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An Integrative View of Hormonal Restoration

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Hormonal Restoration

- Term **Hormone** first used by professor Ernest Henry Starling in **1905** in his Croonian lecture at the Royal College of Physicians

- It derives from the Greek verb **Hormao** which means to put into quick motion, to excite to arouse, **to make things happen**

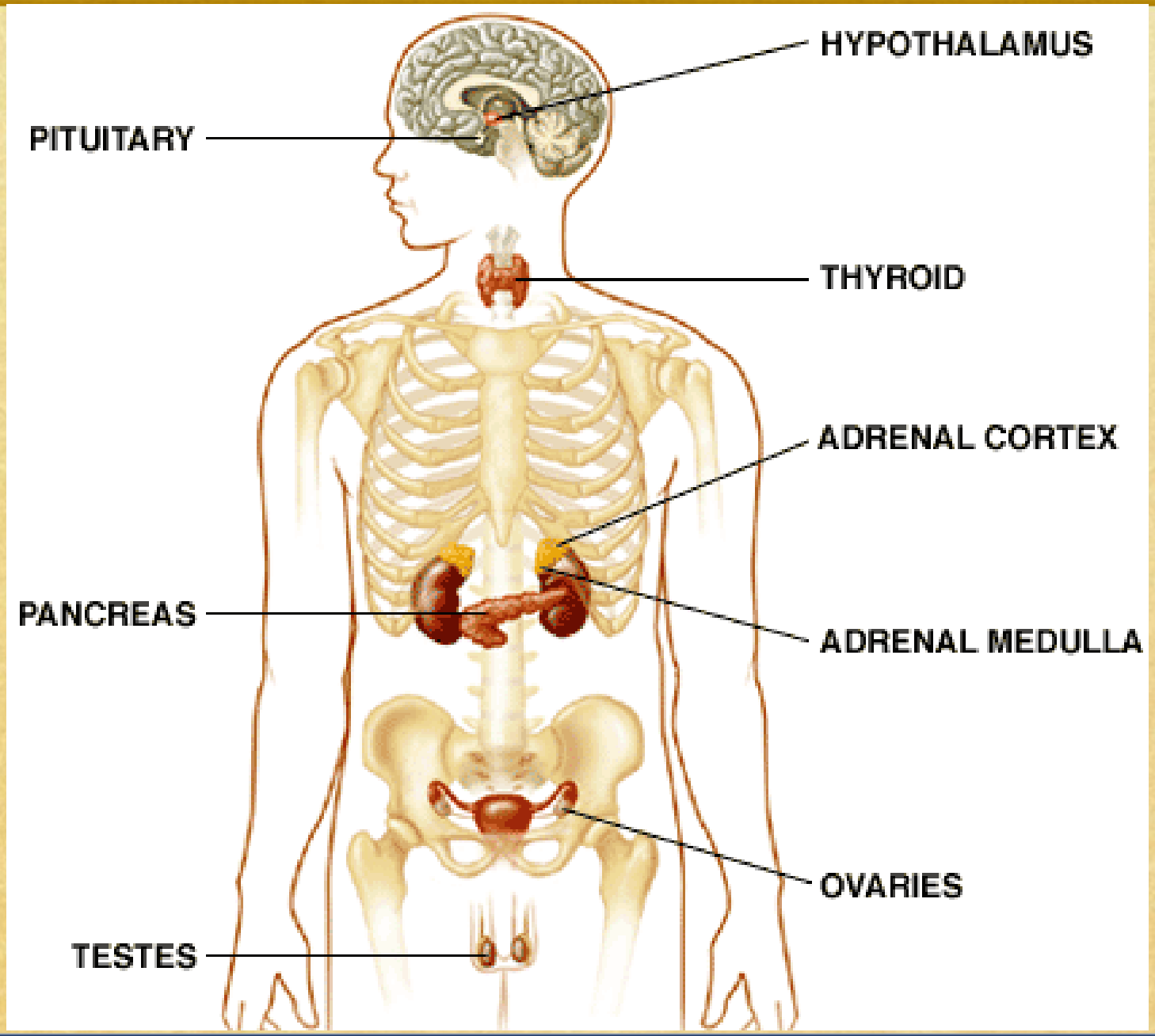
Hormonal Restoration vs Hormonal Replacement

- Hormonal restoration implies adopting a set of strategies aimed at restoring overall endogenous physiological endocrine system function without exogenous hormonal intervention

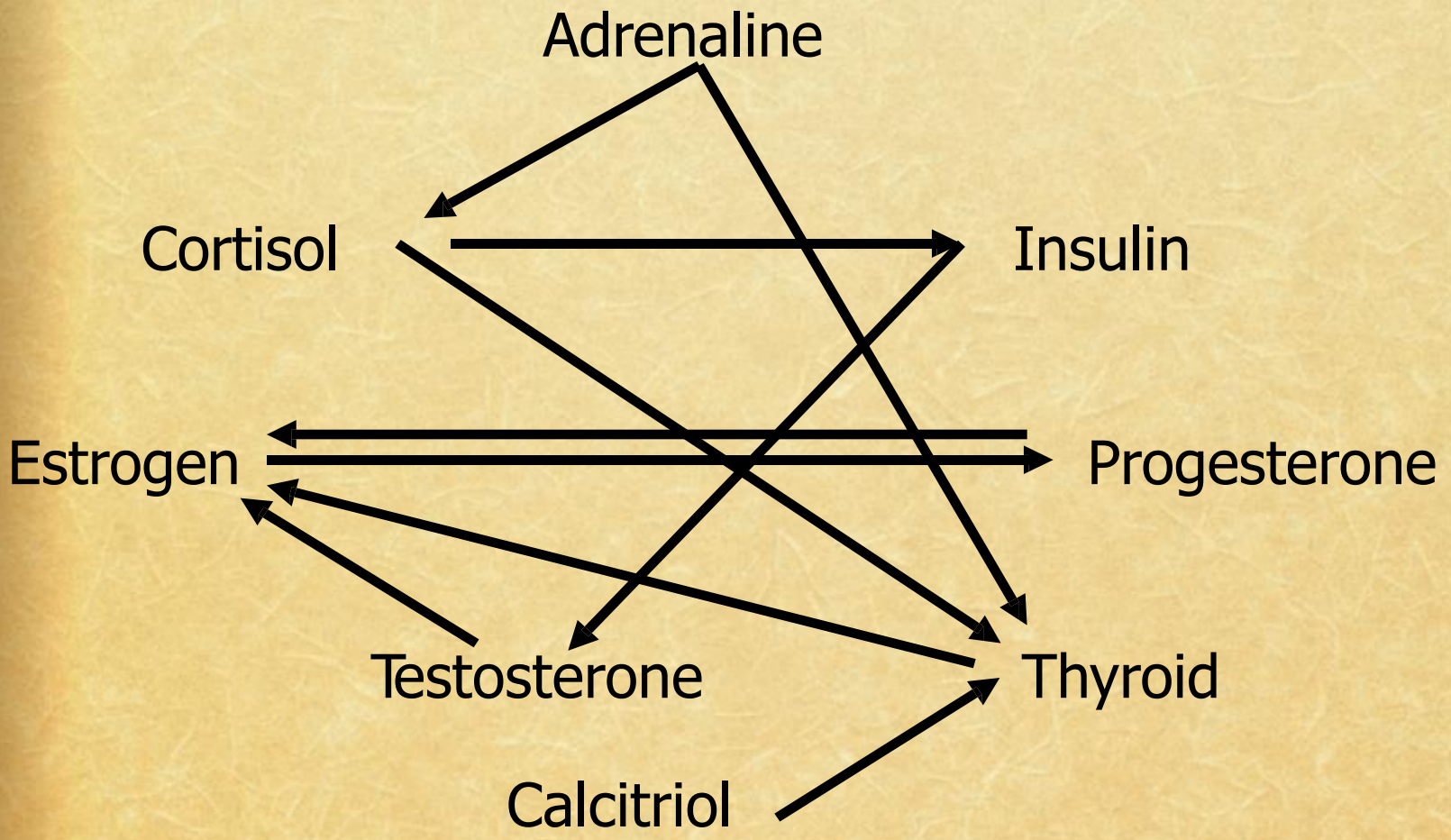
- Hormonal restoration in the integrative medicine model precedes and or works in conjunction with hormone replacement depending on the clinical situation at hand

Hormonal Restoration

- Organize a framework to understand hormonal function and treat hormonal dysfunction
- Recognize antecedents, triggers, and mediators of Hypothalamic-Pituitary- Adrenal –Thyroid-Gonadal (HPATGA) axis dysfunction
- Discuss the influence of stress on the HPATGA axis
- Discuss Cortisol/DHEA adrenal response and intervention options
- Discuss Thyroid response and intervention options
- Briefly mention Estrogen/Progesterone/Testosterone response and intervention options


HYPOTHALAMUS
PITUITARY
THYROID
ADRENAL CORTEX
PANCREAS
ADRENAL MEDULLA
OVARIES
TESTES

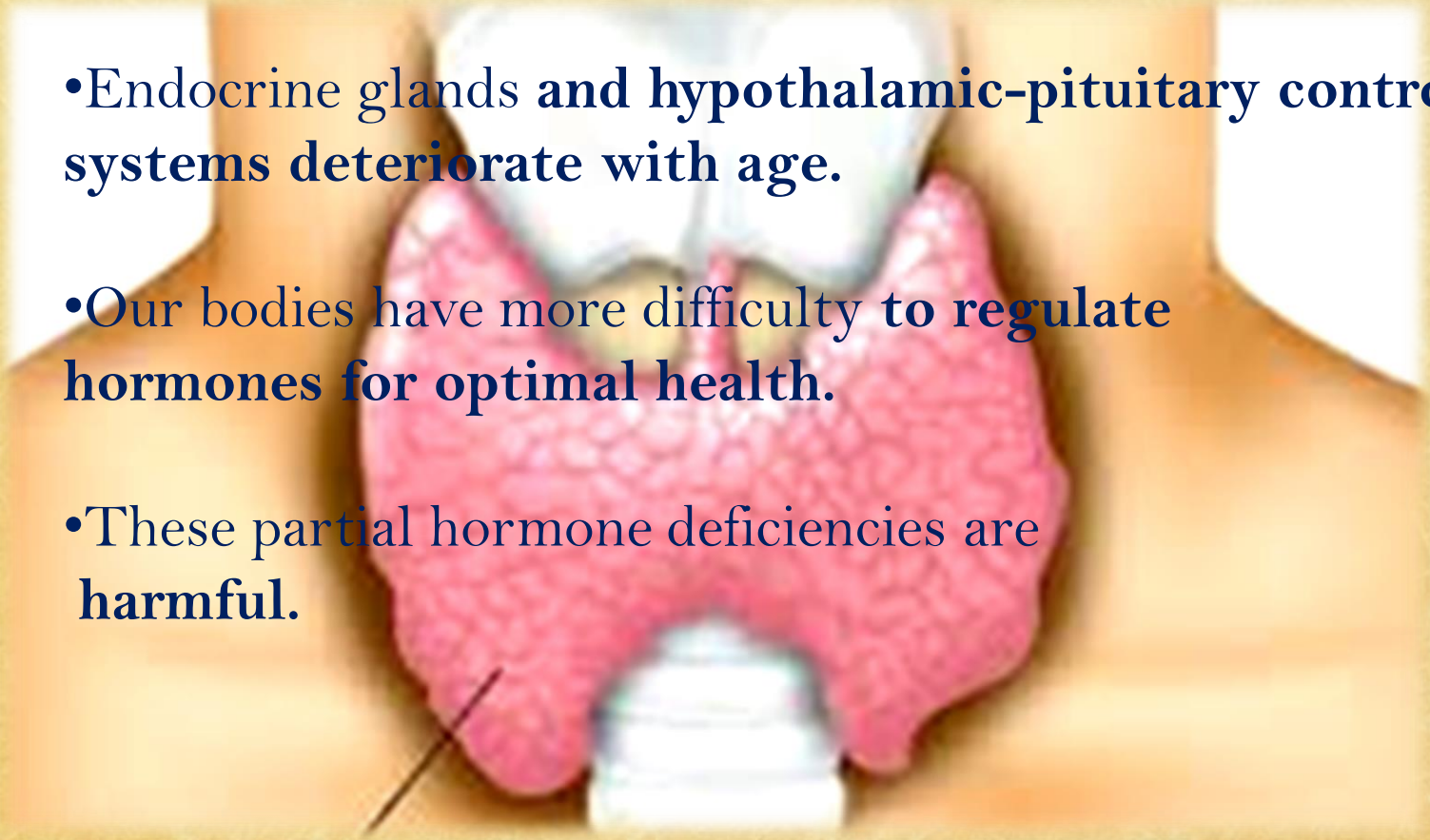
The Web Within the Web



Hormonal Restoration

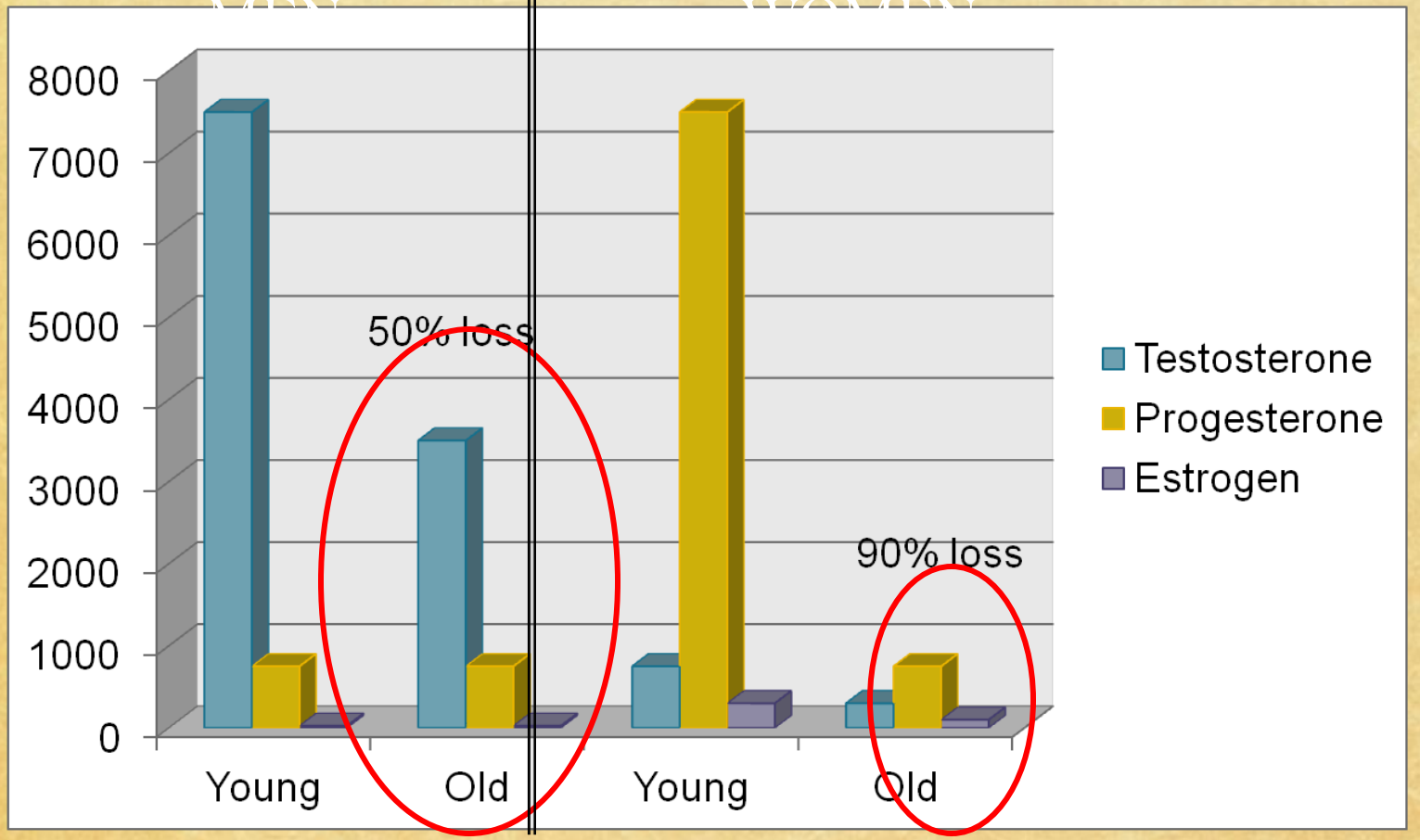
- Acute/Chronic mental & physical stress
- Traumatic physical & emotional events
- Aging
- Chronic sleep deprivation
- Inflammatory diseases
- Infectious diseases
- Chronic diseases
- Nutritional insufficiencies and excesses
- Altered biotransformation
- Endo/Exogenous toxins
- Food intolerance or sensitivity (e.g. gluten)

Hormonal Restoration



- Endocrine glands **and hypothalamic-pituitary control systems deteriorate with age.**
- Our bodies have more difficulty **to regulate hormones for optimal health.**
- These partial hormone deficiencies are **harmful.**

Steroid Loss in Men>>Women



A Short Helpful List

- **Food** (dietary insufficiencies and excesses)
- **Inflammation**
- **Toxins** (biologic, elemental, synthetic) and impaired detoxification
- **Infections**--microbes (bacteria, yeast, parasites, prions)
- **Allergens/Sensitivities** (food, mold, dust, animal products, pollens, chemicals)

Hormonal Restoration

NUTRITIONAL DEFICIENCIES

- North Finland birth cohort study: vitamin D supplementation (2000 iu/d; 50 mg/d) in the first year of life reduced the type 1 diabetes risk by 80% (at age 31).

Hypponen E, et. al. Intake of vitamin D and risk of type 1 diabetes: a birth-cohort study. Lancet. 2001 Nov 3;358(9292):1500-3.

Hormonal Restoration

INFLAMMATION

Changes the adrenal response, results in an alteration of the HPA stress response causing inappropriately low cortisol secretion in relation to ACTH secretion (e.g., rheumatoid arthritis) and lowers DHEA- sulfate as shown in patients with chronic inflammatory diseases

Straub RH, et al. B Rheumatol. 2000;59 Suppl 2:II/108-18

Hormonal Restoration

EXOGENOUS TOXINS

- In some patients with thyroiditis, mercury from dental amalgam can stimulate the production of antinuclear antibodies

  Bartova J, Prochazkova J, Kratka Z, Benetkova K, Venclikova Z, Sterzl I. Dental amalgam as one of the risk factors in autoimmune diseases. Neuro Endocrinol Lett. 2003 Feb-Apr;24(1-2):65-7

- The putative role of organochlorines and other agents in breast cancer should not be dismissed

  Kortenkamp A. Breast cancer, oestrogens and environmental pollutants: a re- evaluation from a mixture perspective. Int J Androl. 2006 Feb;29(1): 193-8.

Hormonal Restoration

ALTERED BIOTRANSFORMATION

- Data suggestive that estrogen metabolism may relate to SLE
- Women with SLE randomized into placebo or indole-3- carbinol (I3C) group. (Treatment group received 375mg/day of I3C).
- Statistically significant increase in the 2-hydroxyestrone/16-hydroxyestrone ratio. Modestly improved clinical control correlated with 2/16 ratio increase.

McAlindon TE, Gulin J, Chen T, Klug T, Lahita R, Nuite M. Indole-3-carbinol in women with SLE: effect on estrogen metabolism and disease©20a14 cThetiinVstitiutteyfo.r FuLncutionpal MuedS

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INFECTION

- Evidence of a potential association of viruses or their components in subacute thyroiditis, Graves' disease, Hashimoto's thyroiditis

Desailloud R Virol J. 2009 Jan 12;6:5.

Hormonal Restoration

FOOD ALLERGIES/INTOLERANCE/SENSITIVITIES

- The prevalence of celiac disease in patients with autoimmune thyroid diseases is significantly increased when compared with the general population
- In distinct cases, gluten withdrawal may single-handedly reverse autoimmune thyroid abnormalities

Gastroenterol. 2001 Mar;96(3):751-
Sategna-Guidetti C, et. al. Prevalence of thyroid disorders in untreated adult celiac disease patients and effect of gluten withdrawal: an Italian multicenter study. Am J 7

Stress and Hormonal Response

From the American Psychological Association and National Institute for Occupational Safety and Health:

- Two-thirds of all office visits to family physicians are due to stress-related symptoms
- 43% of adults suffer adverse health effects from stress
- 40% of workers reported their job was very or extremely stressful

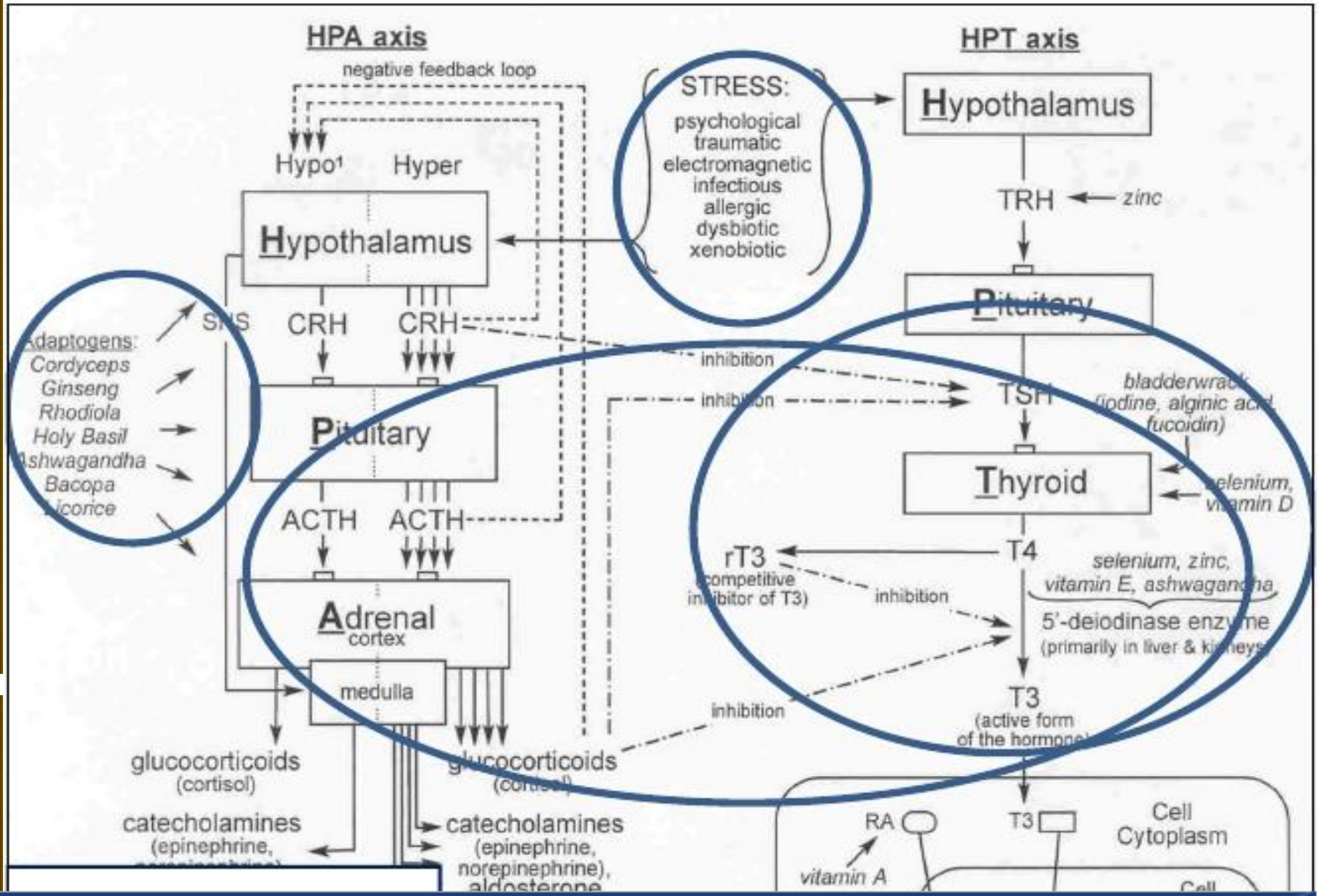
From the American Psychological Association and National Institute for Occupational Safety and Health:

- 75% of employees believe that workers have more on- the-job stress than a generation ago
- 26% of workers said they were often or very often "burned out" or stressed by their work
- 64% of Americans say they are taking steps to reduce stress in their lives

The Stress Response…

Stress is a CRUCIAL Player in Functional Alterations of the Hypothalamic-Pituitary-Adrenal-Thyroid-Gonadal Axis

A SIMPLE SLIDE TO MAKE MATTERS EASIER



The Stress Response

- Disruptions in homeostasis and homeodynamics (i.e., stress) activate:
  - the hypothalamic-pituitary-hormonal (HPATGA) axis
  - the sympathetic nervous system (SNS)
- Stressor-induced activation of the HPATGA axis and the SNS results in a series of neural and endocrine adaptations known as the "stress response"

Allostasis and Allostatic Load

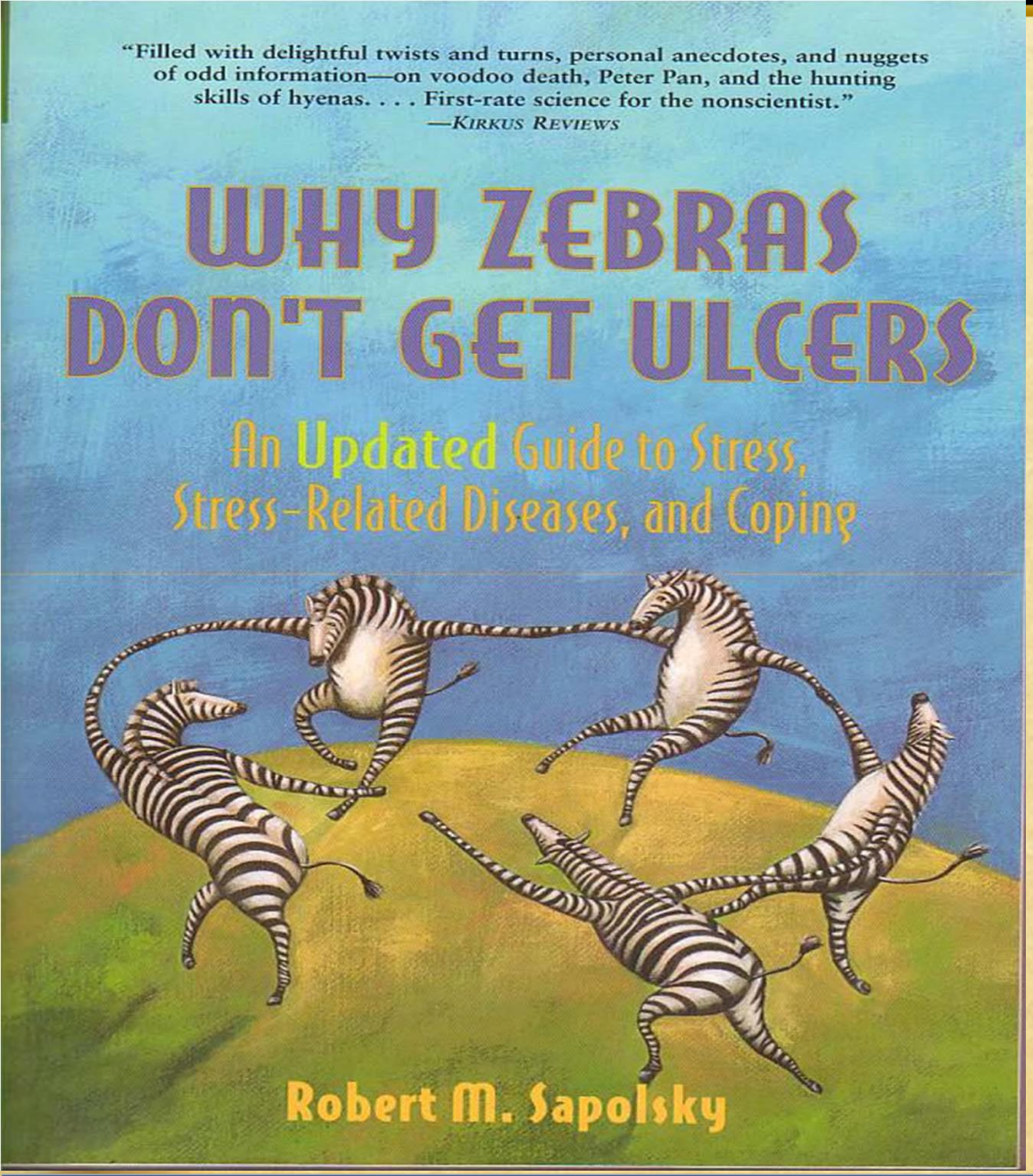
- **Allostasis**: "maintaining stability (or homeostasis) through change"
- **Allostatic load**: the wear and tear that the body experiences due to the repeated use of allostatic responses and inefficient turning on or shutting off of these responses.

McEwen , Lashley *The End of Stress As We Know It.* John Henry Press, 2002

Allostatic Load Concept

- **ALLOSTASIS** allows for a change in the SET POINTS of various physiological systems so that the body can respond adequately to environmental changes
- **ALLOSTATIC LOAD (AL)** is the wear and tear that the body experiences due to the repeated use of allostatic responses and inefficient turning on or shutting off of these responses

ACUTE STRESS RESPONSE

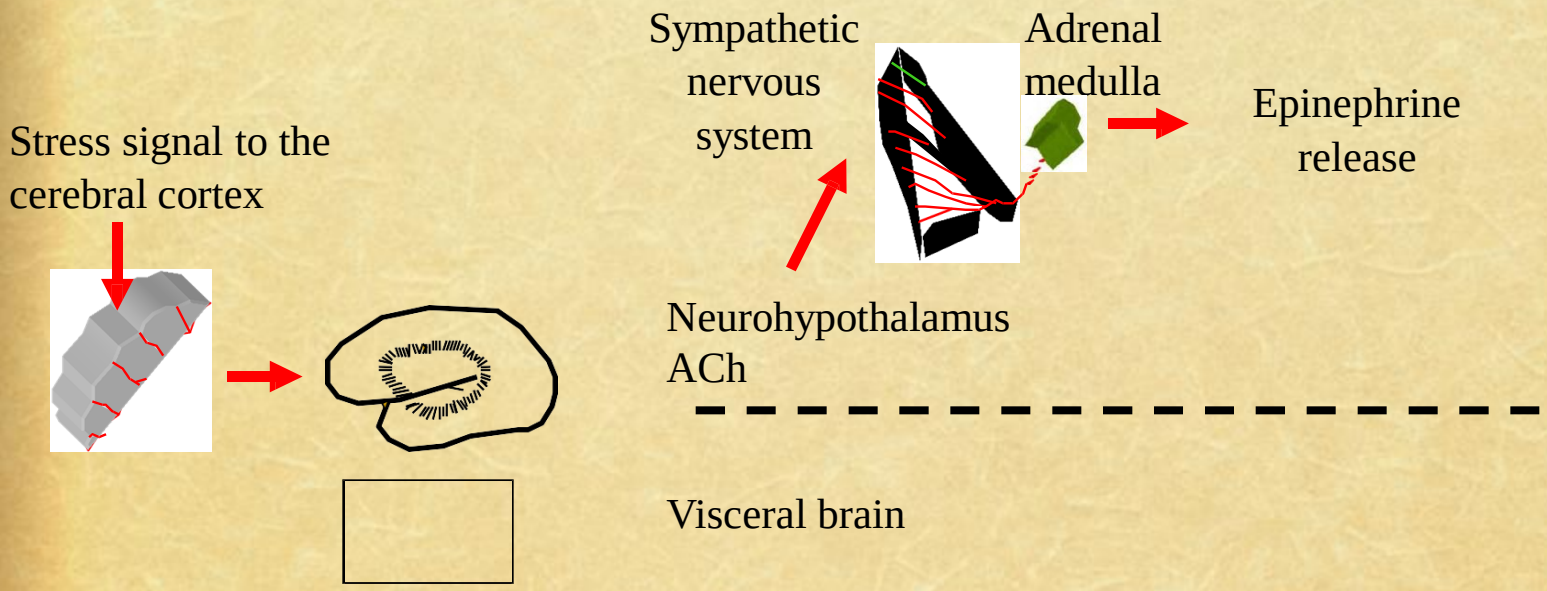


After the predator kills one of the group or is outrun, zebras (and all other animals except humans) go immediately back into their baseline autonomic state and out of the SYMPATHETIC DOMINANT STATE.

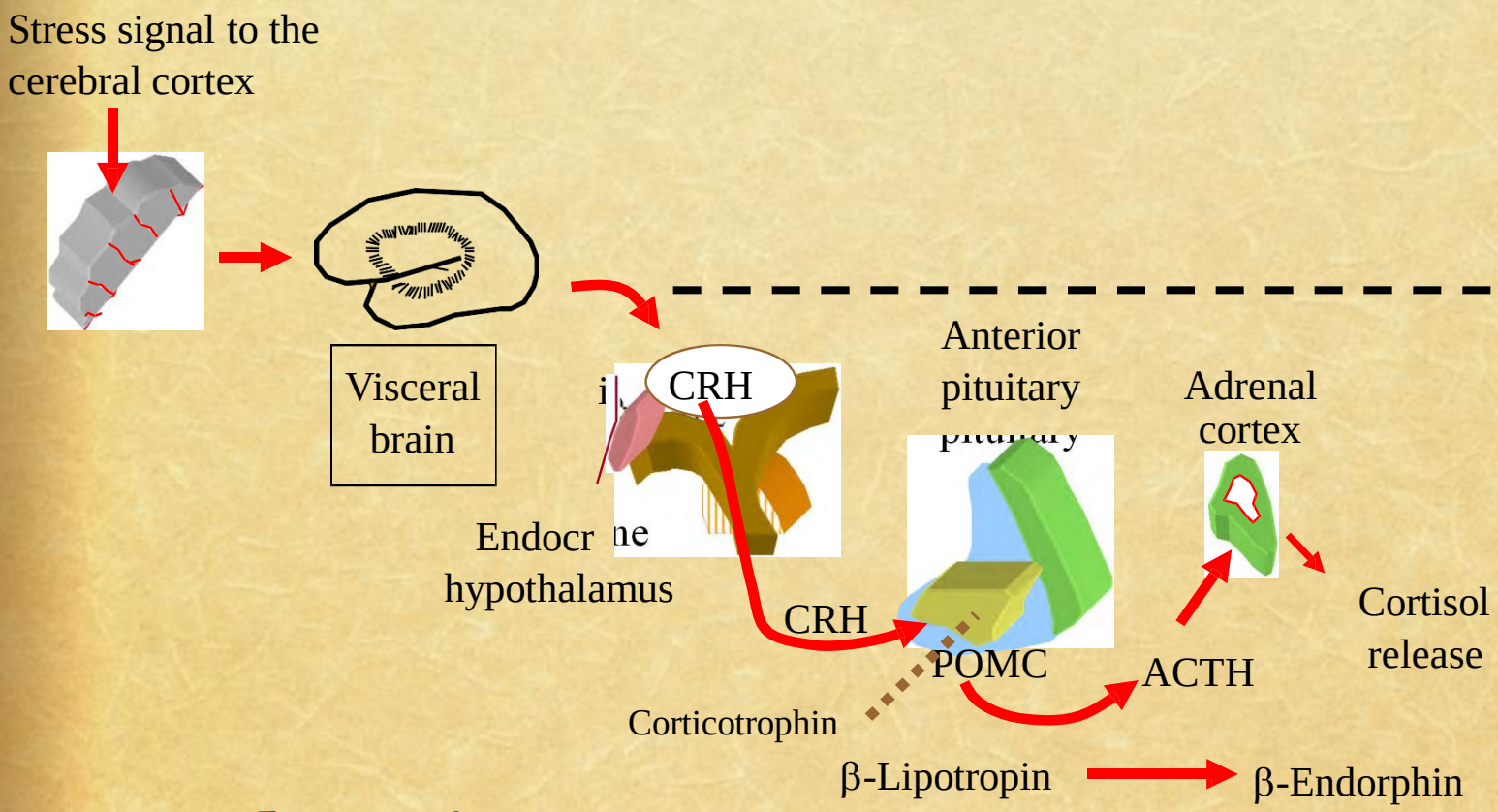
The basis for human stress related disease is the high percentage of time spent in THE SYMPATHETIC DOMINANT STATE

Why?

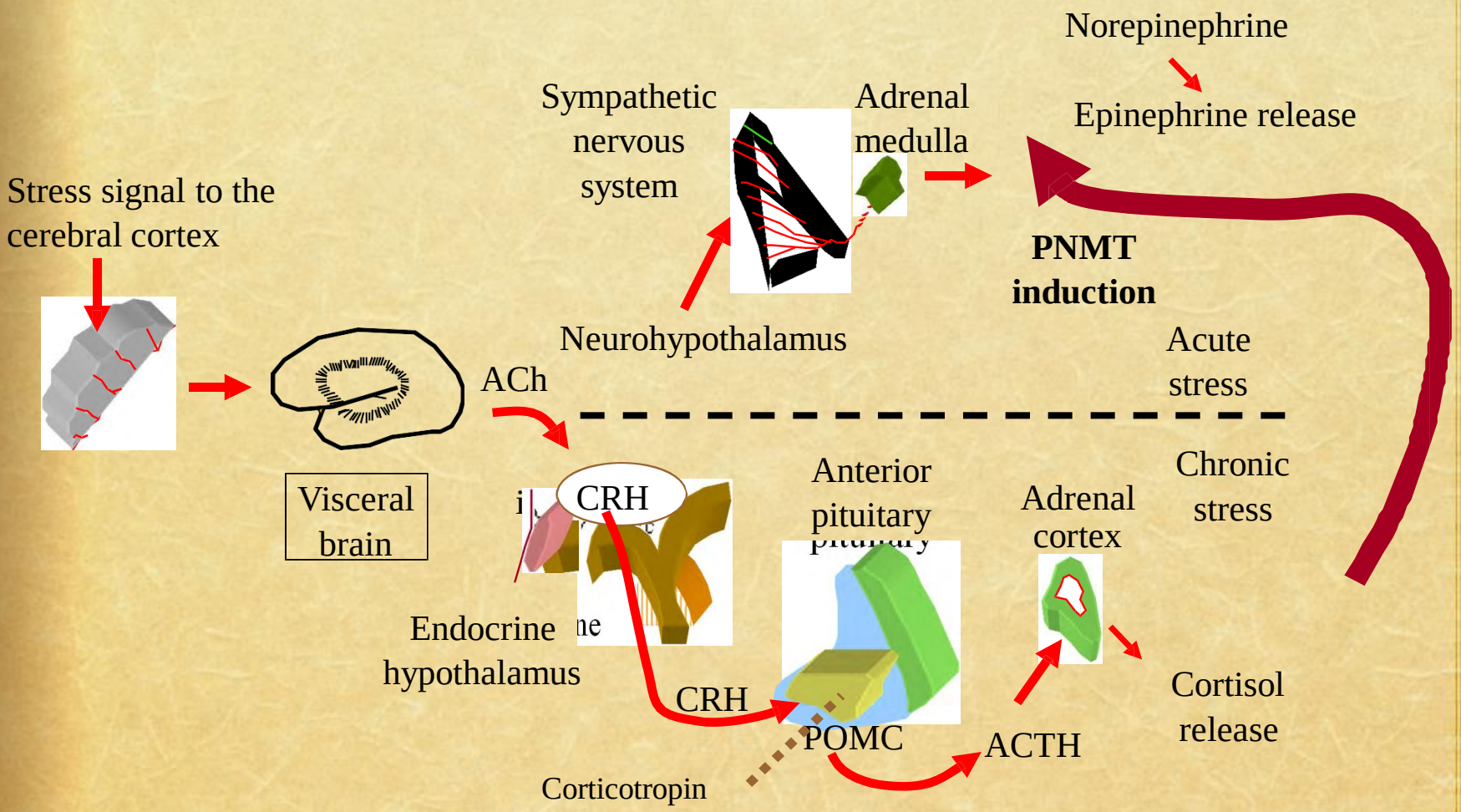
because we can and do.



In an ***Acute*** physical challenge, the body mobilizes the stress response which is crucial to surviving it



In ***Chronic*** mobilization of the stress response: wide array of pathophysiologic risks



Neuroendocrine Pathways Associated with the chronic Stress Response

The Stress Response

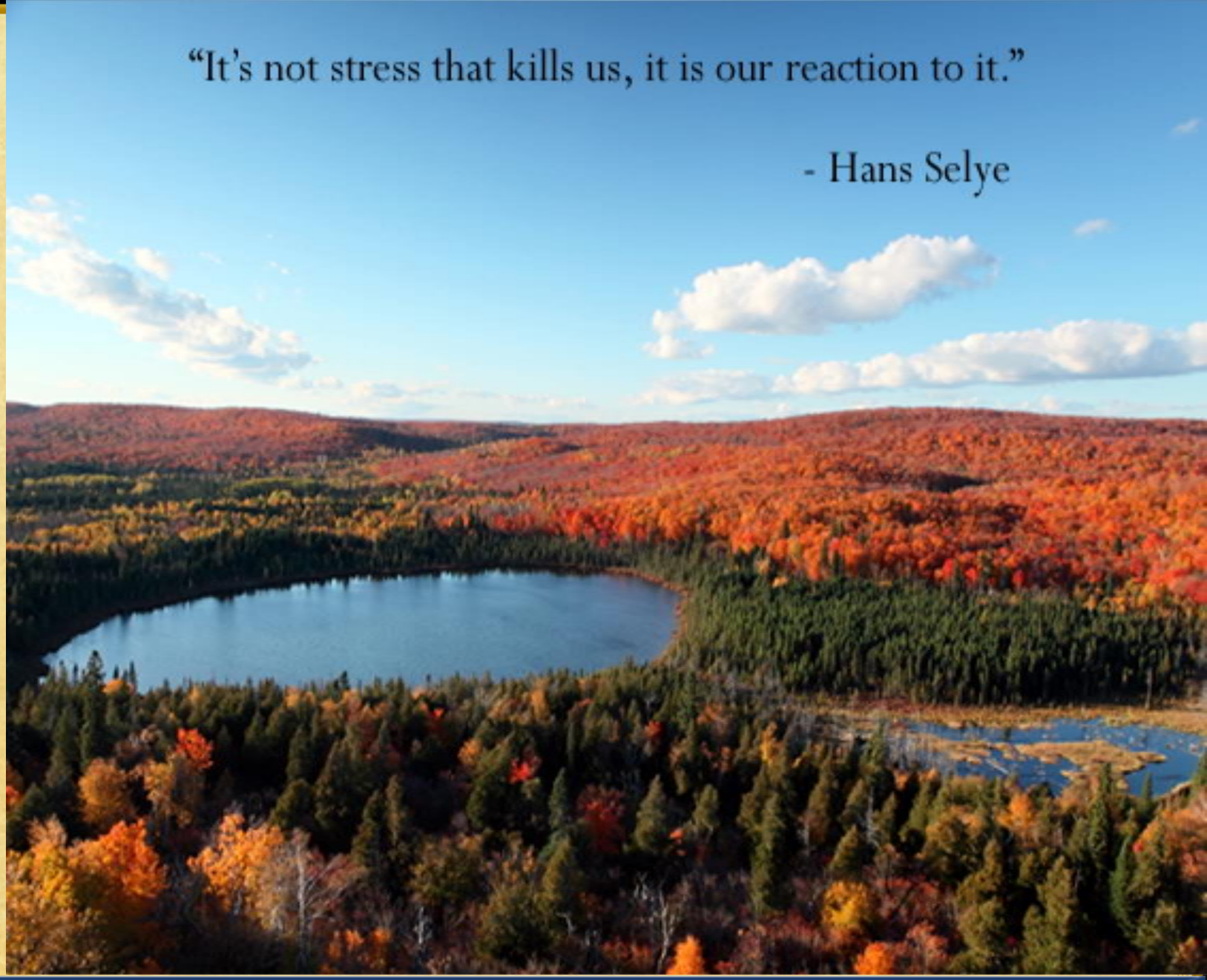
"It is psychological rather than physical stress which has the capacity to elevate and maintain the stress response chronically causing disease consequences."

Sapolsky, R.M., Stress, Stress related Disease, and Emotional Regulation. In J. Gross (Ed.), *Hand Book of Emotional Regulation.* (pp. 606-615).New York, Guilford, 2007

Hans Selye

"Adopting the right attitude can convert a negative stress into a positive one."

Hans Selye


"It's not stress that kills us, it is our reaction to it."
- Hans Selye

Arousal stage

Hans Selye's Stress Classification

Stage 1: Arousal

- Both cortisol and DHEA increase with episodic stress, but recovery occurs to baseline
- This may be asymptomatic

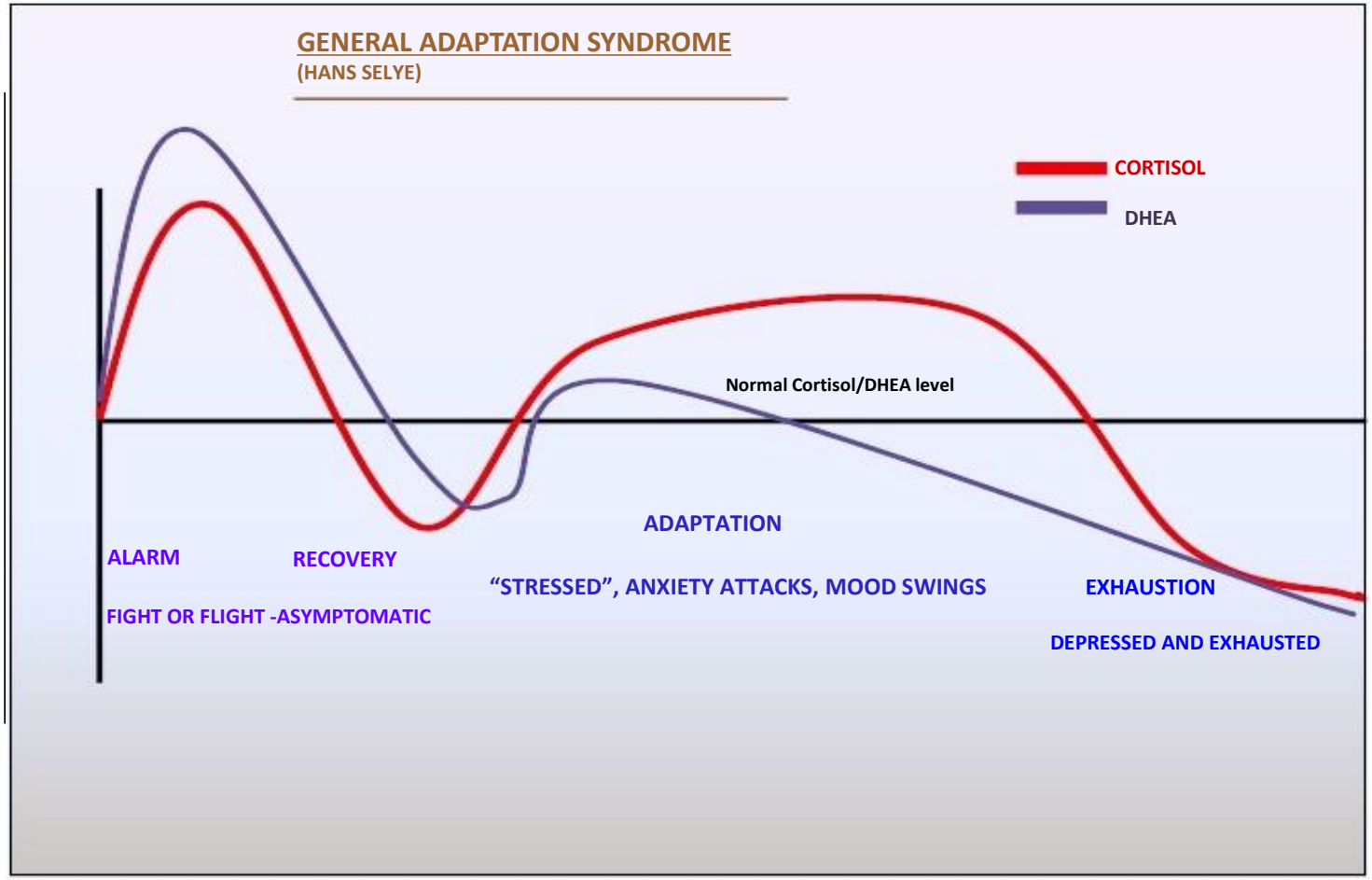
Stage 2: Adaptation

- Cortisol chronically elevated, but DHEA declines
- "Stressed," anxiety attacks, mood swings, depression

State 3: Exhaustion

- Adrenal insufficiency / low cortisol and DHEA
- Depression and fatigued

GENERAL ADAPTATION SYNDROME
(HANS SELYE)



So in the Arousal Stage…

Rapid increases in catecholamines (adrenaline) with a concurrent but slower increase of corticosteroids

The Adaptation Stage

Hans Selye's Stress Classification

Stage 1: Arousal

- Both cortisol and DHEA increase with episodic stress, but recovery occurs to baseline
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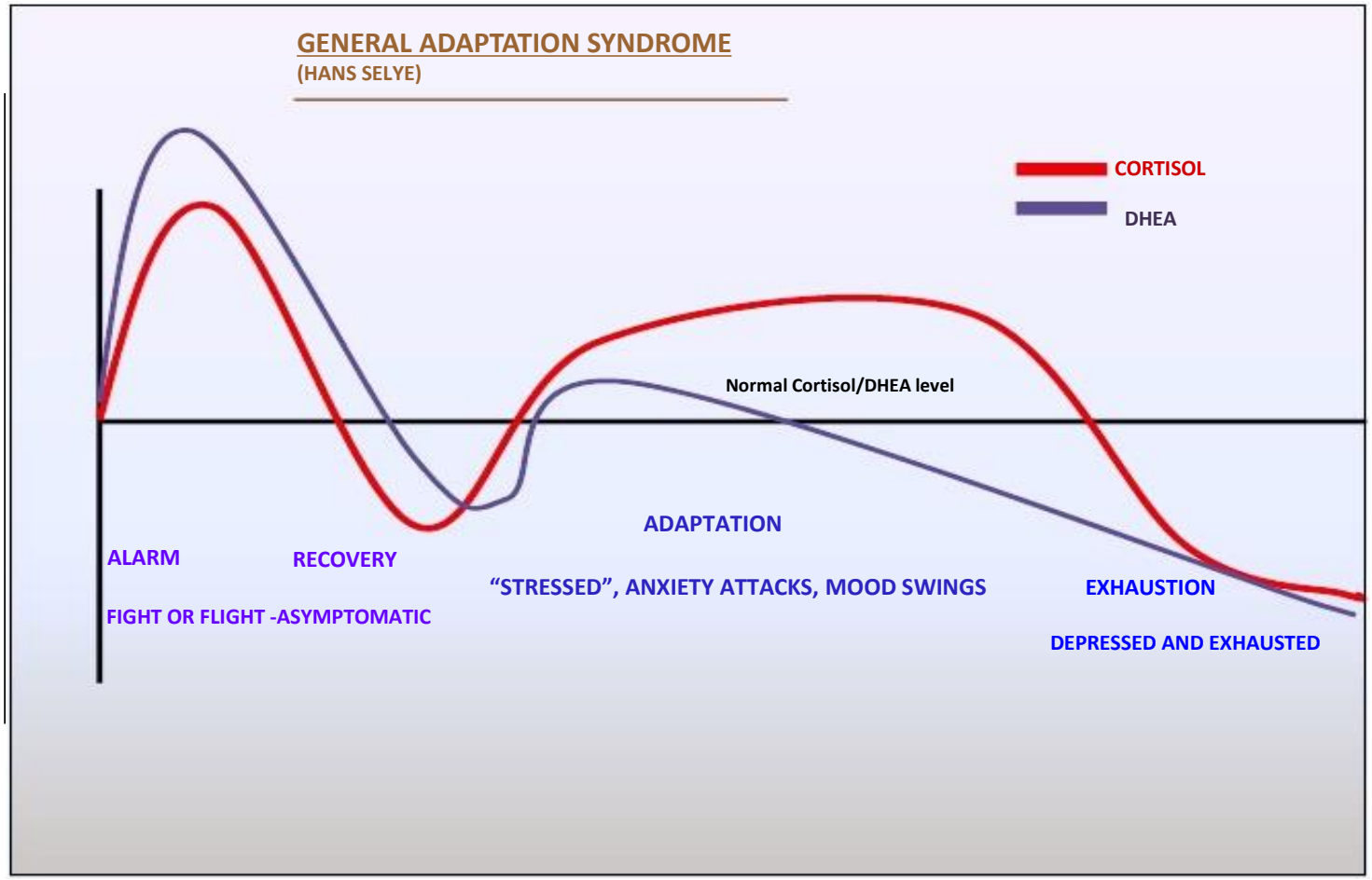

The Adaptation Stage

Characterized by sustained increased levels of corticosteroids and alarm molecules with alterations in blood pressure, thyroid, sex steroid hormone and glucose metabolism

Laboratory tests

- Elevated cortisol, total 24 hr cortisol or normal (depending on where on the continuum the patient is)
- Elevated Cortisol/DHEA ratio or low DHEA
- Elevated cortisol at one time point
- Elevated total 24hr cortisol over the day
- Occasionally elevated DHEA

Cascade of Downstream Consequences

Increased cortisol may decrease the production and activity of progesterone, estrogens, DHEA, and testosterone.

Phenomenon known as the '**Cortisol Steal**' (or the pregnenolone steal).

Symptoms of Hypercortisolism

- Irritability, anxiety, fatigue , low energy
- Night sweats/muscular tremors
- Sleep disturbance, hot flashes
- Increased susceptibility to infection (cortisol immune suppression)
- Shakiness between meals, sugar cravings
- Waist weight gain

Exhaustion Phase

Hypoadrenal State

Hans Selye's Stress Classification

Stage 1: Arousal

- Both cortisol and DHEA increase with episodic stress, but recovery occurs to baseline
- This may be asymptomatic

Stage 2: Adaptation

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State 3: Exhaustion

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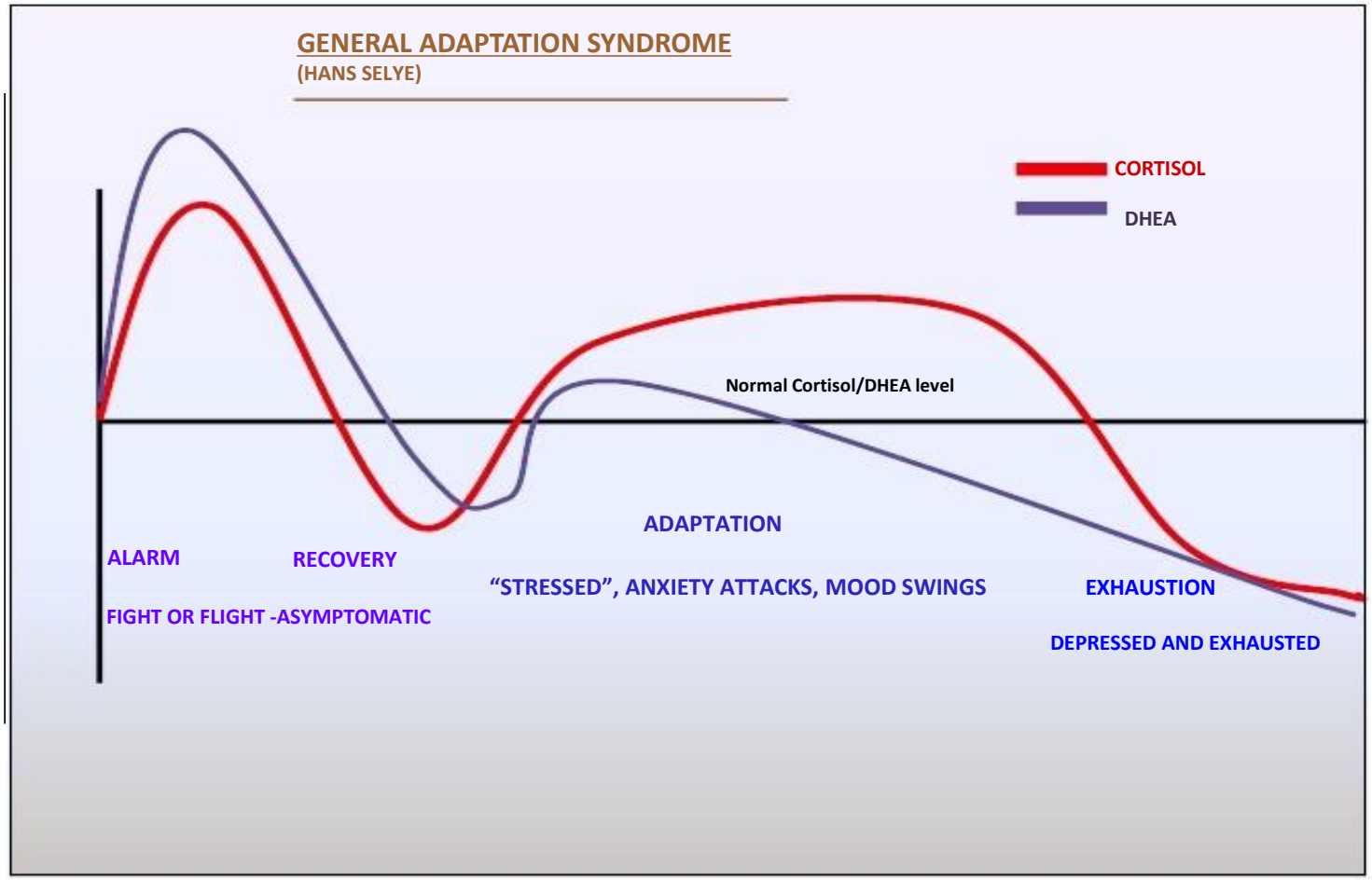

GENERAL ADAPTATION SYNDROME
(HANS SELYE)
CORTISOL
DHEA
Normal Cortisol/DHEA level
ADAPTATION
ALARM
RECOVERY
"STRESSED", ANXIETY ATTACKS, MOOD SWINGS
EXHAUSTION
FIGHT OR FLIGHT -ASYMPTOMATIC
DEPRESSED AND EXHAUSTED

HPA axis dysfunction in Chronic Fatigue Syndrome

Current evidence supports the following states to be related to (HPA) axis dysfunction in patients with chronic fatigue syndrome (CFS)

- mild hypocortisolism
- substandard diurnal variation of cortisol
- enhanced negative feedback to the HPA axis
- blunted HPA axis responsiveness

Papadopoulos AS, Cleare AJ. Nat Rev Endocrinol. 2011 Sep 27;8(1):22-32.

.

Exhaustion stage

- Decrease of endogenous corticosteroids production and the steady advance of degenerative diseases
- Laboratory testing may show:
  - Depressed cortisol over two to four time points
  - Depressed cortisol 24 hour Collection
  - Depressed DHEA
  - At this stage the Cortisol/DHEA ratio is no longer useful

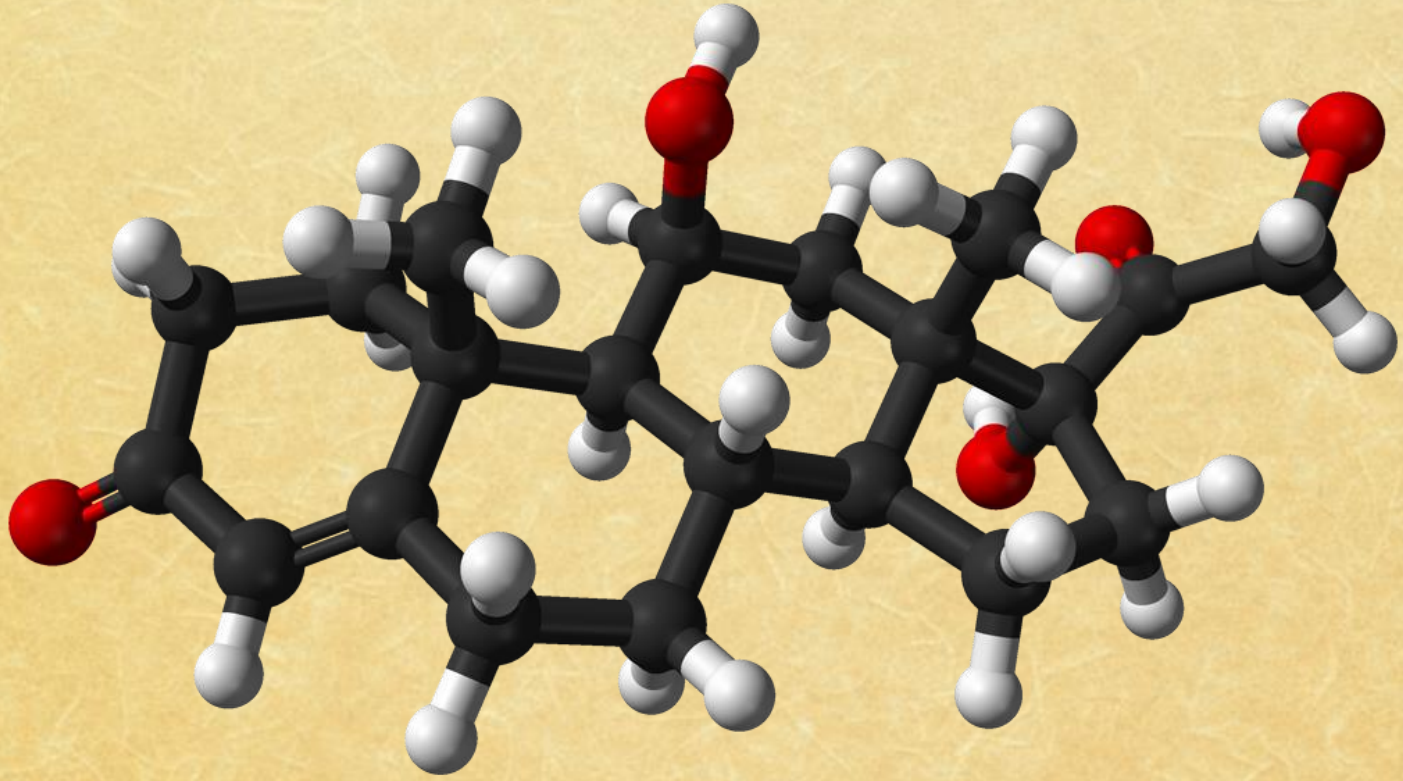
Symptoms of low Cortisol

- Fatigue, apathy, loss of motivation
- Absent-mindedness, poor concentration
- Increased sleep with poor quality
- Increased susceptibility to inflammation and allergies (but not infections)
- Depression, worse in evening
- Early onset of perimenopause or menopause
- Myalgias (Muscle pains)

Conditions with depressed HPA axis and low Cortisol

- Fibromyalgia
- CFIDS
- PTSD
- Panic attacks, generalized anxiety disorder
- Atypical depression
- Seasonal affective disorder (SAD)
- Bipolar II disorder
- Postpartum depression

CORTISOL



Functions of Cortisol

- Stimulates the liver to convert amino acids to glucose
- Stimulates production of glycogen in the liver
- Raises blood sugar as liver glycogen is converted to glucose
- Mobilizes fatty acids into the blood
- Increases coagulation
- Prevents the loss of sodium in urine
- Maintains resistance to stress
- Maintains mood and emotional stability

Functions of Cortisol

- Causes the pupils of the eyes to dilate
- Increases heart rate, force of contraction, blood pressure
- Constricts the blood vessels of nonessential organs such as the skin
- Dilates blood vessels to increase blood flow to organs involved in exercise or fighting, skeletal muscles, cardiac muscle, liver, and adipose tissue

Functions of Cortisol

- Increases the rate and depth of breathing and dilates the bronchioles to allow faster movement of air
- Suppresses parts of the inflammatory response
- Slows down or even stops functions that are not essential for meeting the stress situation, e.g. smooth muscle of the gastrointestinal tract and digestive secretions

ACUTE STRESS RESPONSE

Hormonal restoration

Chronic Stress

Somewhat different

CHRONIC STRESS RESPONSE

Antecedents and Triggers of Chronic Stress and Elevated Cortisol

- Work stress, 'Burnout'
- Chronic sleep deprivation
- Emotional trauma
- Acute physical stress

Burnout and Elevated Cortisol

- HPA axis is disturbed among burnout patients. Elevated early morning cortisol levels may be indicative of sustained activation

W De Vente, M Olff, J G C Van Amsterdam, J H Kamphuis, P M G Emmelkamp Physiological differences between burnout patients and healthy controls: blood pressure, heart rate, and cortisol responses *Occupational and Environmental Medicine* 2003;60:i54.

Work Stress and Elevated Cortisol

- Night-work in particular is associated with elevated cortisol secretion and cortisol dysregulation may exist in subgroups with specific combinations of stressors.

Thomas C, Hertzman C, Power C. Occup Environ Med.

2009 Jun 14. [Epub ahead of print] Night-work, long working hours, job control and cortisol secretion in mid-life: evidence from a British birth cohort.

Sleep Deprivation and Elevated Cortisol

- **Chronic sleep deprivation:**
  - increases evening cortisol levels;
  - increases insulin and blood glucose;
  - decreases parasympathetic and increases sympathetic tone;
  - increases appetite and energy expenditure;
  - increases levels of proinflammatory cytokines;
  - increases blood pressure

McEwen BS. Sleep deprivation as a neurobiologic and physiologic stressor: Allostasis and allostatic load.
Metabolism. 2006 Oct;55(10 Suppl 2):S20-3.

Traumatic Early Events and Elevated Cortisol

- Early-life adversity, such as physical or sexual abuse during childhood, results in long-lasting changes in the corticotropin-releasing factor-mediated stress response and a greatly increased risk of depression in genetically predisposed persons.
- Evidence from preclinical, epidemiologic, and clinical studies has convincingly demonstrated that stressful or traumatic events occurring in early life significantly increase the risk for depression and other psychiatric illnesses in adulthood.

Nemeroff CB, Vale WW. The neurobiology of depression: inroads to treatment and new drug discovery. J Clin Psychiatry. 2005;66 Suppl 7:5- 13.

Acute Physical Experiences and Elevated Cortisol

- During acute stressful experiences, cortisol significantly increased, and remained significantly elevated at recovery.
- Testosterone was significantly reduced within 12 hours of the event.
- Total and free T4 and total and free T3 were reduced, TSH was increased.

Morgan CA 3rd, Wang S, Mason J, et. al. Hormone profiles in humans experiencing military survival training. Biol Psychiatry 2000 May 15;47(10):891-901

Consequences of Chronically Elevated Cortisol

- **Central obesity** Stimulation of fat deposits
- **Osteoporosis** Demineralization of bone
- **Thyroid dysfunction**
- **Gastrointestinal dysfunction**
- **Depression and memory impairment**

Consequences of Chronically Elevated Cortisol

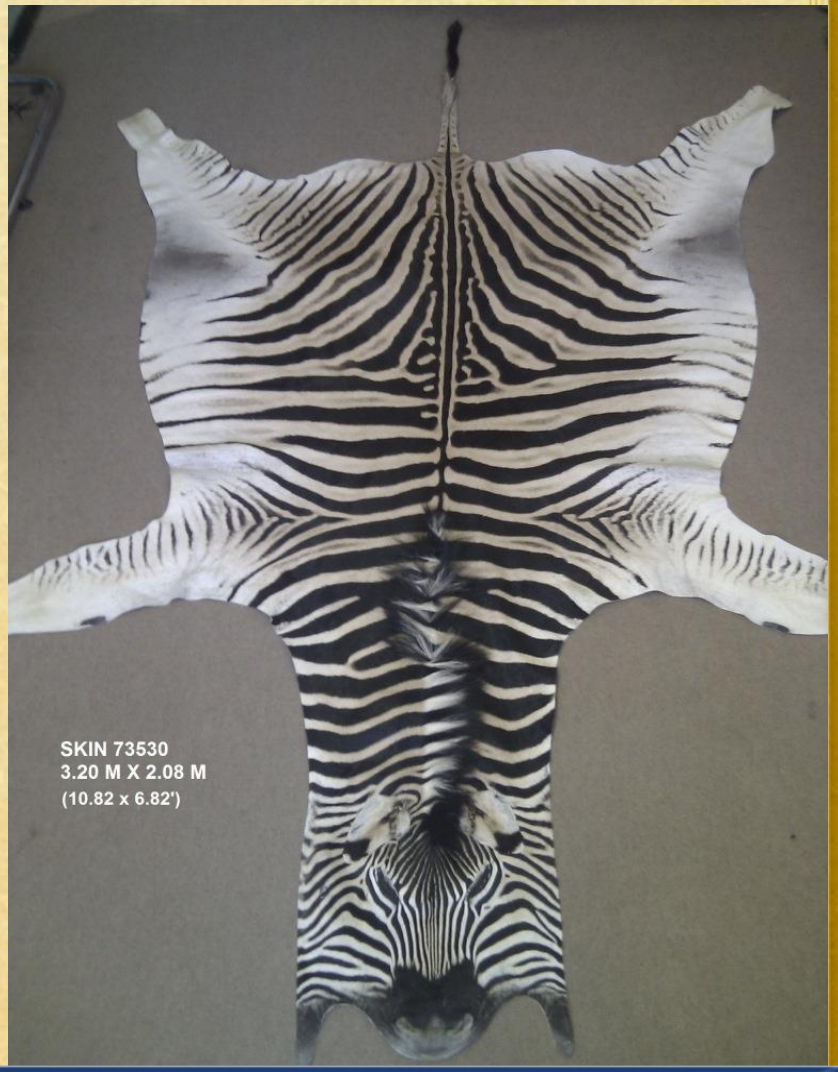
- Increases in blood pressure **HTN**
- Increases in protein breakdown **Sarcopenia**
- Suppression of the immune system **Infections**
- Increases in blood sugar e.g. **diabetes**

After the predator kills one of the group or is outrun, zebras (and all other animals except humans) go immediately back into their baseline autonomic state and **out** of the **sympathetic dominant state**.

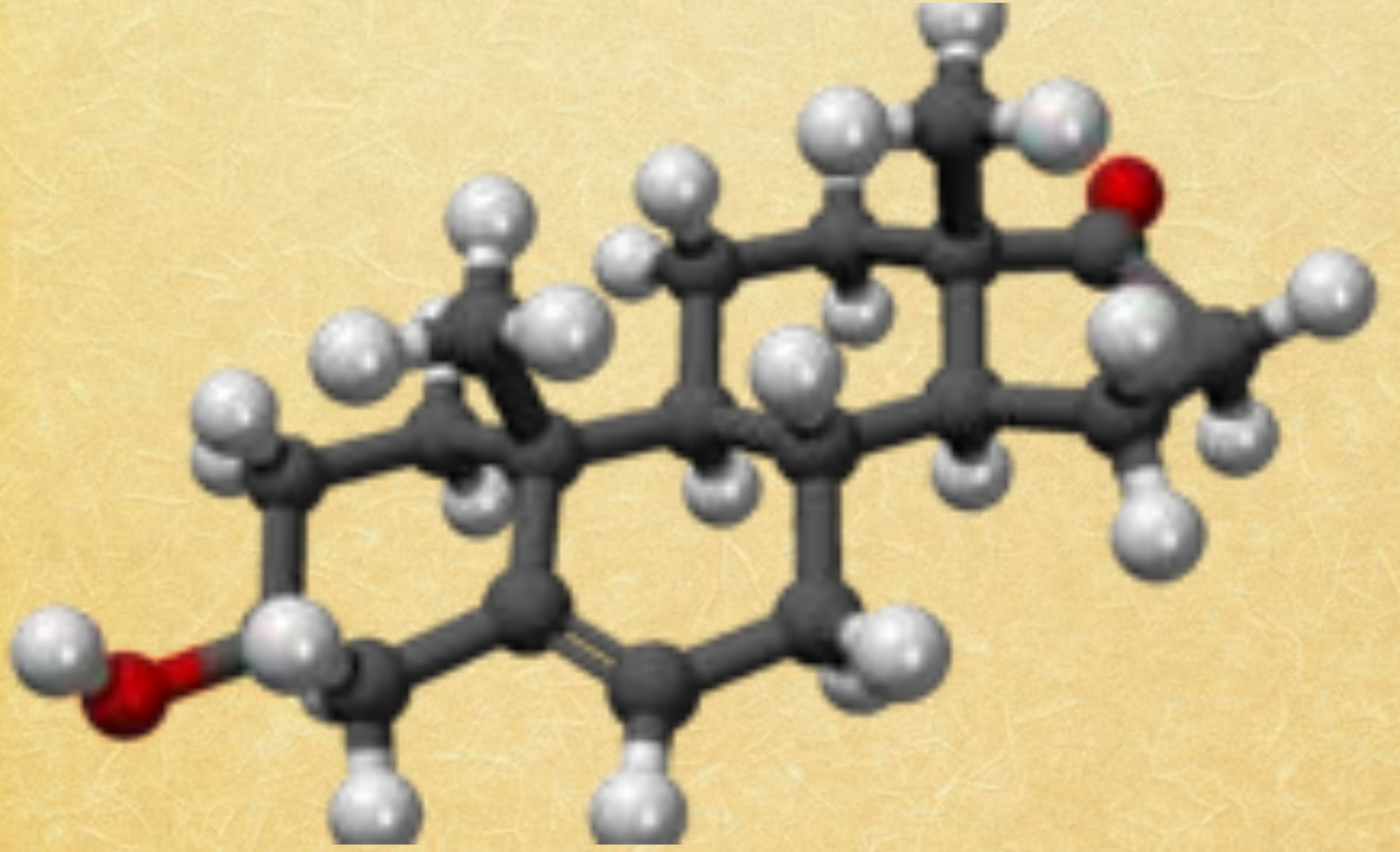
The basis for human stress related disease is the high percentage of time spent in the sympathetic dominant state because we can and do.

If lions, antelopes and zebras had our same ability to use the frontal cortex to keep themselves in a **permanent sympathetic dominant state** this would likely be the final shared pathway:

Final shared pathway of chronic stress

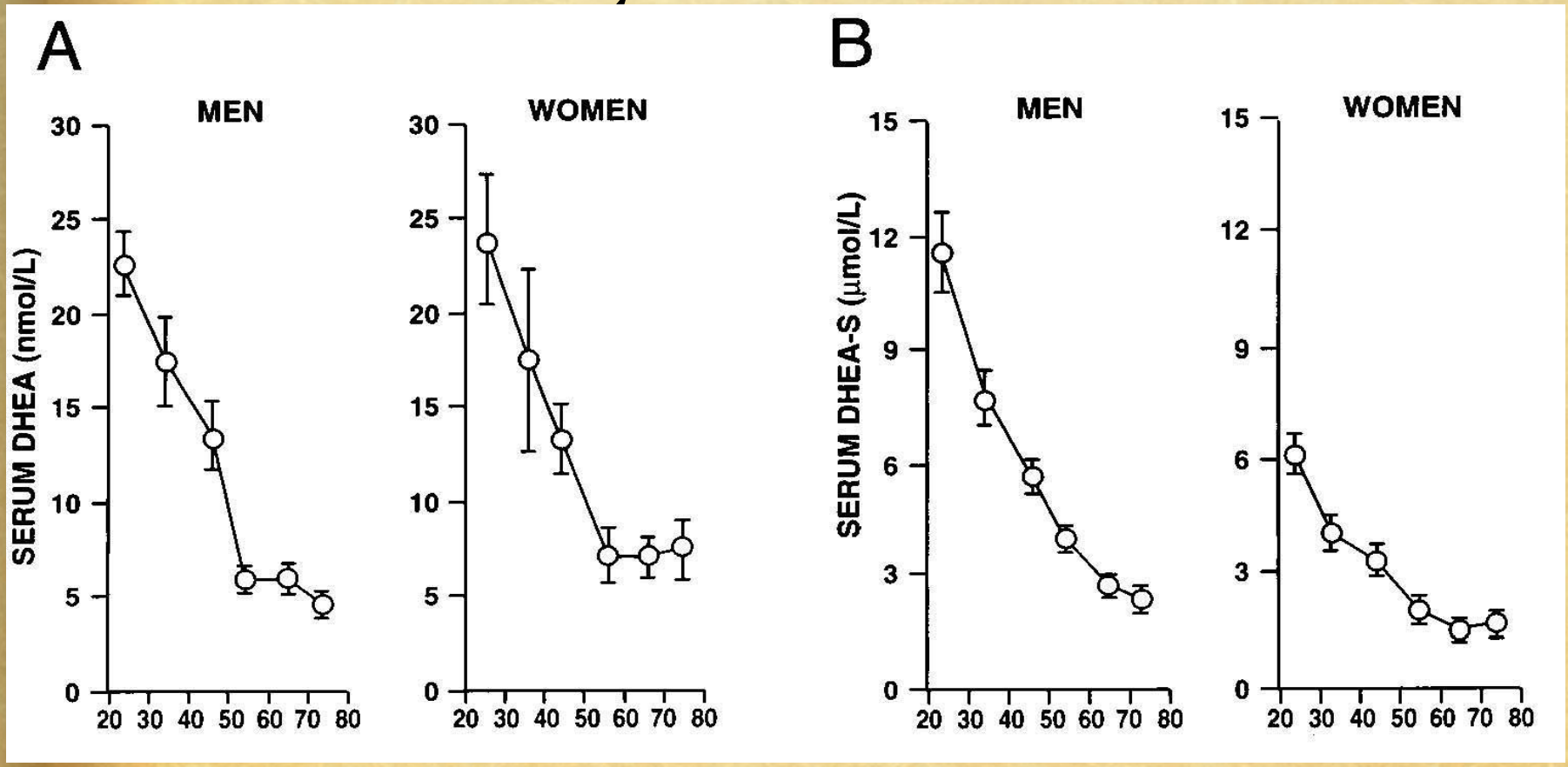


DHEA



DHEA/S losses due to Aging

DHEA ↔DHEA S



Functions of DHEA

- Is a precursor for testosterone and estrogen.
- Reverses immune suppression caused by excess cortisol levels.
- Stimulates bone deposition and remodeling.
- Lowers total cholesterol and LDL levels.
- Increases muscle mass.

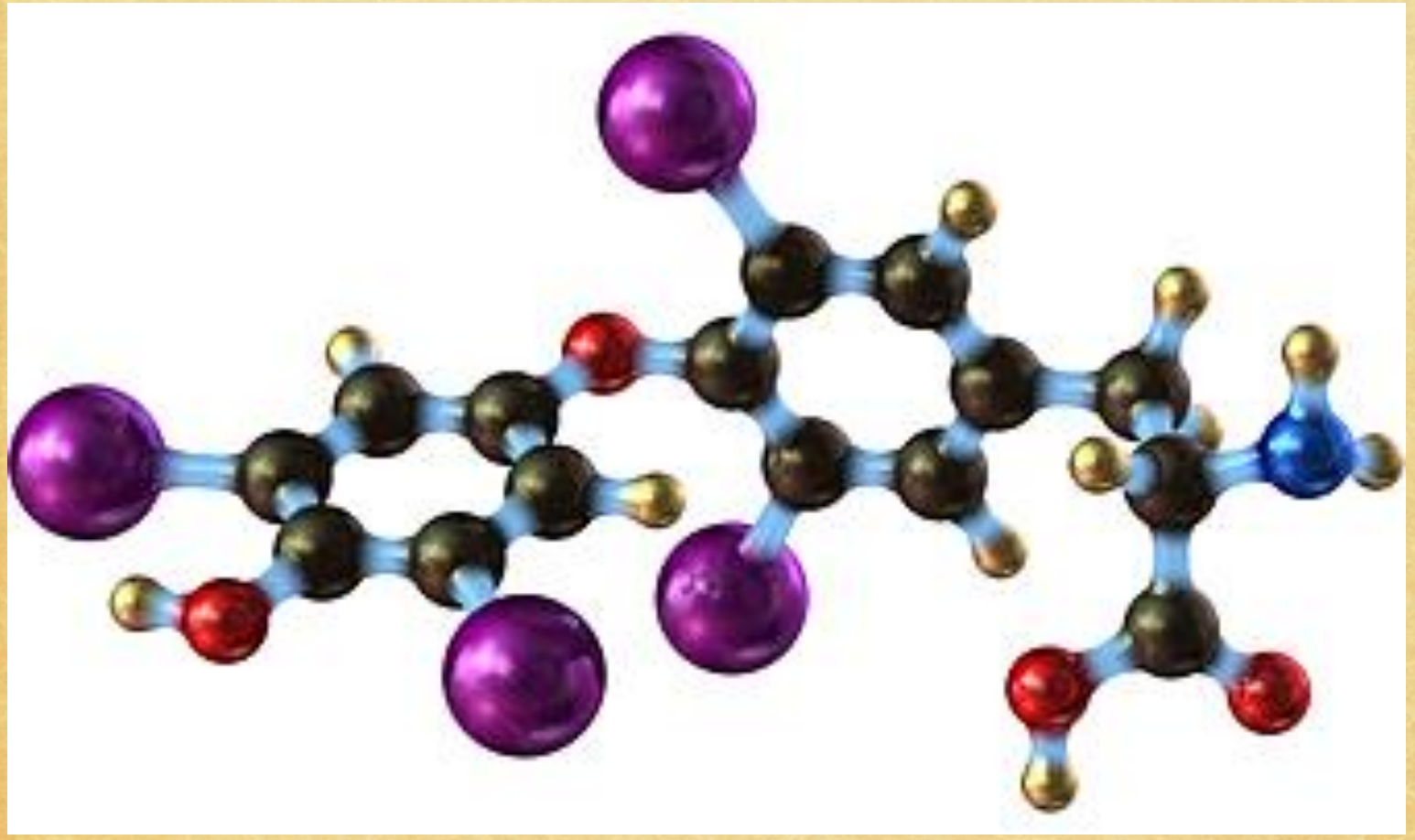
Functions of DHEA

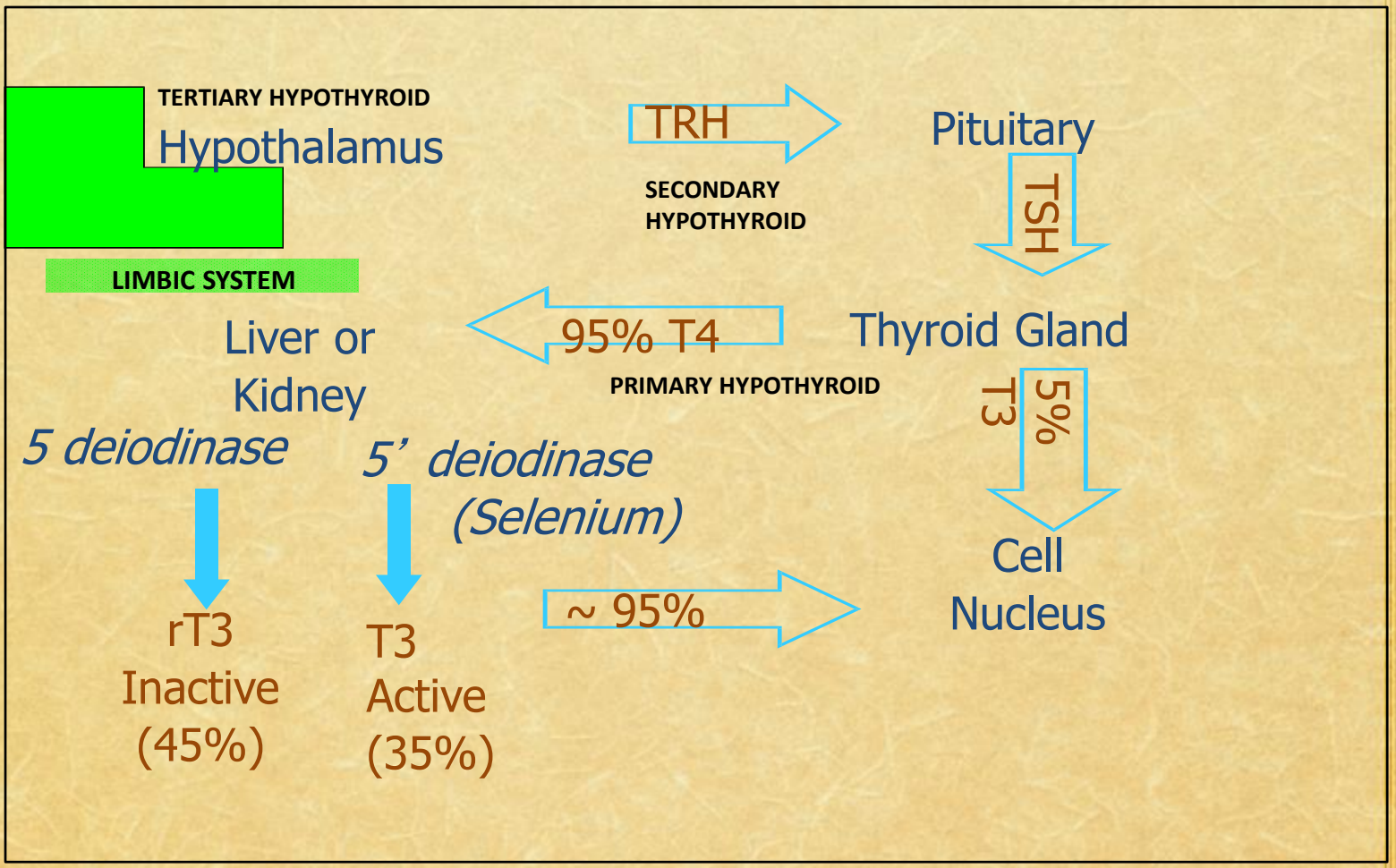
- Involved in conversion T4 to T3
- Accelerates recovery from acute stress
- Reverses many of the deleterious effects of excess cortisol

Cameron DR, Braunstein GD. The use of dehydroepiandrosterone therapy in clinical practice. Treat Endocrinol. 2005;4(2):95-114. Review.

Sorwell KG, Urbanski HF Dehydroepiandrosterone and age-related cognitive decline. Age (Dordr). 2010 Mar;32(1):61-7. Epub 2009 Aug 27.

THYROXINE




TERTIARY HYPOTHYROID
Hypothalamus
LIMBIC SYSTEM
TRH
SECONDARY HYPOTHYROID
Pituitary
TSH
95% T4
Thyroid Gland
PRIMARY HYPOTHYROID
5% T3
Liver or Kidney
5 deiodinase
5' deiodinase (Selenium)
rT3 Inactive (45%)
T3 Active (35%)
~ 95%
Cell Nucleus

Stress and Hypothyroidism

- High cortisol levels have been associated with **impaired conversion of T4 to T3**
- Psychosocial, physical and chemical **stressors increase production of rT3** at the expense of lowering the action of physiologically active T3

– By the action of cortisol
– 5' deiodinase inhibitors (heavy metals)
–

Competitive inhibition

High cortisol

T4

40% *5'-deiodinase*
Selenium Dependent

Low selenium

active T3

5-deiodinase 45%
Selenium Independent

rT3 inactive

Thyroid and Cortisol

- Thyroid sets throttle, cortisol delivers the fuel.
- Thyroid determines metabolic rate in tissues.
- Lack of either leads to hypo-metabolism.
- Conventional tests and ranges can be **insensitive.**
- Under diagnosed, undertreated— Number of prescribed pharmaceuticals instead (SSRIs, amphetamines, anti-seizure drugs, anti-psychotics, sedatives, etc.)

Stress/Cortisol and Suppression of Thyroid Function

Increased urinary cortisol has been associated with reduction in peripheral thyroid hormone metabolism and symptoms of hypothyroidism

Vantyghem MC, et al. Immunohistochemical detection of glycoprotein hormone alpha subunit in somatoprolactinic and pure somatotroph adenomas. J Endocrinol Invest. 1998;21(4): 219-225.

Inflammation and suppression of thyroid function in Fibromyalgia patients

Increase of inflammatory cytokines, has been associated with lower levels of the active thyroid hormone T3 in Fibromyalgia suggesting down-regulation of the activity of the HPT axis.

Riedel W, et al. Secretory pattern of GH, TSH, thyroid hormones, ACTH, cortisol, FSH, and LH in patients with fibromyalgia syndrome following systemic injection of the relevant hypothalamic-releasing hormones. Z Rheumatol. 1998;57 Suppl 2:81-7.

!!!! IMPORTANT !!!!!

ABNORMALITY IN SET POINTS

It appears the HPA axis has the ability of resetting itself at higher or lower cortisol levels

Resetting of Elevations and Reductions in Cortisol Secretion

- In this model, **low GR** (**glucocorticoid receptor**) concentration represents the normal steady state, and **high GR** concentration represents a dysregulated steady state.
- Limited stress in the normal steady state produces a small perturbation in the **GR** concentration that returns to normal efficiently

Resetting of Elevations and Reductions in Cortisol Secretion

- Prolonged stress produces persistent and high **GR** concentration that **does not** return to baseline, forcing the HPA axis to a different steady state (sometimes with reduced cortisol levels such as is observed in CFIDS).

Gupta S, et al. Theor Biol Med Model. 2007 Feb 14;4:8

Conditions associated with arousal of the HPA axis and increased cortisol

- Malnutrition
- Type 2 Diabetes
- Hypothyroidism
- Central Obesity
- Osteoporosis
- Immune Suppression
- GI dysfunction

- Severe chronic disease
- Melancholic depression
- Anorexia Nervosa
- Panic disorders
- Obsessive Compulsive Disorders
- Chronic excessive exercise
- Memory impairment

Conditions associated with HPA axis and decreased cortisol

- It is possible that in situations of initial elevated cortisol (and depression) a severe or prolonged stressor (e.g. viral illness) can "throw a switch" in the HPA Axis.
- This may lead to chronically re-set low cortisol levels such as are seen in PTSD, CFIDS, and fibromyalgia.

Houdenhove BV, et al. Med Hypothesis. 2009;10:1016.

Summary of Patterns in Adrenal Dysfunction

- **Arousal**
  - Elevated Cortisol
  - Elevated or normal DHEA
- **Adaptation**
  - Elevated Cortisol/Depressed DHEA
  - Normal Cortisol/Depressed DHEA
- **Exhaustion**
  - Depressed Cortisol
  - Depressed DHEA

Hormonal Restoration

So to impact hormonal physiology and its dysfunctions…..

We must address:

- Production, synthesis and secretion of hormones
- Transport, conversion, distribution, interaction with other hormones
- Sensitivity to hormone signaling
- Detoxification, metabolism and excretion of hormones

Hormonal Restoration

How?

Hormonal Restoration

In Integrative Medicine, the primary strategy for HR is to adopt a lifestyle conducive to the optimal function of the Endocrine System

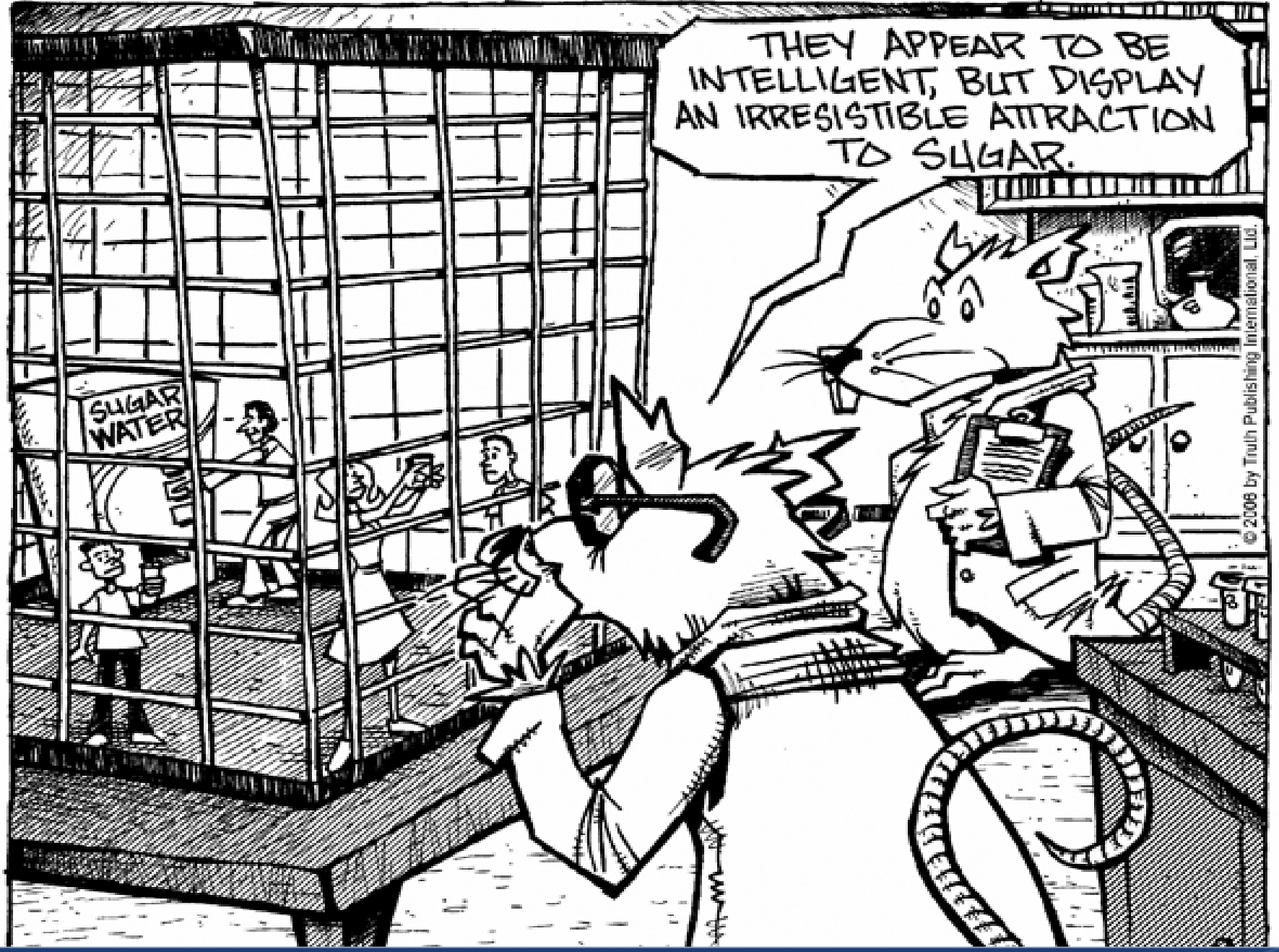
Hormonal Restoration

MULTISYSTEM Intervention

(Holistic Approach)

Hormonal Restoration

- **Diet macro and micro nutrition**
- Appropriate exercise
- Mental Spiritual Health
- Detoxification/Environmental management
- Appropriate use of hormonal replacement when indicated


THEY APPEAR TO BE INTELLIGENT, BUT DISPLAY AN IRRESISTIBLE ATTRACTION TO SUGAR.
SUGAR WATER
© 2008 by Truth Publishing International, Ltd.

Nutrients

Necessary for production and activation of any hormones.

Many patients ask:

"Can't I just get all my nutrients from eating good quality food and eating well?"

-The answer has changed over time. The apple of today has about 1/4th of the nutrients apples had 10 years ago. Our soil is depleted

-There should be 8 different colors a day in vegetable intake .

Hormone Balancing Diet

- Mediterranean style
- Plant-based diet
- Low inflammation (IL-2,IL-6 TNF alpha)
- Low acidity
- Low glycemic load
- Eat what grows in nature
- Maintain healthy eating practices

Hormone Balancing Diet

- Protein Foods – antibiotic, hormone and pesticide residue free
- Organic eggs – DHA added
- Deep sea cold water fish – salmon, sardines, mackerel, cod (tuna, halibut - ? Hg contamination – add *cilantro*
- **Small** amounts of *free-range* lean meats, – arachidonic acid
- Limit dairy – , BGH (Bovine growth hormone), mucus productionSeeds and nuts (healthy fats) – flax seeds , pumpkin, sunflower seeds, hemp seeds, walnuts
  - essential fatty acids (Omega 3 and 6 EFA's)
  - Inflammatory / anti inflammatory mediators

Hormone Balancing Diet

- Organic **low starch** vegetables – green leafy, cruciferous, onion/garlic, root vegetables
- 5-7 servings /day

Limit (2-3x /week)

- **Legumes** – beans, peas, soy:
- with hormone modulating flavonoids
- Starchy vegetables and flour products (**high glycemic index)**
- Sugar/insulin/inflammation connection
- Eat with fat (olive oil) that lowers glycemic index
- Mediterranean Diet

Hormone Balancing Diet

- **Grains**
  - Alkalinizing non-gluten grains – rice, millet, buckwheat
  - (**limit**) Acidic gluten grains– wheat, oats, rye, barley
  - Inhibits CyP450 3A4 – increase estrogens
  - Interferes with thyroid function
  - Sensitivity – gut inflammation
- **Fruits**
- Lower GI fruits – berries, apples
- grapefruit(**naringenin**) affects CyP450 3A4
- **Limit** Dried fruits and juices – high GI -

Nutrients and Receptor cells

Avoid foods overloaded with:

- trans fats
- saturated fats
- hormone infused
- containing antibiotics and pesticide residues
- artificial flavorings and colorings
- preservatives
- pure sugar
- refined flour

Supplements

Four basic main supplements to consider:

- Vitamin D
- Probiotics
- The purest form of Omega-3 that one can find
- A multivitamin in the purest form one can find

Hormonal Restoration

- Diet macro and micro nutrition
- **Appropriate exercise**
- Mental Spiritual Health
- Detoxification/Environmental management
- Appropriate use of hormonal replacement when indicated

Hormonal Restoration

Stress Relief Strategies

1. Body relaxation exercises

breathing techniques

guided imagery

2. Physical exercise

Yoga /Tai Chi /Qi Gong

Healthy work out routines

3. Meditation

4. Exercise Counseling

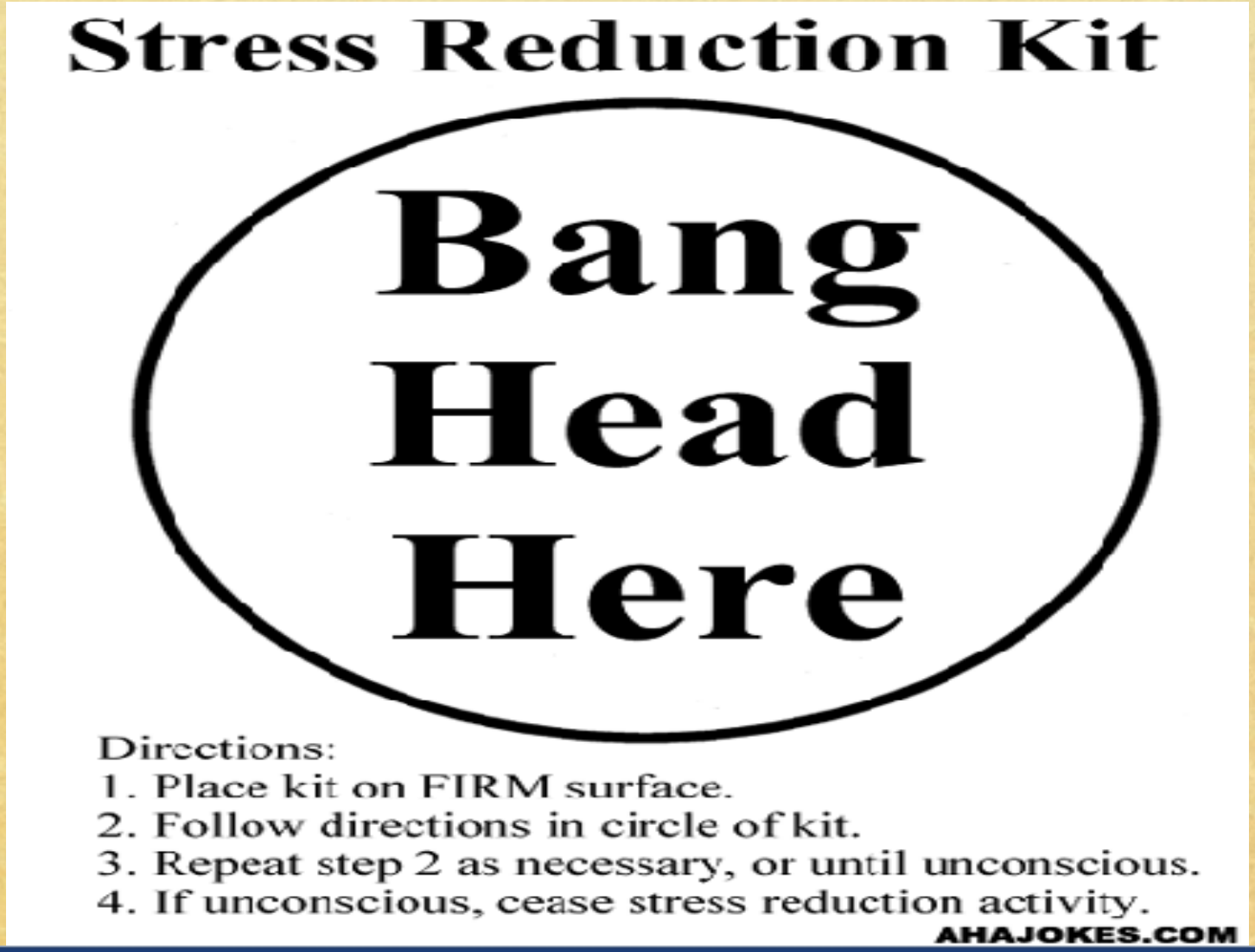
talk therapy/life coaching

Hormonal Restoration

- Diet macro and micro nutrition
- Appropriate exercise for the patient
- **Mental Spiritual Health**
- Detoxification/Environmental management
- Appropriate use of hormonal replacement when indicated

Mental Spiritual Health

Mental Spiritual Health



Stress Reduction Kit

Bang Head Here

Directions:
1. Place kit on FIRM surface.
2. Follow directions in circle of kit.
3. Repeat step 2 as necessary, or until unconscious.
4. If unconscious, cease stress reduction activity.

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When tired of Head-Banging

MBSR

Hormonal Restoration

Contemp Clin Trials. 2015 Feb 7.

Mindfulness-based stress reduction for overweight/obese women with and without polycystic ovary syndrome: Design and methods of a pilot randomized controlled trial

Raja-Khan N, Agito K, Shah J2, Stetter CM, Gustafson TS, Socolow H, Kunselman AR, Reibel DK, Legro RS.

J Appl Gerontol. 2014 Dec 9.

An Adapted Mindfulness-Based Stress Reduction Program for Elders in a Continuing Care Retirement Community: Quantitative and Qualitative Results From a Pilot Randomized Controlled Trial.

Moss AS, Reibel DK, Greeson JM, Thapar A, Bubb R, Salmon J, Newberg AB.

Hormonal Restoration

- Diet macro and micro nutrition
- Appropriate exercise for the patient
- Mental Spiritual Health
- **Detoxification/Environmental management**
- Appropriate use of hormonal replacement when indicated

Detoxification/Environmental Management

- Diet: Cilantro, Glucosinolates e.g. the cabbage family
- Supplements like NAC, GSH, Lipoic Acid
- **Change in Mental Attitudes**
- Search for environmental optimization to include clean and pleasant surroundings but also
- Beauty: Nature appreciation
- Great Art e.g. Music, Paintings, Literature, Philosophy, endeavors that harmonize body with soul

Hormonal Restoration

- Diet macro and micro nutrition
- Appropriate exercise for the patient
- Mental Spiritual Health
- Detoxification/Environmental management
- **Appropriate use of hormonal replacement (HRT) when indicated**

Hormone Replacement Therapy

- Cortisol, DHEA and Thyroid
- Estradiol, Progesterone for Peri/Menopause
- Progesterone alone
- Testosterone for Men and Women
- Non-Bioidentical Pharmaceutical Hormones
- Bioidentical: Pharmaceutical vs Compounded
- The Problem with Reference Ranges
- Compounding Pharmacies issues
- And much more…… for another time

Thank You!

Questions?