SLIM STRESS SOLUTIONS

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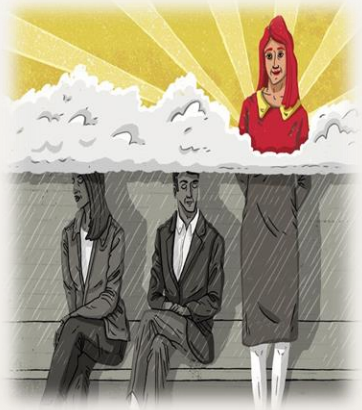
TYPES OF STRESS

We all experience stress at some point in our lives.
But **whilst many** people seem **debilitated** by **stress, others** seem to **thrive on it**!

EUSTRESS

- This type of **Positive** Stress produces **maximum enthusiasm, creativity** & **performance = CONSTRUCTIVE!!**



DISTRESS OR CHRONIC STRESS

- This type of **Negative Stress *reduces*** **motivation, creativity** and **performance = DESTRUCTIVE!!**
- **Types of DISTRESS incl. PHYSICAL, EMOTIONAL, ENVIRONMENTAL** (i.e. temperature changes, changes in altitude, noise variations, etc.), **METABOLIC**

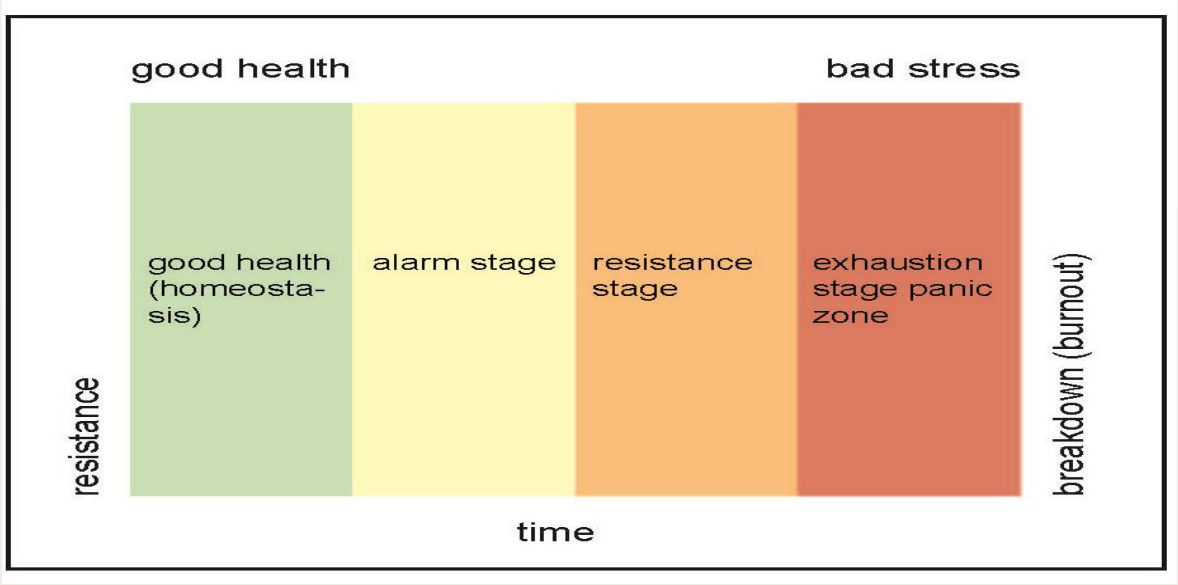
STRESS RESPONSE PATTERN

- Endocrinologist & "*Father of Stress Research*" **Hans Selye** observed that the **body responds to stress** with a ***Predictable Biological Pattern,*** in an attempt to **restore** the body's **Internal Balance/ Homeostasis**.
- He thus introduced the **General Adaptation Syndrome Model**
- The **response** to Stress is divided into **3 stages**:

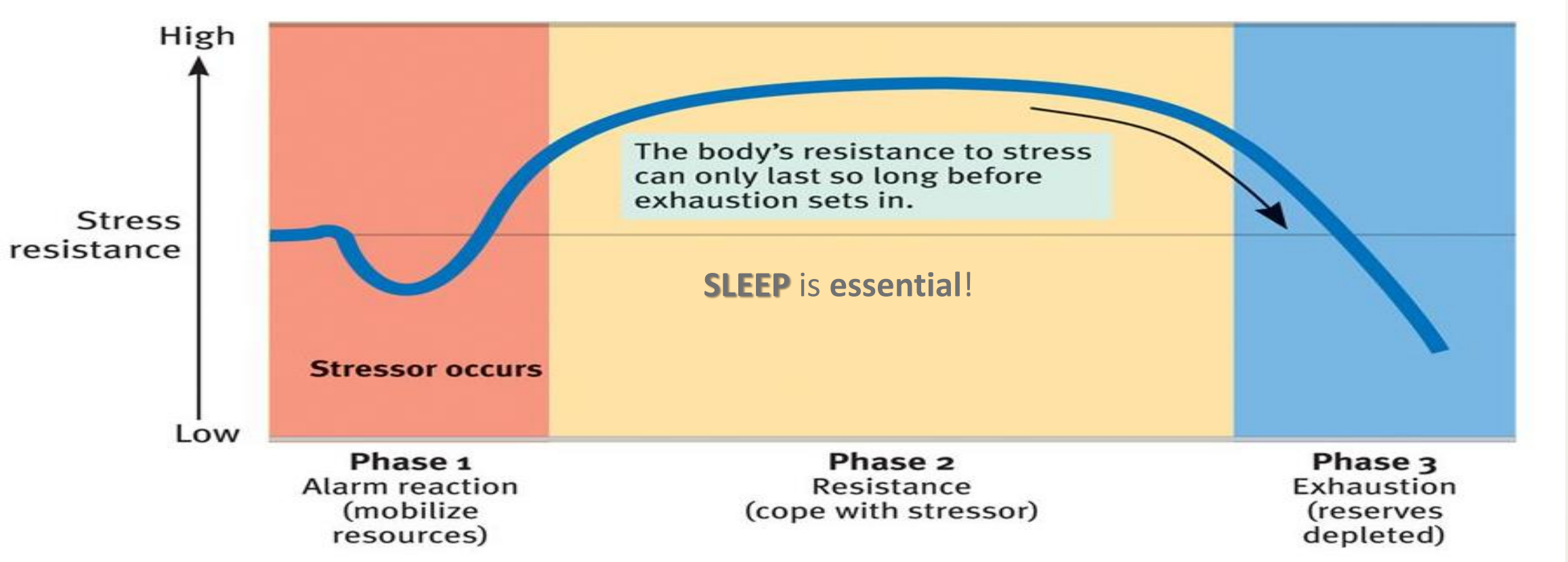
✓**Alarm Stage**

✓**Resistance Stage**

✓**Exhaustion Stage**



General Adaptation Syndrome - GAS



- Going through the **Resistance Stage, the body** is **continuously trying to regain Homeostasis** i.e. **Stability & Balance**, returning systems to normal functioning. This should be a **period** of **Recovery, Repair** & **Renewal.**
- **If** this process/ STRESS is **repeated too often, with little or NO RECOVERY**, the **body** will then **move into the Exhaustion Stage.**

FOOTNOTES FOR PREVIOUS SLIDE:

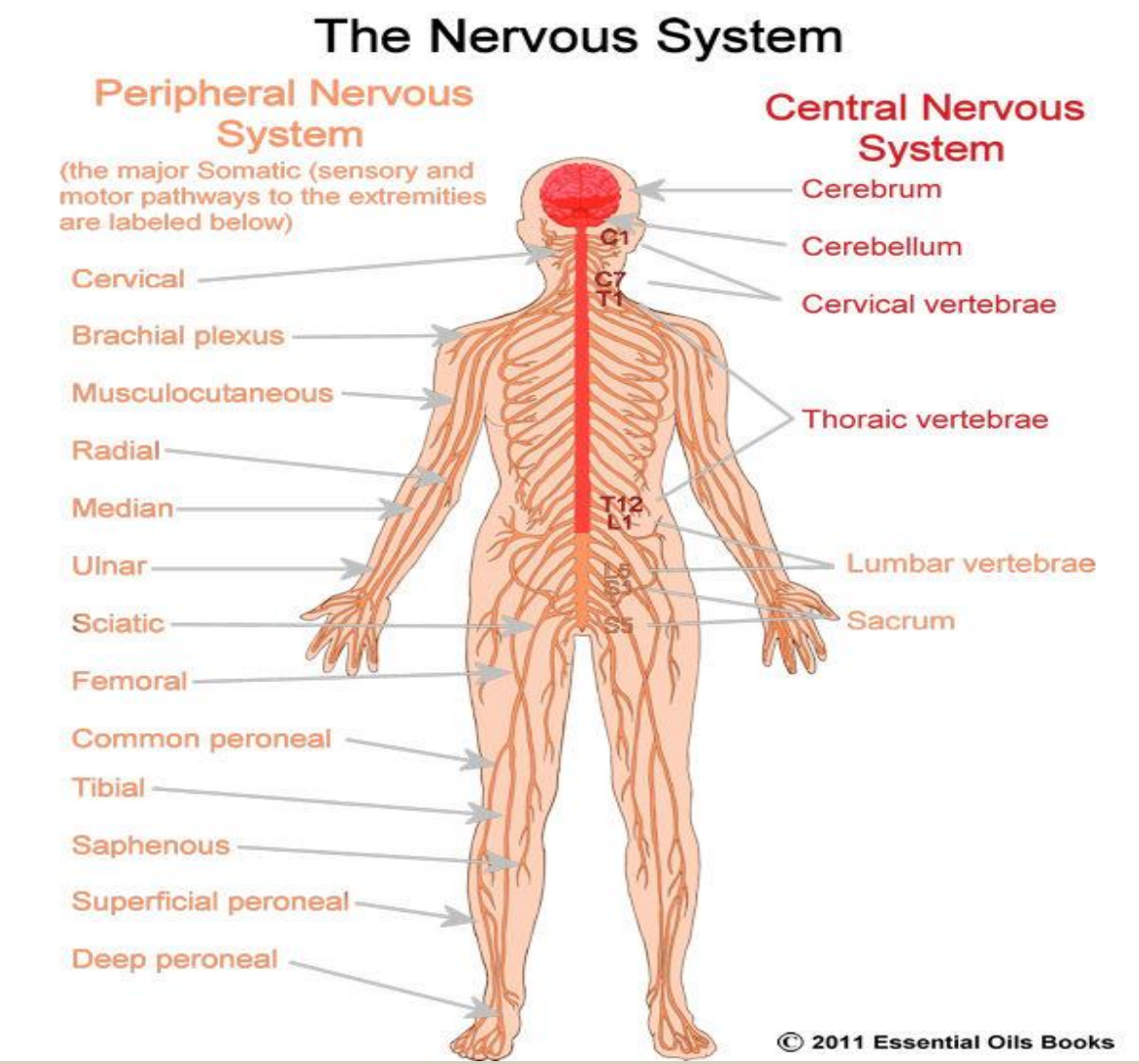
THE RESISTANCE STAGE

- Release of cortisol, increased blood sugar due to catabolism
- Release of aldosterone, retention of sodium and excretion of potassium to increase blood pressure
- The **source** of the stress may **now** have been **dealt with**
  There may still be **increased** levels of **Cortisol**, but even if Stress Hormone levels return to normal, **Defences** and **Energy** levels may be **reduced/ lowered**.
  The process of **Homeostasis begins** a **period** of **Recovery, Repair** & **Renewal – SLEEP** is **essential** at this stage!!

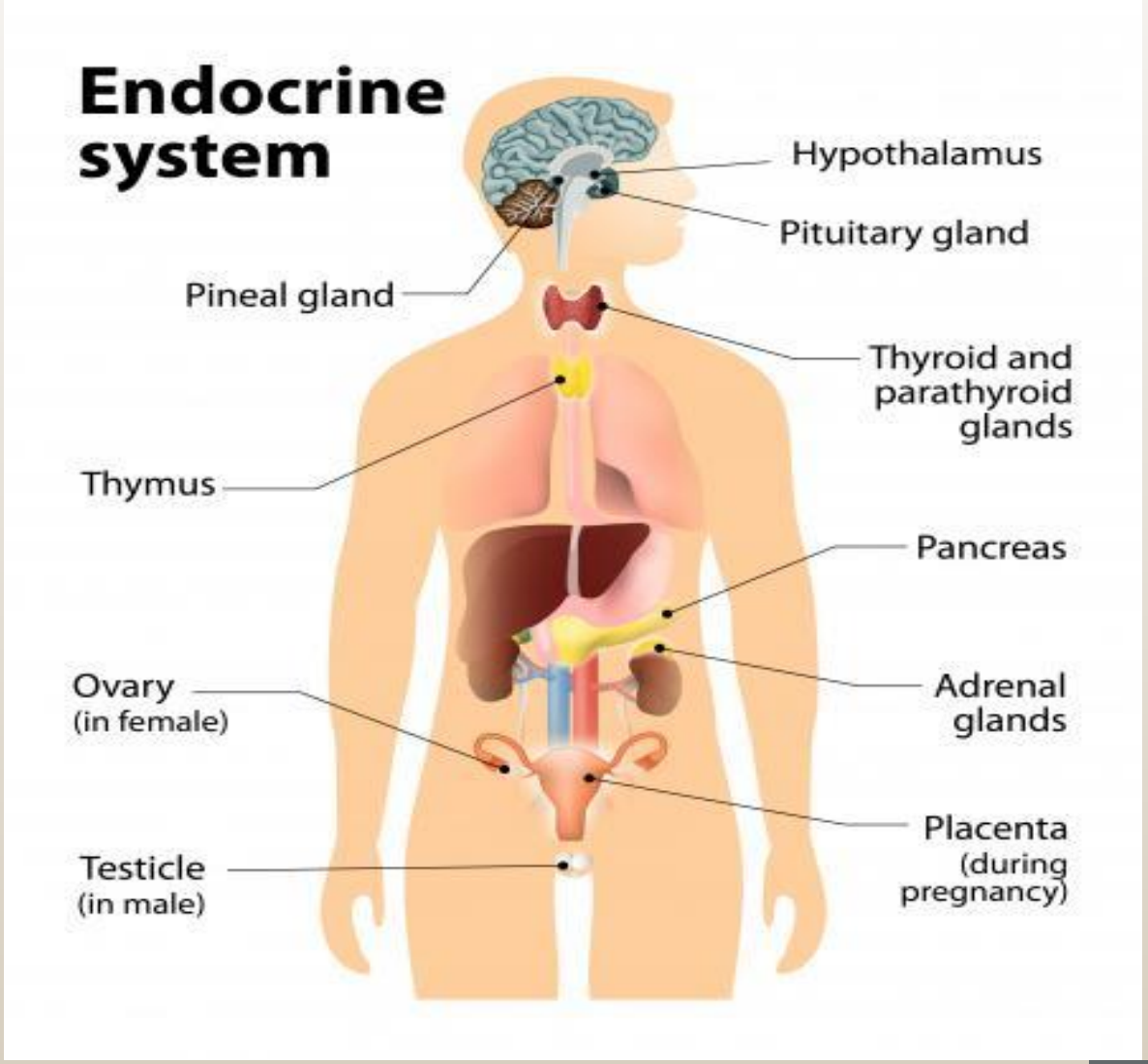
EXHAUSTION STAGE

- Depletion Of Adrenal Hormones
- Reduced Anti-stress Capabilities & Other Functions Dependent On Adrenal Hormones
- Depletion Of Neurotransmitters (E.G. Dopamine)
- Chronic Blood Sugar Depletion
- Chronic Fatigue
- General Physiological & Psychological Depression

- WHAT IS **GOING ON / HAPPENIG IN OUR BODIES** WHEN WE GO THROUGH THESE STAGES?
- WE **ACTIVATE & USE BOTH** THE **NERVOUS & HORMONE SYSTEMS**



SOURCE: https://thesocialmag.net/medical/wp-content/uploads/2017/01/f6e94978a2484ac44849f13b0d0963a0.jpg

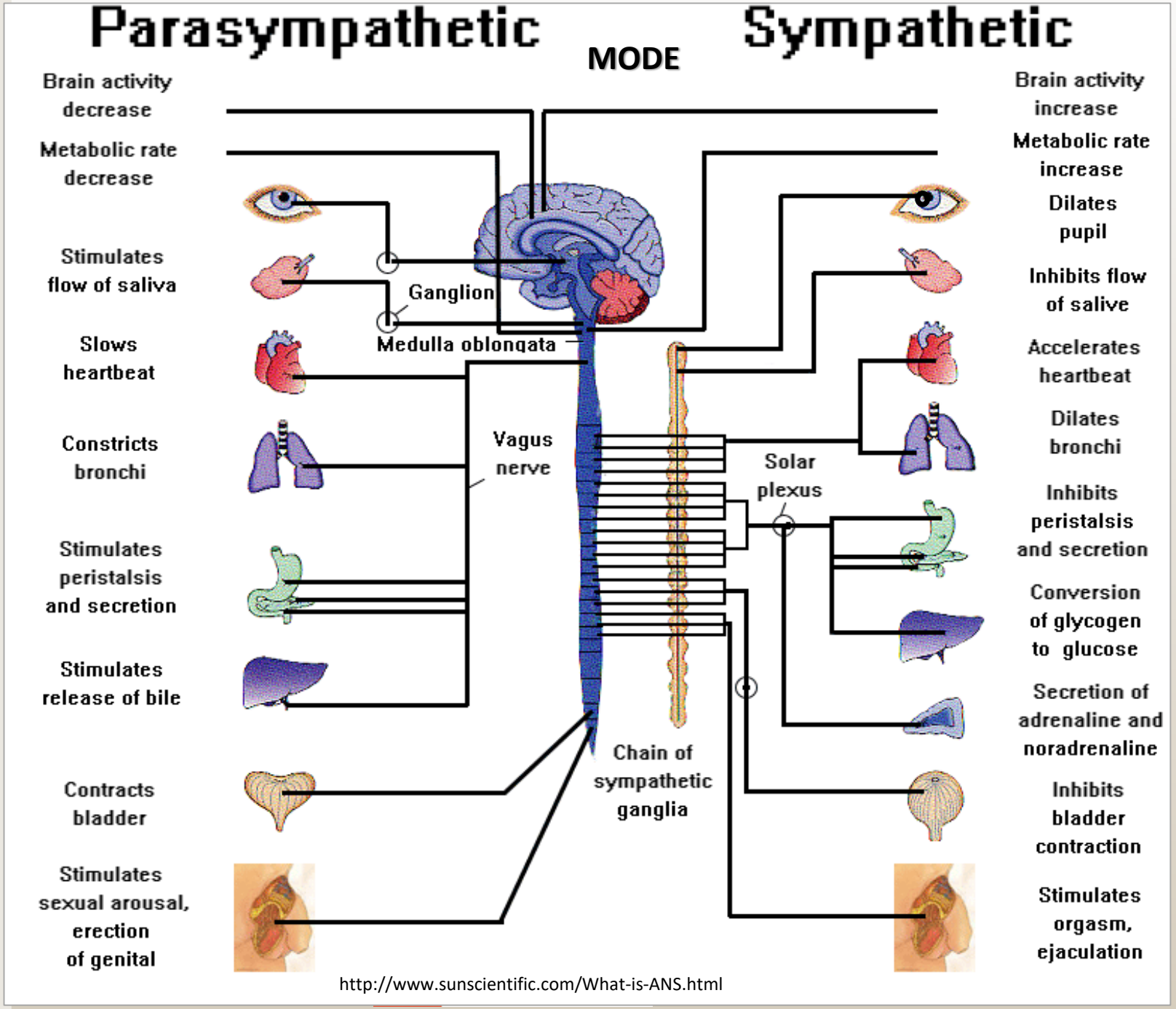


SOURCE: https://www.epa.gov/sites/production/files/styles/medium/public/2015-08/endocrine-system.jpg

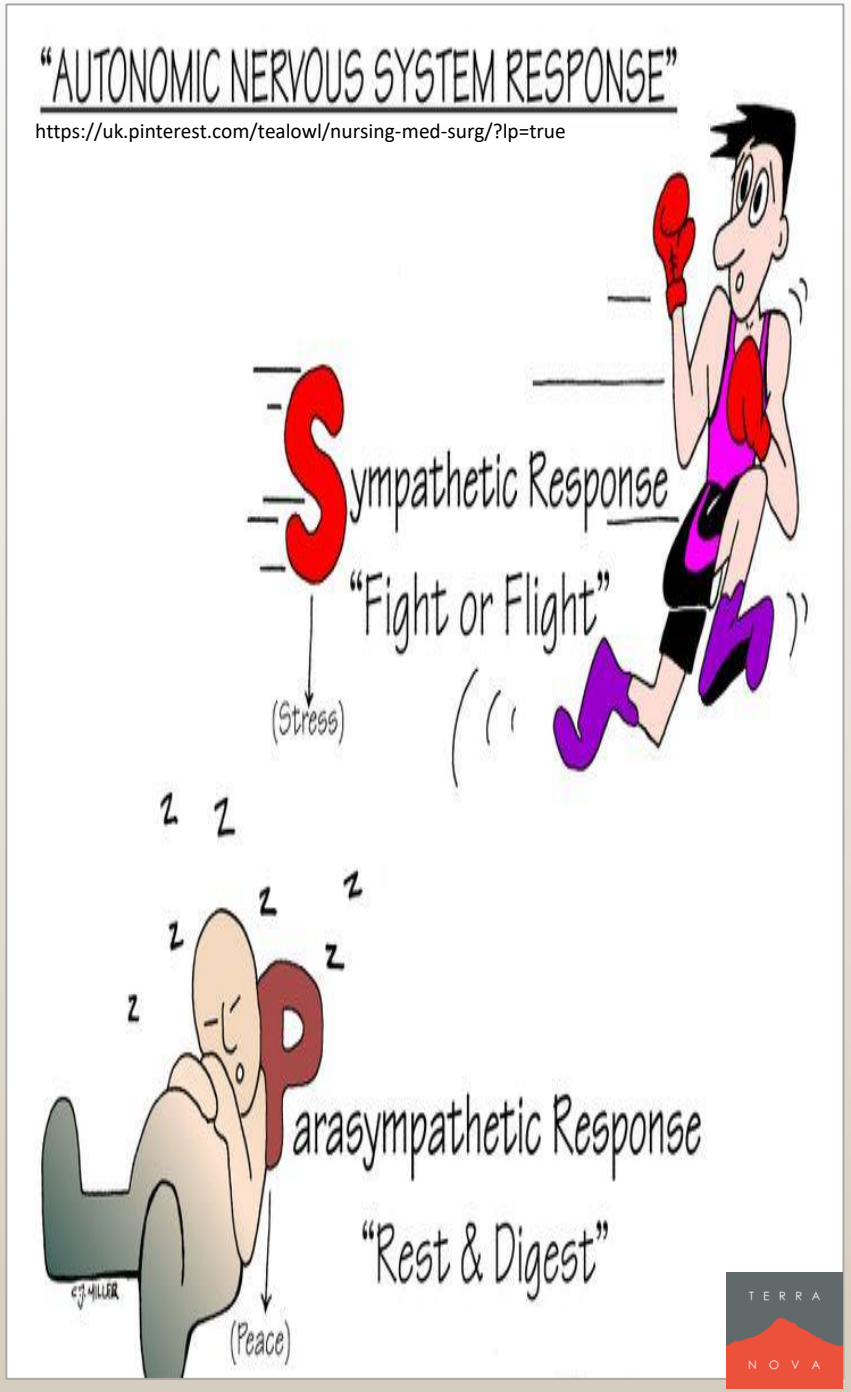
FOOTNOTES FOR PREVIOUS SLIDE:

The Nervous system uses **electrical impulses** to send ***signals (Neurotransmitters)*** through **Neurones**.
Transmission (Communication) is **quick,** effect **LOCALISED**, ***short-lived*** & **reversible *(Temporary)*** .

The hormonal system uses **chemical messengers** **(Hormones)** transported into **Blood** to target cells.
Transmission (Communication) takes **longer** , effect **WIDESPREAD** and ***long-lasting,*** therefore often **permanent**.



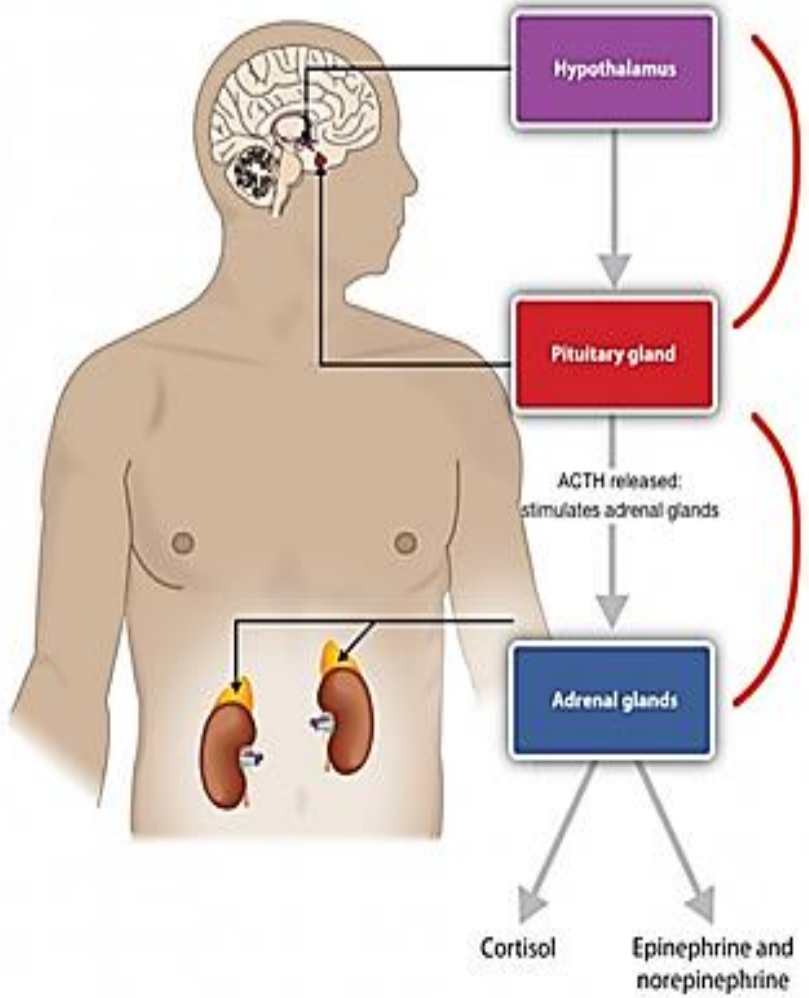
http://www.sunscientific.com/What-is-ANS.html



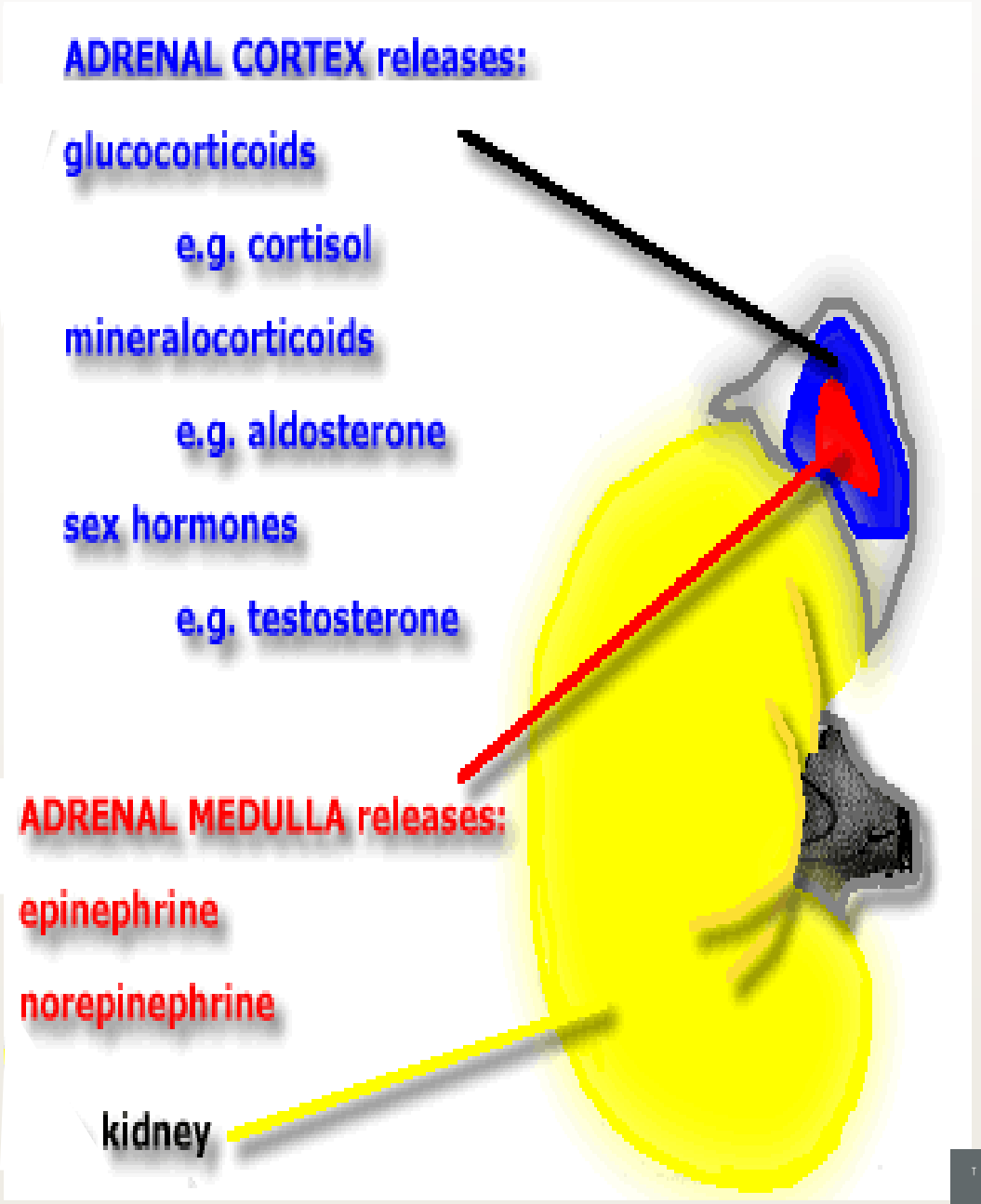
COMMON NERVE MESSENGERS / NEUROTRANSMITTERS

NEUROTRANSMITTER	ACTION
ACETYLCHOLINE	• **Muscle MOVEMENT** in **Peripheral NS** • **MEMORY, Learning, Attention, Alertness** & **REM Sleep** in the **CNS** • 1 ° neurotransmitter of **PSNS** & **ANTAGONISTIC to Adrenaline**
DOPAMINE	• **MOTIVATION, DRIVE** & **feelings of Pleasure** • **SMOOTH & COORDINATED MUSCLE MOVEMENT**
NORADRENALINE & ADRENALINE	• **NEURO-HORMONES** • **FIGHT /FLIGHT-** Involved in **Acute Stress & Energy responses**
GABA	• **INHIBITORY** & **Calming - Mind & Muscles**
GLUTAMATE	• **STIMULATORY-** Assists with **Intellectual Performance, Attentiveness, Eliminating Brain Fog & Cloudiness**.
SEROTONIN	• Regulates **Mood, Appetite, Sleep, Pain perception, Intestinal Movement**

HPA-Axis Feedback Loop



SOURCE: http://dq9ucdqjq6nrk.cloudfront.net/wp-content/uploads/2014/05/Untitled.png



SOURCE: http://www.flyfishingdevon.co.uk/salmon/year1/adrgln.gif

	HORMONE RELEASED	PRIMARY ACTION
ADRENAL CORTEX	**GLUCOCORTICOIDS** (Mainly **CORTISOL**) RAISE BLOOD GLUCOSE	↑ **Blood Glucose** ↑ **Blood Pressure** (↑ H_2O Retention) ↓ **Inflammation** & ↓ **Immunity** *(at high doses)* ↑**Glycogenolysis** ↑ **Lipolysis** ↑ **Proteolysis** } **Gluconeogenesis**
	MINERALOCORTICOIDS (Mainly **ALDOSTERONE**) REGULATE MINERAL & WATER CONTENT	↑ **Sodium** & **Water Retention** (Raises Blood Pressure) ↑ **Excretion of K+** ↑ **Reabsorption of Na+**
	SEX HORMONES (Mainly **ANDROGENS** as **DHEA**)	**Sex Hormone Precursor**
ADRENAL MEDULLA	**ADRENALINE / EPINEPHRINE** (80%) **NORADRENALINE/ NOREPINEPHRINE** (20%) NEUROHORMONES working within the AUTONOMIC Nervous System	**Intensify the SYMPATHETIC response** **ADRENALINE** has greater influence on the **Heart**. **NORADRENALINE** affects **Blood vessels**

DUAL STRESS RESPONSE

SAM — ACUTE

Autonomic Nervous System (Involuntary movements of non-skeletal muscles e. g. heart)

FAST — Higher brain centres once stress is perceived (Hypothalamus) — SLOW

Stimulates

Sympathetic Nervous system (activated in situations needing energy and arousal)

Activates

Adrenal Medulla

ADRENAL GLAND

Releases

Adrenaline

Noradrenaline

Arouses sympathetic ganglia

- ↑ Heart Rate & ↑ Blood Pressure
- ↑ Liver conversion of Glycogen to Glucose
- ↑ Blood Sugar
- ↑ Blood Flow to Muscles & Heart with ↓ Blood flow to Digestive & Urinary System
- ↑ Metabolic Rate

HPA — CHRONIC

Activate

Endocrine System

Releases

Corticotrophin releasing factor (CRF)

Anterior Pituitary gland

Releases

Adrenocorticotrophic hormone (ACTH)

Adrenal cortex

Activates

Releases

Cortisol (a glucocorticoid) "STRESS HORMONE"

MINERAL-OCORTICOIDS

- ↑ Sodium & H2O Retention
- ↑ Blood Volume & Pressure

GLUCOCORTICOIDS

- ↑ Blood Glucose
  - ↑Glycogenolysis
  - ↑Gluconeogenesis
- ↑ Blood Volume & Pressure
- ↓ Inflammation & Immunity

ALARM STAGE

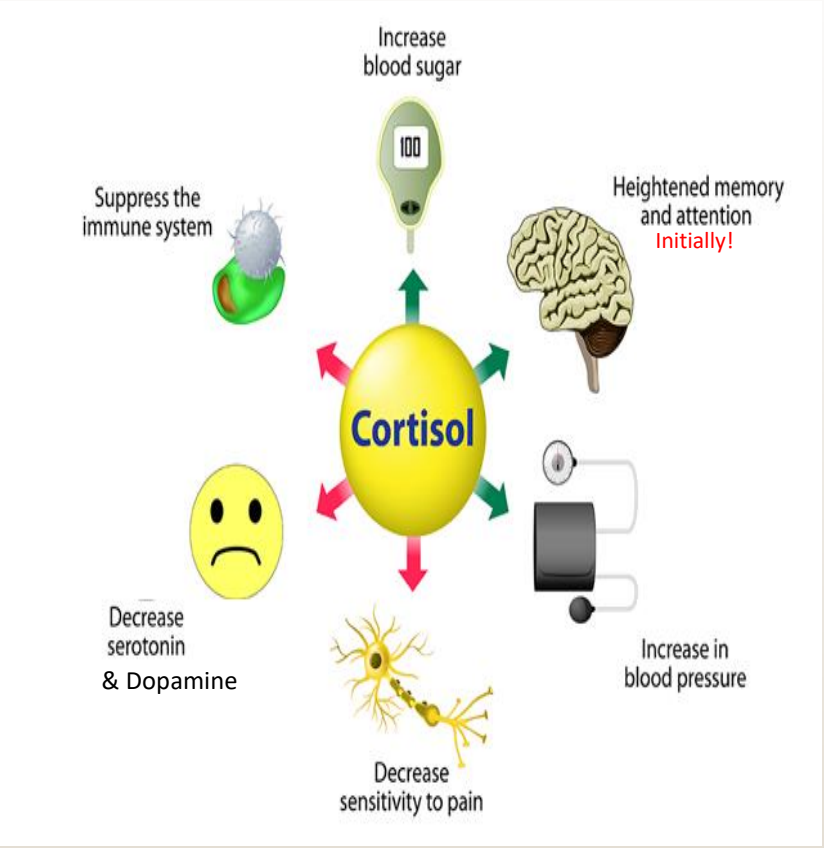
RESISTANCE STAGE

http://drwilsons.com/got-stress/how-your-stress-response-works/

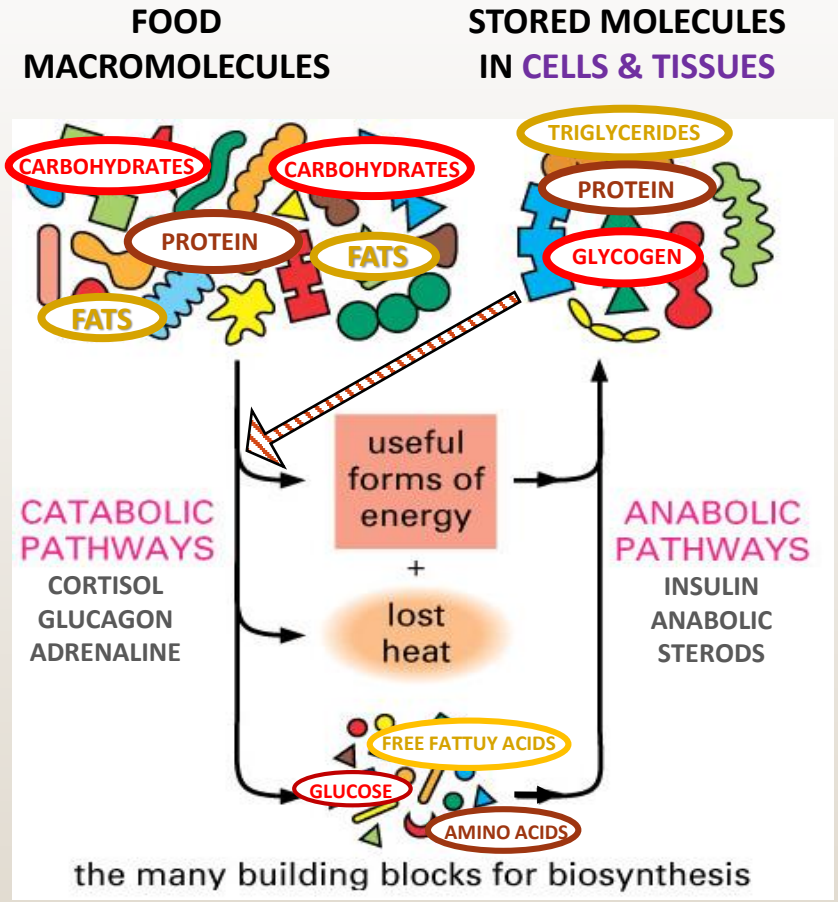
FOOTNOTES FOR PREVIOUS SLIDE:

Every stress you experience triggers a **dual** chain reaction that prepares you to physically respond to the stressor.
The **INITIAL & (Acute) Alarm Reaction ACTIVATES** your Brain & Sympathetic Nervous System, which stimulate your Adrenal glands to produce epinephrine (adrenaline) to prepare your body for immediate “fight or flight”.

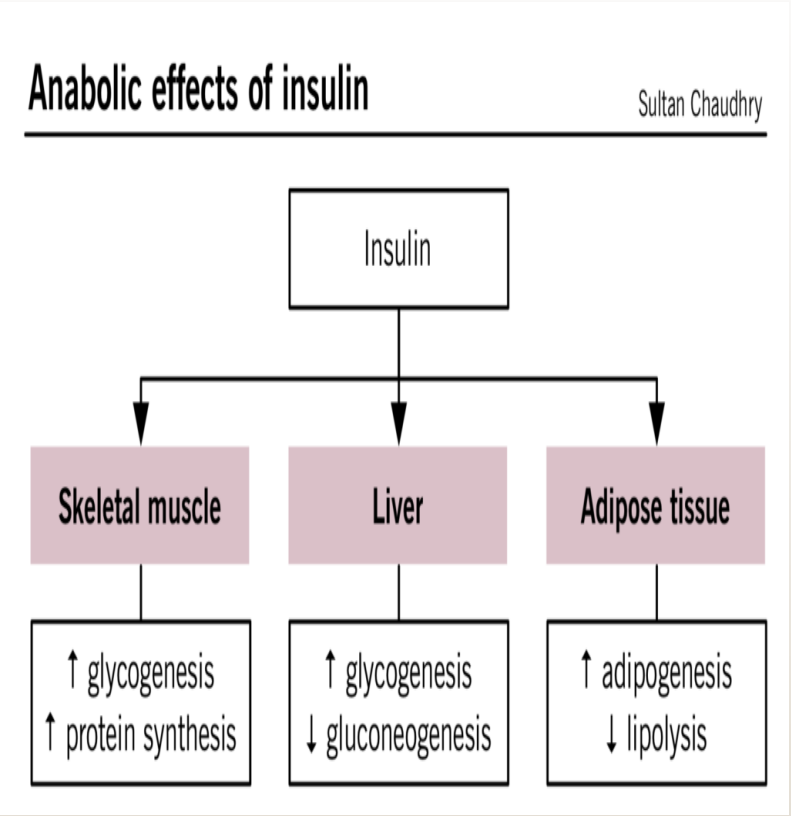
This is then **followed by a stress response regulated through** your **Hypothalamic-pituitary-adrenal (HPA) axis.**
It begins with a message from the hypothalamus in your brain and **leads to the secretion of adrenal stress hormones** that **SUSTAIN** the “fight or flight” as **long** as necessary.



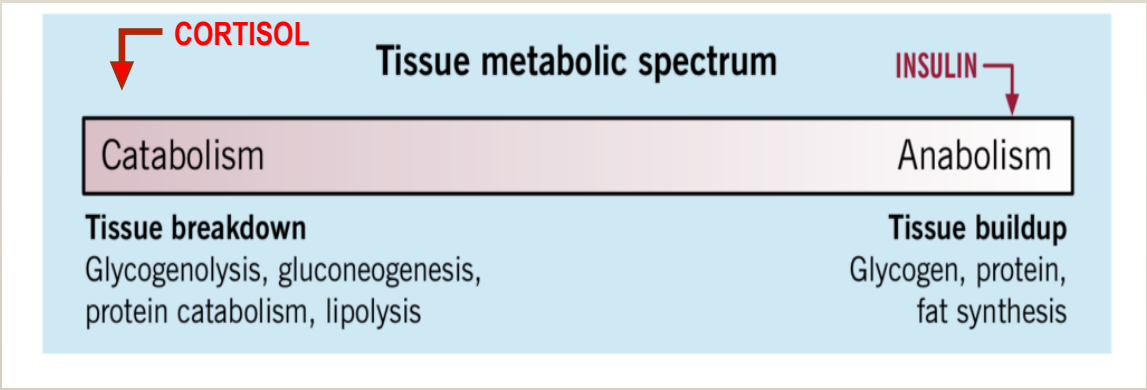
SOURCE: http://www.smartshape.com.au/a/987.html

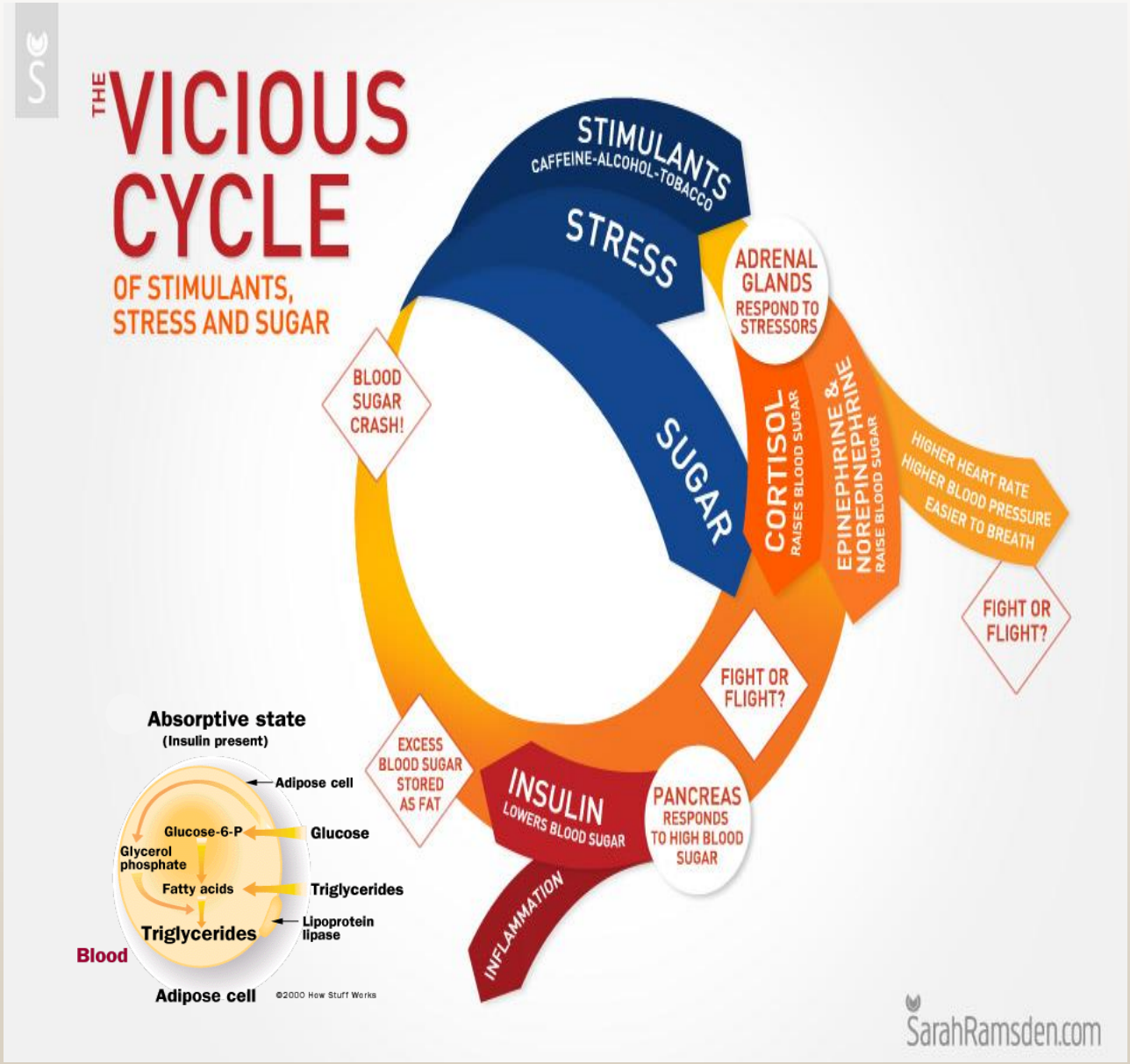


SOURCE: http://www.donnieyance.com/anabolic-nutrients-the-key-to-optimal-health-and-fitness/

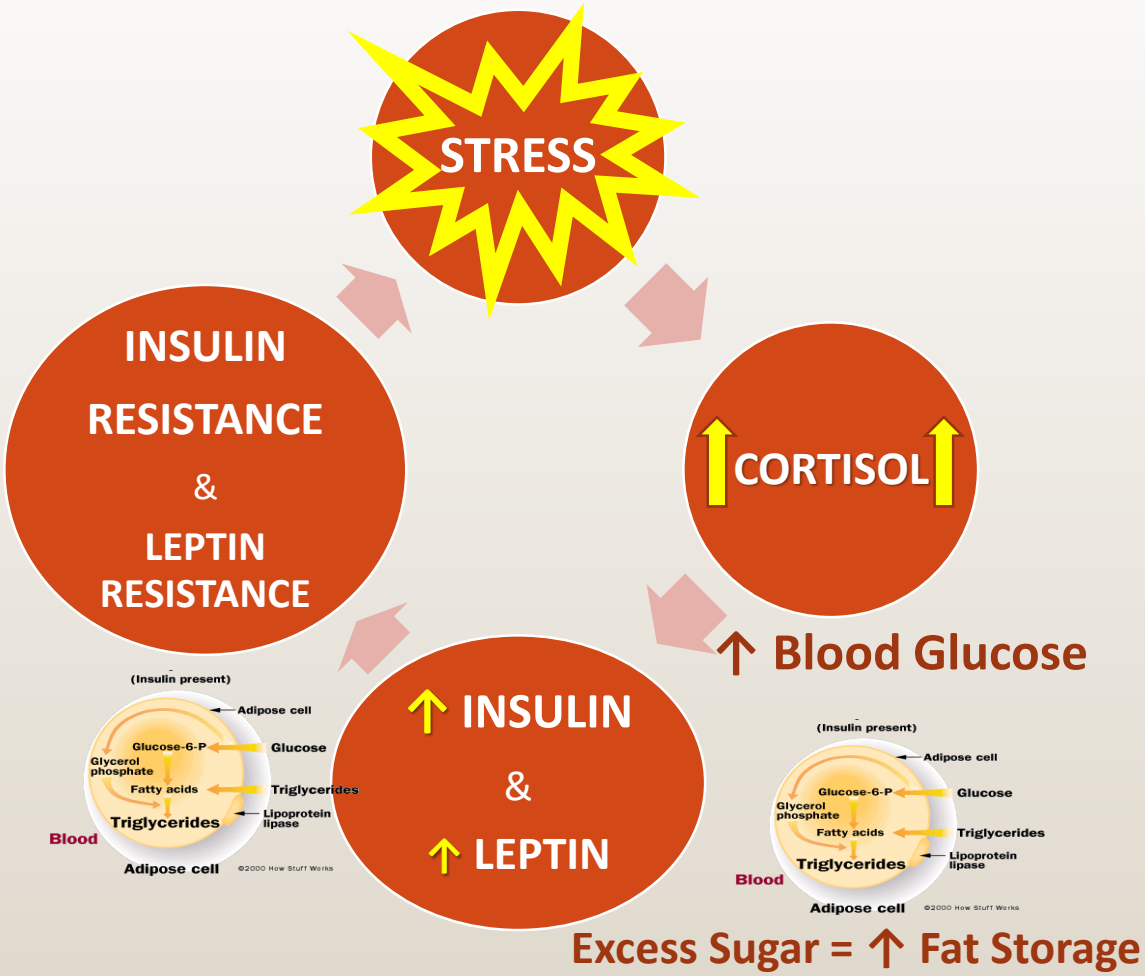


SOURCE: http://www.pathophys.org/hyperglycemic-emergencies-diabetic-ketoacidosis-and-hyperosmolar-hyperglycemia-state/





http://www.sarahramsden.com/why-coffee-might-be-stressing-you-out/



Excess Insulin = Insulin Resistance & ↑ Fat Storage = Leptin Resistance

This leads to Metabolic Stress/ Dysfunction = ↑ Cortisol = Vicious Cycle

GLUCOCORTICOID- EFFECT ON MIND & MOOD

- **GLUCOCORTICOIDS cause** Biochemical **imbalances in** the **Brain** by **disrupting Serotonin, Dopamine, Norepinephrine,** as well as **Glutamate** and ***other*** Brain Chemicals.[1,2]
- **This interferes with Mood, Memory** & **Learning.**[3- 6]
- Ultimately **Glucocorticoids** can even **cause** the **Brain** to **Shrink.**[7,8]

REFERENCES FOR PREVIOUS SLIDE:

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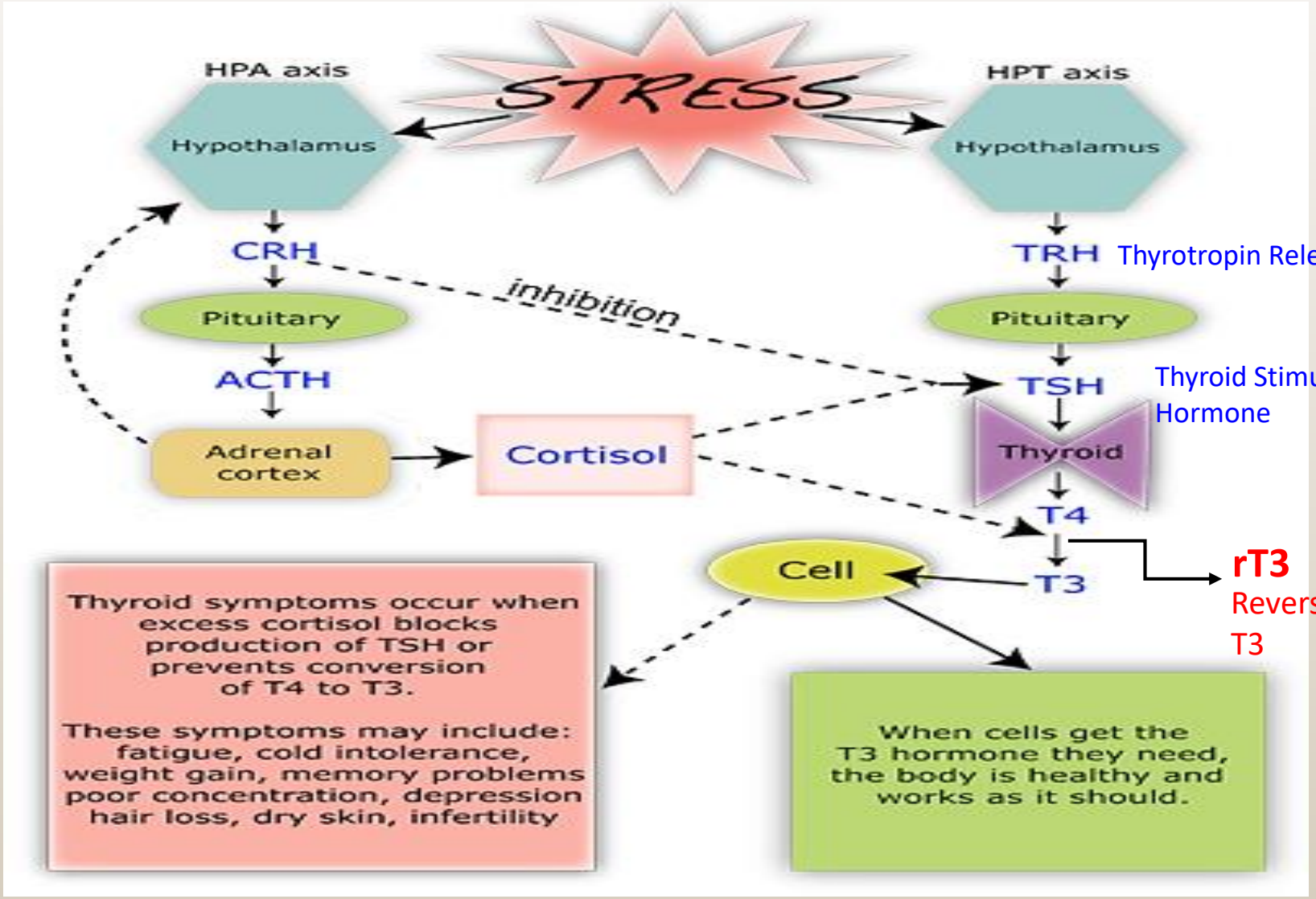
THYROID RESPONSE TO STRESS

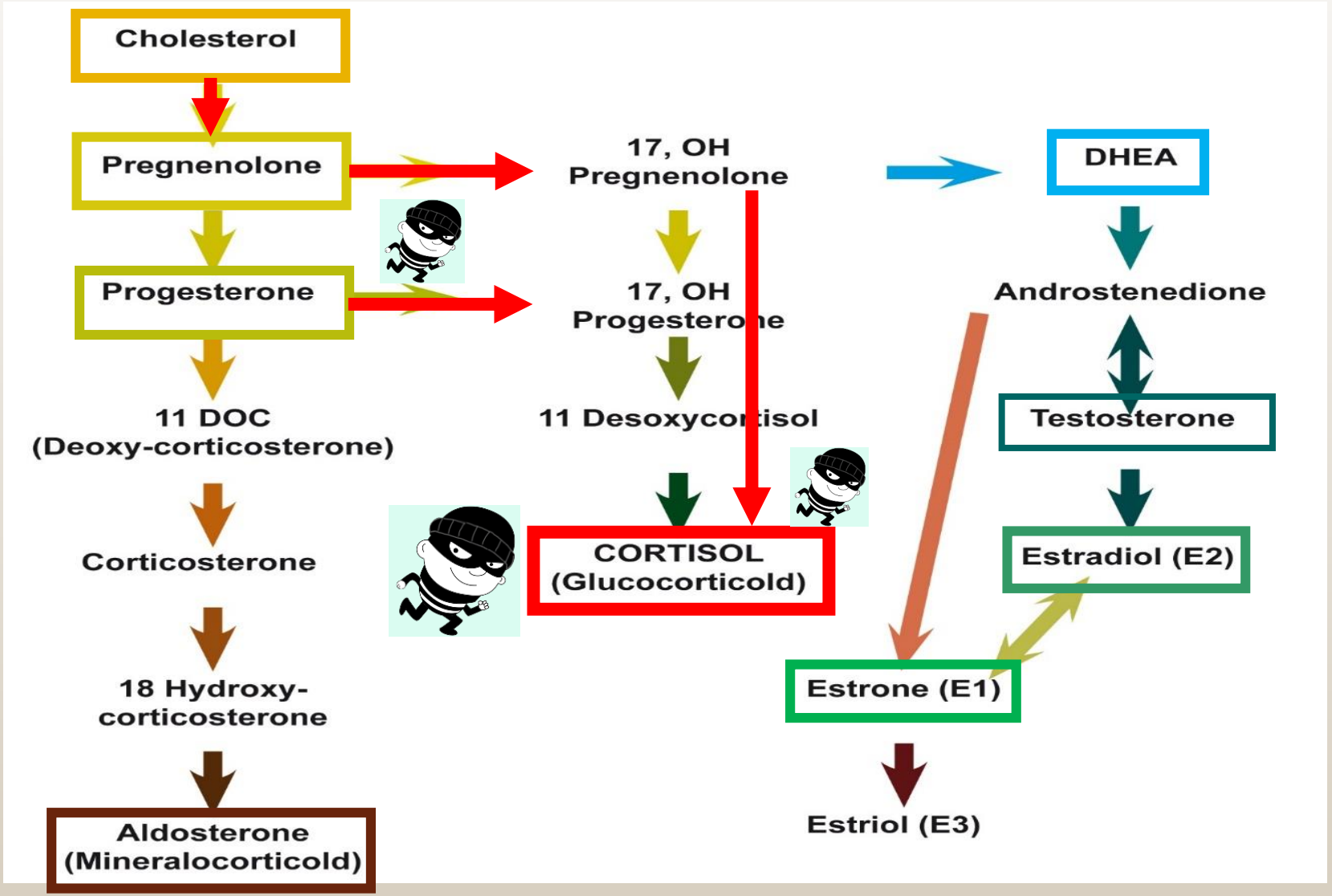


Factors that increase conversion of T4 to RT3

- Stress
- Trauma
- Low-calorie diet
- Inflammation
- Toxins
- Infections
- Liver/kidney dysfunction
- Certain medications **e.g. STEROIDS**

SOURCE: http://knowyourthyroid.com/2015/06/08/stress-affecting-your-thyroid/

PREGNENOLONE STEAL



SOURCE: http://naturesmedicine.com.au/adrenal-fatigue-do-you-have-it/

FOOTNOTES FOR PREVIOUS SLIDE:

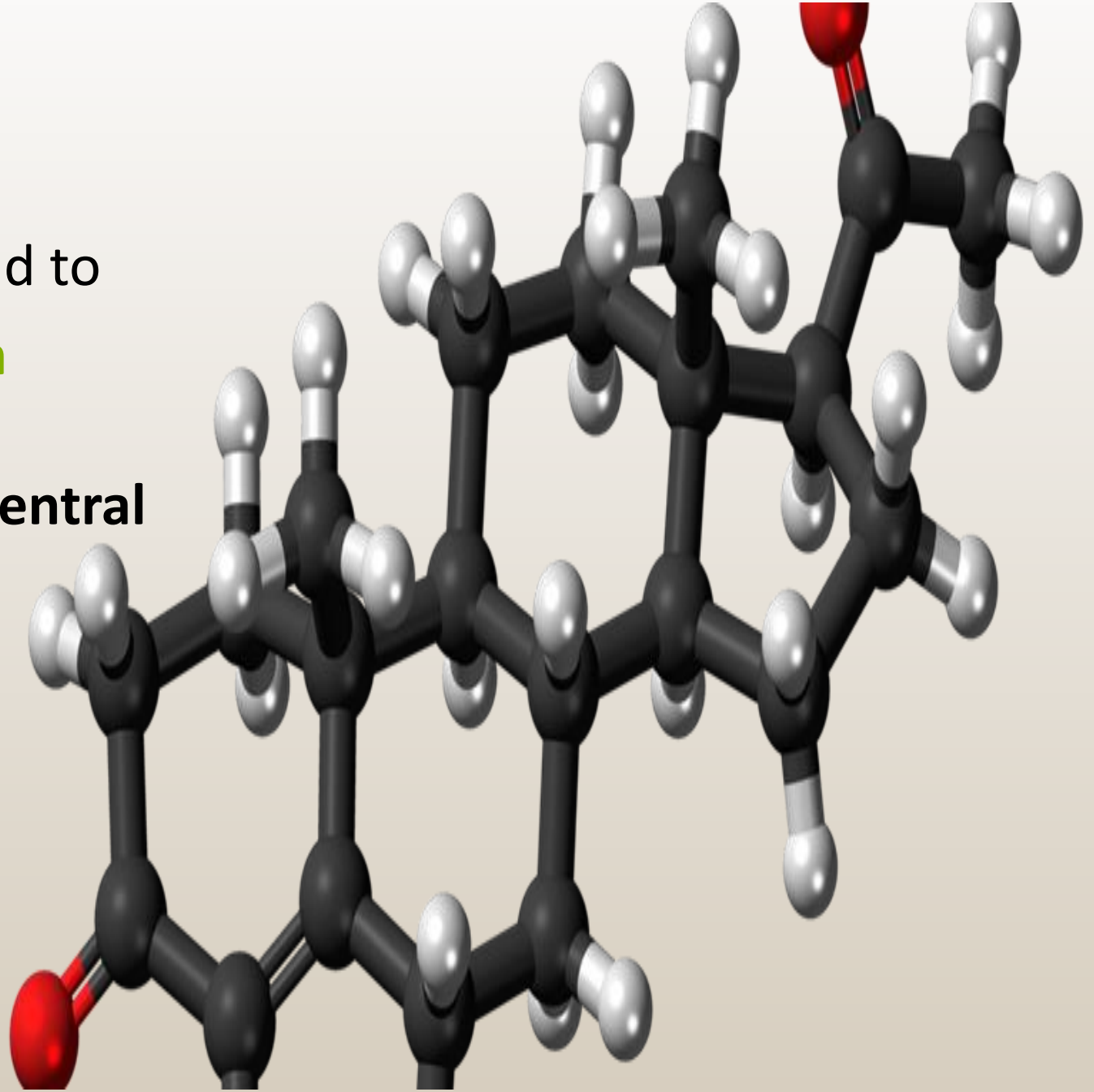
In chronic stress situations, the **constant need for Cortisol** by the body can start to **impact on** the ***manufacture of other hormones***.
This is because **both the SEX hormones and CORTISOL are made from the same precursor substance** called **PREGNENOLONE.**

PREGNENOLONE is the precursor for 3 hormones.
It can be converted into **Progesterone** and then on into other adrenal hormones; it can be converted into **Cortisol** when a stress response is needed and it can be converted into the hormone **DHEA**, from which oestrogen is made.
In prolonged stressful situations, the body's demand for cortisol (and other adrenal hormones) is high. As a result, the **body uses pregnenolone predominantly to support the production of stress hormones, at the expense of making progesterone, DHEA and oestrogen.** This can lead to an imbalance between progesterone, testosterone and oestrogen at menopause.

SOURCE: http://naturesmedicine.com.au/adrenal-fatigue-do-you-have-it/

PROGESTERONE

- **Low Progesterone** can in turn lead to ↓ **Thyroid Hormone production**
- **Low Progesterone** can lead to **Oestrogen Dominance** which is **central** to many female conditions such as **PCOS**, **Fibroids** and **Endometriosis -** All of which are associated with **Blood Sugar Imbalance** & Promoting **Insulin Resistance**

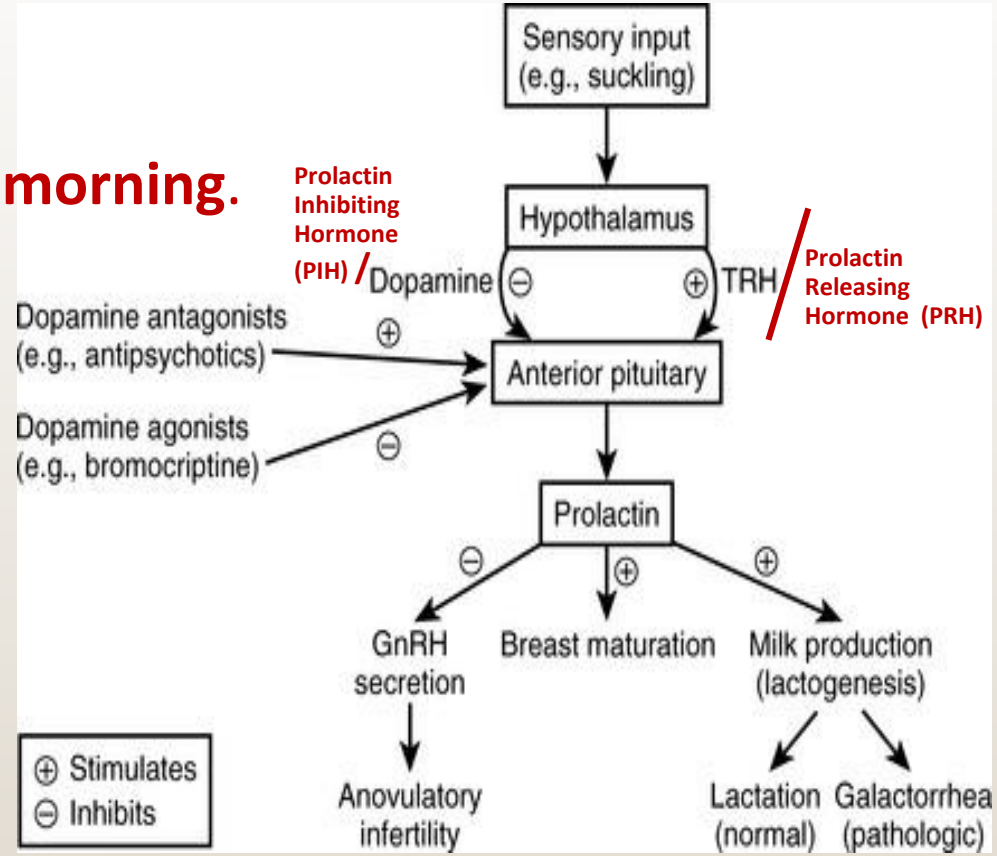


PROLACTIN

Prolactin levels **peak** during **REM sleep &** in the **early morning.**

Levels can ↑↑↑ rise ↑↑↑ :

- **PREGNANCY**
- With **Physical** or **Emotional STRESS. After EXERCISE** & **High-protein Meals**
- **Sexual Intercourse**
- Medications that **reduce DOPAMINE** action in the body
- Following **Epileptic Seizures**
- **HYPOTHYROIDISM** (underactivity)
- **Benign Pituitary Tumours** (known as Prolactinomas).

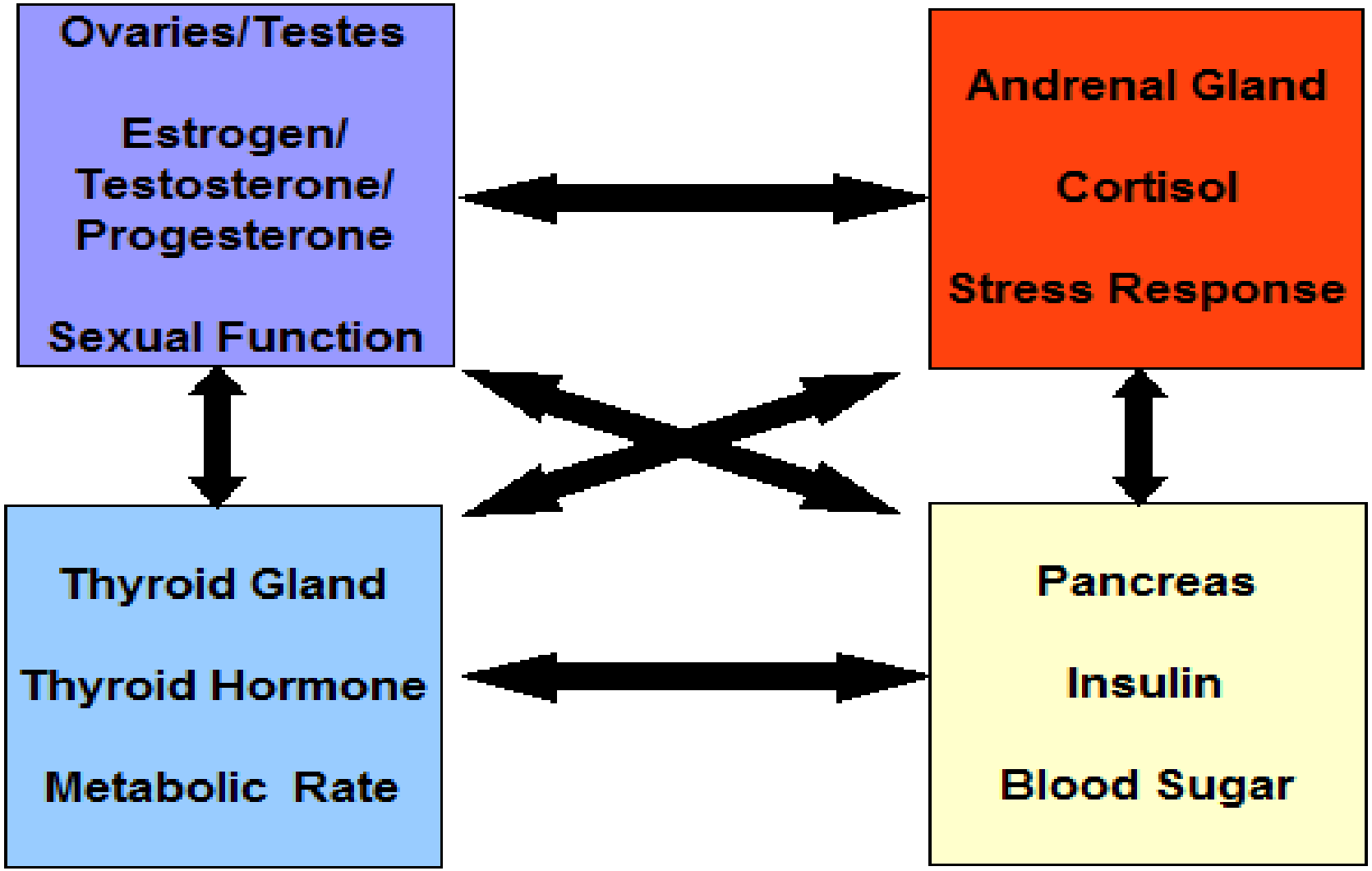


SOURCE: https://nursekey.com/endocrinology-2/

Prolactin promotes more than **300 Reproductive, Metabolic, Immune** & other functions **:**

- It stimulates the **Mammary glands** to produce **Milk** (**Lactation**)
- **Highly** elevated levels of **Prolactin ↓** levels of **Oestrogen** in women and **Testosterone** in men.
- Can act as a weak **Gonadotropin,** ultimately **decreasing** the secretion of **FSH** and **LH,** disrupting the **Ovulatory Cycle** & **Fertility.**

Hormonal Balance



SOURCE: http://drsaulmarcus.com/thyroid/15hypothyroidismbalance.html

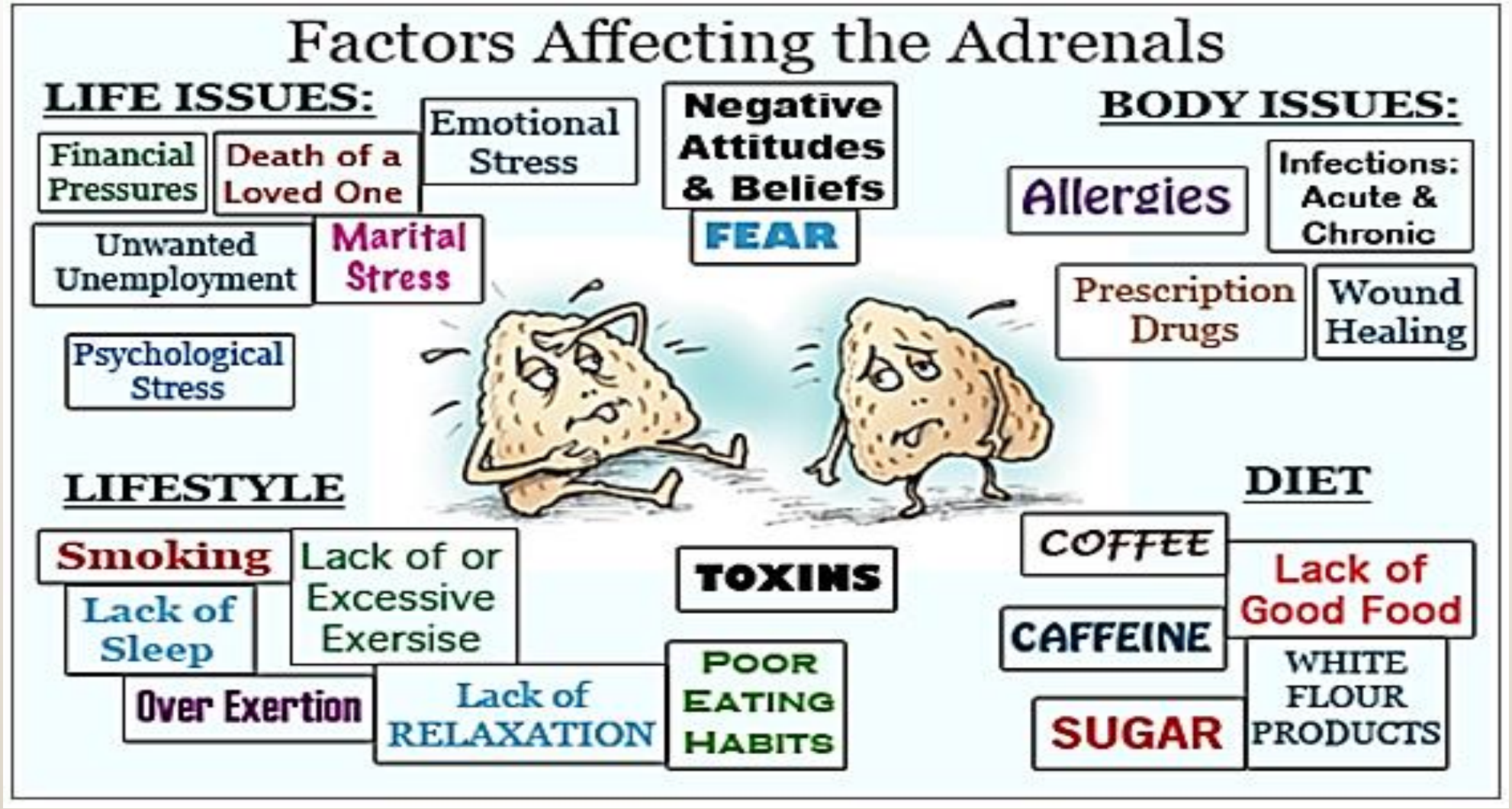
THE 4 FACES OF STRESS

"Wired for Sound"	"Wired and Tired"	"Wired and Tired"	"Just Plain Tired"
High Cortisol High Neuro-transmitters	High Cortisol Low Neuro-transmitters	Low Cortisol High Neuro-transmitters	Low Cortisol Low Neuro-transmitters
SuperNova Diva Soon to Burnout	Allergic and Infected Hypersensitive	Inflamed and in Pain Anxious & Irritable	Situation Critical

STIMULANTS

SOURCE: https://www.integrativepsychiatry.net/_uploaded_files/4-faces-of-adrenal-burnout-blue.png

TERRA NOVA



With **CONTINUED STRESS** and with the **very MANY FACTORS forcing the Adrenals to WORK CONSTANTLY**!! It's no surprise they can '**BURN OUT**!'

SOURCE: http://naturesmedicine.com.au/adrenal-fatigue-do-you-have-it/

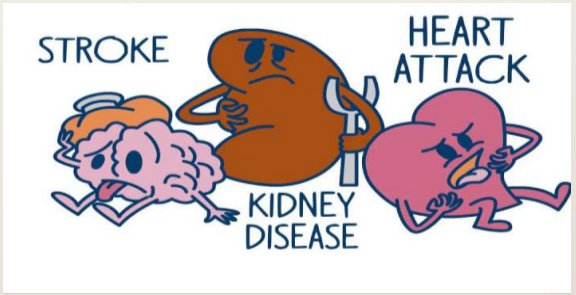
Decreased Defences, Increased risk of Infection, Delayed Healing

Increased Inflammation
Muscle Tension
Aches & Pains

Lowered Immunity

Decreased mental acuity

Poor Memory & Concentration,
Anxiety, Depression,
INSOMNIA,
Irritability & Mood Swings
↓ Libido



↑ / ↓B.P. ★
Increased heart rate

STRESS

Digestive system shuts down

HAIR LOSS
Brittle Hair/ Nails

Dry Skin, Acne

HIVES,

Skin INFECTION, Delayed Healing

Peripheral blood vessels constrict blood flow

Energy stores broken down and sent to muscles and heart

Blood Glucose HIGH = Insulin resistance = ↑ WEIGHT

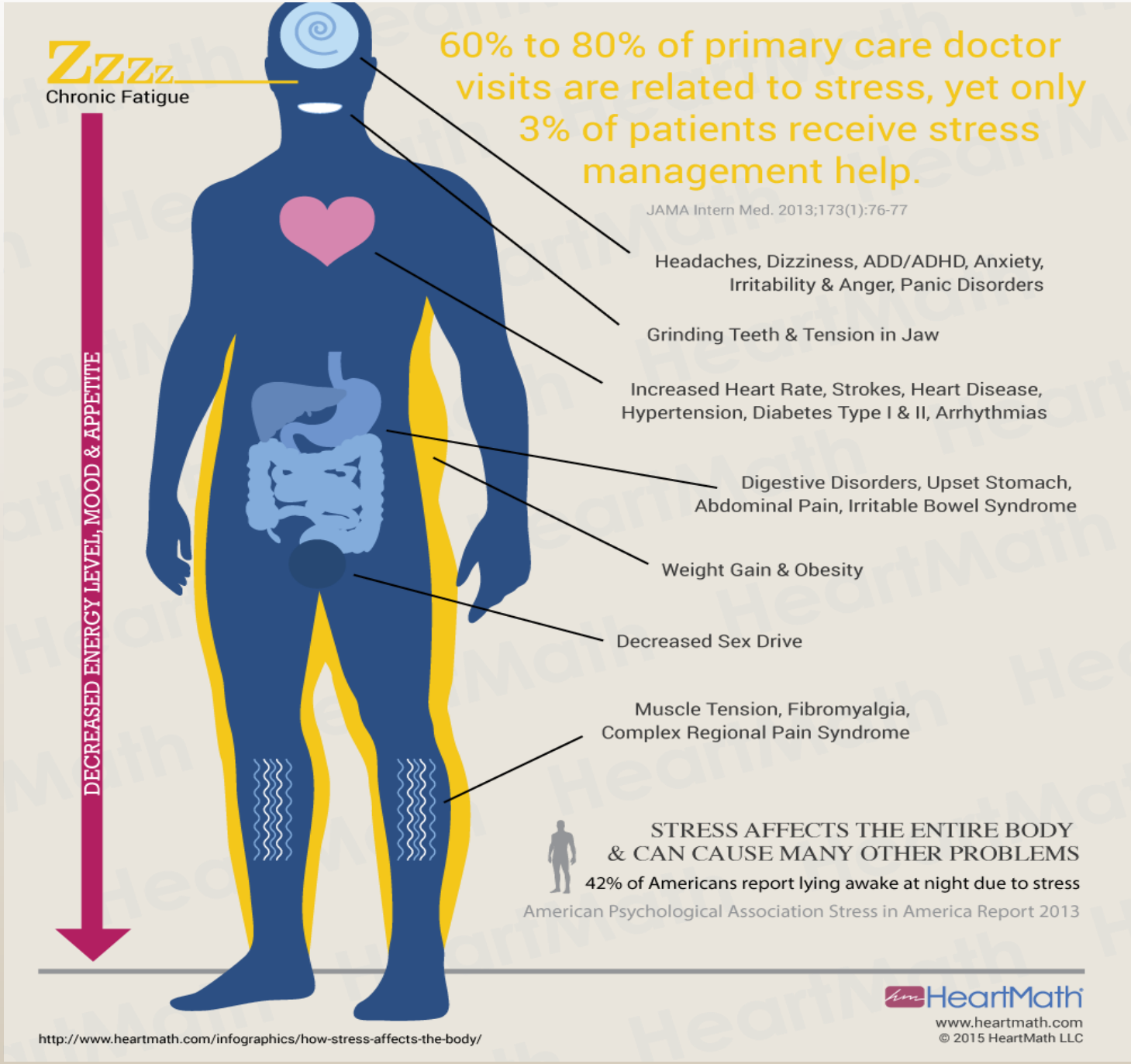
Poor Nutrient ↓Absorption

Diarrhoea # Constipation

Indigestion Bloating

↓ ENERGY = ↑ SUGAR / STIMULANT/ SALT CRAVINGS

- Stress is currently **recognised** as one of the **leading causes of Disease**
- The **AMA** has **acknowledged** that **Stress** is now the **basic cause** of **over 60%** of all **Human Illness** & **Disease**



Stress Management

COMMUNICATION

GROUP & SOCIAL SUPPORT

LAUGH

HAVE FUN

DANCE

LOVE

EXERCISE

YOGA

PILATES

SLEEP

MEDITATION

MINDFULNESS

UNPLUG

GO OUTSIDE

NURTURE

NOURISH

TIME MANAGEMENT

MAKE TIME FOR YOU

MUSIC

LITERATURE

ART

HOBBIES

- ✓ NUTRIENTS TO NOURISH THE NERVES
- ✓ NUTRIENTS TO MAINTAIN OR RESTORE NEUROTRANSMITTER ACTIVITY
- ✓ NUTRIENTS TO HELP LOWER / MODULATE CORTISOL ACTIVITY
- ✓ NUTRIENTS TO ENHANCE PRODUCTION OF ADRENAL HORMONES

- ✓ **B vitamins** esp.
  - ➢ **B5 (Pantothenic Acid)**
  - ➢ **B6 (P-5-P)**
  - ➢ **B9 Methylfolate**
  - ➢ **B12 Methylcobalamin**
- ✓ **CHOLINE**
- ✓ **Vitamin C**
- ✓ **MAGNESIUM**
- ✓ **CALCIUM**
- ✓ **ZINC**
- ✓ **ESSENTIAL FATTY ACIDS** esp. **Ω 3**

B VITAMINS

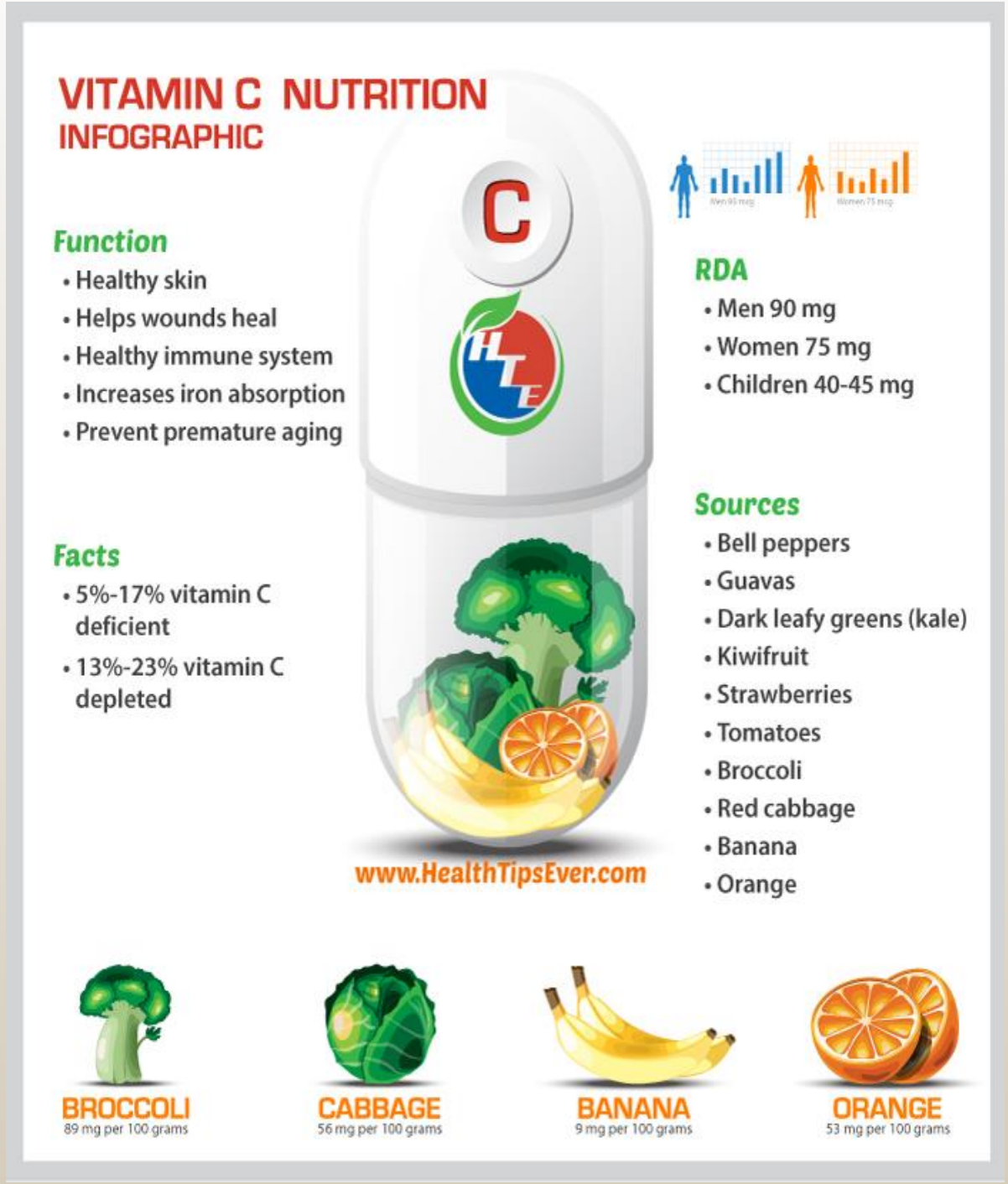
- **Water Soluble** – must be **replaced every day**
- **Help** to **produce ENERGY & set it FREE** when your body needs it.
- Involved in **making Red Blood Cells** thus **helping** to **carry OXYGEN** and **ENERGY** to the brain.
- **Nourish** & help **regulate Nerve** and **Adrenal Function**
- **Co-factors** for **NEUROTRANSMITTER production**

SOURCE: http://www.healthtipsever.com/wp-content/uploads/2015/08/Vitamin-B-infographics-Source-Function-Dose.jpg

Vitamin C

- **Highly concentrated** in the **Adrenal glands** and **quickly used up under Stress** where it **protects** the **Adrenals** from the **high levels** of **Free Radicals *(metabolic by-products)*** **produced** in times of **Stress** [1-3]
- Doses of **1500-3000mg/ day** have been shown to **reduce Cortisol levels** and **protect against** some of the **detrimental effects** of a **Chronic Resistance Phase**[4]

SOURCE: http://www.healthtipsever.com/wp-content/uploads/2015/08/Vitamin-C-infographics-Source-Function-Dose.jpg



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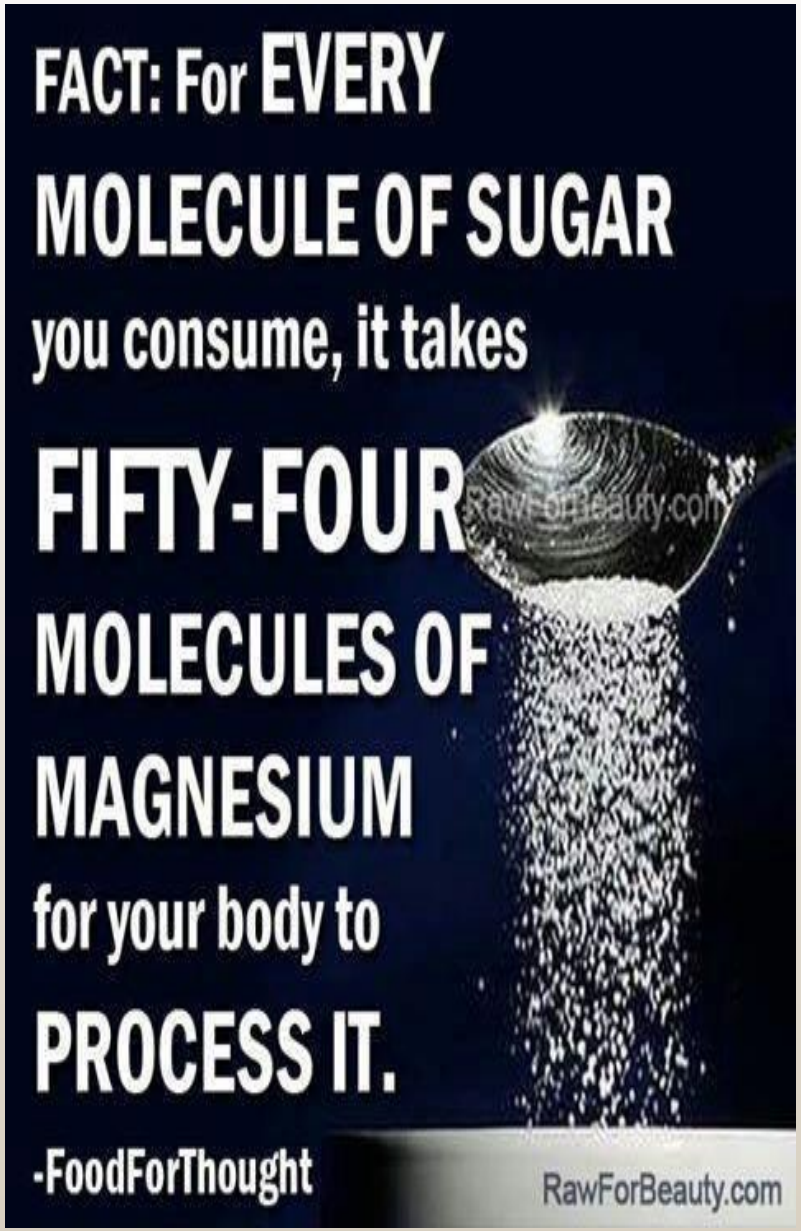
MAGNESIUM

- **4th most abundant Mineral** in the **Body**
- **Involved** in over **300 Metabolic reactions, especially within** the **Adrenals** and **Brain**
- Can only be acquired through **Diet/ Supplementation**
- **Food Sources:**
  - **Dark, Leafy Greens,** Avocados,
  - **Cocoa, Nuts & Seeds**
  - **Fish, Tofu**
  - **Beans, Whole Grains**
  - **Yogurt**
  - **Bananas, Dried Fruit**
- Adults require between **300mg- 600mg daily**

MAGNESIUM

Magnesium is **essential** for the:

1. **Muscle Relaxation** & **GABA enhancement- Magnesium supplementation** has been reported to **reduce insomnia** and **support uninterrupted sleep.**[4]
2. **CARDIOVASCULAR Support**
3. **Metabolism** of **Carbohydrates** to **produce ENERGY**
4. **Glucose Transportation between Membranes** & **INSULIN ACTION-** A number of studies have **linked low Magnesium** status with **Obesity, Insulin Resistance** & **Metabolic Syndrome.** [1–3]
5. **Production** of **NEUROTRANSMITTERS** – **Acetylcholine, Serotonin & Dopamine. So it may become depleted in times of Stress**
6. **Conduction** of **NERVE SIGNALS**
7. **ADRENAL HORMONE Production**
8. **pH BALANCE**



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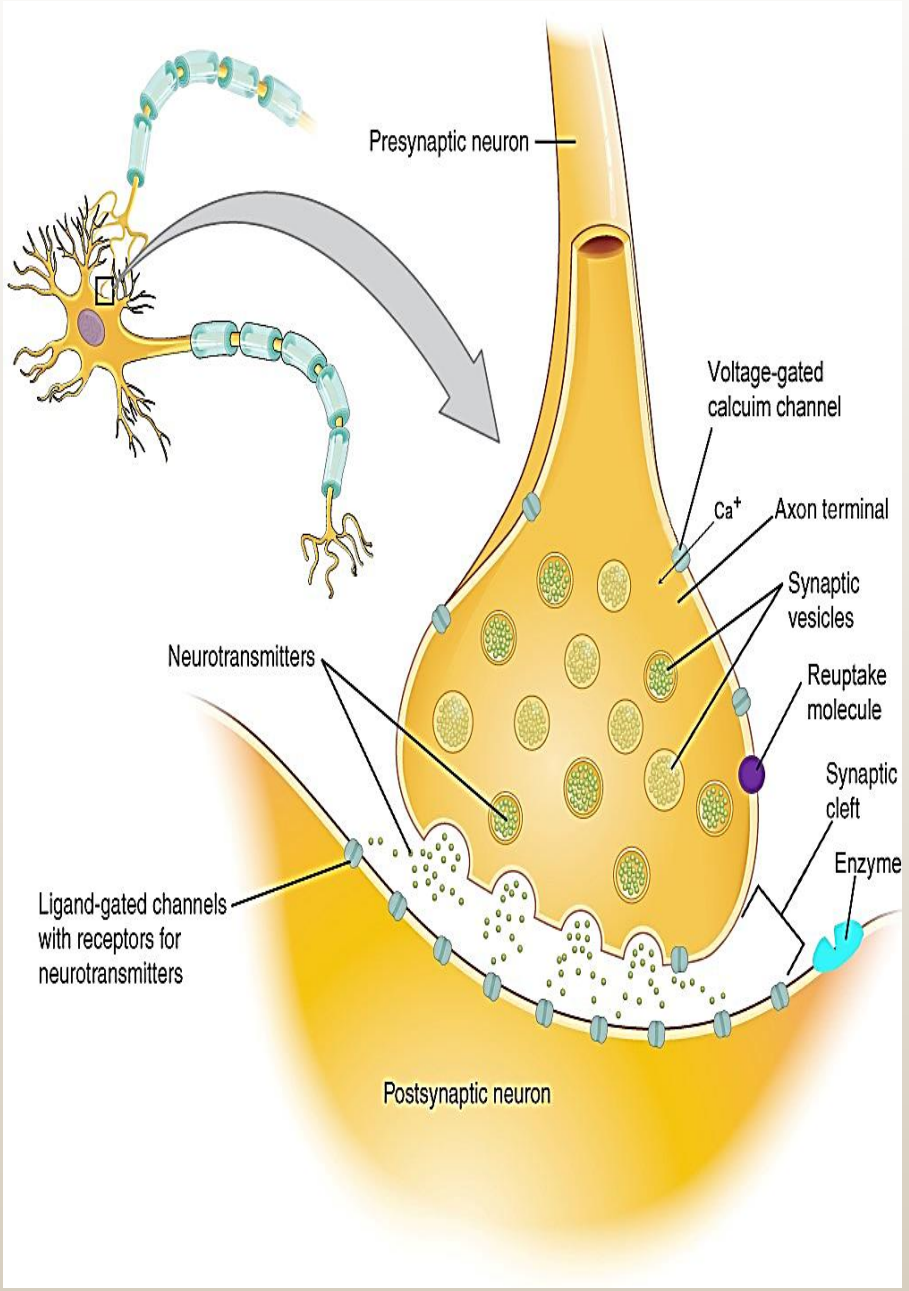
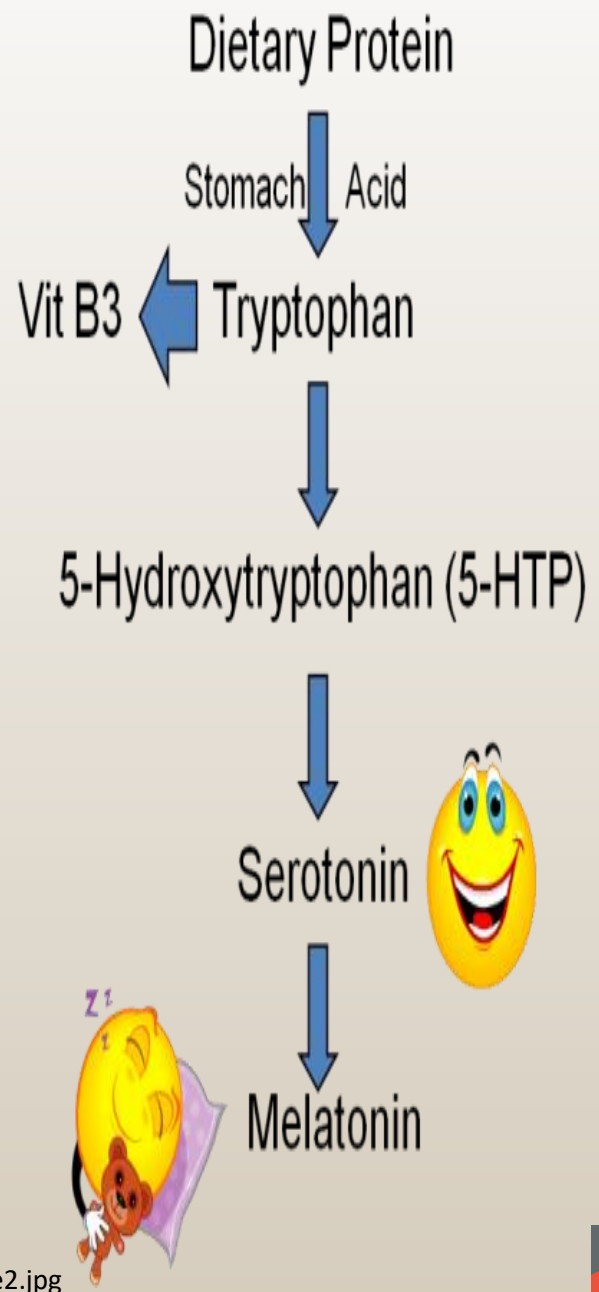
CALCIUM

- Calcium is an integral mineral **involved in Nerve Signalling**
- Calcium **helps** the **Brain use Tryptophan** to **manufacture Melatonin** by activating Tryptophan Hydroxylase
- A dose of **500-1000mg** before bed **can aid induction of sleep**





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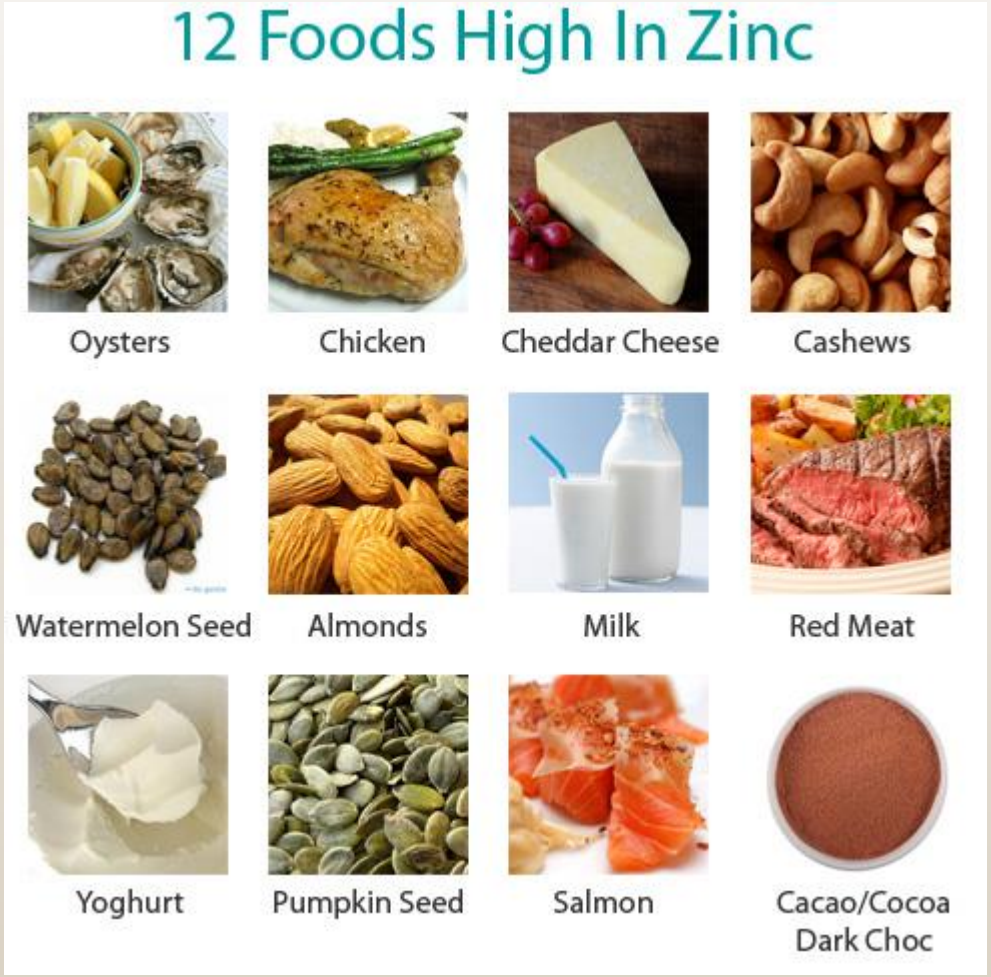
ZINC



- Zinc is an **essential mineral** for the **functioning** of **ENZYMES, HORMONES & the IMMUNE System**
- Zinc is **easily lost through sweat!!**
- Zinc **aids** in the **production** of **vital hormones** such as **PROGESTERONE, CORTISOL, ALDOSTERONE & T4.**
- Zinc is also **essential** for the proper **formation** and **secretion** of **INSULIN,** therefore a **higher Zinc intake** may be **associated with** a slightly **lower risk** of **Type 2 Diabetes** and **Insulin Resistance.**[1]

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TERRA NOVA

ESSENTIAL FATTY ACIDS

★The Neves and the **100 billion cells that make** up the **Brain** are **insulated** by a **protective FATTY Membrane** called the **Myelin Sheath**.

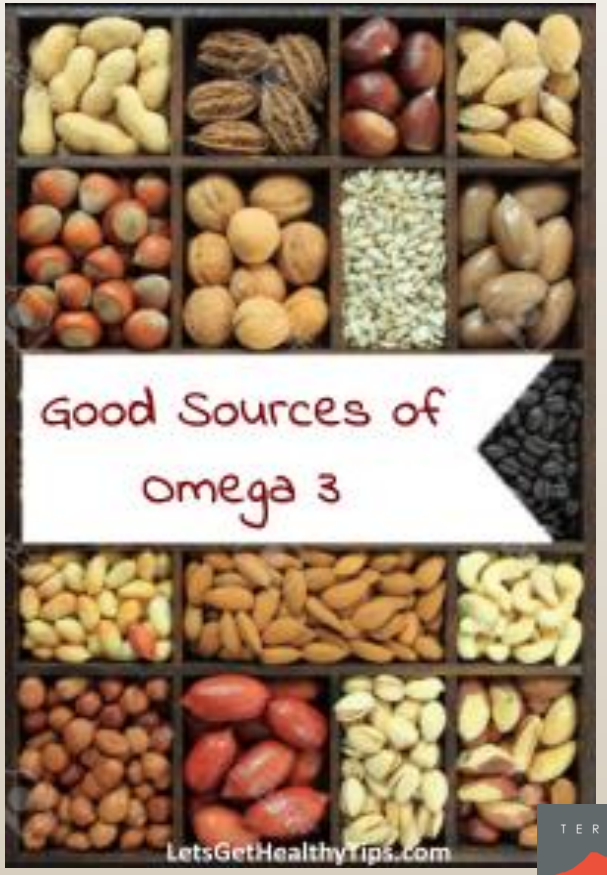
★This sheath is **made** of **FATTY molecules** called **PHOSPHOLIPIDS** which are made up of:

✓**SATURATED FATTY ACIDS**

✓**UNSATURATED FATTY ACIDS - AA (Ω 6) & DHA (Ω 3)**

✓**PHOSPHATIDYLSERINE**

- Arachidonic Acid (**AA**) is derived from **Omega 6.**
  - ➢ Found in **Meat, Animal Fats, Dairy, Nuts & Seeds, EPO & Borage/Starflower Oil**.
- Docosahexaenoic acid (**DHA**) is derived from **Omega 3.**
  - ➢ Found in **Oily fish, Breast Milk, Algae & Flax** or **Hemp Seed.**



★The **BALANCE** of these **two Fatty Acids** is **critical** for the healthy **structure & functioning** of the **whole Nervous System**

TRANS FATTY ACIDS

- **Trans-Fatty Acids** (**TFAs**) & **Hydrogenated Vegetable Oils,** found in deep ***Fried Food*** & ***Margarines*** & most ***Refined Confectionaries*****,** affect our **ability to convert & use EFA.**
- The **TFAs OCCUPY** the **position** of **DHA in** the **nerve cells, thereby BLOCKING** the **uptake** of **DHA.**
- **Fried foods** also **create Free-radicals, OXIDISING the Fatty Acids**.
- **Pollution**, **Smoke & Radiation**, also **oxidise fats, further DAMAGING Phospholipid structures**.
- ★ This may all be **avoided/ reduced** through **Diet, Antioxidant supplementation** & maintaining a **high ratio** of **EFA**.

But its **not just about**
VITAMINS, MINERALS & FATS

NATURE has **generously provided us with**
incredible **PLANTS, HERBS** & **MUSHROOMS**
that have all been **used for Centuries**
to **help** us **ADAPT**!

ADAPTOGENIC HERBS

The **term '*Adaptogenic*'** was coined by **Dr. Nikolai Lazarev, a noted Russian Pharmacologist,** who used the term to **describe** and **classify ~ 25 Herbs which provide the body with the ability to *adapt* to particular Stress conditions.**[1]

To be **classified** as an **Adaptogen**, herbs must possess the following **three qualities:** [2–4]

1. They must be **non-toxic** and **allow for normal physiological functioning** - **no toxicity** associated with them & *do not force or block any processes*.
2. They must have a **Modulating, Balancing / "Normalizing"** ability- should normalise body functions, irrespective of existing pathological condition (i.e. the **same dose can *raise* or *lower* physiologic properties**),
3. The **mechanisms** by which the herbs carry out their **effects** must be **due to more than one physiologic** or **pharmacologic mechanism**.

Adaptogens therefore, **positively *condition* your body** to **react well to Stress.**

SOURCE: Life Extension. **Stress Management. Alternative Stress Management Strategies. Available at: http://www.lifeextension.com/protocols/emotional-health/stressmanagement/page-02 (Accessed: 1st May 2017)**

TERRA NOVA

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	KOREAN / ASIAN GINSENG (Panax Ginseng)	AMERICAN GINSENG (Panax Quinquefolius)	SIBERIAN GINSENG Eleutherococcus Senticosus
TRADITIONAL USE	Also known as '***True Ginseng***'- This ginseng has been **used** in **China for 4000 years.** 	**Native Americans traditionally** used this member of the Ivy Family to help with **Nausea** & **Libido**. 	**NOT a true Ginseng,** although it is **related to Korean & American Ginsengs** and **acts** in a **similar way**. 
MAIN ACTIVE PART	***Ginsenosides***.	***Ginsenosides***. **	***Eleutherosides***
	Panax = ***Panacea*** *(Cure -All) in Greek*	Works **similarly** to ***Korean Ginseng***, but **more subtly**	An **ADAPTOGEN**
ADRENAL SUPPORT	✓ Especially when **challenged**	✓ Especially when **challenged**	✓ **Increases** production of **Catecholamines**
MOOD, ENERGY, STAMINA, MENTAL PERFORMANCE.	✓ **Enhances ALL**	**Enhances ALL** ** esp. **ACTH** release from pituitary = ↑**Corticosterone** from **Adrenals**	✓ **Enhances ALL, including Memory**
LIBIDO	✓ **Improves Libido**	**NUEROPROTECTIVE**	✓ **Promotes healthy Reproductive System Function- incl. Libido**
IMMUNITY	✓ **Supports** natural **Immunity**	✓ **Supports Immunity**	✓ **Promotes Healthy Immune Function**
BLOOD SUGAR LEVELS	✓ **Helps regulate Blood Sugar Levels**	✓ **Helps Balance Blood Sugar Levels**	✓ **Helps Balance Blood Sugar Levels**
BLOOD FLOW & PRESSURE	✓ **Helps improve Blood Flow**	✓ Helps **Balance Blood Pressure** **	✓ Helps **Balance Blood Pr.** ✓ **Regulates Blood Flow to Brain**
CHOLESTEROL	✓ **Helps balance Cholesterol levels**	✓ **Helps balance Cholesterol levels**	✓ **Helps regulate Cholesterol**
DIGESTION & APPETITE		✓ **Enhances Digestive function** and **Appetite**.	✓ **Enhances Appetite**

FOOTNOTES & REFERENCES FOR PREVIOUS SLIDE:

** Research suggests that the **BALANCE** of **Ginsenosides** in **American Ginseng** favours a much **less Stimulating Influence** on the **NS** compared to Korean / Asian forms of Panax Ginseng.

American & Siberian Ginseng have a COOLING effect, compared to Korean/ Asian Ginseng which has a WARMING effect.

Dong Quai is another herb that is **NOT a TRUE Ginseng**, but **used in a similar manner.**

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2. Reay JL, Scholey AB, Kennedy DO. (2010). **Panax ginseng (G115) improves aspects of working memory performance and subjective ratings of calmness in healthy young adults** . *Hum Psychopharmacol*. 25(6):462-71.
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RHODIOLA ROSEA

- AKA **ARCTIC ROOT** because it **grows** and **thrives** in **dry ground** at **high altitudes** in **Arctic areas** of **Europe & Asia**.
- **2nd most popular Adaptogen**, second only to ***Panax Ginseng***.
- Traditional Herb **revered** by Russian Scientists as a **powerful antidote to Stress!** [1–3]
- Rhodiola's **main mechanism of action** may be related to its **ability** to **aid Neurotransmitter transport in** the **BRAIN** ***(Hypothalamic level)*** and **reduce Catecholamine release.** [4–5]
- **Many well-designed Research papers** have also **documented** its **efficacy** in **reducing fatigue associated with stress**.
- **Rhodioal** administered in dosages of either **340** or **680 mg/day,** over a **6-week period** has also **demonstrated anti-depressive potential** in patients with **mild to moderate Depression.** [6]

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6. Darbinyan V, Aslanyan G, Amroyan E *et al.***Clinical trial of Rhodiola rosea L. extract SHR-5 in the treatment of mild to moderate depression.** Nord J Psychiatry. 2007;61(5):343-8.

ASHWAGANDHA

- AKA ***Withania somnifera,*** has **many uses** in **Ayurveda** (*Traditional Indian Medicine*) including the **management** of **Stress & Fatigue, Depression, Pain, Diabetes, Rheumatologic & GI Disorders.** [1]
- **Scientists** have also **discovered** that **this adaptogenic herb *prevents* Nerve Damage** and ***improves* Neural Function** in times of **Stress.** [2–4]
  - Data also suggests that Ashwagandha may help **reduce the effects of stress** on **Male Reproductive Capacity.**[5]
  - Whilst certain Adaptogens may **possess** a *more* **stimulating influence** on the Nervous System, Ashwagandha has a **more calming, anxiolytic influence**, thus **reducing Cortisol**, whilst at the same time **supporting Energy Metabolism.**

SOURCE: Life Extension. **Stress Management. Alternative Stress Management Strategies. Available at: http://www.lifeextension.com/protocols/emotional-health/stress-management/page-02 (Accessed: 1st May 2017)**

TERRA NOVA

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5. Ahmad MK. **Withania somnifera improves semen quality by regulating reproductive hormone levels and oxidative stress in seminal plasma of infertile males**. Fertil Steril. 2010;94(3):989-996.

ASHWAGANDHA & Hypothyroidism

REDUCES BRAIN FOG

BRAIN FOG IS A TYPE OF MENTAL FATIGUE THAT COMES FROM THE BRAIN NOT HAVING ENOUGH ENERGY AND IS ALSO ESPECIALLY PREVALENT IN THOSE WITH LOW THYROID FUNCTION. THIS FOG COMES ON SUDDENLY, MAKING YOUR THINKING DULL AND CONFUSED, YOUR JUDGMENT IMPAIRED, YOUR MEMORY SHOT. SUPPLEMENTING WITH ASHWAGANDHA WILL NOT ONLY REDUCE YOUR BRAIN FOG, BUT BOOST YOUR ABILITY TO FOCUS AND IMPROVE YOUR MEMORY.

REDUCES CORTISOL

ELEVATED LEVELS OF CORTISOL ARE RESPONSIBLE FOR PREMATURE AGING AND MANY MODERN "DISEASE" PROCESSES, INCLUDING LOW THYROID FUNCTION. ASHWAGANDHA REDUCES CORTISOL IN THE BODY AND REMEMBER: WHEN THE STRESS HORMONES ARE REDUCED, BOTH YOUR THYROID AND BRAIN FUNCTIONS IMPROVE!

INCREASES TESTOSTERONE

SINCE TESTOSTERONE IS RESPONSIBLE FOR FOCUS, IF THE HORMONE IS TOO LOW, YOU GET BRAIN FOG. ASHWAGANDHA STIMULATES TESTOSTERONE PRODUCTION AT THE BRAIN LEVEL. 7 DON'T WORRY—EVEN IF YOU ARE A WOMAN, YOU NEED TESTOSTERONE. IT WON'T MAKE YOU MORE MASCULINE, BUT YOU WILL GET YOUR BRAIN BACK!

IMPROVES PHYSICAL STRENGTH

ASHWAGANDHA IMPROVES MUSCLE MASS AND MUSCLE STRENGTH, 8 SO YOU WILL GET LESS FATIGUED DURING THE DAY. YOUR BRAIN IS BENEFITTED FROM THIS EXTRA PHYSIOLOGICAL RESERVE OF ENERGY, SO YOU HAVE LESS BRAIN FOG (MENTAL FATIGUE).

STRESSRX SOURCE: https://stressrx.com/brain-fog/

HOLY BASIL / TULSI

Krishna Tulsi

- The use of Holy Basil dates back to **1500 BC** where it was considered to be a **Sacred Herb** and is highly regarded in **Ayurvedic Medicine** to this day.
- Modern research on this **adaptogenic** Herb confirms Tulsi's **ability** to **help *reduce* Stress- Related Anxiety** & ***enhance* Stamina** and **adaptability.**[1] ***Relieve* Inflammation, *improve* Digestion** and **provide a rich supply of Antioxidants** & **other Nutrients.**
- Tulsi has also proved to be especially effective in **helping** to ***control* Blood Sugar** [2] and ***regulate* Diabetes mellitus** resulting from **Corticosteroid treatment.** [3]

SOURCE: Marc Maurice Cohen. **Tulsi - Ocimum sanctum: A herb for all reasons.** *J Ayurveda Integr Med.* 2014 Oct-Dec; 5(4): 251–259. doi: 10.4103/0975-9476.146554
(Accessed: 31st Jan 2018)

FOOTNOTES FOR PREVIOUS SLIDE:

TYPES OF TULSI

The tulsi plant (*Ocimum sanctum L.* or *Ocimum tenuiflorum L.*) is a close relative of culinary basil (*Ocimum basilicum)*, but it is differentiated by its medicinal properties and some physical characteristics. There are three main types of tulsi plants:

Rama Tulsi (also known as Green Leaf Tulsi) - A green tulsi with light purple flowers and an aromatic, clove-like scent (thanks to its chemical component of eugenol, which is the main aroma in cloves) and mellower flavor.

Krishna Tulsi (also known as Shyama Tulsi or Purple Leaf Tulsi) - A purple plant with a clove-like aroma and peppery flavor.

Vana Tulsi (or Wild Leaf Tulsi) - A bright, light green tulsi plant that grows wild and is indigenous to many areas of Asian and North/East Africa; it has a more lemony aroma and flavor.

Of the three types of tulsi, **Krishna Tulsi is often considered to be the most** beneficial to health, followed closely by Rama Tulsi. Vana Tulsi has less potency, but it is sometimes blended with other types of tulsi for a more pleasing flavor.

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MACA

- **ADAPTOGENIC** like **Ginseng** - often referred to as **PERUVIAN GINSENG**
- Rich in many different **Nutrients** esp. **Flavonoids.**
- The *exact mechanisms* behind Maca's ability to **INCREASE ENERGY& ENDURANCE** levels *remain unclear,* but it's been shown to:
  - ✓ **Help prevent BLOOD SUGAR imbalances**
  - ✓ **Offer NEUROPROTECTION**
  - ✓ **Maintain ADRENAL Health**

Helps regulates Mood & Energy through out the day.

MACA

A number of studies have also associated Maca with **reduced Anxiety** and symptoms of **Depression**, **particularly** in **Menopausal women.**

The **anxiolytic effect** may be related to the fact that **certain "***MACA compounds mimic the* ***endogenous Endocannabinoid System****. Thus ….acting on the Central Nervous System to provide* ***ANALGESIC, ANTI-INFLAMMATORY or NEUROPROTECTIVE effects****, by* ***modulating the release of Neurotransmitters****."* [1]

FOOTNOTES & REFERENCES FOR PREVIOUS SLIDE:

The **anxiolytic** effect may be related to the fact that **certain '***MACA compounds mimic the endogenous endocannabinoid system i.e. MACA compounds serve as* ***Fatty acid amide hydrolase (FAAH) inhibitors.*** *Anandamide is degraded by FAAH, so inhibiting FAAH* ***prolongs the presence of Anandamide****, the* ***principal endogenous endocannabinoid.***
FAAH inhibitors are known to "act on the central nervous system to provide analgesic, anti-inflammatory, or neuroprotective effects, by modulating the release of neurotransmitters."

1. Jeffrey Dach MD. 2016 **Health Benefits of Peruvian Maca Lepidium Peruvianum.**

Available at: http://jeffreydachmd.com/2016/06/health-benefits-peruvian-maca/ (Accessed on: 30th Jan 2018)

MEDICINAL MUSHROOMS

Western Medicine's awareness of the **beneficial properties** of **Mushrooms started** with the **discovery of Penicillin** by Alexander Fleming in **1928**.
Since then, Pharmacological research has **identified Antifungal, Antiviral & Antiprotozoal, isolates** from Fungi.
The fungus with the **longest record of medicinal use** is ***Ganoderma lucidum*** (**Red Reishi**)

SOURCE: Nootropics. What are Medicinal Mushrooms. Available at: http://nootropicsdepot.com/whole-fruiting-body-medicinal-mushroom-extract-sample-pack/ (Accessed: 1st May 2017)

NERVOUS & ENDOCRINE SUPPORT

CORDYCEPS (***Cordyceps militaris***): KNOWN FOR ITS Anti-oxidant, Anti-aging, **Immunomodulatory**, **Anti-inflammatory,** Antibacterial, Anti-viral, Anti-fungal, Anti-diabetic, **ADAPTOGENIC**, **Anti-fatigue, NEUROPROTECTIVE, Liver-protective & Pro-sexual PROPERTIES**

RED REISHI (***Lingzhi***): **SUPPORTS MENTAL, CARDIOVASCULAR & LIVER health. PROVIDES** Anti-oxidant/ Anti-aging, **ANTI- ALLERGY, Anti-inflammatory & IMMUNOMODULATORY SUPPORT**

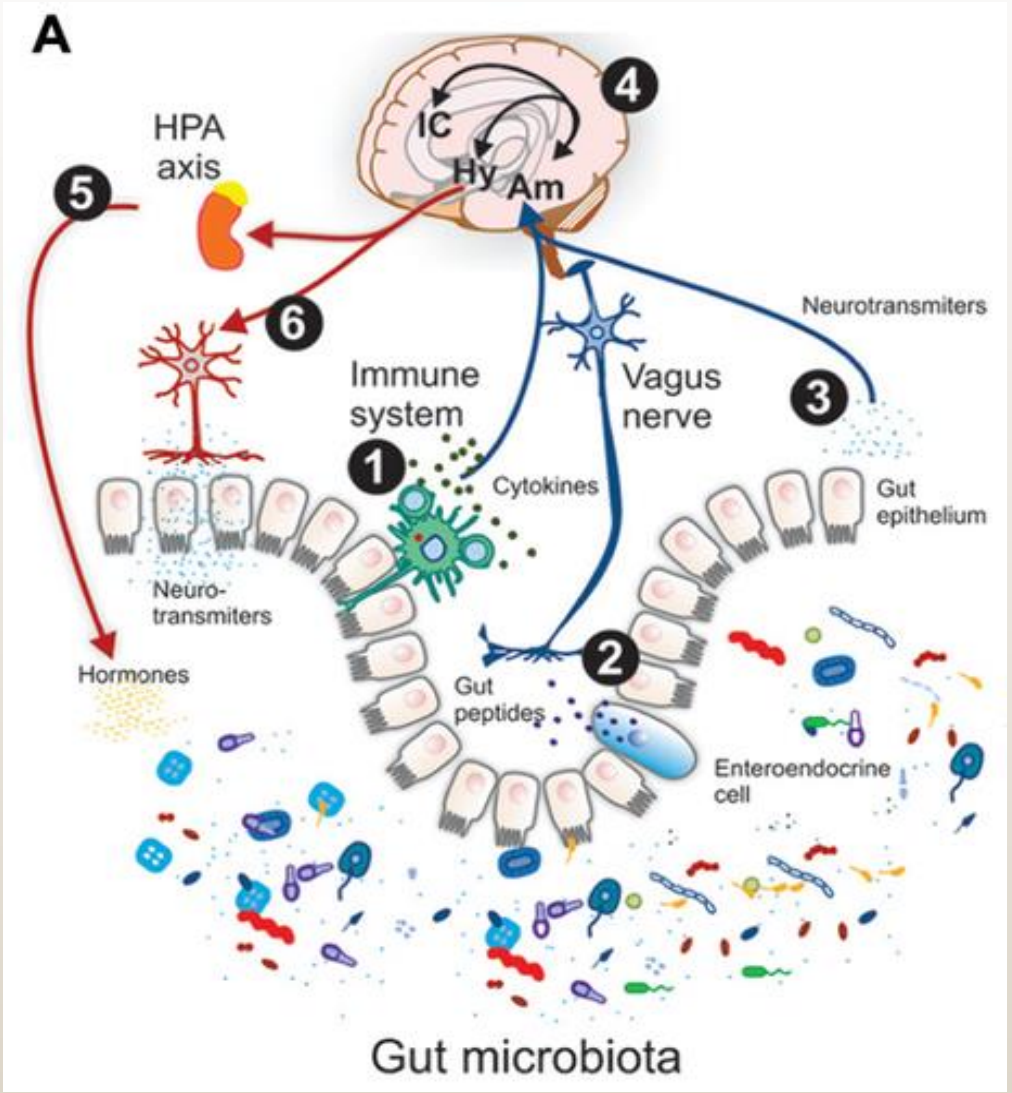
SOURCE: Nootropics. What are Medicinal Mushrooms. Available at: http://nootropicsdepot.com/whole-fruiting-body-medicinal-mushroom-extract-sample-pack/ (Accessed: 1st May 2017)

PROBIOTICS & GBA

Gut- Microbiota Brain Axis (**GBA**) = *connection* between **Gut Microbes (Microbiome)** and the **Brain.** [1-5]

There are several ways in which **Microbes** can **communicate** with the **Brain**. This includes:

1. **Vagal Nerve Activation** [6-7]
2. **Production** of many **Neurotransmitters & Neuromodulators**. [(8-11)] e.g.
   - **Bacillus** produces **Dopamine**
   - **Escherichia**, **Bacillus** and **Saccharomyces spp**. produce **Noradrenalin**
   - **Lactobacillus** produces **Acetylcholine.**
   - Certain **Lactobacillus & Bifidobacterium spp.** produce **GABA**
   - **~ 90% Serotonin produced** in the **GIT.**



SOURCE:https://www.researchgate.net/profile/Gustavo_Pacheco-Lopez/publication/257600309/figure/fig1/AS:273889821458447@1442311830921/Figure-1-A-Microbiota-gut-brain-MGB-axis-Direct-and-indirect-pathways-support-the.png

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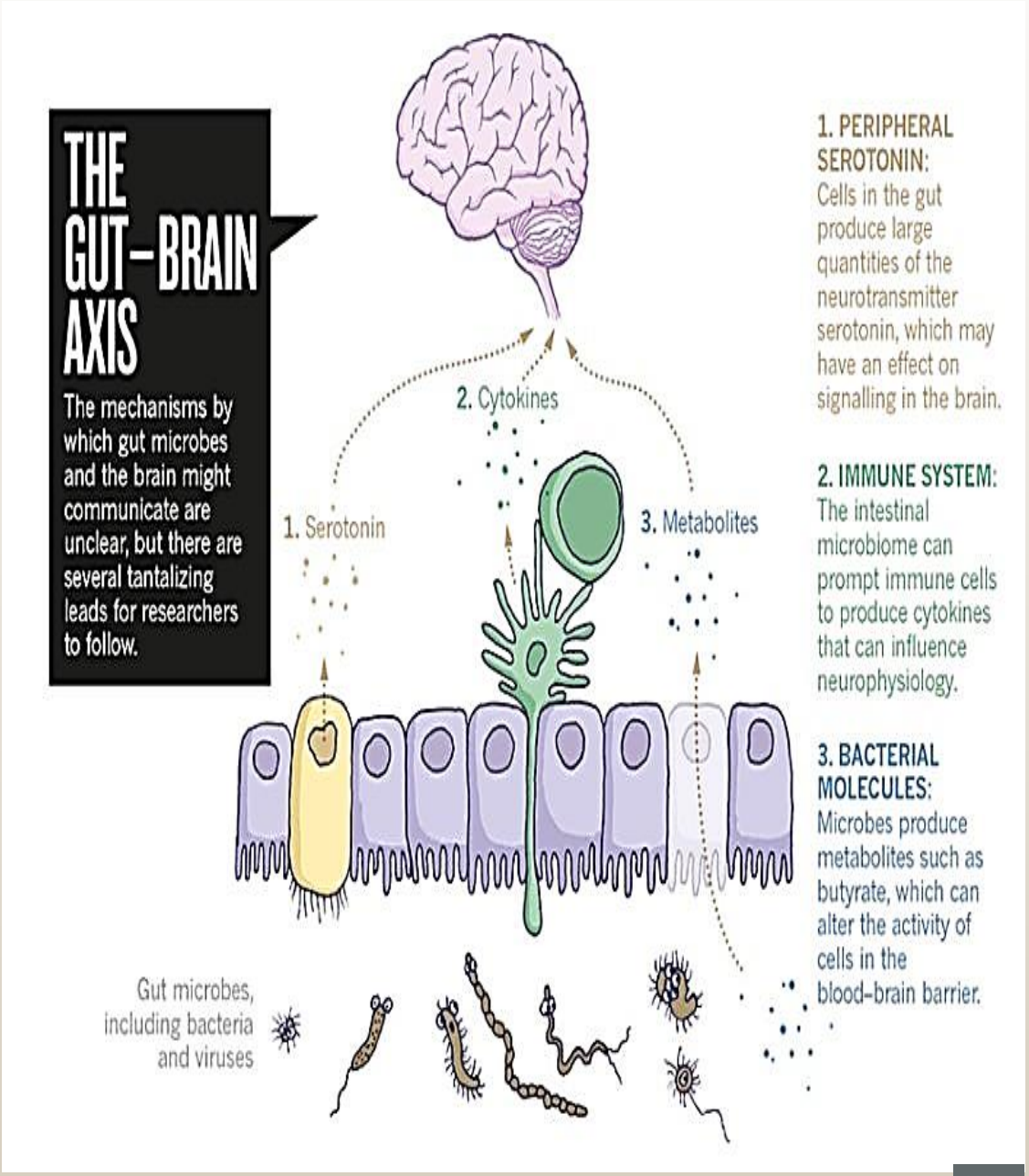
PROBIOTICS & GBA

- An **increasing** number of **Studies** show that **Probiotics are able to *modulate*** the **Gut-Brain Axis,** thus **helping to improve behaviours** and **symptoms of Stress, Anxiety** & **Depression**. [1-3]

  e.g. **Recent research demonstrated Lactobacillus helveticus** R0052 and **Bifidobacterium longum** R0175 **improved reaction to Stress & Depression Symptoms.**

  In fact, the **ability** of the **Probiotics** to **reduce stress-related behaviours** was **similar** to that of **Diazepam (Valium).** [3-4]



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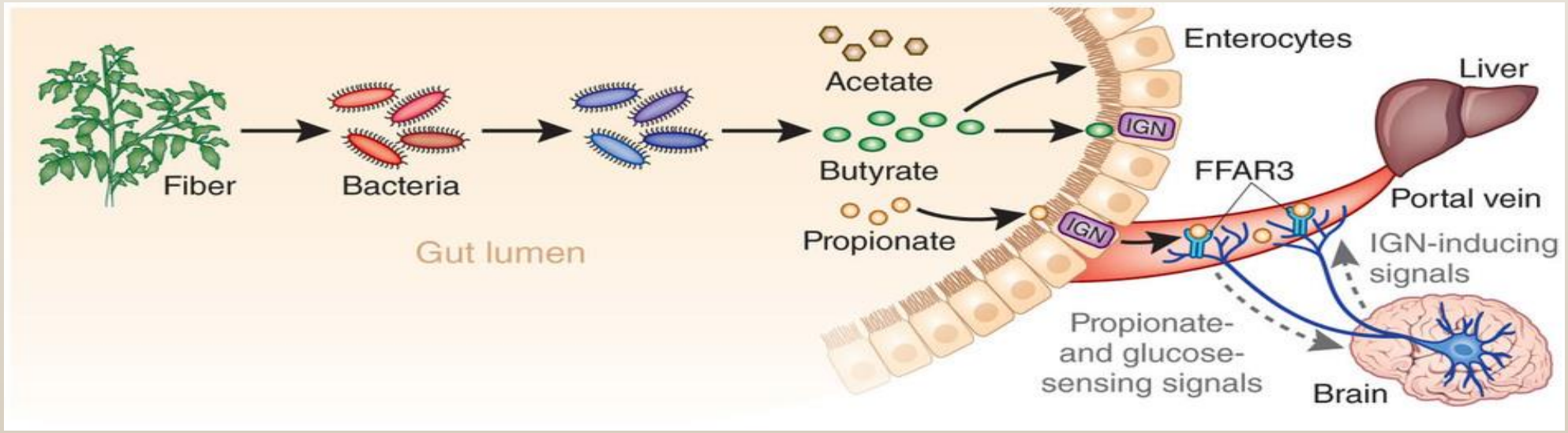
PROBIOTICS & GBA

The Gut Microbes can also have an **impact on Innate / Basic IMMUNITY** by **altering circulating levels** of **Pro** and **Anti-inflammatory Cytokines** which in turn **influences** the **HPA- Axis** [1]**.**

Short Chain Fatty Acids (**SCFAs**) **produced** in the Gut when **Bacteria Ferment Fibre,** have been shown to **have Neuroactive Properties** [2] as well as **Anti-inflammatory Properties.** [3]



SOURCE: http://www.nature.com/nbt/journal/v32/n3/fig_tab/nbt.2845_F1.html

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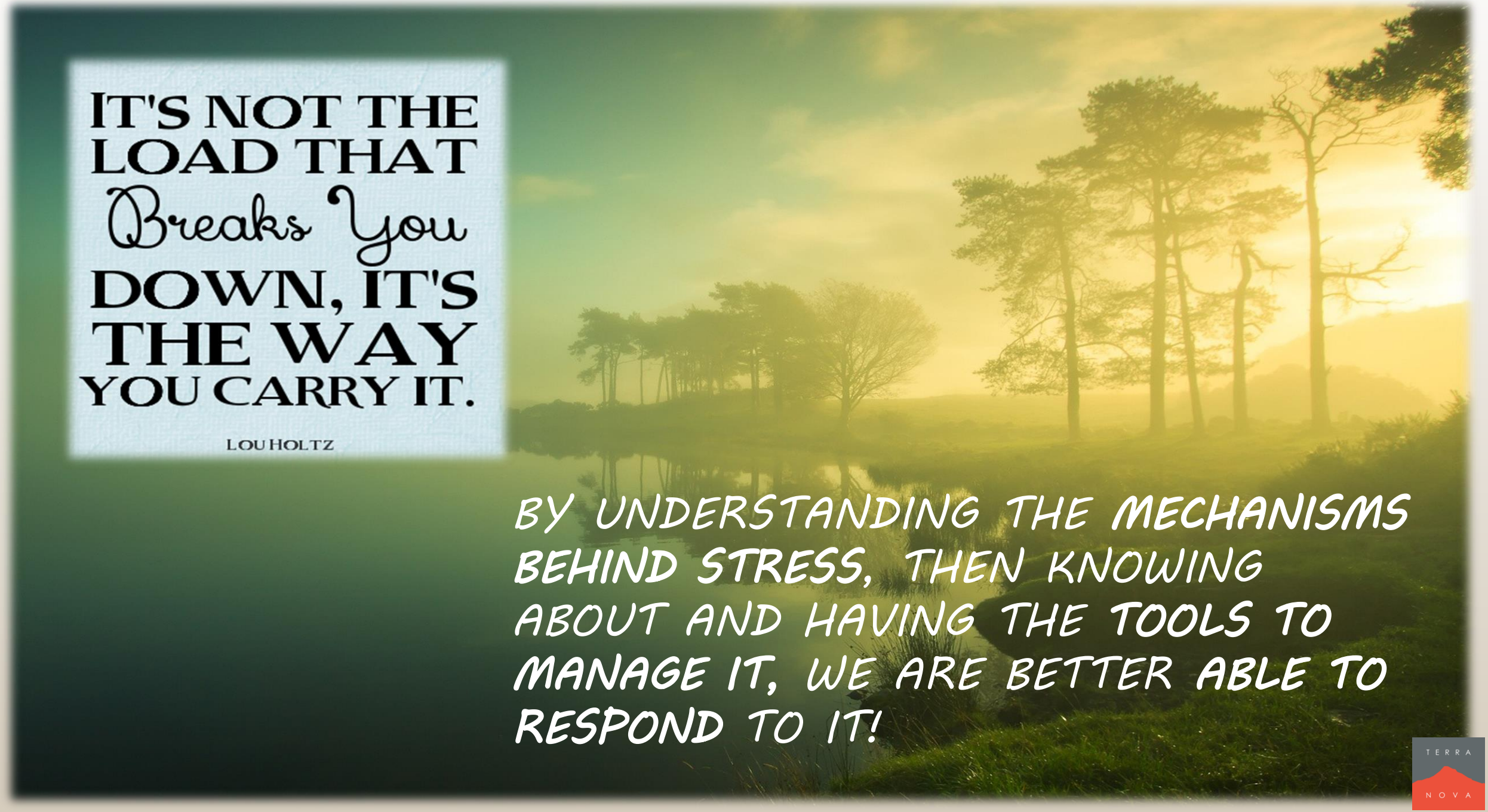
IT'S NOT THE LOAD THAT Breaks You DOWN, IT'S THE WAY YOU CARRY IT.
LOU HOLTZ
BY UNDERSTANDING THE MECHANISMS BEHIND STRESS, THEN KNOWING ABOUT AND HAVING THE TOOLS TO MANAGE IT, WE ARE BETTER ABLE TO RESPOND TO IT!
TERRA
NOVA