



# Amy Doyle MS, CNS

## Board Certified Nutrition Specialist

Willow Health & Wellness Center, Baldwinsville

&

The Synergy Center, Manlius

Ph: 315-527-1453

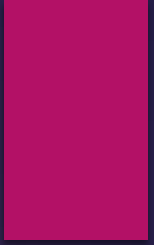
Email: [amy@whitestonefunctionalnutrition.com](mailto:amy@whitestonefunctionalnutrition.com)

Website: [www.whitestonefunctionalnutrition.com](http://www.whitestonefunctionalnutrition.com)



# The Nutrition Connection

AMY DOYLE MS, CNS



**Disclaimer: Any information conveyed herein is for educational purposes only, and does not constitute medical, mental or other healthcare advice. The views and advice expressed by Amy Doyle, MS, CNS are not intended to be a substitute for conventional medical service - always consult your own licensed primary health care provider before using any information acquired herein.**

# Who Am I?

Wife

Mom

Certified Nutrition Specialist

Medical Writer

OCD

Anxiety & Panic Attacks




# What is Functional Nutrition?

Each person is unique

Whole person wellness

Asks Why?



***“When you understand the why  
behind the what, you can reach  
the who.”***

***-Nancy Alcorn, Mercy Ministries***

# Statistics

Major depressive disorder is the leading cause of disability in the US for ages 15-44.3

Anxiety disorders are the most common mental illness in the US, affecting more than 18% of the population.

One-fourth of children between the ages of 13-18 are affected by an anxiety disorder.

It is common for a person to have symptoms of both anxiety and depression.

• *American Association of Anxiety and Depression, 2018*

# Old paradigm

- ▶ Depression and anxiety result from an imbalance of neurotransmitters in the brain:
  - ▶ Serotonin
  - ▶ Norepinephrine
  - ▶ Dopamine



# Antidepressants

- ▶ The third most commonly prescribed medications to Americans. The most commonly prescribed medications to Americans between the ages of 18-44.
- ▶ 40-70% of individuals do not respond to treatment. Relapse is common.

*Greenblatt & Brogan*

# Antidepressants

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## Side effects:

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Cognitive impairment   Sexual dysfunction

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Nausea   Weight gain

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Cardiovascular effects   Insomnia   Migraines

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Blood sugar dysregulation

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Risk of violent, irrational behavior and suicide

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Severe withdrawal symptoms

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[www.madinamerica.com](http://www.madinamerica.com)

# Benzodiazepines

Valium, Xanax,  
Klonpin, Ativan

Drowsiness  
fatigue insomnia  
dizziness dry  
mouth

Difficulty  
concentrating  
loss of appetite

Sore gums poor  
memory  
runny/stuffy nose

Highly addictive

Withdrawal  
symptoms can  
persist for years

- Spanemberg 2011

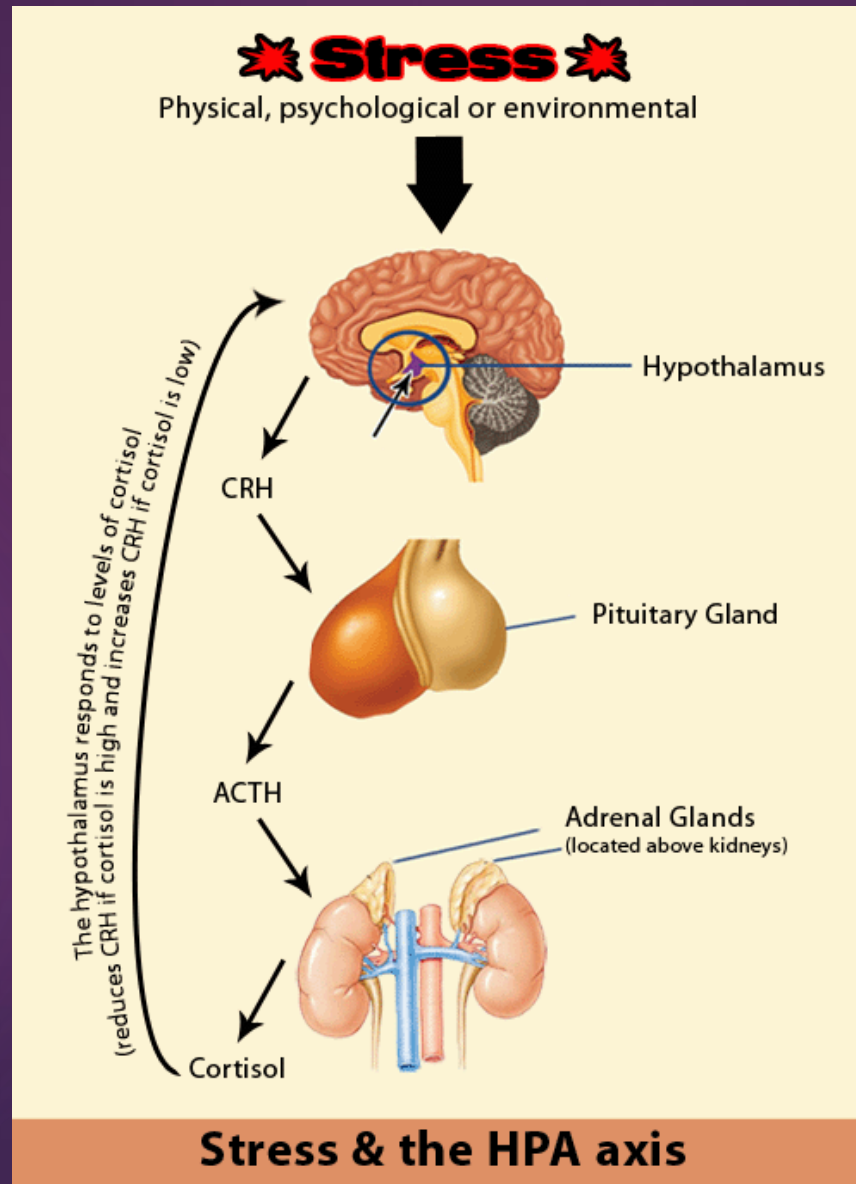
# THE NEW PARADIGM

Depression and anxiety are a downstream effect of an imbalance in the body and a whole body treatment approach is needed.

# Contributing factors to mood disorders

- ▶ HPA Axis dysregulation
- ▶ Inflammation
- ▶ Western diet & poor gut health
- ▶ Vitamin or mineral deficiency
- ▶ Hormone and Thyroid imbalance
- ▶ Toxic Exposure
- ▶ Socioeconomic changes
- ▶ Sedentary behavior
- ▶ Excessive screen time
- ▶ Lack of adequate sunlight
- ▶ Lack of social support & engagement
- ▶ Less time spent in nature

# HPA AXIS

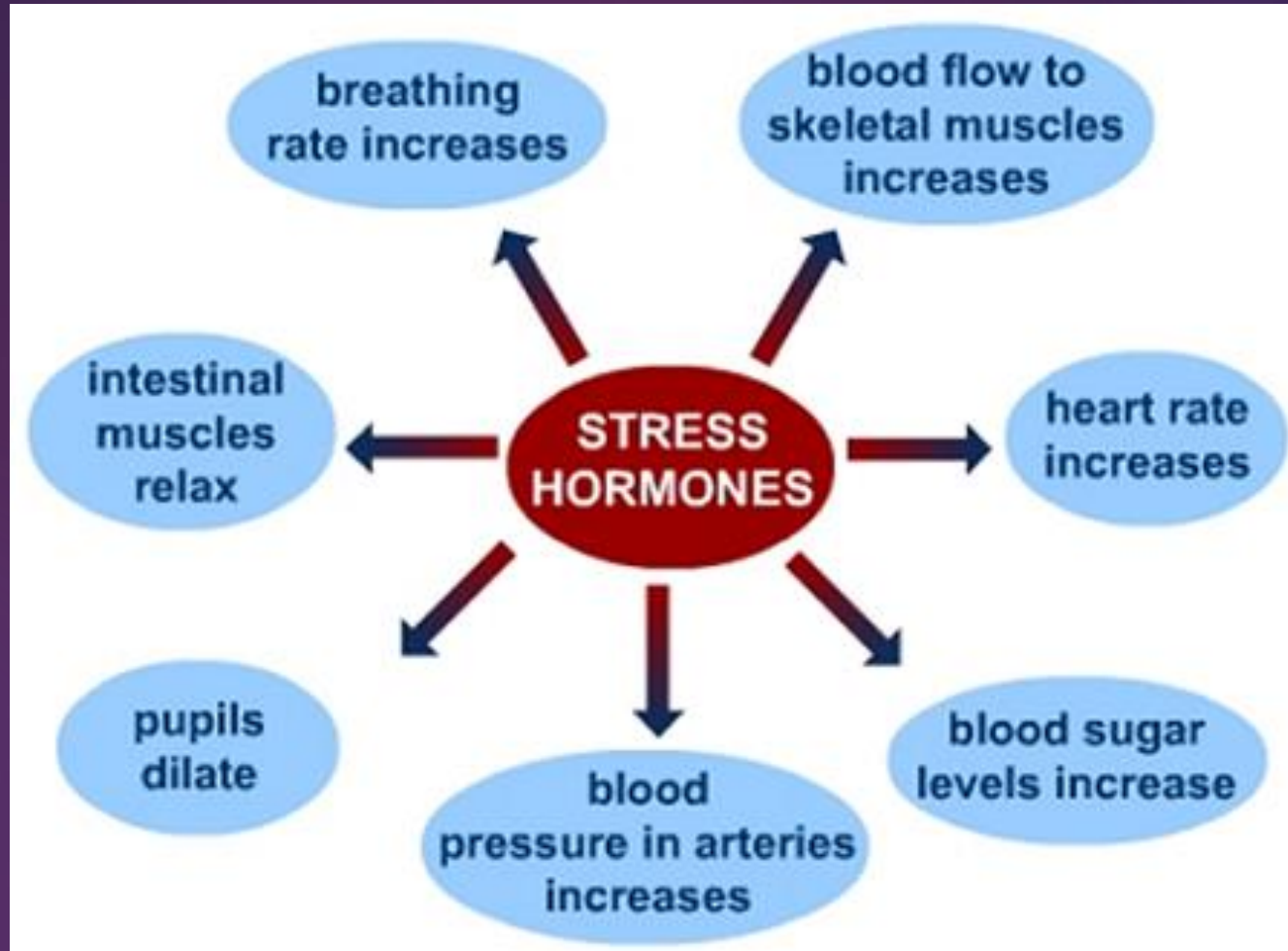


# The Stress Response



***“Fight or Flight”***

Photo credit: <http://www.exploremeditation.com/the-secret-health-benefits-of-guided-meditation/>



<https://study.com/academy/lesson/what-is-norepinephrine-effects-function-definition.html>



# Stress Adaptation: 3 stages

## Stage 1: HPA Activation

Elevated cortisol, blood pressure, anxious, agitated, poor sleep, GI issues, “tired but wired”.

## Stage 2: HPA Adaptation

Ongoing, moderate stress, tired, immune compromised, normal cortisol, elevated inflammatory markers, low serotonin.

## Stage 3: HPA Depression

Chronic stress, low serotonin & cortisol, fatigue/exhaustion, sleep unrestorative, pain, inability to handle small stressors, mood complaints.

# Inflammation



Involves chemical messengers called *cytokines*:

IL6, IL1, TNF- $\alpha$

# Inflammation



# INFLAMMATION

- ▶ Inflammatory cytokines & depression.
- ▶ Cytokines affect the synthesis and usage of neurotransmitters.
  - ▶ Stimulate HPA Axis
  - ▶ Influence release and reuptake of neurotransmitters
  - ▶ Decrease growth of new nerve cells and increase cell death in some areas of the brain.

*Greenblatt & Brogan, 2016*

# The Gastrointestinal Tract

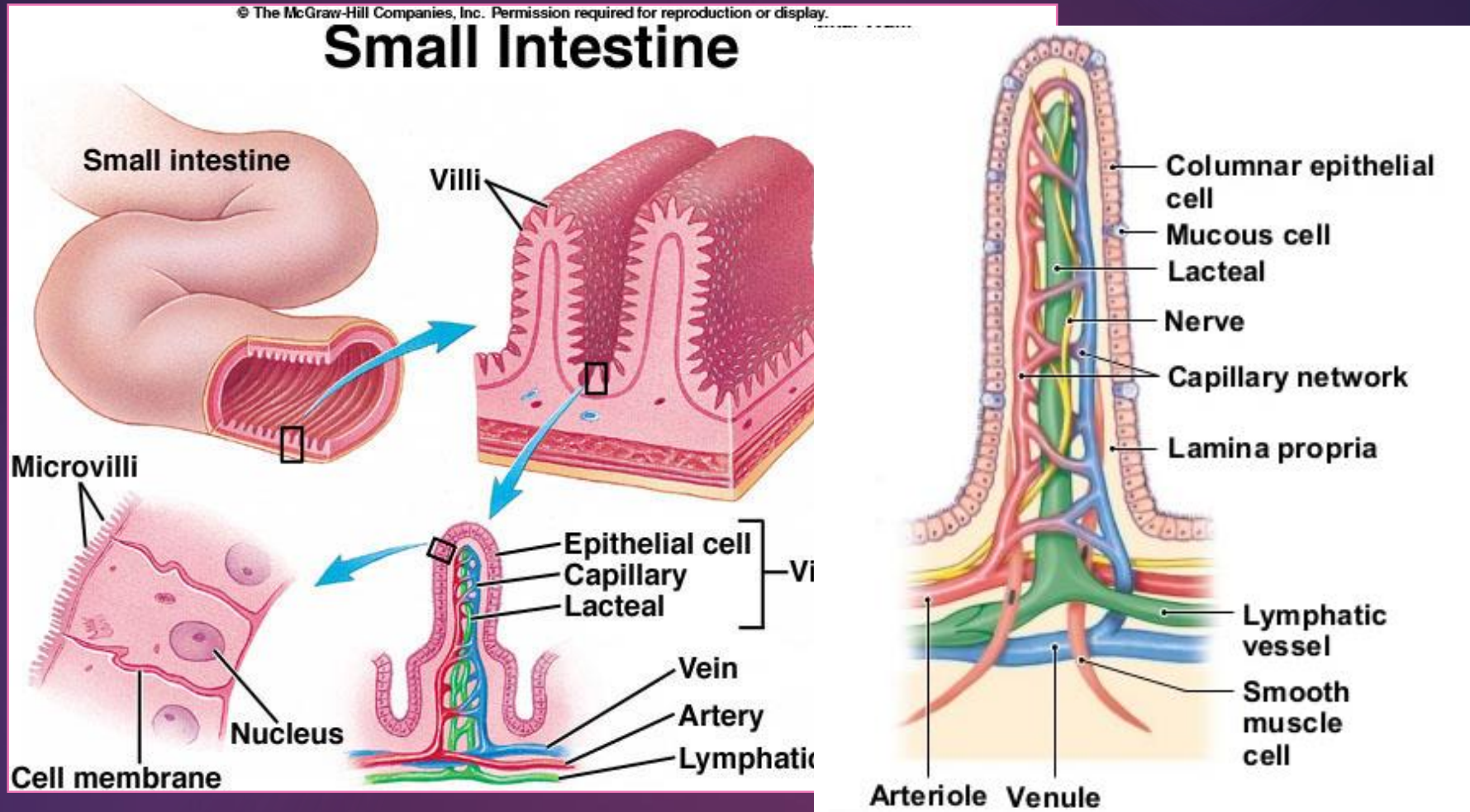
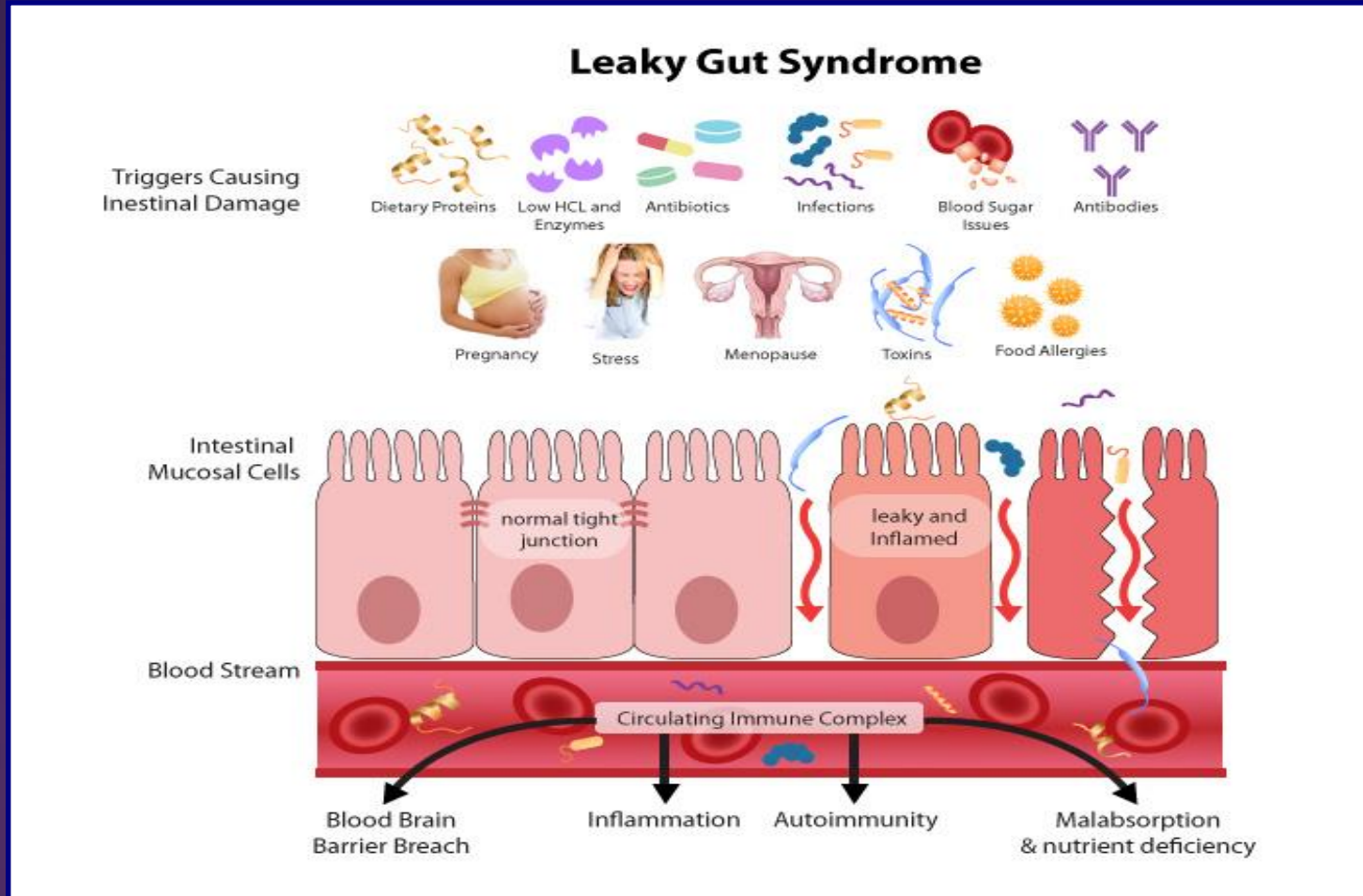


Photo credit:  
[https://online.science.psu.edu/biol011\\_sandbox\\_7239/node/7429](https://online.science.psu.edu/biol011_sandbox_7239/node/7429)

Photo credit:  
<http://www.highlands.edu/academics/divisions/scipe/biology/faculty/harnden/2190/notes/3.htm>

# Leaky Gut



**GMO**  
**Alcohol**  
**Nutrient deficiencies**  
**Pesticides/Herbicides**

# Molecular Messages

Hormones

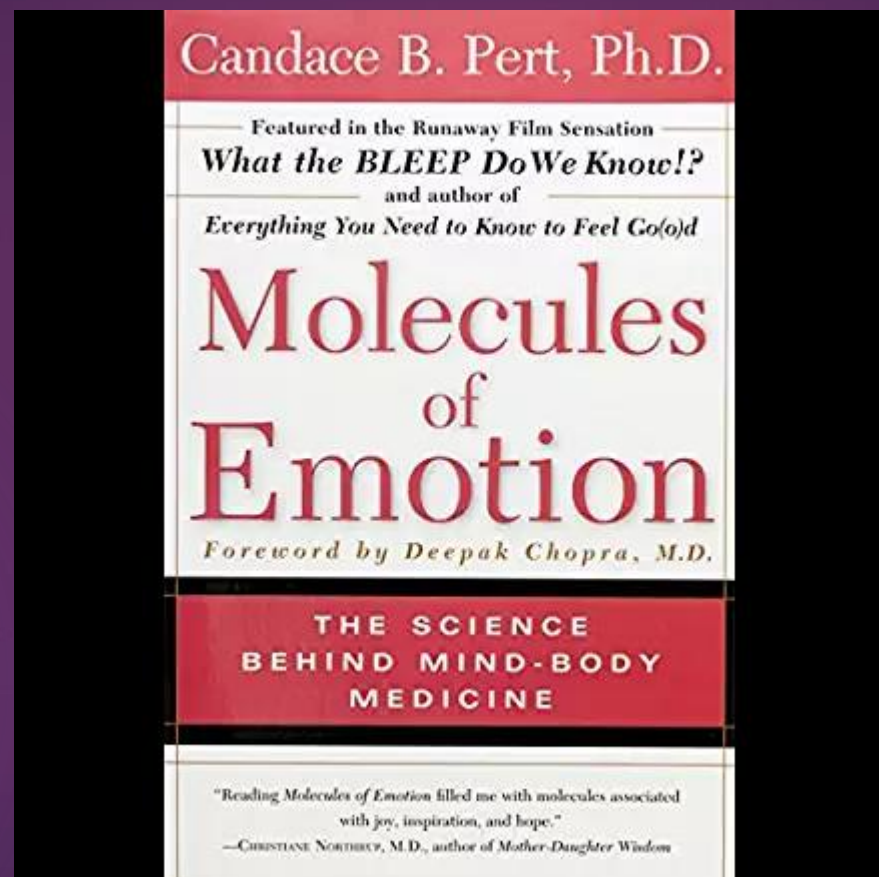
Food

Toxins/Viruses/Bacteria

Emotions



# Molecules of Emotion







# Reproductive Hormones

- ▶ Boys and girls exhibit the same stress response until they reach puberty—when the rate of stress-related complaints in girls is 2-3 times the rate seen in boys.
- ▶ Estrogen & Progesterone
  - Serotonin, dopamine, HPA and GABA pathways
  - Puberty, Premenstrual, Post-partem and Perimenopause.

*Albert, 2015*

# Thyroid

Genomic hormones

Sensitivity to other hormones

TSH, T4, T3, RT3

- Depression
- Stress
- Illness
- Nutrient deficiencies

# Nutrition

- ▶ Whole, unprocessed foods
- ▶ Caffeine and sugar intake
- ▶ Macros: Protein, carbohydrates and fats
- ▶ Food intolerances



# FUNCTIONAL FOODS



Fiber: feeds healthy microbiota

Anti-inflammatory diet

# VITAMIN AND MINERAL CONSIDERATIONS FOR DEPRESSION

Folate

B vitamins: B1,  
B6, B12

Inositol,  
Vitamins A, D,  
C,

Magnesium  
and zinc

# VITAMIN AND MINERAL CONSIDERATIONS FOR DEPRESSION

- ▶ **Folate (not folic acid)**

Only form able to directly cross the blood brain barrier for the synthesis of neurotransmitters.

- ▶ **B12 (the feel good vitamin)**

40% of Americans have low levels of B12.

- ▶ **B6**

Depression and PMS

# VITAMIN AND MINERAL CONSIDERATIONS FOR DEPRESSION

- ▶ **Vitamin D:** not just for bone health

  - Optimal levels 50-80 ng/mL

  - Low levels are a predictor for depression, higher suicide rates

- ▶ **Magnesium:** the stress mineral

  - Reduces stress response via HPA axis/brain  
communication

  - 75% of Americans consume less than half of RDA

- ▶ **Zinc**

  - Cofactor to over 300 enzymes in the body, many of them involved with  
brain function.

*Polak, 2014*

*Umhau, 2013*



# Probiotics

- ▶ Regulation of mucosal immune system, GI motility, epithelial barrier, digestive and metabolic support and neurotransmitter production.



# Essential Fatty Acids

Recommended ratio of dietary  
Omega 6:Omega 3 is 4:1



[www.lightstock.com](http://www.lightstock.com)

Typical Omega 6:Omega 3 ratio in the Standard  
American Diet (SAD) is 30:1

# Essential Fatty Acids

## Omega 6 vs. Omega 3

### Omega 6:

Corn oil  
Canola oil  
Soybean oil  
Grain-fed  
(factory raised)  
animal products  
Shellfish



### Omega 3:

Flax & Hemp seed  
Olive oil  
Walnuts & Almonds  
Fish oil  
Grass fed animal  
products  
Salmon

## SUPPLEMENT CONSIDERATIONS FOR ANXIETY

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All of the above

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Inositol (both depression & anxiety, esp. OCD)

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GABA

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Lavender

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L-theanine

# Drug Induced Nutrient Deficiencies

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**Oral contraceptives:** folate, magnesium, zinc, B6, riboflavin, thiamin

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**Antacids:** folate, magnesium, Vit C, B12

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**Antibiotics:** folate, magnesium

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**Anti-inflammatories:** B vitamins, zinc

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**Corticosteroids:** Magnesium, zinc

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**Antidepressants:** Magnesium, riboflavin, folate, melatonin, B6, zinc

## LIFESTYLE

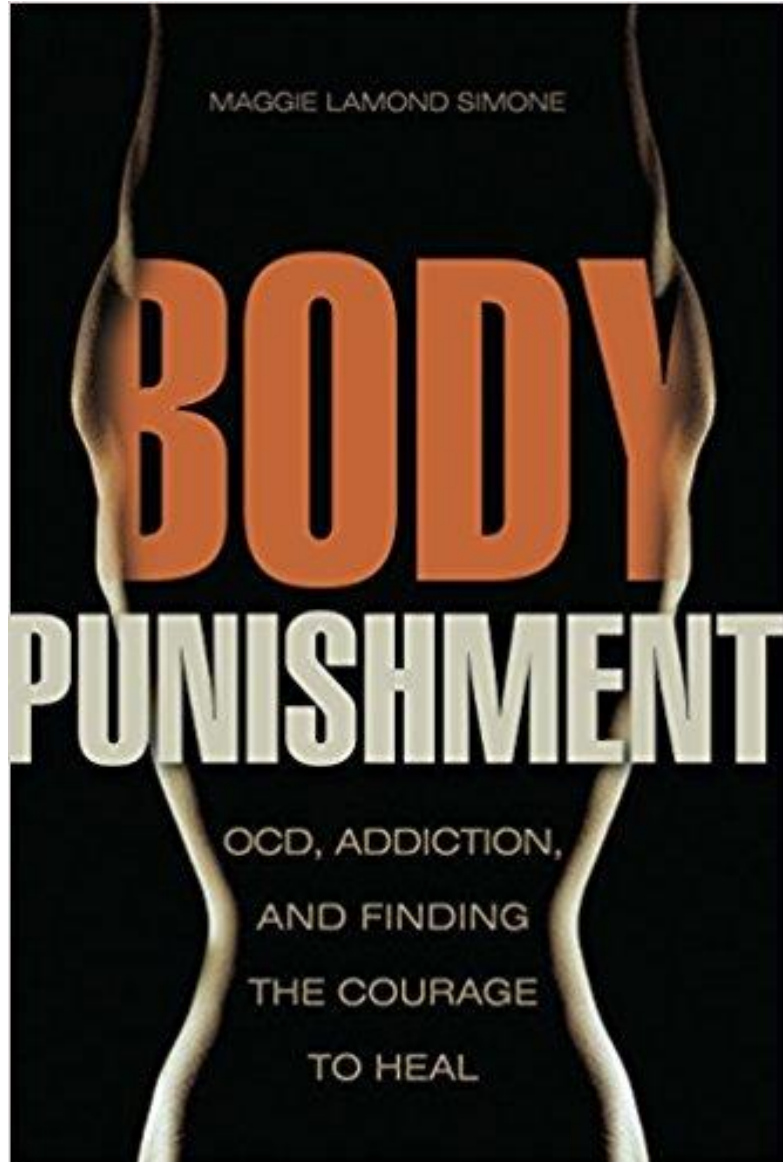
Exercise

Meditation & Relaxation

Fun

Reduce toxic exposure

The other 25%



# Maggie Lamond Simone

# “All In My Head”

## Call for submissions:

Stories of mental illness by kids,  
for kids.

[https://allinmyheadbook.wordpress.com/  
submissions/](https://allinmyheadbook.wordpress.com/submissions/)

Maggie Simone, local author and mental  
health advocate

A photograph of a piece of lined paper with the handwritten text "Write your story!" in black ink. The paper is slightly tilted and has a pink tab at the top right. The handwriting is in a casual, cursive style.

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