THE THYROID SHOW

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THE THYROID SHOW

Objectives:

1. The Thyroid Story-How to Talk to Your Patient about the Thyroid
2. What is the function of the Thyroid Gland?
3. Relevant laboratory studies: It's not only about the TSH
4. Autoimmunity and the Thyroid
5. Treatment Options
6. The 100 Day Thyroid Repair Program

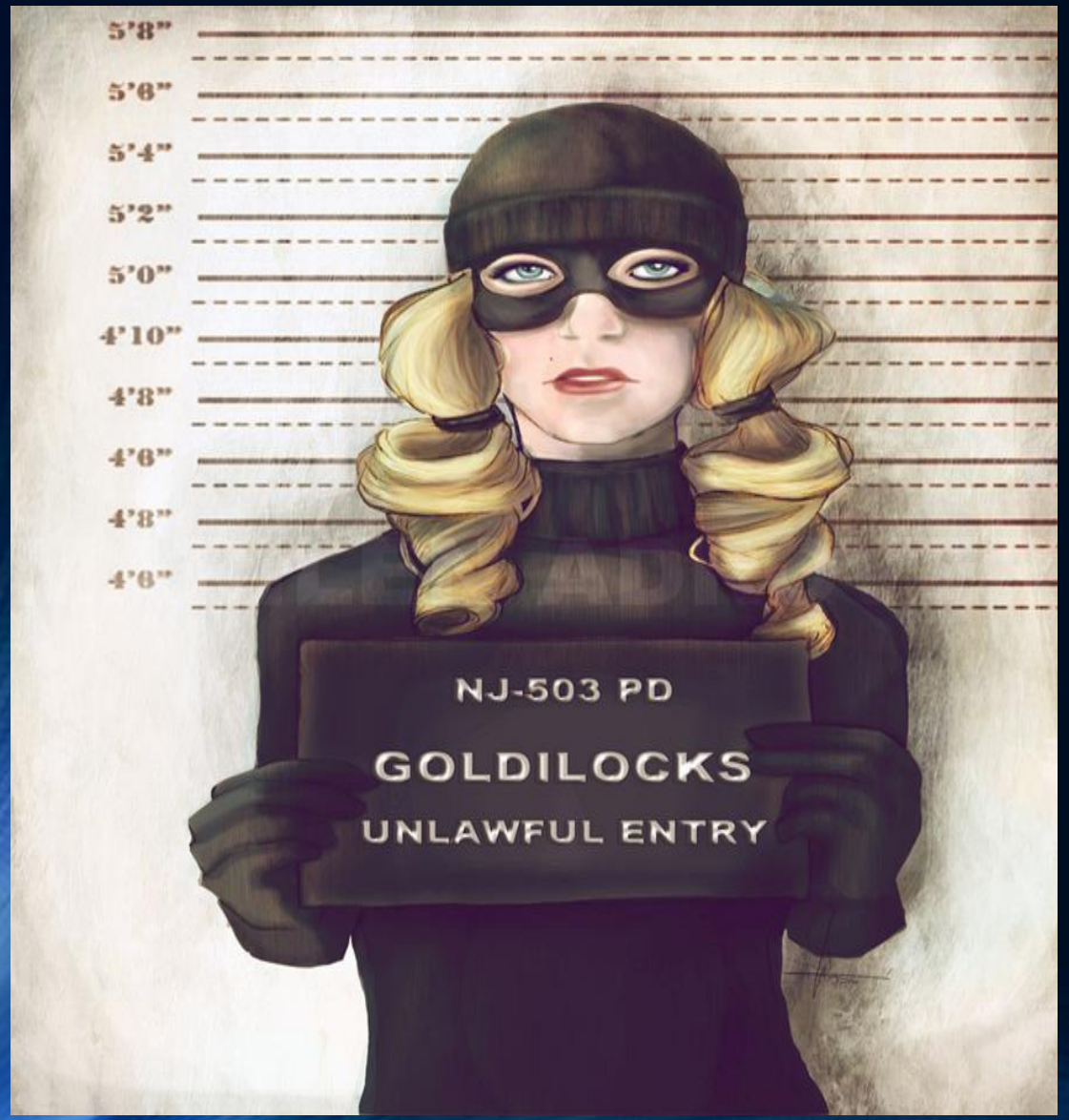
The Thyroid Story-How to Talk to Your Patient

- Cast of Characters
  - Featuring
    - Lost in Space Robot
    - Sherlock Holmes
    - Imelda Marcos
    - Goldilocks
    - Mark Twain

Great Faces of the Thyroid Story-Lost in Space Robot

Great Faces of the Thyroid Story-Sherlock Holmes

Great Faces of the Thyroid Story-Goldilocks

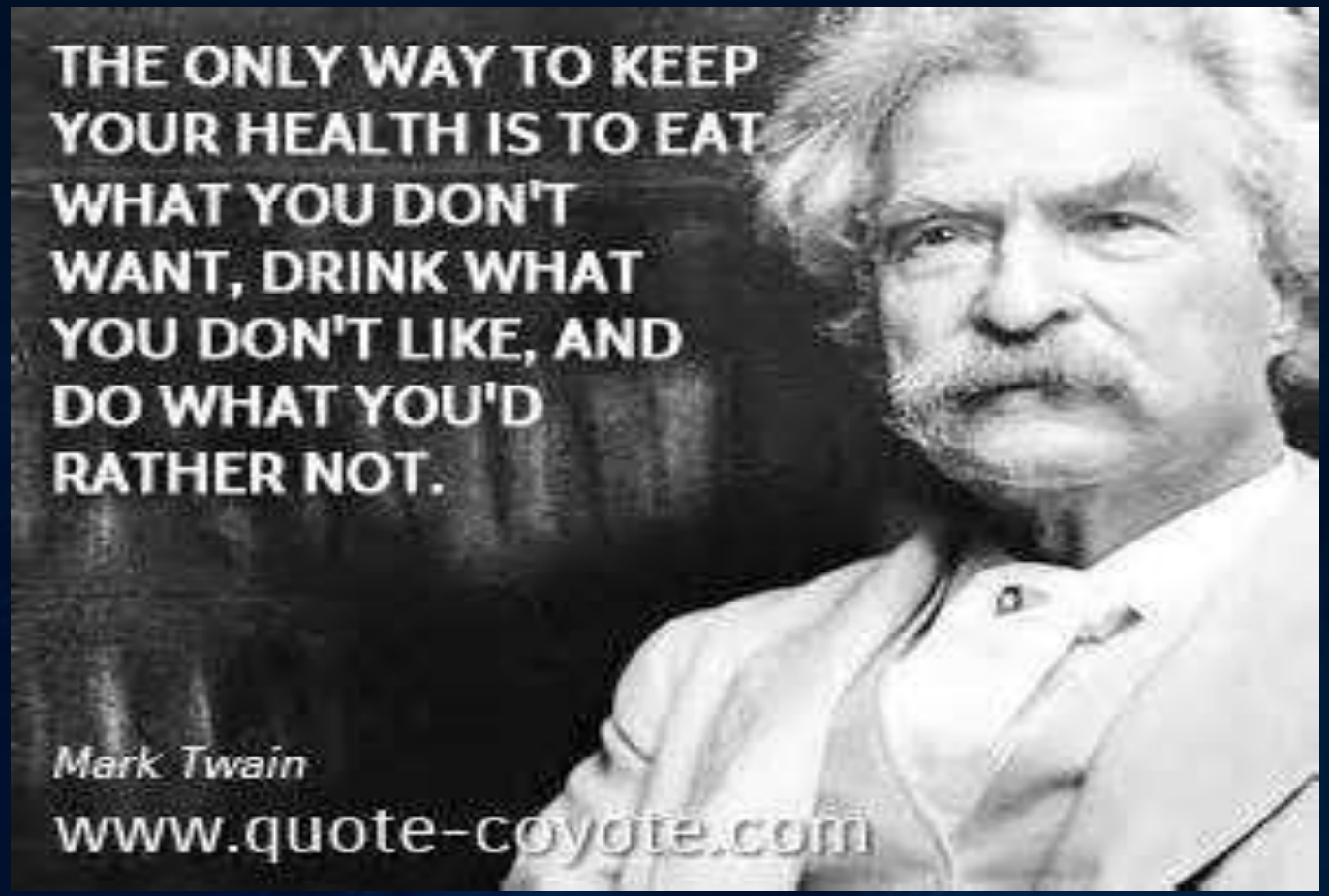


Great Faces of the Thyroid Story-Imelda Marcos

They went into my closets looking for skeletons, but thank God, all they found were beautiful shoes!

Imelda Marcos

Great Faces of the Thyroid Story



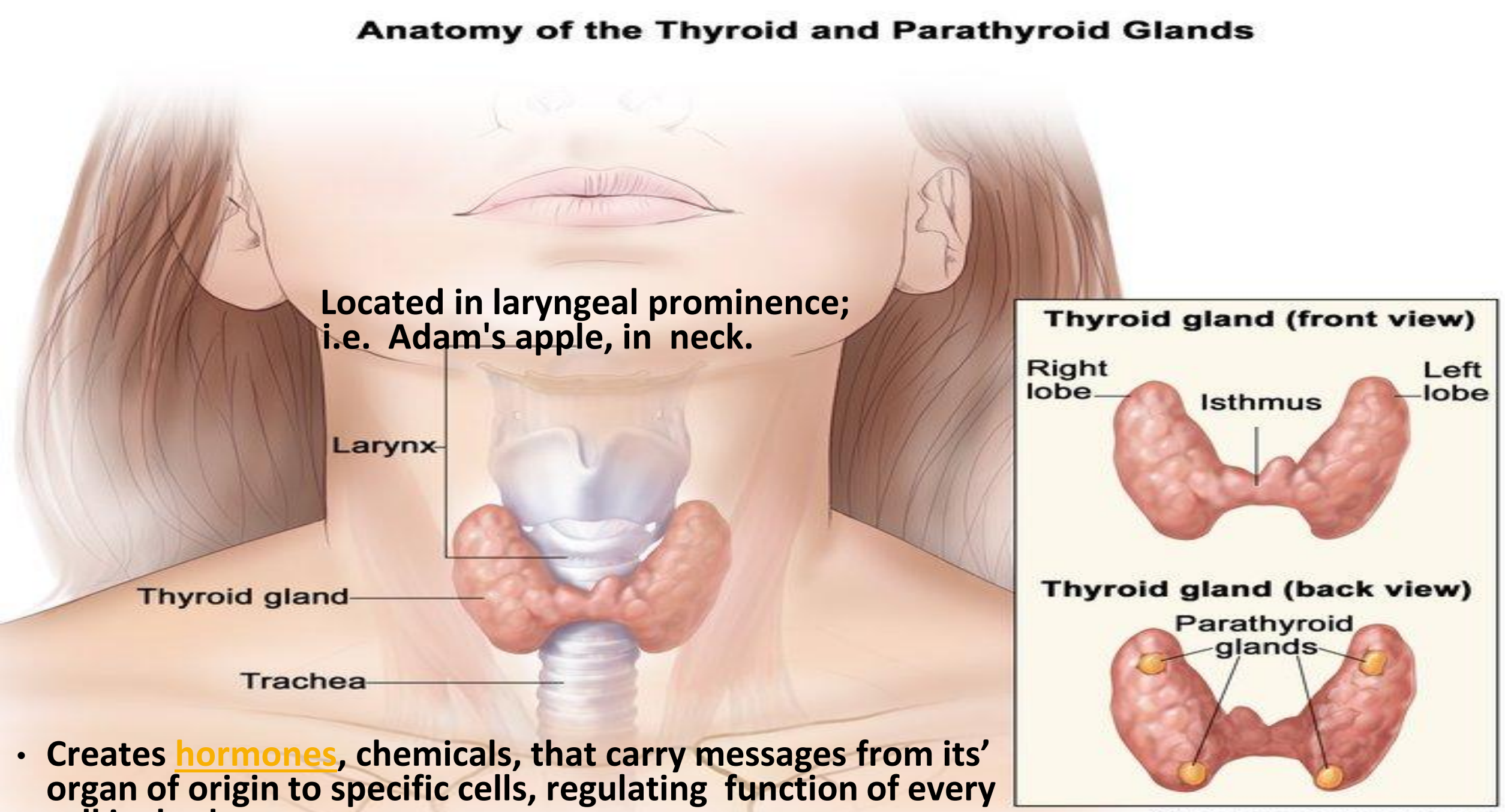
The Thyroid Story:

Featuring

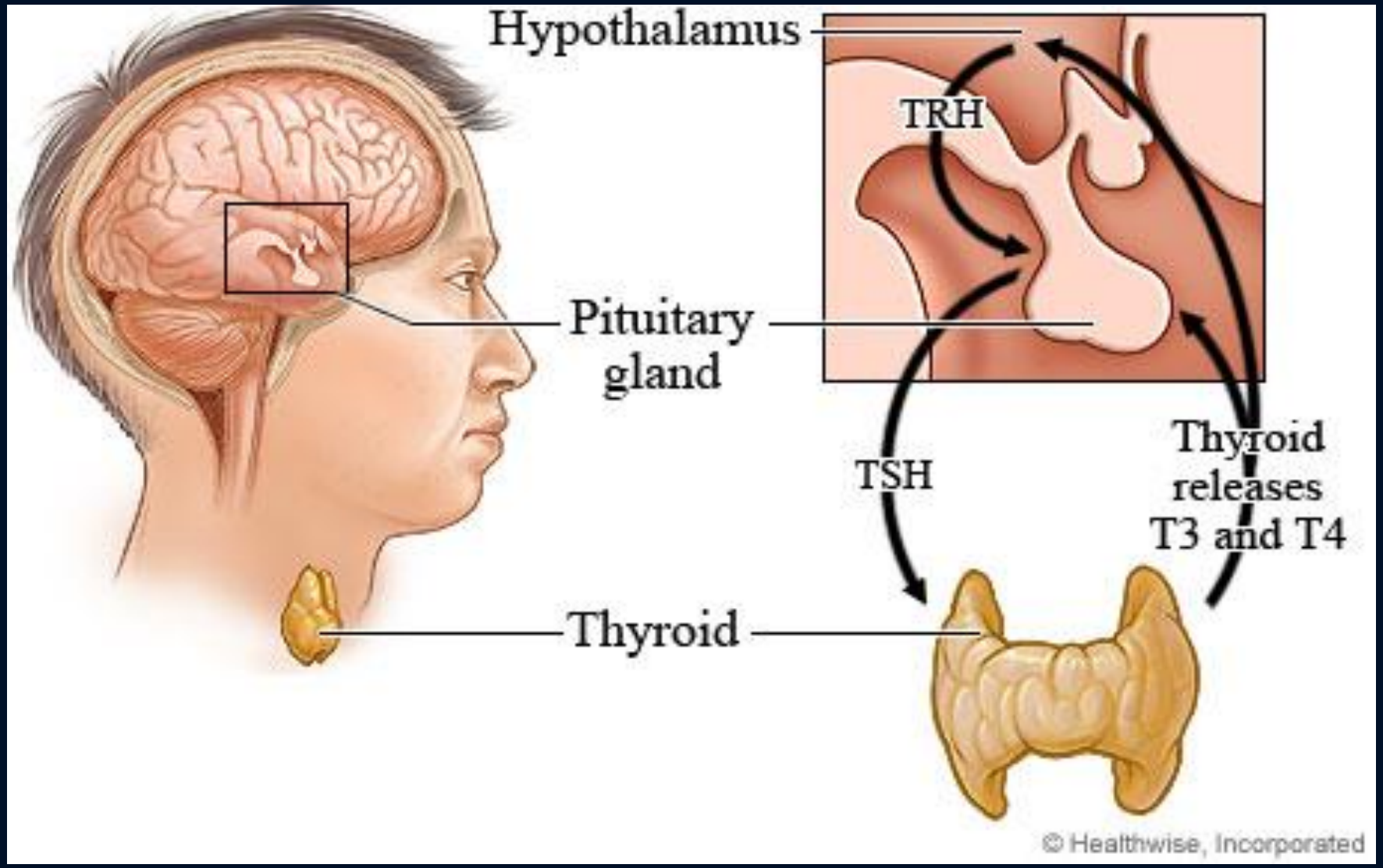
Lost in Space Robot
Sherlock Holmes
Imelda Marcos
Goldilocks
Mark Twain

Anatomy of the Thyroid and Parathyroid Glands

Located in laryngeal prominence; i.e. Adam's apple, in neck.



- Creates hormones, chemicals, that carry messages from its' organ of origin to specific cells, regulating function of every cell in body.


Hypothalamus
TRH
Pituitary gland
TSH
Thyroid releases T3 and T4
Thyroid
© Healthwise, Incorporated

Patient Education:

In 4 Words,
What Does the THYROID Do?

First Two Words Are:

It's Your……

(It's Your)

"Gas Pedal."

Thyroid is Responsible for:

Heart

Cholesterol

Bone Regeneration

Lung

G.I. tract

Brain Function

Brain Speed

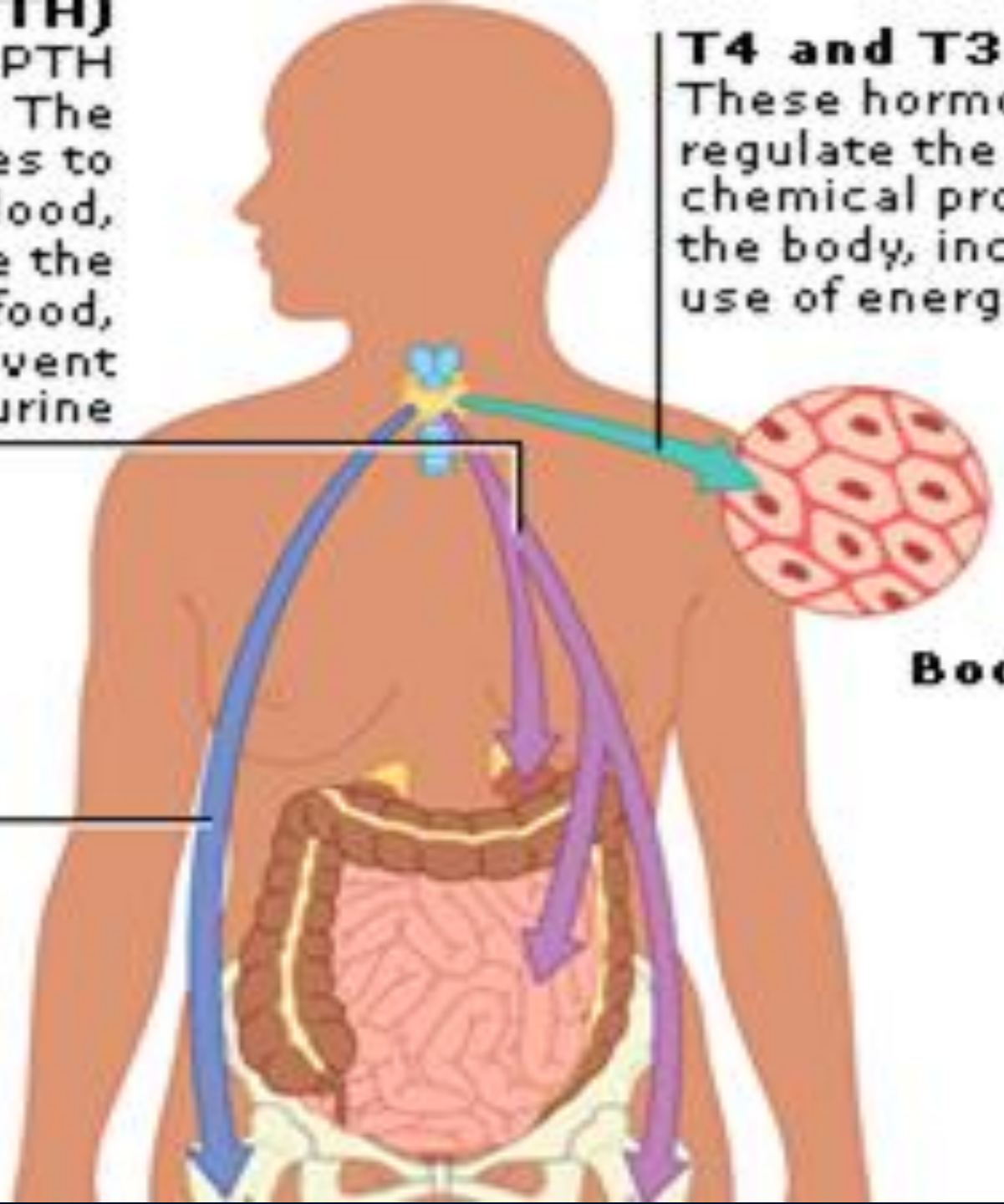
Blood Sugar

THYROID HORMONE PRODUCTION

- Produces 2 major hormones, triiodothyronine (T3) and Thyroxine (T4).
- Produces Calcitonin. Responsible calcium balance and bone density.
- T3 and T4 are major regulators of growth and rate of function of our body systems.

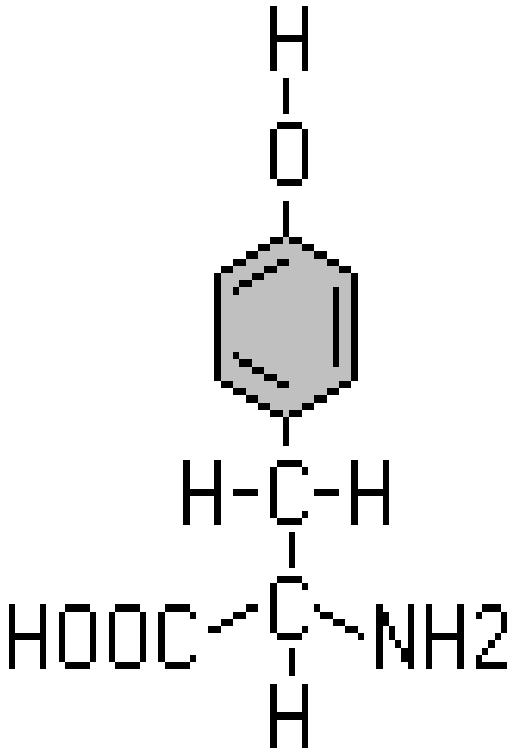
Parathyroid hormone (PTH)
If blood calcium is low, PTH secretion is increased. The hormone acts on the bones to release calcium into the blood, on the intestines to increase the absorption of calcium from food, and on the kidneys to prevent calcium loss in urine

T4 and T3
These hormones regulate the rate of many chemical processes in the body, including the use of energy

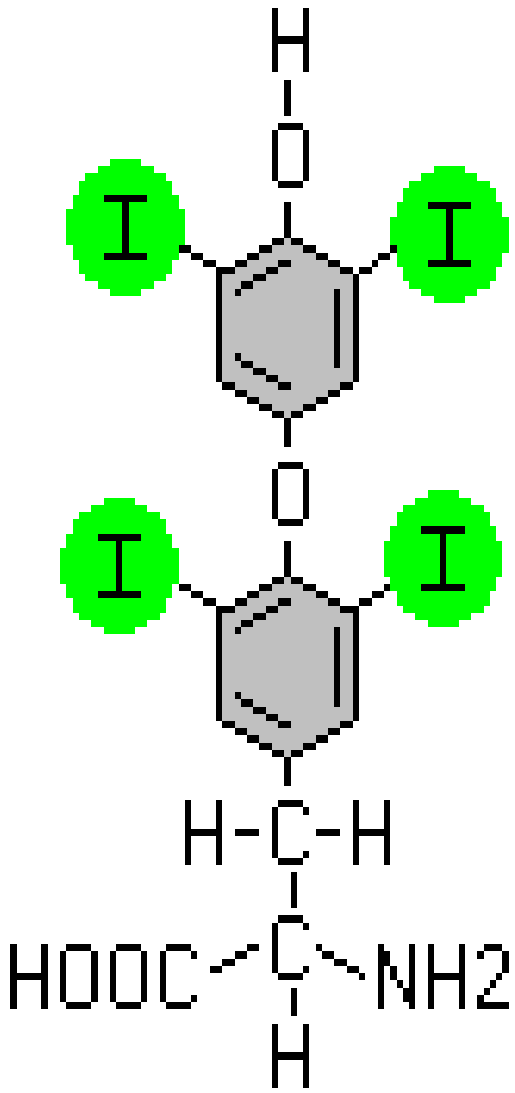


Body cells

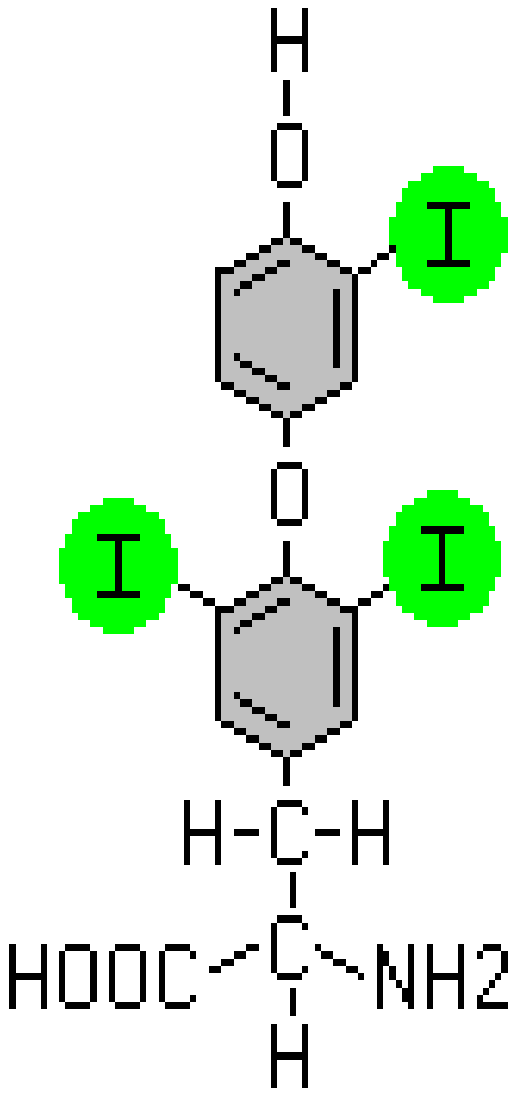
Calcitonin
This hormone inhibits calcium release from the bones if blood calcium levels are high



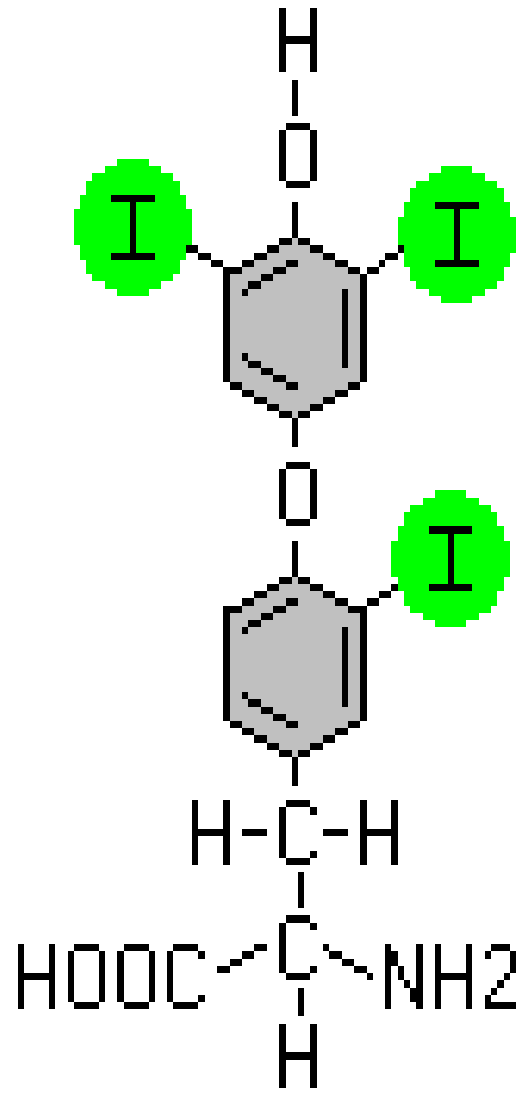
Tyrosine



Thyroxine (T4)



Triiodothyronine (T3)



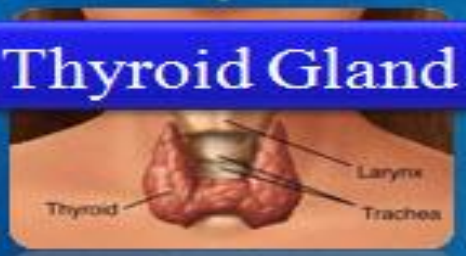
"Reverse T3" (inactive)

THYROID HORMONE PRODUCTION

- Produces only 20% of daily requirements
- 100 micrograms a day of T4
- 30 micrograms a day of T3
- Majority (80%) of active thyroid molecule comes from a process known as deiodination, naturally converting T4 to T3.

TSH

Requires Zinc and adequate protein



Thyroid Gland

T4 (requires iodine)

Reverse T3 (does not work)

Requires Selenium

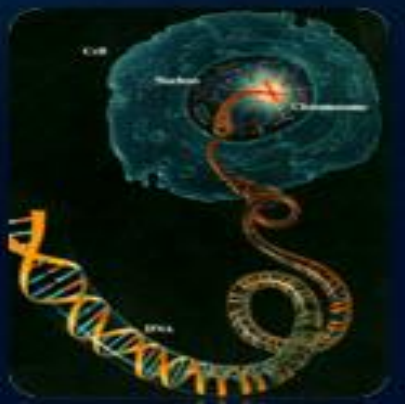
T3 (active thyroid hormone)

Requires Vitamins A and D

Cell Communication

Increase Metabolism = energy, weight loss, healthy hair and skin, lower cholesterol

Requires EFA



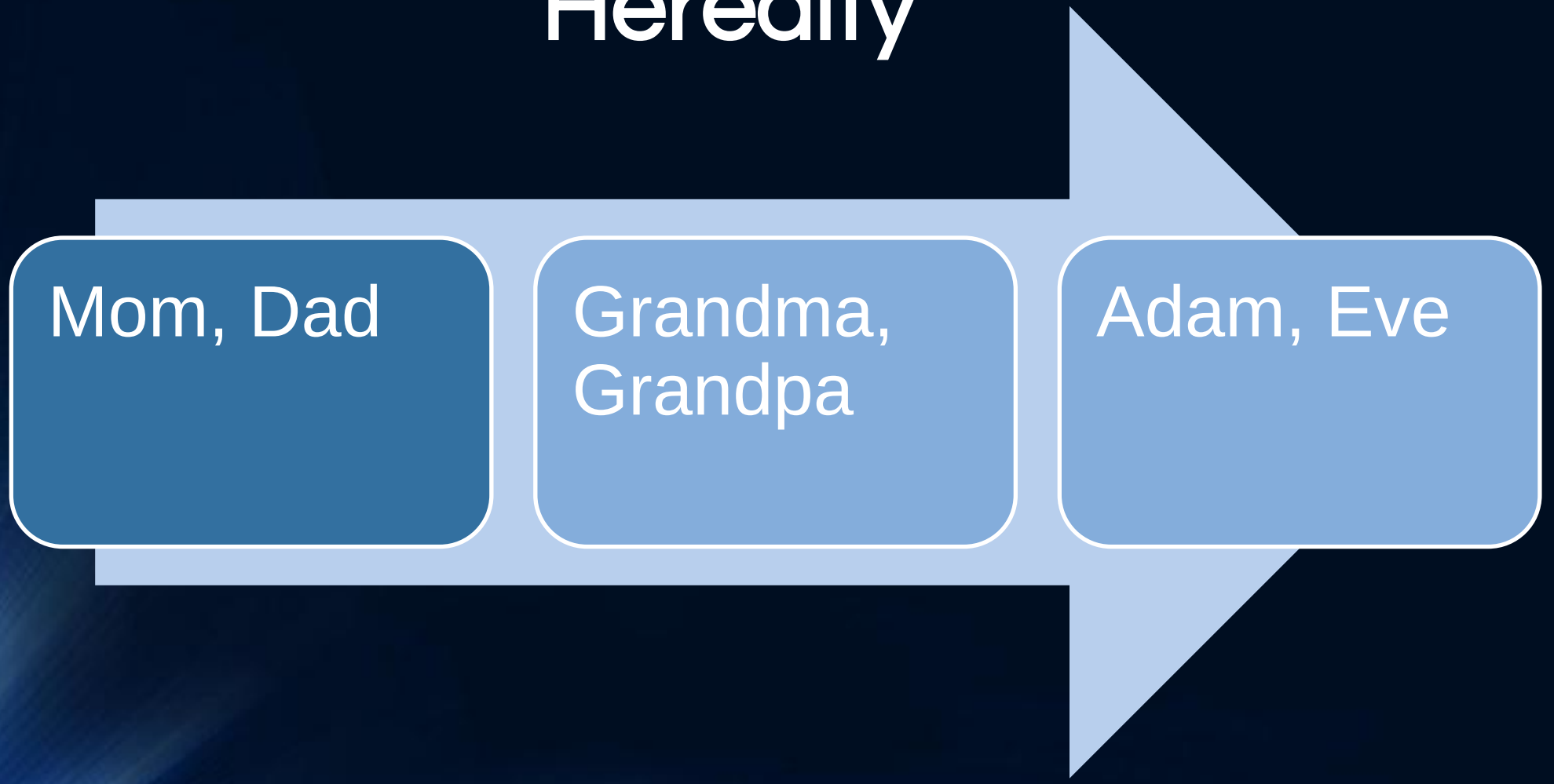
What Could Go Wrong?

Heredity

Acquired

(Molecular Mimicry)

Heredity

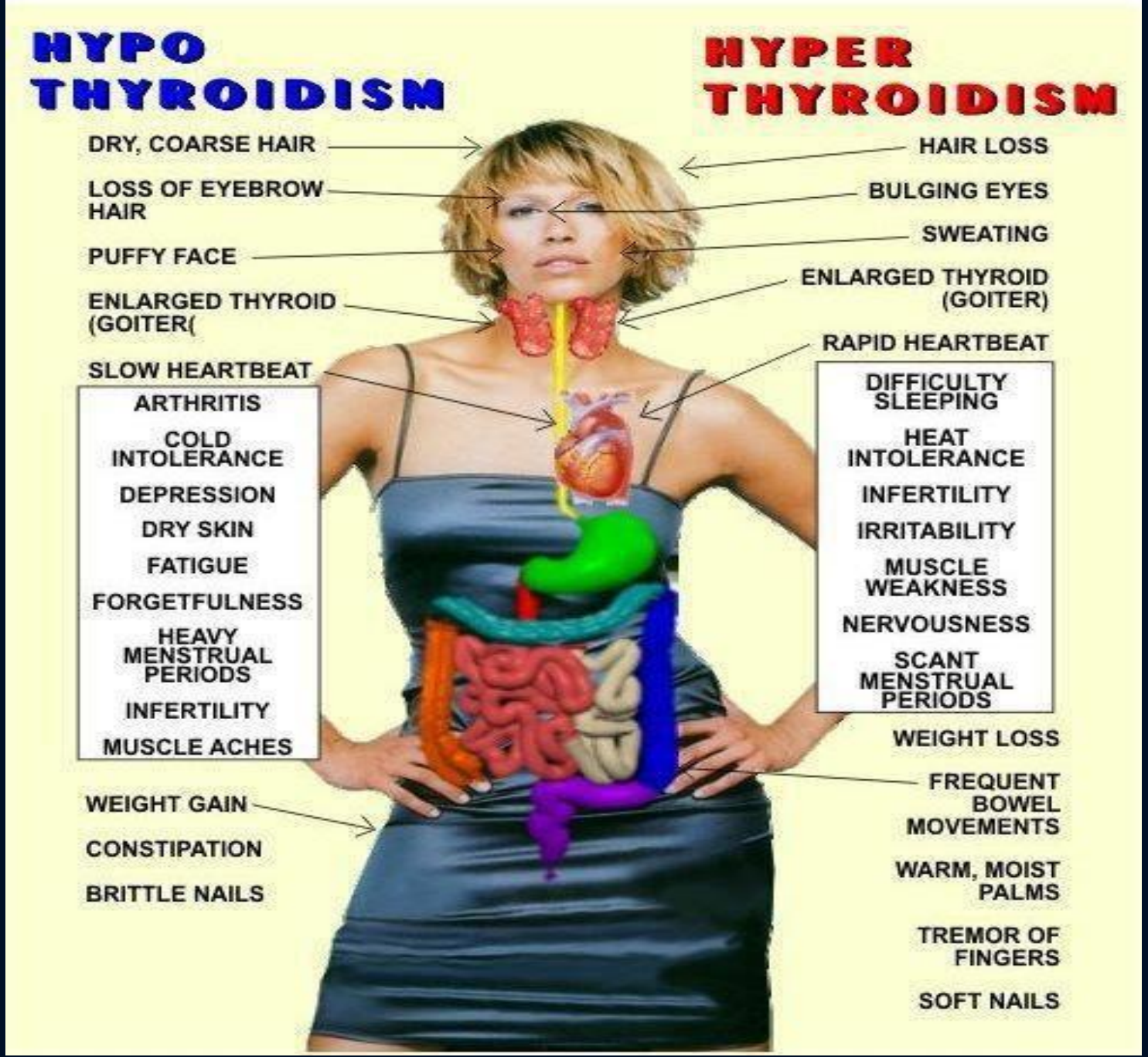


ACQUIRED-MOLECULAR MIMICRY

Offending Agents

1. Gluten
2. Heavy Metals, Toxins
3. Infectious Diseases
4. HPA Axis Insufficiency
5. Halogens (Fluoride, Bromide, Chlorine)
6. Medications (Amiodarone, Beta blockers, Dilantin, Prednisone, Synthetic progesterones, BCP, and Lithium)

Thyroid Dysfunction



RELEVANT LABS: DIAGNOSIS OF THYROID DISEASE

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- TSH
- free T3
- free T4
- reverse T3

Ferritin

TPO and TgAb

25 hydroxyvitamin D

B12

DIAGNOSIS OF THYROID DISEASE

Danger Will Robinson, Danger!

American Society of Clinical Endocrinologists Has Proclaimed:

" **Serum thyrotropin (TSH) is single best screening test for primary thyroid dysfunction for vast majority of outpatient clinical situations.** "Normal" is 0.45-4.5 mIu/L

Standard treatment is replacement with levothyroxine. Decision to treat subclinical hypothyroidism when serum thyrotropin is less than 10 mIU/L should be tailored to individual patient."

Any Treatment Other Than Desiccated T4 Is Outside Realm Of Medicine

Guarva, S., Hypothyroidism, *"Scinece Based Medicine"* "https://www.sciencebasedmedicine.org/hypothyroidism--facts--controversies-and--pseudoscience/

DIAGNOSIS OF THYROID DISEASE

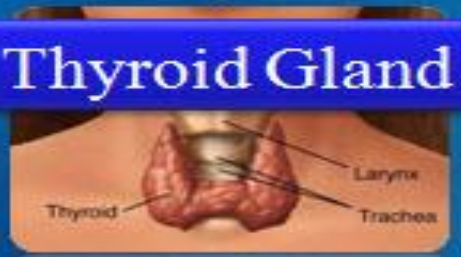
Normal Vs. "Optimal"

"Normal" Lab Values Reflect 2 Standard Deviations or 95.4% of a Random Population

"Optimal" Lab Values Reflect 1 Standard Deviation (Approximately 68%) of a Select Idealized Population

TSH

Requires Zinc and adequate protein



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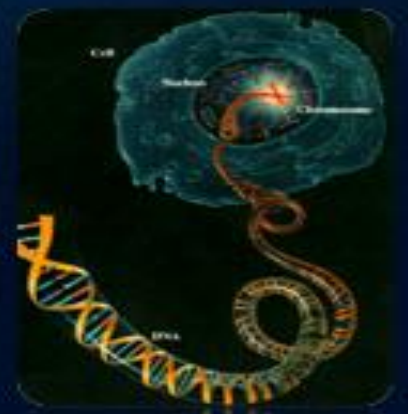


DIAGNOSIS OF THYROID DISEASE: OPTIMAL LAB VALUES

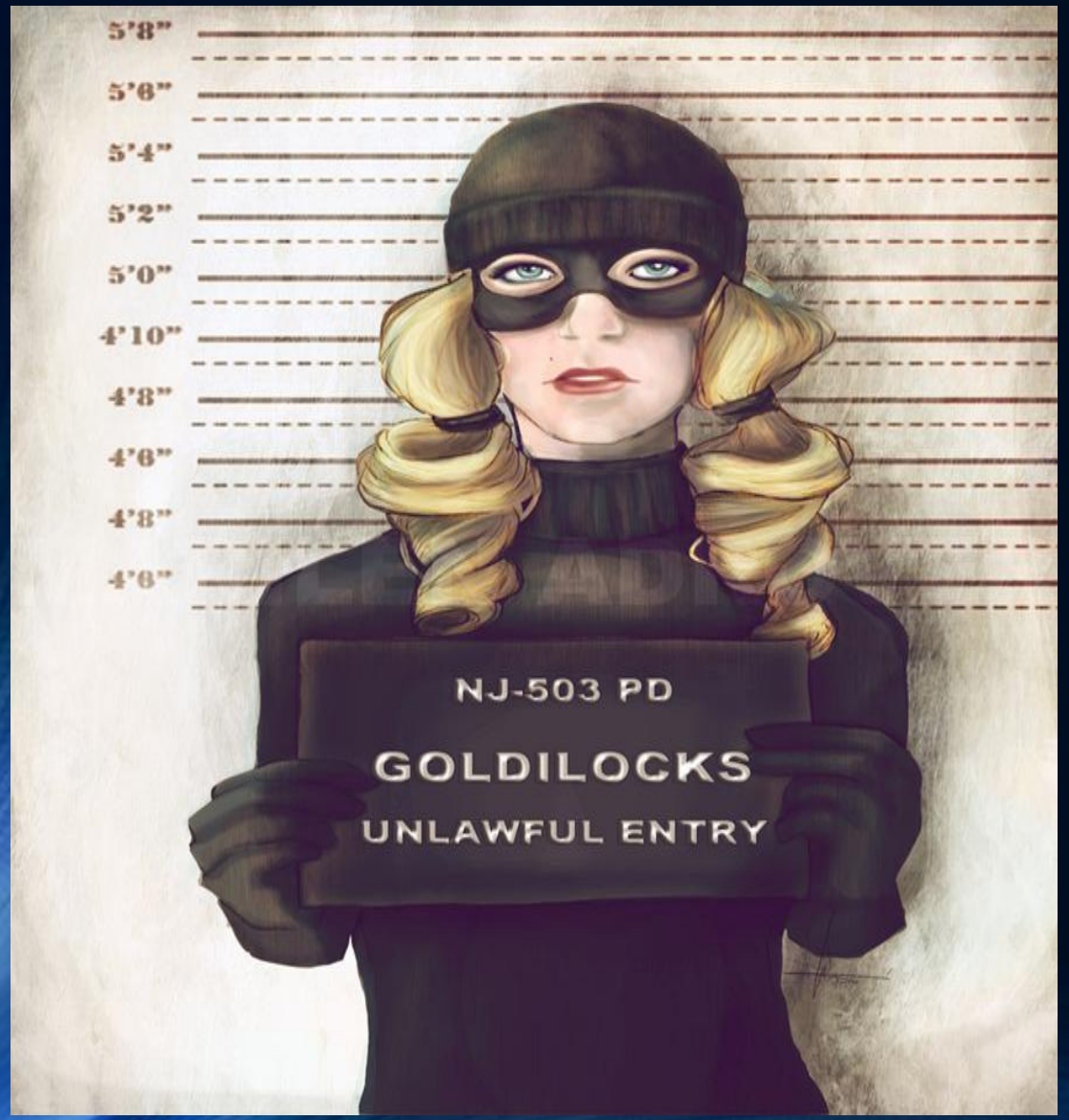
Thyroid Stimulating Hormone

- **TSH:** Produced in pituitary gland. **Detects** low or high circulating thyroid.
  - "Normal Value 0.40-4.5 mIU/L or is it 3.0 mIU/L ?
  - "Optimal" 0.8-2.0 mIU/L
  - Difference between 0.4 to 4.5= 5.5 kg or 12.13 pounds

Holmes the Detective=TSH the Detective

Serum TSH: Cut-off points within ref. range abovewhich there is ↑ risks of disease			
mU/L	↑ Risks of disease		Reference
> 3.6			
> 3.3 (higher quartile)	↑ severe form of depression		Berlin I 1999 Nyrnes A 2006
2-3.6	↑ body mass index over 7 years		Nyrnes A 2006
	↑ waist circumfer., BMI, glucose, TG, systolic BP		Waterhouse DF 2007
> 3	↑ cardiac abnormalities (pat. + auto-immune thyroiditis)		Zoncu S 2005
	↑ post-partum hypothyroidism		Azizi F 2004
> 2.1	↑ Stenoses, multi-vessel disease (angina patients)		Yun KH 2007
> 2	↑ homocysteine & CRP (patients + L-thyroxine)		Gursoy A 2006
≥ 2	↑ Familial predisposition to hypertension		Gumieniak O
≥ 2	↑ Hypercholesterolemia	(patients + auto-immune thyroid antibodies)	Michalopoulou G 1998
1-1.99	↑ Overt hypothyroidism		Geul KW 1993
> 1.98	↑ aggravation of coronary heart disease		Auer J 2003
≥ 1.9	↑ systolic & diastolic blood pressures (men)		Iqbal A 2006
> 1.9	↑ auto-immune thyroid ATPO+ (pregnant women)		Sieiro Netto L 2004
≥ 1.8	↑ systolic & diastolic blood pressures (women)		Iqbal A 2006

Goal=Goldilocks, Not Too Much, Not Too Little, Just Right



TSH

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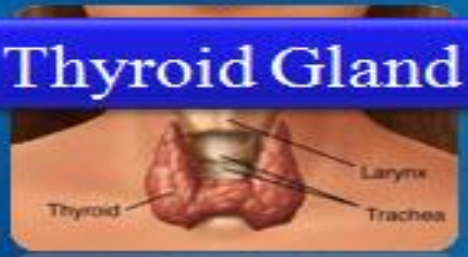

Thyroid Gland

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Cell Communication

Increase Metabolism = energy, weight loss, healthy hair and skin, lower cholesterol

Requires EFA

I DID NOT HAVE THREE THOUSAND PAIRS OF SHOES, I HAD ONE THOUSAND AND SIXTY.

QUOTEHD.COM

Imelda Marcos

Free T3-The Active Hormone

The Shoes Imelda's Wearing Right Now

- T3 is your active thyroid hormone. "free" T3 fraction represents amount that is available for use.
  - **"Normal" free T3 2.0-4.4 pg/ml "Optimal" 3.4-4.2 pg/ml**

• free T4-The Storage Hormone

Imelda's Shoe Closet

- **T4** is primary hormone produced by your thyroid.
- Storage hormone and meant to convert to active hormone **T3.**
- **"Normal" T4 0.7-1.53 ng/dl "Optimal" 1.15-1.53 ng/dl**

Are Your Thyroid Levels Optimal?

Reverse T3

Inactive form of T3. T4 converts to either T3 or reverse T3. rT3, is not available for metabolic function.

- reverse T3 (rT3): "Normal" reverse T3 9-24.9
  "Optimal" <15

Or

- free T3/reverse T3 <20 pmol/ml
- To calculate: http://www.stopthethyroidmadness.com/rt3-ratio/

Reverse T3

Causes

- ***Excess or Deficient Cortisol (90%)***

- Diabetes
- Starvation/severe calorie restriction
- Beta-blocker long-term use
- Chronic inflammation
- Iron Deficiency-Inability to Distribute T4 to Tissues to Convert toT3
- Lyme Dx

DIAGNOSIS OF THYROID DISEASE WITH OPTIMAL LAB VALUES

Antithyroid peroxidase antibodies (TPO):

Immune proteins-identify and remove foreign antigens.
Peroxidase = enzyme that converts T4 to T3.

TPO measures inappropriate attack of on immune system.

"Normal" <34 IU/ml "Optimal" <20 IU/ml

Thyroglobulin antibodies (TgAb):.

Immune protein-Synthesizes T4 and T3 hormone.

Measures immune system attack on this particular protein.

"Normal" <5 IU/mL "Optimal" <5 IU/mL

Thyroid Antibodies: Graves Disease (Autoimmune Hyperthyroidism)-(TSI)

"Optimal" < 30 "Remission" <80

DIAGNOSIS OF THYROID DISEASE

- **B12:** Function of red blood cells and nervous system. Stress and deficiency in stomach acid depletes vitamin B12 levels. Low B12 levels will exacerbate symptoms related to fatigue and mental health.

  "Optimal" > 800 pg/mL

- **Ferritin:** Storage form of iron. Releases iron to blood stream.
  - Low=iron deficiency. Iron deficiency exacerbates hypothyroidism.
  - High=cardiac disease, MTHFR defect

  "Optimal" 90-110 ng/mL

- **25-hydroxyvitamin D:** Low in thyroid disease due to digestive challenges.

  "Normal" 30-100 ng/mL "Optimal" 50-80 ng/Ml

EXOTIC DIAGNOSTICS

IODINE-24-hour urinary iodine

RBC ZINC AND SELENIUM

HYPOTHALAMIC-PITUITARY-ADRENAL (HPA) AXIS ASSESSMENT-

Urinary hormones and metabolites, including estrogens, progesterone, (DHEA), testosterone, and cortisol.

GI Function

(GI Issues Think Thyroid, Thyroid Issues, Think GI Dysfunction)

1. Stool testing-screens for parasites, fungi, and bacteria including H pylori, and C. diff A & B. Measures inflammatory markers, digestion markers, and beneficial gut flora.

1. Small Intestinal Bacterial Overgrowth (SIBO)-Lactulose Breath Test. Detects bacterial overgrowth in the small intestine.

3. Urine Testing-detects bacterial and fungal overgrowth in the gut.

4. Urine for Micronutrients

To The Rescue!

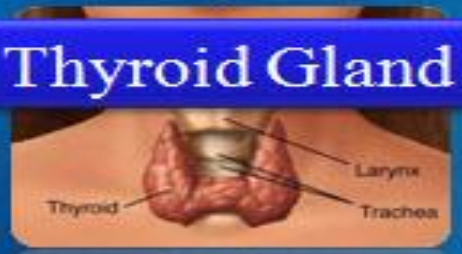
TO FIX IT, WE NEED TO KNOW WHAT COULD GO WRONG?

- Failure to Convert T4 to T3
- Inadequate Nutrients
- Molecular Mimicry
  - Gluten Sensitivity
  - Toxin Exposure
  - Infectious Diseases
  - HPA Axis Insufficiency
  - Iodine Deficiency
  - Medications

TSH

Requires Zinc and adequate protein

Thyroid Gland



Increase Metabolism = energy, weight loss, healthy hair and skin, lower cholesterol

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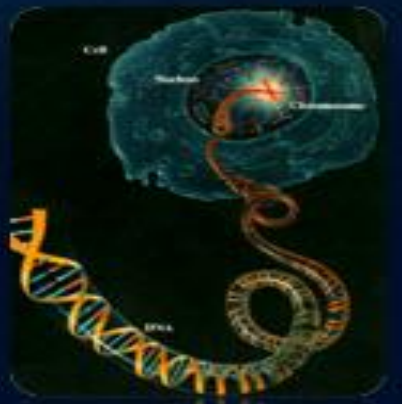
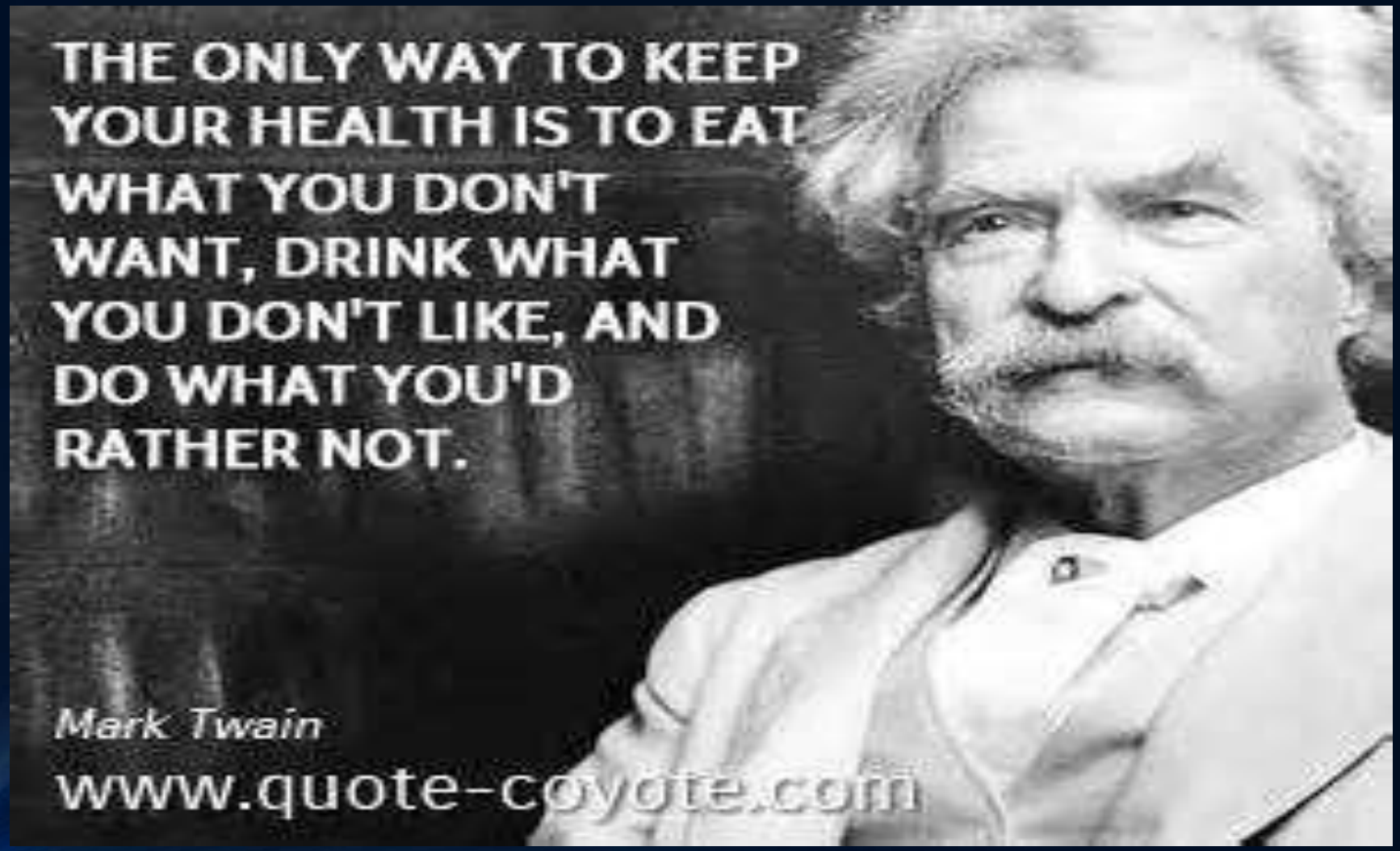
Cell Communication



Requires Vitamins A and D

Diet


THE ONLY WAY TO KEEP YOUR HEALTH IS TO EAT WHAT YOU DON'T WANT, DRINK WHAT YOU DON'T LIKE, AND DO WHAT YOU'D RATHER NOT.
Mark Twain
www.quote-coyote.com

GASTROINTESTINAL-THYROID CONNECTION

- 80% of our immune system resides in the gastrointestinal tract.

- Without a healthy GI tract it is impossible to have adequate defense against disease.
- Causes:
  - (S.A.D.), Standard American Diet
  - Environmental toxins
  - Sleep deprivation
  - Alcohol
  - Chronic stress
  - Liver toxicity

GASTROINTESTINAL-THYROID CONNECTION

- *Gluten*

- Protein in, barley, rye, and a cross between wheat and rye called triticale.
- Major stressor of the junctional walls of the small intestine.
- When loosened, these openings allow toxins, microbes and food particles a clear path to the bloodstream.

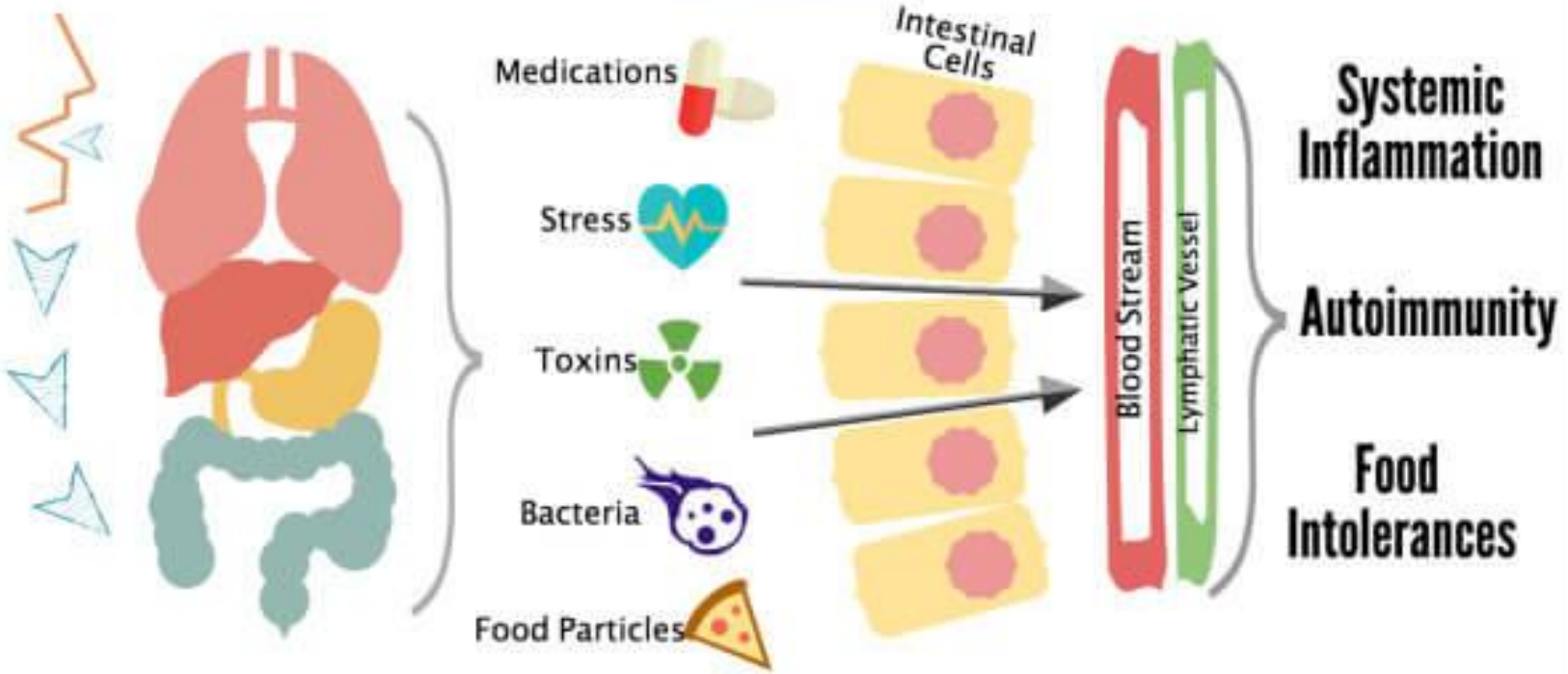
GASTROINTESTINAL-THYROID CONNECTION

Gluten

- Body fights back by developing defenses, (antibodies) to its' own tissue.
- The thyroid is particularly vulnerable because of Molecular Mimicry.
- The body misinterprets its' normal thyroid tissue for an invader leading to autoimmune response, most commonly hypo (low) thyroid function, or Hashimoto's Thyroiditis.

The Damaging Effects Of Leaky Gut Syndrome

simplemedicine.co



GASTROINTESTINAL-THYROID CONNECTION

Result="Leaky Gut Syndrome"

Small intestine, the site of the immune function is under constant attack.

Creates outpouring of immune defenses, specifically zonulin, a chemical that weakens and widens the attachments in the intestinal lining.

Large particles that normally traverse the digestive tract due to its' "tight" junctions, now "leak" into the bloodstream.

The body fights back by developing defenses, antibodies to its' own tissue.

How To Heal Your Leaky Gut (In 4 Easy Steps)

Do you suffer from bloating, gas, IBS, and

Do you suffer from bloating, gas, IBS, and other digestive issues? Maybe you have a case of leaky gut syndrome (LGS). Unknown to most doctors, LGS is when damage to your body's digestive system makes it much harder to break down and absorb food. It could explain a variety of gut and even non-gut problems. Whether you want fewer digestive issues, improved immunity, or simply better health, all it takes is these four steps to heal your gut.

Remove

Foods that could be harming your gut

-Caffeine
-Alcohol
-Gluten
-Dairy
-Soy
-Eggs
-Shellfish
-Saturated/Trans Fat
-Processed Foods

Ask about a prescription called Rifaxamin to help kill bad bacteria that could lead to LGS

Repair

Your Gut and Heal Damage

-Eat Clean, Whole Foods
-Get More Omega 3's In Your Diet
-Try Healing Herbs

Omega 3 Foods: Fish, Nuts, Seeds, Avocados, Fish Oils
Healing Herbs: Aloe Vera, Turmeric, Evening Primrose Oil, L-Glutamine

Restore

Your Gut With Probiotics

-Eat Fermented Foods
-Invest In a Probiotic Supplement

Fermented Food Ideas

Kefir
Kimchi
Kobumcha
Fermented Veggies
Plain Yogurt

Replace

Digestive Enzymes & Bile Salts To Aid Digestion

-High-Quality Digestive Enzymes
-Organic Pink Himilayan Salt

Heal your gut today with these four steps!

Limit Goitrogens (3-6 Servings/Week)

Cruciferous Vegetables

Bok Choy
Broccoli
Brussel Sprouts
Cabbage
Canola
Cauliflower
Chinese Cabbage
Collard Greens
Horseradish
Kale
Kohlrabi
Mustard Greens
Radishes
Rutabaga
Turnips

Others

Soy
Pine Nuts, Peanuts
Millet
Strawberries
Pears, Peaches
Bamboo Shoots
Spinach
Sweet Potatoes

Goitrogen-AutoImmune Diet

Bone Broth-Helps restore gut barrier (i.e. heals the “leaky gut”)

Fermented Vegetables and Beverages (i.e. sauerkraut, kimchi, beet kvass, coconut water kefir, etc.). High in Probiotics

Fish and Shellfish-High in omega-3 fats. Eat at least one pound of cold-water, fatty fish per week EPA and DHA needs.

Organ Meats-Loaded micronutrients that promote healthy immune function.

Micronutrients

Vitamins A & D: Immune enhancement.

Vitamin D supports proper T-regulatory cell function.

Cod liver oil is the best source of A & D.

Iodine & Selenium- Crucial for immune health.

Glutathione: Promotes healthy function of T regulatory cells

Liver Detox Agent, Antioxidant

Niacin (B3), Pyridoxine (B6), Vitamin C, Magnesium, Iron, Copper, Zinc, and Manganese.

Eliminate Usually One Item at a Time

Goitrogens-Limit to 3-6 servings/week raw. Steaming/boiling reduces goitrogenic effect.

Eggs (both whites and yolks)

Nightshades (potatoes, tomatoes, sweet and hot peppers, eggplant, tomatillos, pepinos, pimentos, paprika and cayenne pepper)

Nuts-30-day elimination if nut sensitive. Common allergen.

TREATMENT OF "LEAKY GUT SYNDROME"

"Budwig's Snack"-Oil-protein mixture to jump-start normal cell metabolism

- 6 oz of cultured dairy (cottage cheese, goat milk kefir)
- 4 Tbsp of sprouted and ground chia or ax
- 1 Tbsp flaxseed oil
- 1 tsp turmeric powder
- 1/4 tsp black pepper

Mix all the ingredients together in bowl or blender and consume once daily. Extras: Add berries, fruit, organic raw nuts such as ground hemp seed, ground almonds, sunflower seed, pumpkin seed and Brazil nuts (but not peanuts). For flavoring try vanilla, cinnamon, shredded coconut or a dash of cayenne pepper.

Mr. Fix-It

"Drugs"

RX: Drug "SOLUTION"

One Size FIts All

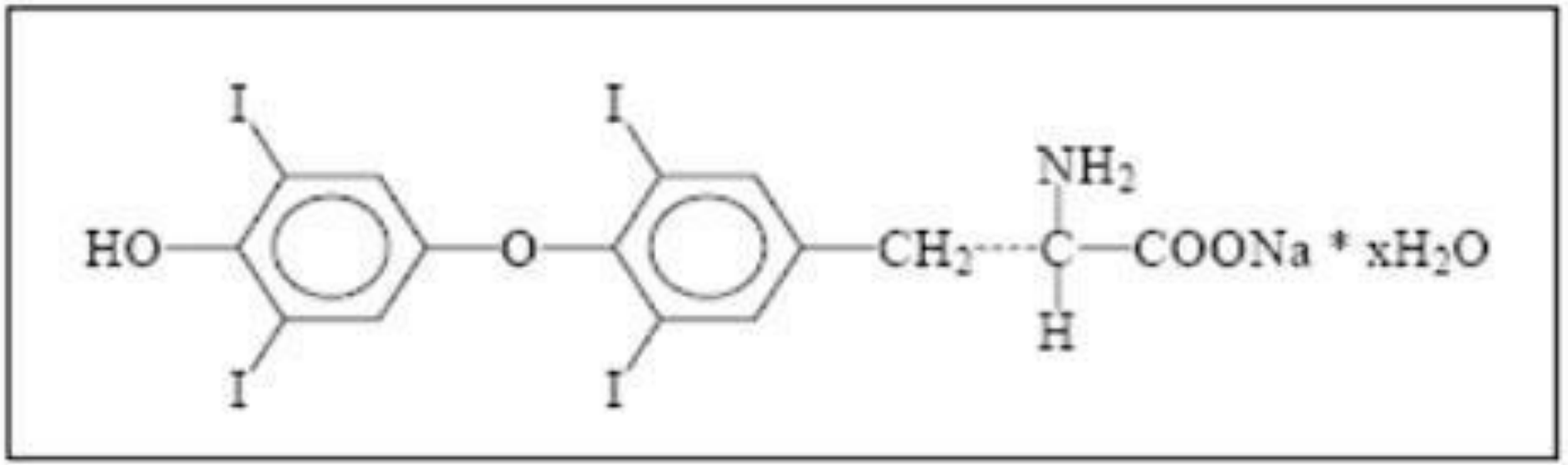
- Levothyroxine, Levoxyl, Synthroid

American Association of Clinical Endocrinologists and American Thyroid Association emphatically declared, in 2012, "Standard treatment is replacement with Levothyroxine. "

Garber, J.,Cobin, R., Gharib, H., et al., Clinical Practice Guidelines For Hypothyroidism In Adults, Endocr Pract. 2012; 18(No.6) 989. Hollowell JG et al. J Clin Endocrinl Metab 2002 87(2)489-499

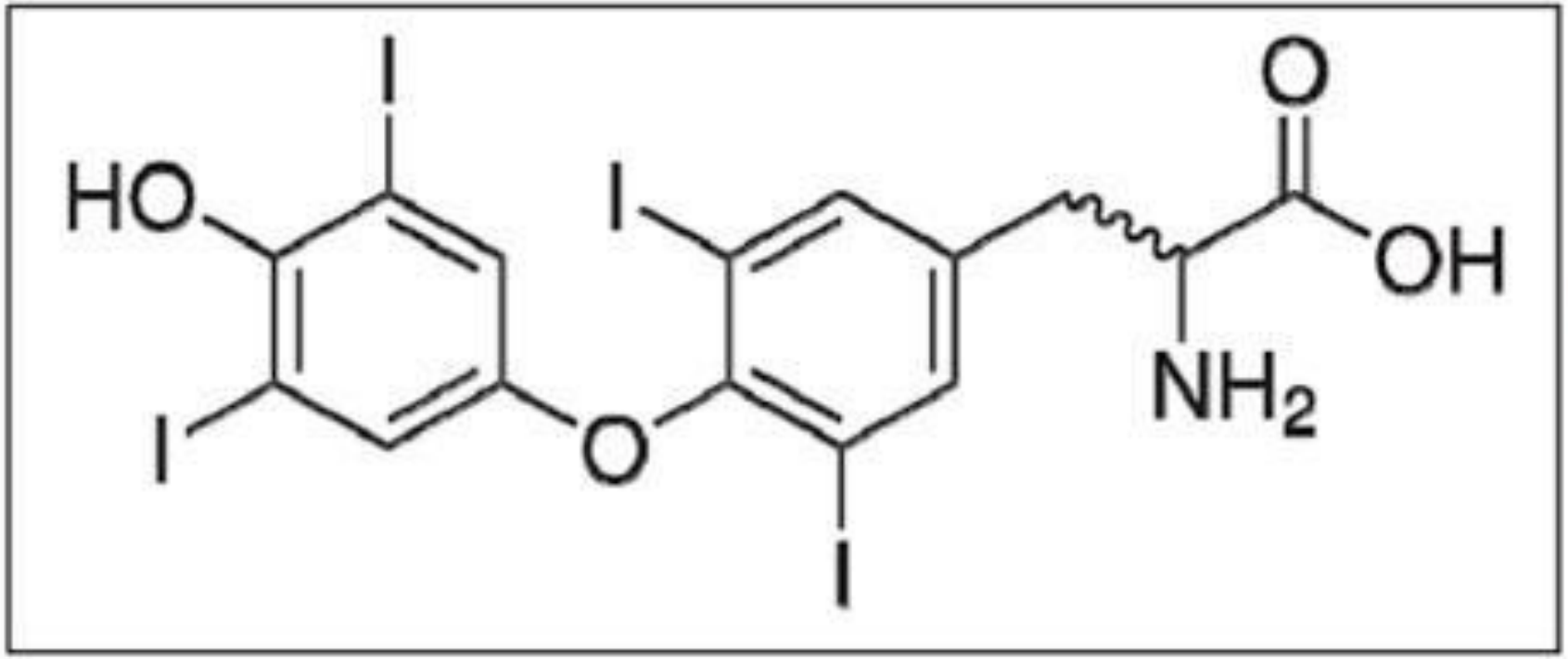
Any Treatment Other Than Desiccated T4 Is Outside Realm Of Medicine

Guarva, S., Hypothyroidism, *"Scinece Based Medicine"* "https://www.sciencebasedmedicine.org/hypothyroidism--facts--controversies-and--pseudoscience/



Synthroid

$C_{15}H_{10}I_4N\ NaO_4 - H_2O$



Thyroxine

$C_{15}H_{11}I_4NO_4$

THYROID REPLACEMENT

- Case For Desiccated T4 Only
  - Nearly 80% of circulating thyroid is T4.
  - T4 naturally converts to T3
  - “Standardized.” “WYSIWYG”

Is This How We Want to Treat Our Thyroid Deficiency?

Negative Influences Preventing Conversion from T4 to T3

1. Advanced Age
2. Excess raw goitrogen consumption-broccoli, kale, cauliflower, brussel sprouts
3. Stress/H-P-A Axis Disruptions
4. Taking medications at same time as thyroid meds.
5. Birth Control Pills
6. Chemotherapy or radiation exposure

Negative Influences Preventing Conversion from T4 to T3

6. Toxin Exposure
7. Extreme Exercise
8. Inflammation
9. Low iron
10. Low Testosterone/Low Growth Hormone

THYROID REPLACEMENT

- Desiccated Thyroid Replacement
  - Natural Preparation
    - Exact equivalent as your own thyroid
      - *T4, T3, T2, T1 and calcitonin*.

THYROID REPLACEMENT

- Why Desiccated Thyroid?
  - T3 needed for adequate tissue levels–
  - Brain and Heart-no transport T4 into cells, T3
  - Danzi S et al. Potential uses of T3 in treatment of human disease. *Clin Cornerstone* 2005;7 Suppl 2:S9-15.

THYROID REPLACEMENT

- DTE = Desiccated Thyroid Extract = Porcine thyroid vs. Levothyroxine
- Double blind crossover study
- Conclusion:
- DTE caused more weight loss
- Cognitive performance mood and depression improved
- 50% felt better on DTE
- No adverse effects on combination

Bunevicius R et al. Effects of thyroxine as compared with thyroxine plus triiodothyronine in patients with hypothyroidism. *N Engl J Med* 1999 Feb 11;340(6):424-9

Hoang TD et al. Desiccated thyroid extract compared with levothyroxine in treatment of hypothyroidism: a randomized, double-blind, crossover study. *J Clin Endocrinol Metab*. 2013 May;98(5):1982-90.

DESICCATED THYROID REPLACEMENT AND HEART DISEASE

- **Lowers BP; Improves Cholesterol** –
  - Asvold BO et al. The HUNT Study. Eur J Endocrinol. 2007 Feb;156(2):181-6

- **Improves Metabolic Syndrome; Insulin Resistance** -
  Razvi S et al. The influence of age on the relationship between subclinical hypothyroidism and ischemic heart disease: a meta analysis. J Clin Endocrinol Metab. 2008 Aug;93(8):2998-3007 6

Myth: Thyroid (T3) is Dangerous for the Heart

Hyperthyroidism is associated with atrial fibrillation but:

Optimizing thyroid:

- **Improves lipids**
- **Improves CHF**
- **Positive inotropic (smooths heart beat)**
- **Vasodilatory**

Most Patients with Advanced Congestive Heart Failure Have Altered Thyroid Metabolism

Hamilton MA, Stevenson LW, FOnarow GC, et al. Safety and Hemodynamic Effects of Intravenous Triiodothyronine in Advanced Congestive Heart Failure. *American Journal of Cardiology.* 1998 Feb 15;81(4)443-447.

Mild Thyroid Disease Raises Cardiac Risk

1. **Subclinical Hypothyroidism is linked with a > 2 fold increase in heart attack risk among women > age 55**
2. **Mild thyroid disease is a well established a cardiac risk factor as high cholesterol and smoking.**

Hak, EA, Pols H, Visser TJ, et al. Subclinical hypothyroidism is an independent risk factor for atherosclerosis and myocardial infarction in elderly women: The Rotterdam Study. *Ann. Int. Med.* 2000;132:270-278.

Optimizing Thyroid Function After an MI

- **Normalizes QT interval**
- **Improves CRP, Homocysteine**
- **Improves arterial stiffness and endothelial dysfunction**

Asvold BO et al. The association between TSH within the reference range and serum lipid concentrations in a population-based study. The HUNT Study. Eur J Endocrinol. 2007 Feb;156(2):181-6.

Razvi S et al. The influence of age on the relationship between subclinical hypothyroidism and ischemic heart disease: a meta analysis. J Clin Endocrinol Metab. 2008

LOW T3 IS STRONGEST INDEPENDENT PREDICTOR OF CARDIAC DEATH

- Low T3 < 3.1 Free T3
- Low-T3 syndrome is a strong predictor of death in cardiac patients and might be directly implicated in poor prognosis of cardiac patients.
- **Strongest independent predictor of death**

  > lipids or EF

- Iervasi, G et al. Low-T3 Syndrome, A Strong Prognostic Predictor of Death in Patients With Heart Disease *Circulation.* 2003;107:708

RUMOR: THYROID REPLACEMENT CAUSES OSTEOPOROSIS

- No decrease in BMD in pre or postmenopausal women or men.
- High dose thyroid does not appear to be a significant risk factor for osteoporosis

Gorres G et al. Bone mineral density in patients receiving suppressive doses of thyroxine for differentiated thyroid carcinoma *Eur J Nucl Med* 1996

Kelly, T. A favorable risk-benefit analysis of high dose thyroid for treatment of bipolar disorders with regard to osteoporosis. J Affect Disord. 2014 Sep;166:353-8.

Thyroid Hormones, Gut Peptides and Growth Hormone

Ghrelin and Obestatin

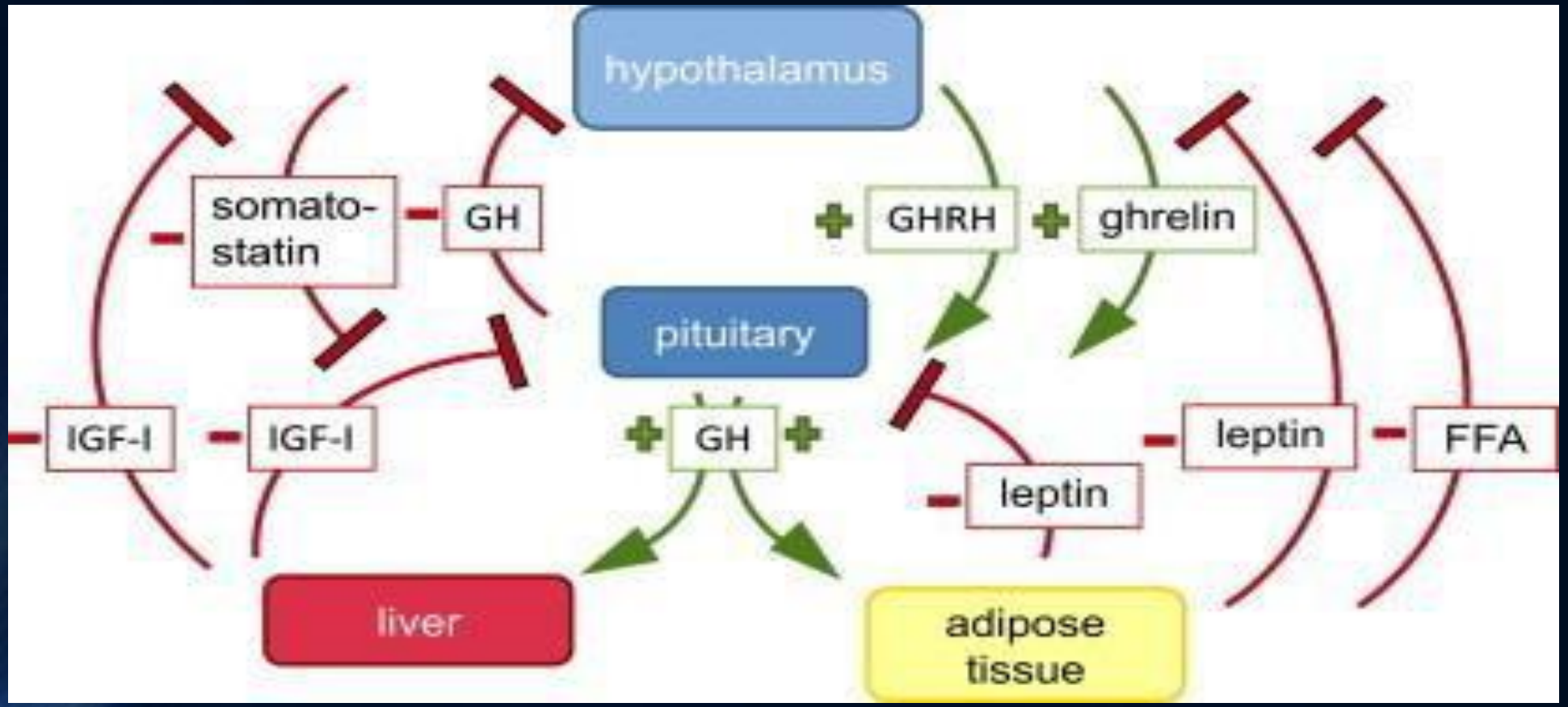
75	Ghrelin	Obestatin
Hypothyroid	320 +/- 81 ng/L	44 +/- 11.7 ng/L
Control	**487 +/- 110 ng/L**	**58.5 +/- 10 ng/L**
Hyperthyroid	750 +/- 289 ng/L	71 +/- 27.3 ng/L

Ghrelin and Obestatin **have strong correlations with TSH, FT3 and FT4.**

- Emami A, Nazem R, Hedayati M. **Is association between thyroid hormones and gut peptides, ghrelin and obestatin, able to suggest new regulatory relation between the HPT axis and gut?,** Regul Pept. 2014 Feb 10;189:17-21. doi: 10.1016/j.regpep.2014.01.001. Epub 2014 Feb 4.

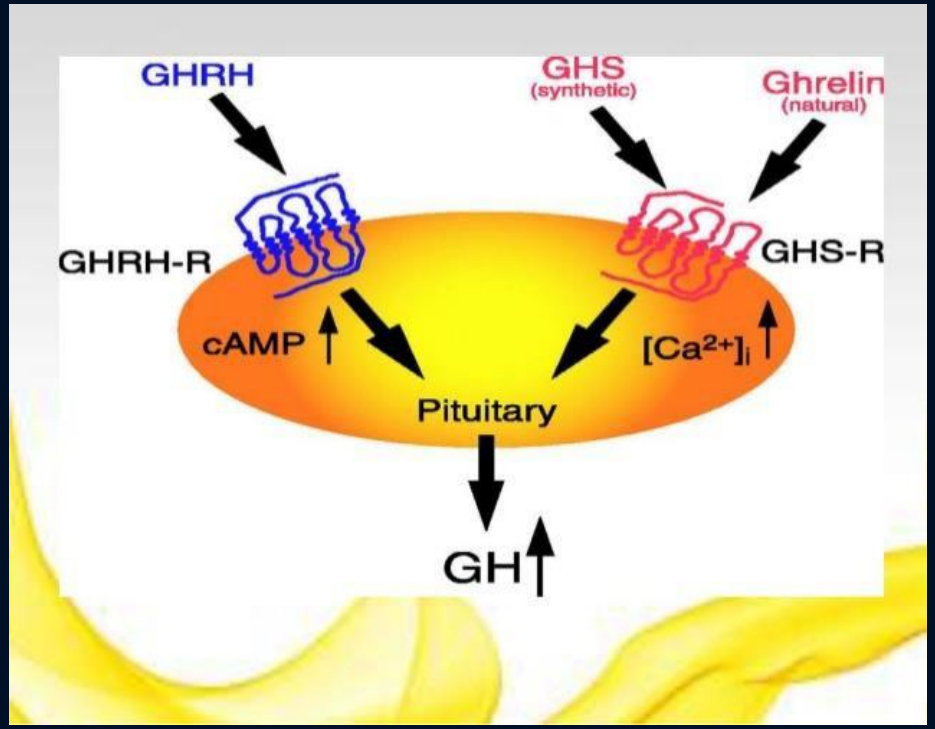
Growth Hormone Axis

Endocrinology and Metabolism Clinics - Volume 41, Issue 2 (June 2012)

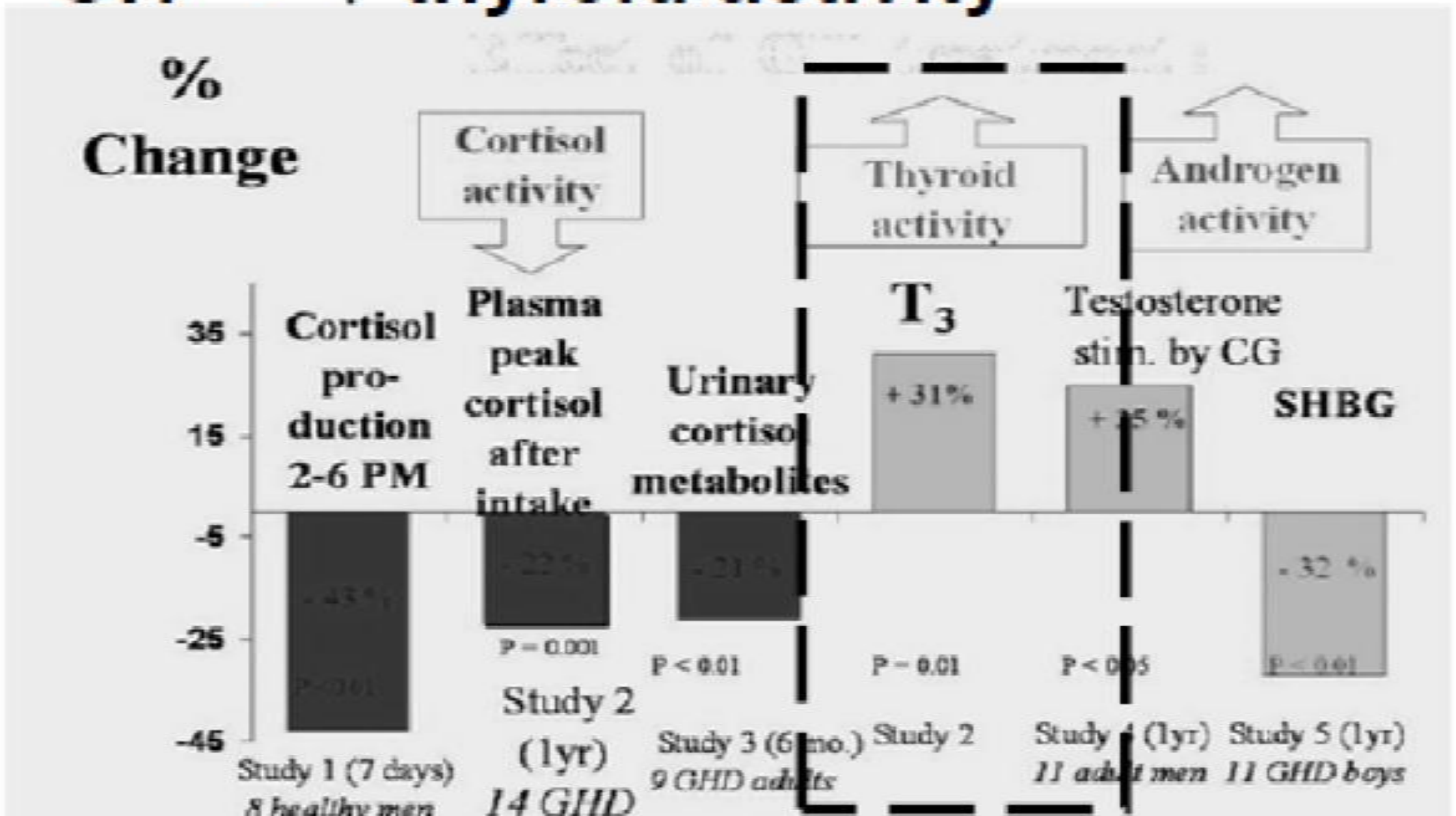


GHRP-"Ghrelin-esque"

- GHRP acts on Ghrelin receptor
- Antagonizes somatostatin
- Stimulates release of GHRH
- GH release from somatotrophs in ant. Pituitary
- Ghrelin binds to GHS-R (GH secretagogue receptor
- neuron excitability GABA inhibitory inputs =
- GHRH release.



GH => ↑ thyroid activity



THYROID IMMUNE MODULATORS

- Plant Sterolins

  Promote a balanced immune system
  - Protects against negative stress responses
  - Limits cortisol activity

  Modulates the autoimmune response in Hashimoto's Thyroiditis.
  - Can decrease antibodies by 90%

  Improves balance of T-helper 1 to T-helper 2 cells
  Down Regulates overactive immune responses.*

IMMUNE MODULATORS

- Immune Modulator W PS
  - Systemic Enzyme Formula
    - Promotes Immune Function

Bouic PJ1, Lamprecht JH., **Plant sterols and sterolins: a review of their immune-modulating properties.** Altern Med Rev. 1999 Jun;4(3):170-7.

Yamada H, Yoshino M, Matsumoto T, et al. Effects of phytosterols on anti-complementary activity. Chem Pharm Bull 1987;35:4851-4855

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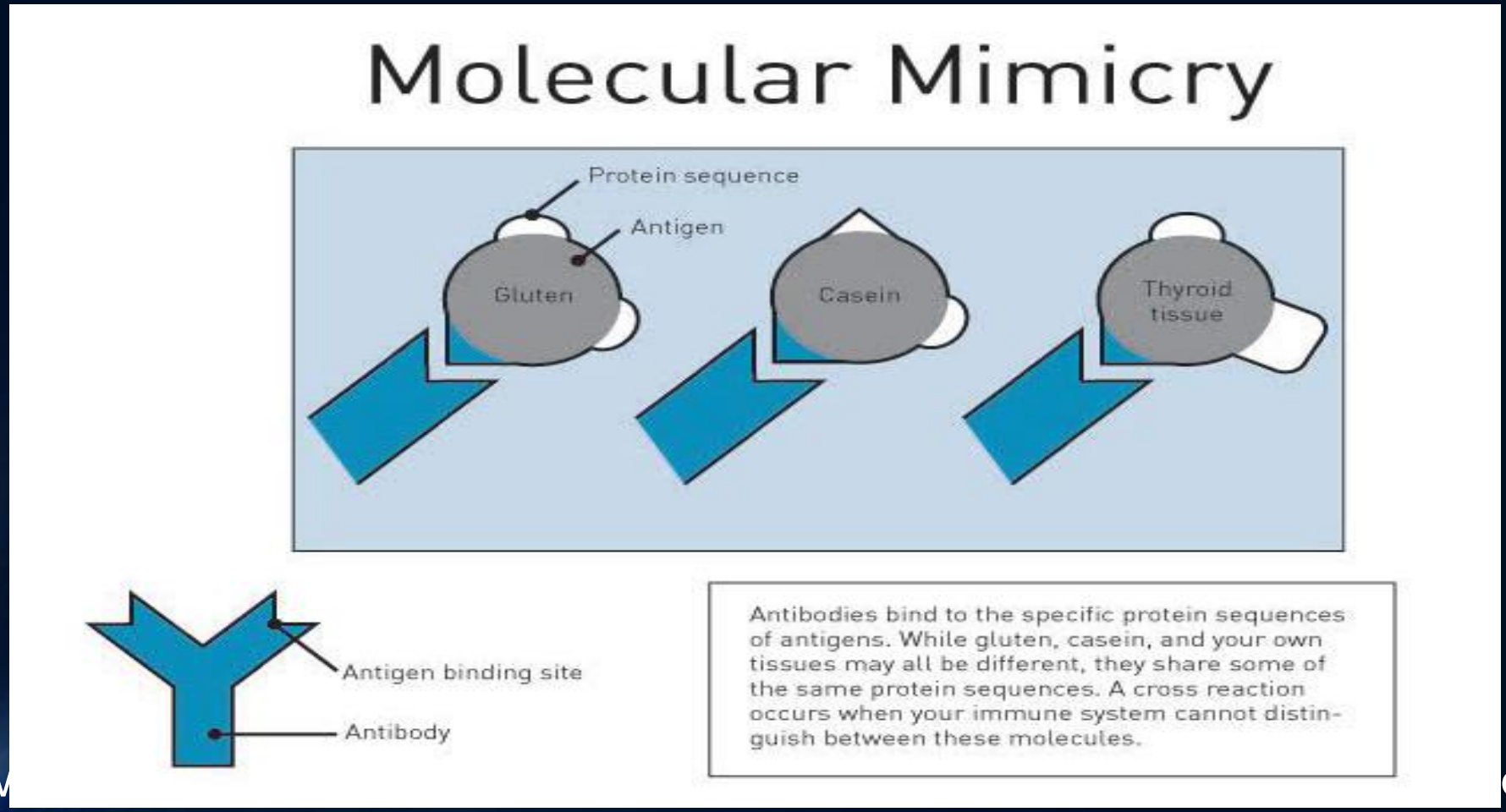
Autoimmune Disorders

- **Thyroid:** Graves disease, Hashimoto's
- **Bones:** Rheumatoid arthritis, ankylosing spondylitis
- **Brain/Nervous system:** MS, ALS, GBS
- **GI System:** Crohn's disease, Ulcerative colitis
- **Skin:** Vitiligo, psoriasis

ROOT CAUSE OF THYROID DISEASE

- Fool Me Once Shame on Me;
- Fool Me Six TImes is Molecular Mimicry

COMMON DENOMINATOR



http://w ection/

COMMON DENOMINATOR

Antibodies bind to specific protein sequences of antigens.

While gluten, casein and local protein tissues may all be different, they share the same protein sequences.

A cross reaction occurs when your immune system cannot distinguish between tissues

The 6 Root Causes of Thyroid DIsease

- Gastrointestinal-Immune-Thyroid Connection
- Heavy Metal-Toxin-Thyroid Connection
- Infectious Disease-Thyroid Connection
- HPA Axis-Thyroid Connection
- Autoimmune-Iodine-Thyroid Connection
- Autoimmune-Nutrient-Thyroid Connection

- Gastrointestinal-Immune-Thyroid Connection

Covered Earlier

Gluten

Goitrogens

HEAVY METAL-TOXIN-THYROID CONNECTION

By age 10, a child born in 2000 is exposed to approximately 80,000 chemicals that did not exist in 1970.

1. **Glyphosate Endocrine system, GI bacteria balance, DNA damage, Cancer mutations**

1. **PCB's-Brain impairment**

1. **Triclosan-Present in soap, toothpaste, and bath towels, limb deformities**

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- Swanson, N, Leu, A., Abrahamson, J, et. al., Genetically Engineered Crops, Glyphosate and the Deterioration of Health in the United States of America; *Journal of Organic Systems,* http://www.organic-systems.org/journal/92/abstracts/Swanson-et-al.html; Vol. 9 No.2(2014)

HEAVY METAL-TOXIN-THYROID CONNECTION

By age 10, a child born in 2000 is exposed to approximately 80,000 chemicals that did not exist in 1970.

4. Phthalates-Fragrances, Thyroid abnormalities

5. Perfluorooctanoic acid-Non stick cookware, Microwave Popcorn Bags

- Reasoner, J., Leaky Gut Syndrome in Plain English – and How to Fix It, http://scdlifestyle.com/2010/03/the-scd-diet-and-leaky-gut-syndrome/, Accessed September 6, 2015.
- Swanson, N, Leu, A., Abrahamson, J, et. al., Genetically Engineered Crops, Glyphosate and the Deterioration of Health in the United States of America; *Journal of Organic Systems*, http://www.organic-systems.org/journal/92/abstracts/Swanson-et-al.html; Vol. 9 No.2(2014)

Disorders Linked to Heavy Metal Toxicity

Attention Deficit Disorder	Parkinson's disease	Asthma
Autism Spectrum disorders	Thyroid disorders	Arthritis
Auto-immune disorders	Multiple Scleroris	Candidiasis
Chronic Fatigue Syndrome	Kidney disease	Epilepsy
Lou Gehrig's disease (ALS)	Schizophrenia	Fibromyalgia
Gulf War Syndrome	Hypertension	Insomnia
Alzheimer's disease	Liver disease	Infertility

HEAVY METAL-TOXIN-THYROID CONNECTION

Mercury-in sushi, cosmetics, vaccines, pesticides, dental fillings, and coal fired power plant residue.

Perchlorate-in fireworks, fertilizer and rocket fuel.

Nitrates-in fertilizer and processed or cured meats like hot dogs and bacon. Spinach and celery naturally contain nitrates.

TREATING THE HEAVY METAL-TOXIN-THYROID CONNECTION

1. Avoidance (Nearly Impossible)
2. HEPA filters to clean the air
3. Water filters.
4. Organic, grass fed meats
5. Fish with lower mercury levels (salmon versus tuna)
6. Avoiding processed and cured meats
   (Or use nitrate-free cured products)
7. Organic Skin care products,
8. Dental amalgams removal

TREATING THE HEAVY METAL-TOXIN-THYROID CONNECTION

Liver Detoxification

1. Intravenous glutathione
2. N-Acetyl-Cysteine (glutathione precursor)
3. Liposomal Glutathione
4. Milk Thistle
5. Vitamin C

THE AUTOIMMUNE-INFECTIOUS DISEASE-THYROID CONNECTION

Molecular Mimicry Caused by infectious agents

1. *Herpes simplex 1 and 2* (causing oral and genital herpes)

1. *Ebstein-Barr virus* (mononucleosis, multiple sclerosis, lupus, chronic fatigue syndrome, and fibromyalgia)

1. *Yersinia enterocolitica (*food poisoning from uncooked pork, and contaminated meat and dairy)

THE AUTOIMMUNE-INFECTIOUS DISEASE-THYROID CONNECTION

Molecular Mimicry Caused by Infectious Agents

*4. Hepatitis C (*blood or body fluids of an infected person)

5. H. pylori (bacteria that attacks stomach lining creating ulcers).

6. Lyme Dx.

THE AUTOIMMUNE-INFECTIOUS DISEASE-THYROID CONNECTION

Blood Cultures

- Herpes
- Ebstein Barr
- Hepatitis
- H. Pylori

Stool Cultures

- Yersinia
- H. Pylori (Breath Test also)
- Lyme Dx (Various tests)

THE AUTOIMMUNE-INFECTIOUS DISEASE-THYROID CONNECTION

Treatment

Viral infections (*Herpes, Ebstein Barr, Hepatitis)*

Colloidal Silver

Humic Acid-Monolaurin

Free-radical scavenger and natural antioxidant.

Binds positive and negatively charged ions boosting the immune system.

Contains olive leaf a known anti-viral, anti-bacterial, and fungal agent.

THE AUTOIMMUNE-INFECTIOUS DISEASE-THYROID CONNECTION

Treatment

Viral infections (*Herpes, Ebstein Barr, Hepatitis)*

Peptides:

Thymosin Alpha 1
Thymosin Beta 4
Epithalon

THE AUTOIMMUNE-INFECTIOUS DISEASE-THYROID CONNECTION

Treatment

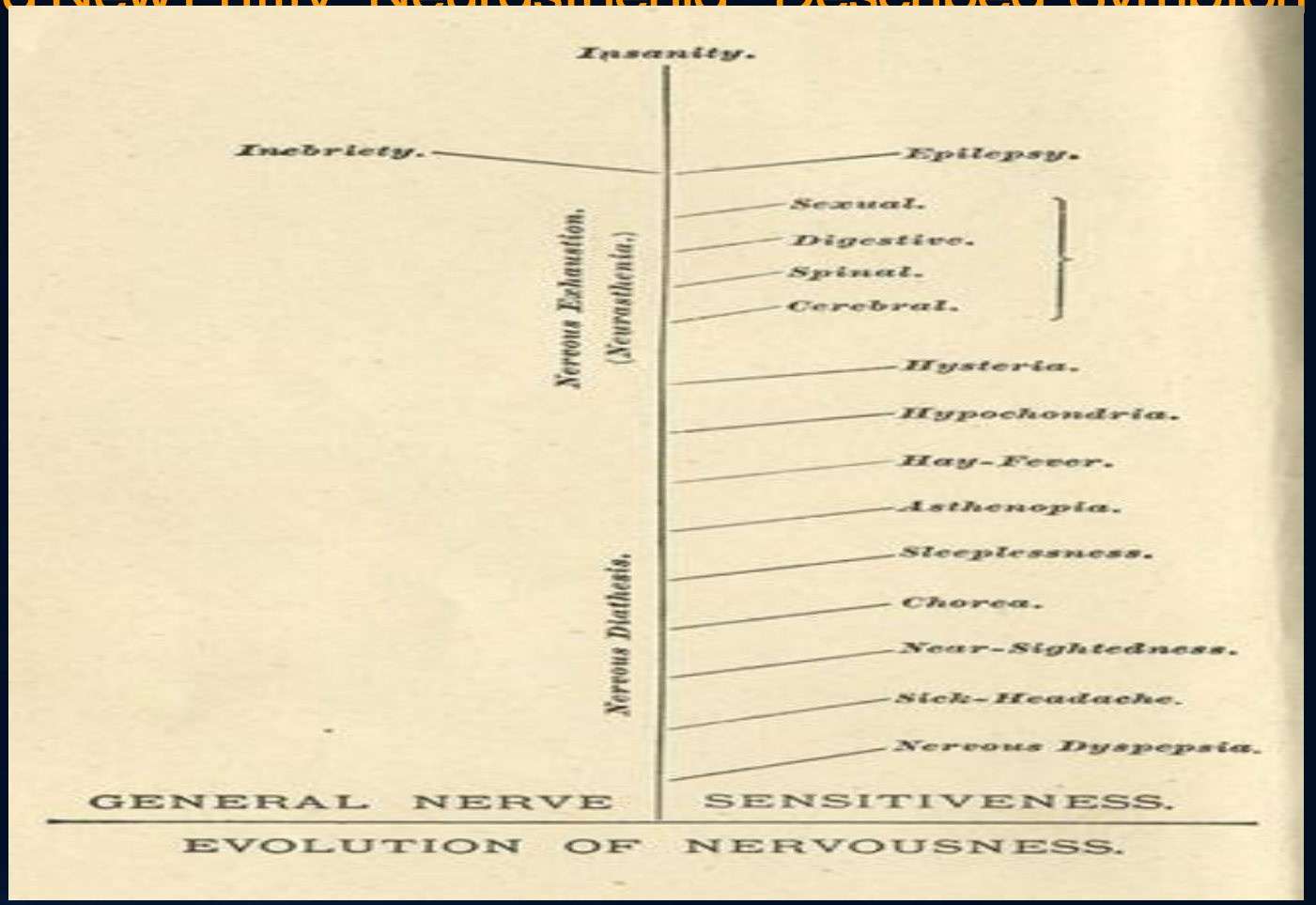
Bacterial Infections (*Yersinia and H. pylori*)

- Antibiotics
- GI tract flora protection (Pro and prebiotics)
  - (Chicken soup and a little Vitamin D wouldn't hurt.)
- Peptide

BPC 157 Orally

THE AUTOIMMUNE-HPA AXIS-THYROID CONNECTION

1881 a New Entity "Neurasthenia" Described Symptoms:



THE AUTOIMMUNE-HPA AXIS-THYROID CONNECTION

Epidemiology:

The best educated and most sophisticated Americans were the most afflicted.

Theodore Roosevelt and Frederic Remington were two prominent sufferings from "neurasthenia."

"Cure"

Withdraw from the modern life, rest and simpler lifestyle.

"Critics"

Countered "urban life in the late nineteenth century had produced a "pathetic, pampered, physically and morally enfeebled 97 pound weakling, unworthy successors to the stalwart Americans who had fought the Civil War and tamed a continent."

The Birth of Modern Culture, *Digital History,* http://www.digitalhistory.uh.edu/disp_textbook.cfm?smtID=2&psid=3313, accessed September 7, 2015.

THE AUTOIMMUNE-HPA AXIS-THYROID CONNECTION

Neurasthenia=HPA AXIS Fatigue="Burnout?"

1. ***Stress*** hijacks normal hormonal responses, redeploying the HPA AXIS' resources to combat the "evil" of the moment.

1. The other functions of the HPA Axis hormones, digestion, immune response, and thyroid hormone production, are temporarily put on hold or slowed until the stress has passed.

THE AUTOIMMUNE-HPA AXIS-THYROID CONNECTION

Neurasthenia=HPA AXIS Fatigue="Burnout?"

3. In an ideal world the stress is resolved, or passes quickly, and the HPA AXIS get on with their business.

4. In our non-ideal world, stresses not only linger and get worse, but newer stresses arise compounding the problem.

THE AUTOIMMUNE-HPA AXIS-THYROID CONNECTION

Neurasthenia=HPA AXIS Fatigue="Burnout?"

1. This state of chronic stress puts the HPA AXIS in overdrive.
2. The body is flooded with cortisol driving the HPA AXIS to make more.
3. Eventually the HPA AXIS can no longer keep up resulting in a "burnout" type situation.

THE AUTOIMMUNE-HPA AXIS-THYROID CONNECTION

- **High Cortisol**-signals brain to lower the production of stressor hormones. Unfortunately thyroid hormone is produced in the same pathway and it too, unwittingly, is lowered.

- **Stress hormones**-
  - affect enzymes that convert T4 to T3
  - converts T4 into the inert unusable reverse T3.

Cortisol

- Is the only hormone in the body that increase with age.
- Is made by the adrenal glands.
- When one is stressed cortisol elevates and then it is suppose to come right back down. This does not always happen in today's world of 365-24-7.
- Overbooking is an issue with everyone. Know how much work and responsibility to take on.

Functions of Cortisol

- Balances blood sugar
- Weight control
- Immune system response
- Bone turnover rate
- Stress reaction
- Sleep
- Protein synthesis

More Functions of Cortisol

- Mood and thoughts
- Influences testosterone/estrogen ratio
- Influences DHEA/insulin ratio
- Affects pituitary/thyroid/adrenal system
- Participates with aldosterone in sodium reabsorption
- Is an anti-inflammatory

Cortisol Elevators

- Stress
- Depression
- High progestin intake

Elevated Cortisol Consequences

- Decreased immune system
- Increased osteoporosis risk
- Morning Fatigue, Second Wind At Night
- Irritability
- Sugar cravings
- Shakiness between meals
- Confusion
- Memory is not as sharp

More Consequences of Elevated Cortisol

- Low energy
- Night sweats
- Binge eating
- Increased blood pressure
- Increased cholesterol
- Increased triglycerides
- Increased blood sugar

Even More Consequences of Elevated Cortisol

- Increased insulin/insulin resistance
- Increased infections
- Thin skin
- Easy bruising
- Muscle weakness
- Weight gain around the middle
- Sleep disturbances
- Impaired hepatic conversion of T4 to T3

High Cortisol Levels=Thyroid Resistance

- Elevated cortisol levels release inflammatory cells
- Serum cortisol exhibited a strong inverse temporal association with ghrelin
  - **Fasting Unmasks a Strong Inverse Association between Ghrelin and Cortisol in Serum: Studies in Obese and Normal-Weight Subjects** Ulrick Espelund, Troels Krarup Hansen, Kurt Højlund, Henning Beck-Nielsen, Jes Thorn Clausen, Birgit Sehested Hansen, Hans Ørskov, Jens Otto Lunde Jørgensen, Jan Frystyk *The Journal of Clinical Endocrinology & Metabolism*, Volume 90, Issue 2, 1 February 2005, Pages 741–746, https://doi.org/10.1210/jc.2004-0604
- Desensitizes thyroid receptors to thyroid hormone.
- Like diabetics who don't respond to insulin
- Have adequate thyroid hormone, but inadequate thyroid utilization.

THE AUTOIMMUNE-HPA AXIS-THYROID CONNECTION

- Estrogen increases w increased cortisol
- Estrogen increases thyroid binding globulin
- Ties up T3 and T4 lowering Hormone levels to achieve the conversion to free T3.
- Elevated Estrogen = Elevated Cortisol = Diminished Thyroid, GH

Cortisol and Other Hormones

- With Increased Cortisol :
  - Estrogen Increases
  - Thyroid Function Decreases
    - Estrogen increases thyroid binding globulin
    - Ties up T3 and T4 lowering Hormone levels to achieve the conversion to free T3.
  - Progesterone Decreases
  - Triggers “Leaky Gut” Syndrome

DIAGNOSIS OF AUTOIMMUNE-HPA AXIS-THYROID CONNECTION

The HPA AXIS Stress Index Panel

Saliva Test-Measures Cortisol levels on four occasions throughout a single day. Cortisol levels normally are high upon awakening and then quickly fall and flatten out by noon.

Symptoms of Hypoadrenalism

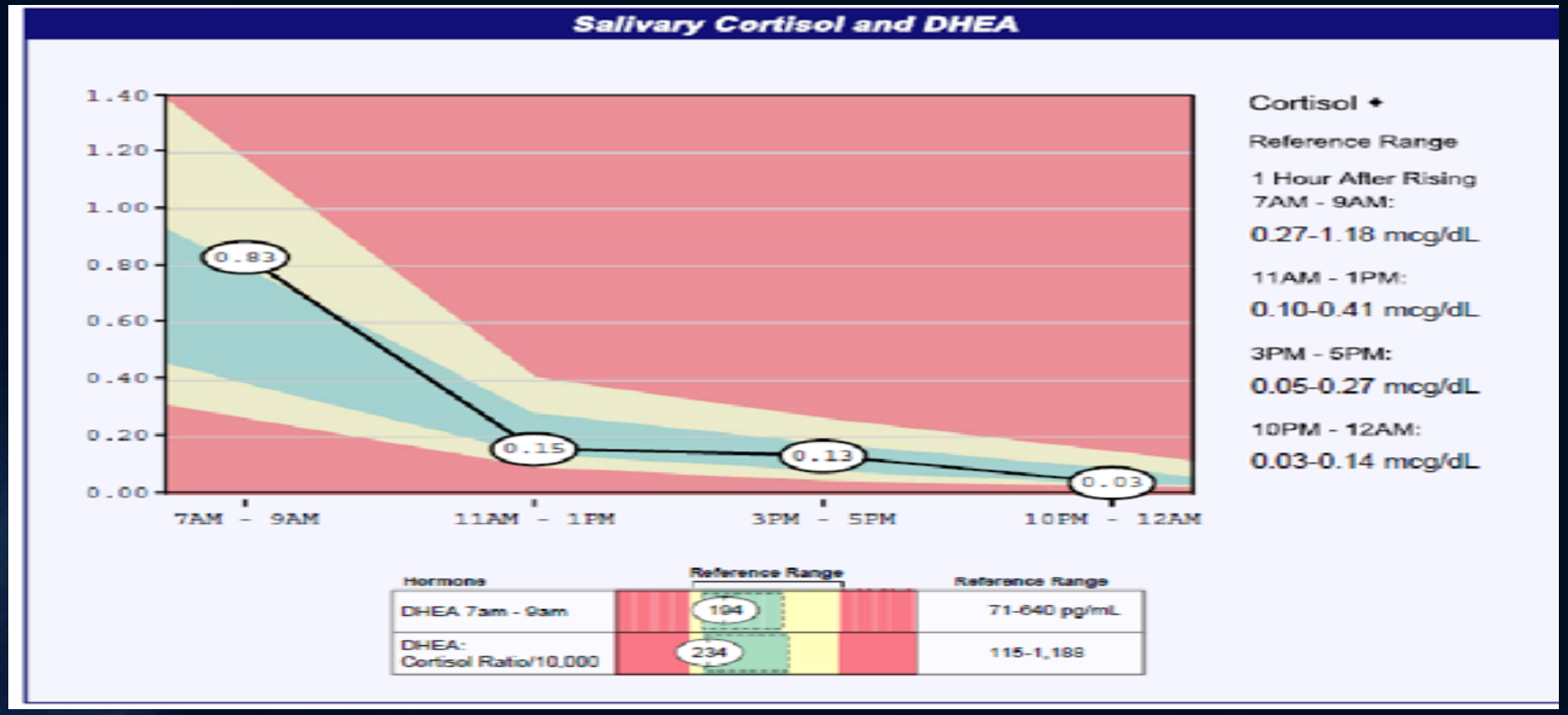
- Fatigue
- Low blood pressure
- Sensitivity to light
- Insomnia
- Digestive problems
- Emotional imbalances/lack of motivation
- Hypoglycemia
- Decreased sexual interest

Symptoms of Hypoadrenalism

- Decreased immunity
- Lack of stamina
- Emotional paralysis
- Poor wound healing
- Alcoholism and drug addiction
- Allergies
- Unresponsive hypothyroidism (does not respond to treatment)
- Feeling of being overwhelmed

Normal Saliva Cortisol Pattern

n

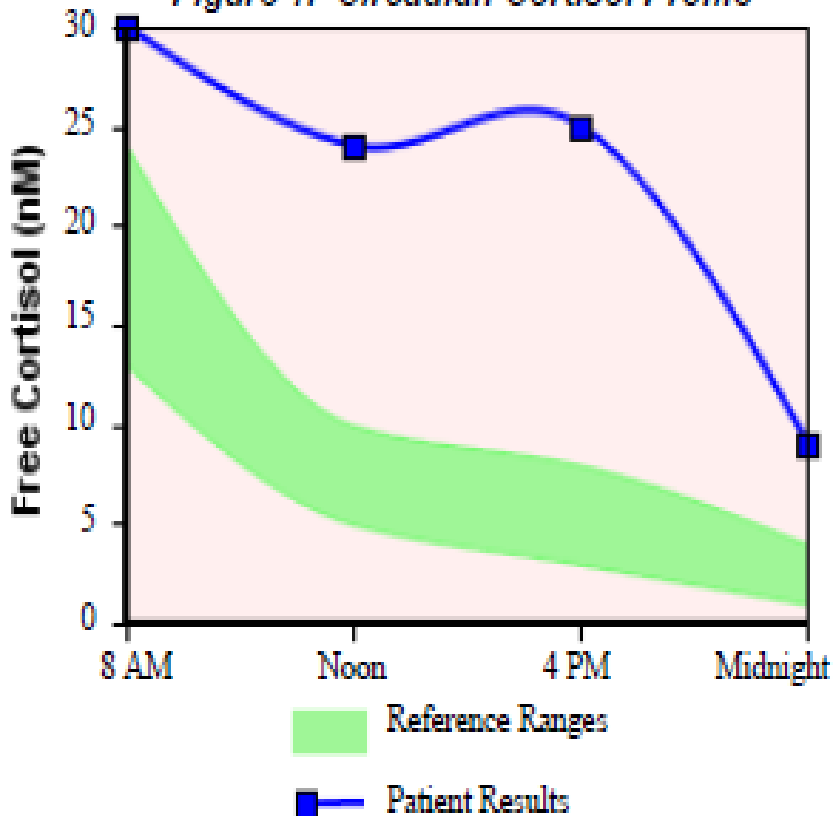


Cortisol Excess

Test	Description	Result		Ref Values
ASI	**Adrenal Stress Index (Original) - Saliva**			
TAP	**Free Cortisol Rhythm - Saliva**			**Adults (M/F):**
	06:00 - 08:00 AM	39	Elevated	13-24 nM
	11:00 - 1:00 PM	24	Elevated	5-10 nM
	04:00 - 05:00 PM	25	Elevated	3-8 nM
	10:00 - Midnight	9	Elevated	1-4 nM
	Total Cortisol Output:	97		***22 - 46 nM***

The Total Cortisol Output is the sum of the four cortisol values. Elevated values may indicate hypercortisolism or exogenous exposure, and low values suggest adrenal hypofunction.

Figure 1. Circadian Cortisol Profile

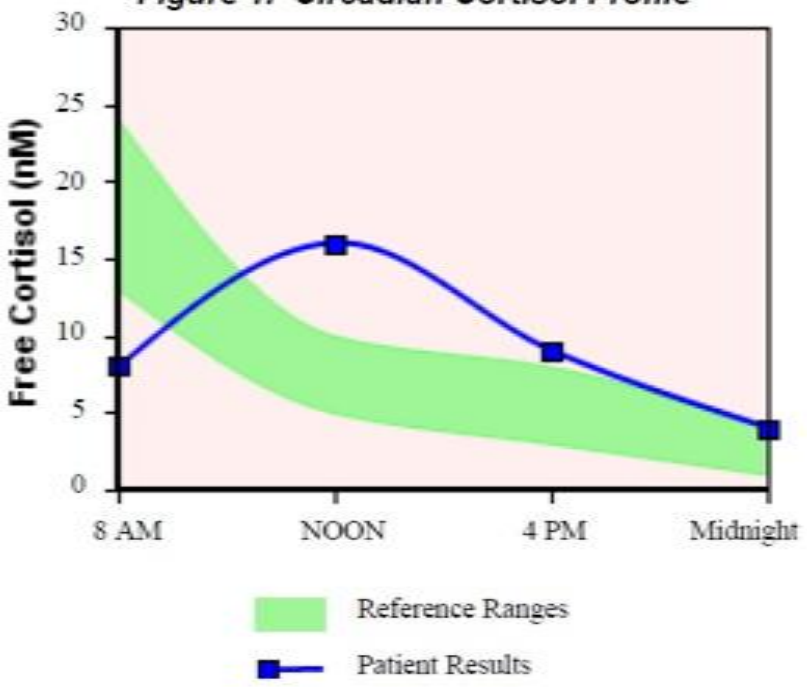


Cortisol Excess-6 Months Later

Test	Description	Result		Ref Values
TAP	**Cortisol rhythm (saliva)**			
TAP	**Cortisol rhythm (saliva)**			**Adults (M/F):**
	06:00 - 08:00 AM	8	Depressed	13-24 nM
	11:00 - 1:00 PM	16	Elevated	5-10 nM
	04:00 - 05:00 PM	9	Elevated	3-8 nM
	10:00 - Midnight	4	Normal	1-4 nM
	Total Cortisol Output:	37		***22 - 46 nM***

The Total Cortisol Output is the sum of the four cortisol values. Elevated values may indicate hypercortisolism or exogenous exposure, and low values suggest adrenal hypofunction.

Figure 1. Circadian Cortisol Profile

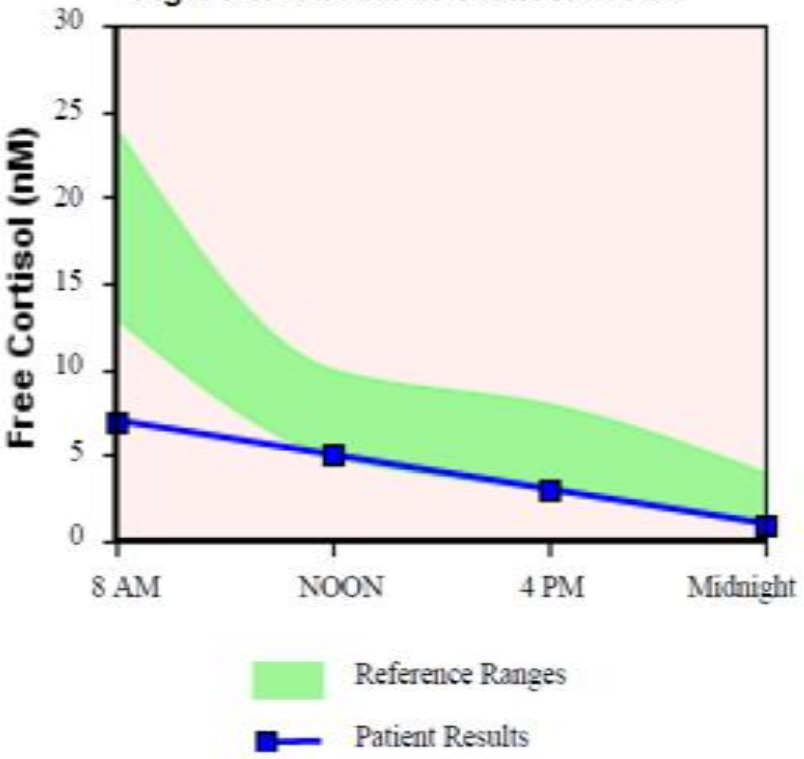


Cortisol Deficiency

Test	Description	Result		Ref Values
TAP	**Free Cortisol Rhythm - Saliva**			
TAP	**Free Cortisol Rhythm - Saliva**			**Adults (M/F):**
	06:00 - 08:00 AM	7	Depressed	13-24 nM
	11:00 - 1:00 PM	5	Normal	5-10 nM
	04:00 - 05:00 PM	3	Normal	3-8 nM
	10:00 - Midnight	1	Normal	1-4 nM
	Total Cortisol Output:	16		***22 - 46 nM***

The Total Cortisol Output is the sum of the four cortisol values. Elevated values may indicate hypercortisolism or exogenous exposure, and low values suggest adrenal hypofunction.

Figure 1. Circadian Cortisol Profile



TREATMENT OF AUTOIMMUNE-HPA AXIS-THYROID CONNECTION

- Reducing stress (easier said than done at times)
- Anti-inflammatory Diet
- Exercises
- Stress reduction techniques
  Yoga, Pilates, Qi Gong, Meditation, Massage, Infrared sauna

Lifestyle changes may be the only way to better health.

Treatment of Hyperadrenalism

- **Replacement of DHEA if it is low with adrenal support**
- **Adaptogenic herbs**

- **Calming herbs**
- **Stress reduction techniques**
- **High evening cortisol: Add phosphatidylserine 300 mg**

Adrenal extracts (if adaptogenic herbs do not work)

Calming herbs

Licorice

Treatment of Hyperadrenalism

- Nutrients
  - –Vitamin C
  - –B vitamins
  - –Calcium
  - –Magnesium

Nutrients

- Zinc
- –Selenium
- –Copper
- –Sodium
- –Manganese

Treatment of Hypoadrenalism

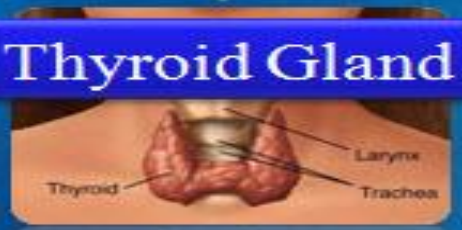
- Stress reduction techniques
- Adaptogenic herbs
- Adrenal extracts (if adaptogenic herbs do not work)
- Calming herbs
- Licorice (cannot use if the patient has hypertension)
- Cortef

THE AUTOIMMUNE-IODINE-THYROID CONNECTION

TSH

Requires Zinc and adequate protein

Thyroid Gland



Increase Metabolism = energy, weight loss, healthy hair and skin, lower cholesterol

T4 (requires iodine)

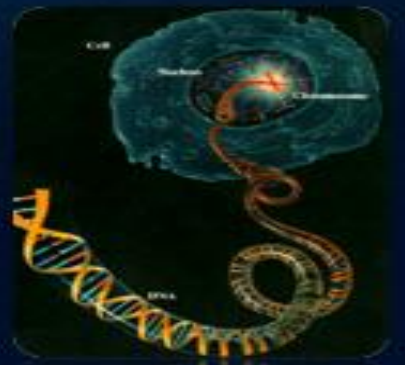
Reverse T3 (does not work)

Requires EFA

Requires Selenium

T3 (active thyroid hormone)

Cell Communication



Requires Vitamins A and D

THE AUTOIMMUNE-IODINE-THYROID CONNECTION

- Iodine is necessary for the production of T4.
- Iodine must come from the diet
- Iodine resides in the ocean

  Seafood, esp. seaweed are good sources of iodine.

Iodine is added to salt as a rule.

Iodine-Phobia-The Wolff Chaikoff Effect

Injected rats with radioactive iodine ➡ killed thyroid tissue.

- *Symptoms*=Effects of Radioactive Iodine
  - Sore teeth and gums, burning mouth, burning throat, stomach cramps, diarrhea, muscle wasting, acne and depression.
- W/C failed to distinguish between radioactive, poisonous iodine with natural, everyday garden-variety iodine from foodstuffs.
- Experiments, though repeated many times, with physiologic, food grade iodine ***were never duplicated***. The type of the iodine made all the difference.

Iodine-Phobia-The Wolff Chaikoff Effect

- Serum inorganic iodide levels raised to 0.2 mg/L; radioiodine uptake by the thyroid gland becomes undetectable.
- ***Correct interpretation: Iodide sufficiency of the thyroid gland achieved when serum inorganic iodide levels reach 0.2 mg/L***
- ***W/C Interpretation: Serum inorganic iodide levels at 0.2 mg/L blocks the synthesis of thyroid hormones***
    - Resulting=hypothyroidism and goiter.
        - Authors did not measure thyroid hormones in the rats studied.

Iodine-Phobia-The Wolff Chaikoff Effect

Incidentally, the *rats refused to become hypothyroid* when fed food grade iodine following the normal course of events when iodine loaded.

Wolff and Chaikoff publicly accused the rats of escaping from the new "normal," of the Wolff-Chaikoff effect, declaring the poor innocent rats "rodents non grata.")

Abraham, GE, " *Crying Wolff,"* https://www.optimox.com/pics/Iodine/IOD04/IOD_04.html#1 , accessed February 2, 2016

THE AUTOIMMUNE-IODINE-THYROID CONNECTION

Iodine-Phobia-The Wolff Chaikoff Effect

“Wolff-Chaikoff,” + fluoride in drinking water of large American cities, = unprecedented era of thyroid disorders never before seen.

1n 1964, the tide of iodophobia and the fluoride crusade reached its crescendo when popular U.S. Air Force General Jack D. Ripper convinced that fluoridation of our water supply was a Communist plot, took to the airwaves to warn the American population.

Iodine-Phobia-The Wolff Chaikoff Effect

According to Abraham:

The goal of discouraging the use of inorganic non-radioactive iodine in the proper amounts?

If you want to destroy a nation, remove iodine from their diet. It is that simple.

This is a form of domestic bioterrorism, called iodophobic bioterrorism.

1. Abraham GE. “The Wolff-Chaikoff effect: Crying wolf?” The Original Internist, 2005; 12(3):112-118.

Iodine-Phobia-The Wolff Chaikoff Effect

Iodine Effects on Estrogen, Progesterone and Menstrual Irregularities

Administration of iodine results:

1. *Prolongation of the menstrual cycle*
2. *Decrease in menstrual flow*
3. *Marked drop in serum estradiol 17-B levels*
4. *Marked increase in serum progesterone*

Skibola, C., The effect of Fucus vesiculosus, an edible brown seaweed, upon menstrual cycle length and hormonal status in premenopausal women., BMC *Complementary and Alternative Medicine;* 04 August 2004.

https://bmccomplementalternmed.biomedcentral.com/track/pdf/10.1186/1472-6882-4-10?site=bmccomplementalternmed.biomedcentral.com

Iodine-Phobia-The Wolff Chaikoff Effect

There is a significant and inverse correlation between iodine intake and the incidence of breast, endometrial, and ovarian cancer .

Iodine is the active ingredient in seaweed against the carcinogenic effect of estrogens on female reproductive organs .

Thomas BS, Bulbrook RD, Russell MJ, et al. "Thyroid function in early breast cancer." Europ J Cancer Clin Oncol, 1983; 19:1213-1219. 27)

Thomas BS, Bulbrook RD, and Goodman MJ. "Thyroid function and the incidence of breast cancer in Hawaiian, British, and Japanese women." Int J Cancer, 1986; 38:325-329

Iodine-Phobia-The Wolff Chaikoff Effect

Molecular Mimicry: Iodine is A Halogen

Halogens:

- Iodine
- Fluoride
- Chlorine
- Bromine

Halogens can mimic iodine, causing displacement and thyroid dysfunction.

Iodine-Phobia-The Wolff Chaikoff Effect

Halogens-Iodine, fluorine, chlorine and bromine, all halogens.

- **Chemically similar to one another.**
- **We can easily mistake one halogen for another.**
- **Molecular mimicry sets off the autoimmune cascade.**
- **When the immune system belatedly realizes it hasn't produced enough real working thyroid molecules, it sends out the cavalry, our immune system, to clean up the mess.**

Iodine-Phobia-The Wolff Chaikoff Effect

Chlorine **–Pesticides,, paper products, unfiltered drinking water, bath water and Splenda (sucralose).**

Bromide **is in flour products, citrus flavored soft drinks, chemical additives used in municipal water purification, pesticides, dyes, leaded fuel additive, and OTC antitussives (cough medicines).**

Iodine-Phobia-The Wolff Chaikoff Effect

Fluoride/Fluorine:

Toothpaste
Infant formula
Beer
Soda
Tea (higher in decaf)
Anesthetics
SSRI inhibitors (Prozac,etc.)
Antiviral medications.

Wine
Processed cereals

Insecticide
Antibiotics

Removing Iodine from the Food Supply is a Major Mistake.

Supplying daily intake of iodine for whole body sufficiency (100-400 times the RDA):

Iodine:

1. **Improves immune functions**

1. **Decreases singlet oxygen formation the major cause of oxidative damage to DNA and macromolecules**

1. **Is anticarcinogenic**

1. **Detoxifies heavy metals**
    a. **Lead, mercury, cadmium, and aluminum**

Removing Iodine from the Food Supply is a Major Mistake.

Supplying daily intake of iodine for whole body sufficiency (100-400 times the RDA):

5. **Detoxifies Goitrogens**
    a. Fluoride, bromide, chloride

6. **Normalizes hormone receptor functions**
    a. Improves thyroid hormones function
    b. Improves blood sugar control in diabetics

7. **Stabilizes cardiac rhythm**
    a. Obviating the need for the toxic sustained release form of iodine, amiodarone
    b. Normalizes blood pressure without medication in hypertensive patients.

8. **Iodine deficiency a major cause of cognitive impairment, worldwide.**

9. **Protects against goitrogens and radioactive iodine/iodide fallout**

10. **Protects against fibrocystic breast disease and breast cancer**

Iodine-Phobia-The Wolff Chaikoff Effect

Iodine Remedies

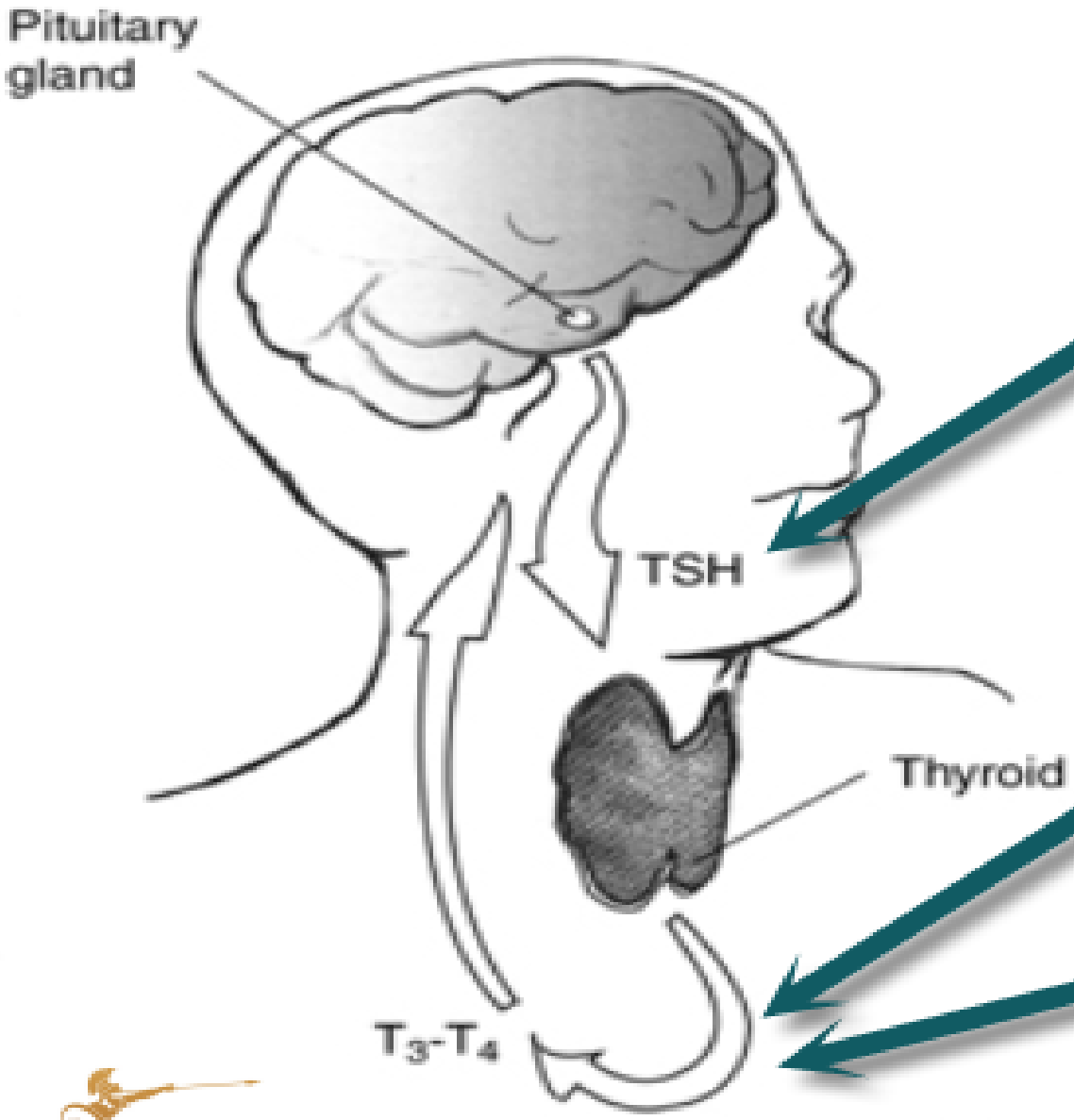
- **Foods**
  - Sea vegetables, saltwater fish.

- **Supplements**

  - Iodine 177- 225 micrograms (low dose)
    A “homeopathic” dose to stimulate own iodine production).

    Higher doses, 12.5 milligrams can lead to hyper and if unchecked, burnout, to hypothyroidism.

Nutritional Regulators of Thyroid Hormone



TSH production requires adequate protein, magnesium, and zinc.

T4 production requires iodine, vitamins C, and B2

T3 production requires selenium, and is dependent on healthy liver and adrenal gland function.

THE AUTOIMMUNE-SUPPLEMENT-THYROID CONNECTION

- **Selenium**
  - converts T4 (the inactive form of thyroid hormone) to T3 (the active form).
  - Protects body against hydrogen peroxide.
  - Reduces TPO (autoimmune) levels.

    Foods: Brazil nuts. meats, fish, and shellfish.
    Dose: 200 mcg/day.
- **Zinc**
  - aids in conversion of T4 to T3
  - key nutrient for adequate production of TSH.
    - Foods: Beef.
    - Dose is 25-35 mcg./day
- **Protein**

  –necessary to transport TSH to the tissues.

THE AUTOIMMUNE-SUPPLEMENT-THYROID CONNECTION

- Magnesium- needed for production of TSH
- Iodine-helps the body build T4
- Vitamin C-helps deliver iodine into T4.

AUTOIMMUNE-MEDICATION-THYROID CONNECTION

- Amiodarone
- Beta blockers
- Dilantin
- Prednisone
- Synthetic Progesterone
- Lithium
- Benzodiazepines

100 Day Thyroid Rehab Program

Phase I

- History and Physical
- Lab

Minimum

- CBC, CMP, c Reactive Protein, Homocysteine, DHEA-S, 25 OH Vitamin D3, TSH, free T3, free T4, TPO, reverse T3, antithyroglobulin

Advanced

- ASI Saliva

100 Day Thyroid Rehab Program

Phase I

14 Days to Heal the Gut [1]

- **4 R's**
- **Cleanse**
- **Thyroid Enhancement Diet Recommendations**

Medications

Detox-Supplements

Phase I Supplements

SUPPLEMENT	DIRECTIONS	CORRESPONDING LAB TEST
Cleanse	1 shake, 1 packet in AM 1 shake, 1 packet in PM	Liver Enzymes, Thyroid Antibodies
Methylated B6, B12, Folic Acid	1 in AM, 1 in PM	Homocysteine
Liposomal Glutathione or N Acetyl Cysteine	1 Gel Pack, AM, 1 Gel Pack, PM	Liver Enzymes
Vitamin D3	1000-5000 IU	25 OH Vitamin D
Curcumin 500 mg Fish Oil/Krill Oil 1000 mg	1-2 Am, 1-2 PM 1-2 Am, 1-2 PM	C Reactive Protein

Phase I Supplements -Cont.

Magnesium Taurate 100 mg	1-2 @ bedtime	RBC Magnesium, Sleep Disturbance
Probiotics 40 Billion Units	1 in AM, 1 in PM	Liver Enzymes
Plant Sterolins	1 in am, 1 in PM	If Antibodies +

100 Day Thyroid Rehab Program

Phase II-HPA Axis Protocol (Day 15-44)

Elimination Diet (Online)

Testing

- Minimum:
  - ASI Saliva
- Advanced
  - Micronutrient Testing
  - Delayed Food Allergy (IgG) Testing

- Eliminate
  - Nightshades
  - Nuts-30-day elimination if nut sensitive. Common allergen.
-

Phase II Supplements

Supplement	Dose	Corresponding Tests
Adrenal Support	10 drops three times/day	Saliva Test
B Complex	1/day	Homocysteine, cRP
Vitamin C	500-1000 mg 1/d	
Selenium	200 mcg/d	TSH, free T3, free T4
Magnesium Taurate	100 mg 1-2 @ bedtime	Sleep

Phase II-Saliva Test Interpretation

- **2 or More Elevated Cortisol Levels;**
  - **Low DHEA**

Pregnenolone	25 mg/d
DHEA	10 mg
Phosphatidylserine	300mg prior to high cortisol

- High Cortisol in AM, Normal Late in Day

Pregnenolone	25 mg/d
DHEA	10 mg
Phosphatidylserine	300mg 2 hours prior to high cortisol

Phase II-Saliva Test Interpretation

- Low Cortisol; Low DHEA

Pregnenolone	**50 mg/d**
DHEA	**5 mg**
Cortef (RX. Needed)	**7.5 mg in am; 5mg noon; 2.5 mg @ 4 PM**
Licorice	**10 Drops Prior to Low Cortisol Level of Day**

Phase III-Days 45-100

Gluten Free

- Testing
  - Minimum Protocol
    - Repeat TSH, free T3, Free T4, Rt3, Antibodies (TPO, Anti Thyroglobulin) if previously positive

Advanced Testing

- IgG (Delayed) Food Allergy Testing
- Functional GI Test (Many Companies)
- SIBO Test
- Hormone Balancing
- VCS APTitude Screening (www.survivingmold.com)
- ERMI (Mold Index) (www.mycometrics.com)
- C4a (mold)
-

Phase III-Supplements

Supplement	Dose	Info
Betaine HCL	10 caps 3 times a day w meals	Take W Protein Do not use w GERD, Stomach Ulcers
Probiotics	40-100 Billion/Day	S. boulardii, Spore Based
L-Glutamine	5 grams 3 times a day	Combine with Zinc, DGL, Aloe
NAC; Glutathione Gel	1800 mg/d; 1 tsp three times/ day IV Glutathione 600 mg 2X/week	(NAC) Capsule (Gel) Transdermal Glutathione Liposomal (IV) In Office
Omega 3 Fatty Acids	1000 mg 1-2 2 times/day	Mau use Flaxseed Oil, Krill
Vitamin D3	1-5000 IU @ bedtime	Sunshine x 20 minutes daily Q. 1000 IU Supplement; Level increases by 8; Goal 50-80 Ex: Blood Level 25 8 X4=32; 8x5=40 4000 IU = Blood Level 57 5000 IU= Blood Level 65

Special Considerations

Infection	Test	Treatment Infectious Diseases	Prescription Treatment?
Blastocystis Hominis	**Stool**	**Caprylic Acid** **Oil of Oregano 150 mg 2 po 3 times a da** **Saccharomyces boulardii 5 Billion CFU 3 times/day** **Wormwood 600 mg 2 times a day, x 7 days; repeat in 4 wks.** **Ultrazyme 1 time, day** *Rx: Metronidazole or Nystatin or Bactrim DS*	**Yes**
Candida	**Stool**	**Anti-yeast Diet** **Caprylic Acid 1-2 2 times a day** **Oil of Oregano 150 mg 2 po 3 times a day** **Saccharomyces boulardii 5 Billion CFU 3 times/day** **Activated Charcoal 2-4/d** ***Rx:*** *Nystatin or Diflucan*	**Yes**
SIBO	**Breath Test**	**Caprylic Acid 1-2 2 times a day** **Oil of Oregano 150 mg 2 po 3 times a day** **+ Methane Aged Garlic Extract 1 2 times a day** **Peppermint Tea** **Low FODMAP Diet** ***Rx:*** *+ Hydrogen: Rifaximin 1200 mg/d x 14 Day* *+Methane: Rifaximin 1600 mg/d x 10 days +Metronidazole 750 mg/d x 10 days*	**Yes**

Special Considerations

Infection	Test	Treatment
Chronic Sinusitis	**X Ray** **Nasal Swab**	**Neti Pot** **GI S/S Treatment** **Candida Treatment** **Silver (Argentyn) 1 puff each nostril 2 times a day** **Yeast Nasal Flush** ***Rx: Traconazole/Budesonide (1000 mcg/0.06 mg/ml) Nasal Spray 2/d*** ***Peptides: TA 1, TB 4, LL-37***
Mold	**VCS Screen**	**Oil of Oregano** **Saccharomyces boulardii 5 Billion CFU 3 times/day** **Silver Nasal Spray, Activated Charcoal** ***Peptides: Vasoactive Intestinal Peptide: 500mcg/ml provided in a 12 ml nasal spray applicator.*** ***Suggested dosage: Instill 50mcg intranasally in alternating nostrils up to 4 times daily.*** ***BPC-157 :*** *500 mcg orally 1/d x 30 days*

Special Considerations

Infection	Test	Treatment
Periodontal Dx.	**Dental Screening**	**Oil Pull: 1 tsp. Coconut Oil + ½ tsp. Baking Soda + ½ tsp Curcumin –Swish up to 5 minutes followed by floss 1-2/d** **Rx: Doxycycline 100 mg 2 times/d x 1 day then 1 daily x 21 days.**
Ebstein-Barr	**Serum**	**Humic Acid-Monolaurin** **Cordyceps 750 mg 2-3 3x/d** **Olive Leaf Extract 1 po 2 x/d** **NAC 600 mg 3 times a day** **Adrenal Extract** **Vitamin C 500-3000 mg** **Vitamin D3 5000 IU** **IV Vitamin C** **Rx: Valganciclovir 1800 mg/d x 21 days then 900 mg/d x 6 mo.** ***Thymosin Beta 4:*** *5mL at 3000mcg/mL ; 0.25mL SQ daily for 20 days on 10 d off x 6 cycles*

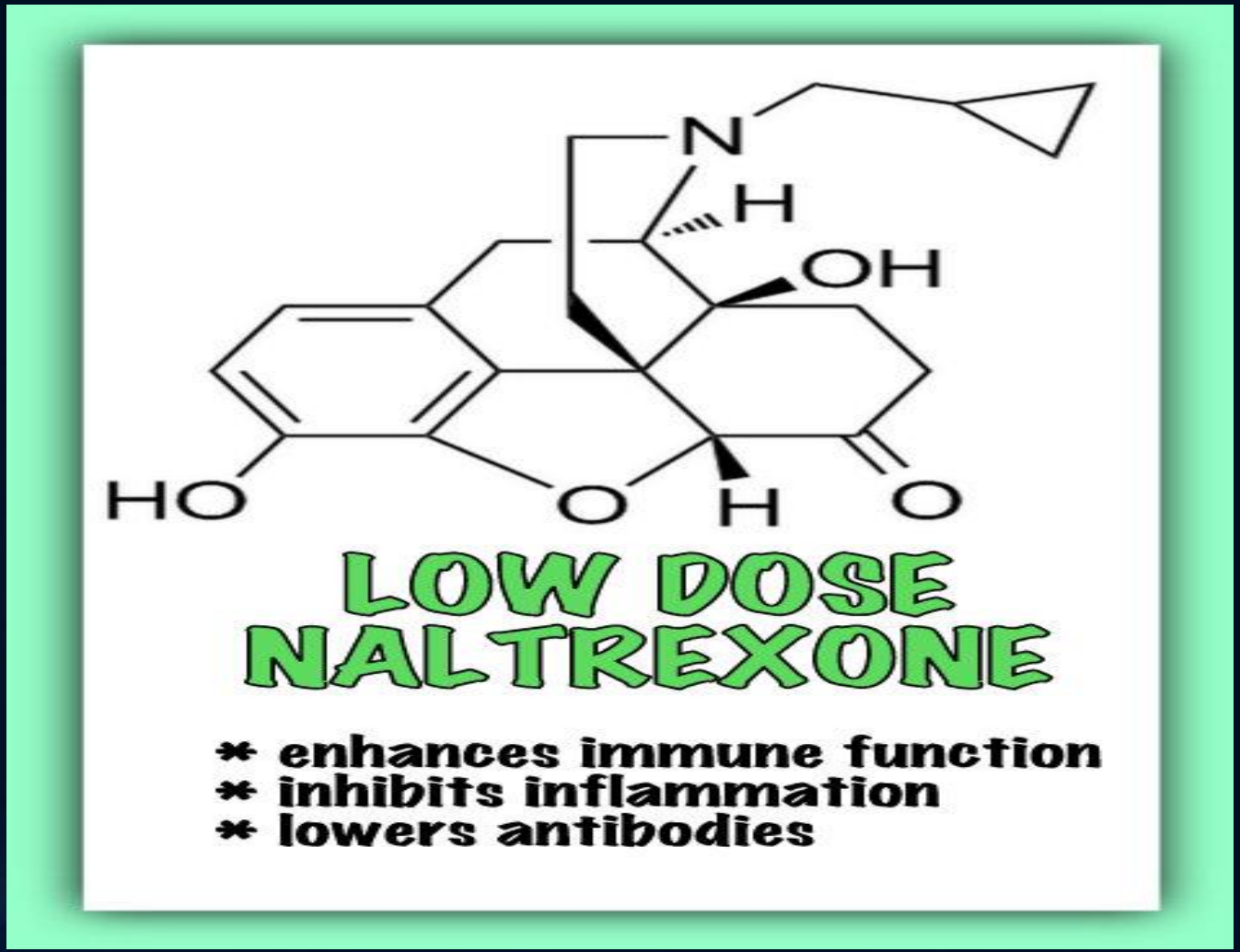
Day 100

Repeat Testing

CBC, CMP, c Reactive Protein, Homocysteine, DHEA-S, 25 OH Vitamin D3, TSH, free T3,

T4, TPO, reverse T3, antithyroglobulin

Our Ace in the Hole



IN CONCLUSION- OUR GOAL: