

# **ADVANCED NUTRIENT THERAPIES FOR BIPOLAR DISORDER**

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# Walsh Research Institute



- Nonprofit organization
- Expertise in schizophrenia, depression, anxiety, bipolar disorder, ADHD, autism, behavior disorders, and Alzheimers
- International physician training
- Experimental Research

# Clinical Experience



- 10,000 Behavior & ADHD
- 3,500 Schizophrenia
- 3,200 Depression
- 1,500 Bipolar Disorder

# Database Findings



**Striking blood/urine chemistry  
differences between mental illness  
populations and the rest of society.**

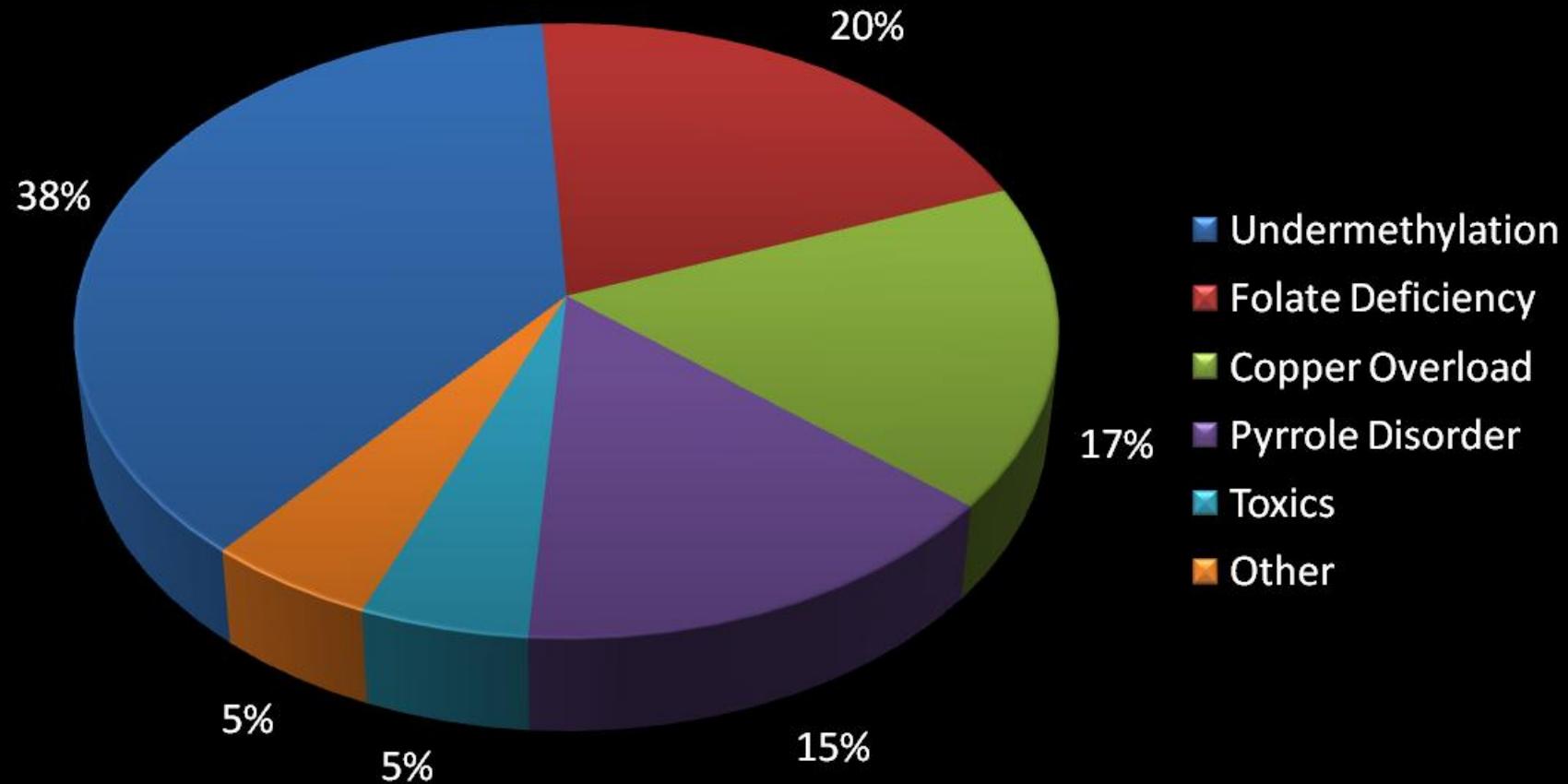
# High-Incidence Imbalances in Bipolar Disorder Patients

- Overmethylation
- Undermethylation
- Zinc Deficiency
- Copper Overload
- Folate Deficiency or Overload
- Pyrrole Disorder (Low B-6, zinc)
- Heavy-Metal Overload
- Fatty-Acid Abnormalities

# Bipolar Phenotypes

- Our chemistry database (250,000 assays) indicates that bipolar patients fit into four major biochemical classifications,
- Each bipolar “biotype” is associated with distinctive symptoms and traits,
- Bipolar disorder appears to be an umbrella term used for different mental disorders, each requiring a different treatment approach.

## Depression Biotypes



# Bipolar Disorder Phenotypes (preliminary)

- **Undermethylation**
- **Overmethylation**
- **Copper/Zinc Imbalance**
- **Severe Oxidative Stress**

# Frequently Asked Questions



- 1. How can vitamins, minerals, or amino acids significantly help a patient with a bipolar disorder?**
- 2. Don't you really need a powerful drug to get the job done?**

# The Power of Nutrients



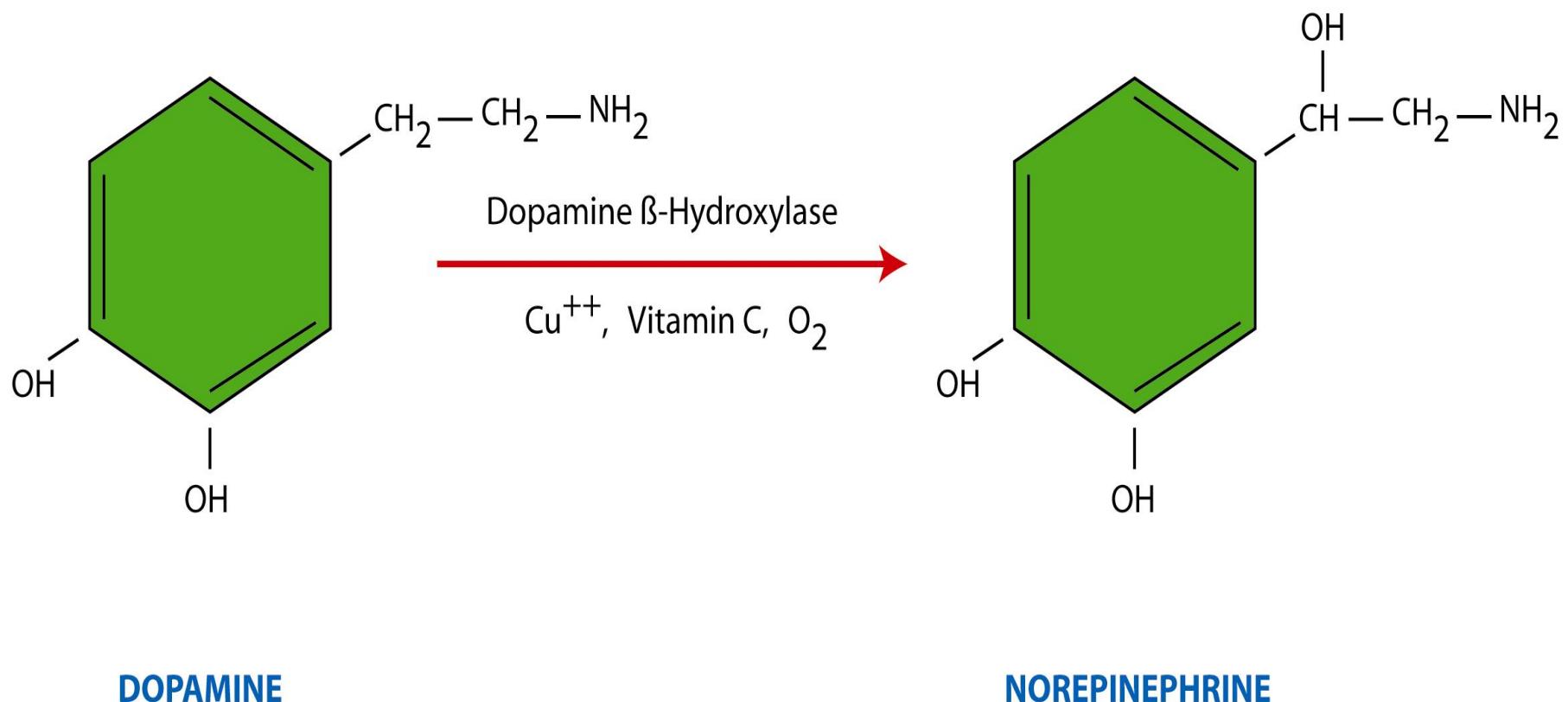
- 1. Neurotransmitter synthesis**
- 2. Epigenetic regulation of gene expression**
- 3. Reuptake processes at synapses (DAT and SERT transport proteins)**
- 4. Antioxidant Protection at NMDA, GABA**

# The Brain Is a Chemical Factory

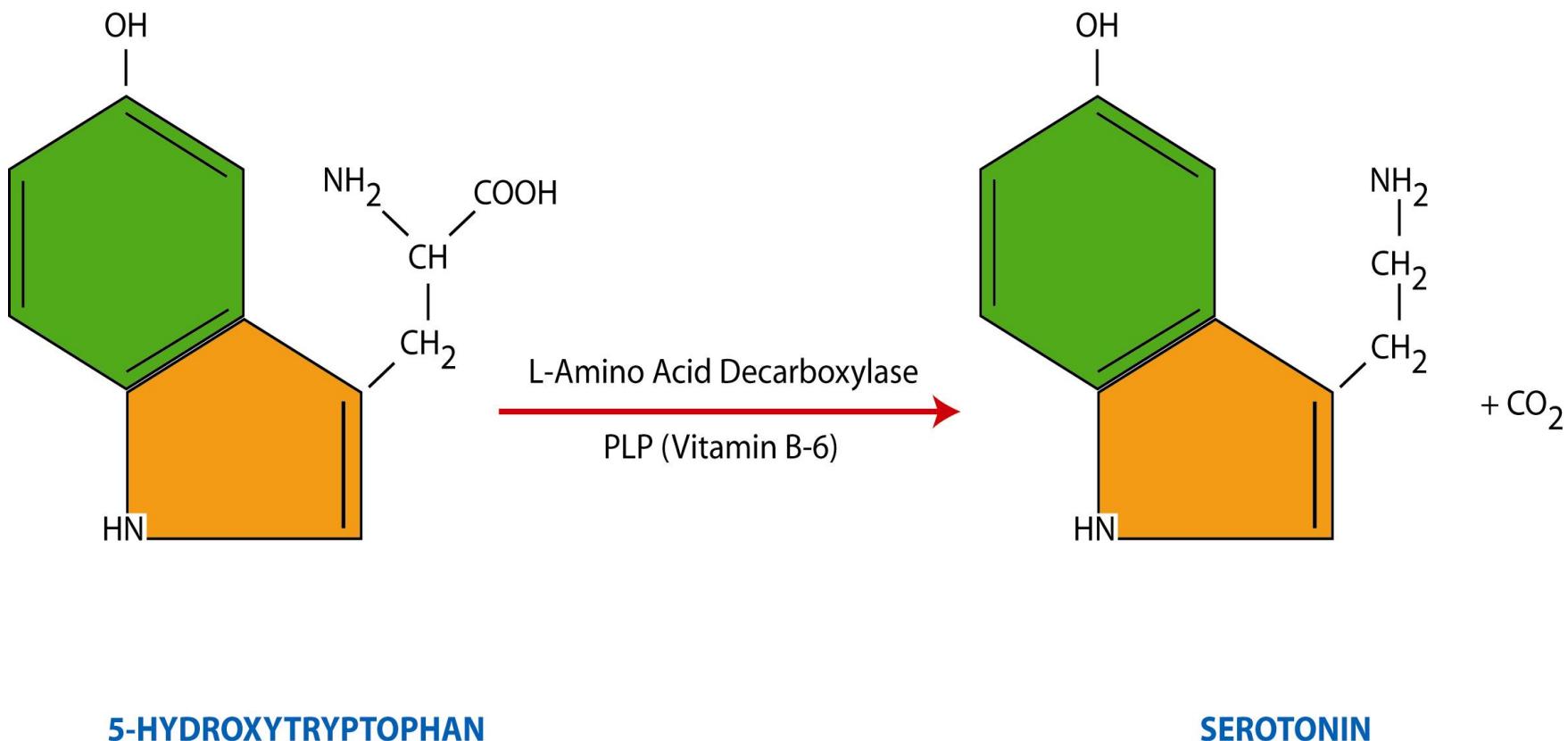


- Serotonin, dopamine, and other NT's are synthesized in the brain.
- The raw materials for NT synthesis are nutrients: vitamins, minerals, and amino acids.
- A genetic or epigenetic imbalance in a nutrient needed for NT synthesis or regulation can result in serious mental problems.

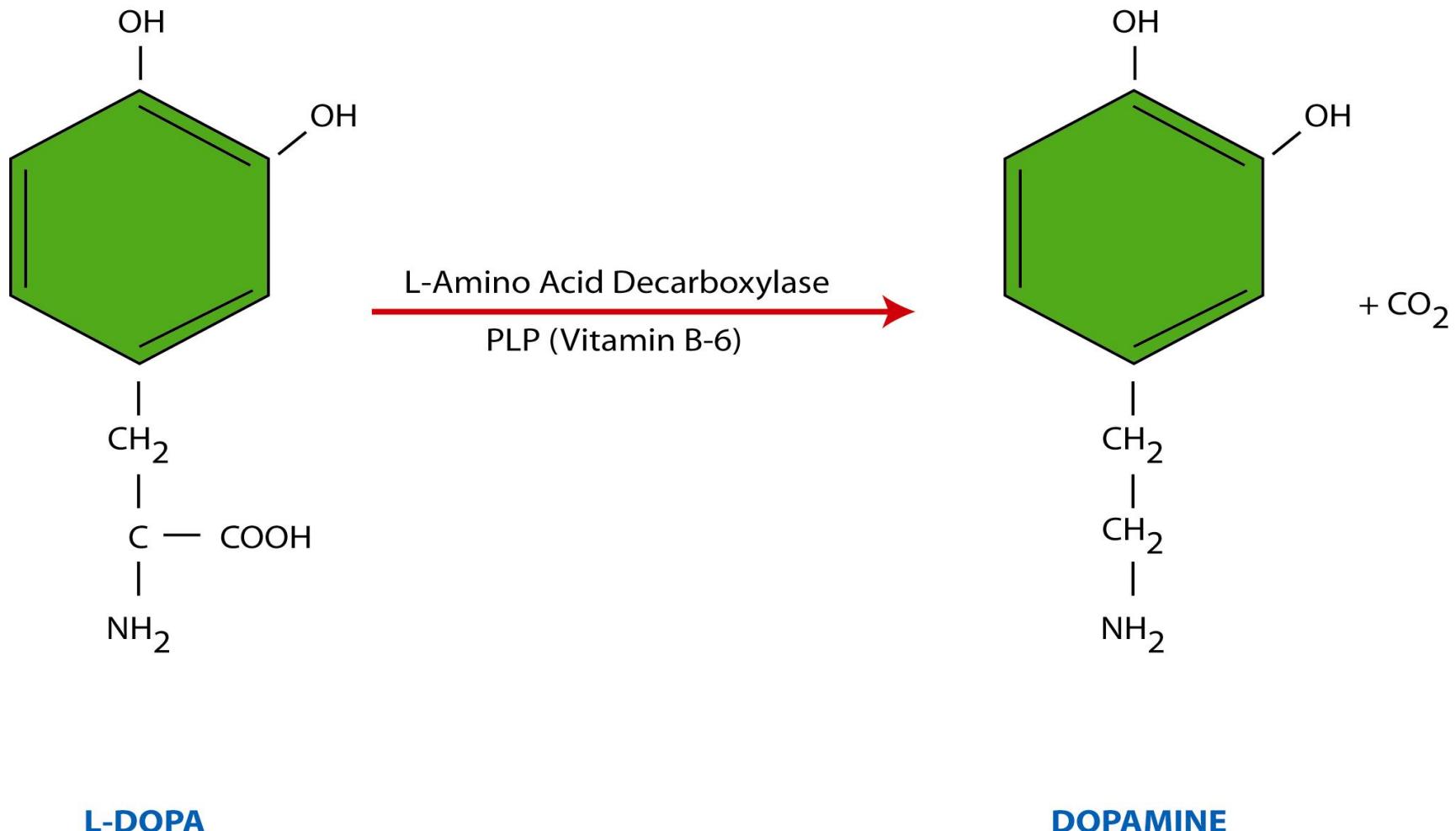
# Norepinephrine Synthesis



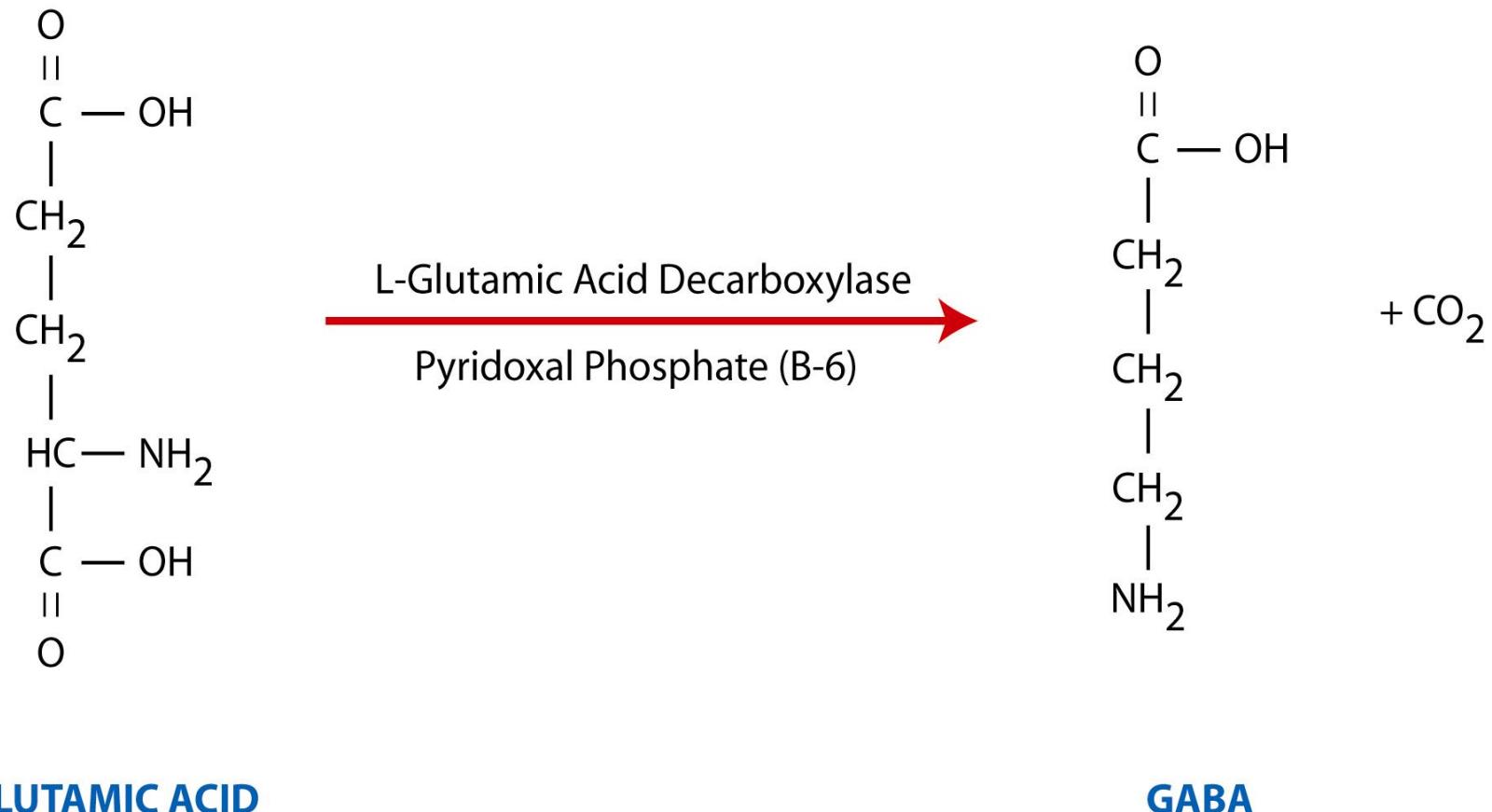
# Serotonin Synthesis



# Dopamine Synthesis



# GABA Synthesis



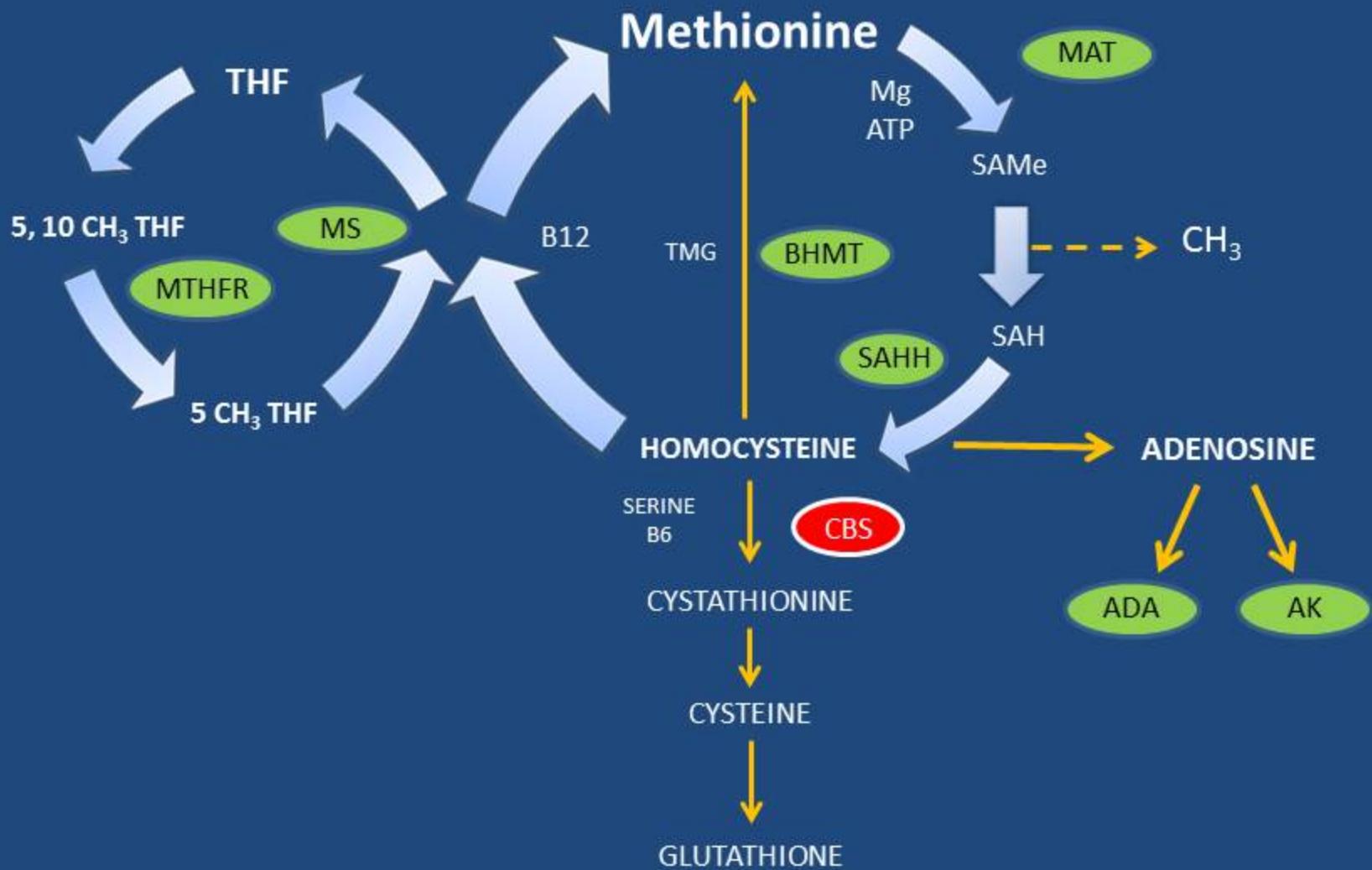
# Pyrrole Disorder

- Double deficiency of B-6 and Zinc
- Reduced Serotonin, NMDA, GABA activity
- Severe oxidative overload
- Supplements of B-6 and zinc can normalize pyrrole levels, often resulting in elimination of symptoms and the need for psychiatric medication.

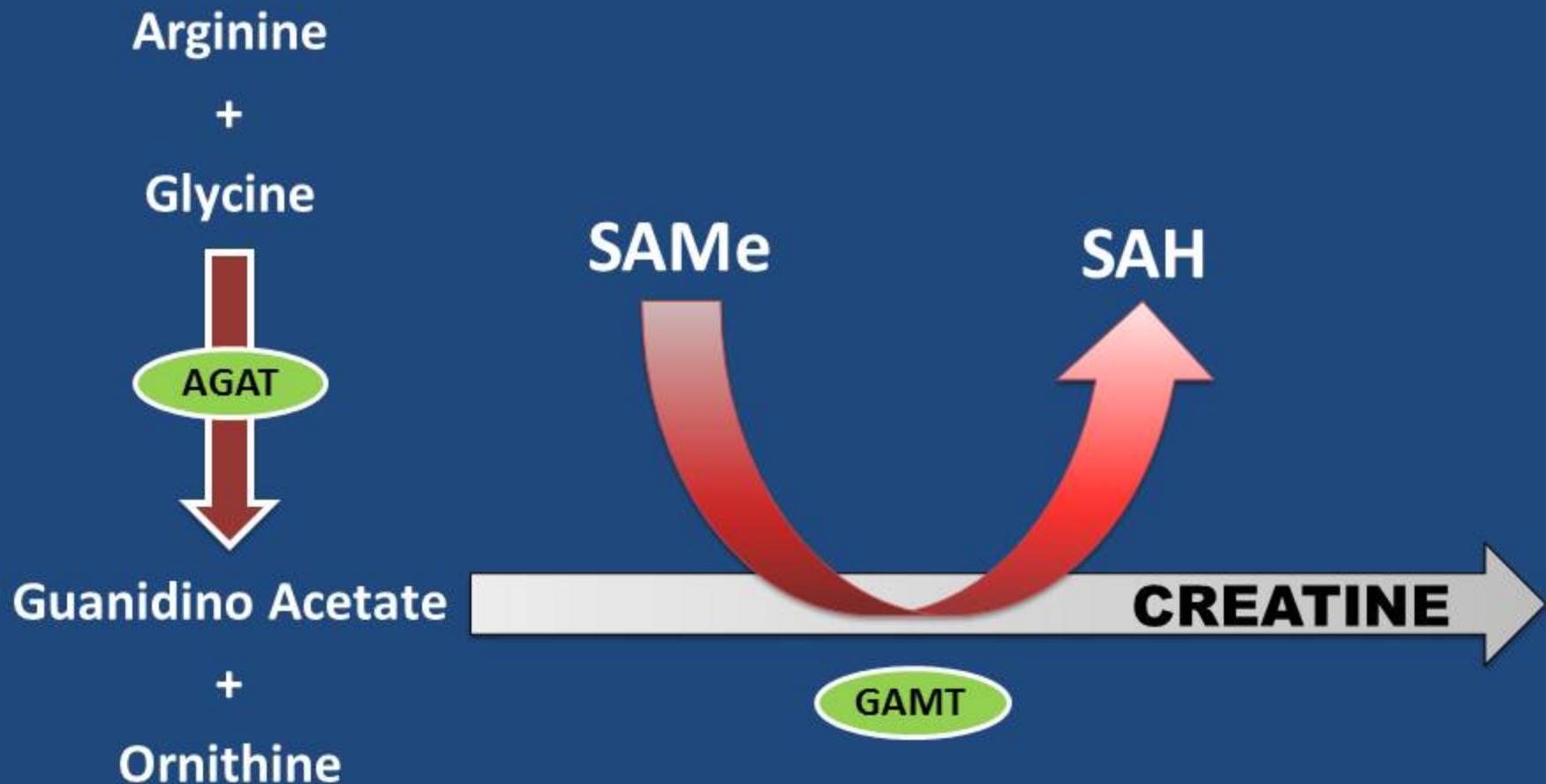
# Methylation and Mental Health

- Methyl is a dominant factor in epigenetic processes,
- Methyl has a powerful impact on neurotransmitter activity at synapses,
- About 70% of bipolar patients exhibit a serious methylation disorder,

# Methylation Cycle Enzymes

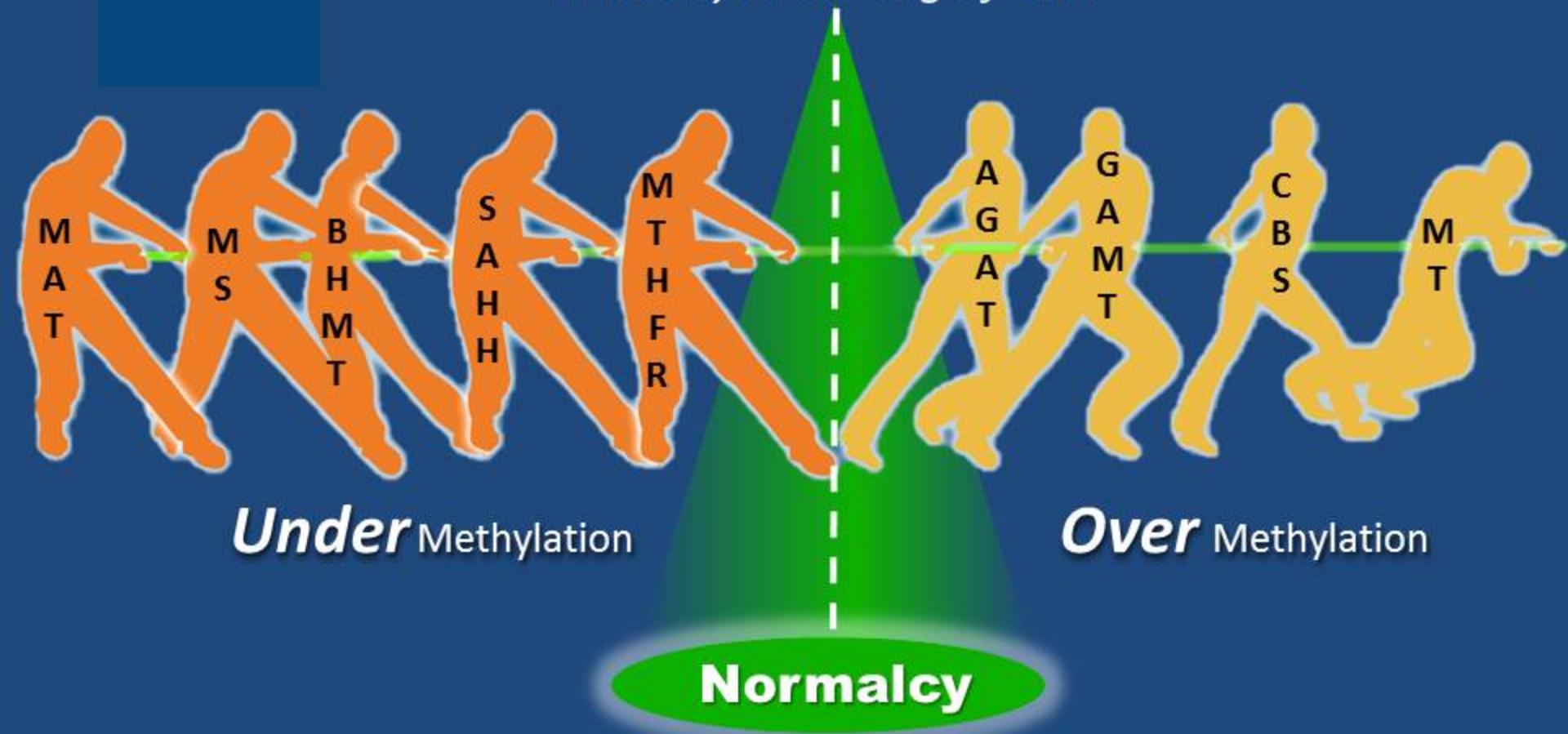


# Creatine Synthesis



# Enzyme Mutations and Methylation

*A Methylation Tug of War*



# Epigenetics & Mental Health

Many familial mental disorders appear to be epigenetic, rather than genetic:

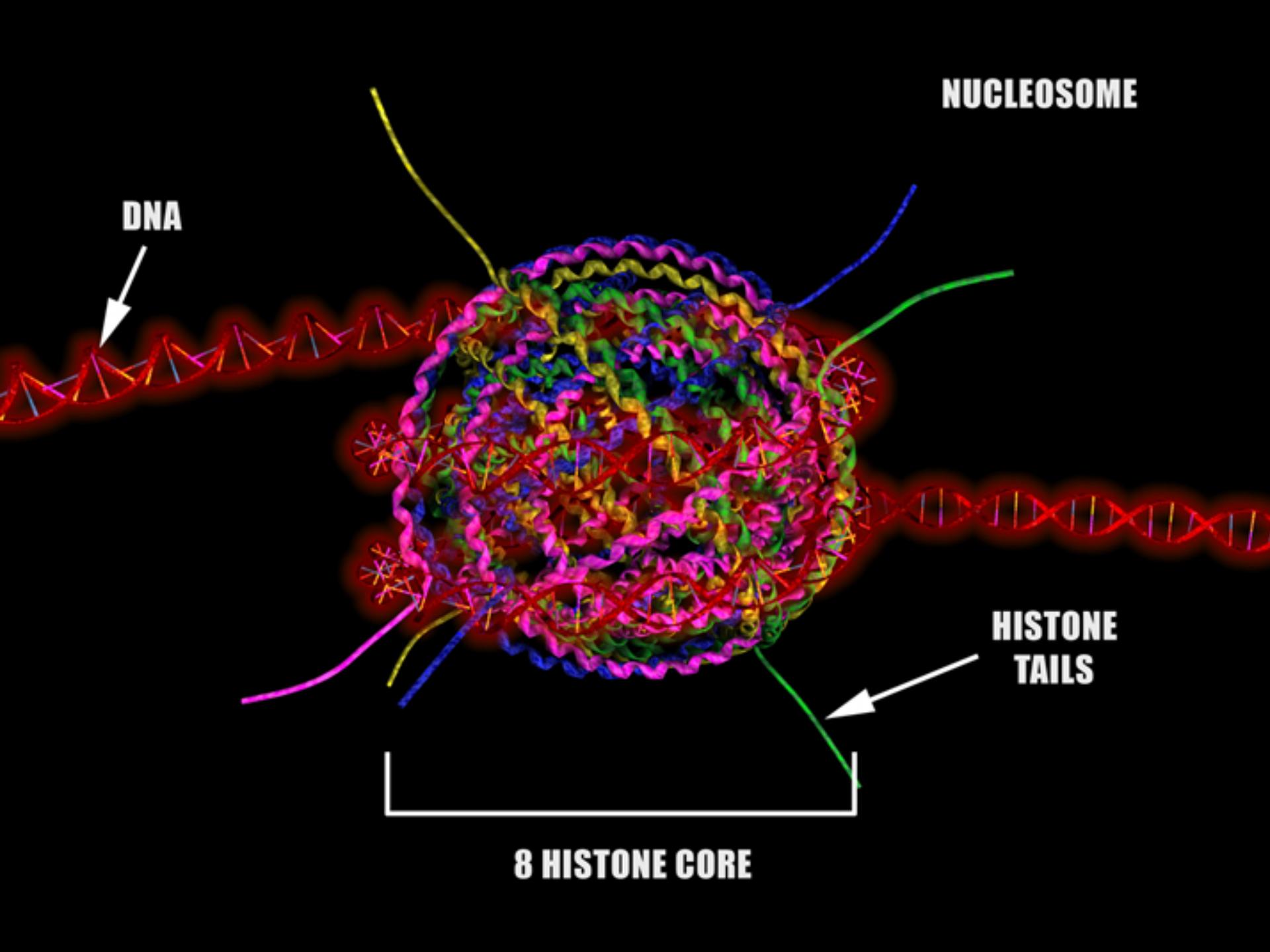
- Schizoaffective disorder
- Antisocial personality disorder
- Paranoid schizophrenia
- Obsessive compulsive disorder
- Autism
- Bipolar Disorder?

# Epigenetics

- >20,000 genes in every cell's DNA, each capable of producing a specific protein,
- Liver, skin, brain, and other tissues require a unique combination of proteins,
- For each tissue, in-utero chemical environment can determine which genes will be expressed throughout life (bookmarking),
- Environmental insults can alter gene marks and produce mental disorders and disease conditions.

# Histones

- Composed of 8 linear proteins twisted together like a ball of yarn,
- Originally believed to serve only as structural support for DNA packaging,
- Later found to inhibit/promote gene expression depending on chemical reactions at histone tails.



A 3D diagram of a nucleosome, a protein-DNA complex. The nucleosome is shown as a dense, multi-colored core (blue, green, yellow, red) wrapped by a DNA double helix (red and blue). The DNA is labeled 'DNA' with a white arrow pointing to it. The core is labeled '8 HISTONE CORE'. The protruding ends of the histone tails are labeled 'HISTONE TAILS'. A bracket at the bottom points to the core.

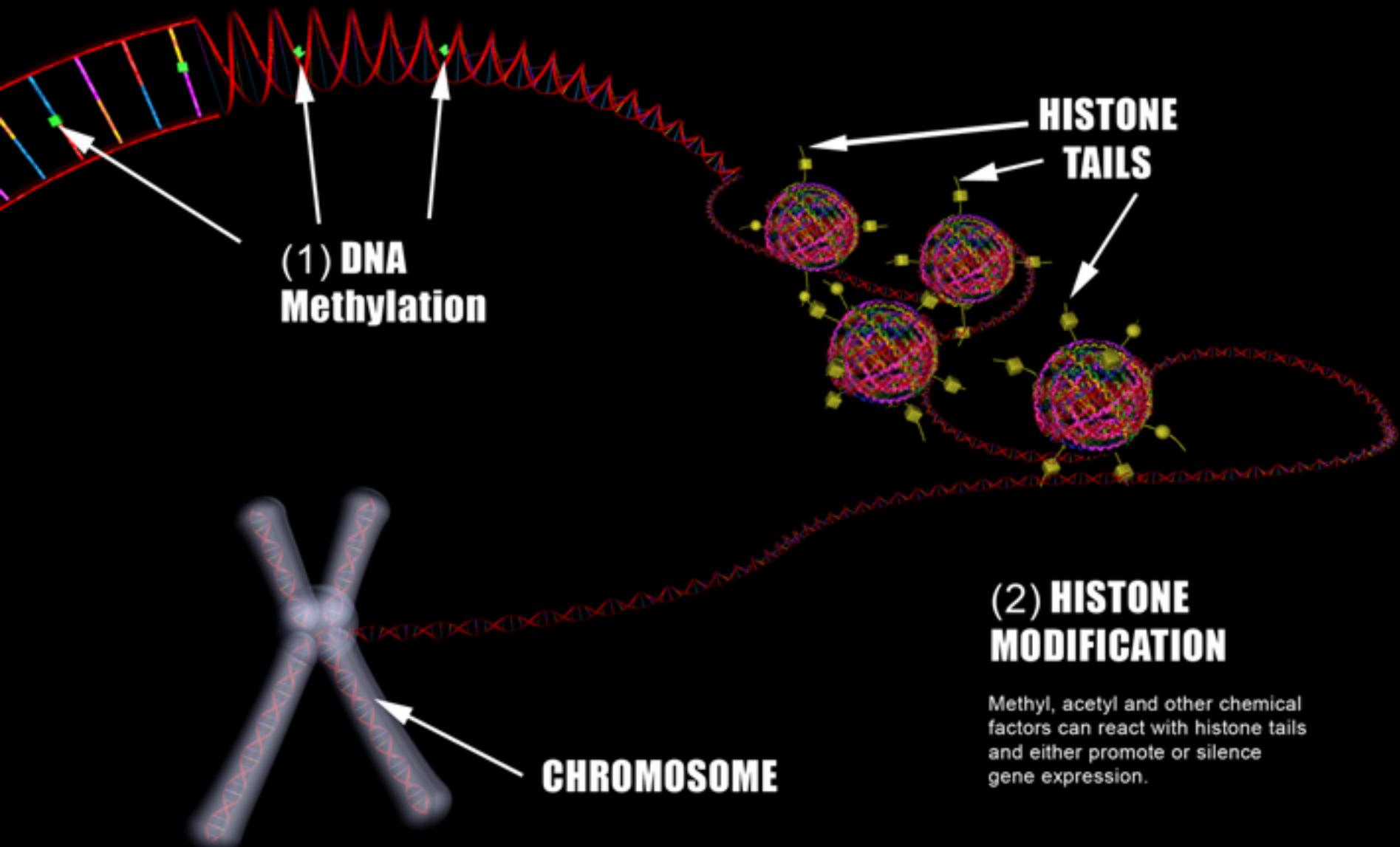
NUCLEOSOME

DNA

HISTONE  
TAILS

8 HISTONE CORE

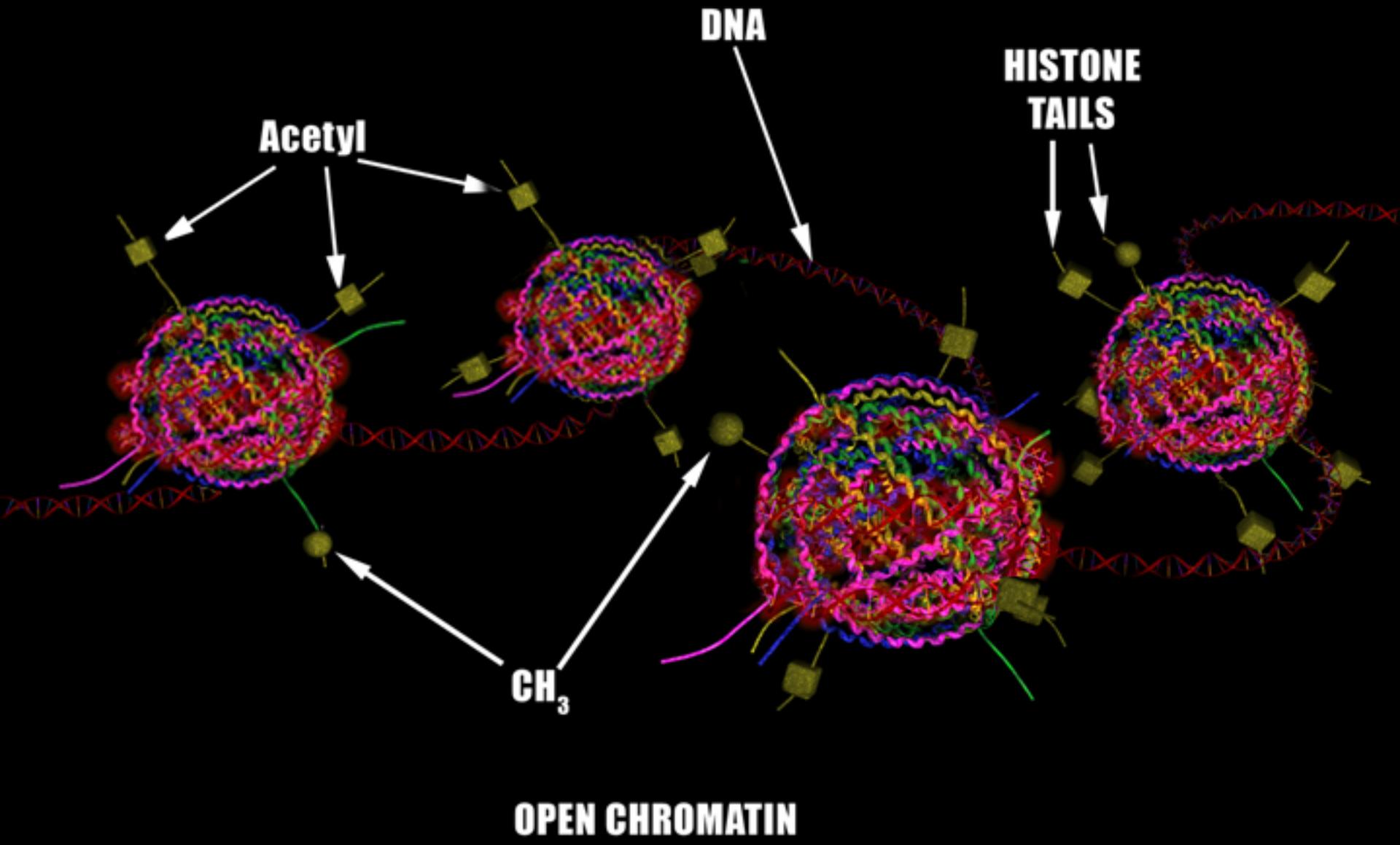
# The Two Main Components of the Epigenetic Code



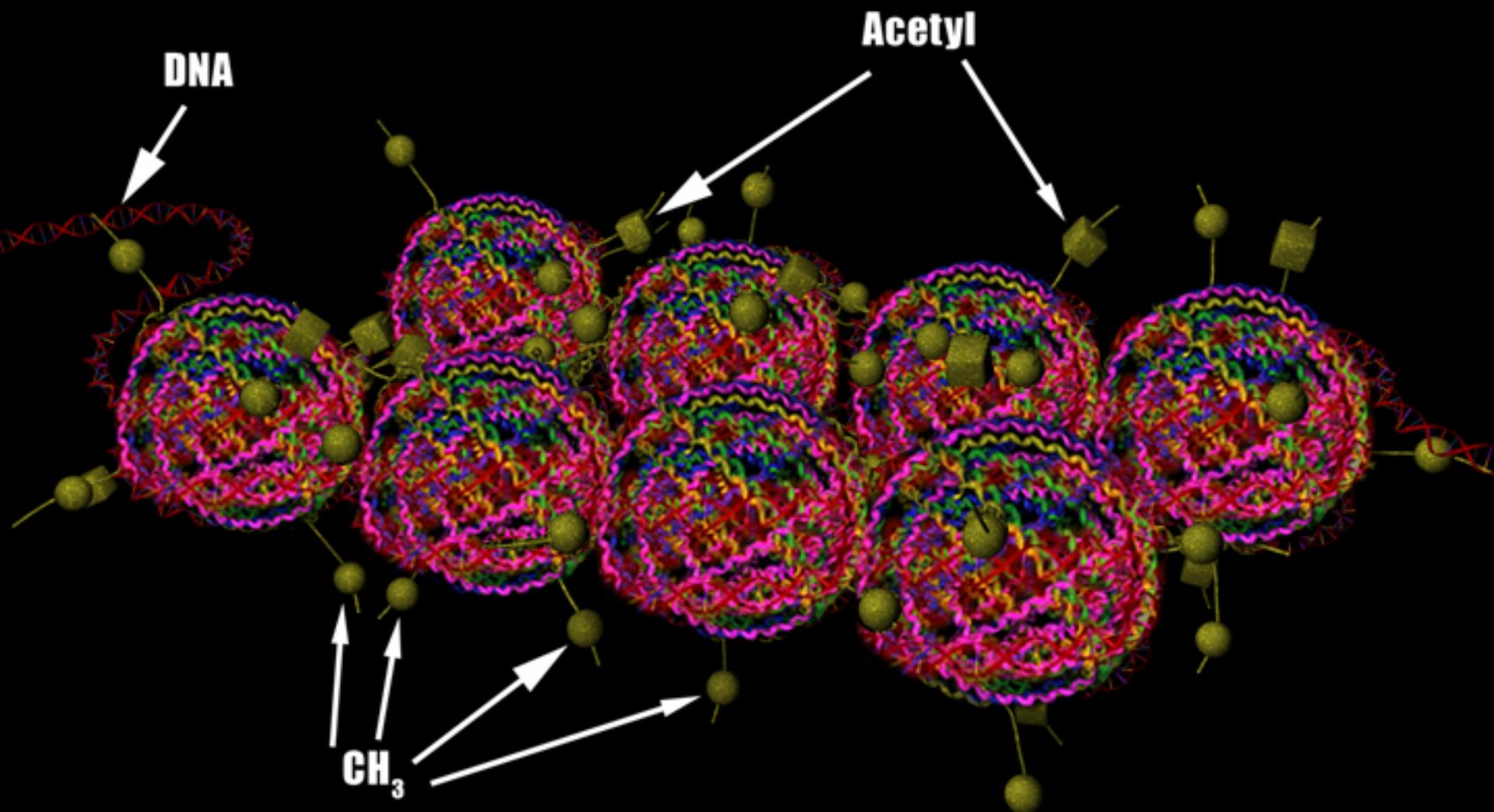
# Methyl-Acetyl Competition

- Competition between acetyl and methyl groups often determines whether genes are expressed or silenced,
- Acetylation tends to promote gene expression; Methylation generally inhibits expression,
- Nutrient therapy can change methyl/acetyl ratios and adjust neurotransmitter activity.

# LOW METHYLATION PROMOTES GENE EXPRESSION



# HIGH METHYLATION INHIBITS GENE EXPRESSION



**CLOSED CHROMATIN**

# Nutrients and Regulation of Neurotransmitter Activity

Reuptake at synapses through transporter protein “passageways” is the dominant factor in NT activity.

Gene expression of transporters regulated by epigenetic processes.

Methyl, folate, niacin, and other nutrients have a powerful epigenetic impact on gene production of transporters and NT activity.

# Epigenetic Insights Into Nutrient Therapy

- Niacin & niacinamide act as dopamine reuptake promoters,
- SAMe is a serotonin reuptake inhibitor,
- Folates reduce synaptic activity at serotonin, dopamine, and norepinephrine receptors,
- Undermethylated bipolar patients are intolerant to folic acid,
- Many nutrients influence neurotransmitter activity and brain function.

# Individualized Nutrient Therapy



- **Medical history and review of symptoms,**
- **Special blood/urine lab tests,**
- **Diagnosis of chemical imbalances,**
- **Prescribed nutrient program aimed at normalizing brain chemistry.**

# Nutrient Therapy & Bipolar



- Separate nutrient therapies developed for each bipolar phenotype,
- Open-label outcome studies reveal 74% of patients report treatment effectiveness & ability to reduce or eliminate medication,
- Double-blind, controlled studies needed to accurately measure treatment effectiveness.

# Bipolar Treatment Approach



- 1. Continuation of psychiatric medication while starting nutrient therapy.**
  
- 2. After 3-6 months of both treatments together, cautious reductions in medication to identify optimum dosage.**

# WRI Bipolar Research



- Collaboration between W. Walsh and R. DeVito
- Investigation of possible causes of mania
  - a. Weak mitochondrial production of ATP resulting in reduced neuron membrane voltages
  - b. Abnormal glial-cell regulation of neuron voltages

# PRACTITIONER TRAINING



- **USA – February 24-28, 2014**
- **AUSTRALIA – April 5-13, 2014**
- **IRELAND (to be announced)**
- **NORWAY (to be announced)**

# Pfeiffer's Law

*“For every drug that benefits a patient, there are natural substances that can produce the same effect”.*

*Carl C. Pfeiffer, MD, PhD*

Over his impressive career, Dr. Walsh has worked with 30,000 patients with conditions ranging from autism to schizophrenia to Alzheimer's. His book is an essential tool for anyone who would prefer to heal the brain with nutrients rather than drugs.

Teri Arranga, editor-in-chief, *Autism Science Digest*

# NUTRIENT POWER

HEAL YOUR BIOCHEMISTRY  
AND HEAL YOUR BRAIN



WILLIAM J. WALSH, PhD

# **THANK YOU!**



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