Herbs and Somatic Practices for Stress, Trauma and Resilience

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What do we mean by stress and trauma?

Stress: the non-specific response of the body to any demand for change (Hans Selye, 1936)

eustress vs. distress

What do we mean by stress and trauma?

Trauma can be described as the effects and symptoms of thwarted and incomplete, biologically based, self-protective and defensive responses, and incompletely discharged autonomic arousal.

(~based on Peter Levine's work)

Trauma is in the nervous system, not in the event (or our stories about it).

Potential Impacts of Chronic Stress and Trauma on Health and Wellbeing

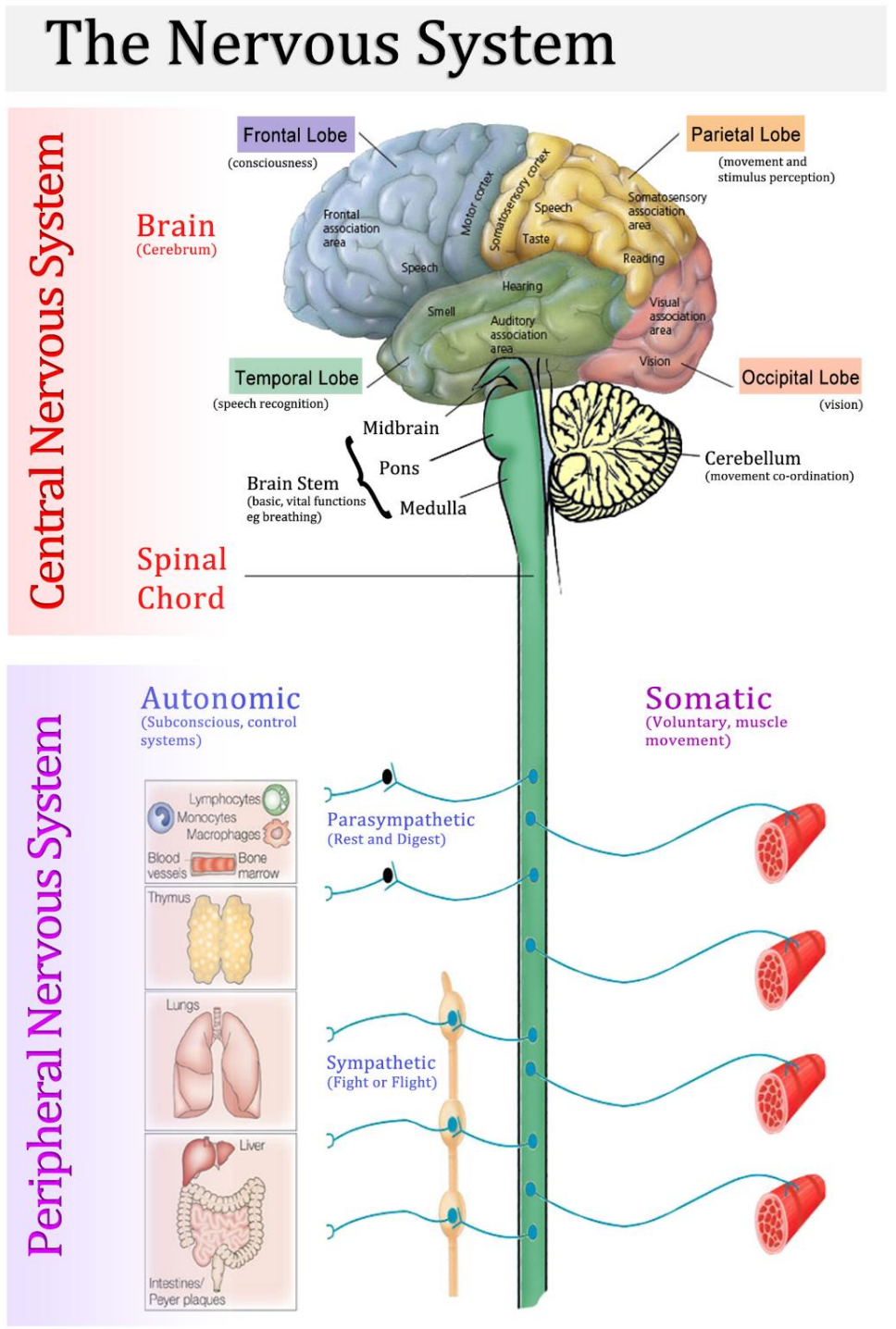
- overall, **disruption of adaptability** and stress resistance; increased vulnerability to chronic disease
- **reduced emotional resilience** and optimism, neuropsychiatric symptoms/dis-ease (anxiety, depression, panic, PTSD), maladaptive neural networks and function
- **alterations in overall endocrine** function, affecting sexuality, fertility, thyroid health and metabolism (e.g. diabetes)
- **digestive dysfunction**, gut hyperpermeability and dysbiosis
- chronic **inflammation** (as in CVD, auto-immunity, atopy) and/or **immunosuppression**, cancer
- **maladaptive epigenetic alterations**, which may be heritable

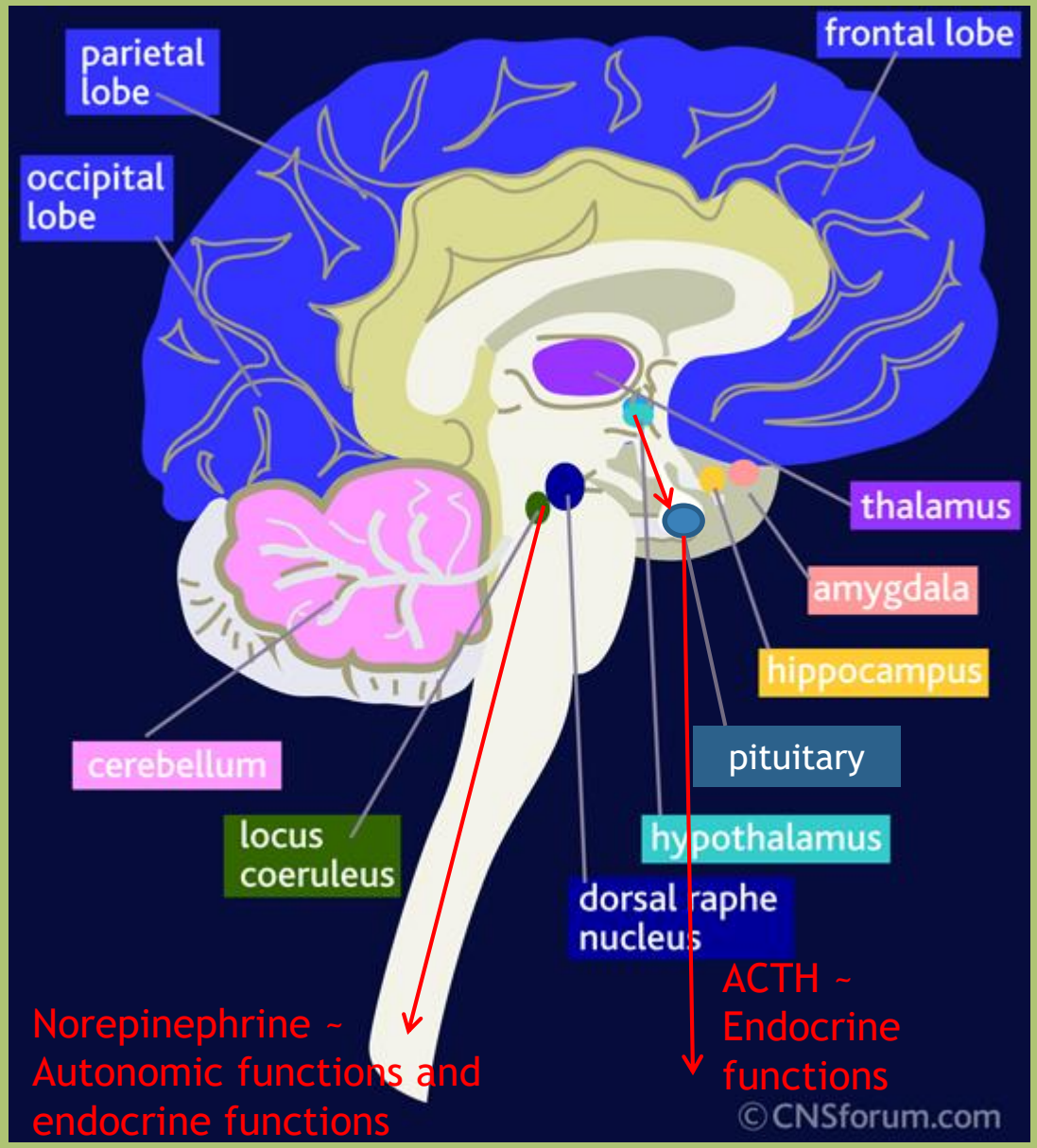
Review of physiology

Nervous System Review

Central Nervous System (CNS)

Peripheral Nervous System (PNS), divided into Autonomic (ANS) and Somatic

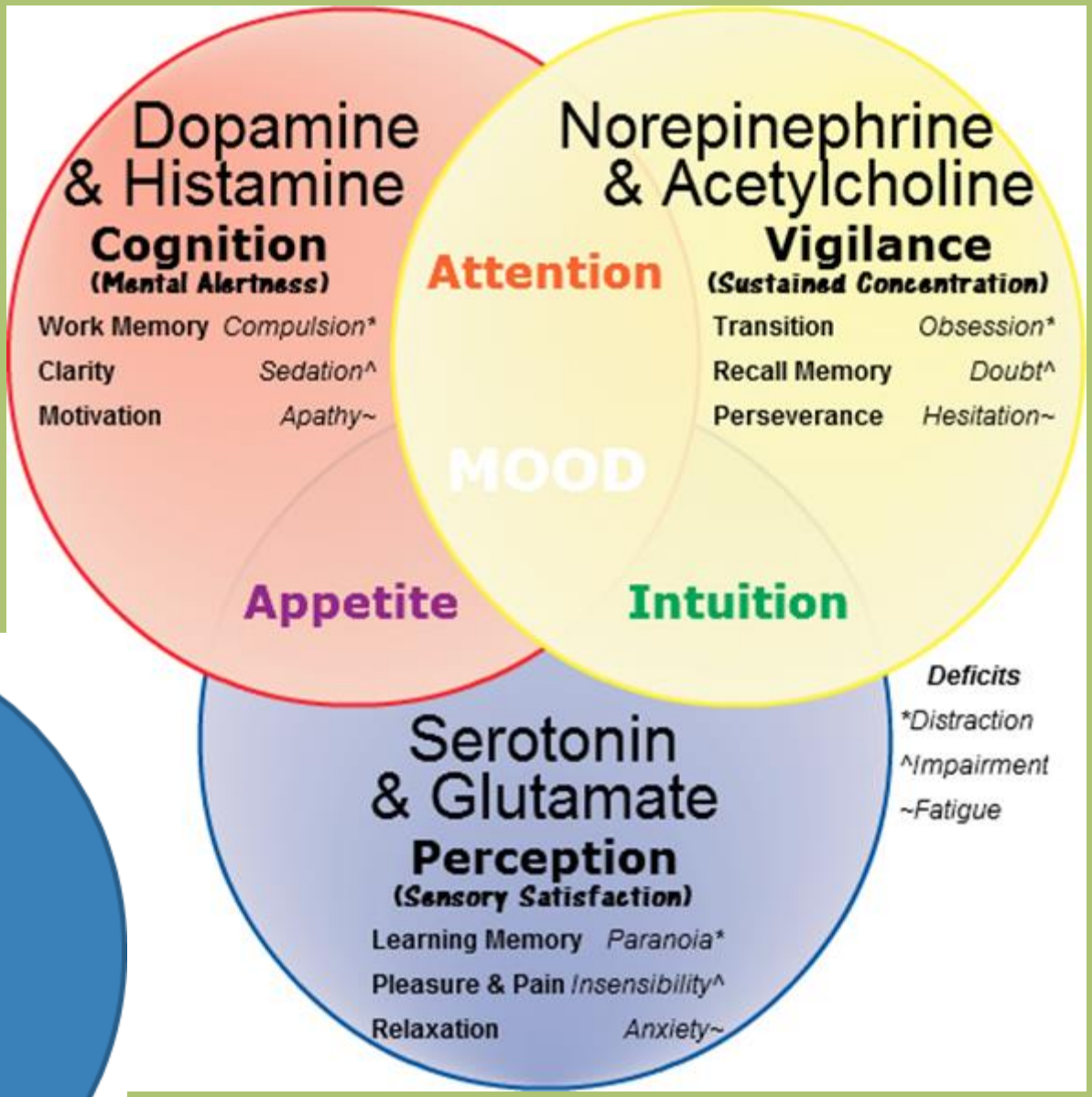




The brain is part of the central nervous system and includes nervous tissue, as well as important glands, like the hypothalamus and pituitary, which are part of the endocrine system (specifically the Hypothalamic-Pituitary-Adrenal axis (HPA axis))

Image source: CNSforum.com, used w/permission; image adapted

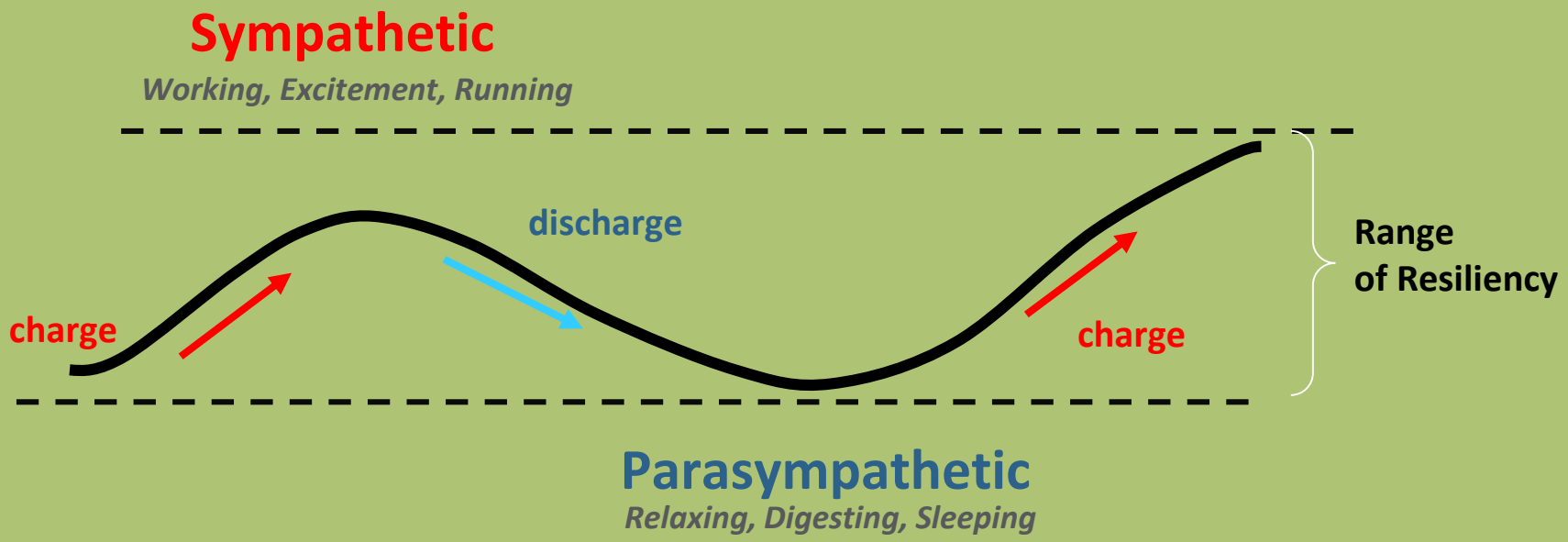
Primary CNS Neurotransmitters



GABA
(gamma-aminobutyric acid)
Relaxation
General inhibition of CNS arousal

The Regulatory Process of the Autonomic Nervous System (Sympathetic and Parasympathetic)

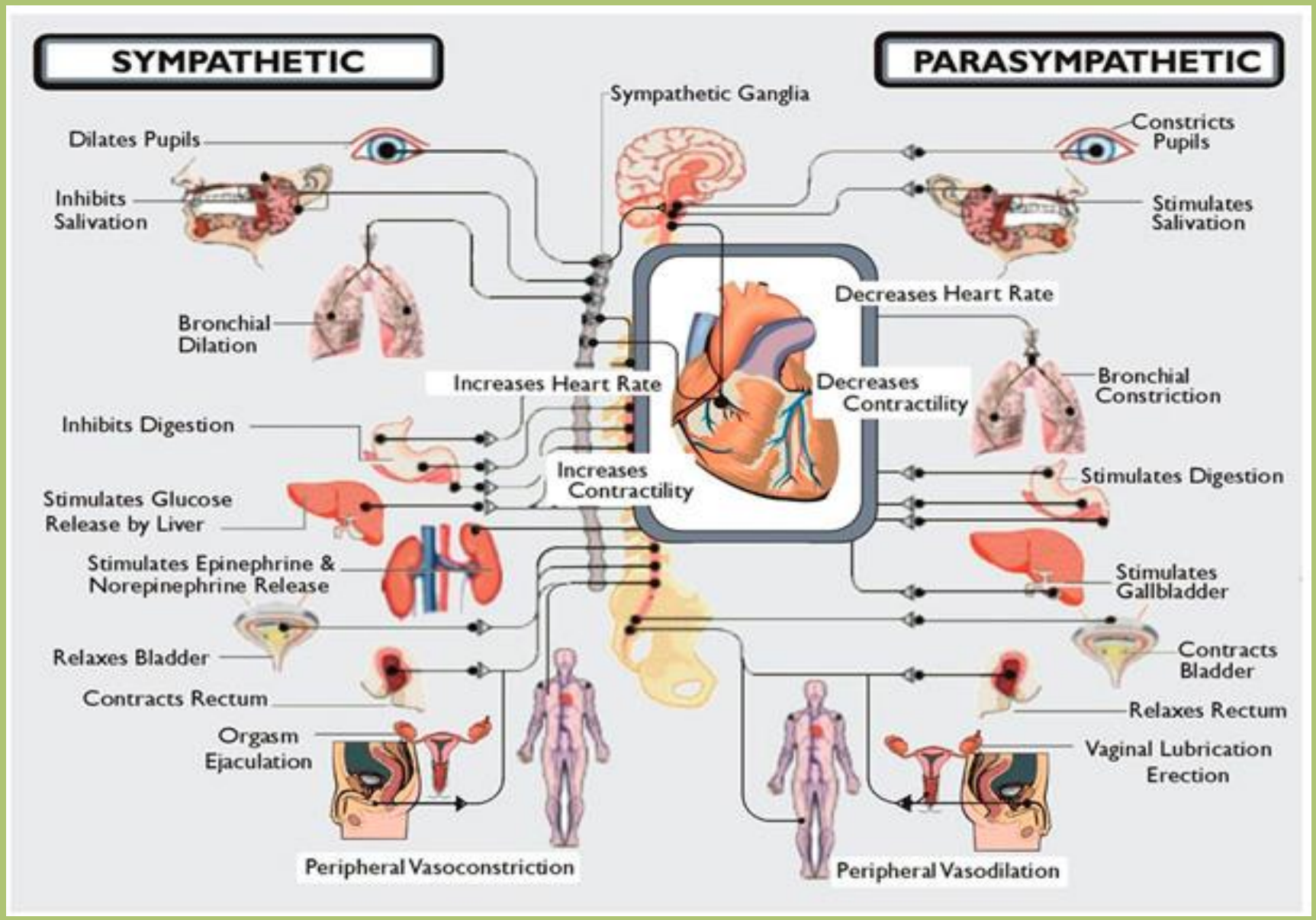
Activation – Deactivation Cycles

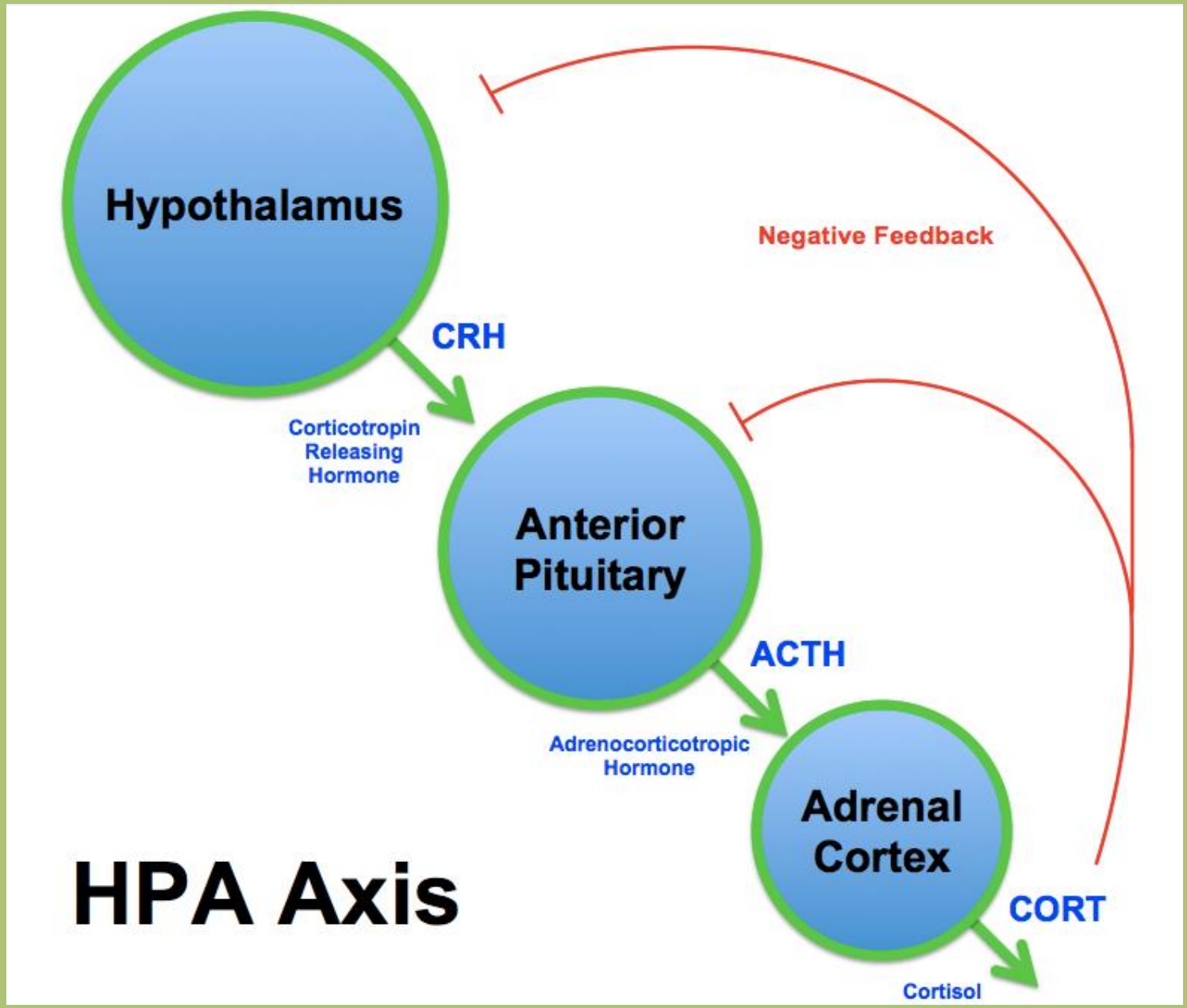


Two Branches of the Autonomic Nervous System (ANS)

Response to acute stress

Relaxation response





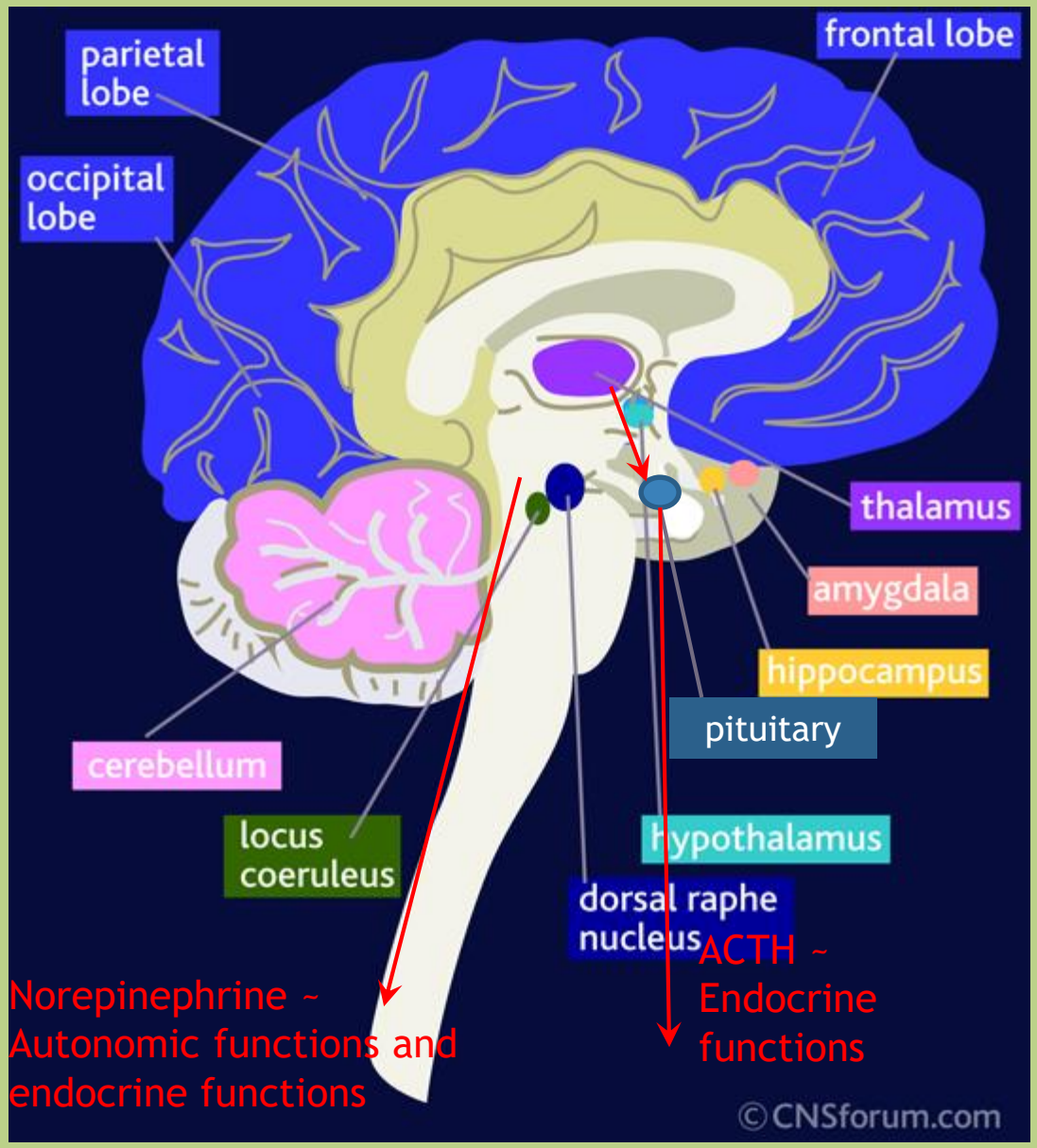


Image source: CNSforum.com, used w/permission; image adapted

Mind is body and body is mind

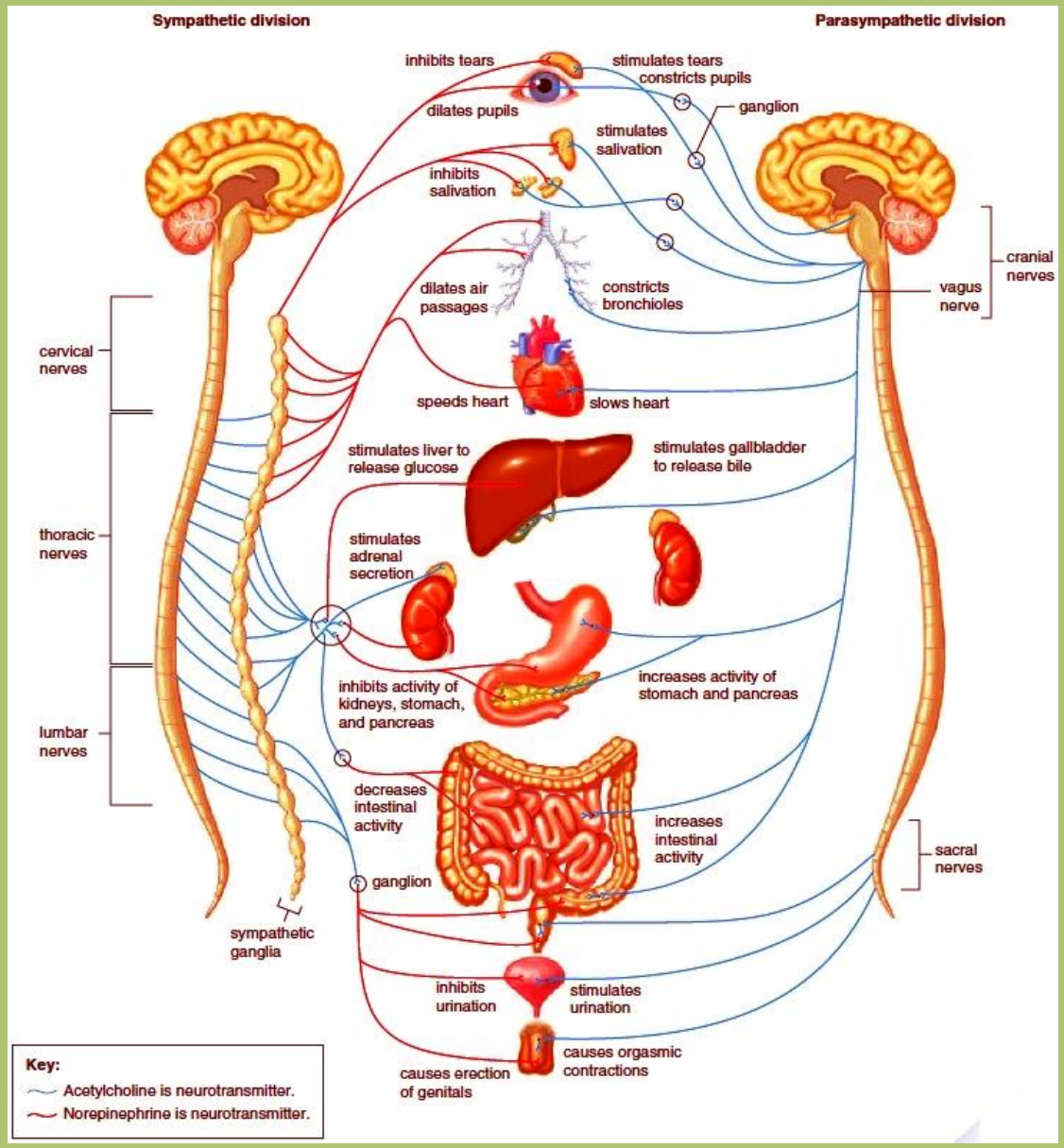
The HPA axis acts interdependently with the nervous system (functioning as the neuroendocrine system) to maintain many baseline physiologic functions, as well as respond to stressors.

We'll see that the immune system and gut also play a large role.

The Vagus Nerve – Mind-Body Integrator

The vagus nerve is an important player in the parasympathetic nervous system, which mediates much of the communication between the gut, brain, and immune system, as well as the heart. It is responsive to the microbiome—our inner landscape—and to external stimuli, like the forest.

Vagal tone is measured through Heart Rate Variability (HRV). Higher tone (and HRV) is a measure of nervous system (and whole organism) resilience.



During perceived **emergencies**, the CNS, ANS and HPA work in tandem to carry out four important survival functions:

- **Social Engagement**
- **Fight**
- **Flight**
- **Freeze**

Understanding Stress and Trauma through Animal Biology and Behavior

Overwhelmed or threatened, animals go through predictable stages of responding to danger. Humans are animals, too…

In order to optimize chances for survival, the body:

Activates implicit, hardwired survival sequences

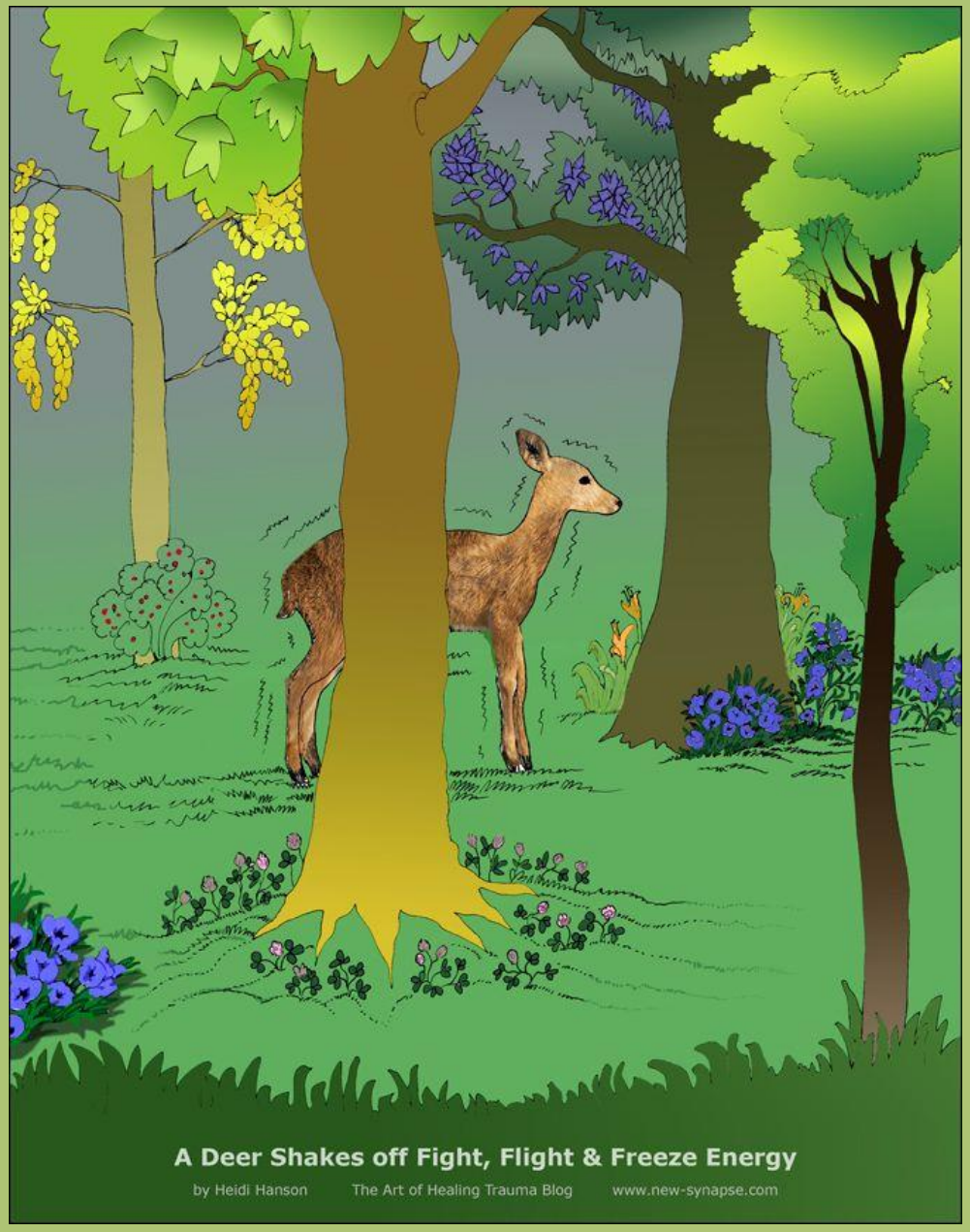
Mobilizes high levels of energy to defend itself

Shuts-down unnecessary bodily functions

After threat has passed, animals return to normal functioning by:

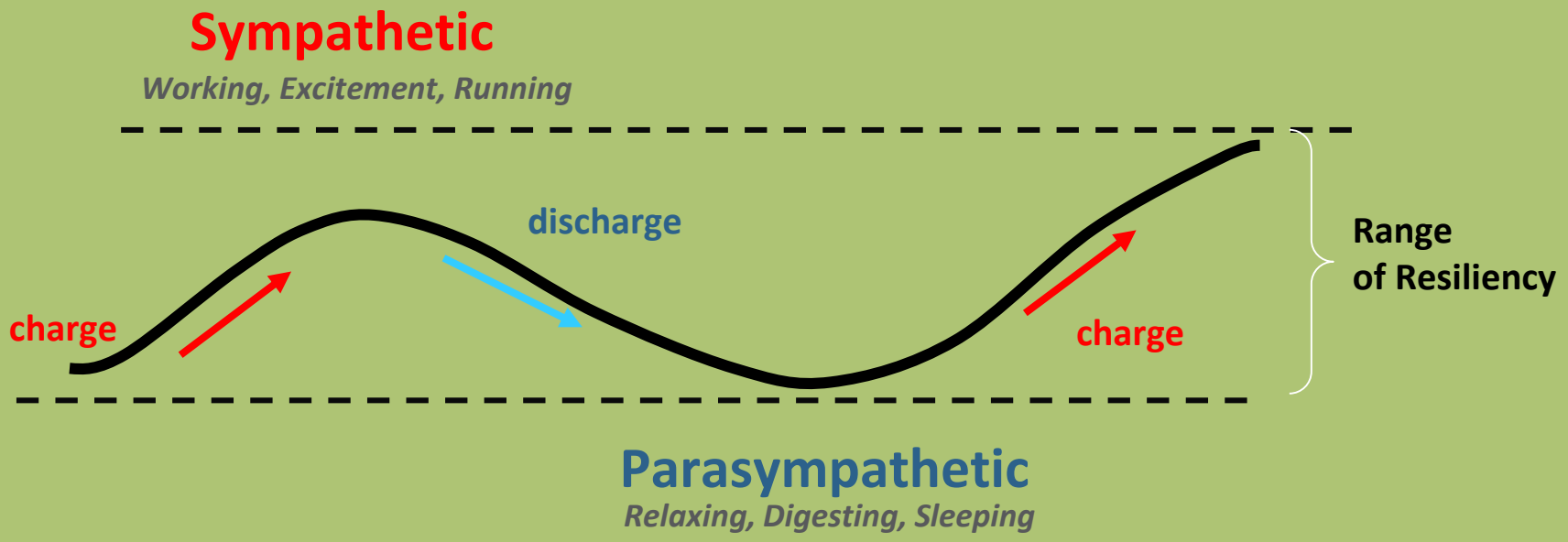
Discharging survival energy

Integrating excess activated energy

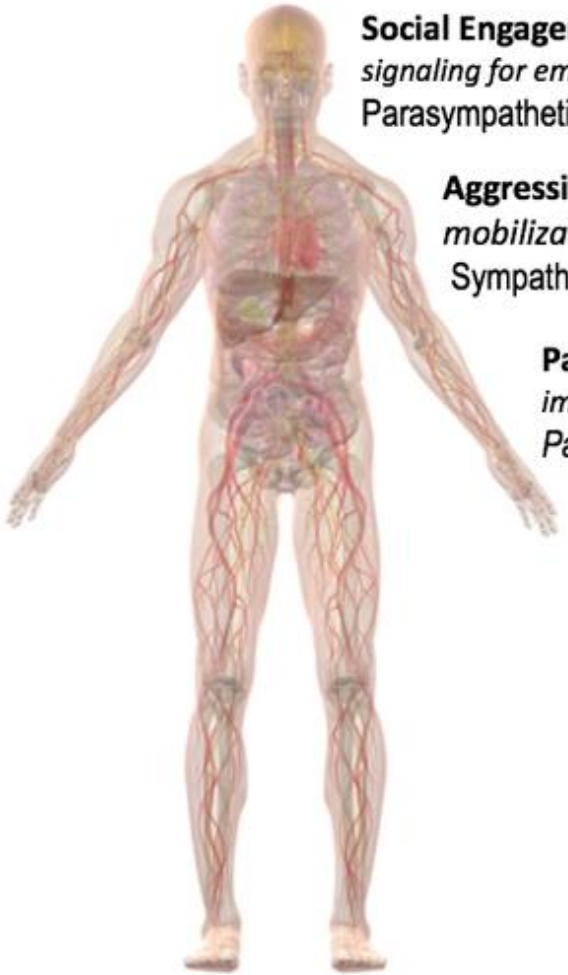

A Deer Shakes off Fight, Flight & Freeze Energy
by Heidi Hanson
The Art of Healing Trauma Blog
www.new-synapse.com

Ideally, there is a flexible and responsive ebb and flow of activation/deactivation cycles, with quick recovery and wide range of system resiliency

Activation – Deactivation Cycles



Slide text courtesy of Somatic Experiencing Trauma Institute / TraumaHealing.org



Social Engagement System
signaling for emotion, motion, communication
Parasympathetic Ventral Vagal Complex

SAFE
optimal relaxation & activation (*rest, digest, relate)*
eye contact, facial expression, voice

Aggressive Defensive System
mobilization for fight or flight
Sympathetic Nervous System

DANGER
↑ arousal, ↑ *heart rate, stress, muscle tension*
fear, anger, aggression, rage

Passive Protection System
immobilization for freeze or feint
Parasympathetic Dorsal Vagal Complex

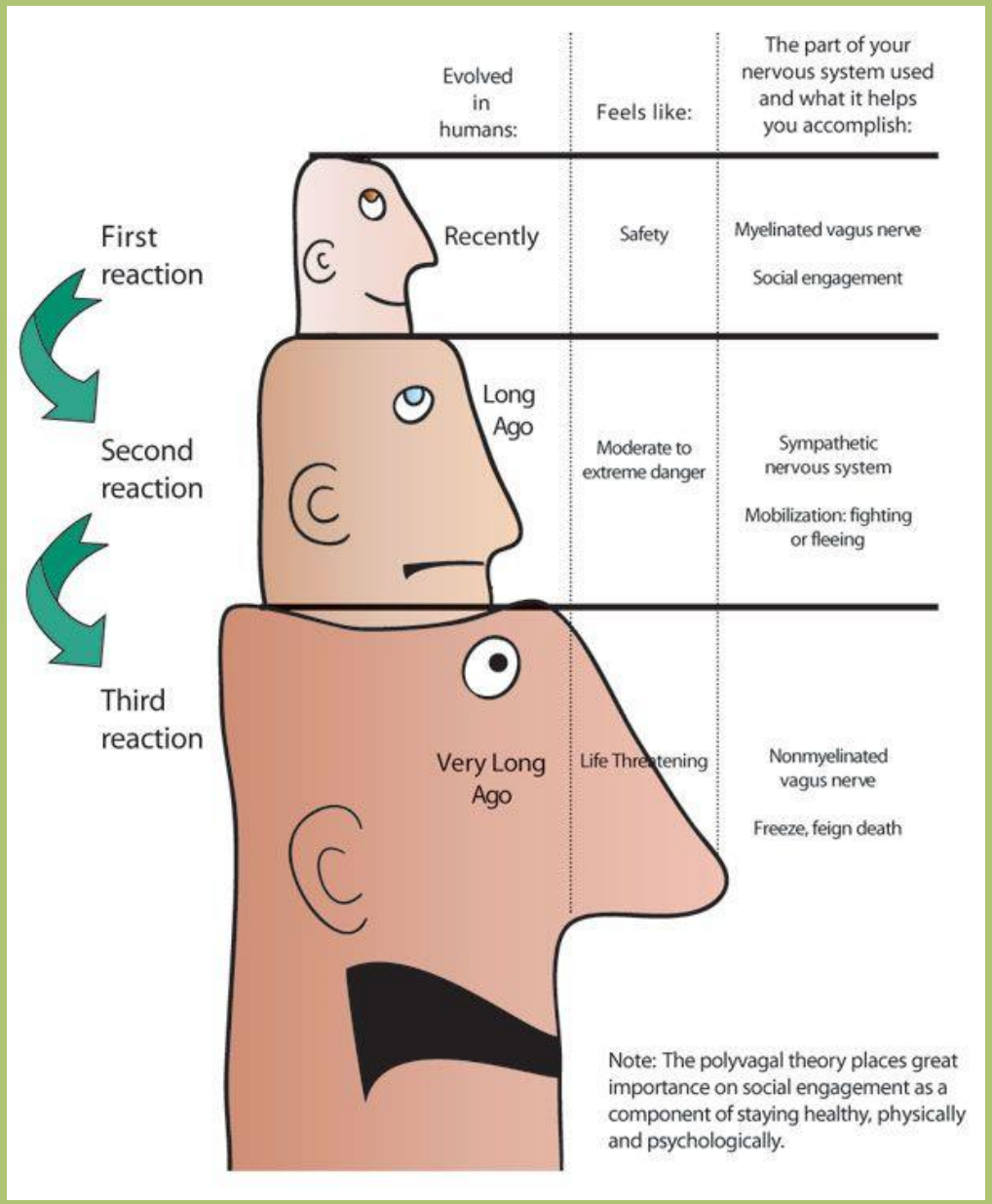
LIFE THREAT
↓ arousal, frozen activation, ↓ *heart rate,*
dissociated, frozen, collapsed, limp

Poly Vagal Theory

by Stephen Porges PhD
(2003)

http://www.presence.academy/porges-poly-vagal/

Polyvagal Theory ~ Stephen Porges
visual by Ravi Dykema



Different brain regions process different information and induce different responses to stimuli

Neocortex

"*Thinking*"

Cognition, Language, Speech, Social and Regulatory Centers

Limbic/Mid-Brain (Amygdala)

"*Feeling*"

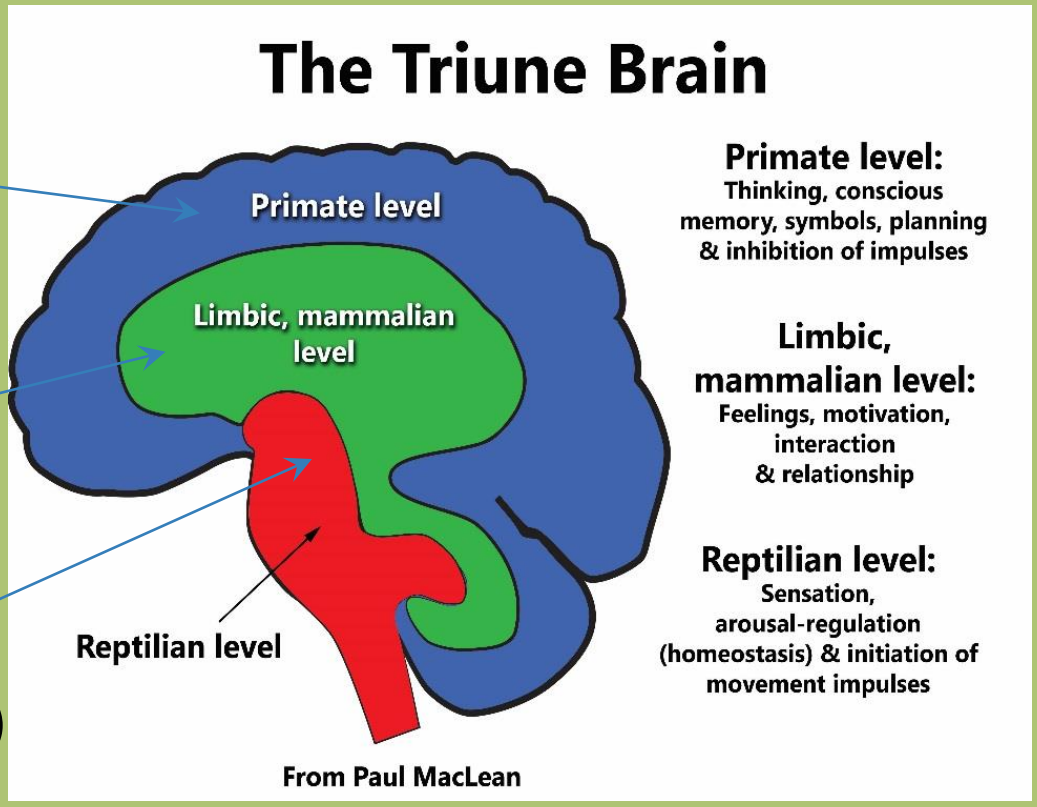
Memory, Emotions and Alarm Center

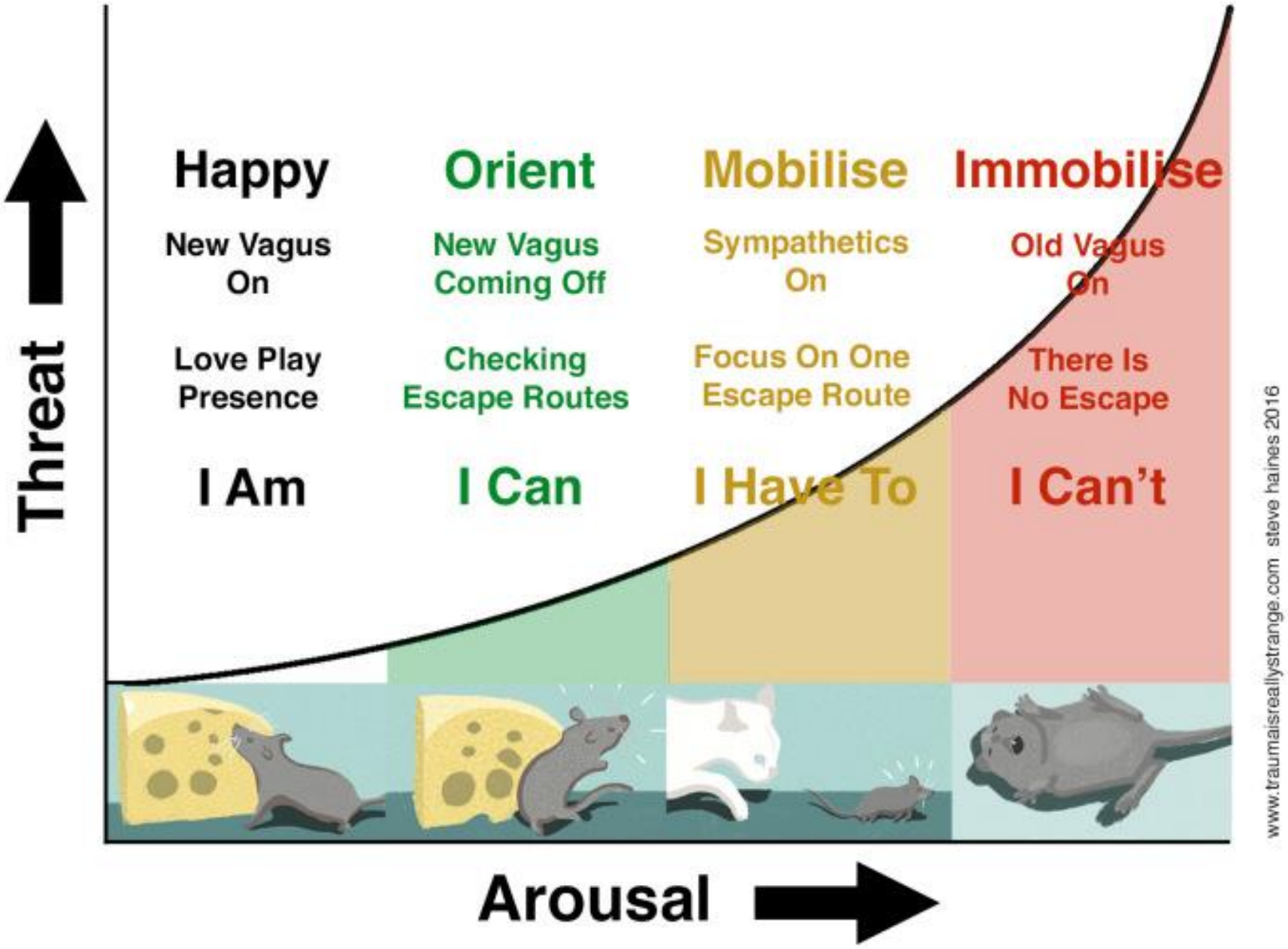
The Brainstem ("Reptilian Brain")

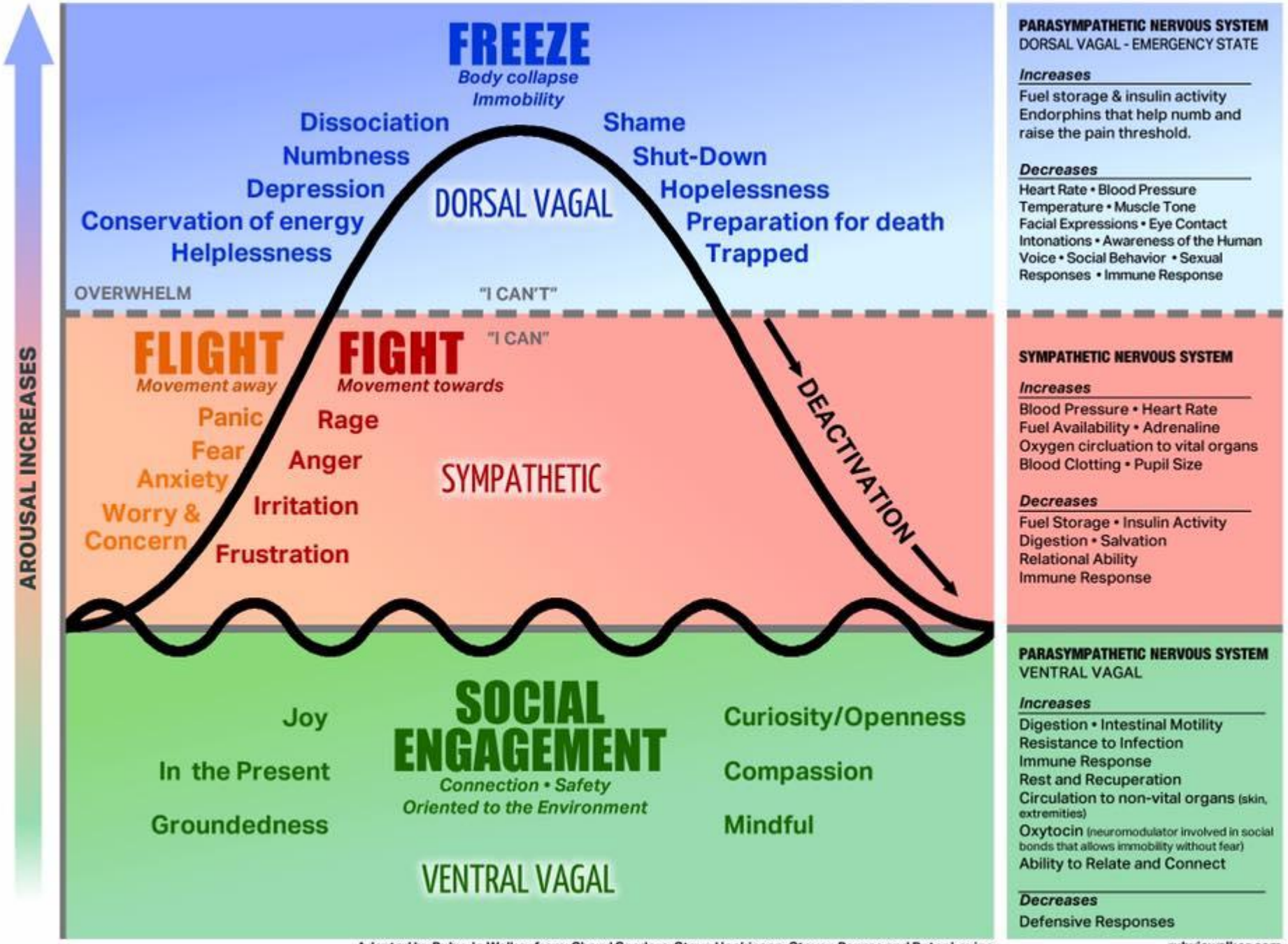
"*Sensing*"

Survival and Instinctual Centers (*fight, flight, freeze*)

Digestion, Reproduction, Circulation, Breathing, Sleeping




Threat
Happy
Orient
Mobilise
Immobilise
New Vagus On
New Vagus Coming Off
Sympathetics On
Old Vagus On
Love Play Presence
Checking Escape Routes
Focus On One Escape Route
There Is No Escape
I Am
I Can
I Have To
I Can't
Arousal
www.traumaisreallystrange.com steve haines 2016

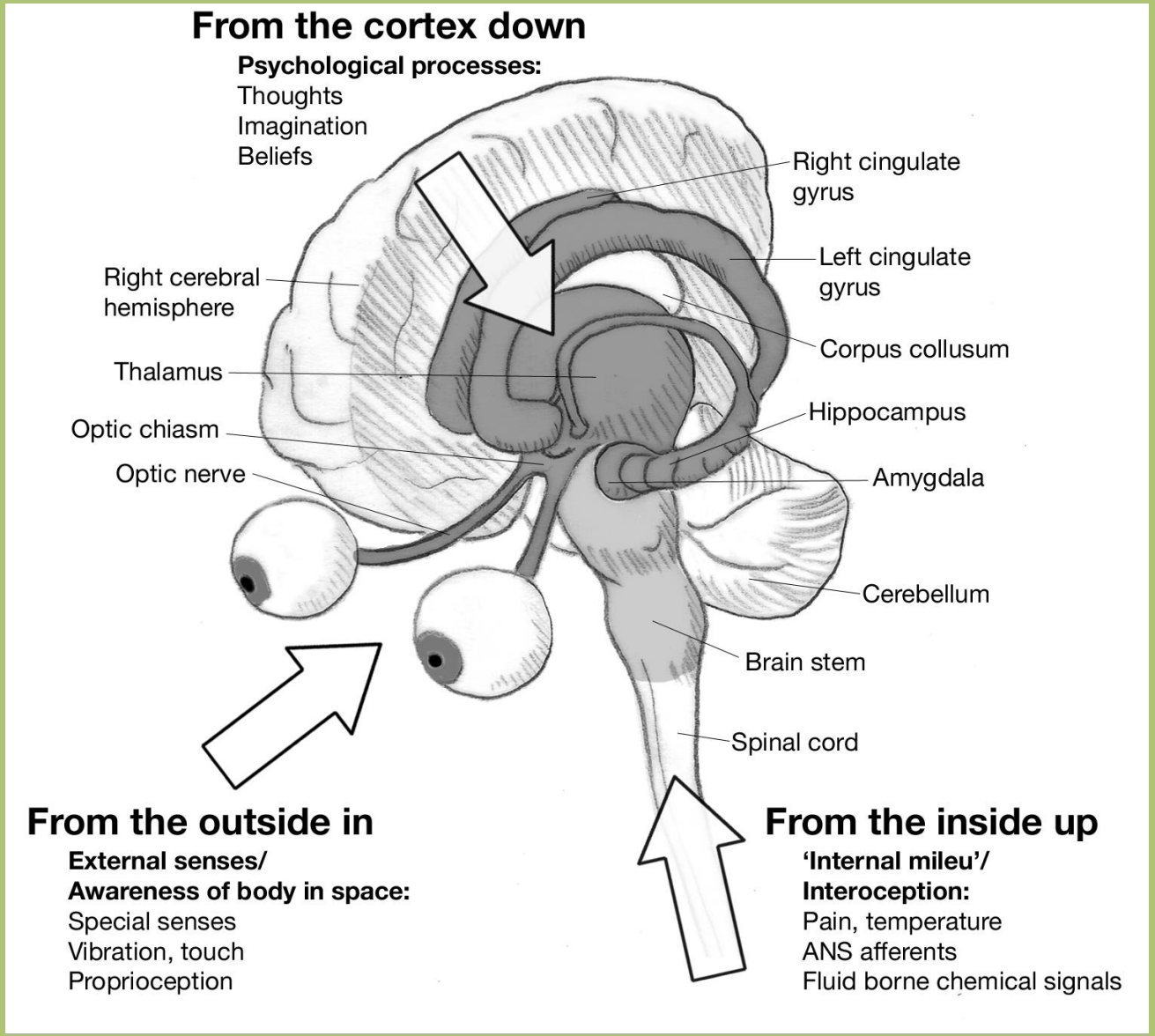


Adapted by Ruby Jo Walker from: Cheryl Sanders, Steve Hoskinson, Steven Porges and Peter Levine

rubyjowalker.com

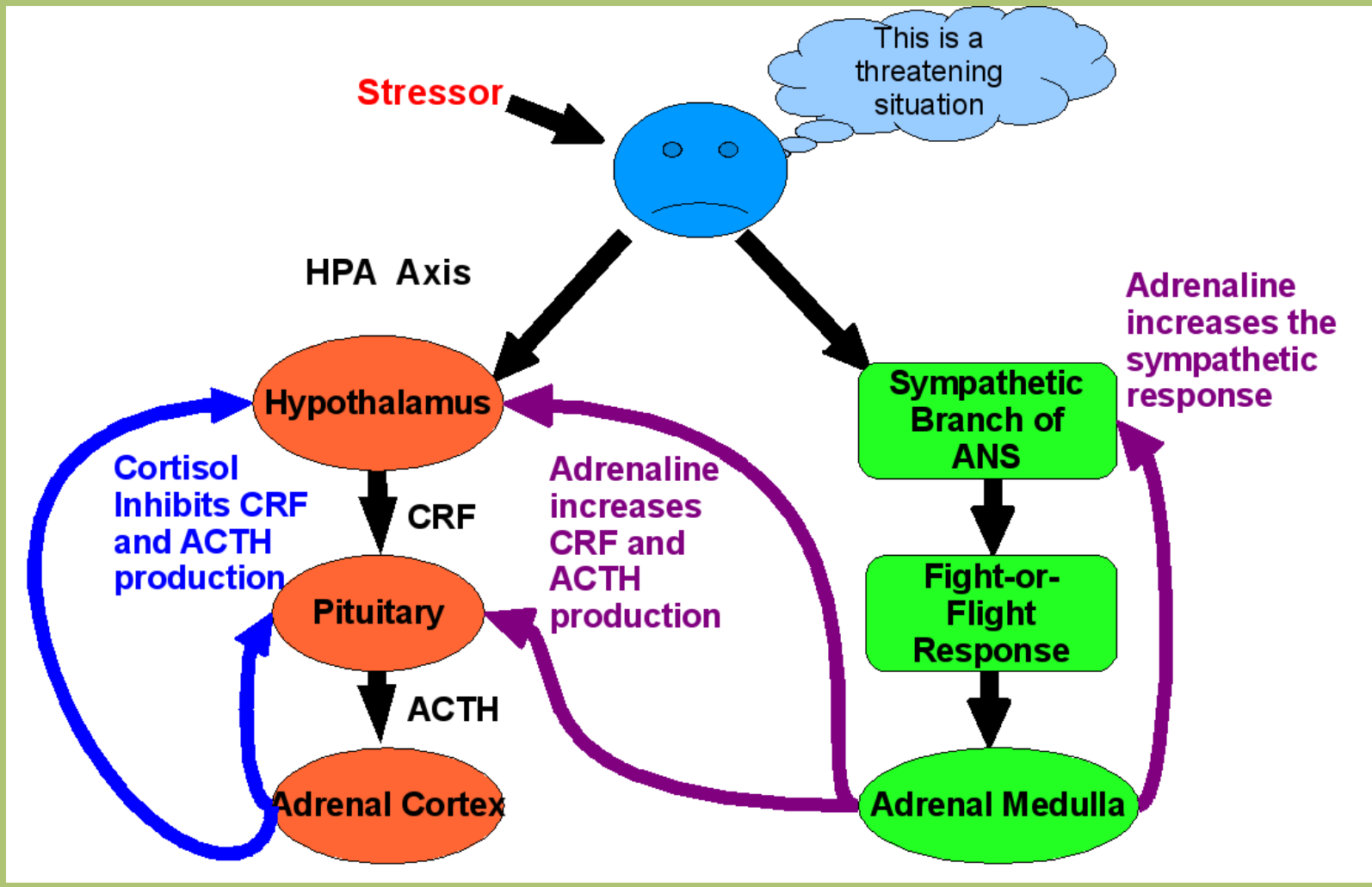
Zooming in on the details: Healthy Stress Response

Information and stimuli come from many sources

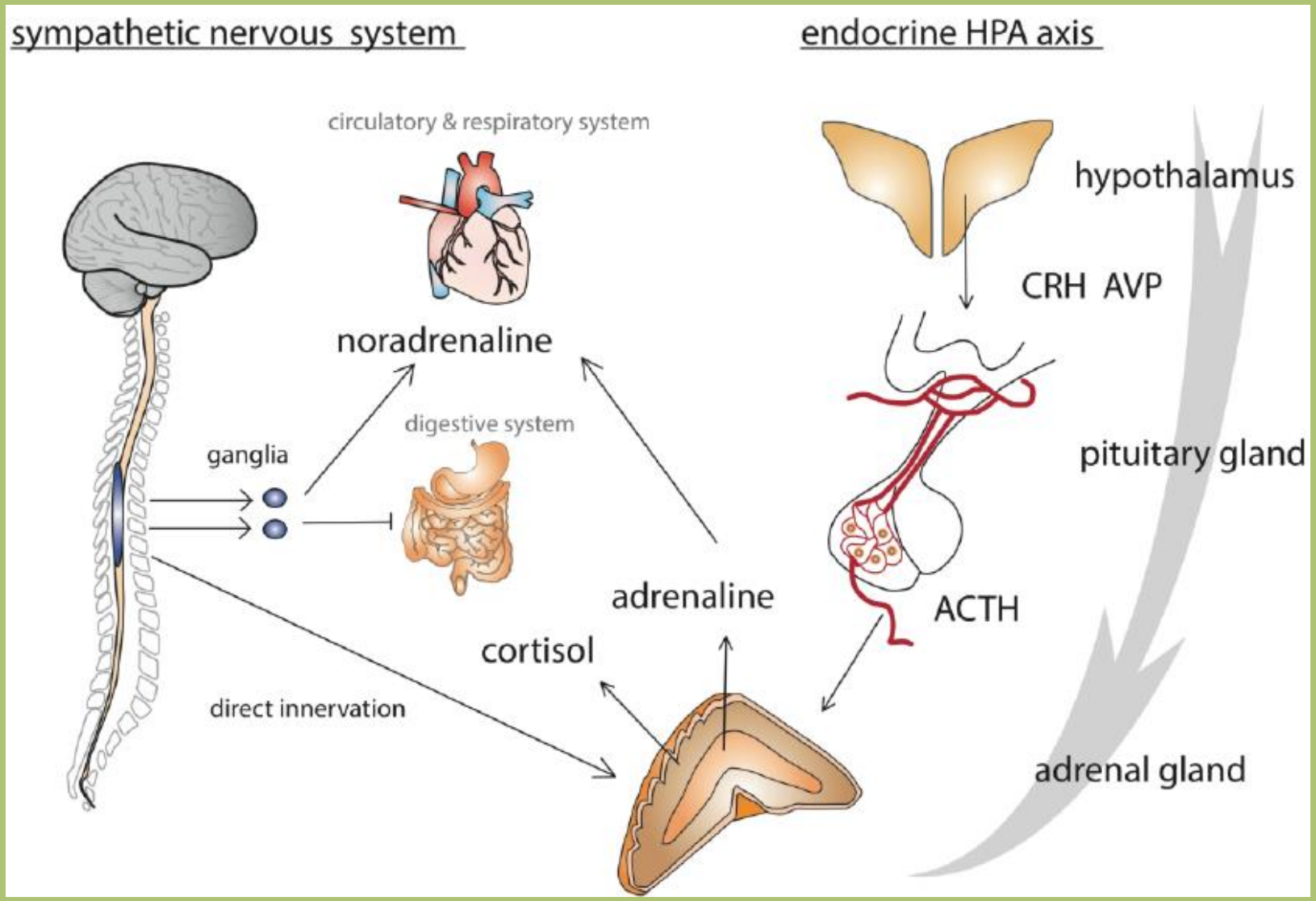


https://cranialintelligence.com/2010/10/04/adapting-insights-from-the-social-nervous-system-model-to-cranial-work/

The hypothalamic-pituitary-adrenal (HPA) axis and the sympathetic nervous system (SNS) work together to respond to all types of stressors (referred to as neuroendocrine arousal)



another view of neuroendocrine arousal



https://www.researchgate.net/figure/235701867_fig1_Figure-1-Human-stress-response-pathways-operating-through-the-autonomic-nervous-system

Normal Stress Response, aka HPA activation

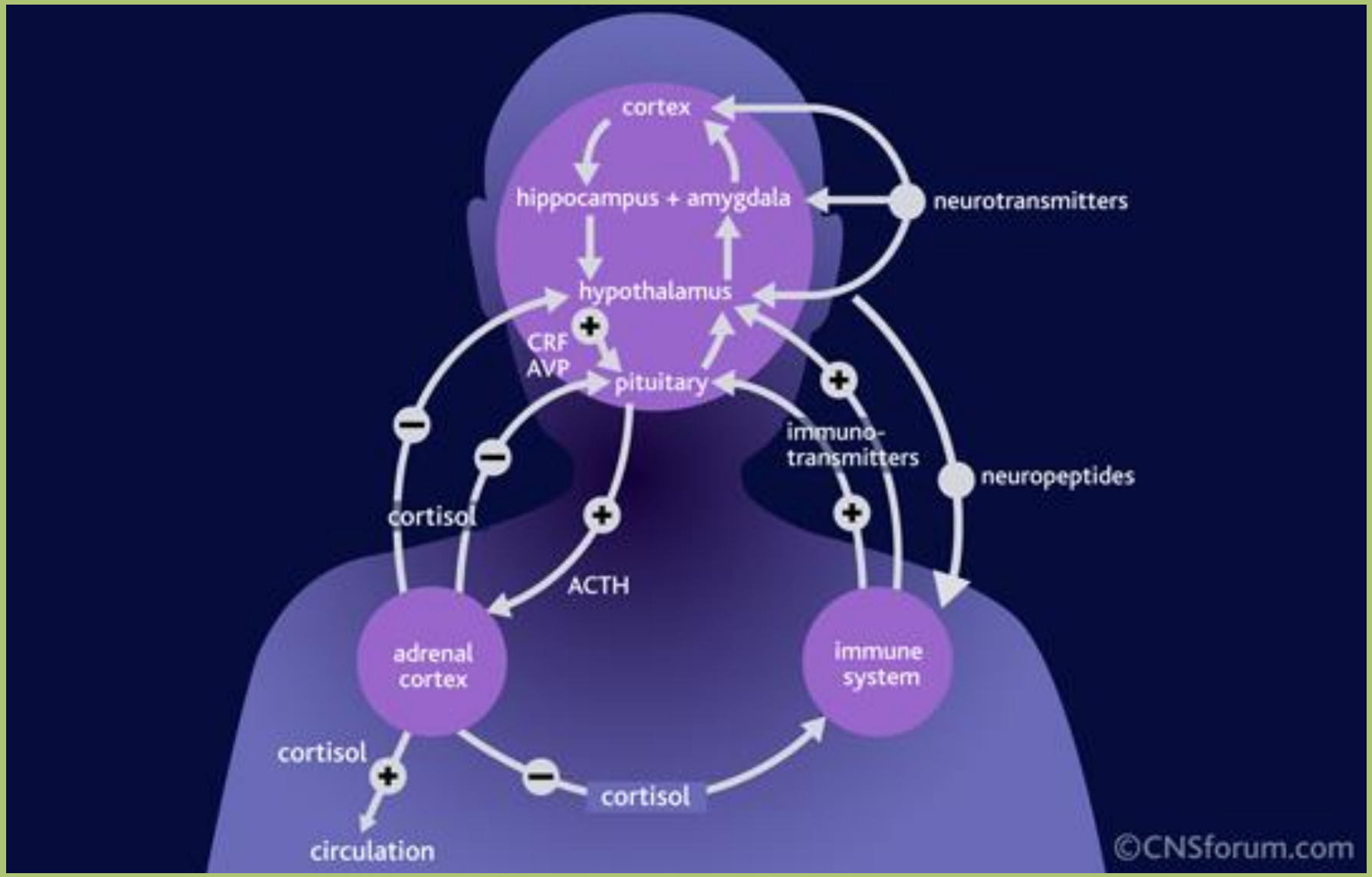
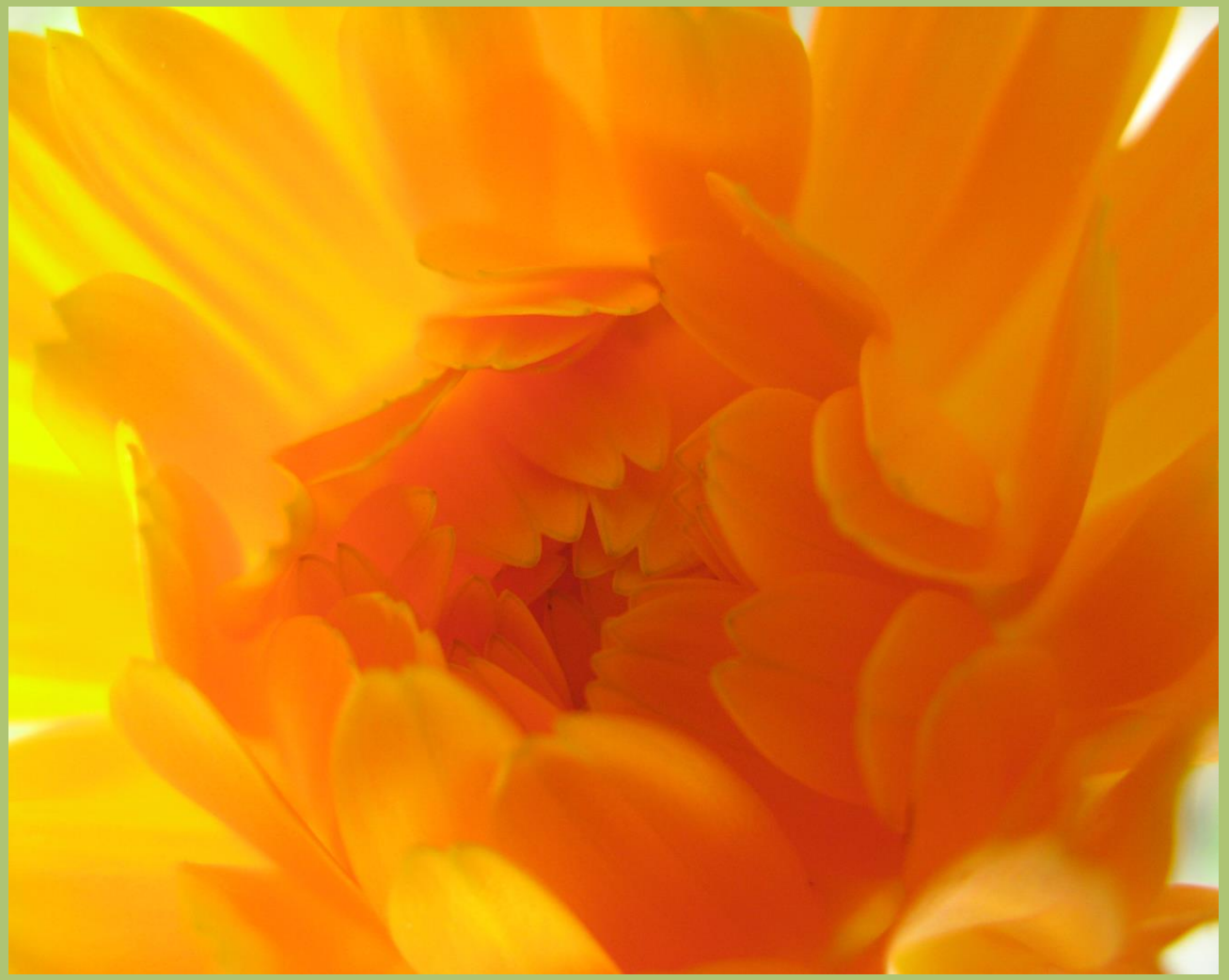


Image source: CNSforum.com, used w/permission

How is trauma related to the stress response?



We can think of trauma as an unresolved or incomplete stress response with short or long-term consequences.

A little history…
Our understanding of stress is rooted in
Hans Selye's
General Adaptation Syndrome
(1930-50s)

Alarm Stage

SNS arousal, including emotional arousal
defense mobilization to begin fight/flight/(freeze)

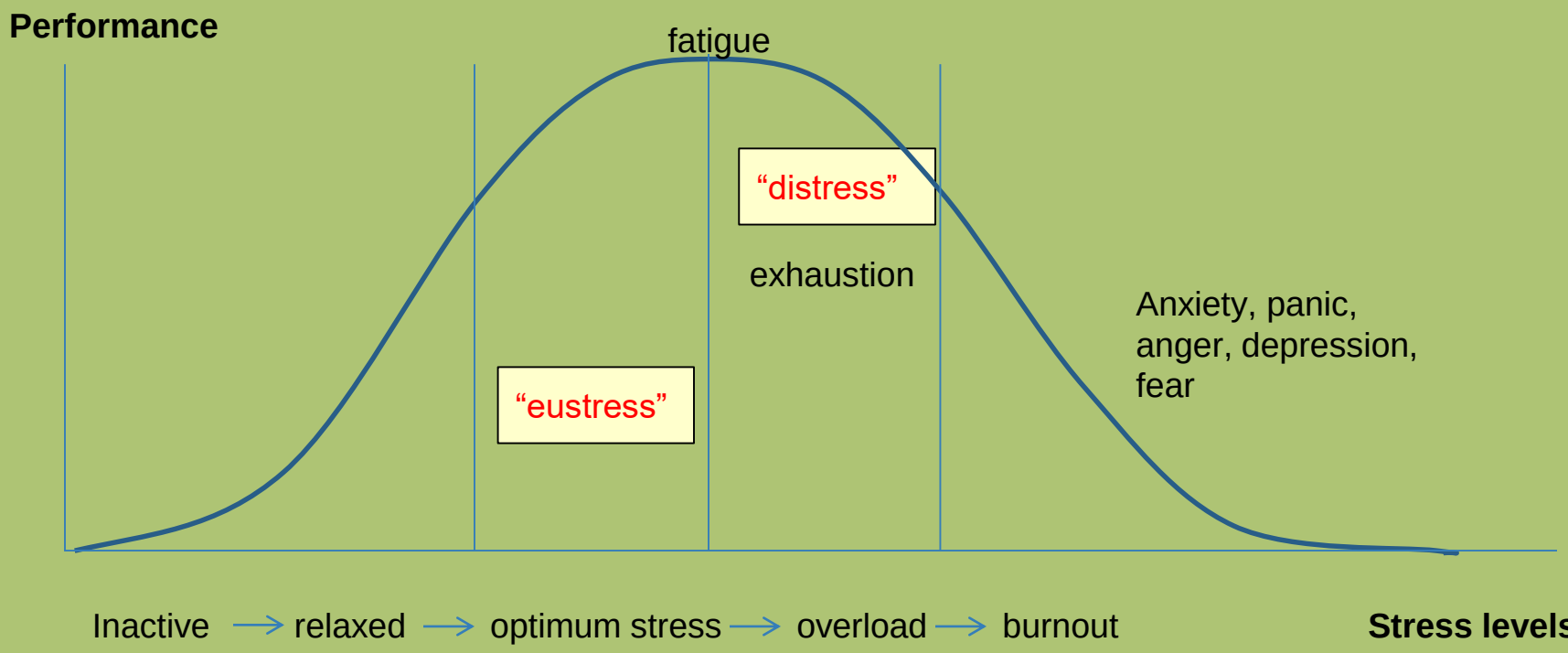
Stage of Adaptation/Resistance

further defense mobilization - fight/flight/(freeze)
attempts to adapt, return to calm, less activation (PNS)

Stage of Exhaustion (or Recovery)

if exhaustion, break down of homeostasis is reached

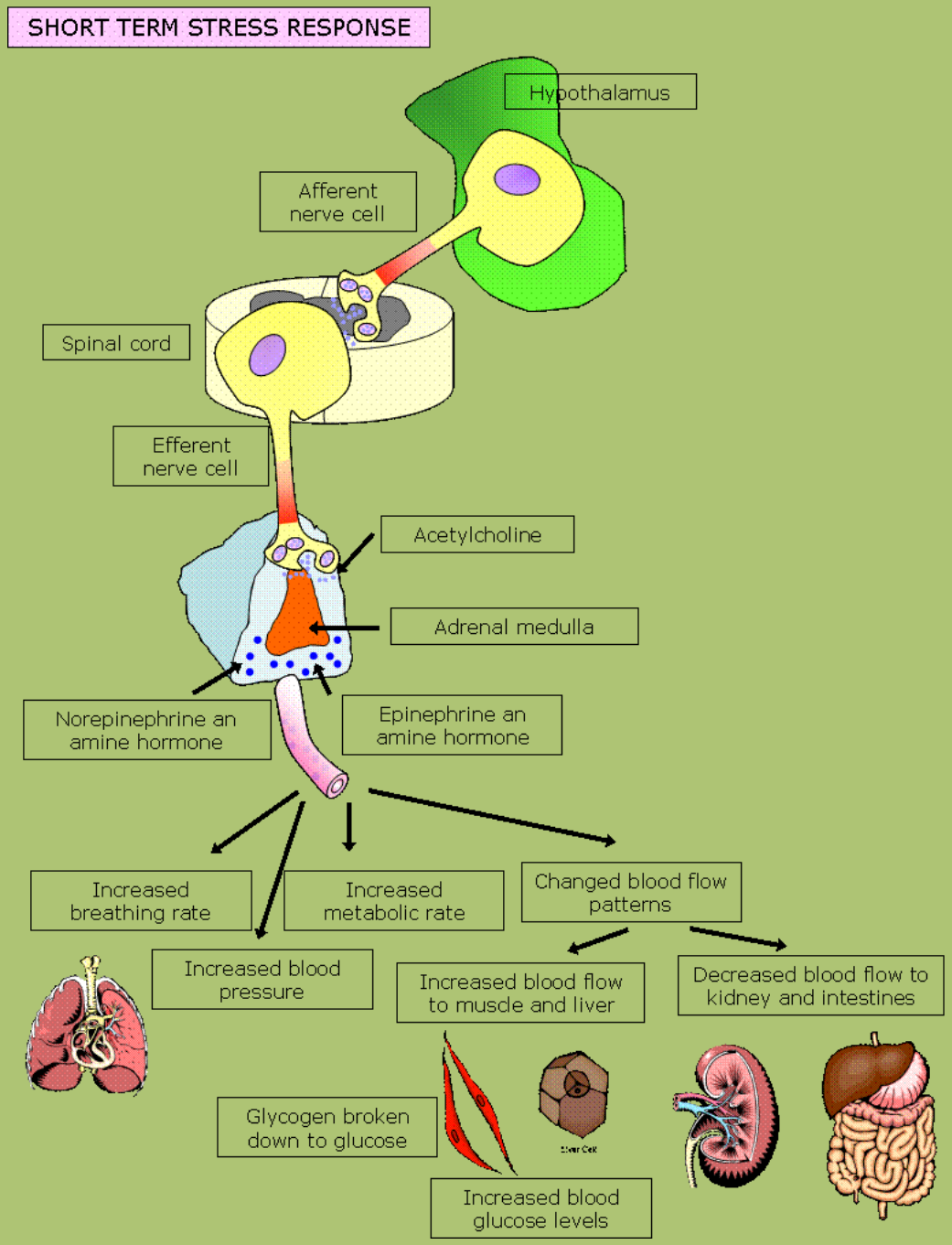
General Adaptation Syndrome



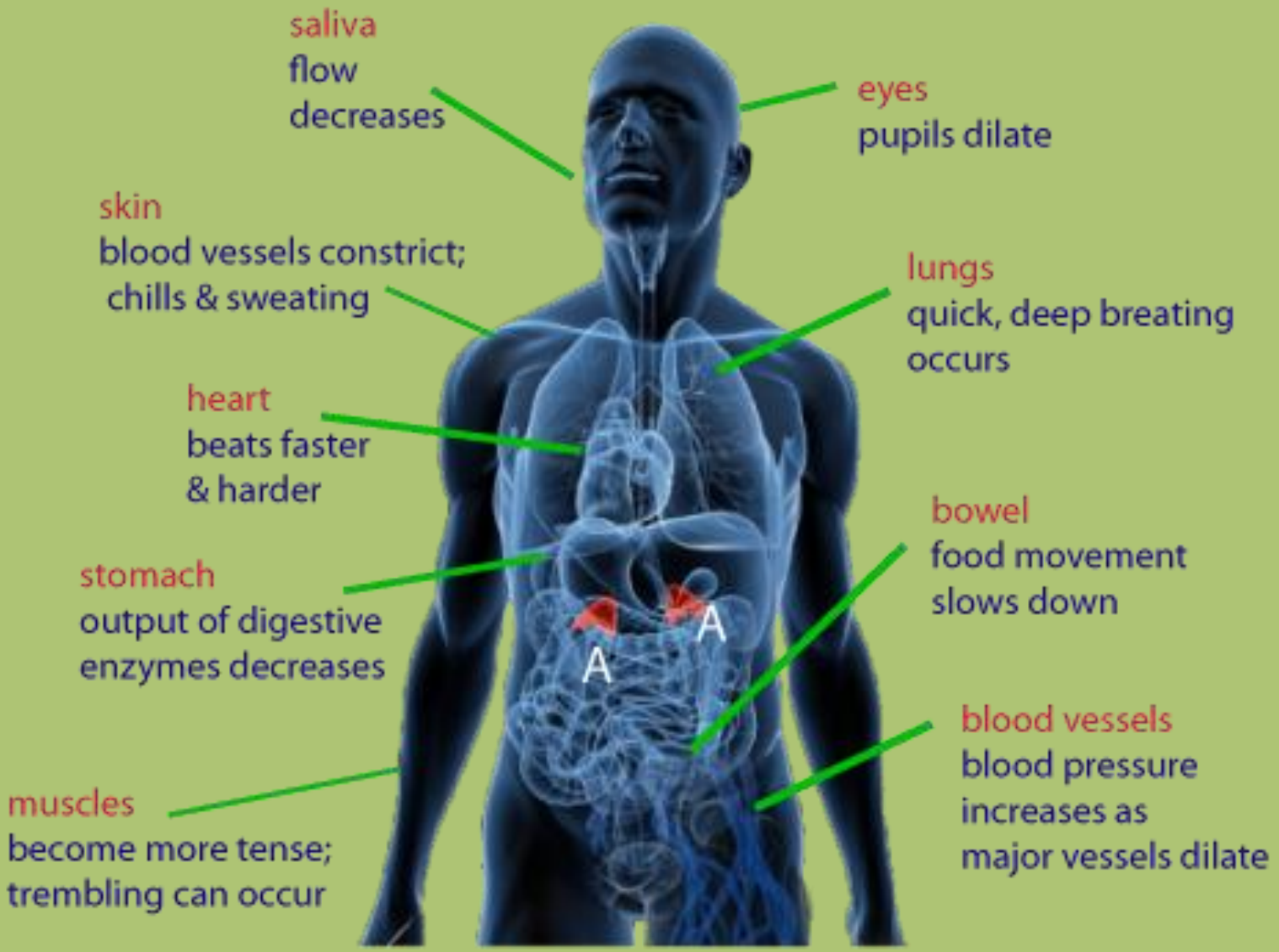
ALARM → RESISTANCE / ADAPTATION → **EXHAUSTION**

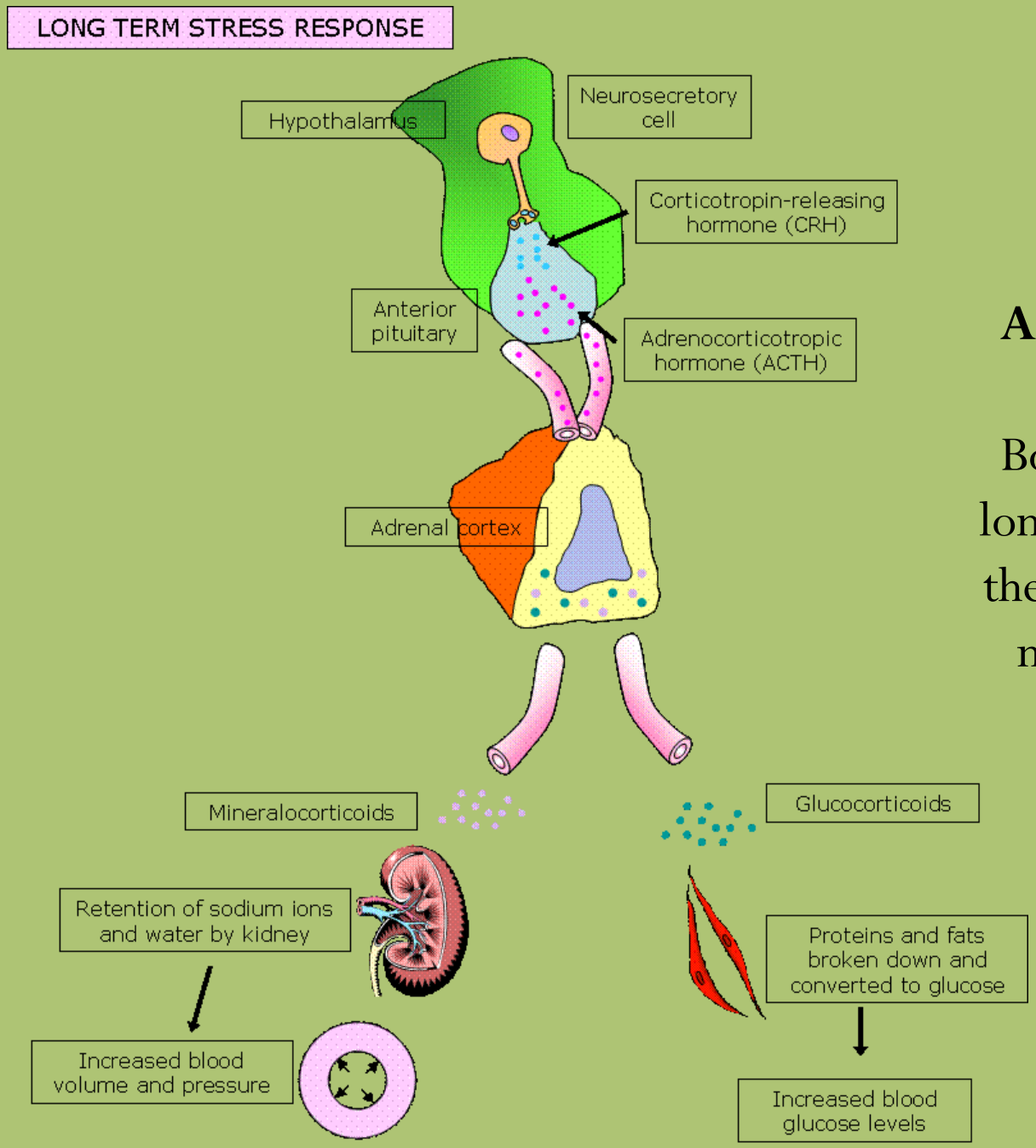
RECOVERY ←

Alarm Phase


SHORT TERM STRESS RESPONSE
Hypothalamus
Afferent nerve cell
Spinal cord
Efferent nerve cell
Acetylcholine
Adrenal medulla
Norepinephrine an amine hormone
Epinephrine an amine hormone
Increased breathing rate
Increased metabolic rate
Changed blood flow patterns
Increased blood pressure
Increased blood flow to muscle and liver
Decreased blood flow to kidney and intestines
Glycogen broken down to glucose
Increased blood glucose levels

body-wide effects of short term stress response

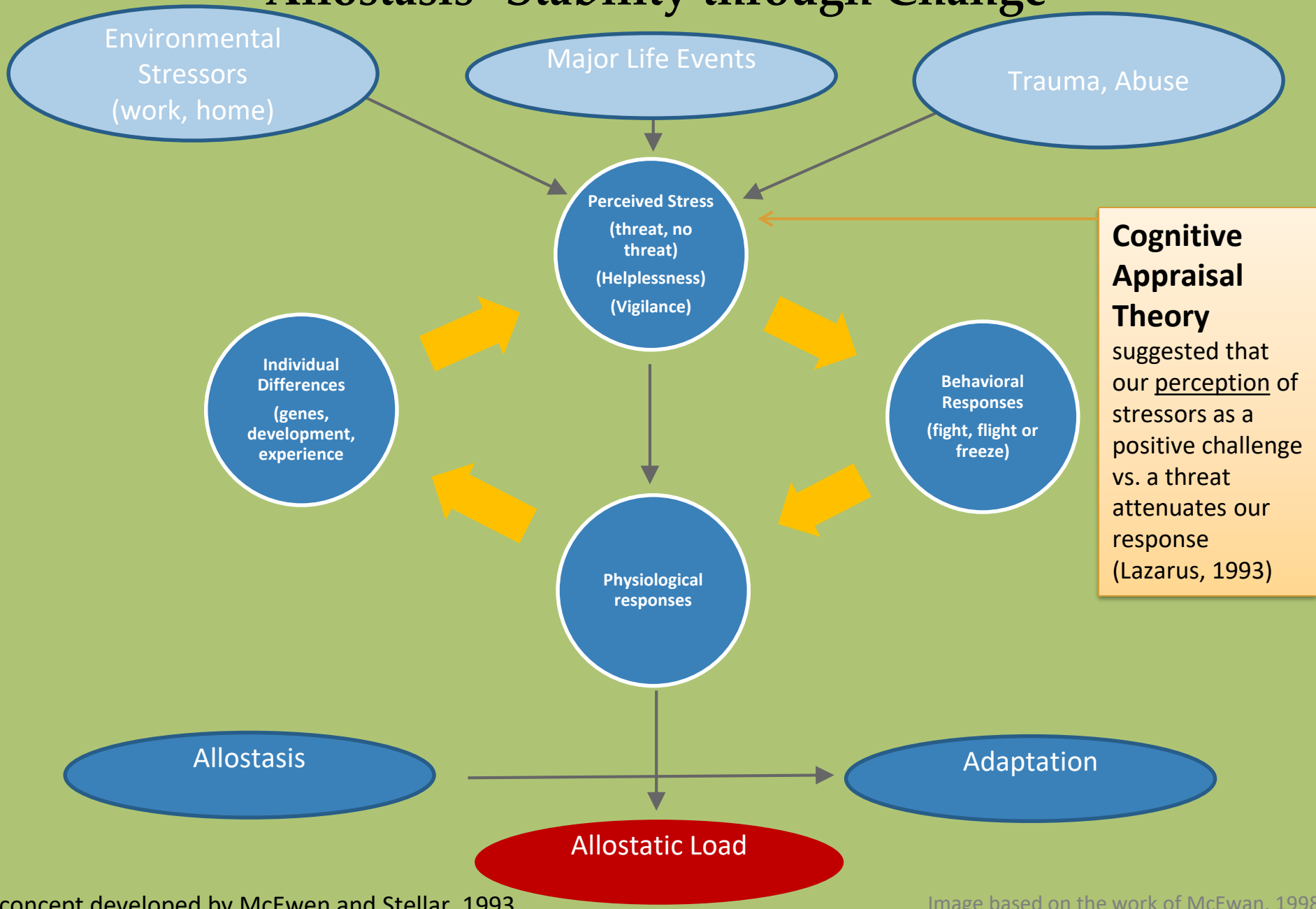




Resistance/ Adaptation Phase

Body-wide effects of long term activation of the stress response are many and complex (see later slides)

Modern Concepts of Stress Response: Allostasis--Stability through Change



Cognitive Appraisal Theory suggested that our perception of stressors as a positive challenge vs. a threat attenuates our response (Lazarus, 1993)

concept developed by McEwen and Stellar, 1993

Image based on the work of McEwan, 1998

Why do we reach allostatic load?

Summary of factors contributing to neuroendocrine dysregulation, experiences of "stress", vulnerability to trauma:

- extreme physiological or psychological environment or demands (poor diet, sleep, exercise, relationships, structural oppression, pollution, etc.), resulting in cortisol resistance
- mood/psychiatric dis-ease (panic, depression, substance addiction, eating disorders, etc.)
- traumatic experiences and/or early life adversity
- alterations in overall endocrine function, especially thyroid health and metabolism (diabetes)
- digestive dysfunction, hyperpermeability and dysbiosis
- chronic inflammation or immune activation, as in CVD, auto-immunity, atopy, infection, etc.
- genetic variability and gene-environment interactions

Potential Impacts of Chronic Stress and Trauma on Health and Wellbeing

**note how similar these are to causative factors!*

- overall, **disruption of adaptability** and stress resistance; increased vulnerability to chronic disease
- **reduced emotional resilience** and optimism, neuropsychiatric symptoms/dis-ease (anxiety, depression, panic, PTSD), maladaptive neural networks and function
- **alterations in** overall **endocrine** function, affecting fertility, sexuality, thyroid health and metabolism (diabetes)
- **digestive dysfunction**, hyperpermeability and dysbiosis
- chronic **inflammation** (as in CVD, auto-immunity, atopy) and/or **immunosuppression**, cancer
- **maladaptive epigenetic alterations**, which may be heritable

Extreme, ongoing physiological or psychological environment or demands (inadequate nourishment, sleep, exercise, relationships, structural oppression, pollution, etc.), results in cortisol resistance as negative feedback loops collapse; exacerbated by inflammation and blood sugar dysregulation

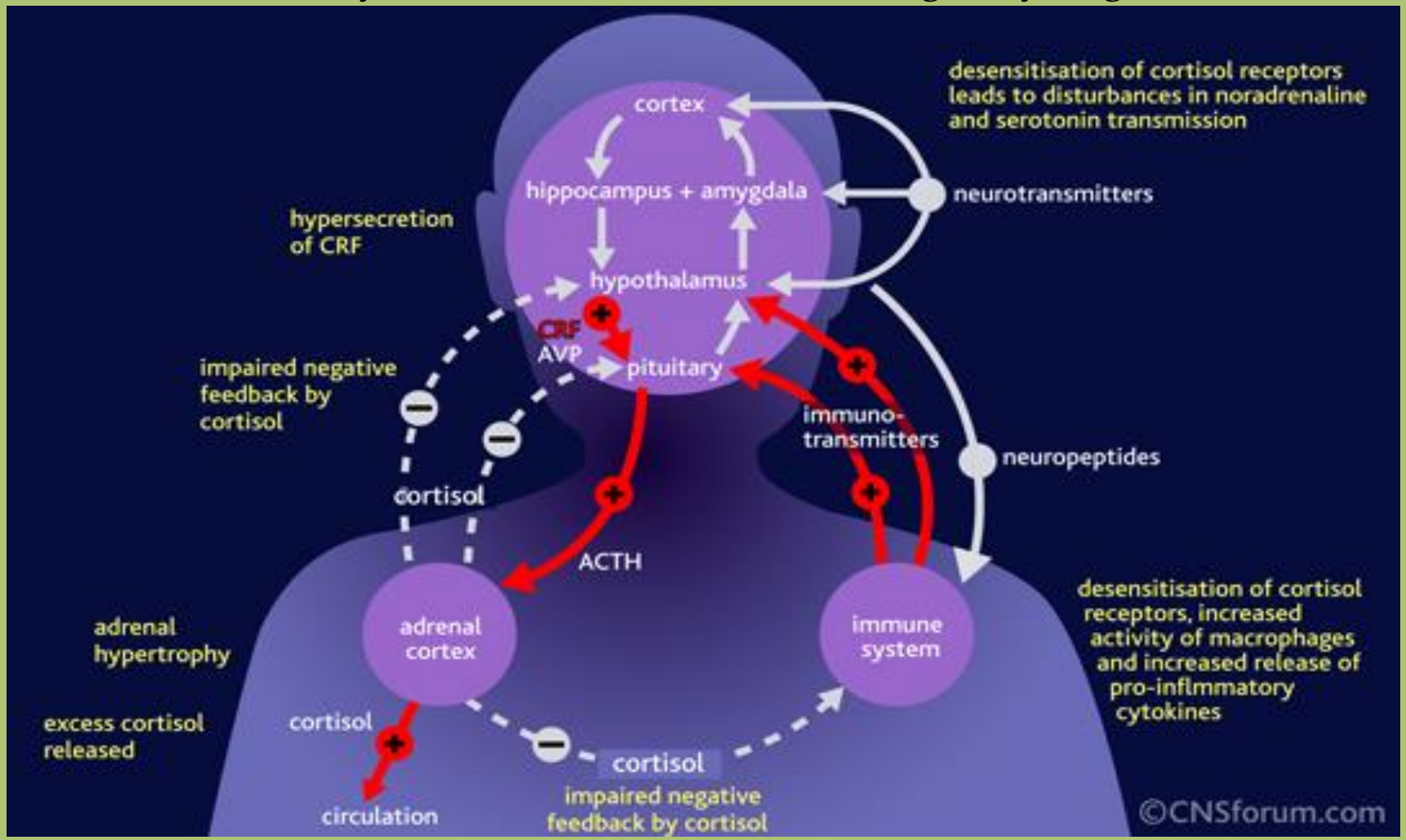


Image source: CNSforum.com, used w/permission

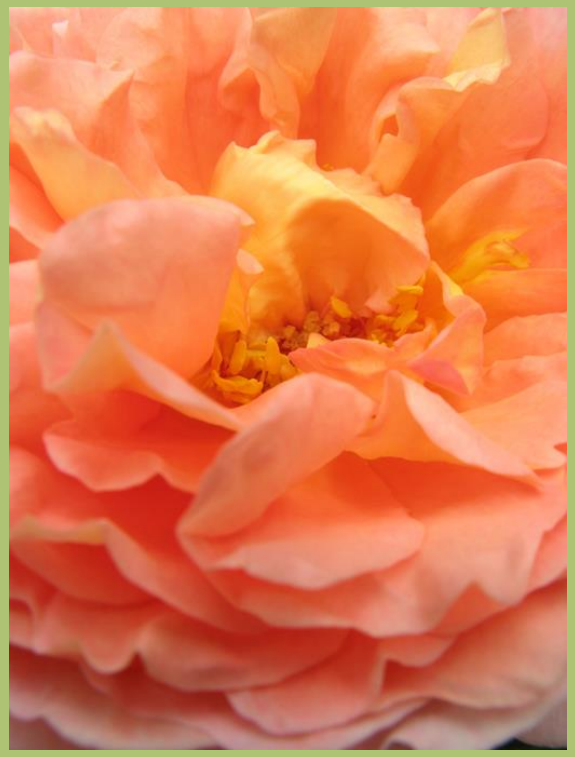
Reduced emotional resilience: mood/psychiatric dis-ease (panic, anxiety, depression, substance abuse, eating disorders, etc.)

Often characterized by neurotransmitter system dysfunctions (the monoamine hypothesis says this is the "cause", but research suggests these changes are actually symptoms):

- alterations can occur in secretion, re-uptake, or degradation of neurotransmitters (e.g. serotonin, norepinephrine and dopamine)
- receptor binding
- receptor expression

Traumatic experiences and/or early life adversity, or "insecure" attachment can lead to reduced physiological and emotional resilience and optimism, and contribute to mood dysregulation and intensified experience of stress.

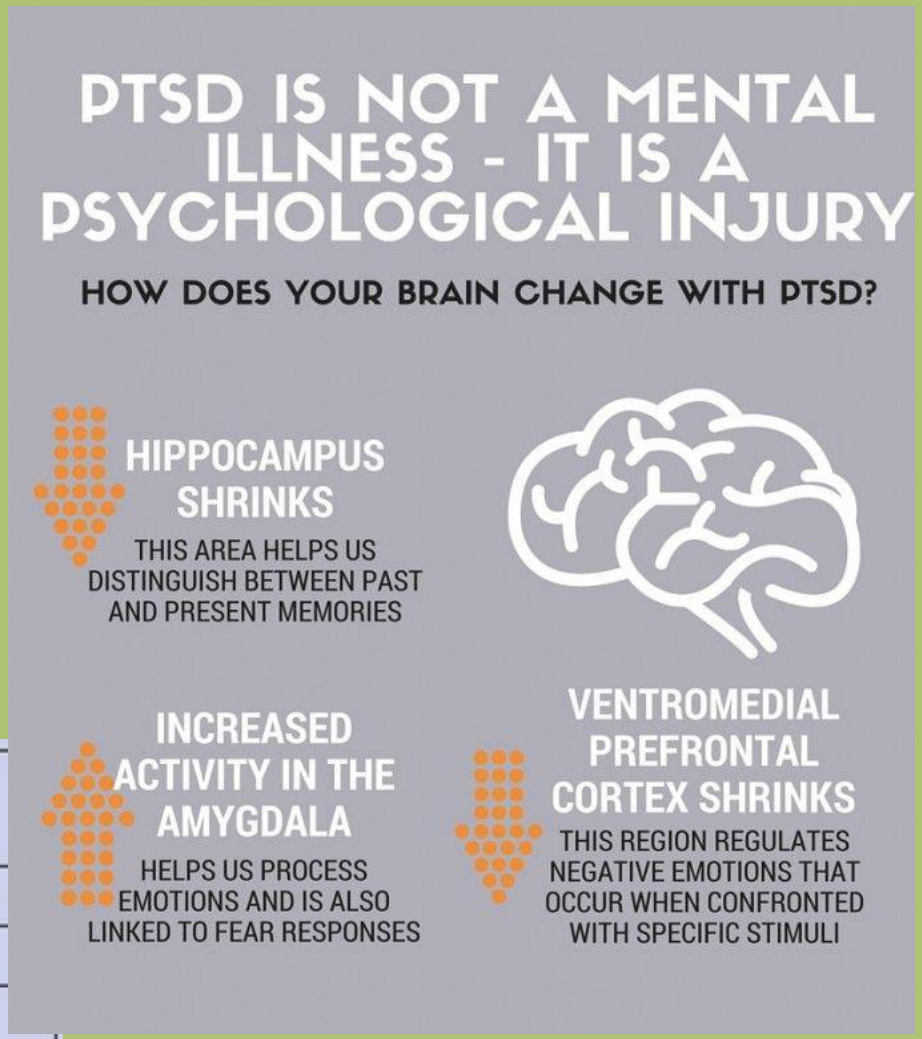
The neuroendocrine dysregulation associated with early or repeated trauma can set us up to be more vulnerable to experiencing further trauma in stressful/harmful situations later in life.



Trauma can manifest in many ways, physical, emotional, cognitive and spiritual (usually a combination of many domains).

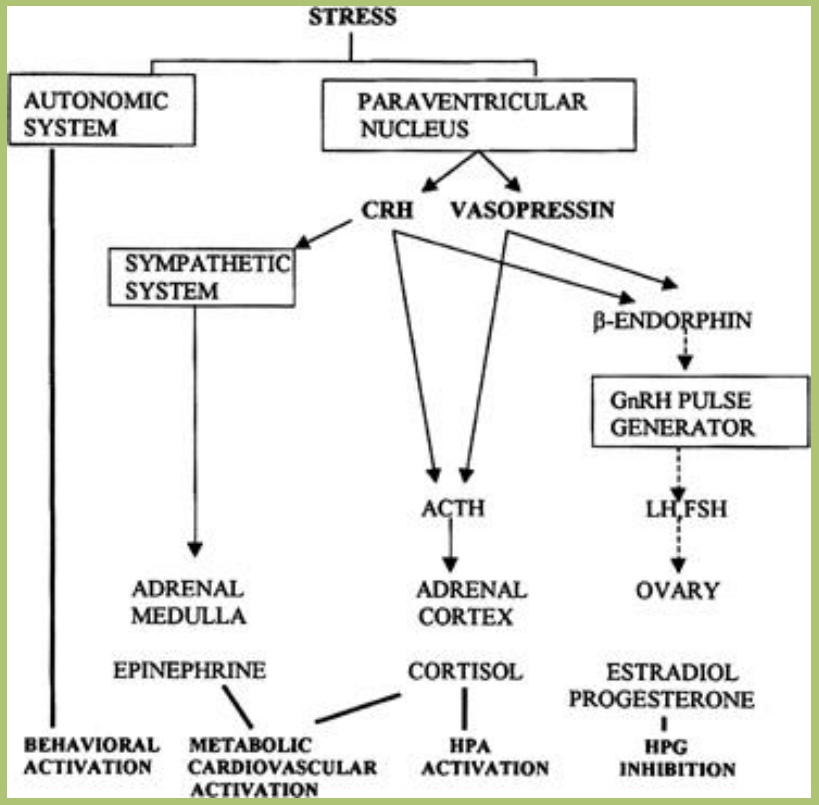
PTSD and Complex-PTSD are the diagnoses often given to make meaning of peoples' experiences (and to pay for treatment). **Diagnosis may or may not be helpful.**

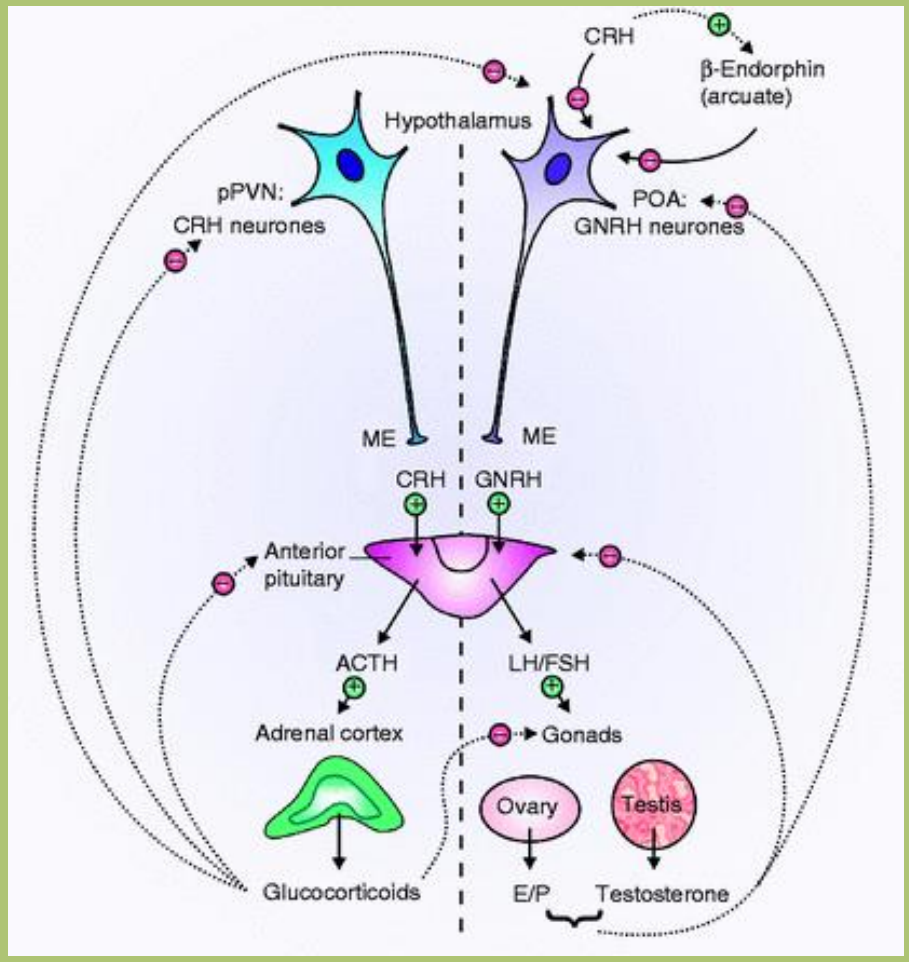
PTSD Persistence of:	Complex PTSD Dysregulation of:
Recollections and/or dreams of event	Affect and impulses
Acting or feeling a reoccurrence of event	Attention and consciousness
Psychological distress at exposure to cues	Self-perception
Physiological reactivity at exposure to cues	Perception of the perpetrator
Avoidance of associated stimuli	Relations with others
Symptoms of increased arousal	Somatization
	Systems of meaning



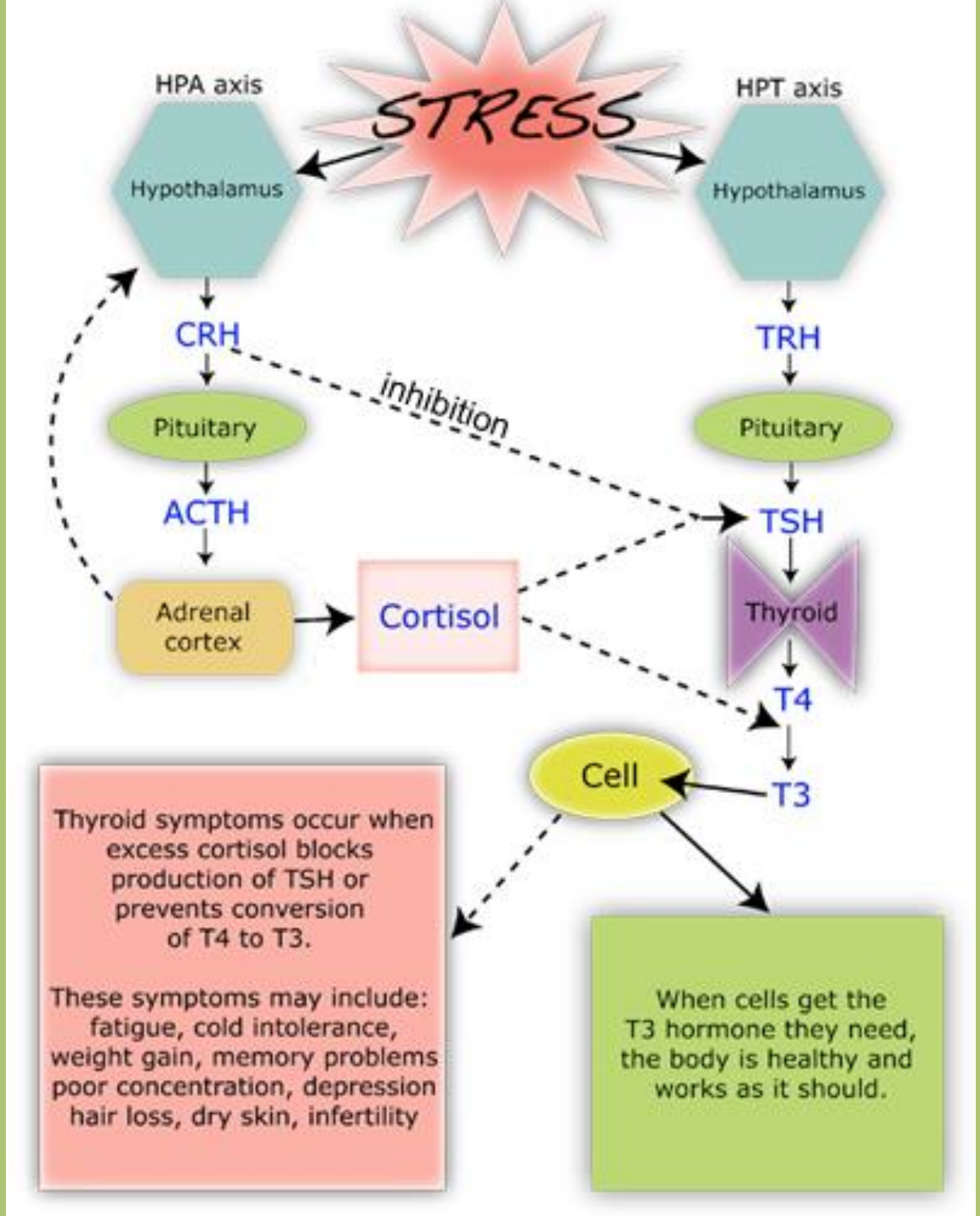
Alterations in overall **endocrine** function, affecting fertility, sexuality, thyroid health and metabolism (e.g. diabetes)

Reproductive/generative effects:

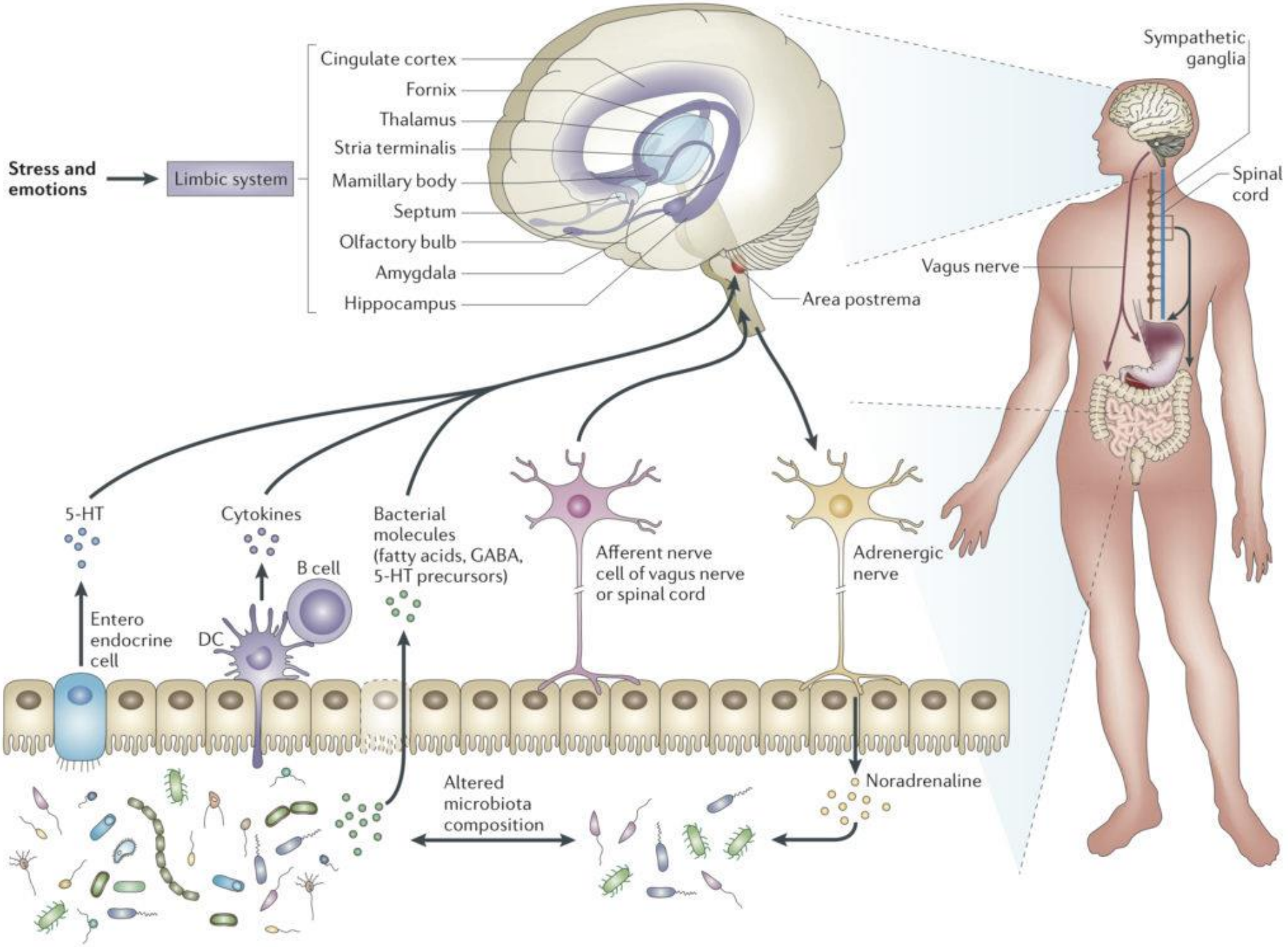


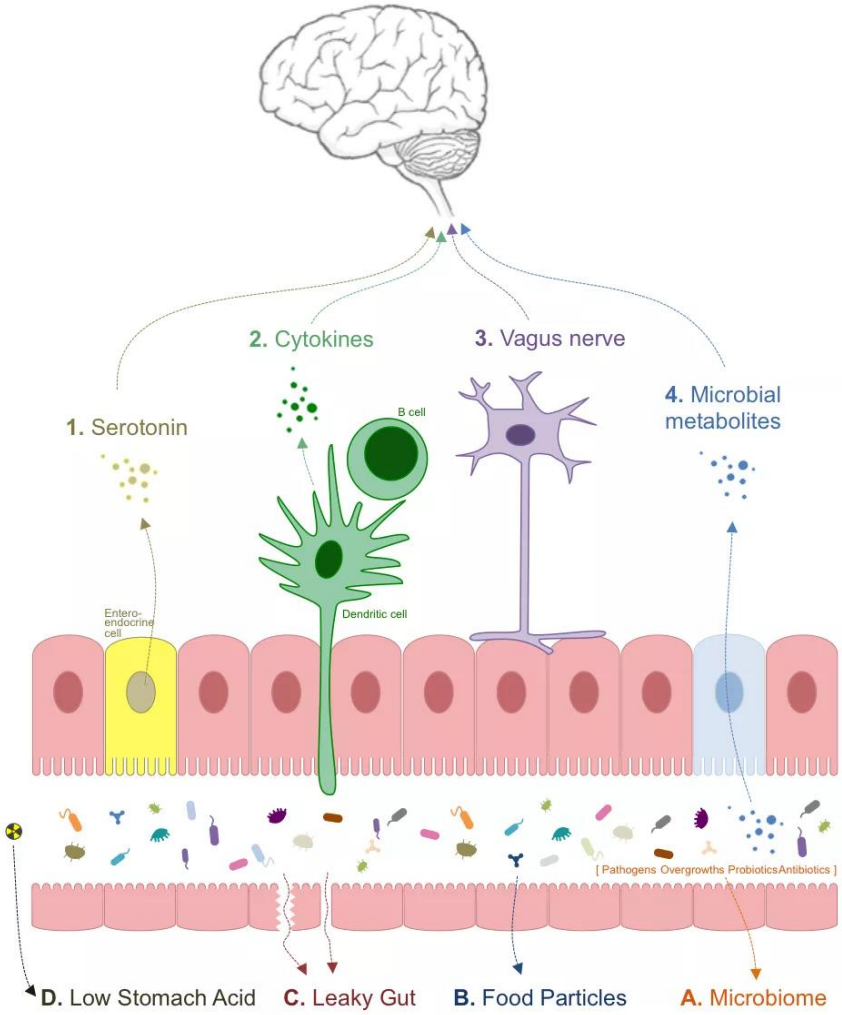


thyroid effects:



GI dysfunction, hyperpermeability and/or dysbiosis


Stress and emotions
Limbic system
Cingulate cortex
Fornix
Thalamus
Stria terminalis
Mamillary body
Septum
Olfactory bulb
Amygdala
Hippocampus
Area postrema
Sympathetic ganglia
Spinal cord
Vagus nerve
5-HT
Cytokines
Bacterial molecules (fatty acids, GABA, 5-HT precursors)
Afferent nerve cell of vagus nerve or spinal cord
Adrenergic nerve
B cell
Entero endocrine cell
DC
Noradrenaline
Altered microbiota composition



THE GUT-BRAIN AXIS

MECHANISMS

1. SEROTONIN
Enteroendocrine cells in the gut produce the neurotransmitter serotonin, which may have an effect on mood signaling in the brain.

2. IMMUNE SYSTEM CYTOKINES
The intestinal microbiome can prompt immune cells to produce pro-inflammatory cytokines that can induce depression and anxiety.

3. VAGUS NERVE
Vagal tone – how strong it is – can affect emotional regulation, depression and even act as a measure of a person's sensitivity to stress.

4. BACTERIAL MOLECULES
Microbes produce metabolites such as butyrate, SCFA, GABA and tryptophan which travel to the brain via blood vessels and regulate neurological function.

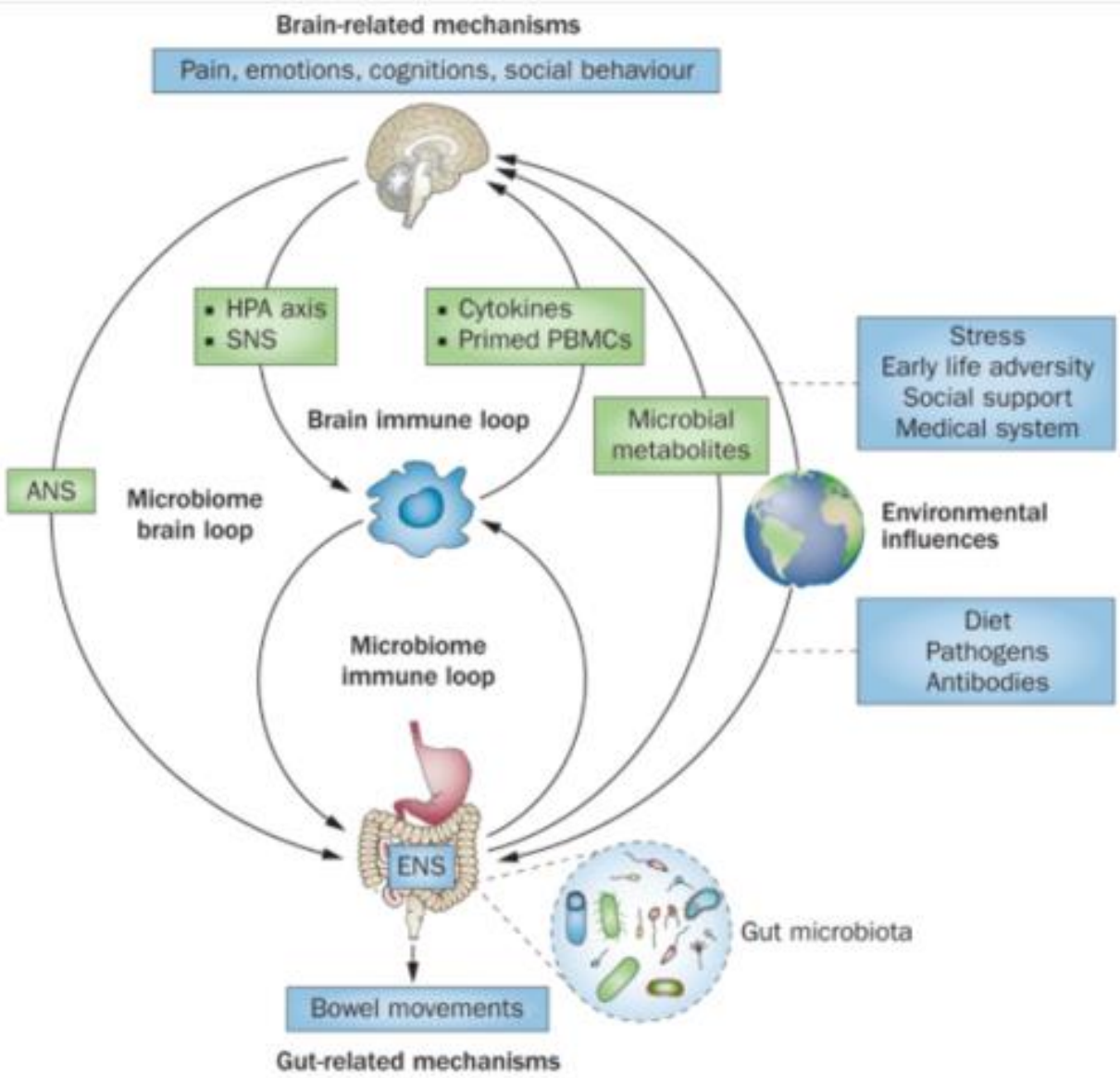
TRIGGERS

A. MICROBIOME
The microorganisms living in our gut influences stress reactivity and anxiety-like behaviour. Our microbiome is impacted by pathogens, overgrowth, antibiotics and probiotics.

B. FOOD PARTICLES
Food and mood are connected in many ways, including the pleasure and reward areas of the brain triggered by certain foods.

C. LEAKY GUT
Leaky gut may underpin the chronic low-grade inflammation observed in anxiety and depression.

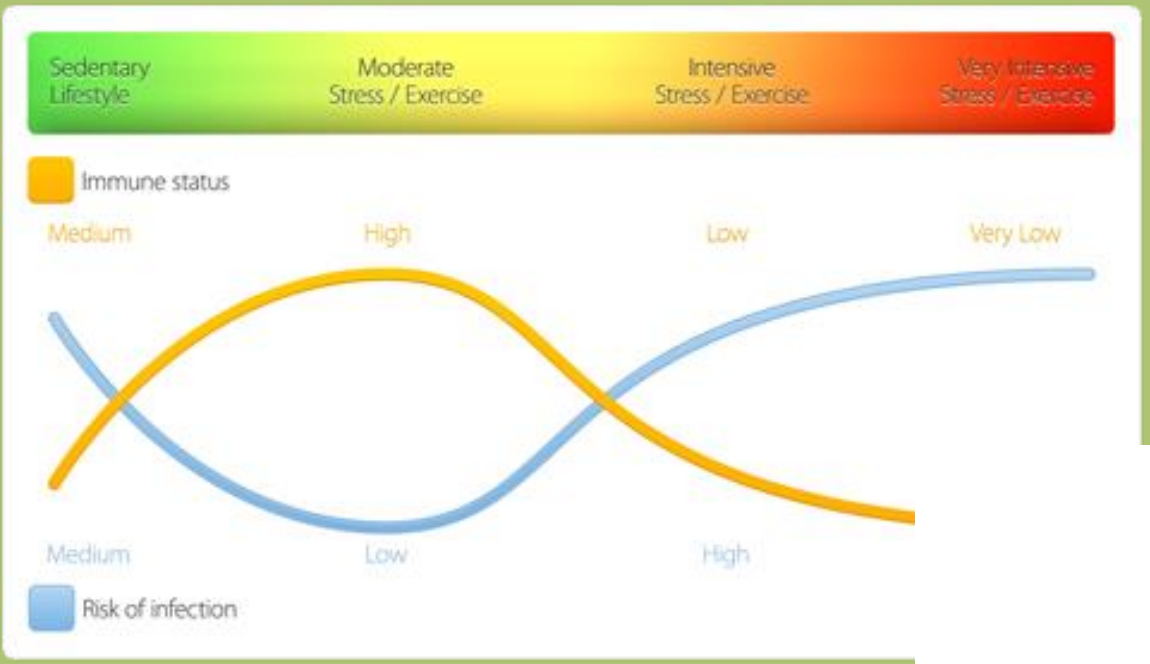
D. LOW STOMACH ACID
Low stomach acid can weaken immunity and, in turn, impact the other triggers listed above.



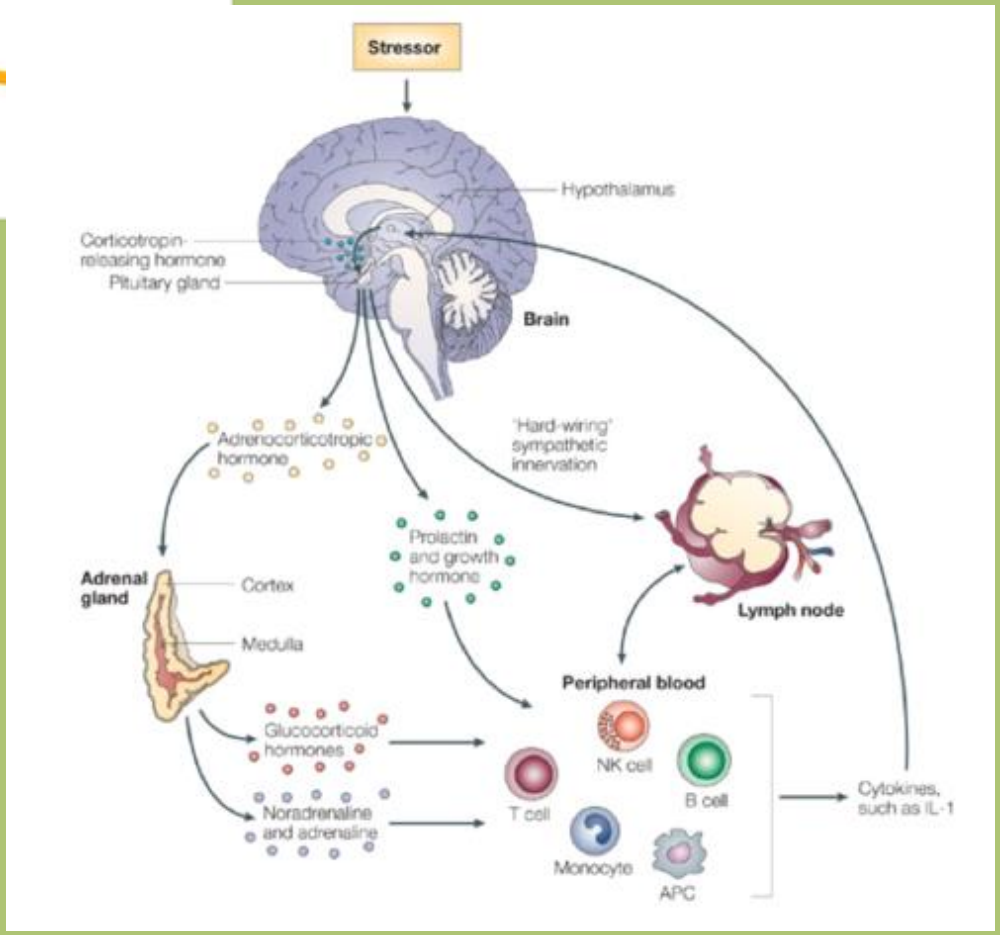
Nature Reviews | Gastroenterology & Hepatology

Schematic of the brain–gut axis, including inputs from the gut microbiota, the ENS, the immune system and the external environment. The model includes both peripheral and central components, which are in bidirectional interactions. Bottom-up influences are shown on the right side, top-down influences on the left side of the graph. Abbreviations: ENS, enteric nervous system; HPA, hypothalamic–pituitary–adrenal; PBMC, peripheral blood mononuclear cell; SNS, sympathetic nervous system. Modified with permission from Nature Publishing Group © Irwin, M.R. & Cole, S.W. *Nat. Rev. Immunol.* **11**, 625–632 (2011).[103]

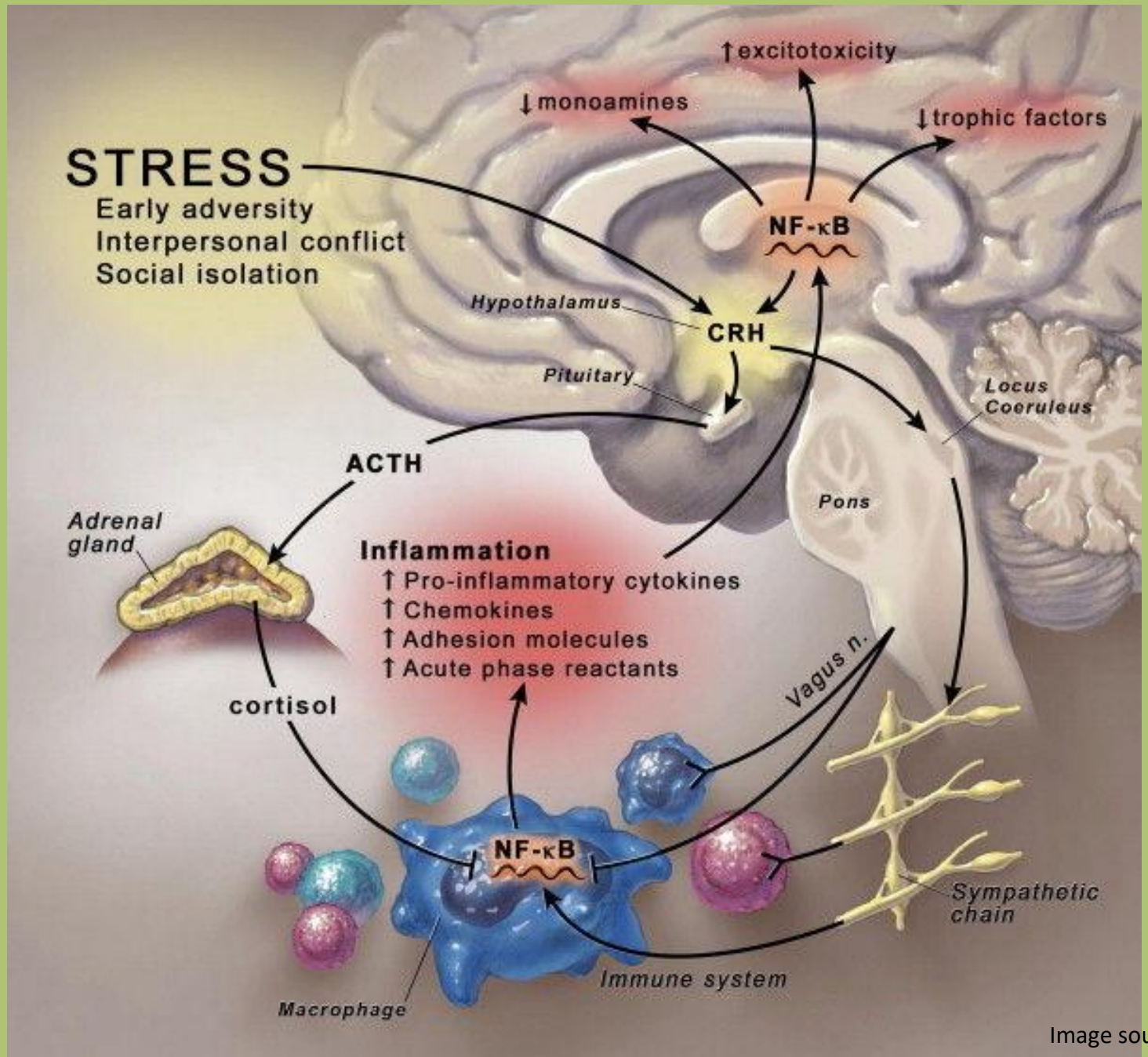
Chronic and systemic dysregulated immune function, including inflammatory conditions, e.g. cardiovascular disease,
GI inflammation, auto-immunity, atopy



Dysregulated immunity



stress and inflammation engender and perpetuate each other...



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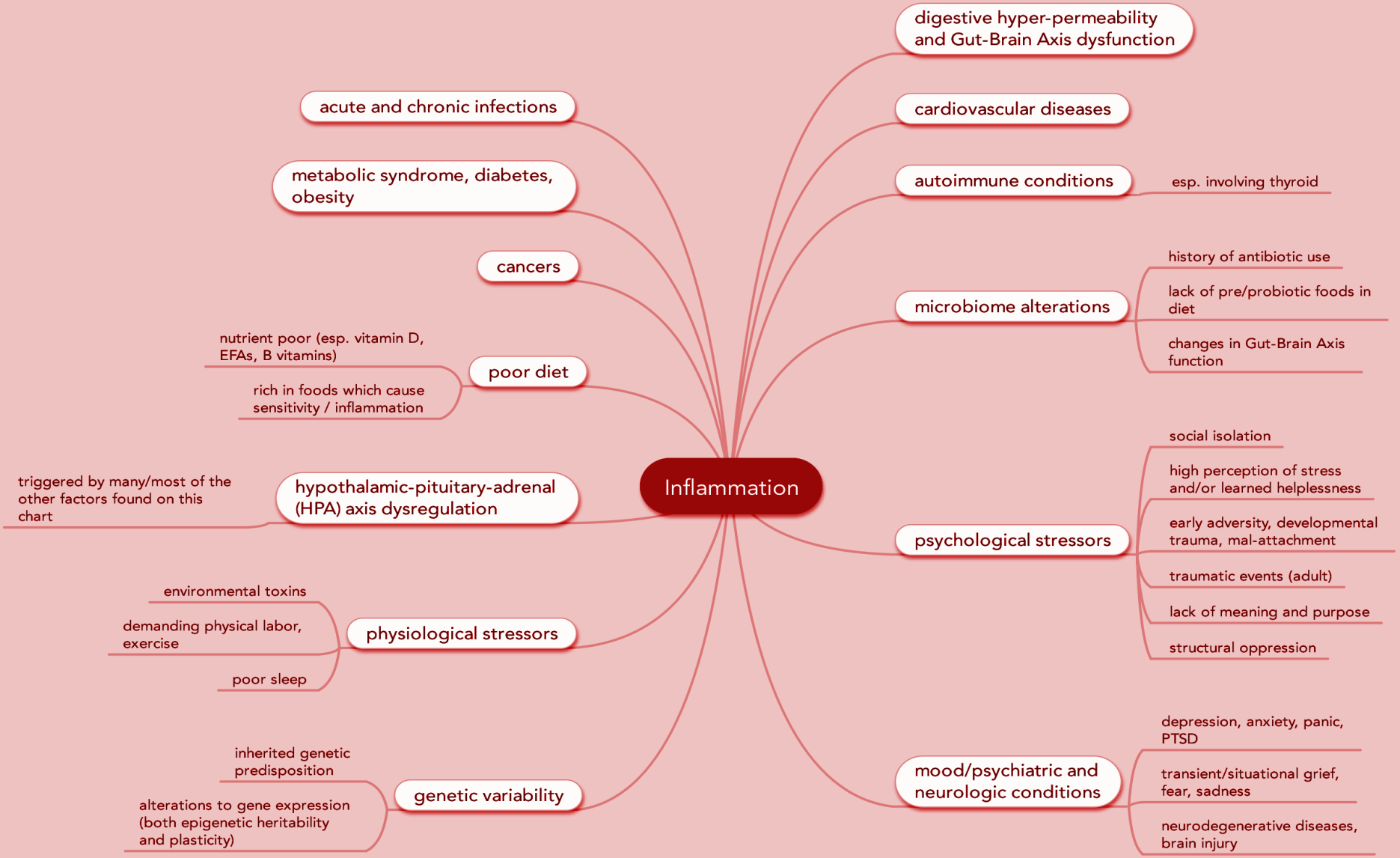
INFLAMMATION: A central mediator of health and disease, including EXPERIENCES OF STRESS, TRAUMA & RESILIENCE



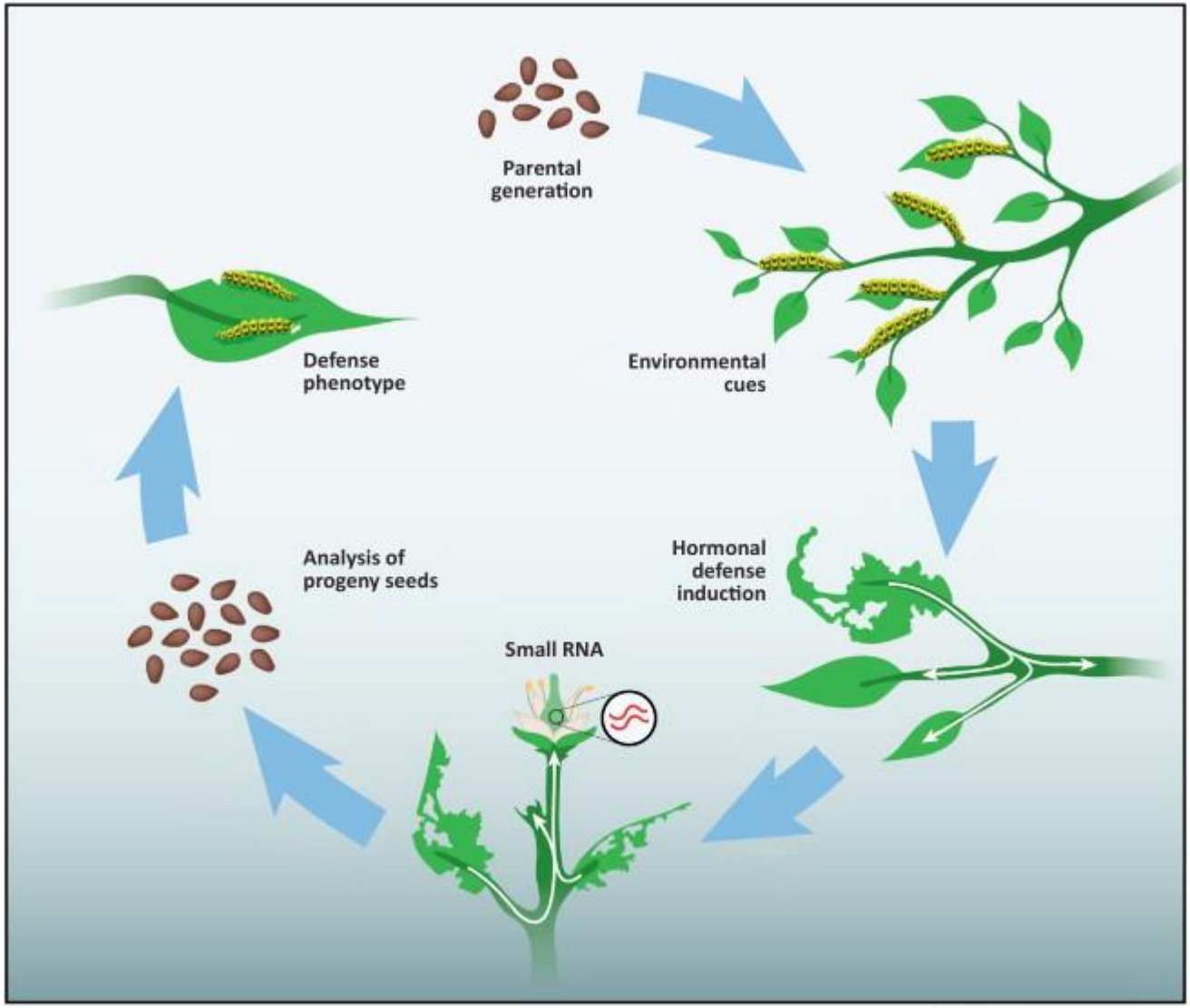
Larken Bunce, 2015

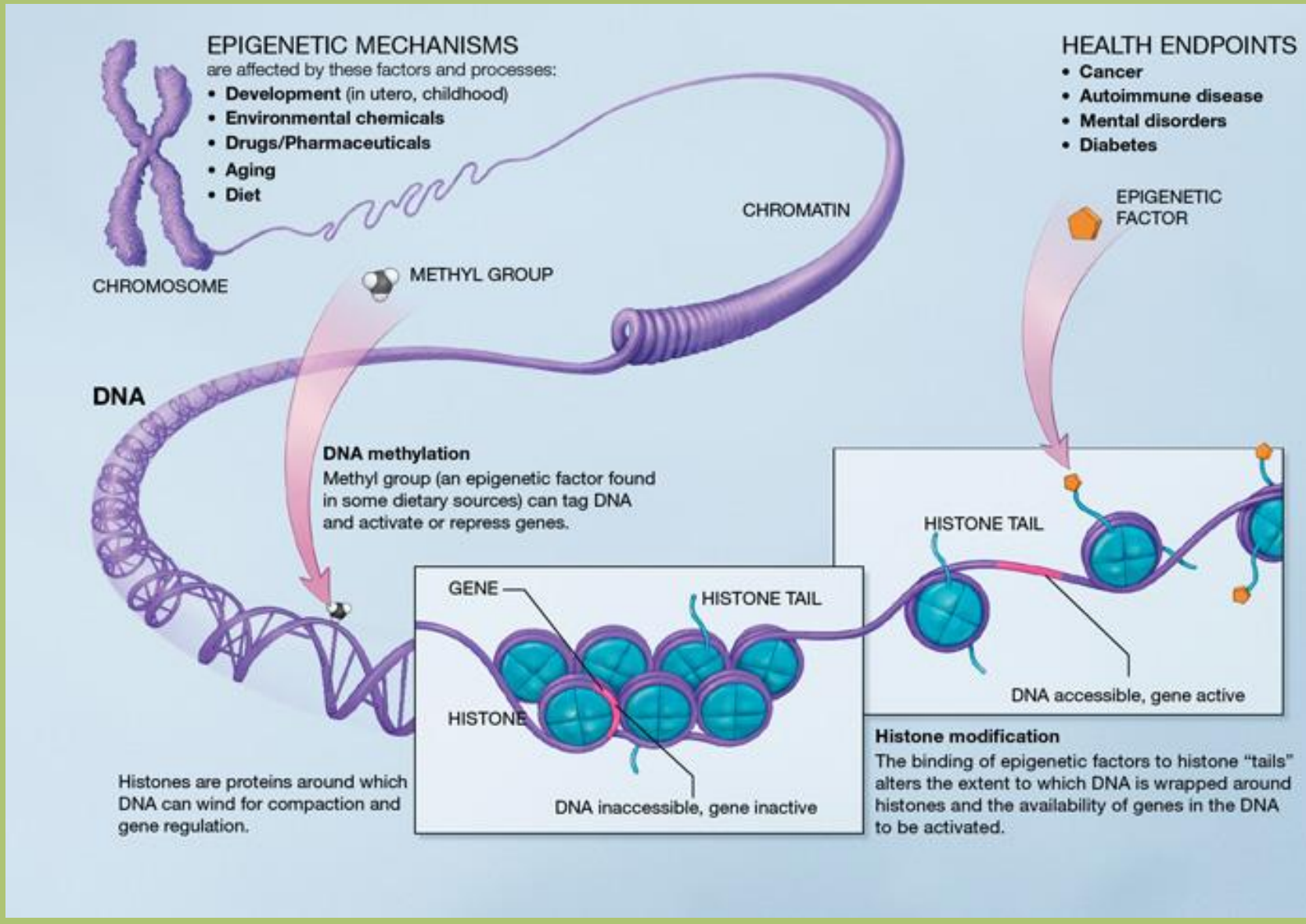
Genetic variability and gene-environment interactions may play a significant role in stress resilience.

Our epigenetic legacy is also impacted by stress.

The NIH "Roadmap Epigenomics Project" defines epigenetics as:
"both heritable changes in gene activity and expression (in the progeny of cells or of individuals) and also stable, long-term alterations in the transcriptional potential of a cell that are not necessarily heritable."

simple example of epigenetic inheritance




EPIGENETIC MECHANISMS
are affected by these factors and processes:
• Development (in utero, childhood)
• Environmental chemicals
• Drugs/Pharmaceuticals
• Aging
• Diet
HEALTH ENDPOINTS
• Cancer
• Autoimmune disease
• Mental disorders
• Diabetes
CHROMOSOME
CHROMATIN
METHYL GROUP
EPIGENETIC FACTOR
DNA
DNA methylation
Methyl group (an epigenetic factor found in some dietary sources) can tag DNA and activate or repress genes.
GENE
HISTONE TAIL
HISTONE
DNA inaccessible, gene inactive
HISTONE TAIL
DNA accessible, gene active
Histones are proteins around which DNA can wind for compaction and gene regulation.
Histone modification
The binding of epigenetic factors to histone "tails" alters the extent to which DNA is wrapped around histones and the availability of genes in the DNA to be activated.

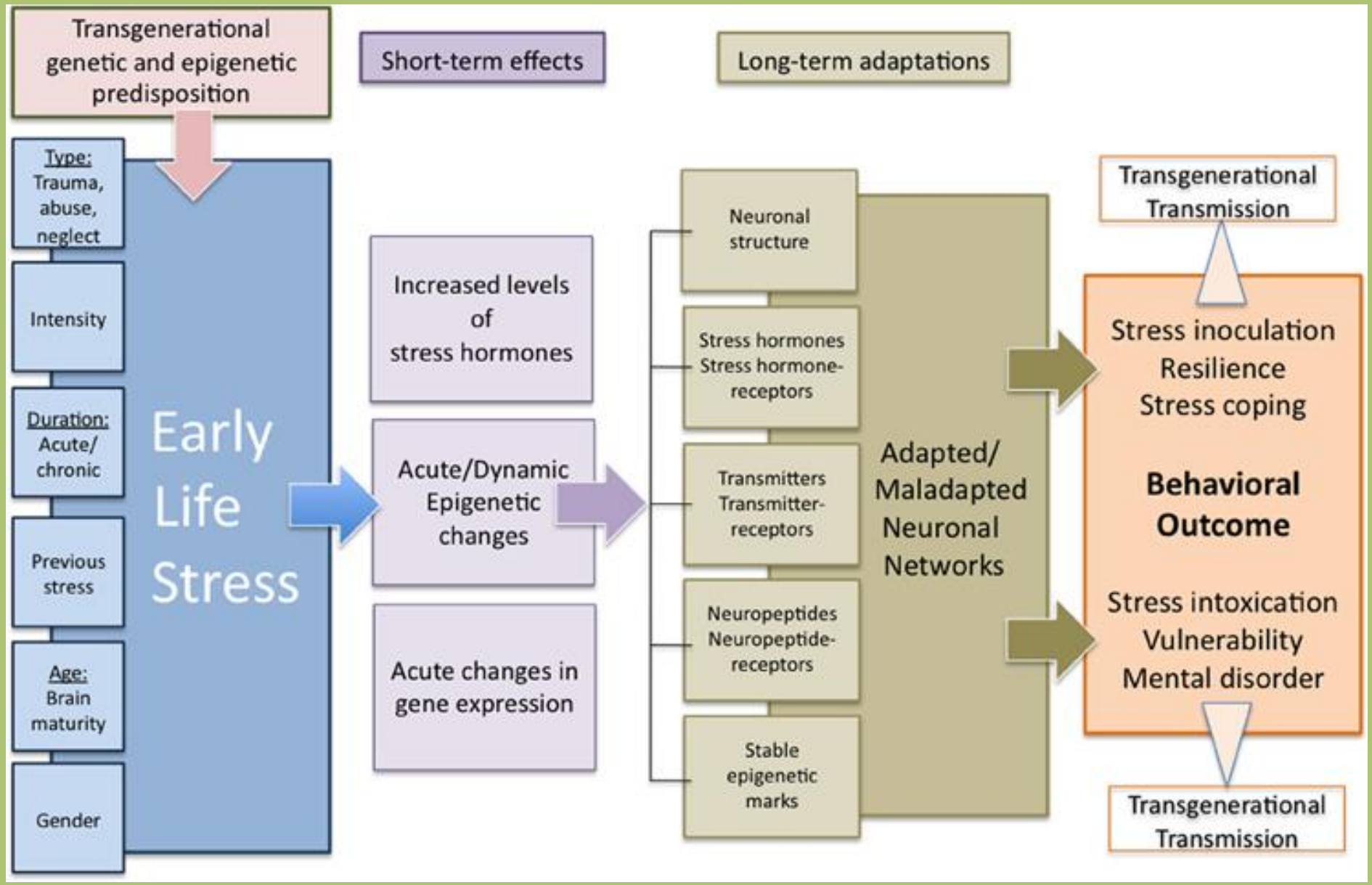
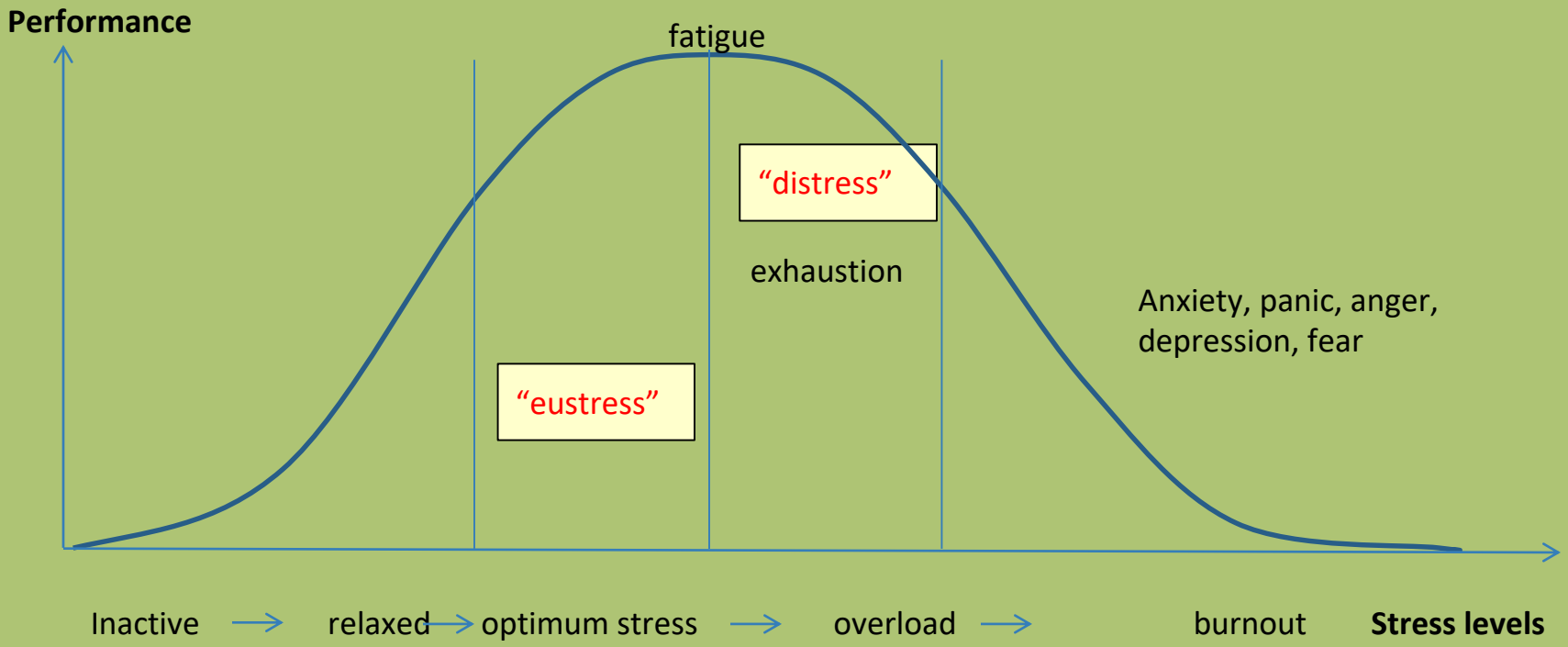


Image credit: Bock J, Rether K, Gröger N, Xie L and Braun K (2014) Perinatal programming of emotional brain circuits: an integrative view from systems to molecules. *Front. Neurosci.* **8**:11. / CC-BY 3.0

The orchid-dandelion hypothesis suggests variations in certain genes(e.g. the 5-HT transporter gene) may cause some to be more vulnerable to stressful environments, as well as more responsive to supportive environments, especially during childhood

However, in vulnerability, may also be plasticity and resilience…

General Adaptation Syndrome Meets Resilience



ALARM → RESISTANCE / ADAPTATION → EXHAUSTION

RECOVERY ←

RESILIENCE

Resilience

"In the context of allostasis, resilience denotes the ability of an organism to **respond to stressors** in the environment by means of the **appropriate engagement** and **efficient termination** of allostatic responses."

Karatsoreos and McEwen, 2011. Psychobiological allostasis: resistance, resilience and vulnerability. Trends Cogn Sci. Dec;15(12):576-84.

"The brain regulates responses that allow for adaptation to challenges in the environment. **The capacity of the brain and body to withstand challenges to stability can be considered as 'resilience'.** While adverse childhood experiences can have long-term negative consequences, under the right circumstances, **the brain can re-enter plastic states, and negative outcomes may be mitigated, even later in life."**

Karatsoreos IN[1], McEwen BS. (2013). Annual Research Review: The neurobiology and physiology of resilience and adaptation across the life course. J Child Psychol Psychiatry. Apr;54(4):337-47.

How do we build resilience?

Key Herbal Actions for Stress, Trauma and Resilience (based on causative factors as we understand them):

- **adaptogen** (regulates HPA axis and functional recovery)
- **nervine** (regulates NS activity, trophorestorative)
- **immunomodulant**, esp. anti-inflammatory
- **digestive** support (e.g bitter, aromatic, vulnerary)
- **prebiotic** and **probiotic** (aka "psychobiotics")
- **circulatory stimulant** and **lymphatic**
- mineral-rich herbs, **nutrient-dense** "special foods" (for specific vitamins, minerals, fats, etc.)

How to choose among plants with the same actions?

Differentiation of people and plants involves moving from

chaos → **orderly complexity via pattern recognition**

Human patterns can be physiological, behavioral, psychological

Human patterns can be physiological, behavioral, psychological

Traditionally, all of the above have been synthesized into observable, qualitative patterns
(e.g. **constitution** or tissue state).
These patterns are usually associated with qualities in the natural environment, often called "**energetics**" in traditional medical systems.

Irritable/Overactive	**Hot**
Stagnant	**Damp**
Atrophic/Underactive	**Dry**
Unresponsive/Decaying	**Cold**
Tense	**Hot or Cold**
Lax/Permeable	**Damp or Dry**

*These aren't absolute or complete correlations ~ nature is nuanced and complex.

Author photo, Lost Gardens of Heligan, England

Four Basic Patterns of Adaptation/Maladaptation:

Hot/Dry/Overactive/Tense

Cool/Moist/Lax/Stagnant

Warm/Moist/Lax/"Permeable"

Cold/Dry/Depleted/Tense

Personality and Stress Response: Type A, B, C and D

types A-C characterized by Freidman and Rosenman, 1974
D characterized by Denollet, 1990s

Type A: competitive, desires to be recognized, longs for development and advancement, wants to achieve **goals** and therefore, tends to rush in order to finish tasks; typically **active** and alert, both mentally and physically

Type B: apparent **lack** of motivation, drive, **urgency**, competitive spirit, ambition or desire; **calm**, **relaxed** and non-competitive

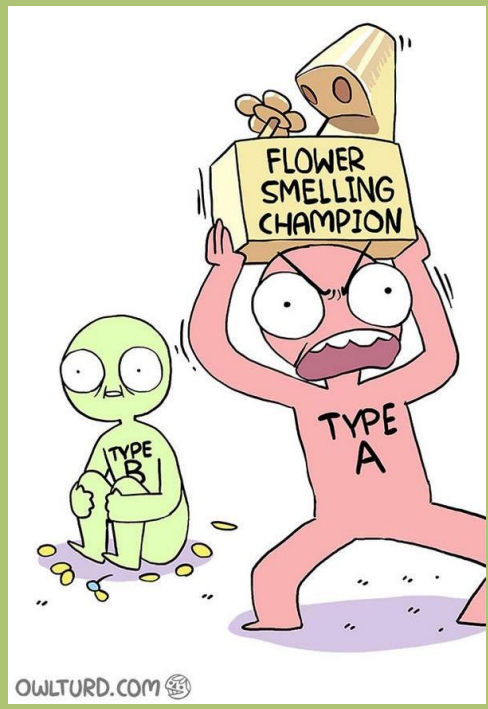
Type C: a personality which involves **passion** for work and desire to achieve goals (typical of Type A), but when faced with **stress**, the person becomes **apathetic** (typical of Type B). Seems less likely to be distressed than A, but **may also be less resilient** in face of challenge

Type D (for "distressed"): "behavior characterized by the joint tendency to **experience negative emotions and to inhibit these emotions,** while avoiding social contacts with others" (Sher, 2005); experience increased **anxiety**, anger, stress and **loneliness**


WOAH WOAH WOAH, SLOW DOWN, FRIEND.
TYPE B
TYPE A


DONT'CHA KNOW THAT SOMETIMES YOU HAVE TO STOP AND SMELL THE FLOWERS ?
TYPE B


TYPE


FLOWER SMELLING CHAMPION
TYPE A
TYPE B
OWLTURD.COM

Basic Patterns of Distress/Expression of Allostatic Load

Psychology meets Traditional Energetics

Working Model

Hot/Overactive/Excessive/Tense

Type A (active/aggravated?)

Cool/Moist/Relaxed/Stagnant

Type B (boggy/blasé?)

Warm/Moist/Lax

Type C (changeable/combo?)

A+B characteristics suggest tendency towards heat + dampness

Cold/Dry/Depleted/Tense

Type D (distressed/depleted?)

We can group plants in the same way we look at people:

First, the broad categories of action and adaptation pattern:

e.g. an adaptogen for a hot, tense, irritable presentation

Selected Nervines and Adaptogens for Stress, Trauma and Resilience Grouped by Adaptation Pattern

Hot/Excessive/Dry/Tense	Cool/Moist/Relaxed/Stagnant
Type A (active/aggravated?)	**Type B (boggy/blasé?)**
Chamomile	Mugwort
Mimosa	Rosemary
Hawthorn	Lavender
Gotu kola	Damiana
Kava**	Valerian
Vervain	Lemon balm^
Linden	Turmeric
Motherwort	St John's wort*
Hops	Holy Basil
Baikal skullcap	Rhodiola
Raw Rehmannia	Schisandra*
Licorice^^	
Eleuthero	

** use w/care with some medications, **avoid in liver damage, ^avoid high dose in hypothyroidism, ^^avoid high dose in hypertension*

Combo Pattern ~ Changeable (Warm/Moist?)

Type C (combo?)
Ginkgo
Gotu kola
Lemon balm^
Lavender
Rose
Chamomile
Mimosa
Anise hyssop
Turmeric*
Vervain
Motherwort
Baikal skullcap
Reishi
Dan shen
Rhodiola

Don't forget your microbiome:

Prebiotics:
Dandelion (A, C)
Elecampane (B)
Burdock (D)
Marshmallow (A, D)

Probiotics:
Saurkraut, Kimchi (B)
Miso (D, A)
Yogurt (A)

Cold/Dry/Depleted/Tense (distressed/depleted?)

Gotu kola
Rose
Lavender
Oat
Skullcap
Passionflower
Kava**
Holy Basil
Ashwagandha
Shatavari
Prepared Rehmannia
Licorice^^
Maca
Codonopsis
Astragalus
Asian ginseng

**use w/care with some medications, **avoid in liver damage. ^avoid high dose in hypothyroidism; ^^avoid high dose in hypertension*

After the broad adaptation pattern,
get to specifics

What makes this person unique?

the particular experiences, perspectives and narrative of the individual;
nuances of history and present circumstances

What do they believe about cause or history?
What do they believe is necessary for change?
What kind of support or ally resonates most?
What plants do they love (or avoid)?
Hunches? Affinities?
Unique details of pathology
(e.g. specific hormone profile that a plant might target)

Then,
what makes each plant unique?

To differentiate among plants with the same actions and "energetic" patterns, we draw on:

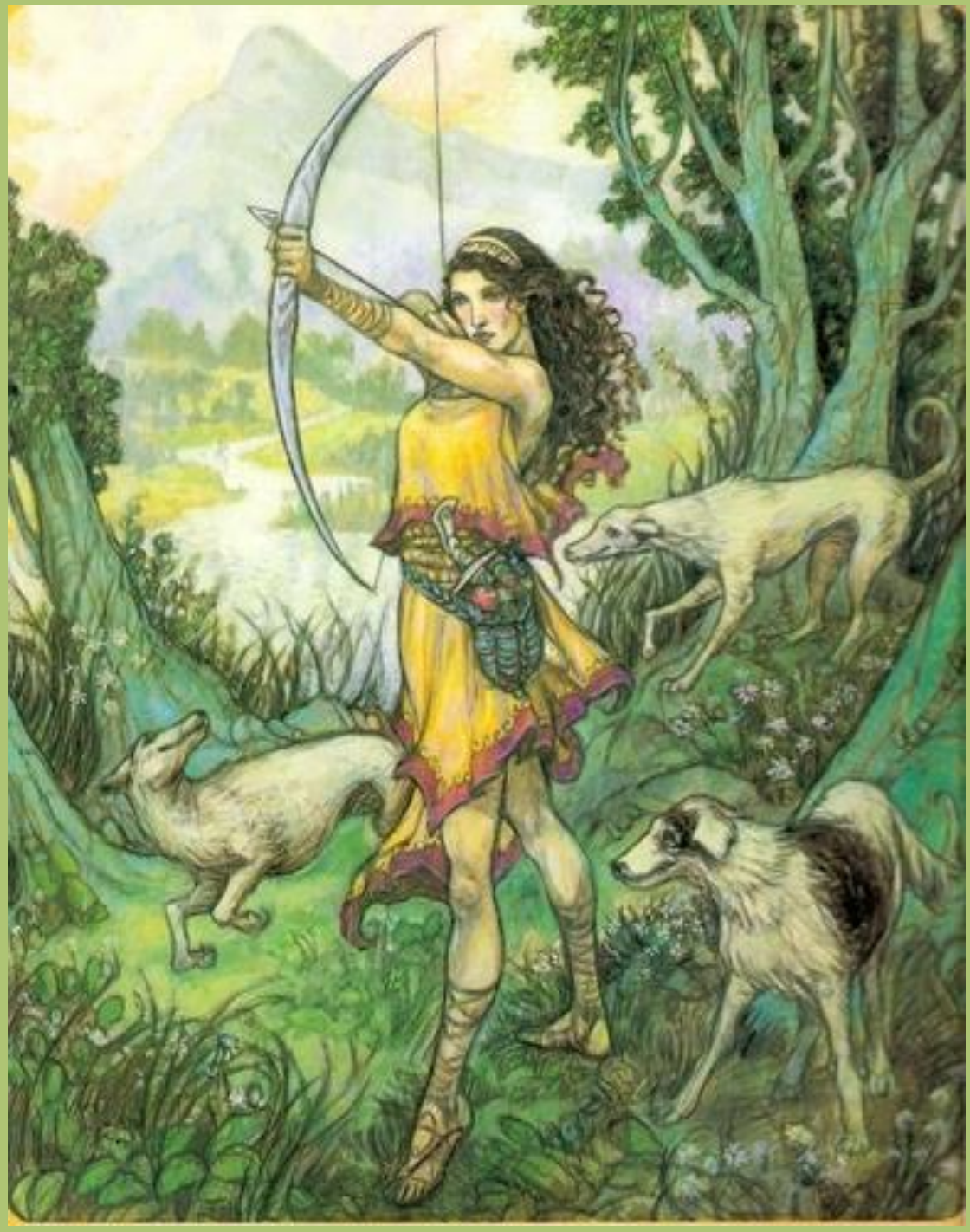
- personal and clinical **experience** of self and peers
- **specific indications** and unique energetic qualities (from historical use, empirical evidence)
- **pharmacologic activity and/or clinical research**
- **secondary actions and organ tropisms of plant**
- **mytho-poetics and meaning-making** (shared cultural or personal narratives, natural history and habits of plant, client affinity or associations)

The stories of plants and the stories of people often help us make meaning with our clients…

Meaning-making is actually a researched resilience-building strategy!

Artemis,
namesake of the artemisias
(e.g. mugwort)…

What is her story?



Let's take a virtual resilience-building herb walk…

American Skullcap *(Scutellaria lateriflora)*
excellent all-purpose, relaxing nervine for somaticized tension and stress, anxiety

Gotu kola *(Centella asiatica)*

anti-inflammatory, vulnerary, circulatory stimulant, anxiolytic, nootropic

Rose (*Rosa rugosa)*

a euphoriant nervine, both calming and uplifting;
anti-inflammatory

Motherwort (*Leonurus cardiaca)*

Relaxing nervine, negative chronotrope, bitter, circulatory stimulant

Blue vervain *(Verbena hastata)*

relaxing and stimulating nervine, as needed;
excellent digestive bitter

Baikal skullcap
(Scutellaria baicalensis)
powerful anti-inflammatory, especially for cardiovascular and liver concerns; anxiolytic

Lemon Balm *(Melissa officinalis)*

nervine (relaxing and uplifting), digestive, antispasmodic, antiviral

Anise hyssop (*Agastache foeniculum)*

digestive antispasmodic,

relaxing nervine

Bee balm *(Monarda didyma)*

strong aromatic digestive, amphoteric nervine

St. John's Wort *(Hypericum perforatum)*

nervine (esp. stimulating, but possibly relaxing, as well), antiviral (esp. HSV), vulnerary, neural analgesic

Turmeric (*Curcuma longa*)

anti-inflammatory, aromatic bitter, vulnerary, "anti-depressant"

Milky oat (*Avena sativa)*
safe, nourishing nerve "tonic", useful in most all mood disorders, chronic stress and trauma

Ashwagandha root
(*Withania somnifera*)
excellent building adaptogen with strong GABAnergic activity, anti-inflammatory

Rehmannia glutinosa

adaptogen, "blood builder", anti-inflammatory

Codonopsis pillosula

gentle adaptogen, digestive tonic, immunomodulant

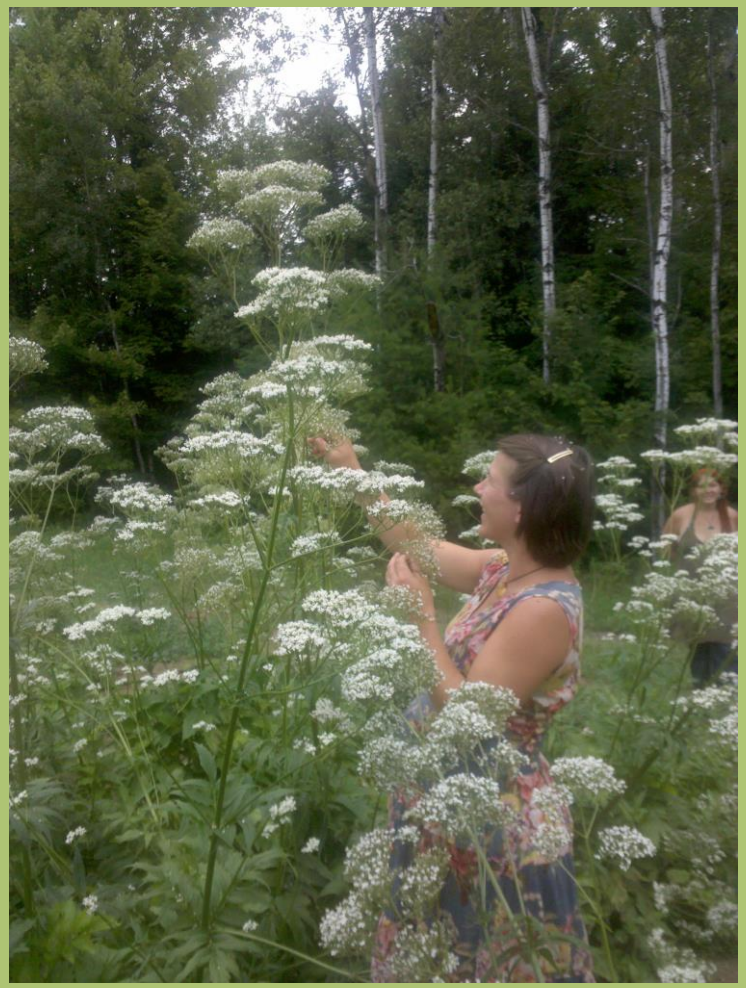
Burdock (*Arctium lappa)*
prebiotic, alterative, gentle bitter

In addition to herbs, lifestyle and diet are paramount:

- constitutionally appropriate, nutrient-dense, anti-inflammatory diet (rainbow), emphasizing blood sugar regulation, protein, EFAs

- Resilience-building and stress management tools, again appropriate to constitution/personality type

  e.g: nature, movement, spiritual practice/inspiration, human connection, play, sleep, talk therapy, biofeedback, **somatic therapies**



Accessing the Subcortical Brain with Somatic therapies

Traditional therapies approach trauma resolution via the cortical brain systems (*language, conscious thought, explicit memory)*

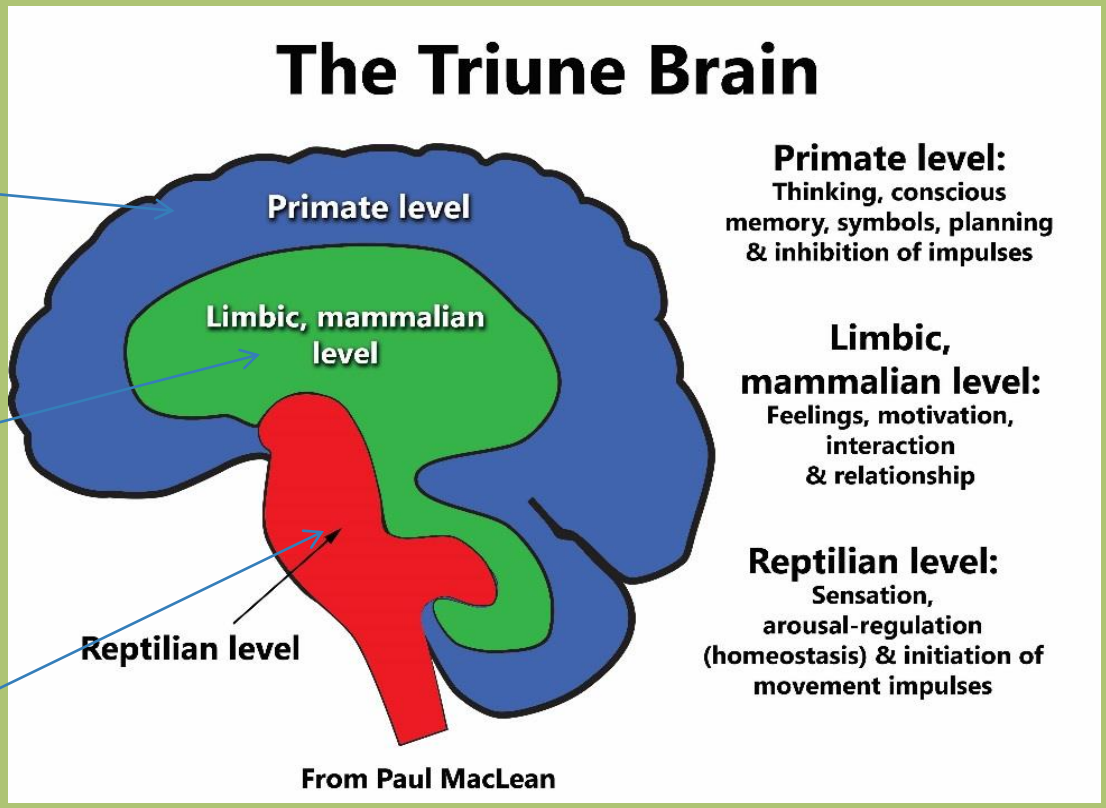
Somatic therapies recruit the subcortical brain systems (*body sensations, unconscious dynamics, implicit memory)* to support safety and re-regulation in the nervous system.

Neocortex

"*Thinking*"
Cognition, Language, Speech, Social and Regulatory Centers

Limbic/Mid-Brain

(Amygdala)
"*Feeling*"
Memory, Emotions and Alarm Center



The Brainstem ("Reptilian Brain")

"*Sensing*"
Survival and Instinctual Centers (*fight, flight, freeze*)
Digestion, Reproduction, Circulation, Breathing, Sleeping

Somatic Therapies Broaden Traditional Approaches to Trauma Treatment

Cognitive Approaches:

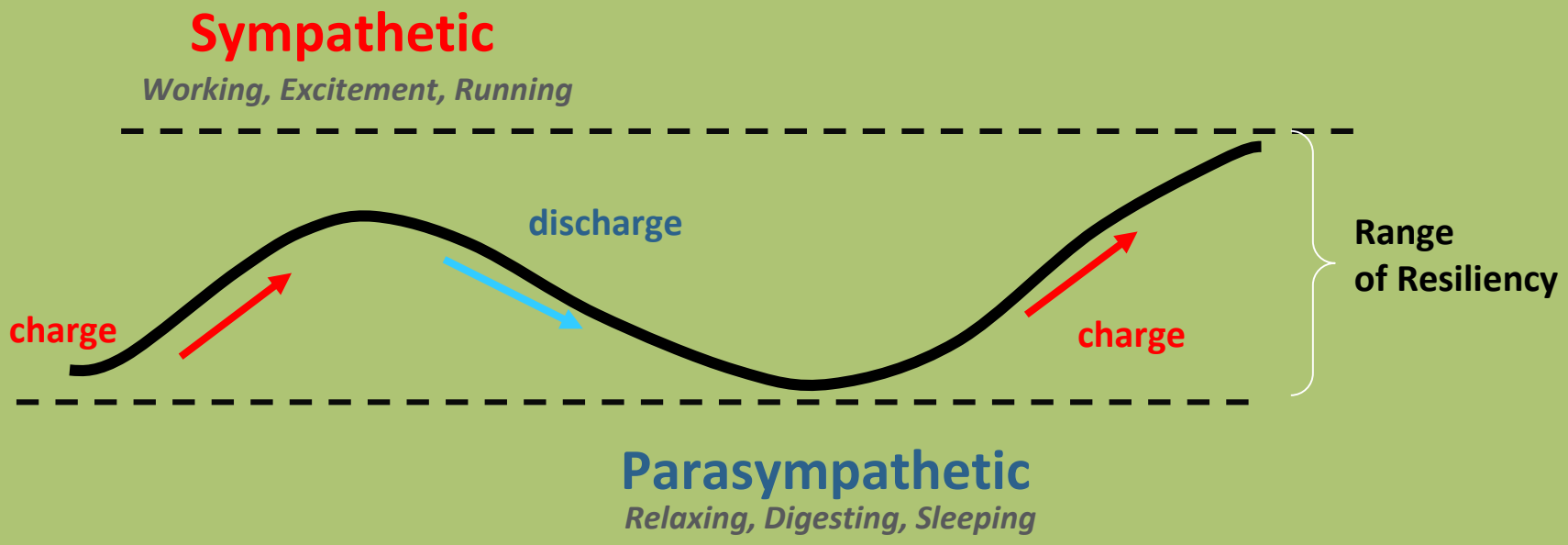
- Focus on how thoughts influence emotions and behaviors **("top-down")**
- Help identify distorted cognitive beliefs and maladaptive behaviors
- Target reduction of symptoms
- Help create more adaptive self-beliefs and behaviors
- ***Rely on insight and behavior change***

Somatic Approaches:

- Focus on how the body influences thoughts, emotions, and behaviors **("bottom-up")**
- Help people become aware of body sensations and procedural memories
- Target underlying dysregulation in the nervous system that causes/maintains symptoms
- Help create a greater control over debilitating symptoms and unconscious dynamics
- ***Rely on body awareness and physiological regulation***

We're working on building the range of resilience and capacity for self-regulation

Activation – Deactivation Cycles



Slide text courtesy of Somatic Experiencing Trauma Institute / TraumaHealing.org

WINDOW OF TOLERANCE (POLYVAGAL THEORY)

STATE OF HYPERAROUSAL

Sympathetic System Activated: Acceleration of autonomic nervous system response (increased heart rate, blood pressure, blood flow to large muscles, etc.) -HEIGHTENED SENSATIONS
"Flight/Fight" Response Activated: state of hyper-vigilance, anxiety, perception of challenge or danger
Disorganized Cognitive Processing: thinking is rigid or chaotic, poor judgment, racing thoughts, obsessive thoughts & behaviors, Intrusive emotions/images, emotional reactivity, dread
No new learning can take place

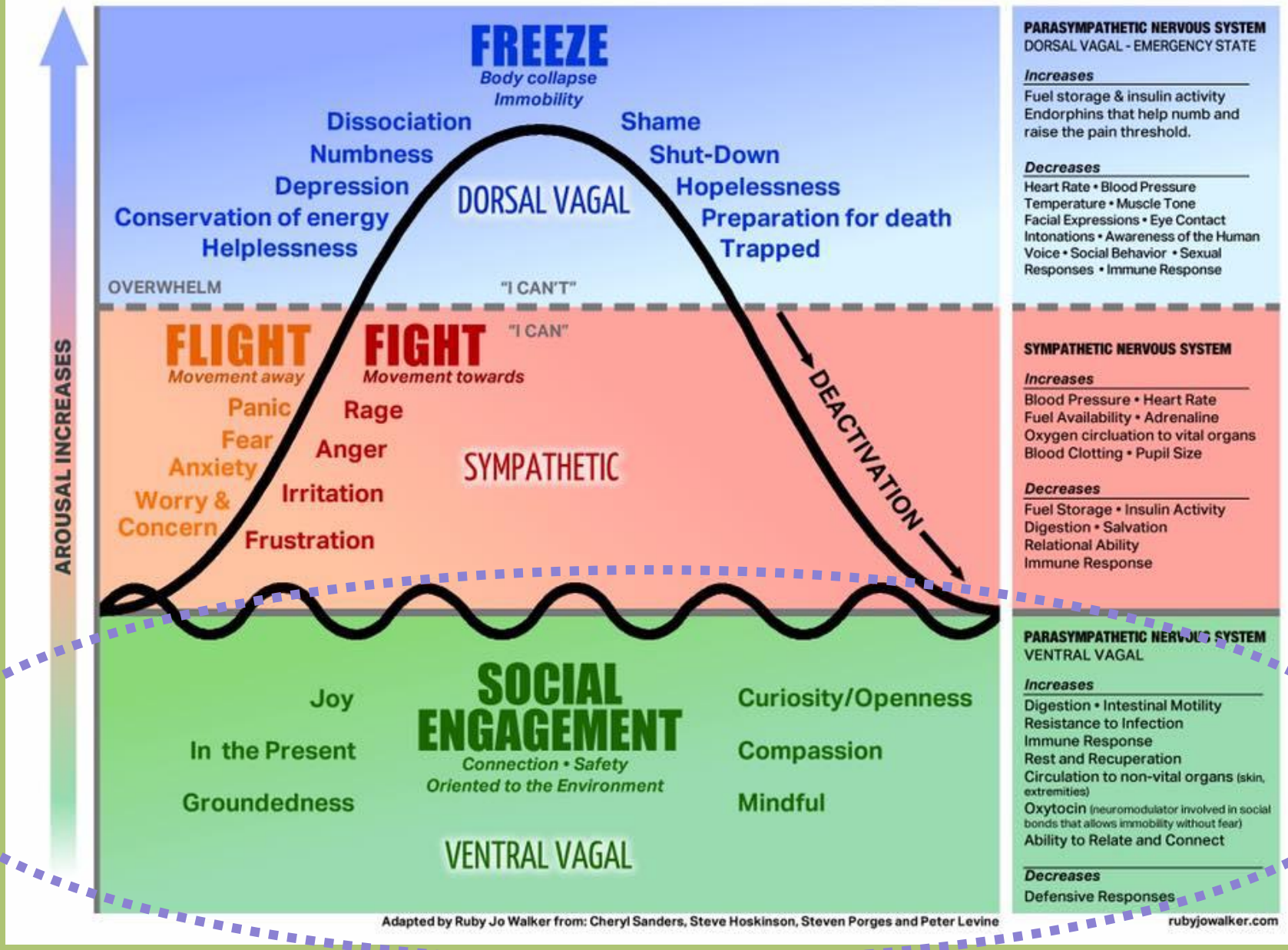
OPTIMAL ZONE OF AROUSAL-WINDOW OF TOLERANCE

Parasympathetic System Stimulated (Ventral Vagal Nerve): Deceleration of autonomic nervous system response, body regulated, State where emotions tolerated and information integrated –NORMALIZED SENSATIONS
Full Activation of Pre-Frontal Cortex: greater access to intuition and insight, calm, alert, relaxed, aware, coherent
Social Engagement System Activated: Self-soothing/emotion regulation system activated, fear modulated
Experience Full Range of Emotions: (joy, grief, anger, etc.) with a sense of control and awareness of options.
New learning can take place

STATE OF HYPOAROUSAL

Parasympathetic System Activated (Dorsal Vagal Nerve): Extreme deceleration of autonomic nervous system response (decreased heart rate, blood flow to extremities, etc.) –ABSENCE OF SENSATIONS
"**Freeze" Response Activated**: slowed or disabled thinking process, dissociation of awareness, isolation/withdrawal, depression, numb, hopelessness, shut-down response, disabled defensive responses
No new learning can take place

adapted from Steven Porges


AROUSAL INCREASES
FREEZE
Body collapse
Immobility
Dissociation
Numbness
Depression
Conservation of energy
Helplessness
DORSAL VAGAL
Shame
Shut-Down
Hopelessness
Preparation for death
Trapped
OVERWHELM
"I CAN'T"
FLIGHT
Movement away
Panic
Fear
Anxiety
Worry & Concern
FIGHT
Movement towards
Rage
Anger
Irritation
Frustration
"I CAN"
SYMPATHETIC
DEACTIVATION
SOCIAL ENGAGEMENT
Connection • Safety
Oriented to the Environment
Joy
In the Present
Groundedness
Curiosity/Openness
Compassion
Mindful
VENTRAL VAGAL
PARASYMPATHETIC NERVOUS SYSTEM
DORSAL VAGAL - EMERGENCY STATE
Increases
Fuel storage & insulin activity
Endorphins that help numb and raise the pain threshold.
Decreases
Heart Rate • Blood Pressure
Temperature • Muscle Tone
Facial Expressions • Eye Contact
Intonations • Awareness of the Human Voice • Social Behavior • Sexual Responses • Immune Response
SYMPATHETIC NERVOUS SYSTEM
Increases
Blood Pressure • Heart Rate
Fuel Availability • Adrenaline
Oxygen circluation to vital organs
Blood Clotting • Pupil Size
Decreases
Fuel Storage • Insulin Activity
Digestion • Salvation
Relational Ability
Immune Response
PARASYMPATHETIC NERVOUS SYSTEM
VENTRAL VAGAL
Increases
Digestion • Intestinal Motility
Resistance to Infection
Immune Response
Rest and Recuperation
Circulation to non-vital organs (skin, extremities)
Oxytocin (neuromodulator involved in social bonds that allows immobility without fear)
Ability to Relate and Connect
Decreases
Defensive Responses
Adapted by Ruby Jo Walker from: Cheryl Sanders, Steve Hoskinson, Steven Porges and Peter Levine
rubyjowalker.com

Basic Skills used in Somatic Experiencing:

- **Orientation**
- **Felt Sense**
- **Tracking**
- **Resourcing**

Orientation

employs e*xteroception:*

receiving direct information from the external environment

Detects and informs us of the external environment via:

Sight

Hearing

Smell

Taste

Touch

Slide text used and altered with permission from Somatic Experiencing Trauma Institute / TraumaHealing.org

Felt Sense

employs *interoception:*

Becoming aware of the internal states of one's body

Detects and informs us of internal regulation responses, such as:

- Respiration
- Heart rate
- Body temperature
- Balance
- Hunger/Thirst
- Need for digestive elimination
- Emotions
- Pleasure/Pain

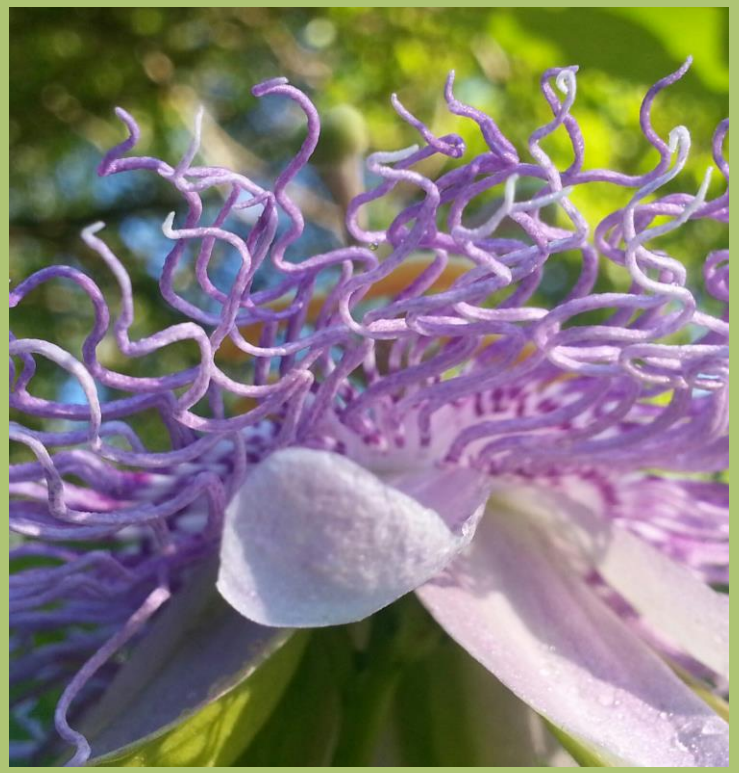


Image: Heidi Hanson, new-synapse.com

Felt Sense: The Language of Sensation

Tracking

Following the felt sensations in the body through focused inward attention

Consciously becoming aware of the body and the information it provides about our “true” experience of safety, alarm, overwhelm, etc.

Resourcing

Resources are anchors that help stabilize the nervous system

External

- **People, places or activities** (in reality or in imagination) that are comforting, calming, settling
  - *Safe people, pets, places in **nature**, home, special rooms, music, exercise, travel, vacation, spiritual community*

- **The therapist's/herbalist's engagement**: capacity to track well, to be in resonance/attunement, to create a safe space

Resourcing

Internal

- When client experiences settling, less constriction, more **breath**, more **presence**, **pleasure**

- **Positive sensations** in the body:
  - *relaxed, more spacious, less tense, grounded, stable, connected, have a freer range of movement, tingling, move alive*

Resiliency Building "Help Now!" Activities

from Community Resiliency Model (CRM)

Ten strategies to get into the Resilient Zone when you need *help now!*
because you're either too amped up (high zone) or too checked out (low zone)

The goal of doing these activities is to signal safety to the Survival Brain. The Survival Brain understands the language of sensation. That's why in some activities it's important to notice, or "track," your body sensations. Most of the time, 20 seconds of holding your attention on a positive or neutral sensation will reset your body to be in the Resilient Zone. The Survival Brain also understands "orienting", or really looking around the environment and coming to feel inside yourself that it's safe.

1. Walk

Feel the sensations in your body as it moves. Feel your feet pressing into the ground.

2. Push against a wall

Focus on the sensations of your muscles pushing.

3. Look for colors / shapes

Option 1: Name 6 or more colors you see.
Option 2: Name 6 or more shapes you see.
(Hint: You may repeat the same one if you see it in two places.)

4. Count backwards

Count backwards from 10 or 20 while walking around.

5. Drink a beverage

Feel the sensations in your mouth, throat and stomach.

6. Touch objects

What do the textures feel like?

7. Temperature

Notice the temperatures on different parts of your body.

8. Listen for sounds

Name all the sounds you can hear around you.

9. Notice

Look at everything around you and notice which objects catch your attention; name them.

10. Open Eyes

If you have a tendency to close your eyes, open them gently; keep them relaxed and soft.

Nature Time as Somatic Therapy

Reduces neuroendocrine hyperactivation, regulates allostatic mechanisms, including HRV

Offers orienting and sensing opportunities

Can be a resource for later use, even when not in natural environment

"Forest bathing" (*Shinrin-yoku*) anyone?

Plants can be Somatic Resources

External

Herb shapes, colors, scents, tastes, textures that are pleasurable can be experienced in the moment or brought to mind later

Internal

Ingesting, inhaling, sitting with plants can engender noticeable shifts in internal sensation which can then be anchored as a resource to return to, even without the plant's presence

Just looking at this photograph can be a resource…

Stress-reducing effects of real and artificial nature in a hospital waiting room.
Beukeboom CJ[1], Langeveld D, Tanja-Dijkstra K. (2012). J Altern Complement Med. Apr;18(4):329-33.

Exercises for Self Regulation

Giving people tools to settle themselves during arousal is the first step in healing from and preventing further damage from stress and trauma.

Most, if not all, mind-body practices guide us towards a predominantly parasympathetic state where we can be **calm, but curious, and tolerant to new stimuli.**

Exercises don't need to be complicated or require special equipment. We can harness our capacity for presence and pleasure, however small, in each moment.

Orienting and Felt Sense Exercise

1. Using your senses (sight, hearing, touch, etc.), identify 3 things you're drawn to in your environment.

2. Sensing internally, identify 1 sensation you're aware of from within your body.

3. Again, using your senses identify 3 things you're drawn to in your environment.

4. Notice what's happening now: *How do you feel overall?*

Orienting and Felt Sense Exercise Application

This external orientation “sandwich” is especially useful when a client seems to spiral into activation when “going inside” too much. It is a way of **easing into the body (titrating) without overwhelming the nervous system.**

Orienting to the environment with eyes open--while being curious about what’s pleasurable--is a gentle place to begin and a safe place to come back to.

Sometimes just orienting to a space and identifying and focusing on what’s pleasurable is enough.

Resource and Felt Sense Exercise

1. Think of an experience or person that makes you happy, brings a smile to your face.

2. Identify one sensation as you bring this resource to mind.

3. What is the size, shape, texture, movements, or even color associated with this sensation?

4. As you become aware of these qualities inside, notice what's happening now: *How do you feel overall?*

Resource and Felt Sense Exercise Application

This is a useful tool for a person in need of support who doesn't always have access to people or places that feel safe or friendly.

Anchoring the symbol or story and attendant positive emotions (higher and mid brain) down into the body (brain stem) makes these resources more real and ultimately more impactful.

When a person isn't comfortable in their body or frequently dissociates, this is a way to begin to bring "goodness" (as Peter Levine calls it) back to the body.

Anemone (*Anemone pulsatilla)*
an excellent anxiolytic in times of panic and dissociation from the body
*(*low-dose botanical: 1-5 drops tincture diluted in water/dose)*

Social Connection

Engaging in community in a way that is meaningful to us is one of the most reliable paths to resilience.

Positive social connections and a sense of purpose or meaning:

- increase vagal tone, positive emotions, and physical health (Kok, 2010)

- increase expression of a suite of genes associated with reduced inflammation and increased immune resistance (Cole, 2015)

Plants & Community – Embodying Resilience

For Further Exploration of Psychoneurobiology, Trauma, Somatics

Trauma Healing, Peter Levine
Waking the Tiger and *In an Unspoken Voice*, Peter Levine
The Polyvagal Theory, Steven Porges
The Body Keeps the Score and *Tramatic Stress,* Bessel van der Kolk
Why Zebras Don't Get Ulcers, Robert Sapolsky
Biology of Belief, Bruce Lipton
The Neurobiology of We and *The Developing Mind,* Daniel Siegel
The Body Bears the Burden and *The Trauma Spectrum,* Robert Scaer
Healing Developmental Trauma, Laurence Heller and Aline Lapierre
Crash Course, Diane Poole Heller and Laurence Heller
Beyond the Trauma Vortex, Gina Ross

David Baldwin's Trauma Information Pages: http://www.trauma-pages.com/
Including a very thorough reading list: http://www.trauma-pages.com/bookstore.php

MacArthur Research Network on SocioEconomic Status and Health collection of resources re: allostatic load:
http://www.macses.ucsf.edu/research/allostatic/default.php

May your journey with the plants be long and joyful.

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