

Addiction Primer for the Health Professional

Module 4 : Naturopathic Treatments

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Bio

Private practice 15 years
BSc Biomedical Toxicology
ND - Naturopathic Doctor
CCAC - Canadian Certified
Addiction Counsellor
Mental health / Addiction
Project Starlight

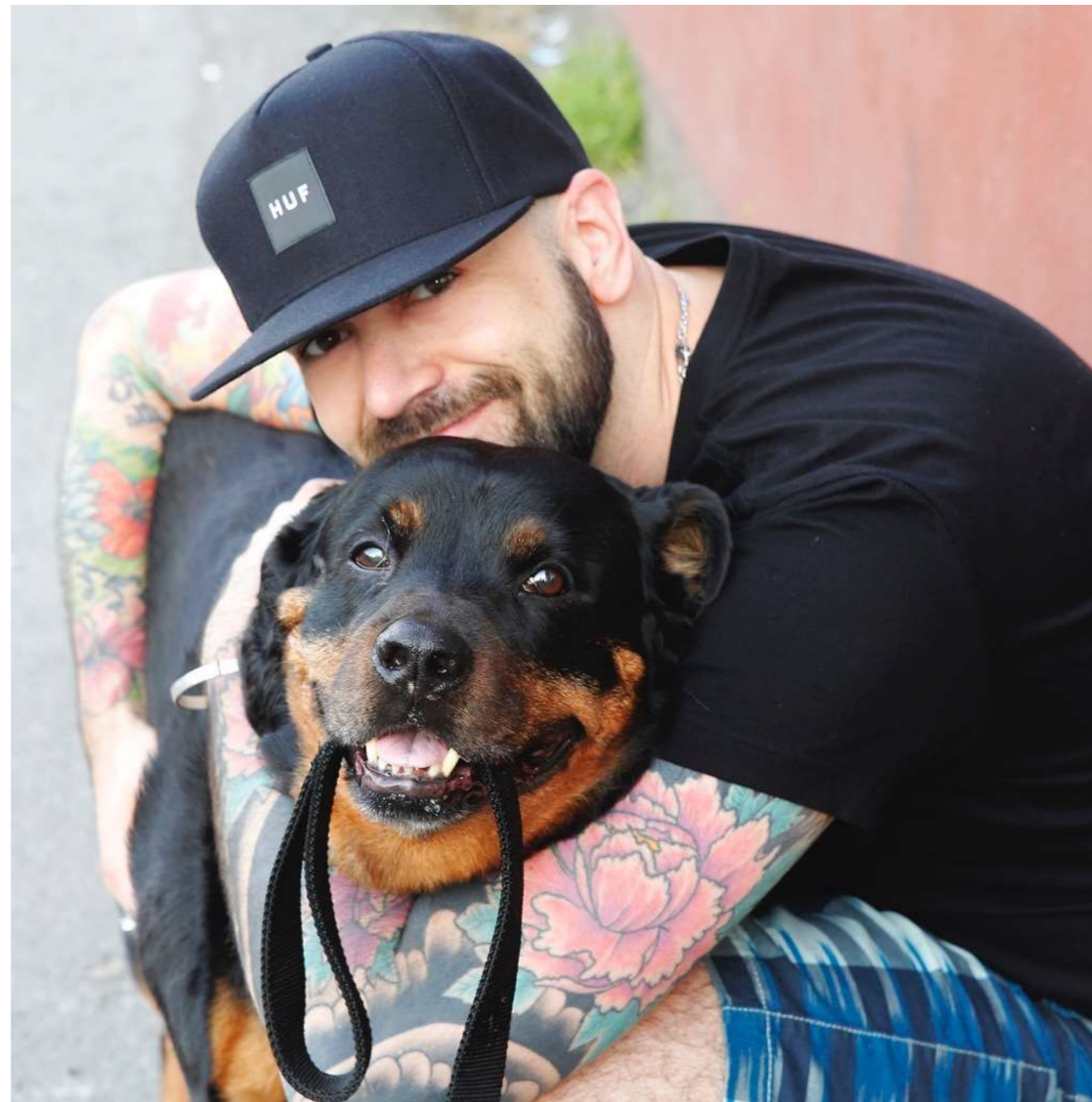
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My passion is...

- Educating other health professionals (NDs, RMTs, DCs, RNs etc...)
- Reduce stigma of mental health and addiction
- Empower and support those in recovery
- Helping families with a loved one.
- Addiction Treatment Centre - 5yr goal !

Disclosures

- None

content

- Neurotransmitter synthesis
- Cofactors and vitamins
- Amino acids
- IV Vitamin Therapy (Amino acids, NAD+)
- NADA Acupuncture
- Botanical medicine
- Treatment protocols

“
the **DOCTOR**
———— of the future ————

WILL GIVE NO MEDICINE
but will interest his patients

IN THE CARE OF THE HUMAN FRAME, IN DIET,
———— and in the ————

CAUSE | *and* | 
PREVENTION

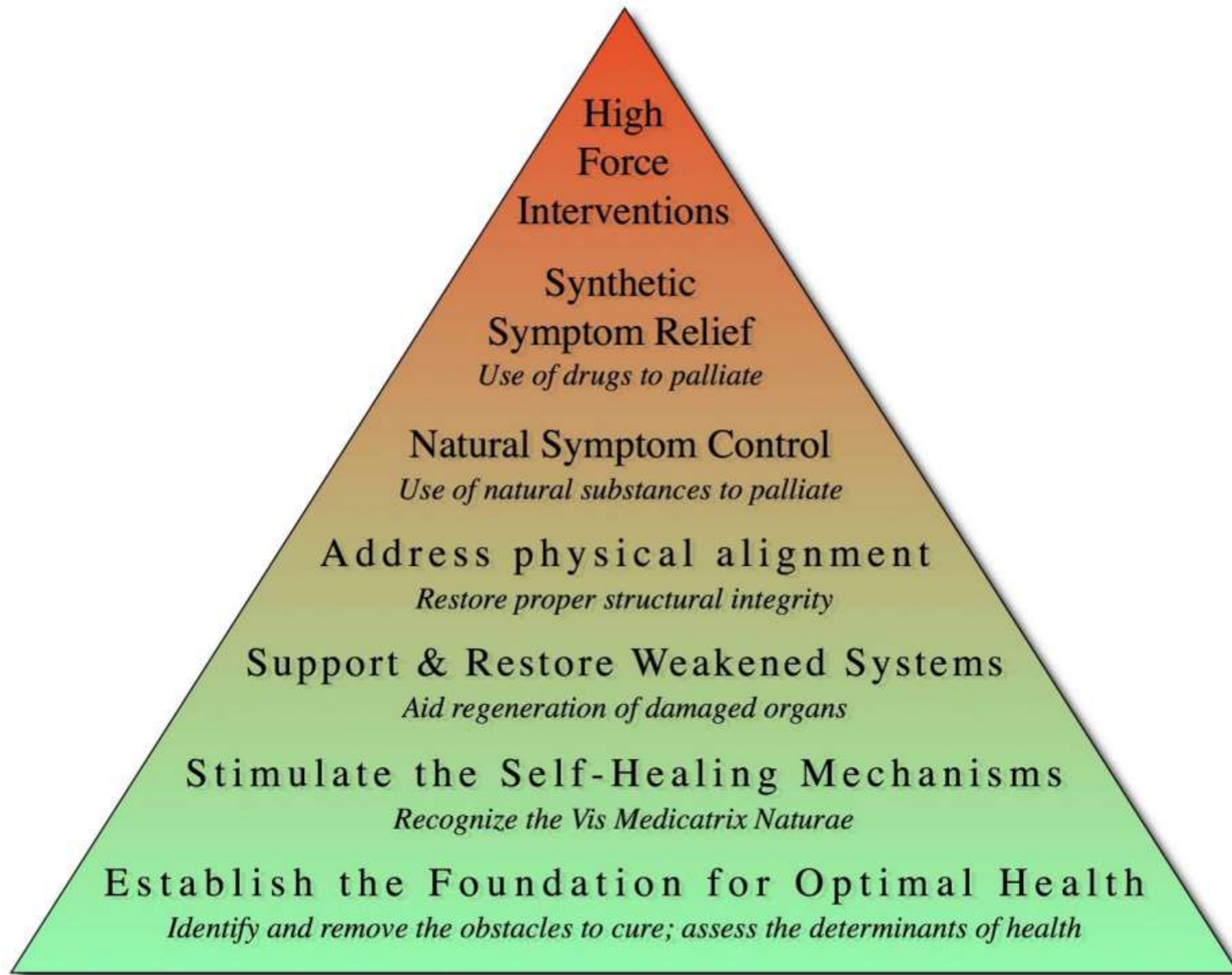
of disease.

”

Thomas Edison, 1901

Being a naturopathic doctor.

- To do no harm
- Treat the whole body
- Eliminate the obstacle to cure
- Support the body's healing
- Emphasize prevention



Therapeutic Order

What defines mental health?

- Ability to enjoy life
- Resilience
- Balance
- Self-actualization
- Flexibility

1) Loss of <u>C</u>ontrol:	The inability to stop using a substance despite a desire or attempt to stop.
2) Use despite the <u>C</u>onsequences:	The ongoing use of a substance despite negative impact on family, job, finances, or health.
3) Increased <u>C</u>ompulsion:	The persistent and often overwhelming urge or impulse to use a substance that increases over time.

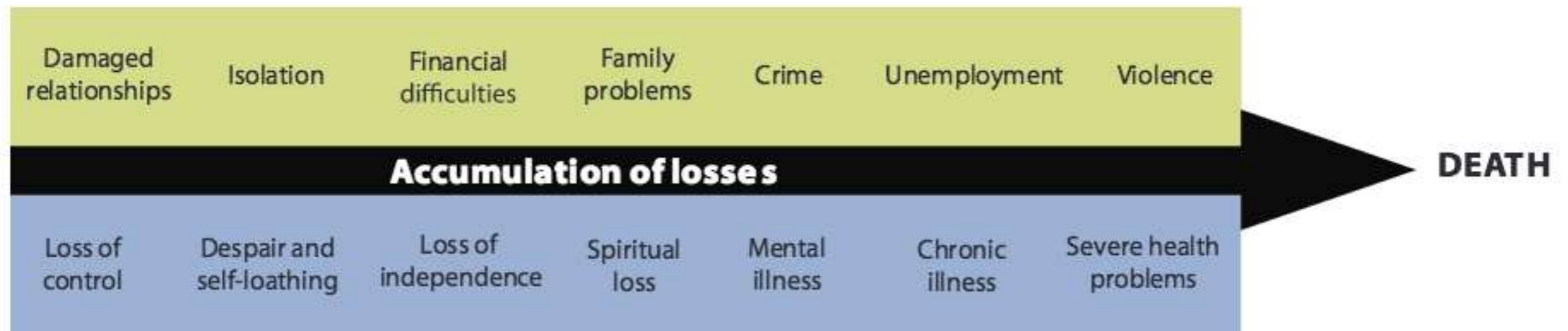
3 C's of Addiction

The Addiction cycle

- addiction follows a cycle
- consistent pattern
- affects brain & alters brain
- 4 common stages of addiction



External

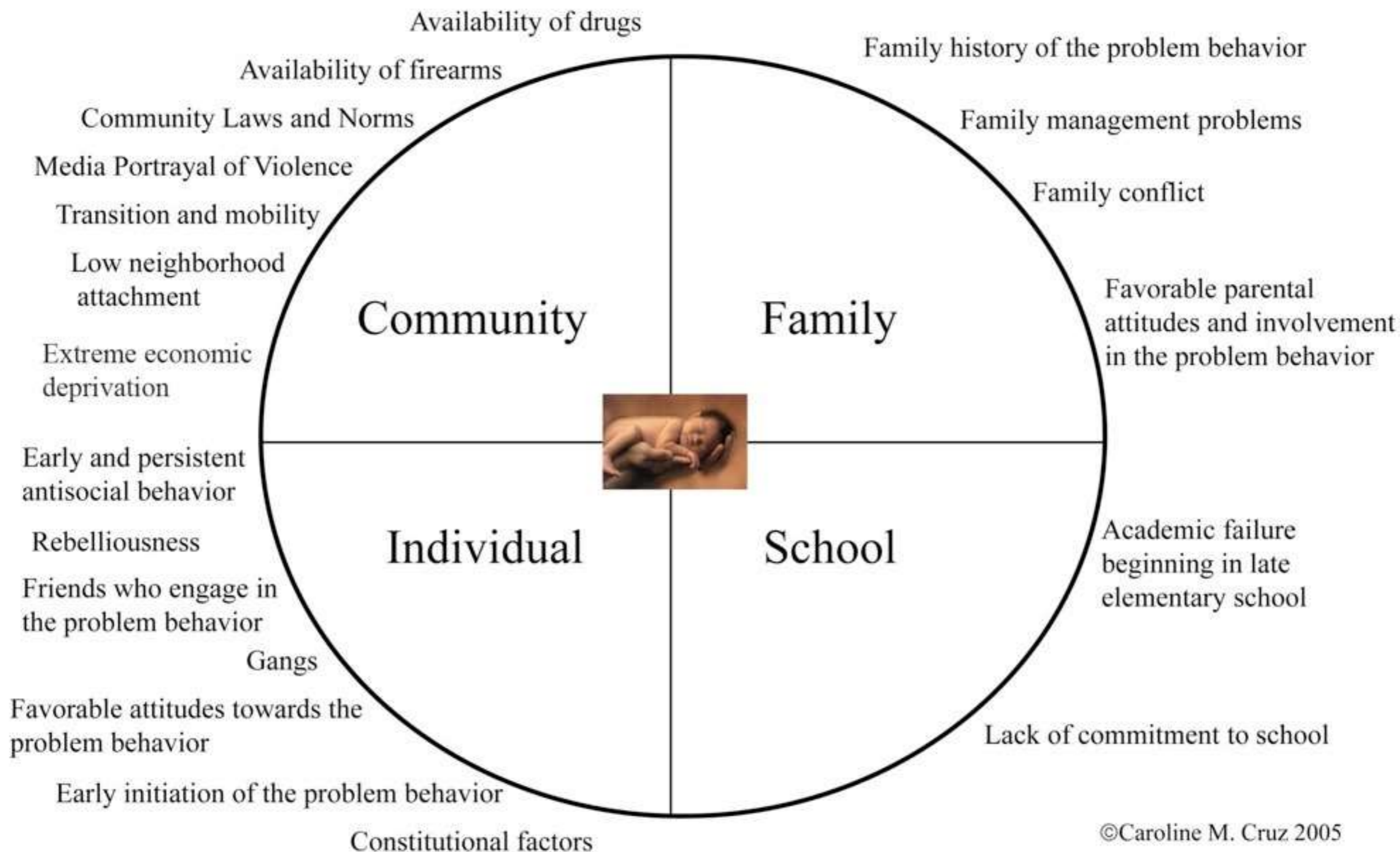


Internal

Items listed above do not represent a chronological sequence of events.

Accumulation of Losses

Summary of Risk Factors





Get to know you. Health and ancestry start here.

- View reports on over 100 health conditions and traits
- Find out about your inherited risk factors and how you might respond to certain medications
- Discover your lineage and find DNA relatives
- ★★★★★ 4.2 (324)

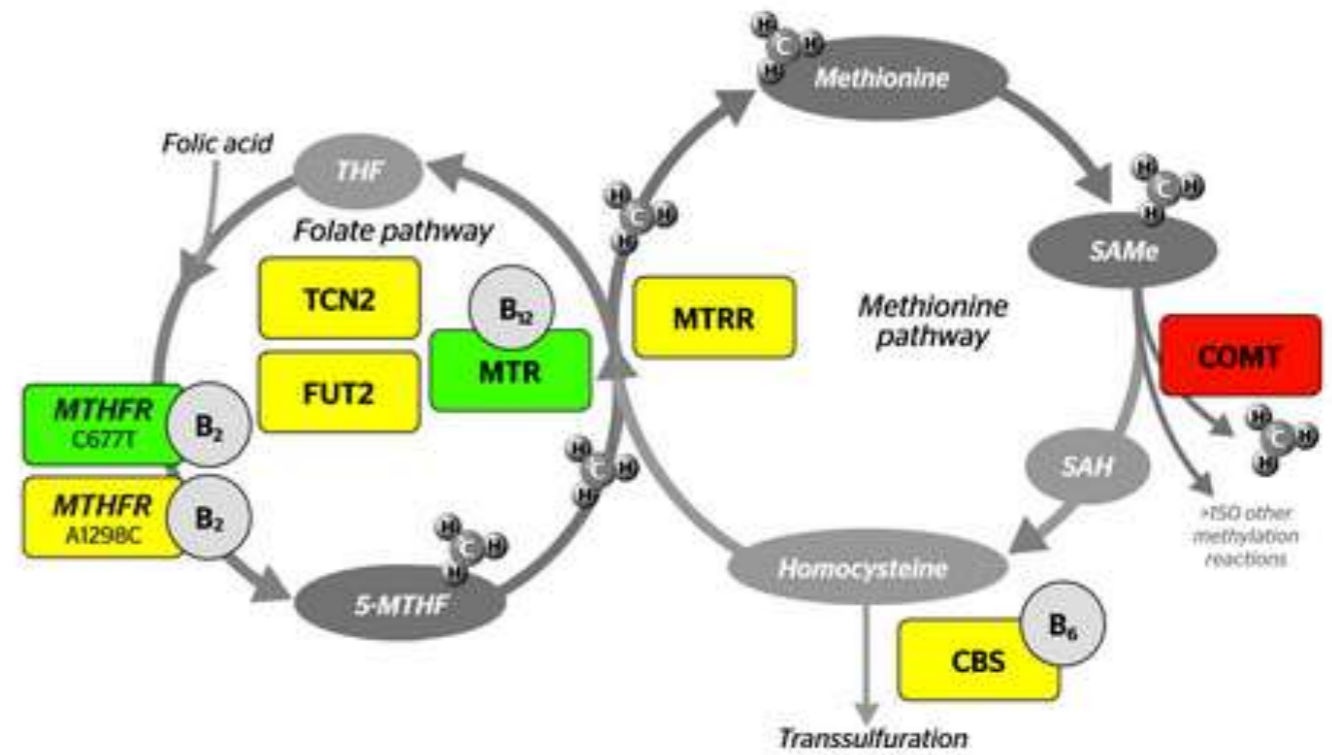
order now

\$199

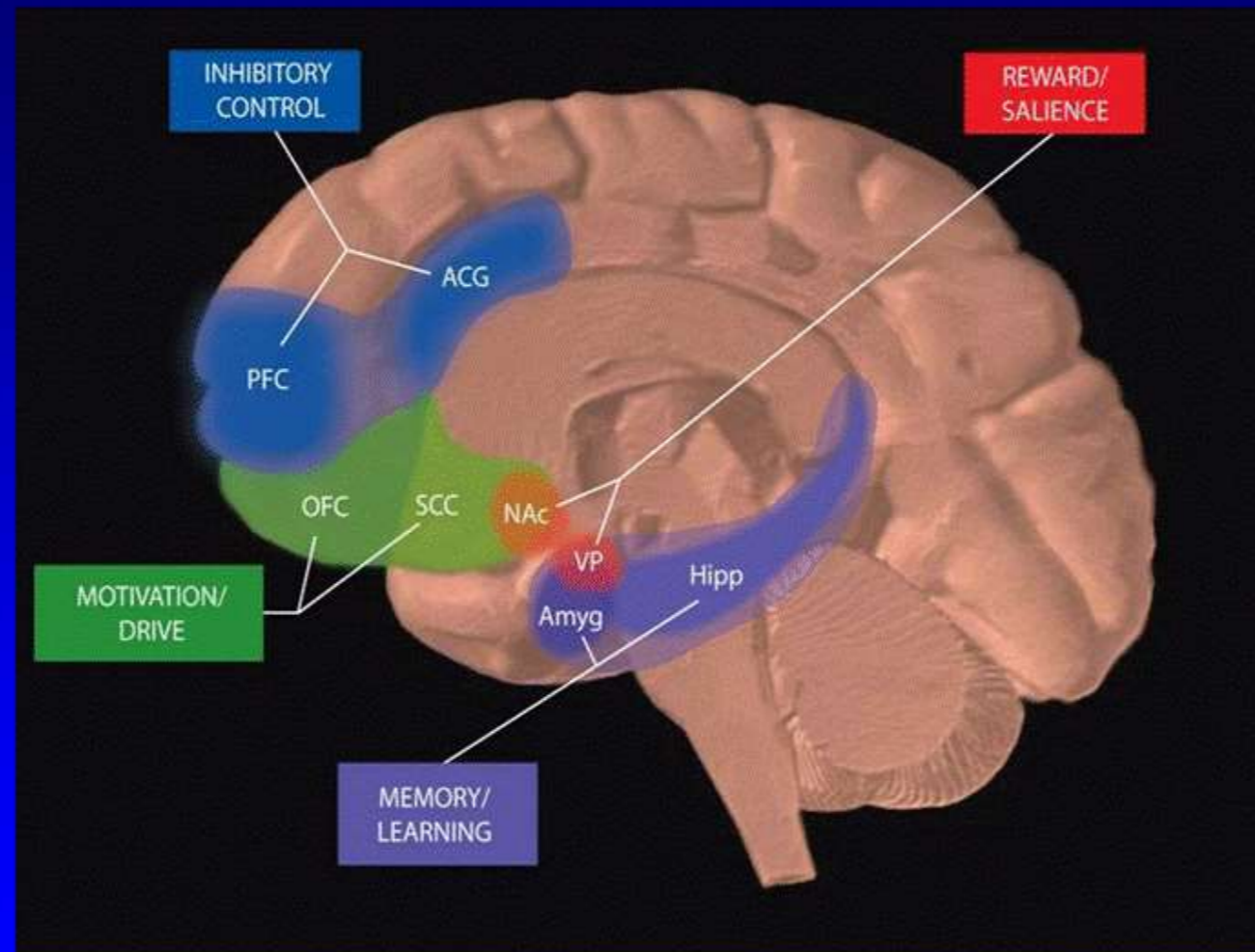
Genetic/Epigenetic Testing

PureGenomics

Methylation Pathway



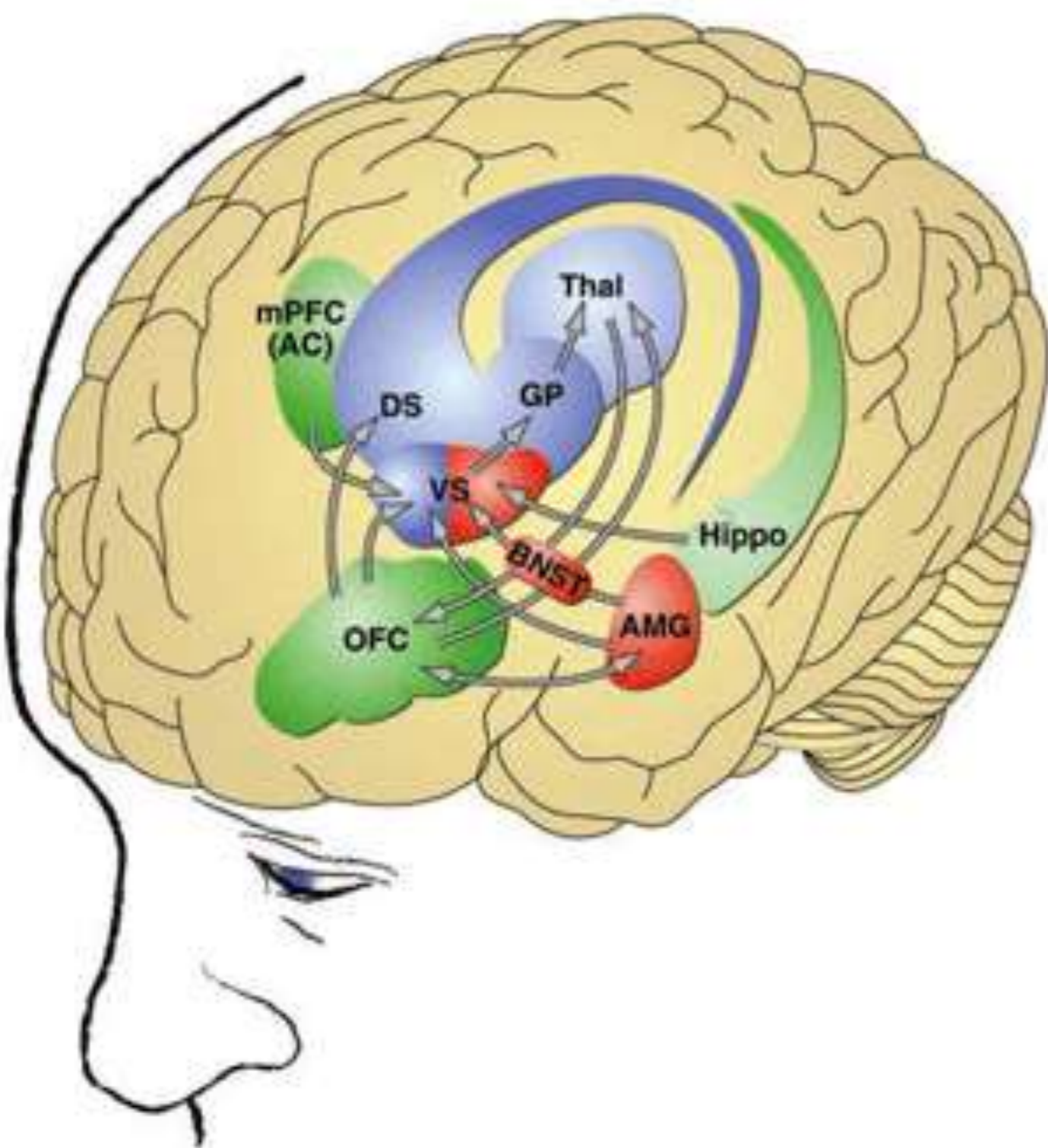
Circuits Involved In Drug Abuse and Addiction



All of these brain regions must be considered in developing strategies to effectively treat addiction

NIDA

Addiction and the brain



Binge/intoxication

- ventral striatum (VS), including nucleus accumbens
euphoria, reward
- dorsal striatum (DS)
habits, perseveration
- global pallidus (GP)
habits, perseveration
- thalamus (Thal)
habits, perseveration

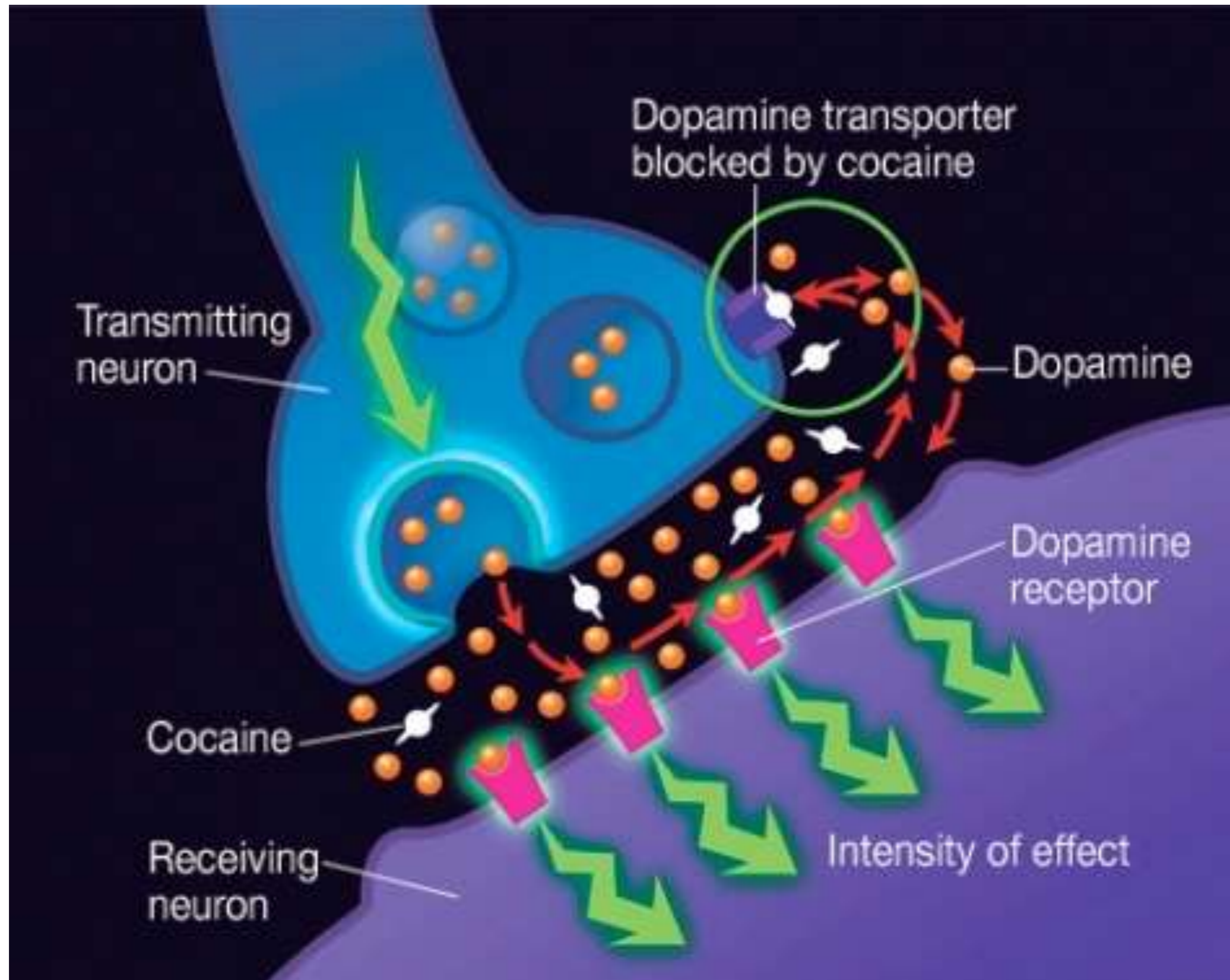
Withdrawal/negative affect

- amygdala (AMG), bed nucleus of the stria terminalis (BNST), together also known as the "extended amygdala"
malaise, dysphoria, negative emotional states
- ventral striatum (VS)
decreased reward

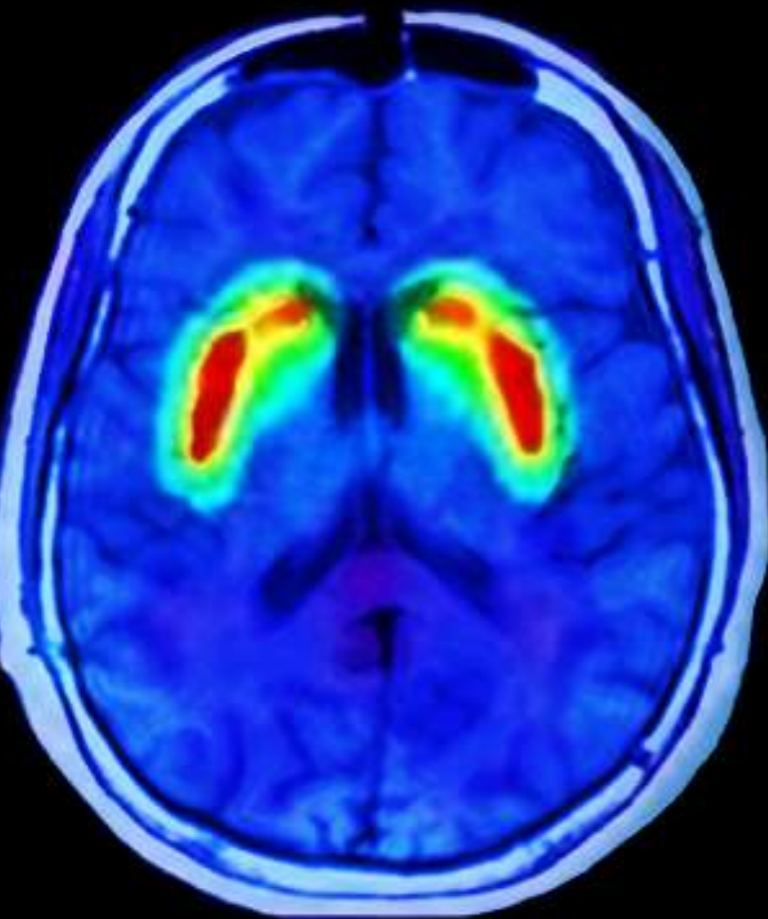
Preoccupation/anticipation

- anterior cingulate (AC)
- prefrontal cortex (mPFC), orbitofrontal cortex (OFC)
subjective effects of craving, executive function
- basolateral nucleus of the amygdala
conditioned cues
- hippocampus (Hippo)
conditioned contextual cues

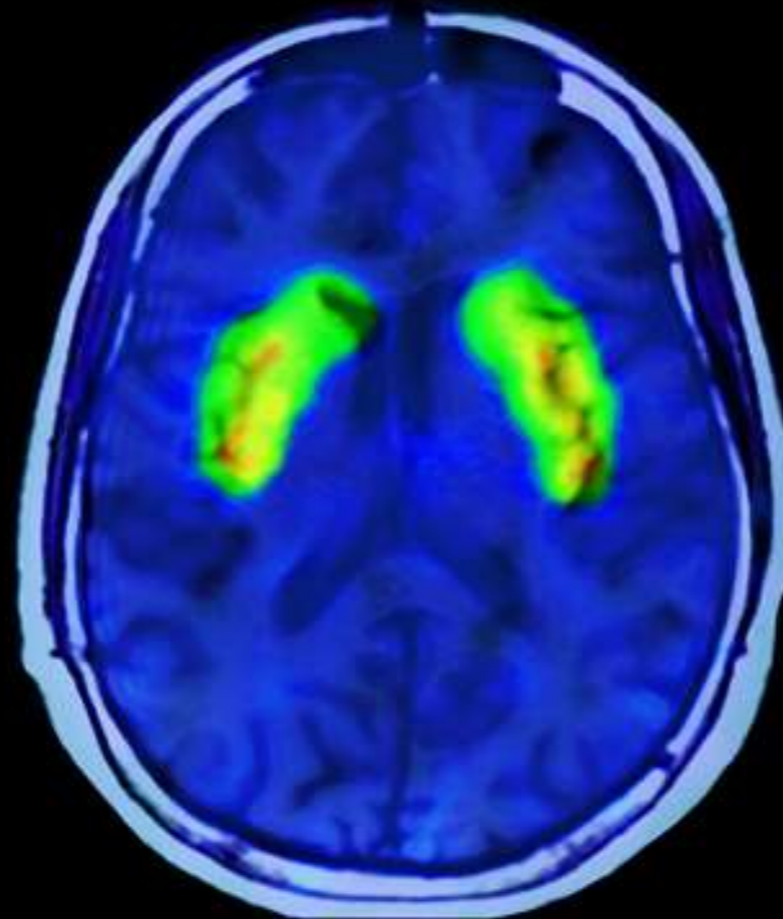
Neurotransmission



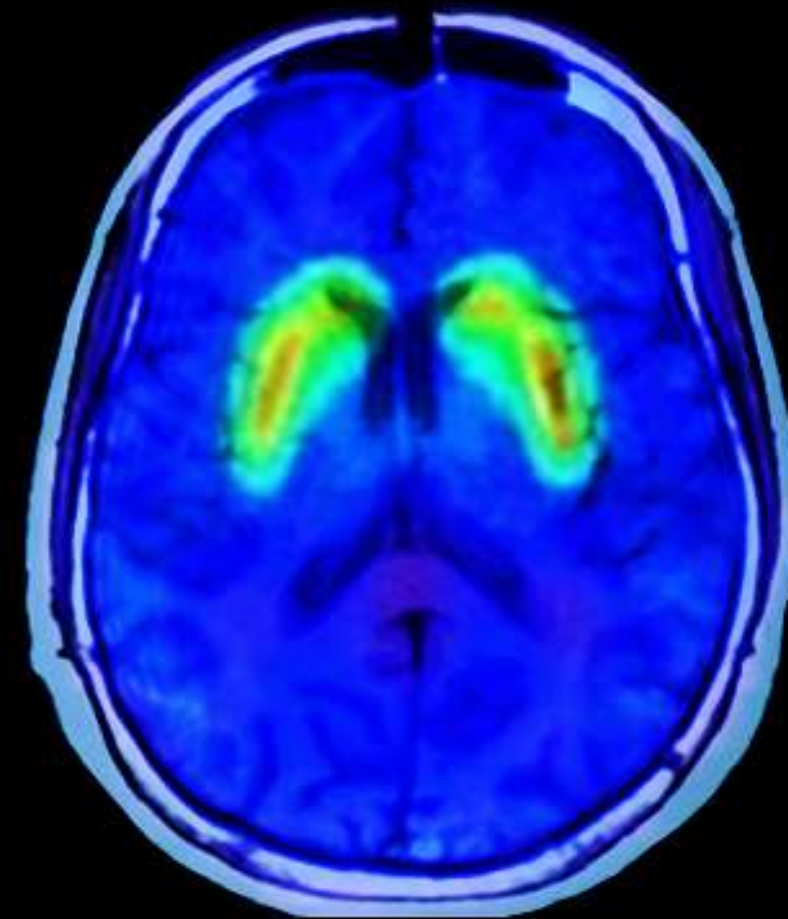
Normal



Cocaine



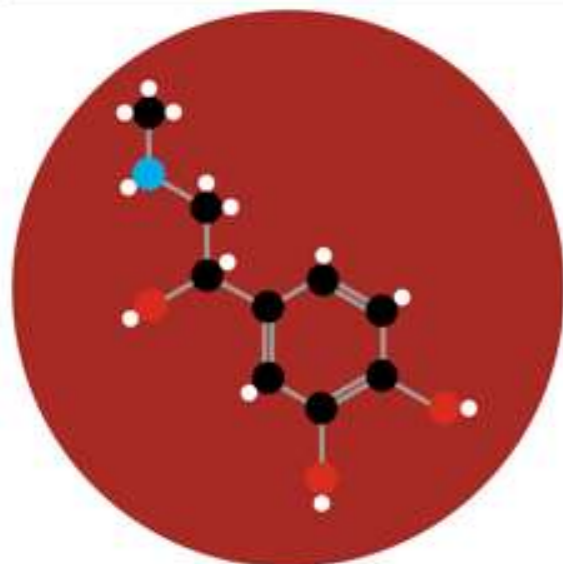
Obese



Changes in the brain

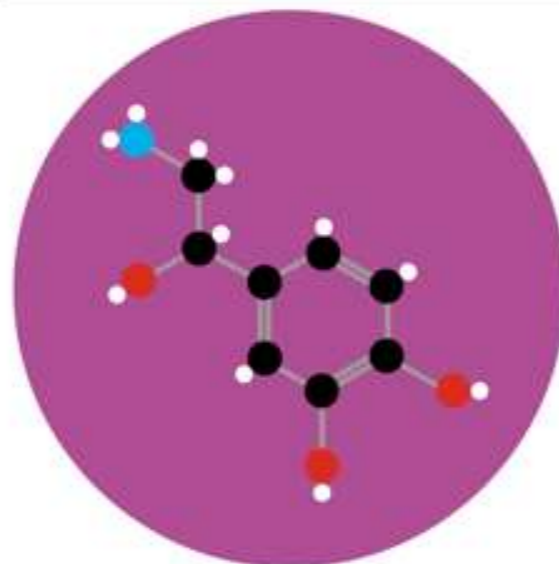
CHEMICAL STRUCTURES OF NEUROTRANSMITTERS

ADRENALINE $C_9H_{13}NO_3$
THE 'FIGHT OR FLIGHT' NEUROTRANSMITTER



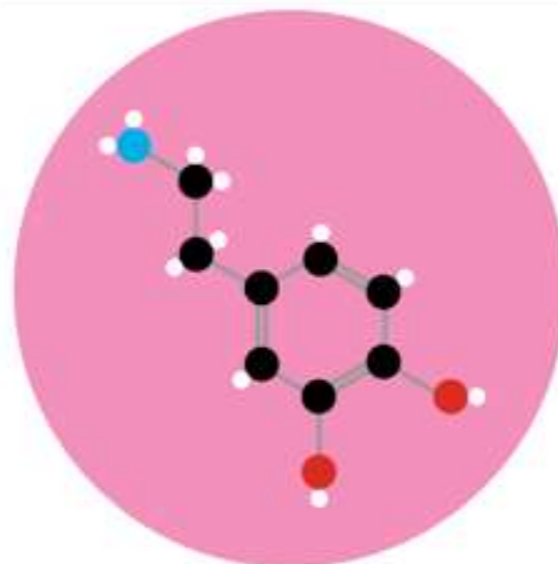
Adrenaline, also known as epinephrine, is a hormone produced in high stress or exciting situations. It stimulates increased heart rate, contracts blood vessels and dilates airways, to increase blood flow to the muscles & oxygen to the lungs. This leads to a physical boost, and heightened awareness. EpiPens, which are used to treat allergic reactions, work by injecting adrenaline.

NORADRENALINE $C_8H_{11}NO_3$
THE CONCENTRATION NEUROTRANSMITTER



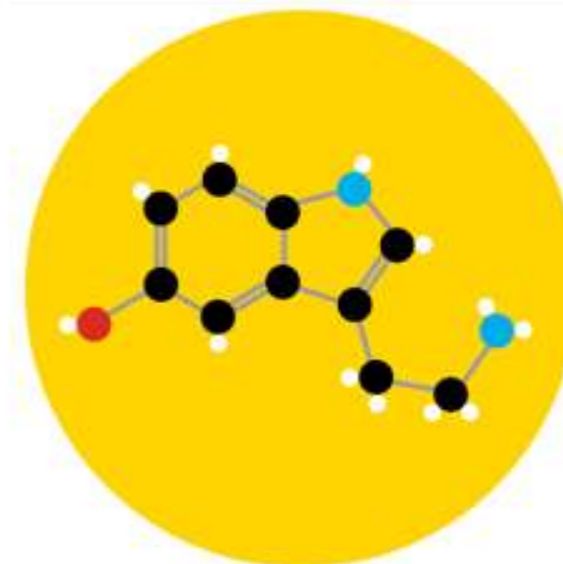
Noradrenaline, also known as norepinephrine, is a neurotransmitter that affects attention & responding actions in the brain. Alongside adrenaline, it is also involved in the 'fight or flight' response. Its effect in the body is to contract blood vessels to increase blood flow. Patients diagnosed with ADHD will often be prescribed drugs designed to help increase levels of noradrenaline in the brain.

DOPAMINE $C_8H_{11}NO_2$
THE PLEASURE NEUROTRANSMITTER



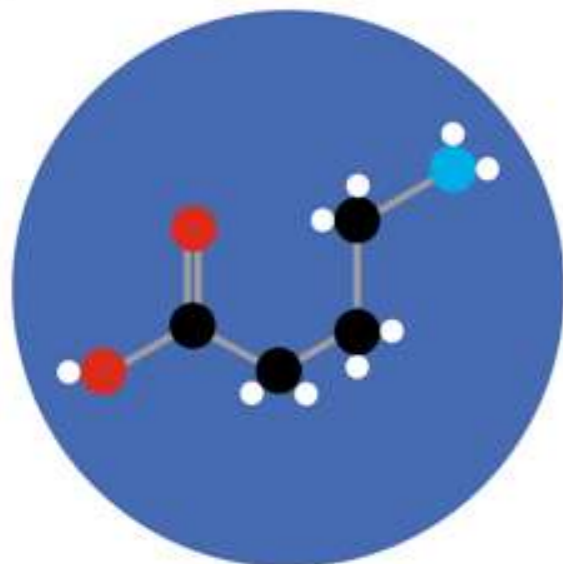
Dopamine is associated with feelings of pleasure & satisfaction. It is also associated with addiction, movement, and motivation. The feelings of satisfaction caused by dopamine can become desired, and to satisfy this the person will repeat behaviours that lead to release of dopamine. These behaviours can be natural, as with eating and sex, or unnatural, as with drug addiction.

SEROTONIN $C_{10}H_{12}N_2O$
THE MOOD NEUROTRANSMITTER



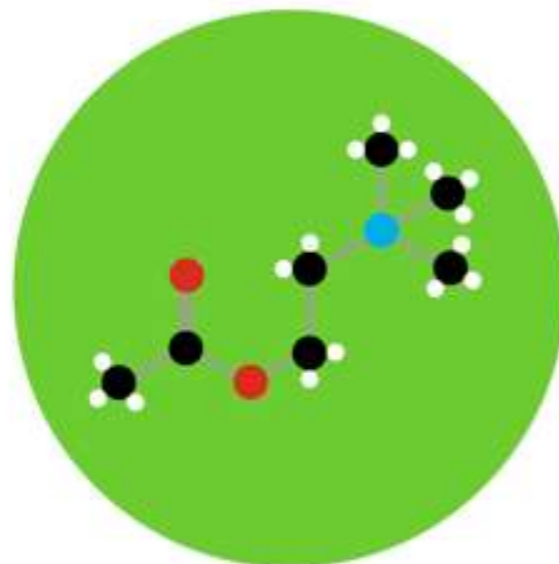
Serotonin is thought to be a contributor to feelings of well-being and happiness. It regulates the sleep cycle along with melatonin, and also regulates intestinal movements. Low levels of serotonin have been linked to depression, anxiety, and some mental disorders. Antidepressants work by increasing serotonin levels. Exercise and light levels can also both have positive effects on the levels of serotonin.

γ-AMINOBUTYRIC ACID $C_4H_9NO_2$
THE CALMING NEUROTRANSMITTER



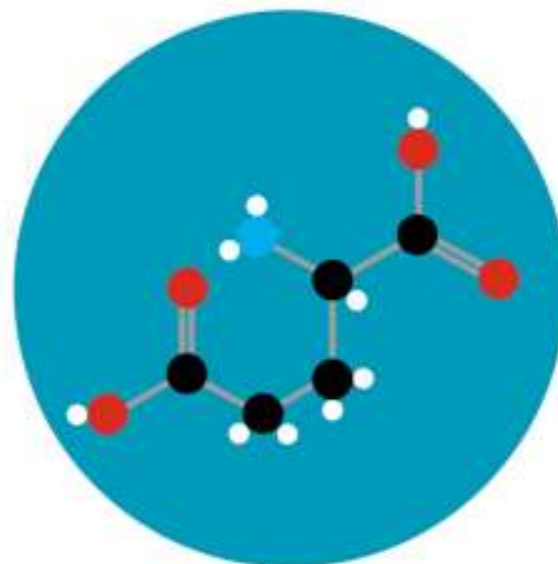
Gamma-aminobutyric acid (GABA) is the major inhibiting neurotransmitter of the brain; its role is to calm firing nerves in the central nervous system. Increased levels improve mental focus and relaxation, whilst low levels can cause anxiety, and have also been linked with epilepsy. GABA also contributes to motor control and vision. Drugs to treat epilepsy often work by increasing levels of GABA in the brain.

ACETYLCHOLINE $C_7H_{16}NO_2^+$
THE LEARNING NEUROTRANSMITTER



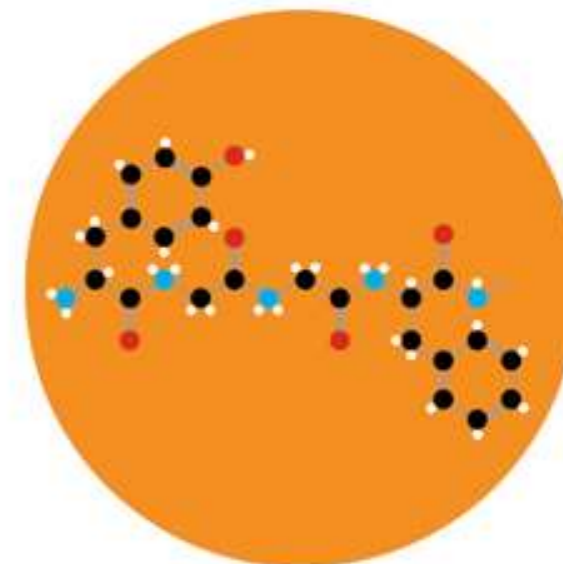
Acetylcholine, often shortened to ACh, is the principle neurotransmitter involved in thought, learning and memory. In the body, it is involved in activating muscle action. Damage to the acetylcholine producing areas of the brain has been linked with the memory deficits associated with Alzheimer's disease. Acetylcholine is also associated with attention, and enhancement of sensory perception upon waking.

GLUTAMATE $C_5H_9NO_4$
THE MEMORY NEUROTRANSMITTER



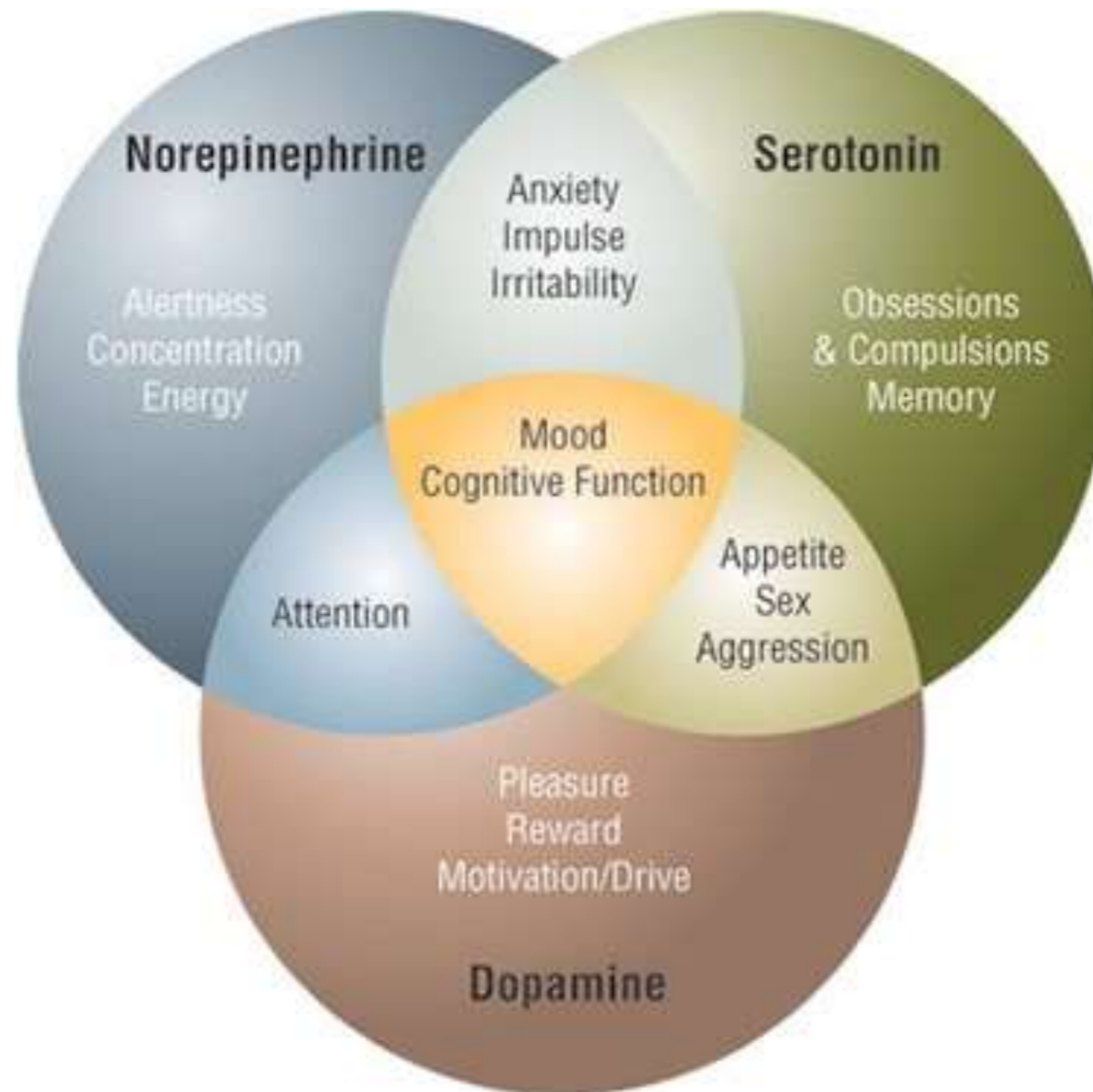
Glutamate is the most common neurotransmitter in the brain, and is involved in cognitive functions, such as learning and memory. It also regulates brain development and creation of nerve contacts. Glutamate is actually toxic to neurons in larger quantities, and if too much glutamate is present it can kill them; brain damage or strokes can lead to the creation of a harmful excess, killing brain cells.

ENDORPHINS 20+ TYPES IN THE HUMAN BODY
THE EUPHORIA NEUROTRANSMITTERS

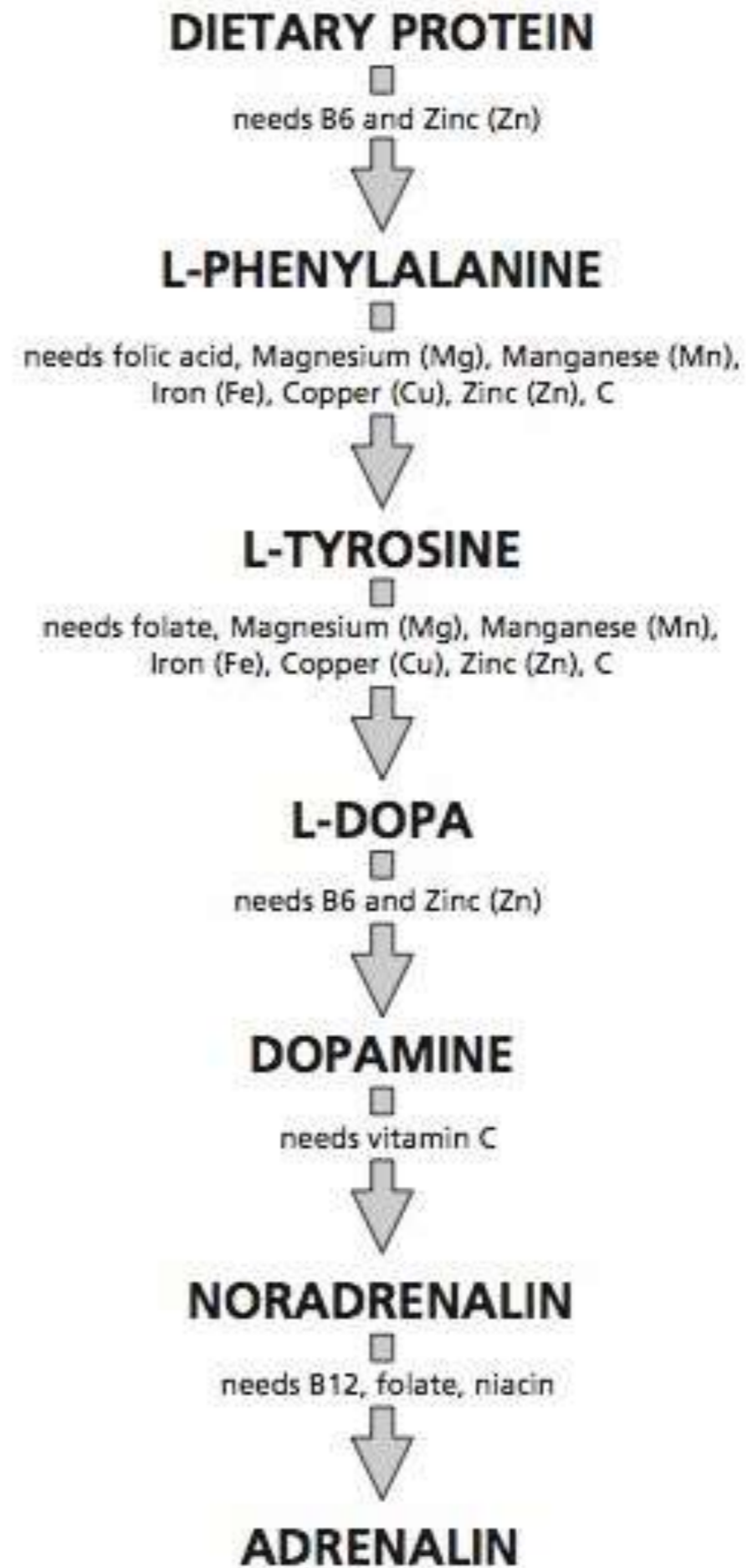


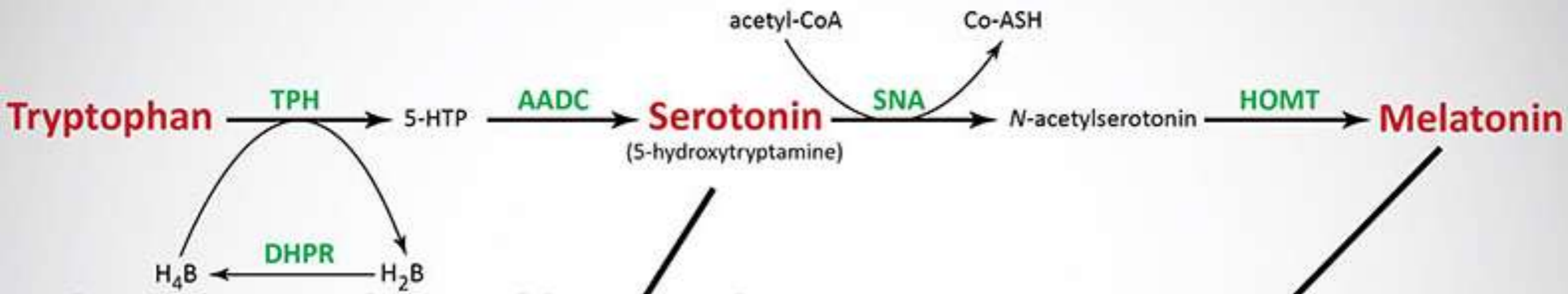
Endorphins are a range of compounds, the biologically active section of which is shown above, formed from long chains of multiple amino acids. They are released in the brain during exercise, excitement, pain, and sexual activity, and produce a feeling of well-being or even euphoria. At least 20 types of endorphins have been identified in humans. Certain foods, such as chocolate & spicy foods, can also stimulate the release of endorphins.

Neurotransmitters



Catecholamine Synthesis:

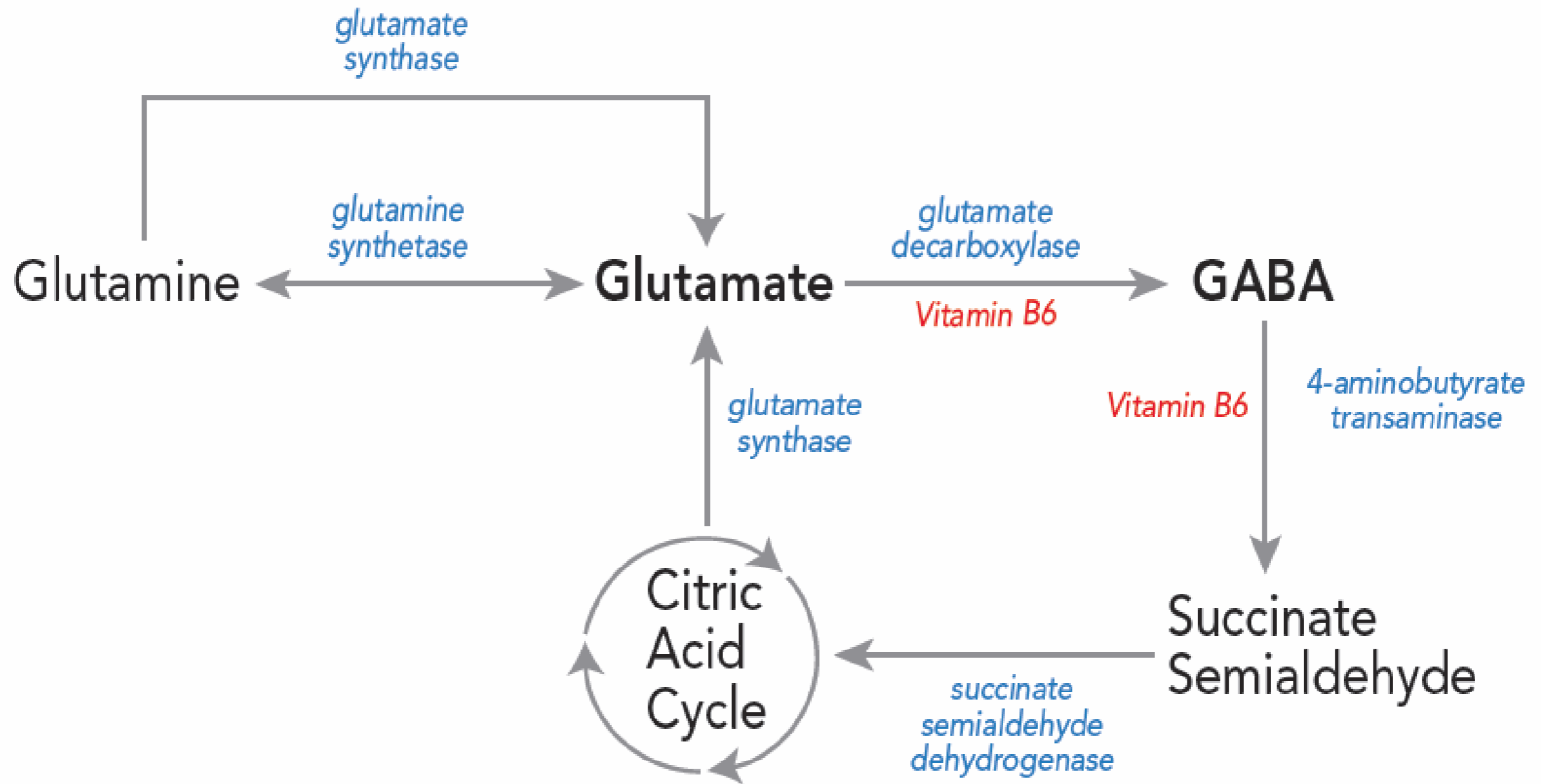




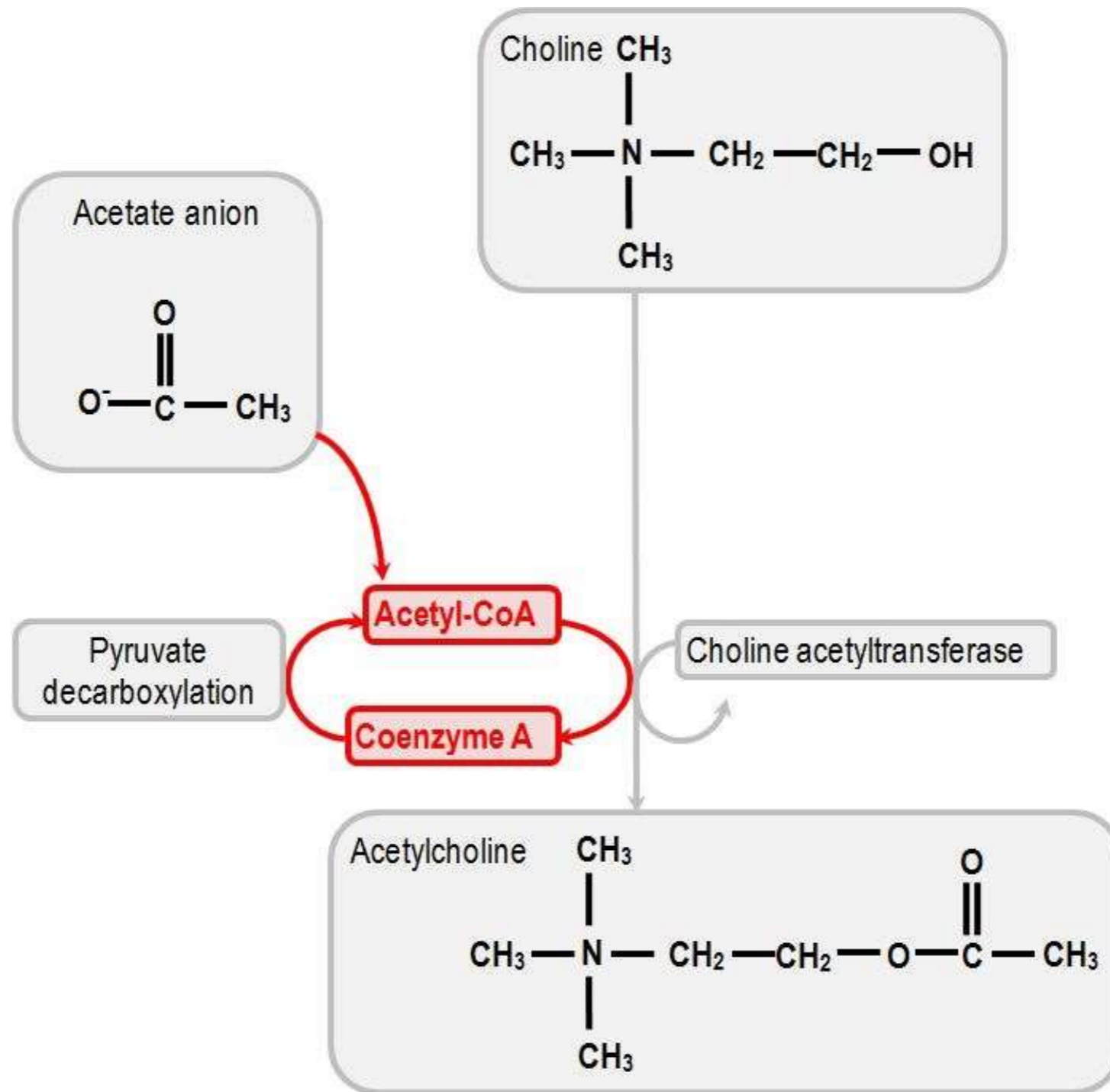
themedicalbiochemistrypage.org



Serotonin Synthesis:

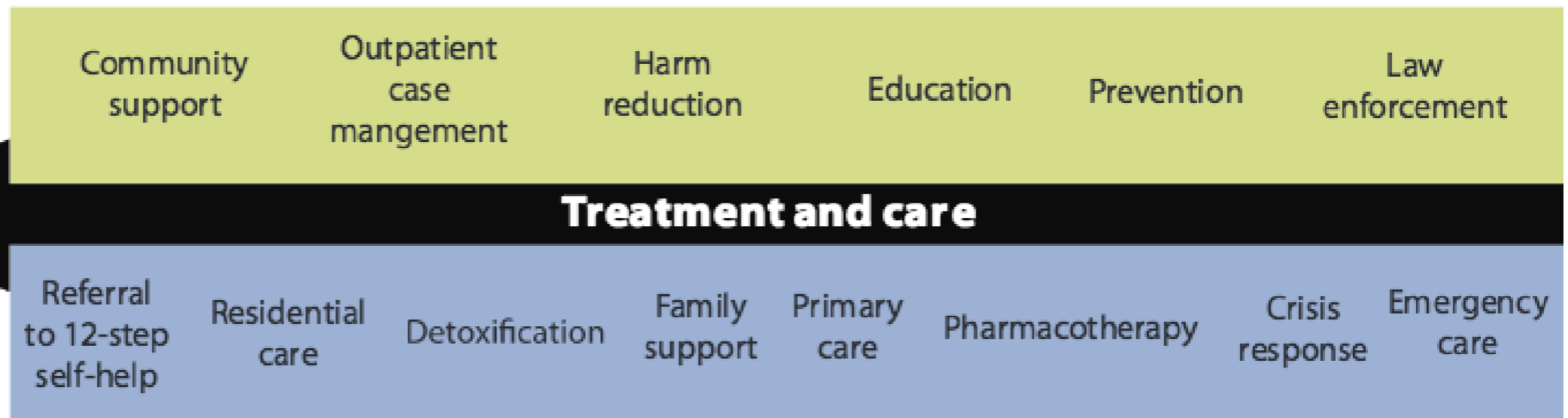


GABA Synthesis:



Acetylcholine
Synthesis:

**HEALTHY
LIVING**



Items listed above do not represent a chronological sequence of events.

Current Treatment

History of IV amino acid therapy

- Dr. Hitt had begun his research in the late 1980s
- Not interested initially in treating addicts
- Observed remarkable change in cravings, mood, attitudes during a short course of treatment

History of IV amino acid therapy

- Kenneth Blum and others in 1980s looked at genetic differences in dopamine production and correlated substance abuse rates
- William Hitt in early 1990s began experimenting with the idea that the physical damage caused by drugs could be repaired with proper IV nutritional support
- Dr. Hitt began with amino acids (and perhaps nicotinamide adenine dinucleotide or NAD) IV – initially only for alcoholism

History of IV amino acid therapy

- Unpublished results of a group of several hundred alcoholics in Mexico City showed over 70% sobriety
- Dr. Hitt relocated to Tijuana to have access to patients with more variety of drug issues and try other amino acid combinations
- Eventually developed four different formulas based on the drug/alcohol history
- 10-day IV treatment, abrupt discontinuation of drugs/alcohol, IV for 7-8 hours per day

Pathophysiology of Addiction

- Addiction and dependence - similar. Main difference is conceptual.
- Human nervous system necessitates gradual growth compared to animals, due to specialized capabilities
- Neurotransmission, homeostasis, tonic and phasic neuronal activity are all carefully developed and balanced during growth, maintained by use of the system
- Nervous system's remarkable capability of self-regulation; the body's hard drive

Pathophysiology of Addiction

- Excessive stimulation of neurotransmission by mind- and mood-altering substances leads to decreased native neurotransmission (inhibition and excitation – imbalance)
- Reuptake inhibition (e.g. cocaine at the dopamine receptor, decreased D2 receptivity in addicts on brain scans)
- Direct receptor stimulation through mimicry of the native neurotransmitter (e.g. opiates, benzodiazepines)
- Alcohol – various: GABA, adenosine, glycine, glutamate, others.
- Likely more a decrease in sensitivity to, rather than a lack of production of, neurotransmitters

Pathophysiology of Addiction

- This is the basis of dependence and tolerance
- Normal neurotransmission may or may not restore with reduction or cessation of exposure
- Depends on substance used, intensity and length of use, genetics and age of patient, other substances
- Results in emptiness, anxiety, brain fog, lack of motivation, pain, +/- cravings, fatigue, lack of clarity, poor memory

Pathophysiology of Addiction

- Two important points:
- These symptoms of damaged neurotransmission may last indefinitely, even after substance use has stopped
- Neurotransmission damage happens - and persists - just as readily with prescription psychotropics (taken as prescribed) as it does with drugs of abuse and alcohol

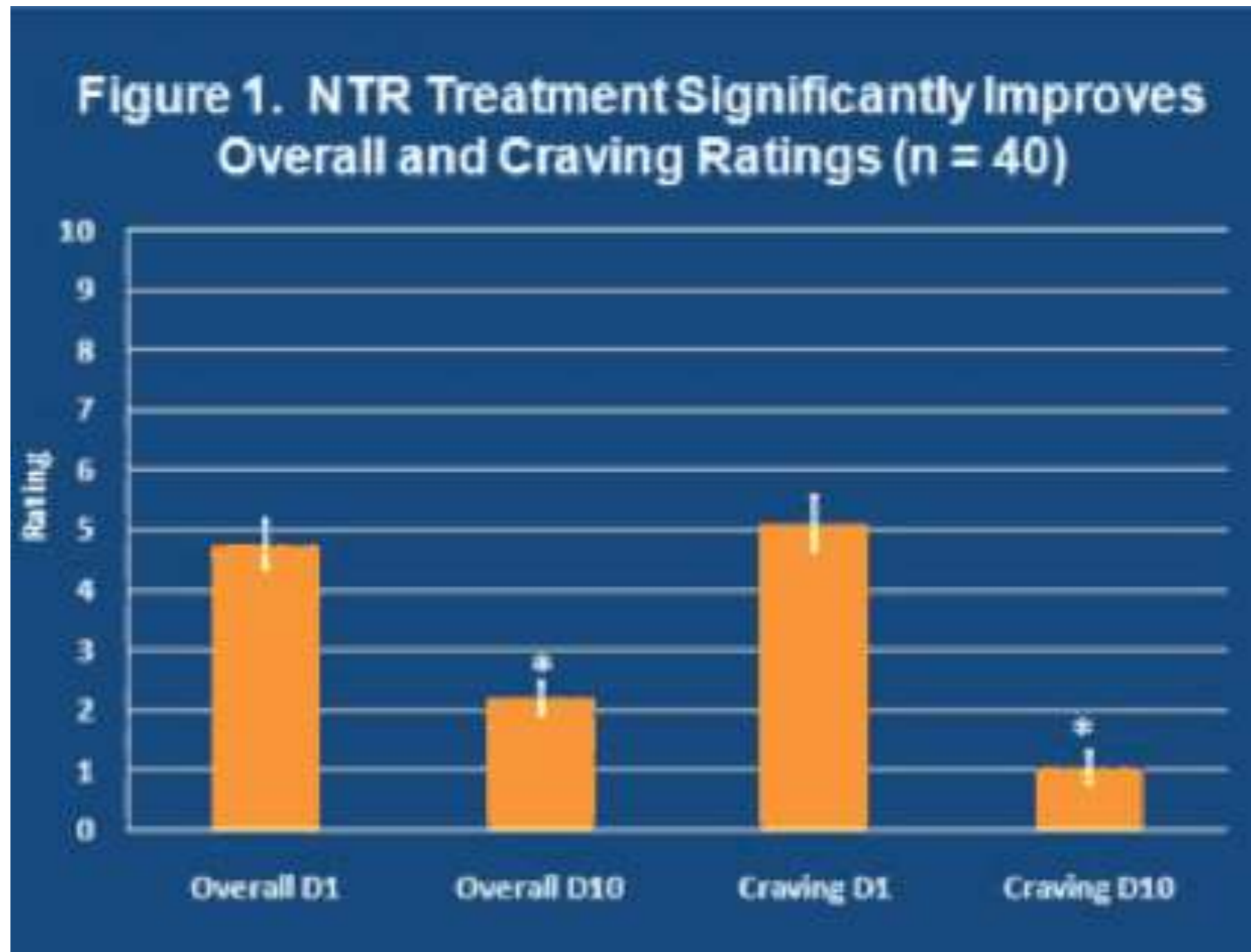
IV Amino Acid Therapy

- Several hundred+ addiction/dependent patients have been treated with IV amino acid formulas since the early 1990s
- No deaths or serious side effects known
- Remarkable improvement observed fairly consistently – minimal withdrawal, rapid decrease in cravings, restored clarity, mood, mental function, with impressively low relapse rates
- Return of previous function can only be reasonably attributed to restoration of normal physiology at synaptic level; brain scans seem to support this

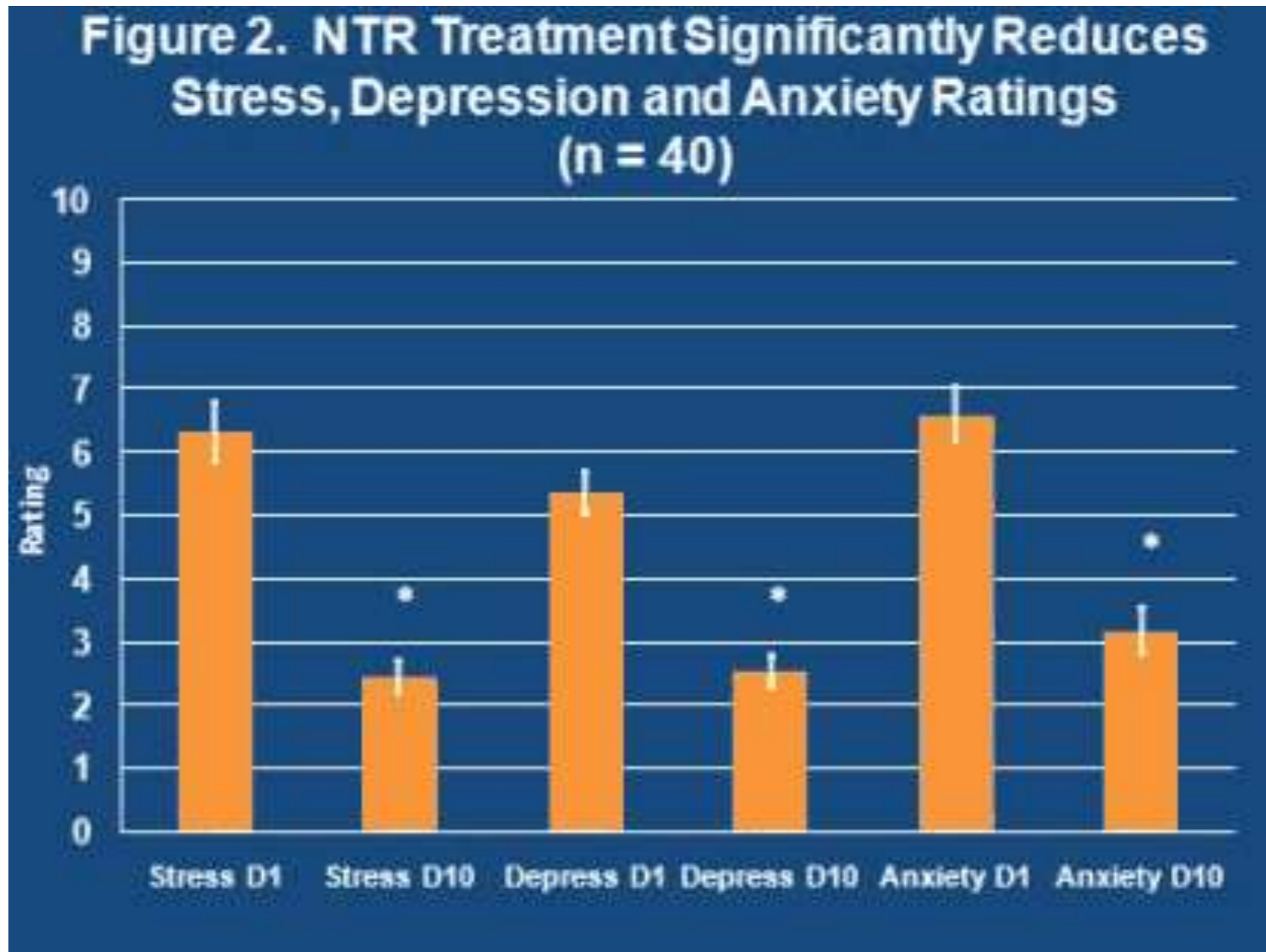
IV Amino Acids - Studies

- × Limited formal clinical research available on IV amino acids for addiction/dependence
- × Dr. Hitt was primary researcher since early 1990s
- × Owen, et al study presented in 2008 to Society for Neuroscience
- × SPECT scans and Q EEGs in collaboration with Amen Clinics
- × Current ongoing data collection

NTR Study (Owen, et. al.)

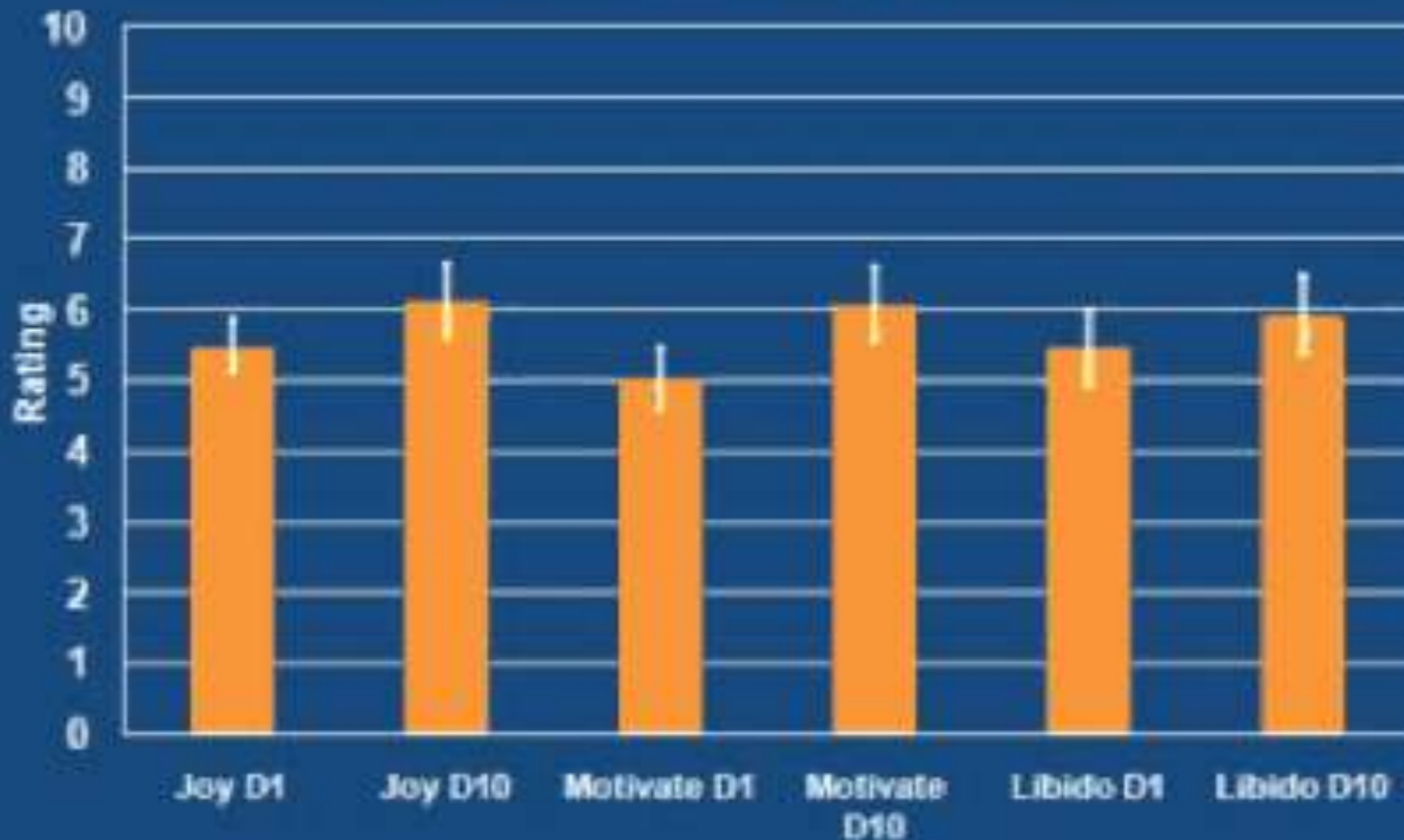


NTR Study (Owen, et. al.)



NTR Study (Owen, et. al.)

Figure 3. NTR Treatment Does Not Show Abuse Potential (n = 40)



IV Amino Acids – Current Therapy

- × Hitt formulas were consistently tweaked as new drug dependencies were treated
- × Never patented, remained trade secret
- × Since 2012, two main programs available:
 - ⌘ Drug-specific IV amino acid formulations
 - ⌘ IV nicotinamide adenine dinucleotide (NAD)

IV Amino Acids – Current Therapy

- Drug-specific IV amino acid formulations
- Established compounding pharmacy collaborated with Hitt clinic to further develop his formulas
- 95% of his various combinations, from research notes, distilled down into 5 formulas:
 - ⌘ Benzodiazepines, antidepressants, compulsions
 - ⌘ Alcohol and opiates
 - ⌘ Cocaine, methamphetamine, methylphenidate
 - ⌘ Tobacco, marijuana, compulsions
 - ⌘ One other formula for non-drug brain boost
 - ⌘ Trade secret amino acid combinations

IV Amino Acids – Current Therapy

- IV nicotinamide adenine dinucleotide (NAD):
- One of the early therapy agents, used mainly for alcoholism, IV and/or oral, long-term use was required
- Has some definite beneficial effects
- No customization per drug history; probably not effective with tobacco and marijuana

IV Amino Acids – Current Therapy

- Patient history: which drugs (prescription or illicit), how much, how long
- Choose most appropriate formula
- 5-7 days for previous use, 9-12 days for current use
- Myer's IV, glutathione IV, then amino acids IV
- 8 hours IV per day, treatment each day (may take a break after day 5 or 6)
- Patients feel the changes happening by the hour

IV Amino Acids – Current Therapy

- Patients abruptly discontinue all meds (exception: methadone). Continued use defeats purpose of treatment
- Withdrawal is minimal compared to unassisted detox
- By the end of day 4, patients feeling much better
- Much better after day 1 if prior use patients
- Remember: illicit or prescription, current or past use

IV Amino Acids – Current Therapy

- Detox phase (if currently using): first 4-5 days
- Restoration phase: next 4-5 days
- Continue treating until mood, sleep, energy, memory, clarity, calmness have returned
- Predictable pattern in almost all patients

IV Amino Acids – Current Therapy

- Few patients need boosters with current available therapy (more so with NAD)
- Important to treat whole person – competently address underlying issues which may have led to the substance use (thyroid, adrenal, insomnia, etc.)
- Emotional/spiritual/psychological support



NADA Protocol

- <http://www.acudetox.com/>

Research

[MDMA-Assisted Psychotherapy](#)

[LSD-Assisted Psychotherapy](#)

[Ibogaine Therapy for Drug Addiction](#)

[Ayahuasca-Assisted Treatment](#)

[Medical Marijuana](#)

[Other Psychedelic Research](#)

Ibogaine Therapy

We are studying the long-term effects of ibogaine treatment on patients presently undergoing therapy at independent ibogaine treatment centers in Mexico and New Zealand.

MAPS-sponsored researchers are collecting observational data for the first prospective ibogaine outcome studies in order to contribute to the growing scientific literature about ibogaine as a treatment for drug addiction.

Ibogaine is a psychoactive alkaloid naturally occurring in the West African shrub iboga. While ibogaine is a mild stimulant in small doses, in larger doses it induces a profound psychedelic state. Historically, it has been





www.politiquessociales.net

Which kratom variety is right for you?

	 MAENG DA	 PREMIUM BALI	 GREEN MALAY	 RED THAI	 WHITE BORNEO	 UEI	 GREEN BORNEO	 RED SUMATRA	 VIETNAM
PAIN RELIEF		X		X		X		X	X
EUPHORIA	X		X	X		X	X		
ENERGY	X		X		X				X
RELAX		X					X	X	X
ANTI-ANXIETY			X			X	X	X	
INSOMNIA		X						X	
OPIATE WITHDRAWAL	X	X		X		X			
MOOD BOOSTING	X		X	X	X		X		X
SOCIABILITY			X		X				

What is Kratom?

Interesting videos in the media...



- <https://youtu.be/HUngLgGRJp>

<https://youtu.be/ZTtCSfzbHigxt>



<https://youtu.be/ao8L-0nSYzgxt>



Johann Hari:

Everything you think you know about addiction is wrong

TEDGlobalLondon · 14:42 · Filmed Jun 2015

21 subtitle languages ?

View interactive transcript



Really good TED Talk!

<https://youtu.be/PY9DcIMGxMs>

TED talk worth watching



https://www.ted.com/talks/vs_ramachandran_the_neurons_that_shaped_civilization?language=en

End of Module #4

- Module # 1 - Addiction Basics
 - ◆ science behind addiction - primer
- Module # 2 - Current Medical Options
 - ◆ understanding how MD's triage patients
- Module # 3 - Assessments in Addiction
 - ◆ how to assess patients with addiction issues

Questions?

References

1. Volkow, N.D.; Wang, G.-J.; Fowler, J.S.; Logan, J.; Gatley, S.J.; Hitzemann, R.; Chen, A.D.; Dewey, S.L.; and Pappas, N. Decreased striatal dopaminergic responsiveness in detoxified cocaine-dependent subjects. *Nature* 386 (6627): 830-833, 1997.
2. Blum, Kenneth; Noble, Ernest; Peter J. Sheridan; Anne Montgomery; Terry Ritchie; Pudur Jagadeeswaran; Harou Nogami; Arthur H. Briggs; Jay B. Cohn (April 18, 1990). Allelic Association of Human Dopamine D2 Receptor Gene in Alcoholism. *Journal of the American Medical Association* 263 (15): 2055–60.
3. Blum, Kenneth; Braverman, Eric R; Holder, Jay M; Lubar, Joel F; Monastra, Vincent J; Miller, David & Comings, David E (November 2000). Reward Deficiency Syndrome: A Biogenetic Model for the Diagnosis and Treatment of Impulsive, Addictive, and Compulsive Behaviors. *Journal of Psychoactive Drugs* 32 (Supplement): i–iv, 1–112.

References

4. Riegel, A.C., and Kalivas, P.W. Neuroscience: Lack of inhibition leads to abuse. *Nature* 463: 743–744, 2010.
5. Brown, M.T.C., et al. Drug-driven AMPA receptor redistribution mimicked by selective dopamine neuron stimulation. *PLoS One*. 5:12: e15870, 2010.
6. Valenzuela, C.F. Alcohol and Neurotransmitter Interactions. *Alcohol Health & Research World* Vol. 21, No. 2, 1997.
7. S. Owen, M.D., P. Norris, M.Ed., LPC, DAPA, S. Broom Gibson, Ph.D., R. Mestayer, M.D. Neurotransmitter Restoration Therapy for the Treatment of Substance Abuse. Presentation at Society for Neuroscience annual meeting, Nov. 2008.

References

8. Cleary, JP. A Consideration of Niacin as an Inhibitor of the Predatory Response. *Journal of Orthomolecular Medicine* Vol. 18, No. 1, 2003.
9. National Institute on Drug Abuse website:
www.drugabuse.gov
Excellent source of current research on the science of drug addiction.