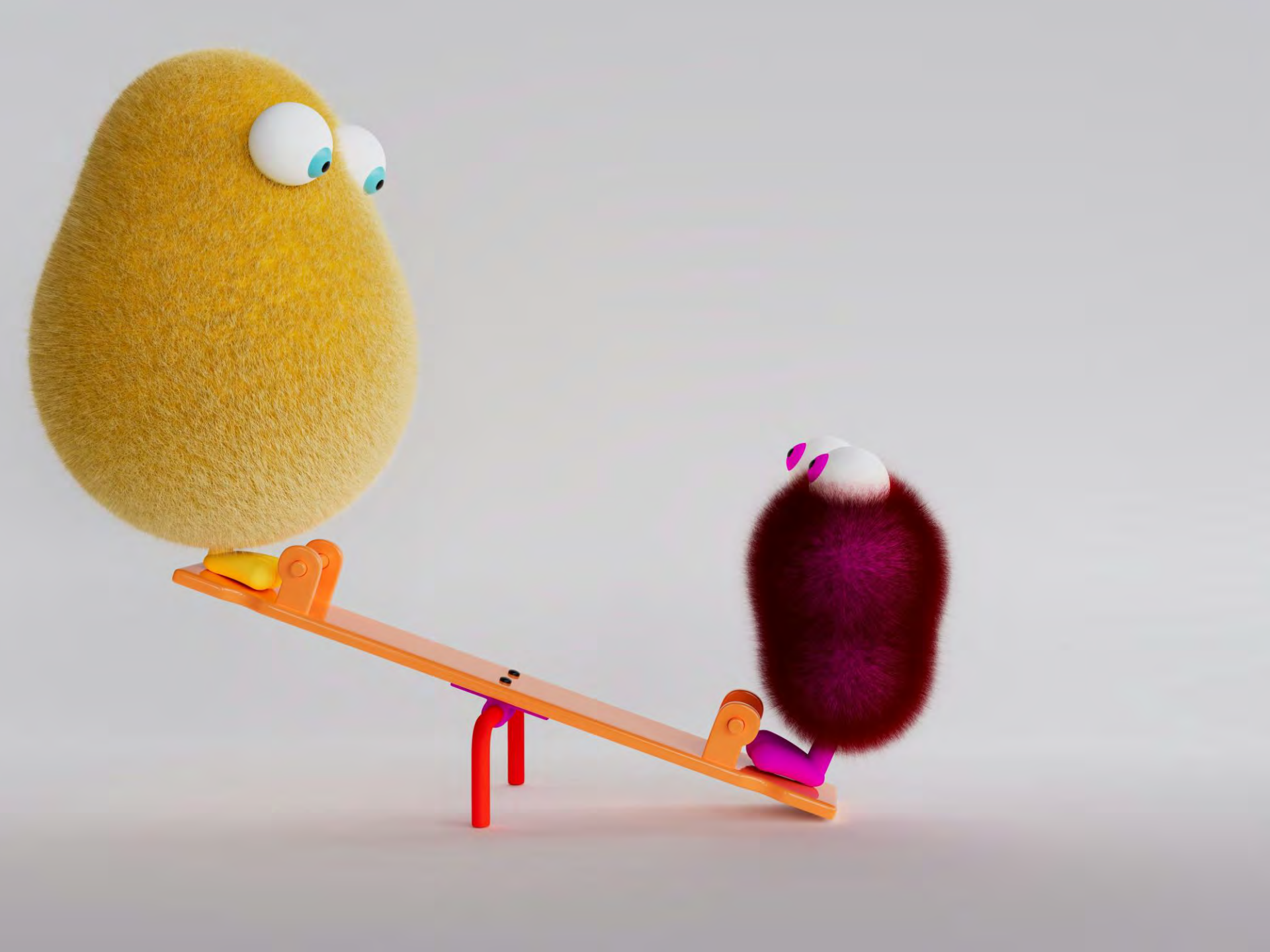
If a behavior has an immediate and meaningful consequence it is less likely to occur

Positive Screen = immediate negative consequence

RECOVERY IS A LONG, DIFFICULT JOURNEY.
CM HELPS TIP THE BALANCE BY PROVIDING POSITIVE REASONS TO MAKE THE NEXT STEPS.

BENEFITS OF CONTINGENCY MANAGEMENT

- Evidence-based treatment
- Better client retention
- More time in treatment = more time to work on other treatment issues
- * Achieve abstinence faster
- * Remain abstinent longer
- Provides a clear tool to help clients achieve goals
- Focus on recognizing successful outcomes and recovery
- Staff report greater satisfaction with their job



CM TREATMENT PROCESS HAS 4 MAIN TOOLS:

1 Determining Need and Assessing Impact

2 ABC Assessment

3 Reward System

4 Self-Management Plan

TOOL #1

Determining Need

- Severity of drug use
- Frequency of use
- Route of use
- Guides choice/schedule of drug screens

Assessing Impact

- Impact of substance use on the individual, their home, school, peer and community
- Identifying strengths in all parts of their life that can aid in abstinence planning and rewards

TOOL #2

Reward System

System gives the client a goal to work toward and a clear path for getting there with frequent, random, drug screens to monitor use

Negative Screen = Reward

Positive Screen = Loss of reward

Work with the client and ecology to consistently develop & enforce the contract.

Clear expectations

Establishes rewards and how to access them

Plan for monitoring and supporting client

A goal to work toward and a clear path for getting there

Provides immediate rewards and immediate consequences

Helps fight the pull of the drugs by giving them something else to focus on

Developmentally appropriate

COMPONENTS

Fishbowl (ages 18+)

100 tokens

Various levels of rewards

MVP

That one thing that is motivating each week for negative screens

Point & Level (ages 12-17)

Earn points

Cash in points for rewards

Move up levels to access more rewards

Coupons

Bonus Coupons for other behaviors – cash in 5 coupons for an extra draw


·MURDOCK·
LONDON
REDCHURCH
BEARD
SHAMPOO
Made in England
250 ML e
8.5 FL. OZ

TOOL #3

ABC Assessment

Basic rationale of an ABC assessment is that drug use (Behavior) is triggered by certain events, situations and feelings (Antecedents) and maintained by immediate and long-term consequences (Consequences)

ANTECEDENTS (TRIGGERS)

- Triggers are things that occur right before a client uses drugs or that lead to drug cravings
- People, places, activities, feelings, thoughts, situations, or a mixture of these
- **Triggers are things that occur right before a client decides to NOT use drugs**

BEHAVIORS (DRUG USE OR DRUG SEEKING)

There are many drug use behaviors that a client might demonstrate after experiencing a trigger.

- Drug seeking
- Drug ingestion
- Behaviors to avoid detection

As well as behaviors to abstain such as drug refusal skills or avoiding triggers

Consequences

Consequences can both increase or decrease the likelihood of future drug use.

Reinforcers INCREASE a behavior:

- feeling good
- enjoying company of friends
- relief from pain

Punishers DECREASE a behavior

- Getting a consequence
- Losing something of value

ABC COMPLETED AFTER EVERY SCREEN

TOOL #4

Self-Management Plan

Client develops strategies and builds skills to avoid and/or manage drug use triggers

- Identify ways to avoid triggers
- Identify ways to rearrange the environment to avoid triggers
- Identify skills to cope with cravings

Develop drug refusal skills for those situations that are unavoidable

Can be a long-term plan or one for the next week based on upcoming risks

Teach the support person/family how to assist the client with this process

Drug of Choice: Marijuana

Trigger: Seeing friend Mike in the halls at school – asks me to skip class and go smoke

Use this form to help create ways to manage the triggers of your drug use. This will help reduce the chances that triggers will lead to drug use. ***Fill out one form for each trigger.***

Plan	Cost/Benefit Analysis		Difficulty
	Benefits	Costs	(1-10 scale; 10=most difficult)
A) Talk to Mike ahead of time and let him know I am in this program where I get consequences for using pot. Also let him know that my P.O. could get me in serious trouble if he catches me skipping school and/or smoking pot.	Mike might stop trying to get me to smoke with him; then I wouldn't have to struggle to say no	Mike might think I'm a loser for not smoking	5
B) Figure out the times I usually run into Mike in the hallway and find a different route during those times. If there are situations when I just can't avoid it and happen to run into him, then I will use my drug refusal skills to avoid skipping class and using pot.	Reduce the chances of running into Mike so I don't experience the trigger at all.	I might still run into him at times if I can't avoid traveling that particular route and it may be difficult to refuse. I need to remember to use my drug refusal skills in this case!	3

PUTTING IT ALL TOGETHER:

1) Check in on recent UAs
2) Draw from Fishbowl/PLS if negative
3) Earn coupons for other behaviors
   - Cash in with a negative screen and 5 coupons
4) Earn MVP if negative
5) ABC on negative screens or ABC on positive screens
6) Update the self-management plan with what you learned from the ABCs
   - *Here you will tie in your other interventions – Behavioral activation, relaxation, coping skills, peer refusal, etc.*
   - 12-16 weeks: discharge with a long-term plan for managing or avoiding triggers and engaging in self-reward

WHAT DID WE TALK ABOUT?

Our brains need rewards.

We have a reward center that manages our rewards.

This reward center floods us with good feelings but then rebalances itself.

Our body remembers these so we can access them again.

Drugs hijack this system, flooding the reward center, and causing dependency.

This upsets the natural balance. We feel more pain.

Treatment needs to rebalance our reward center and train skills to avoid or manage triggers.

The most effective treatments are CBT and CM based.

THANK YOU!

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REFERENCES

Kellogg S.H., Stitzer M.L., Petry N., and Kreek M.J. (2007), of New York University, Johns Hopkins, University of Connecticut School of Medicine, and The Rockefeller University (respectively). Contingency management: Foundations and principles, written and produced specifically for the PAMI (Promoting Awareness of Motivational Incentives) NIDA/SAMHSA-ATTC (2011) Blending Product.

NIDA (2023), September 25. Treatment and Recovery Retrieved from https://nidanih.gov/publications/drugs-brains-behavior-science-addiction/treatment-recovery on 2024, December 3.

Petry, N. M. (2000). A comprehensive guide to the application of contingency management procedures in clinical settings. *Drug and Alcohol Dependence, 58,* 9-25.

Volkow ND, Fowler JS, Wang GJ. The addicted human brain: insights from imaging studies. J Clin Invest. 2003 May;111(10):1444-51. doi: 10.1172/JCI18533. PMID: 12750391; PMCID: PMC155054.