

# The Functional Approach to Balancing the Adrenals & Thyroid



Dr. Ritamarie Loscalzo, MS. DC. CCN. DACBN

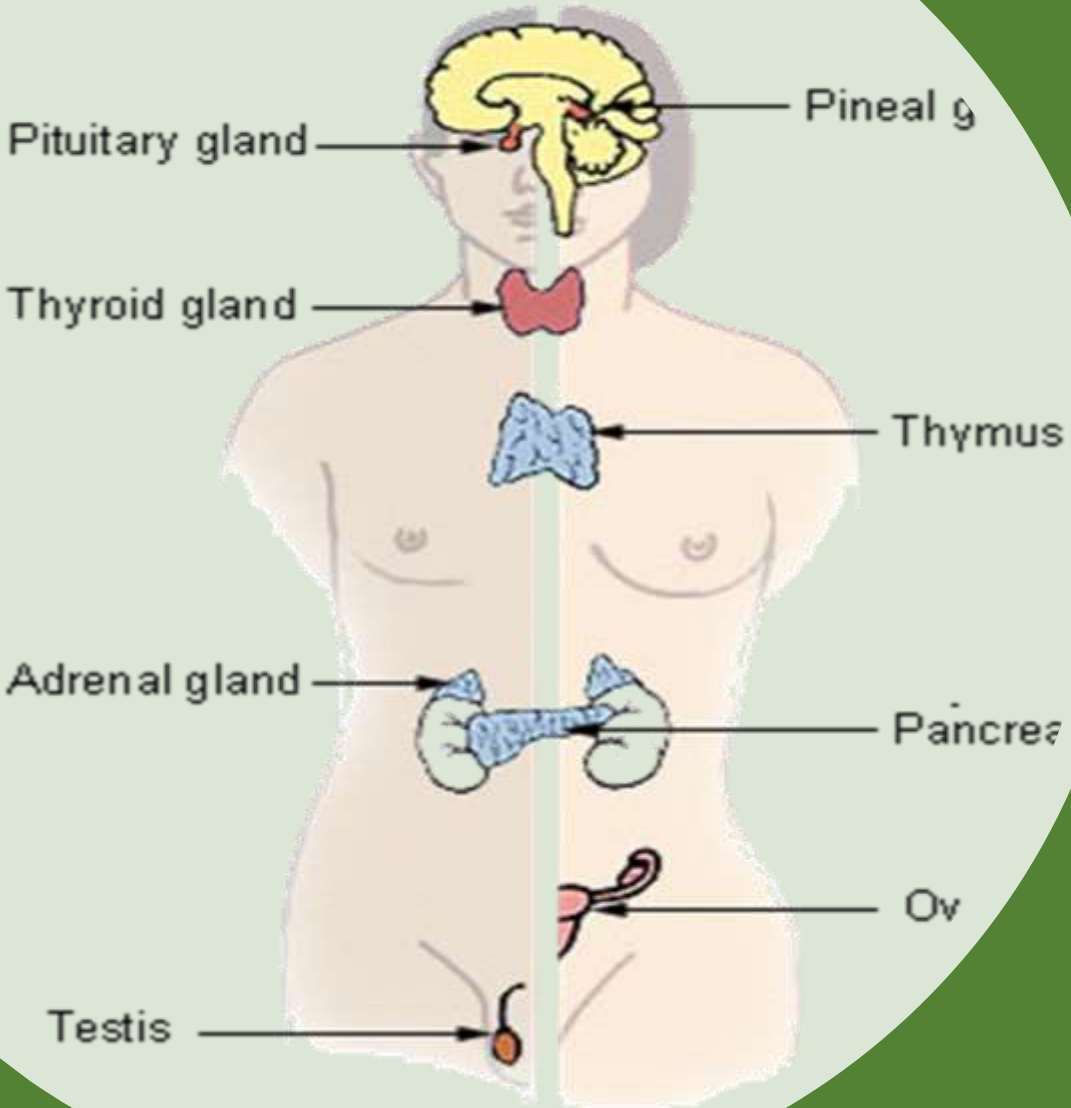
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# Nutritional Endocrinology Method

## Major Endocrine Glands

Male      Female

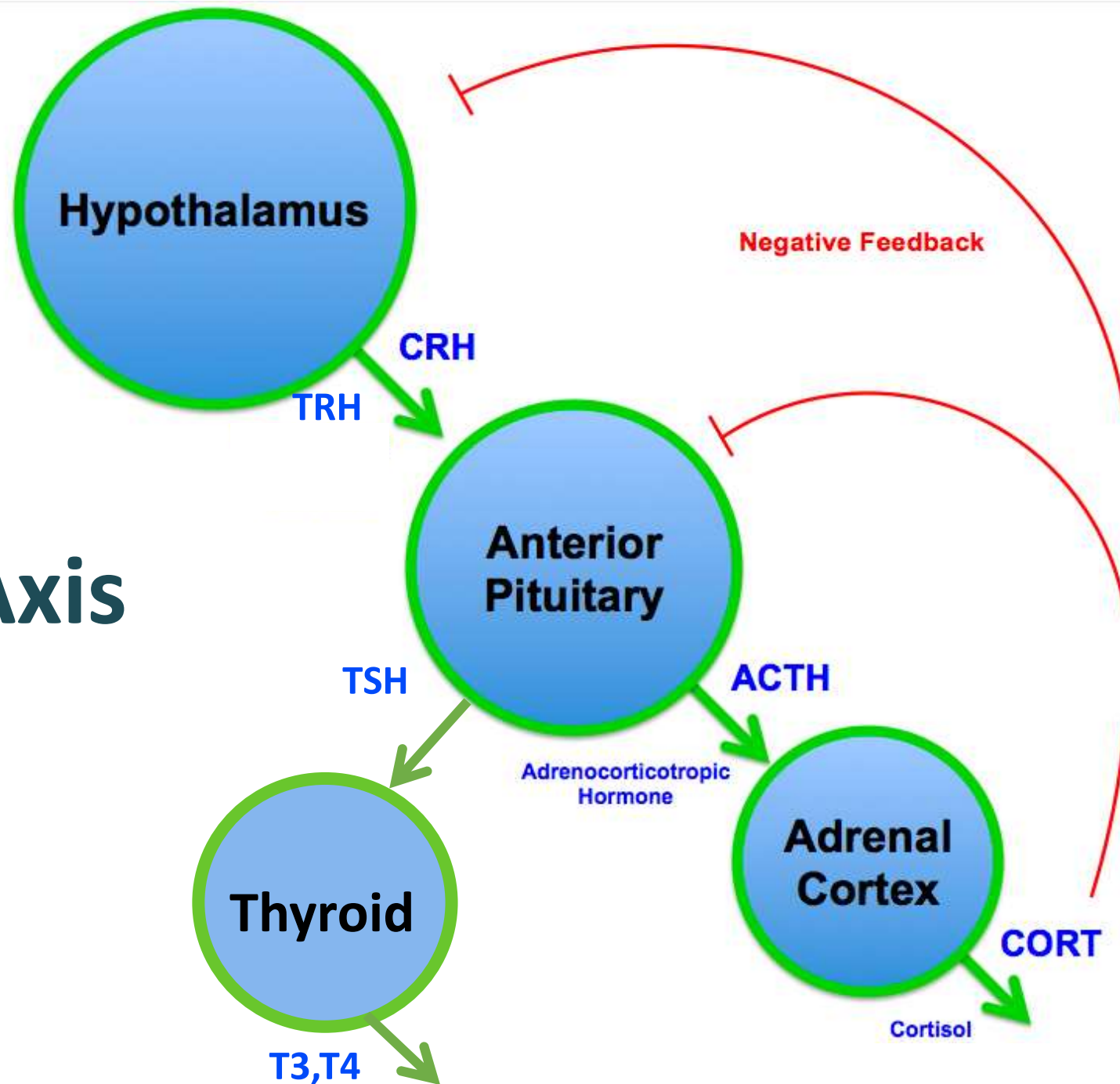


# HPAT

Hypothalamic-Pituitary-  
Adrenal-Thyroid  
Axis



# HPAT Axis

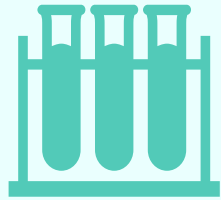




# The **C.A.P.E.** Process



CONNECT



ASSESS



PLAN



EMPOWER

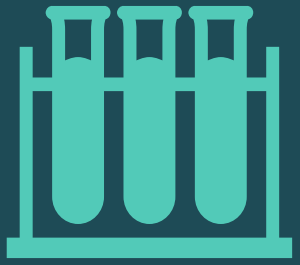


# CONNECT

- Sincere Care and Interest
- Connect to Values
- Identify Big WHY & Vision
- Map out goals







# ASSESS

- Comprehensive history
- Scorecards
- Physical signs
- Lab Testing
- Genetic Testing





# PLAN

- Lifestyle
- Nutrients
- Foods
- Herbs
- Hormones

*Map out a personalized program to remove obstacles and rebalance hormones*



# EMPOWER

- Self Care Tools
- Recipes
- Videos
- Checklists
- Resources to Support Follow-Through

# Housekeeping

- Portal
- Breaks
- Prep

[www.drritamarie.com/WorkshopPrep](http://www.drritamarie.com/WorkshopPrep)

- Workbook
- Today's agenda
- Turn phone to vibrate
- Turn off Facebook after you invite your friends

[www.drritamarie.com/PractitionerWorkshop](http://www.drritamarie.com/PractitionerWorkshop)





A hand is holding a black magnifying glass over a blue puzzle piece. The puzzle piece has the word "WHY?" written on it in blue, handwritten-style capital letters. The background consists of many other blue puzzle pieces, creating a textured, interlocking pattern. The lighting is bright, highlighting the central piece and the magnifying glass.

WHY ?





**The System  
Needs to Change**





TURN LEFT  
ON  
LEFT ARROW  
ONLY



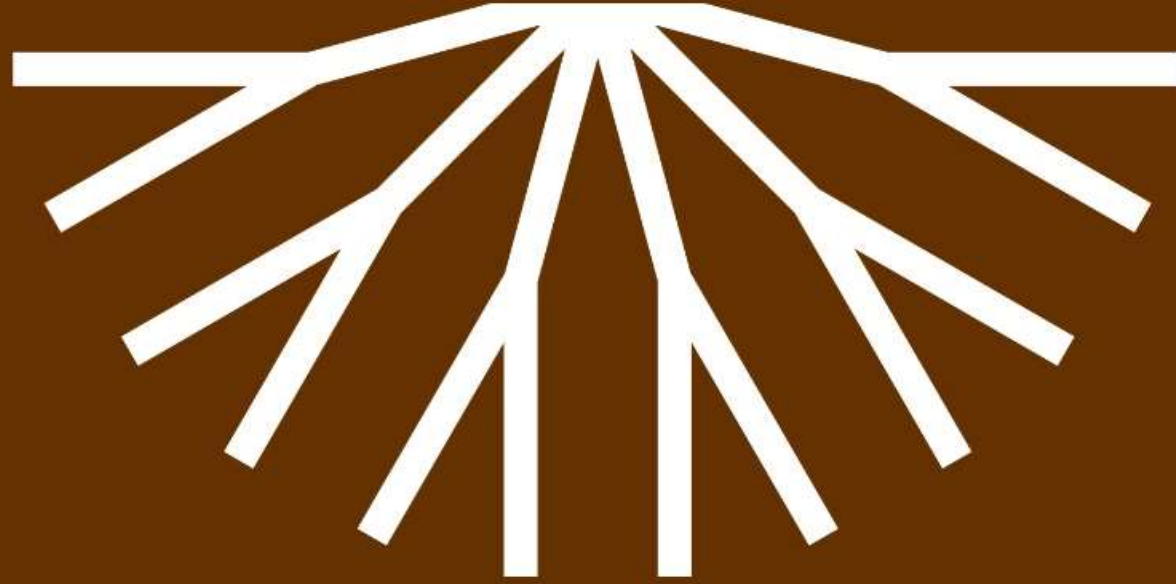
**SYMPTOMS**



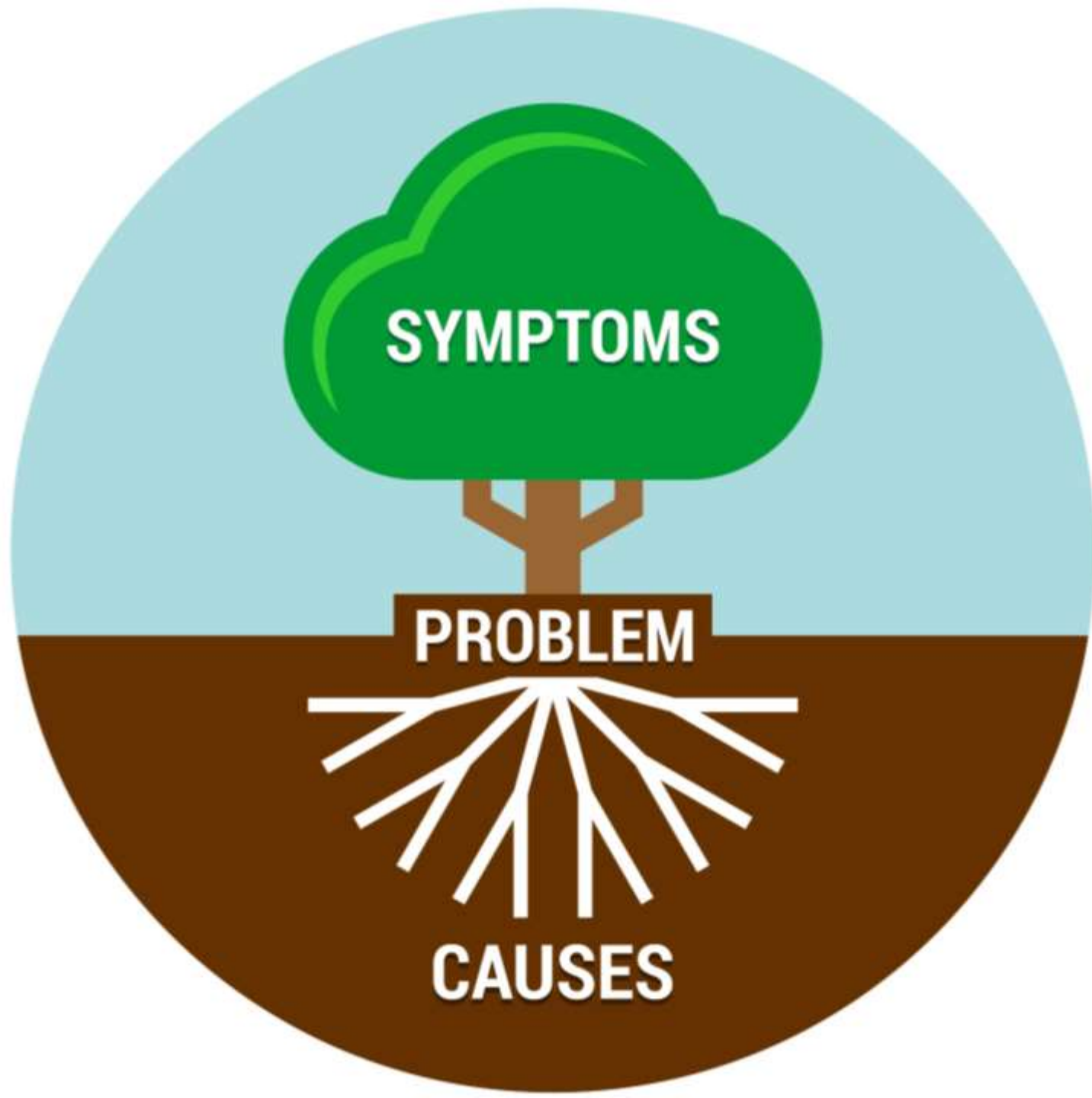
A stylized tree with a brown trunk and a large green canopy. The canopy is shaped like a cloud and contains the word 'SYMPTOMS' in white. The trunk is positioned above a brown rectangular base that contains the word 'PROBLEM' in white. The background is a light blue semi-circle, and the entire scene is framed by a brown border at the bottom and sides.

**SYMPTOMS**

**PROBLEM**



**CAUSES**







**PREVENTION  
IS BETTER  
THAN  
CURE**















**DISRUPT**

**REINVENT**

**REIMAGINE**

**RETHINK**





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Cutting edge information for health and wellness practitioners passionately committed to transforming our broken, disease-focused, healthcare system.

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DR. RITAMARIE LOSCALZO, MS, DC, DACBN

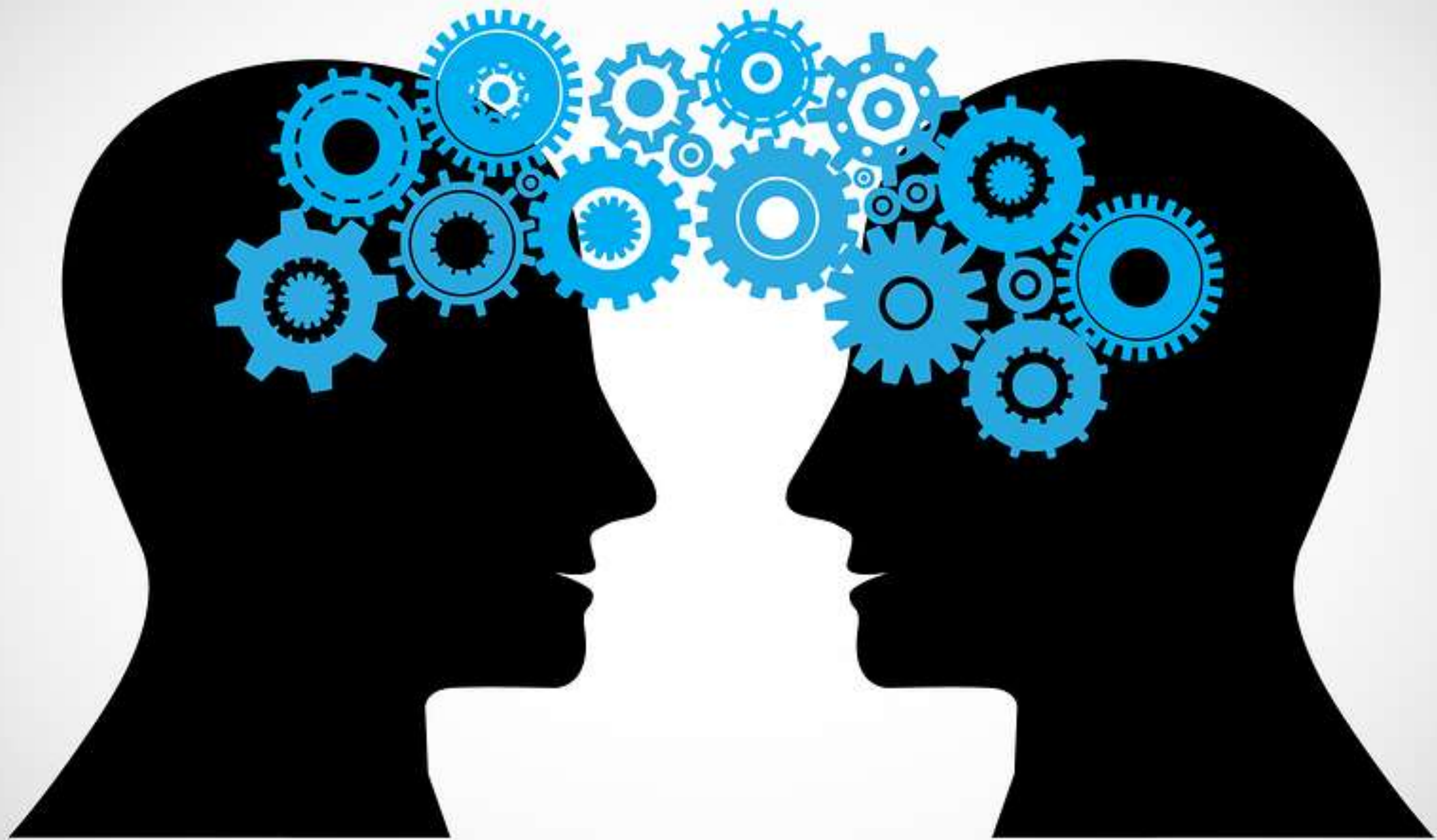




# Breakout

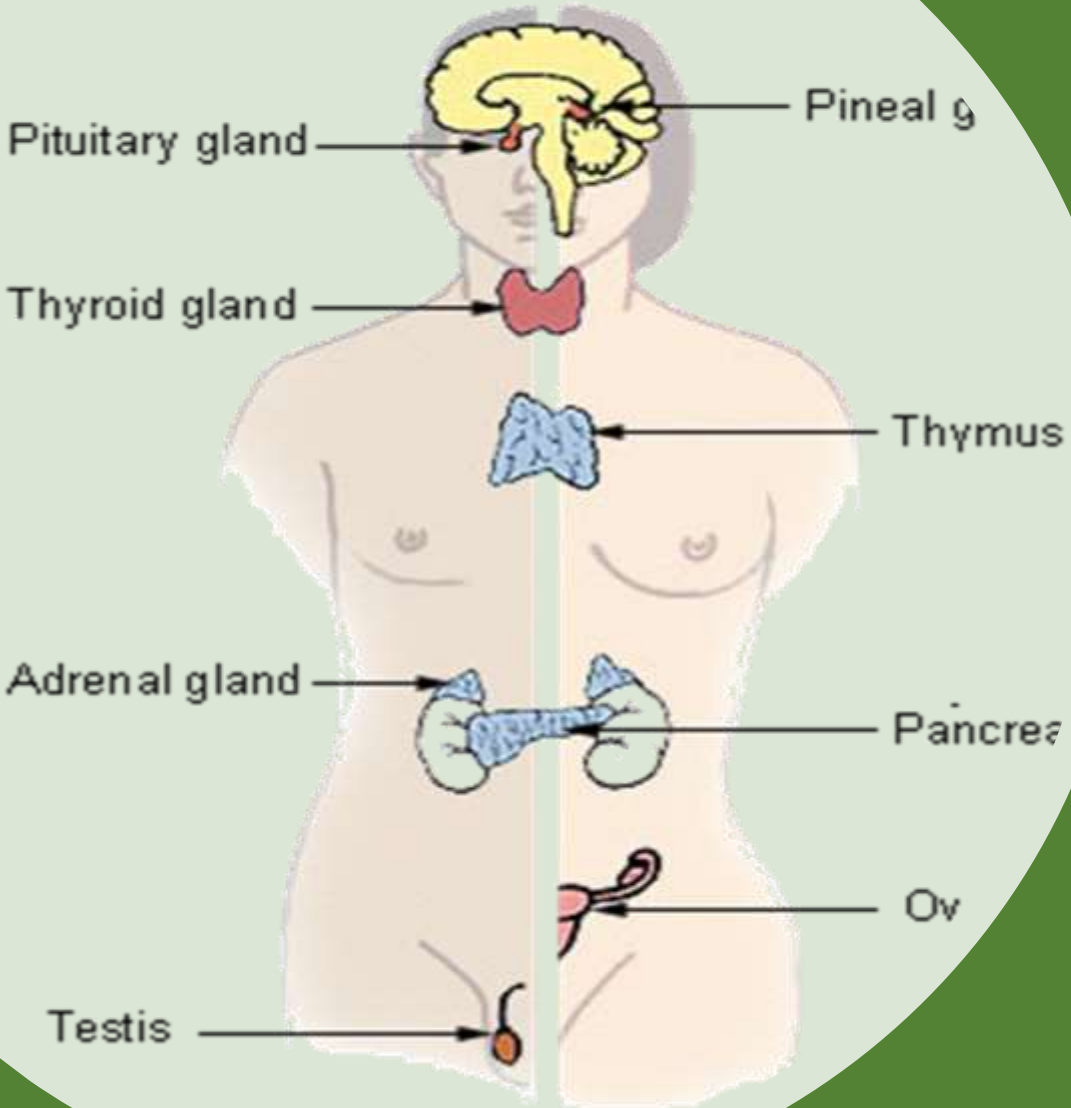
- WHO are you?
- WHERE are you from
- WHAT's Your Big WHY?







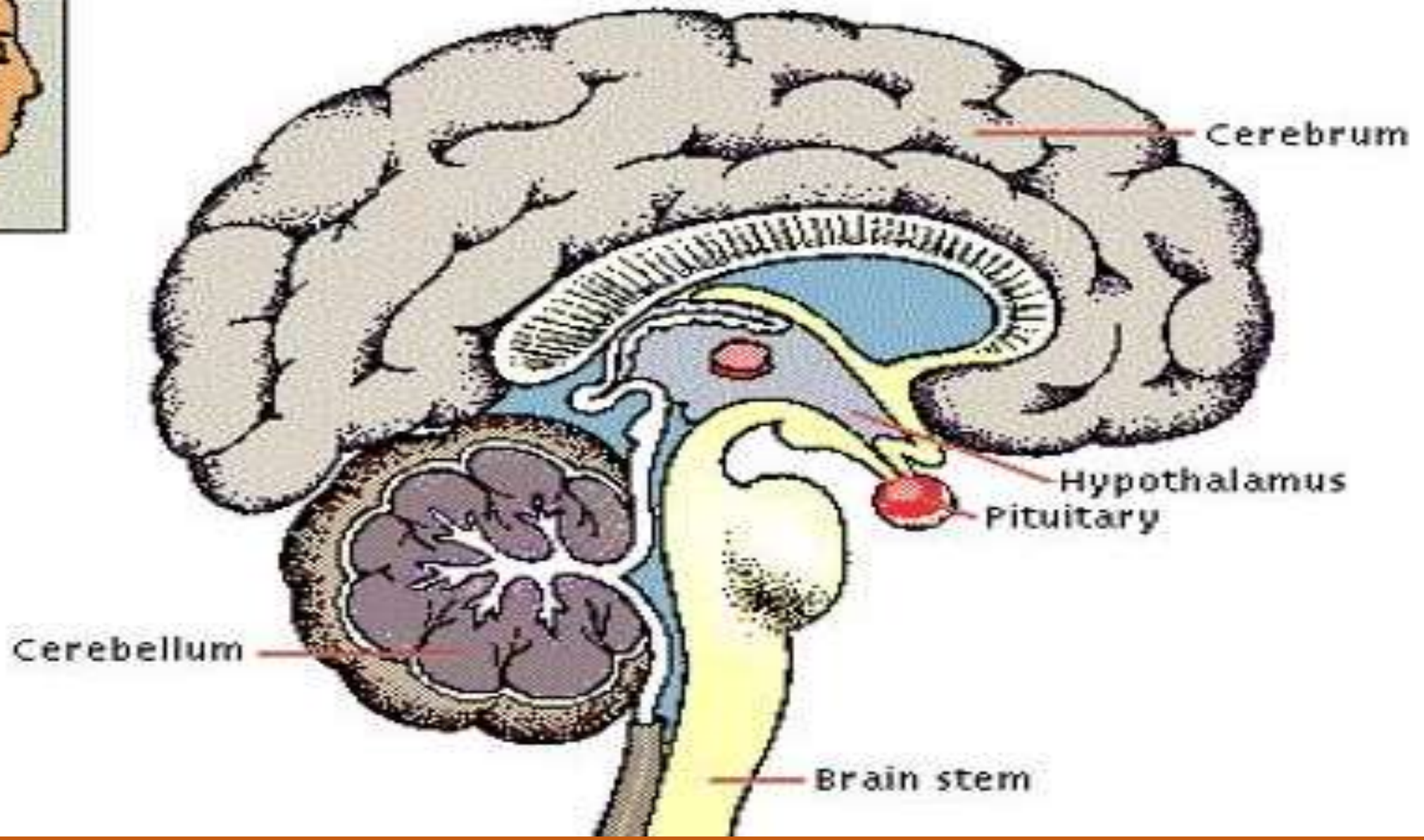
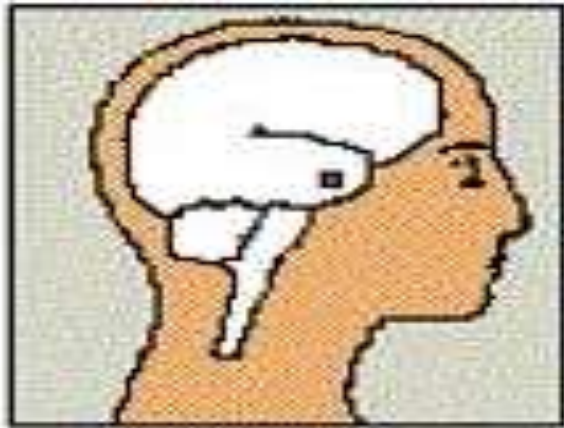
**Major Endocrine Glands**  
**Male    Female**



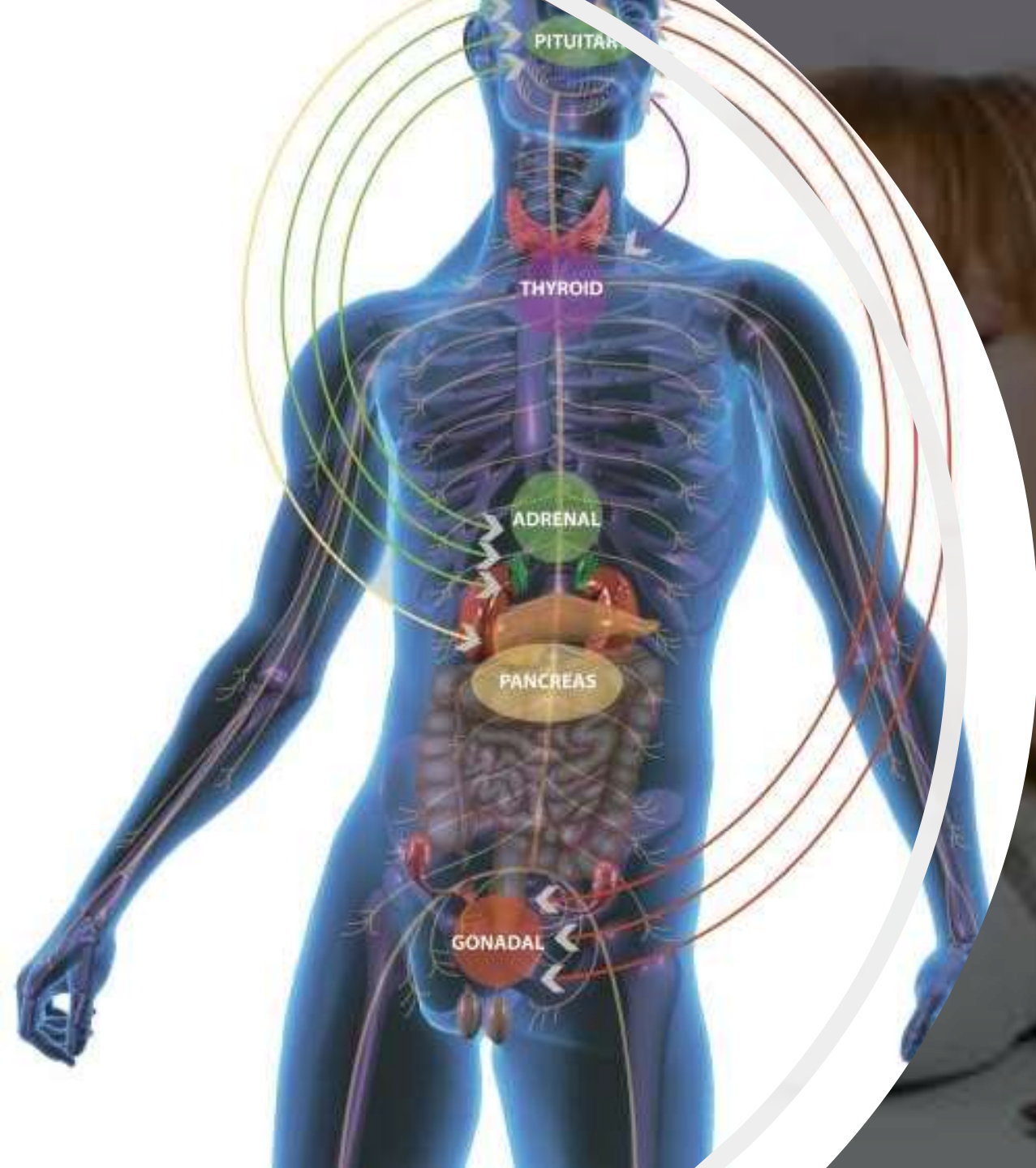
# HPAT

Hypothalamic-Pituitary-  
Adrenal-Thyroid  
Axis

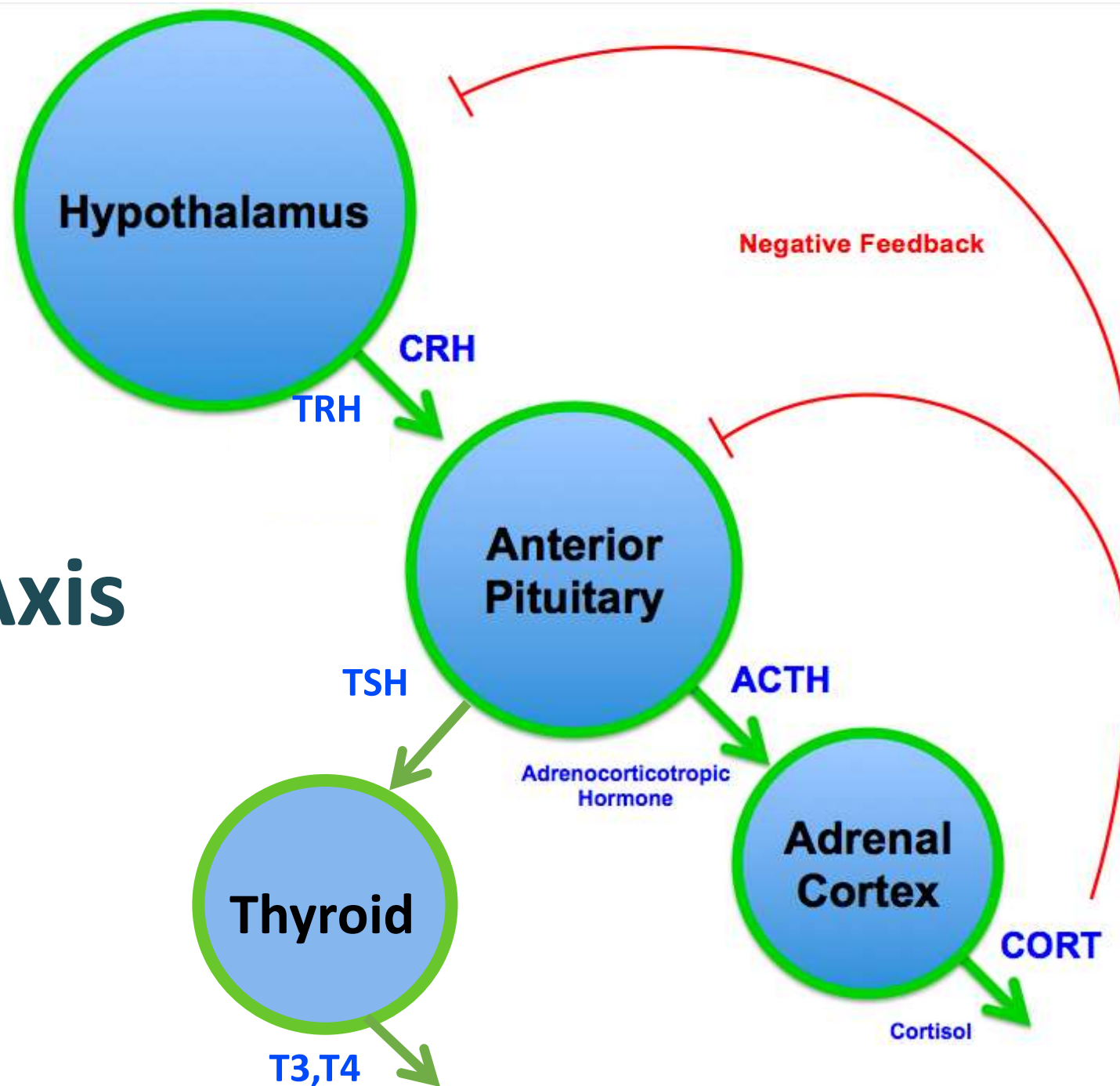
# Master Control System



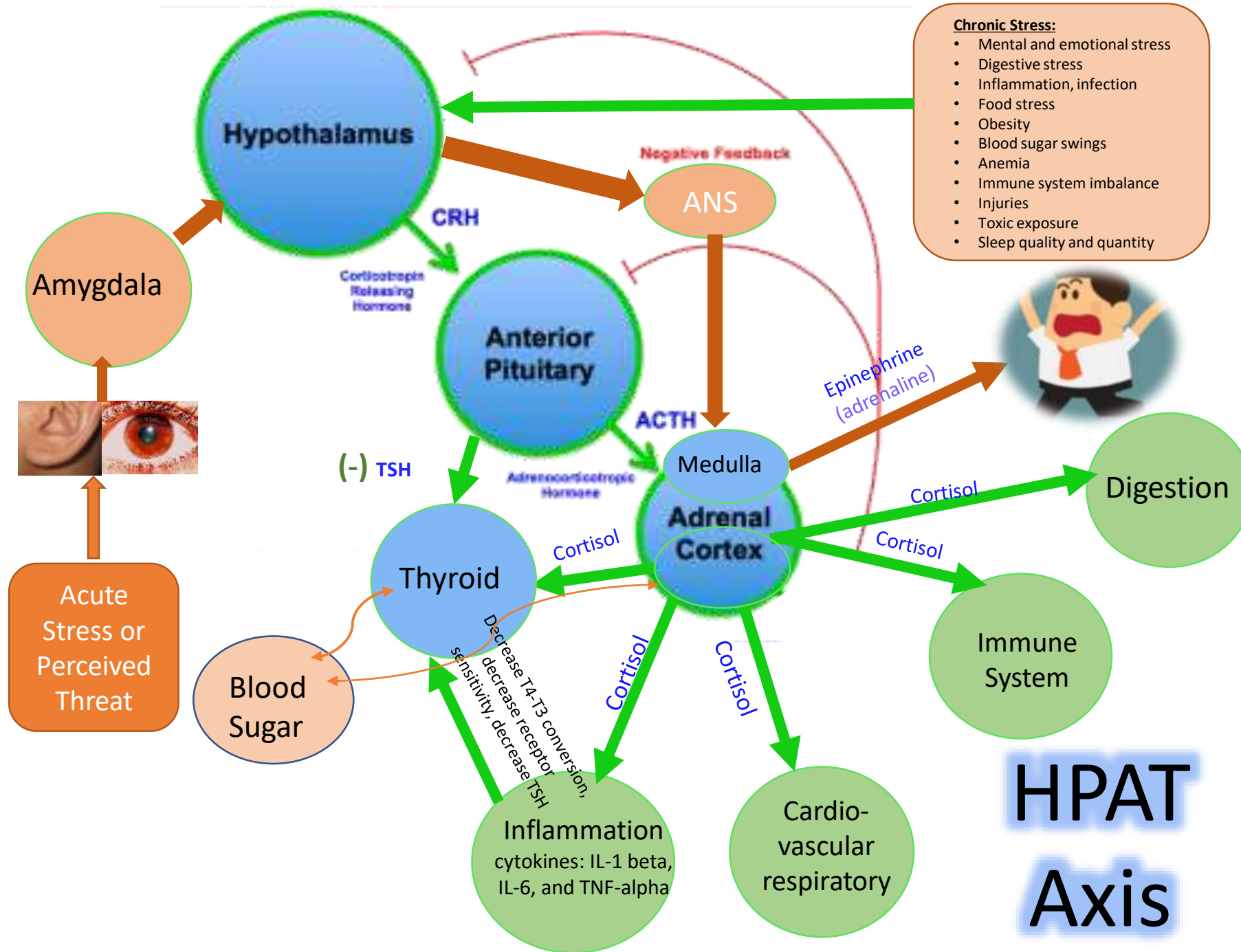


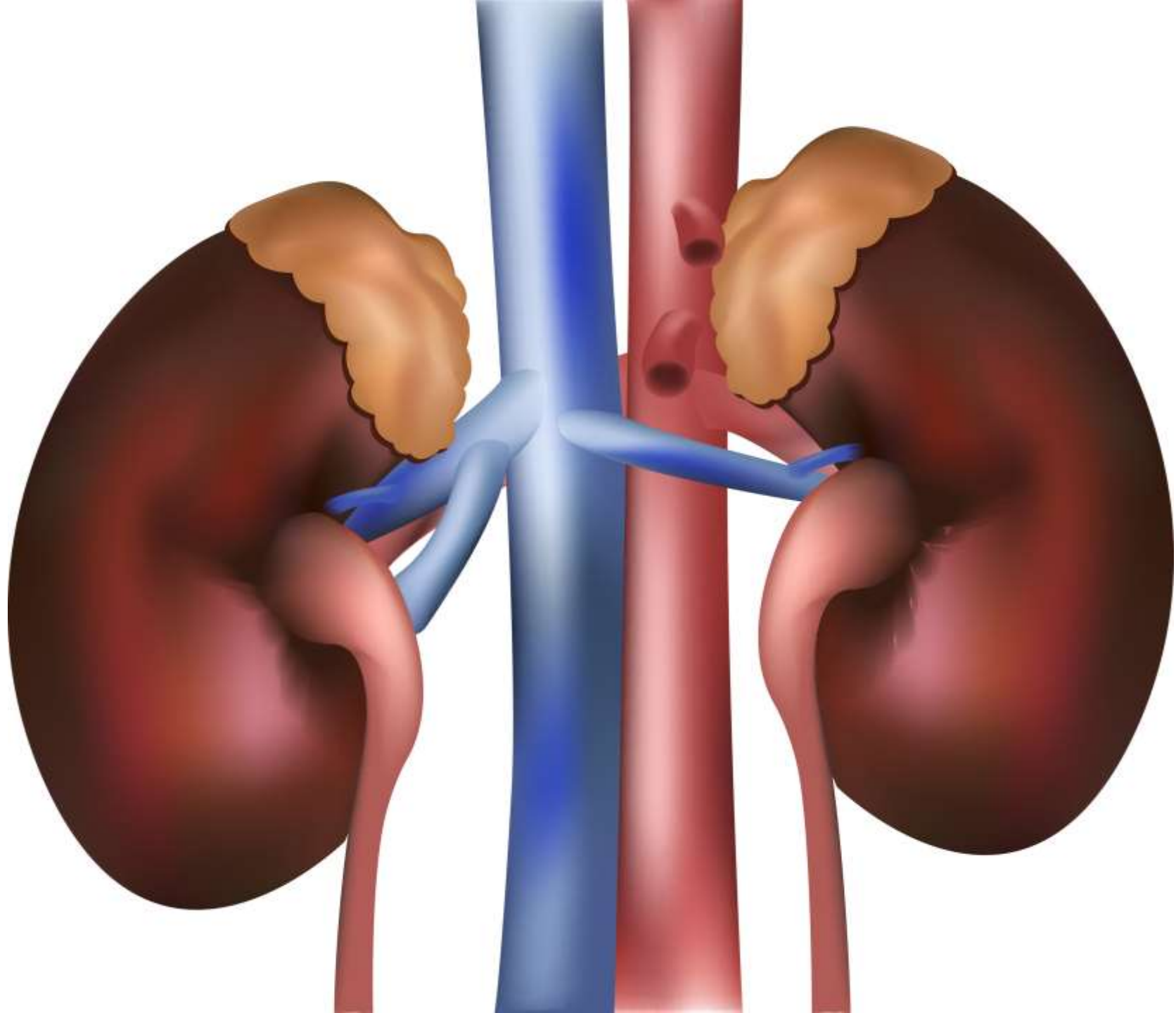


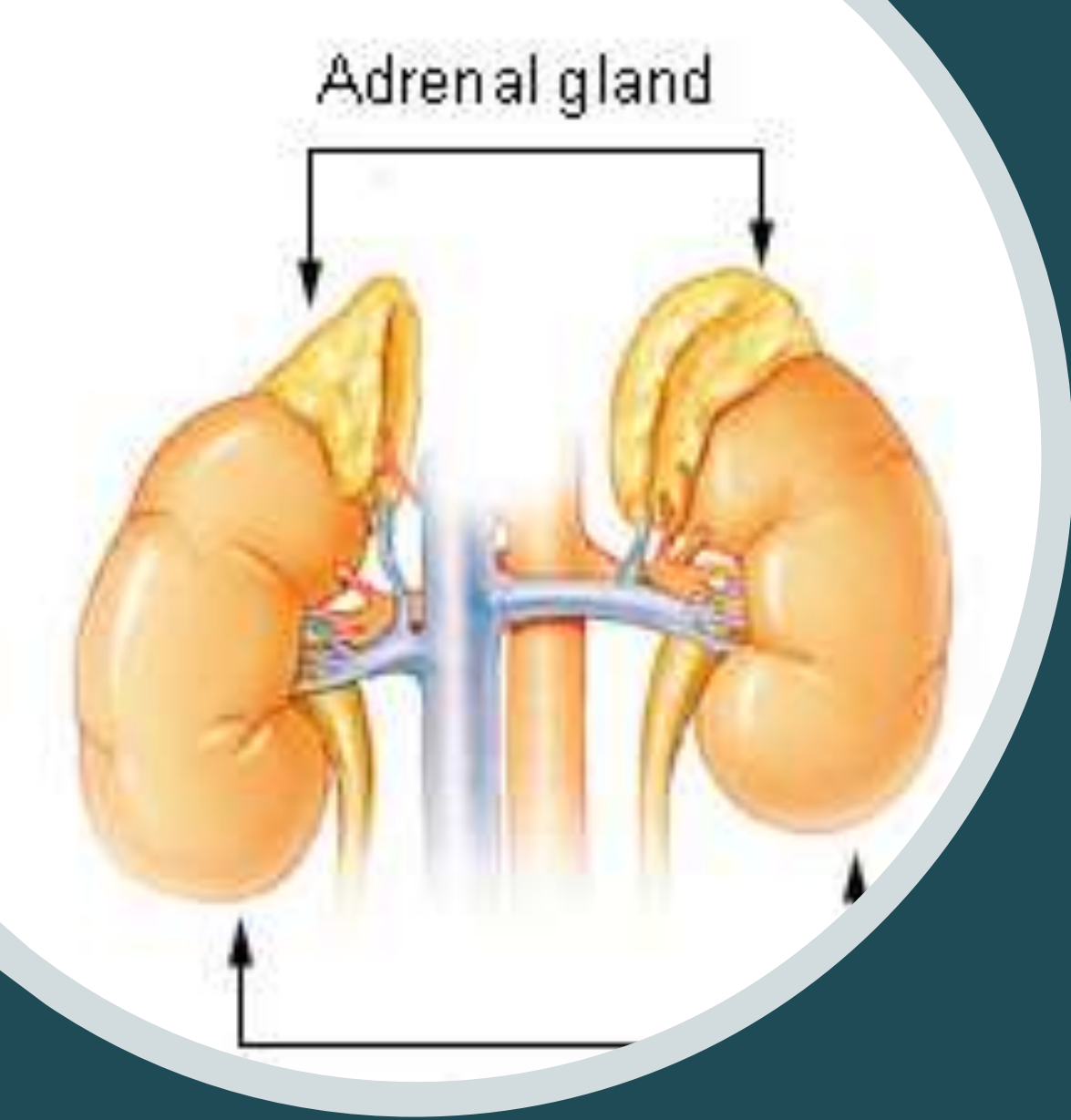
# HPAT Axis







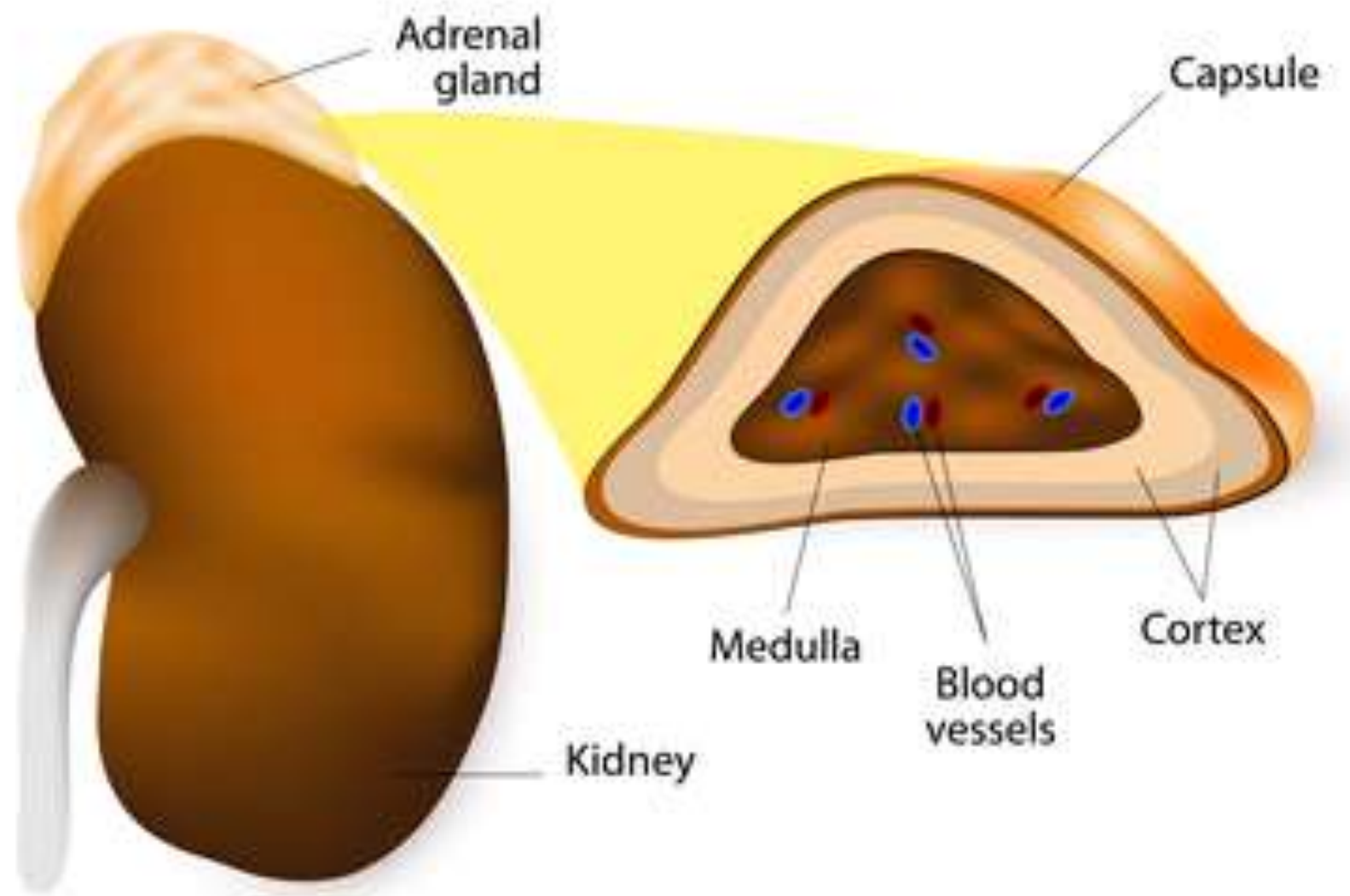




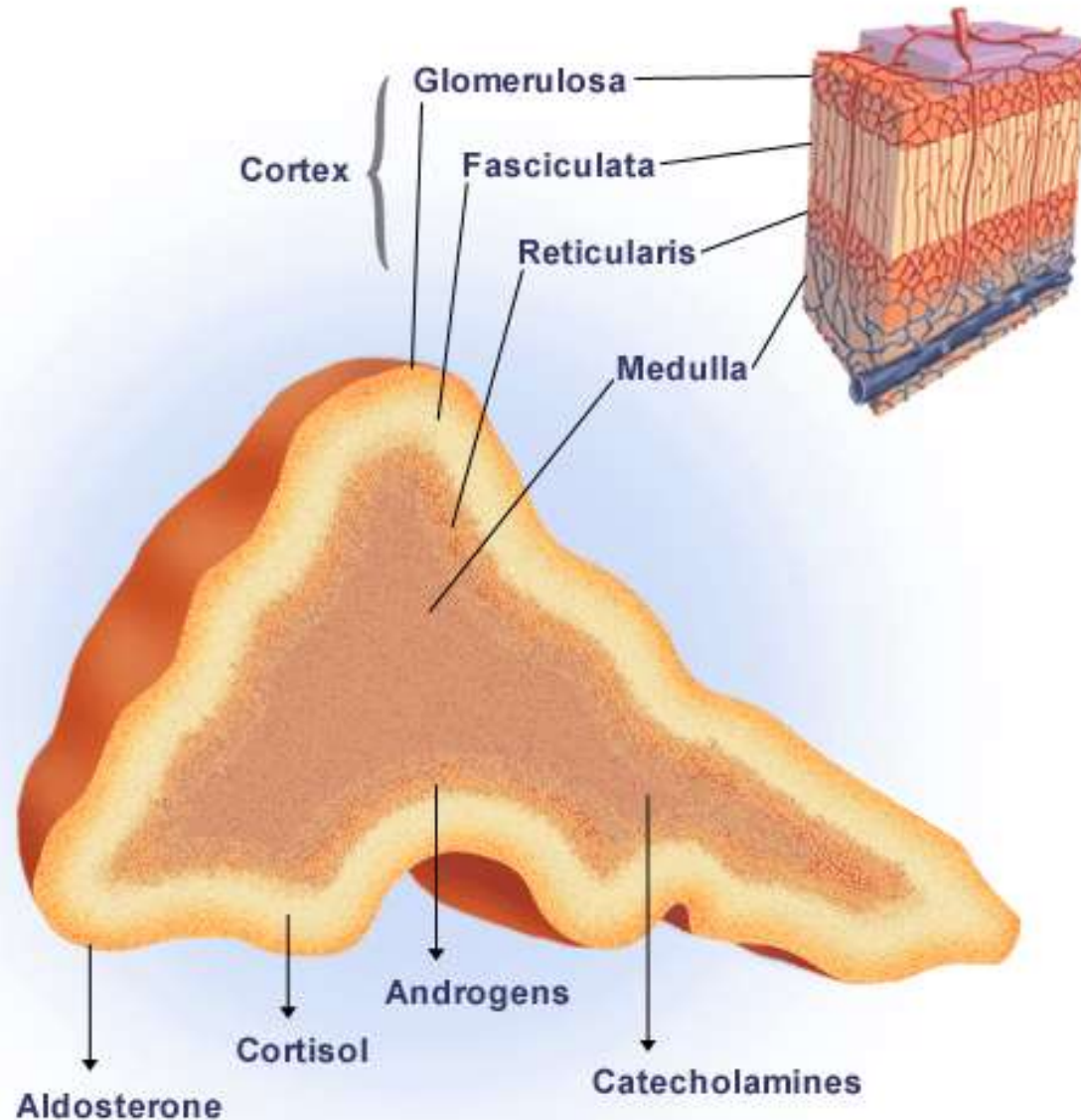
# Adrenal Gland Anatomy and Function

- Two small glands, each weighing 3 to 5 grams
- Located above the kidneys
- One of the highest rates of blood flow per gram of tissue
- Highest concentration of vitamin C per gram of any tissue in the body
- The hormones released in a cycle with the highest value in the morning and the lowest value at night – Circadian Rhythm





# Adrenal Hormone Secretions



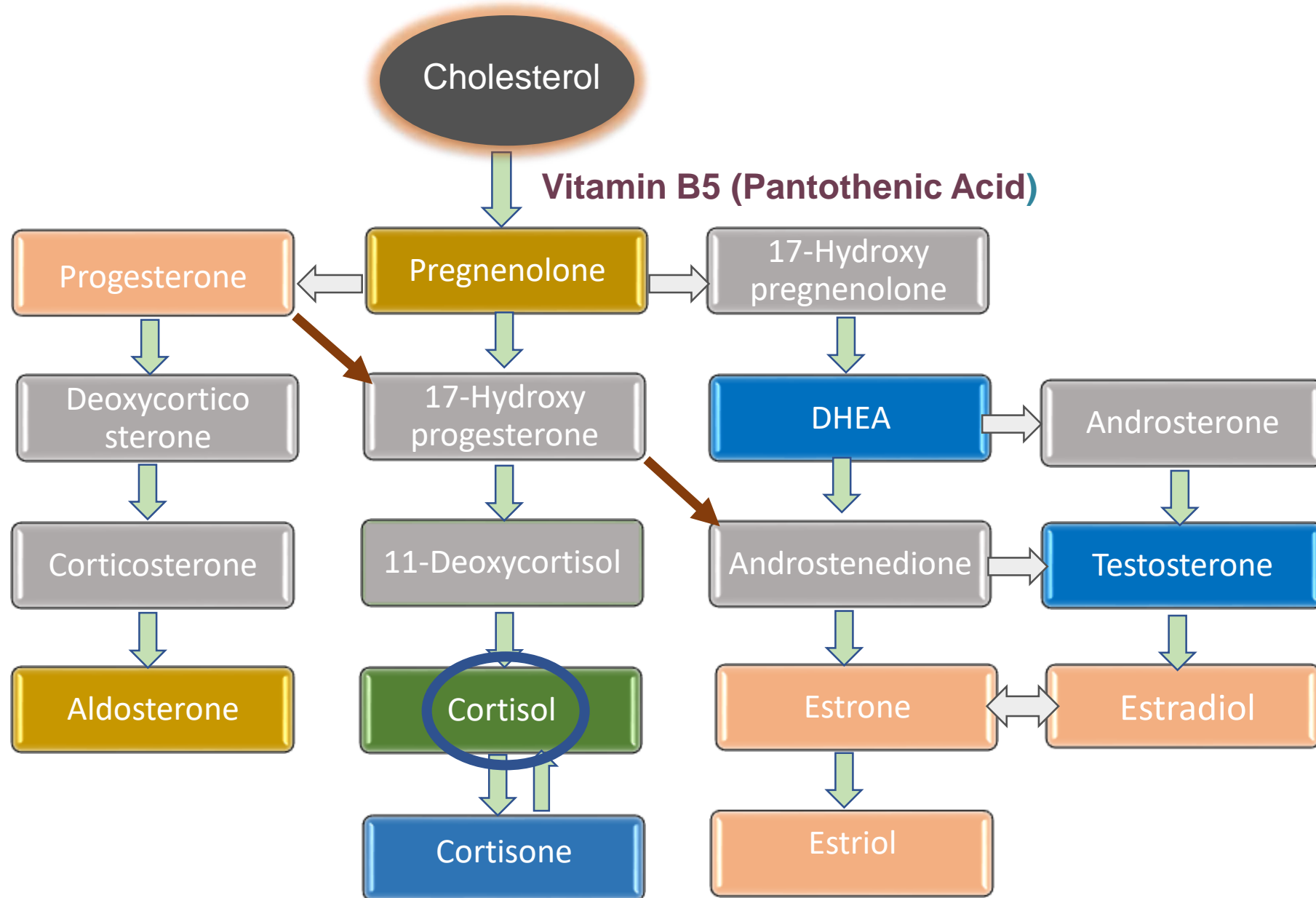
## Outer Zone (Cortex)

- Cortisol
- DHEA
- Aldosterone

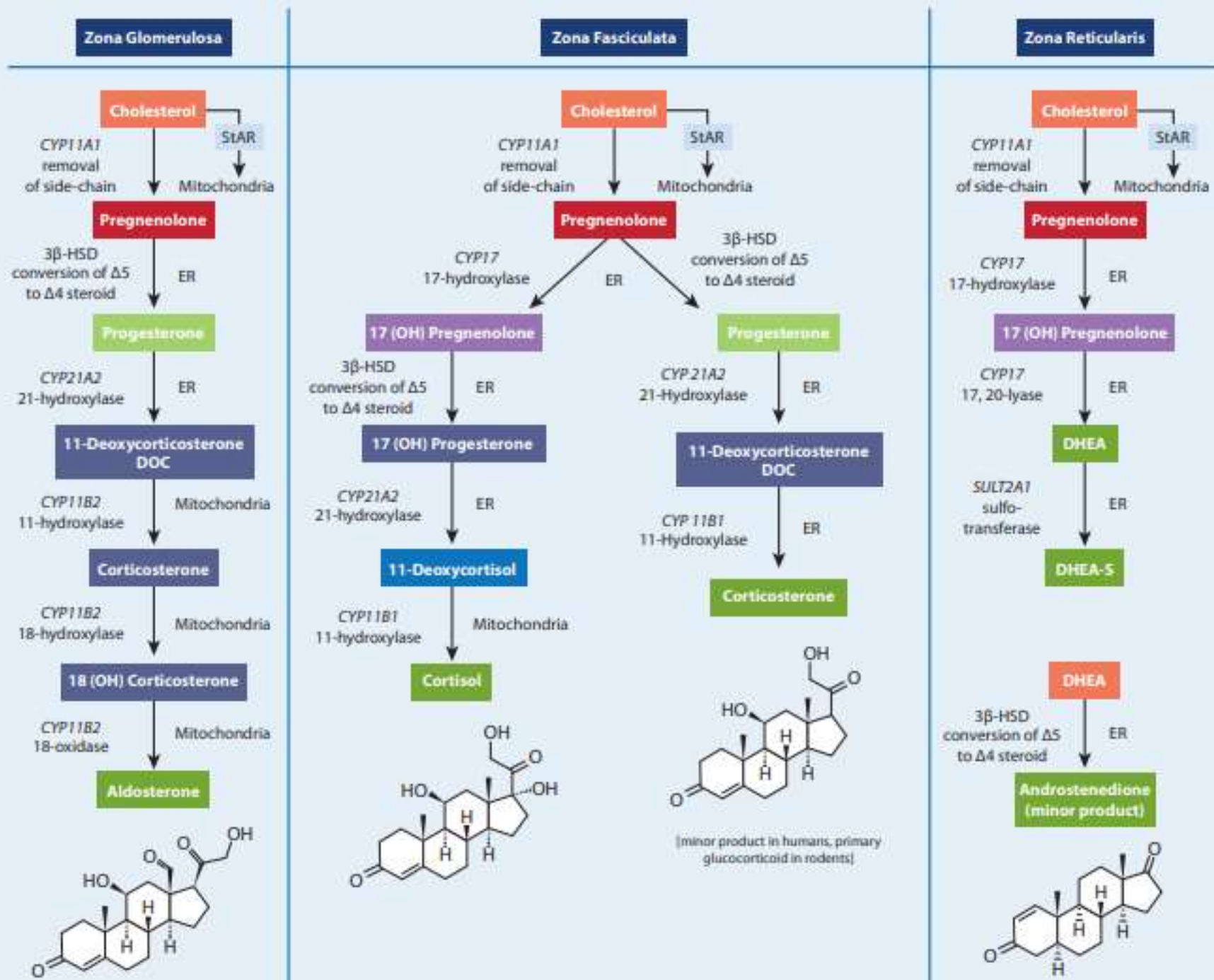
## Inner Zone (Medulla)

- Catecholamines
  - Adrenaline aka Epinephrine
  - Noradrenaline aka Norepinephrine
- Androgens

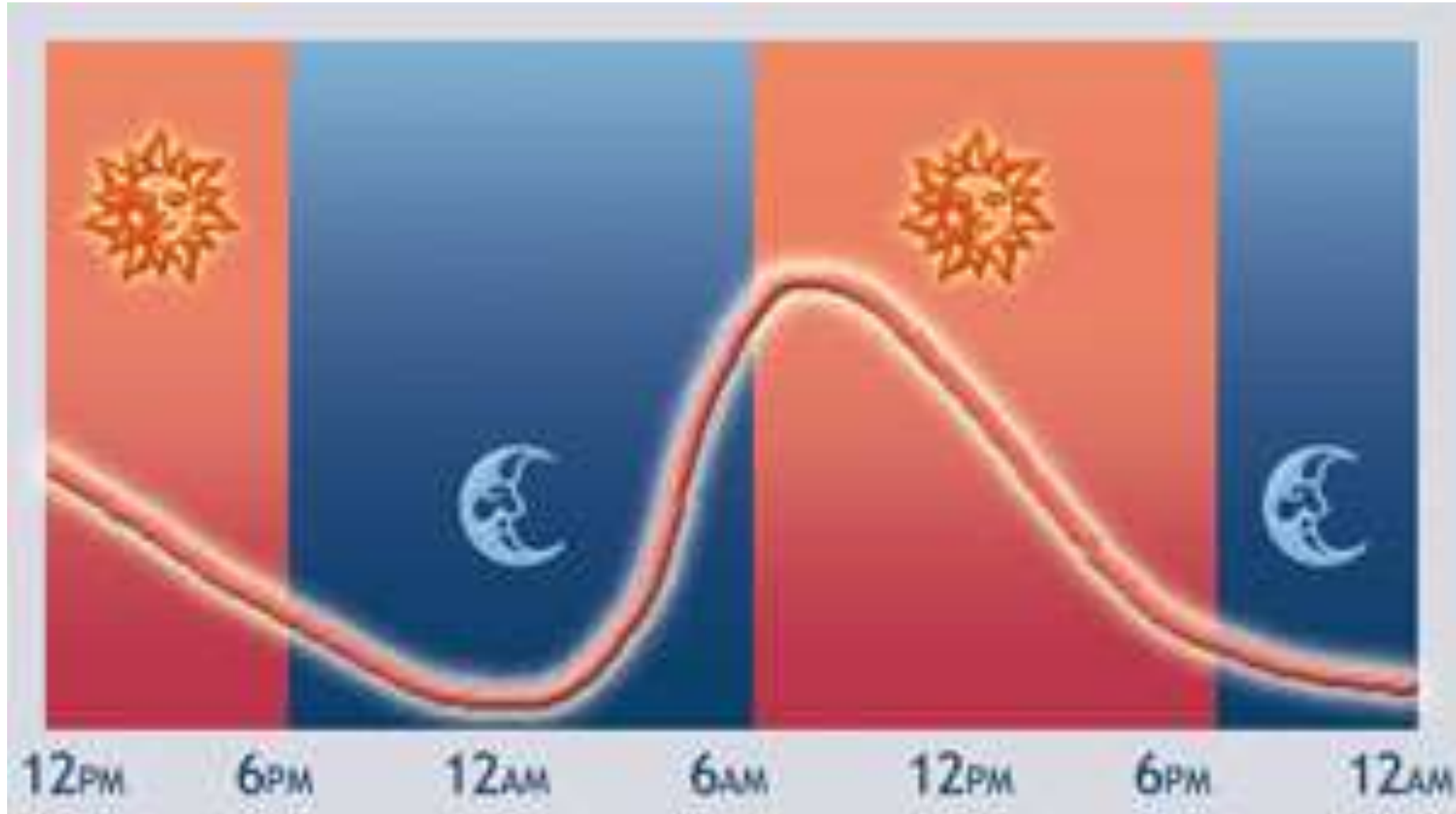
# Male/Female Hormones/Stress Interaction



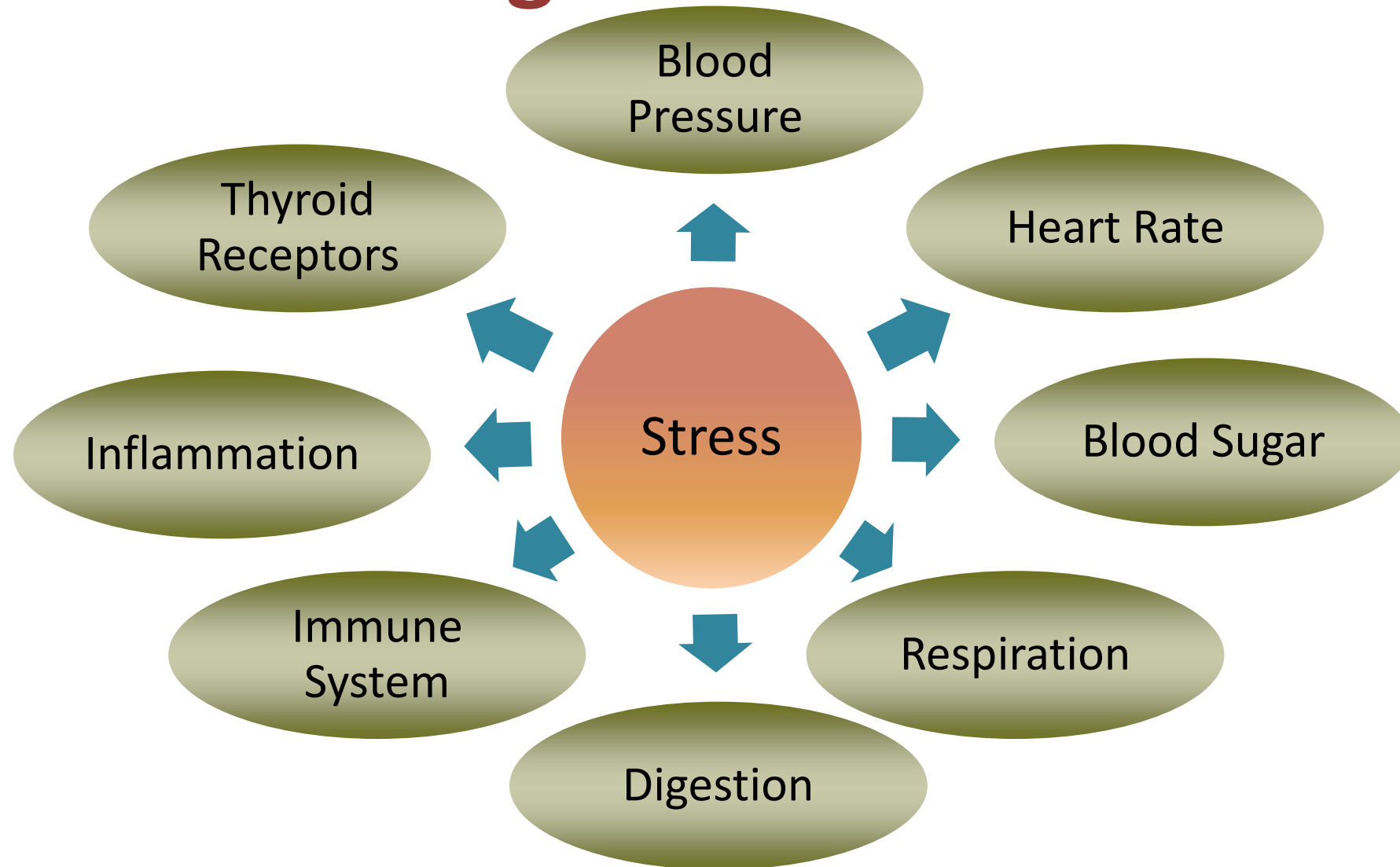




# Circadian Rhythm



# Dangers Associated with Unmanaged Adrenal Issues





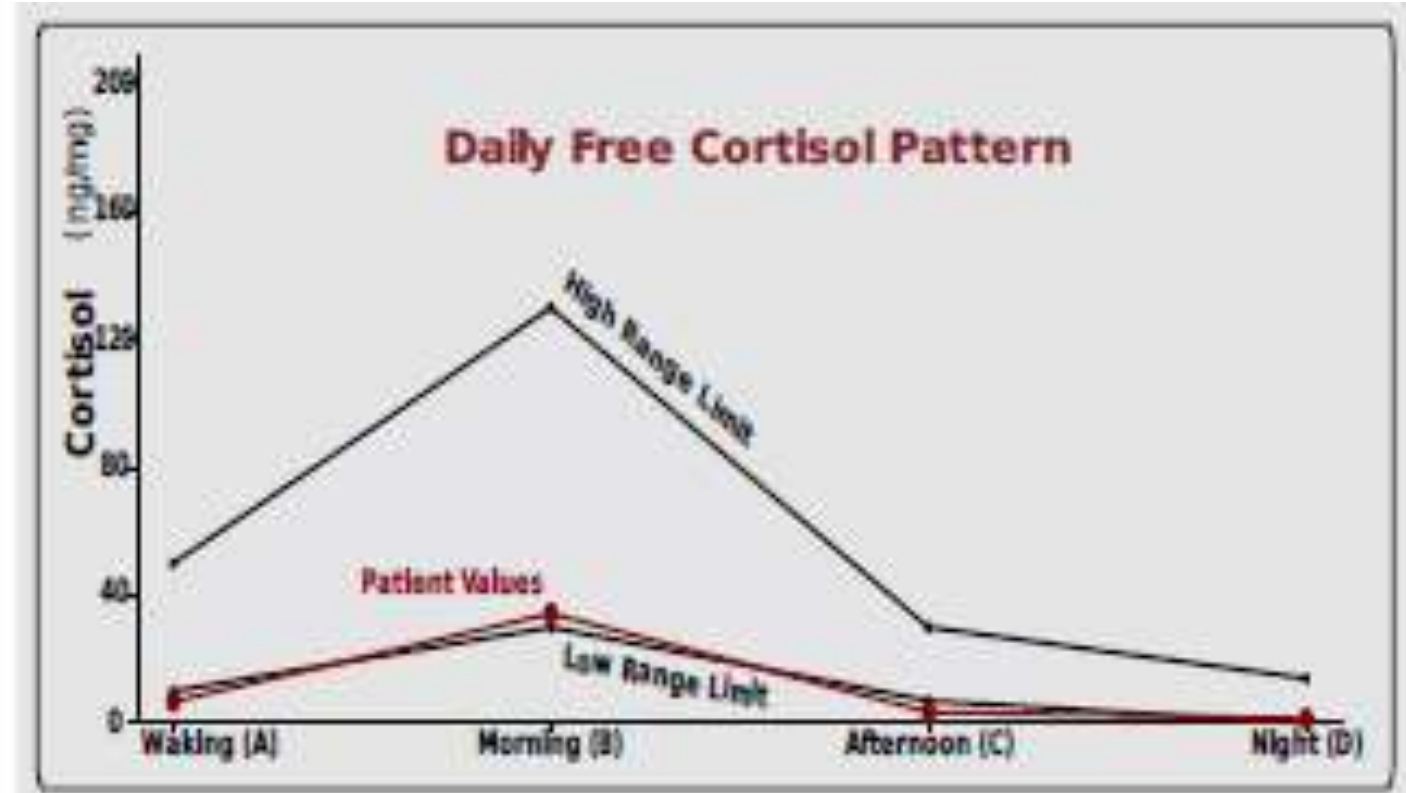
# Cortisol Also Made In

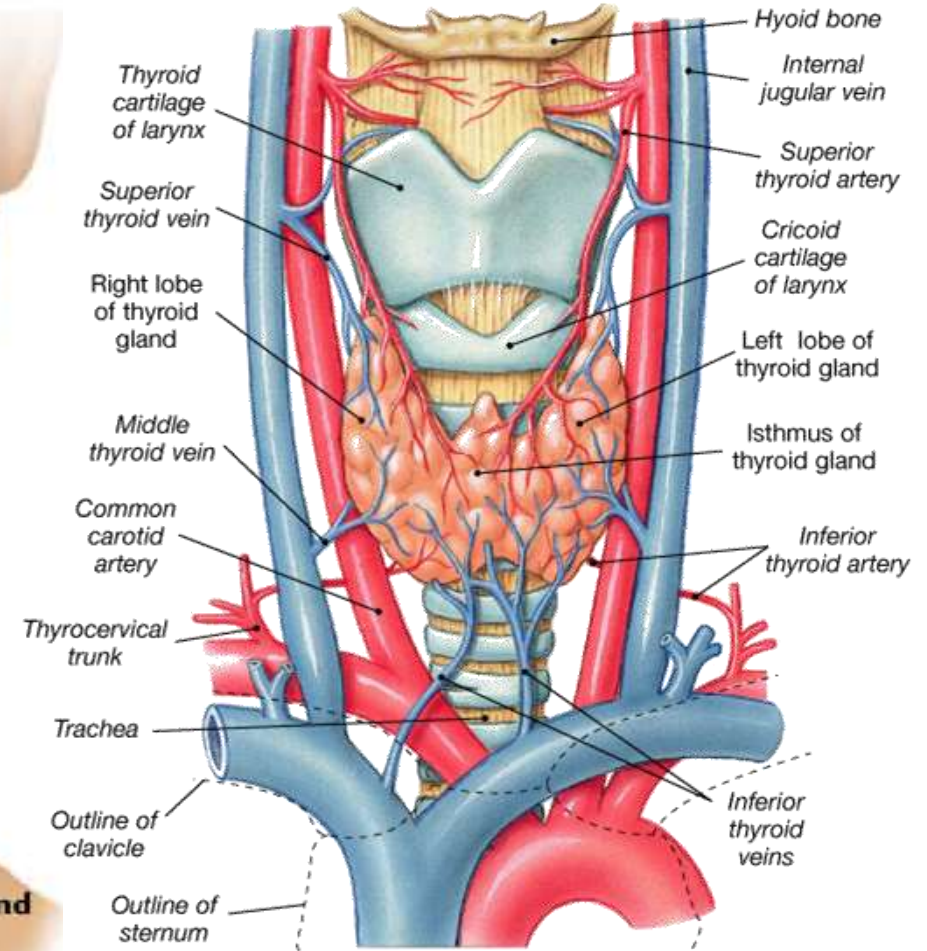
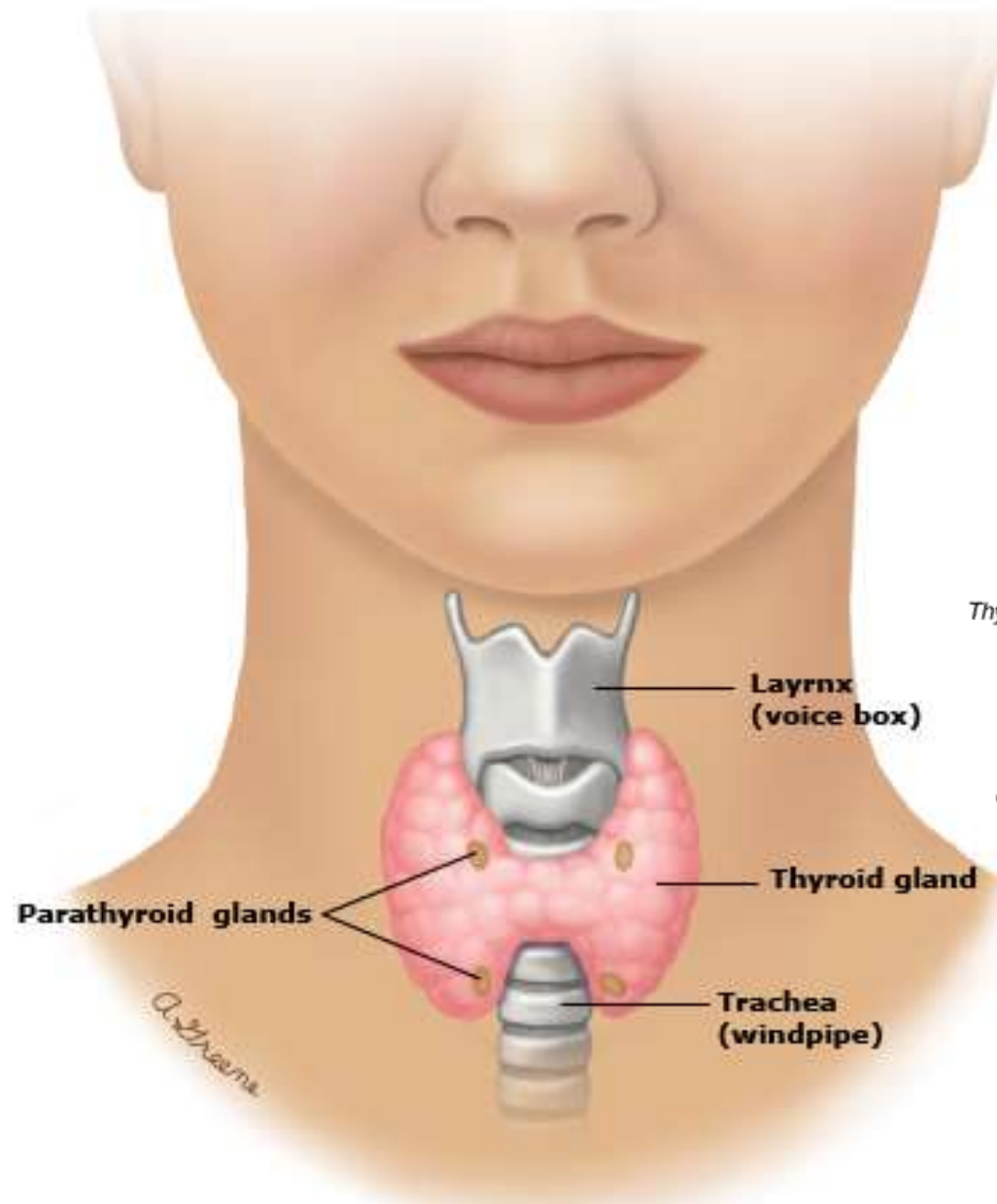
- Lymph
- Intestine
- Skin
- Brain
- Heart (maybe)



# Causes of Low Cortisol

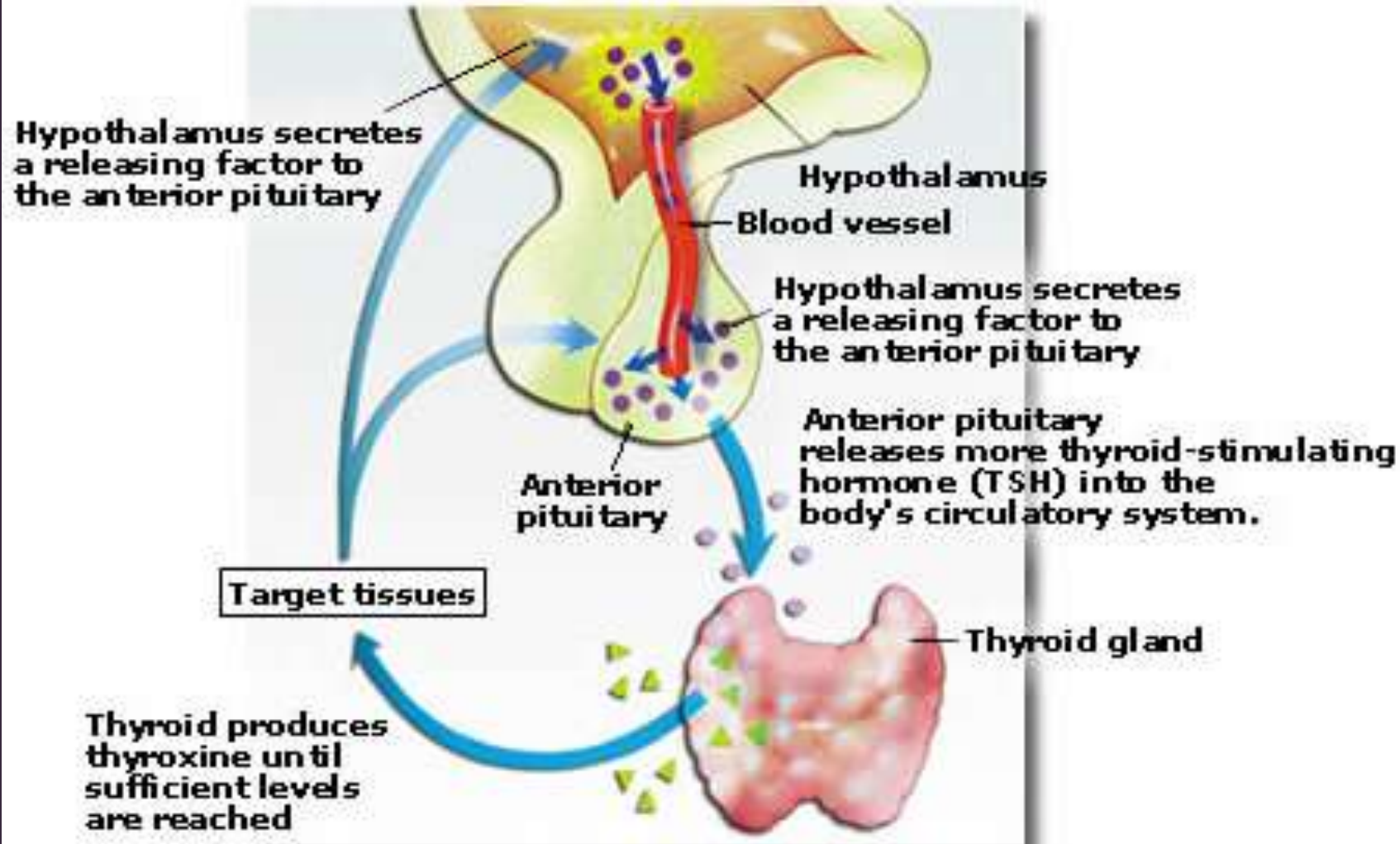
- Viral infections
- Bacterial infections
- Leaky gut
- Inflammation -IL1, TNFa
- Oxidative stress
- LPS
- Mitochondrial dysfunction
- PCBs
- Heavy metals

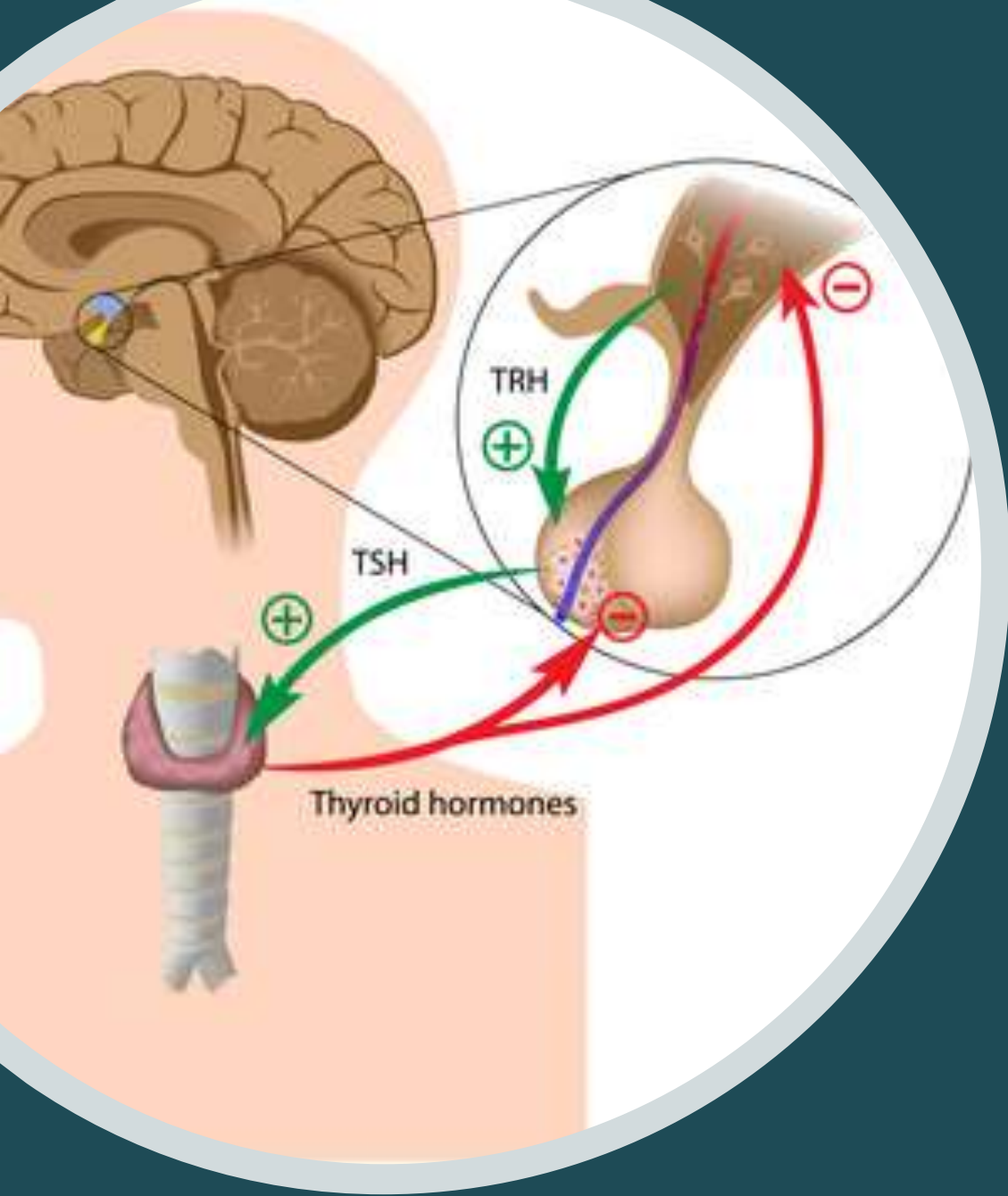






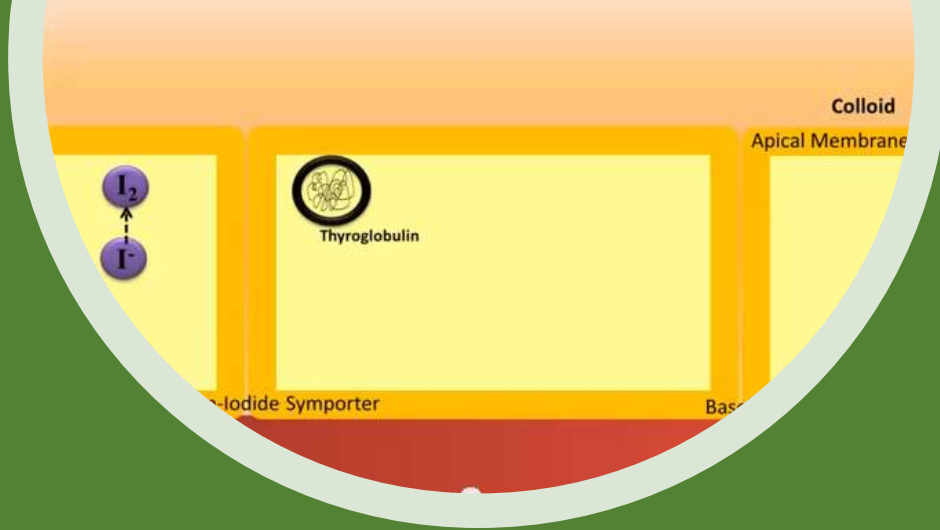
# Thyroid Control



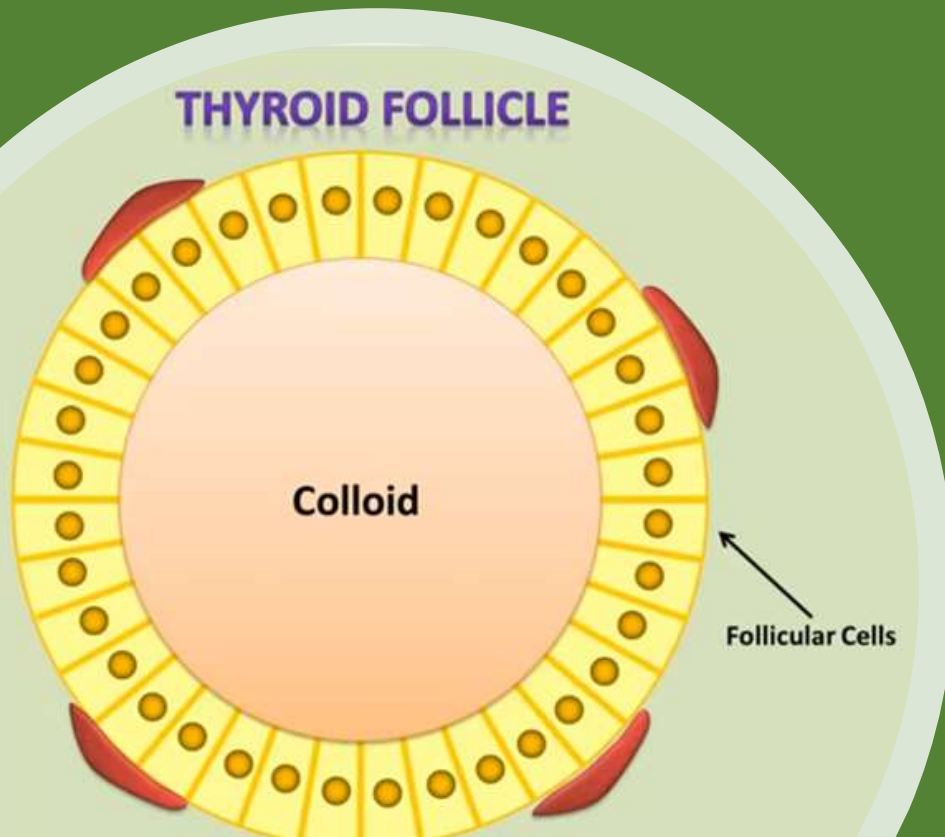


# How Thyroid Hormone Gets Stimulated

# Action of TSH on the Thyroid

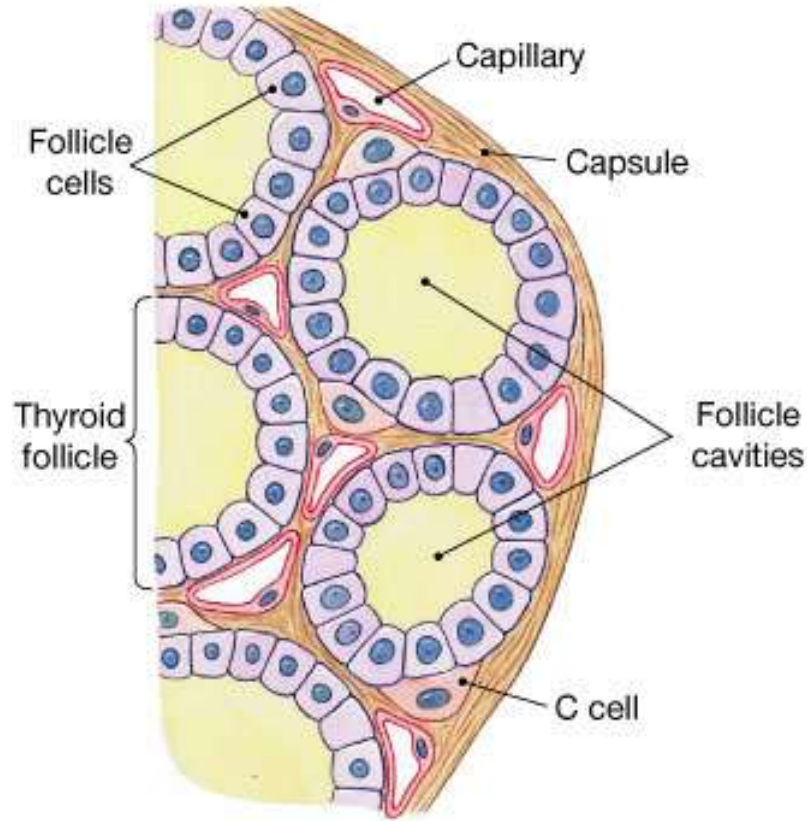


- TSH acts on follicular cells of the thyroid.
- Increases iodide transport into follicular cells by NIS - Sodium Iodide Symporter
- Oxidizes iodide to release iodine for iodination of tyrosine
- Increases production and iodination of thyroglobulin
- Brings the thyroglobulin back into the follicle cell





*Follicle cells produce  
thyroglobulin*

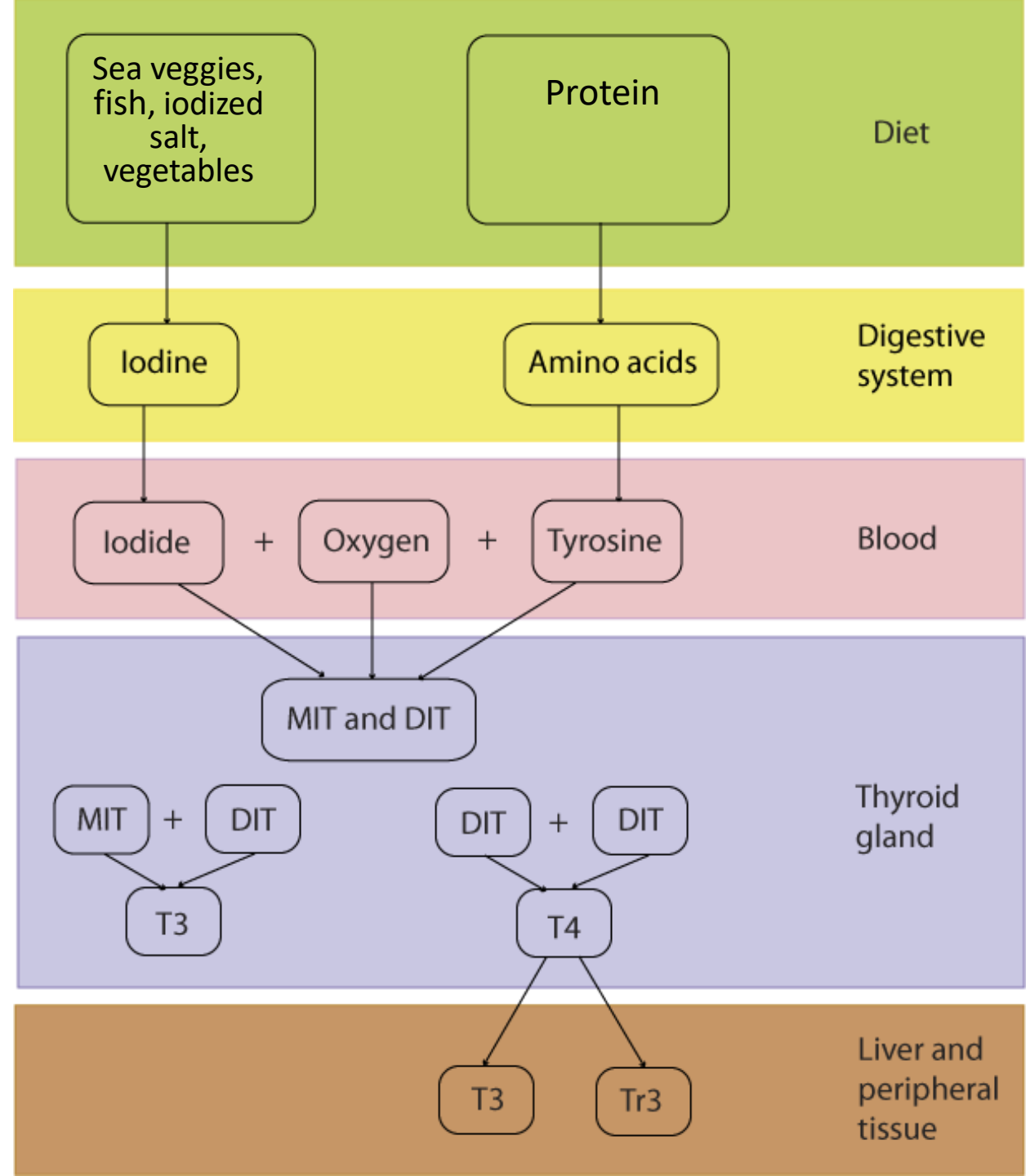


*Colloid fills the  
follicle cavities*

# The Thyroid Gland – Histology

*Gland is composed of hollow spheres, called colloid follicles.*

# Thyroid Hormone Production



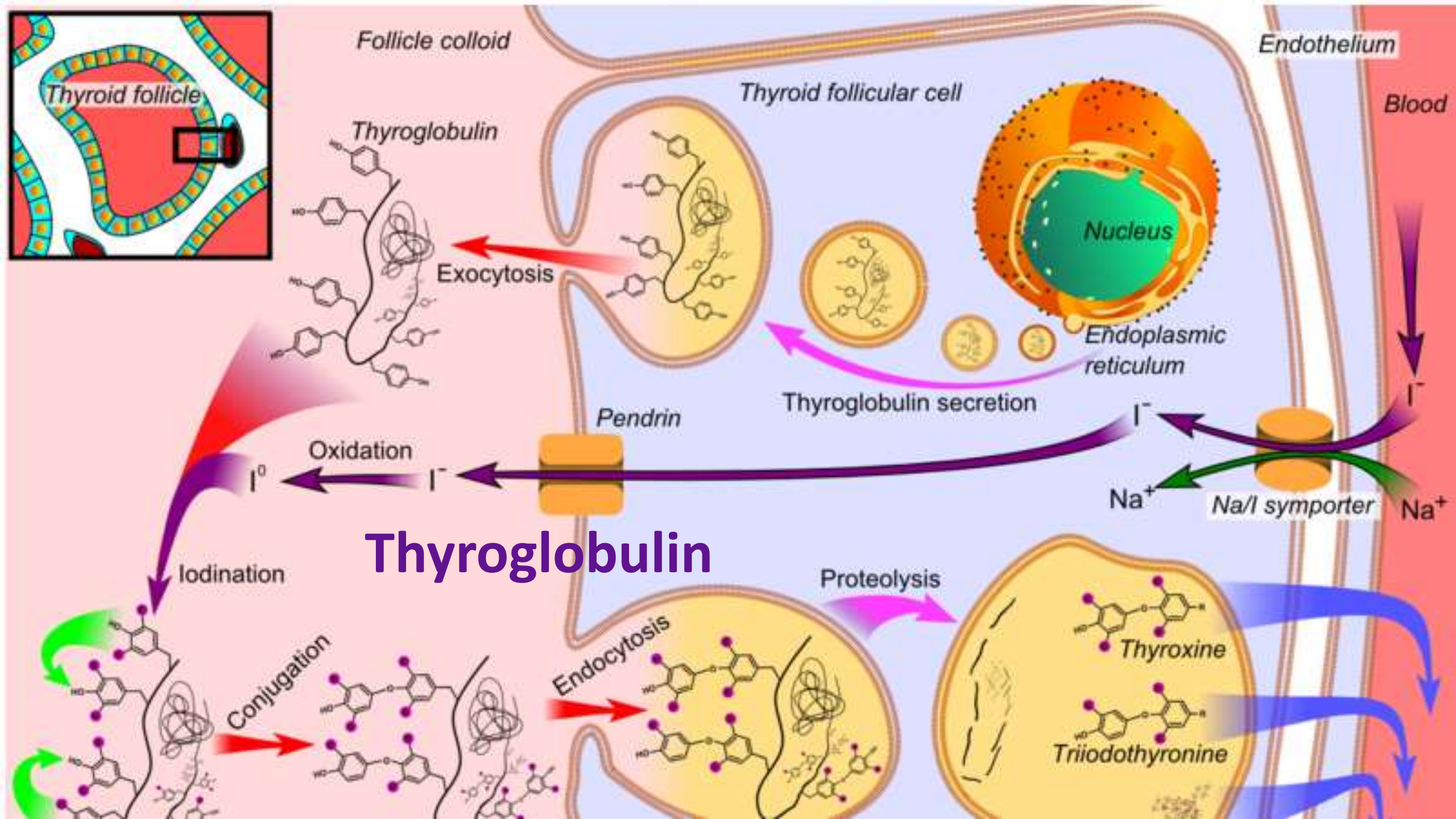


**Thyroxine – T4**

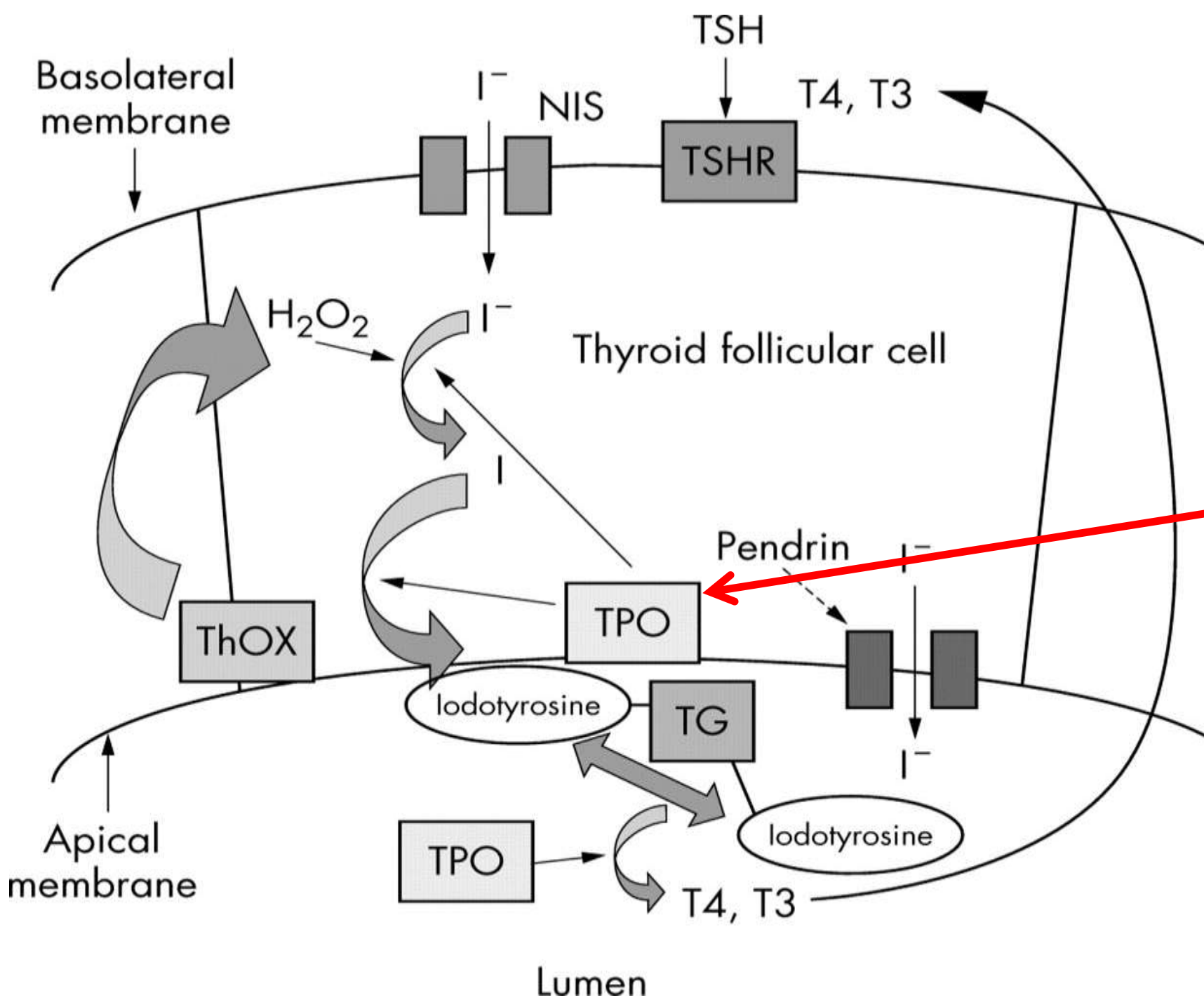




**Triiodothyronine – T3**

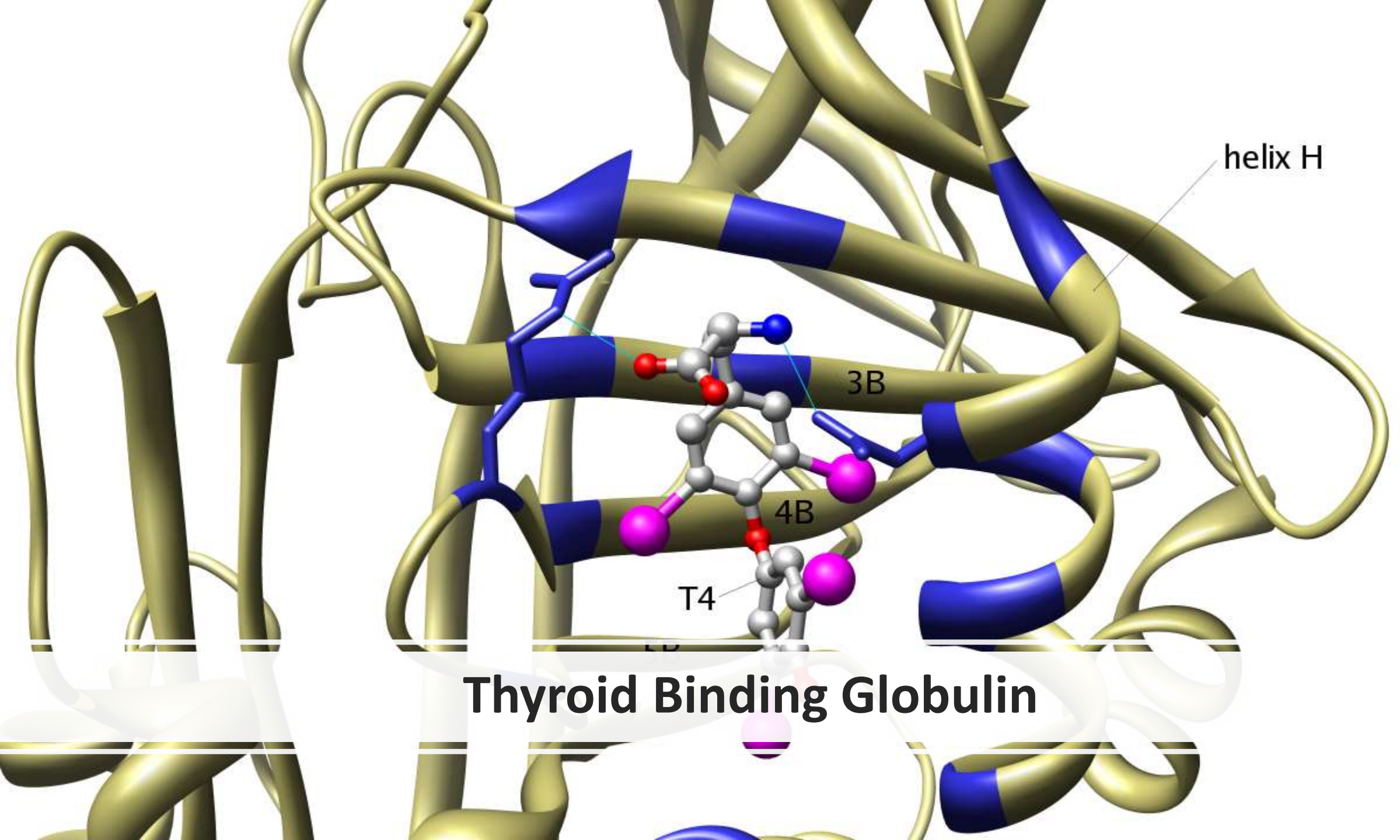




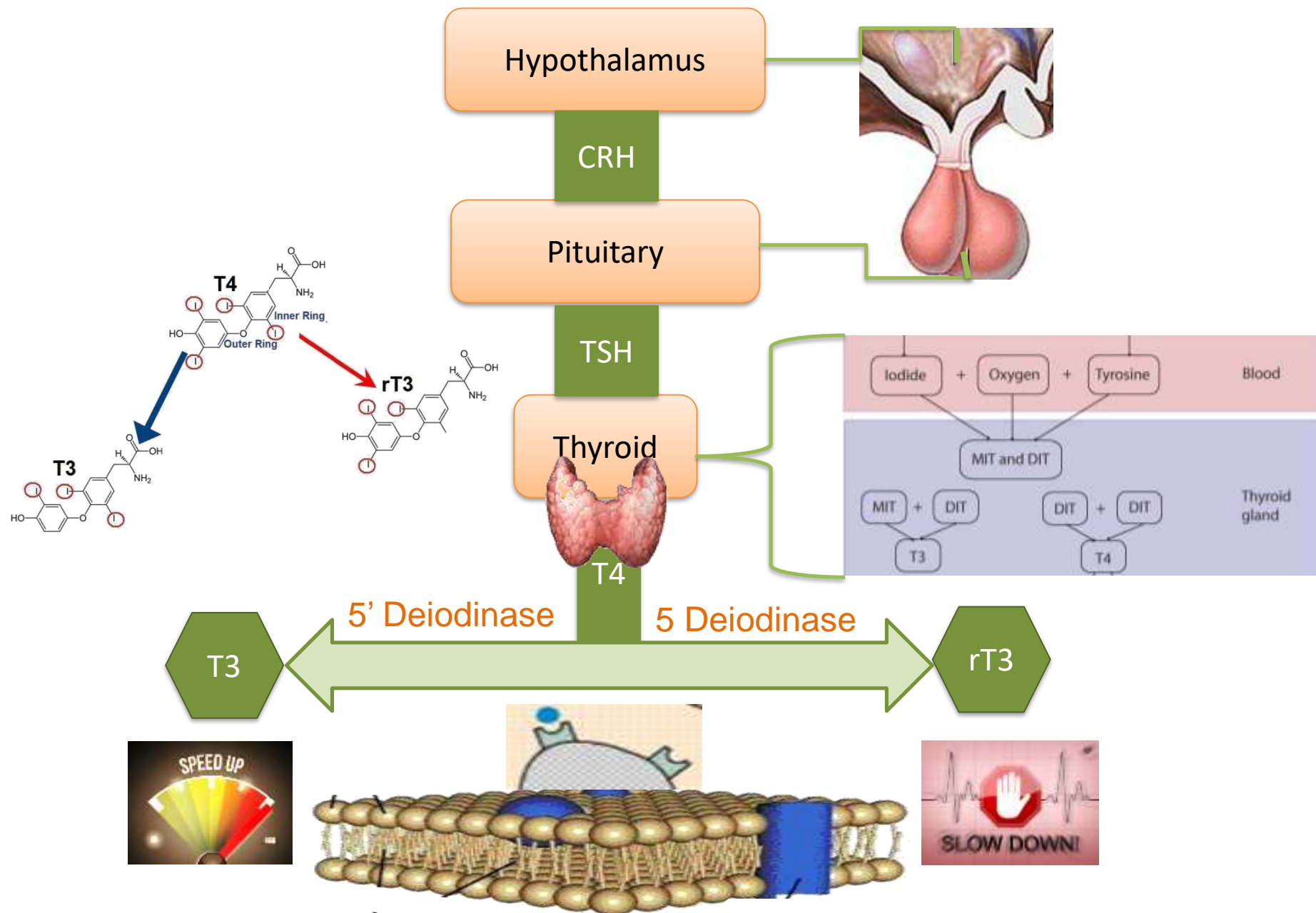


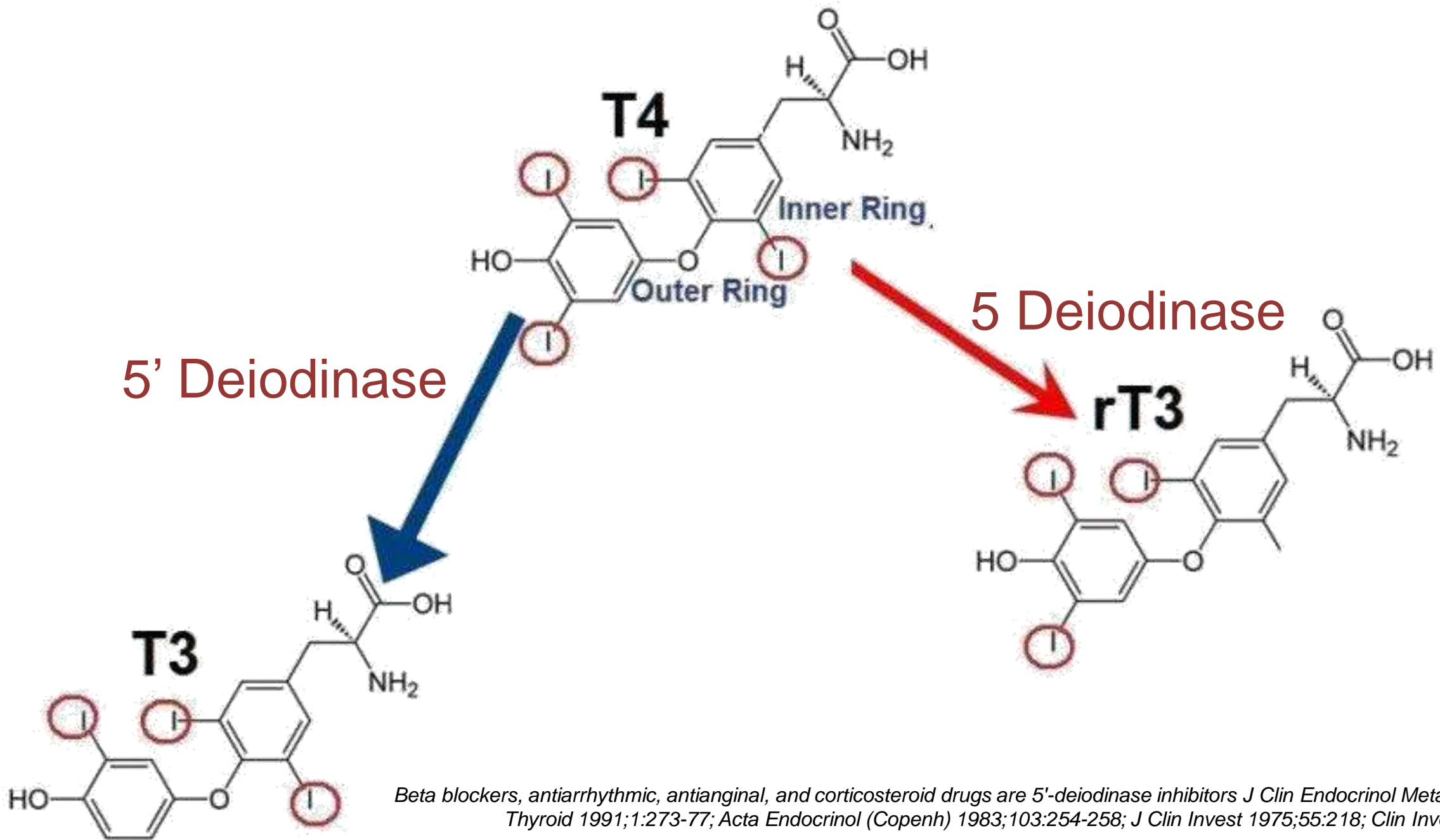
Thyroid  
Peroxidase



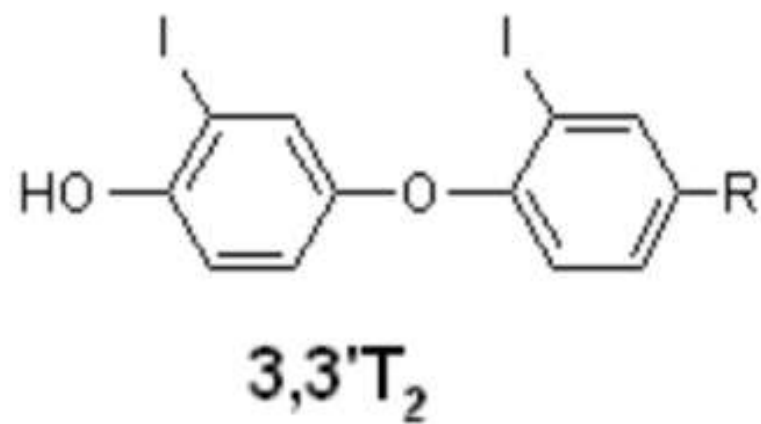
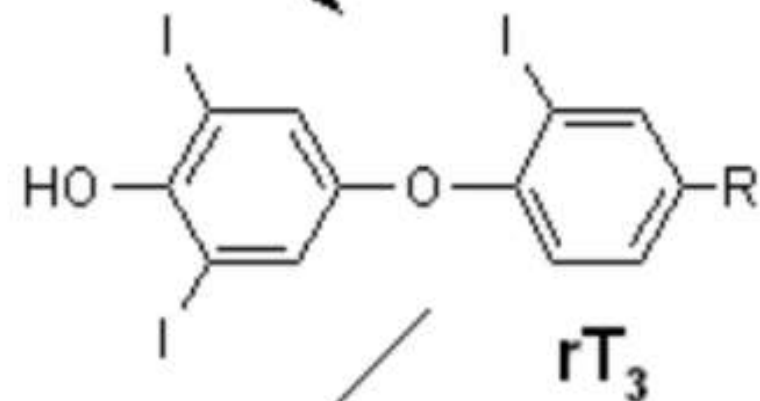
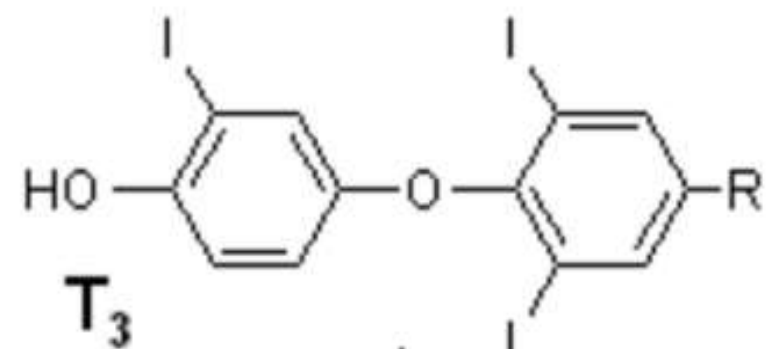
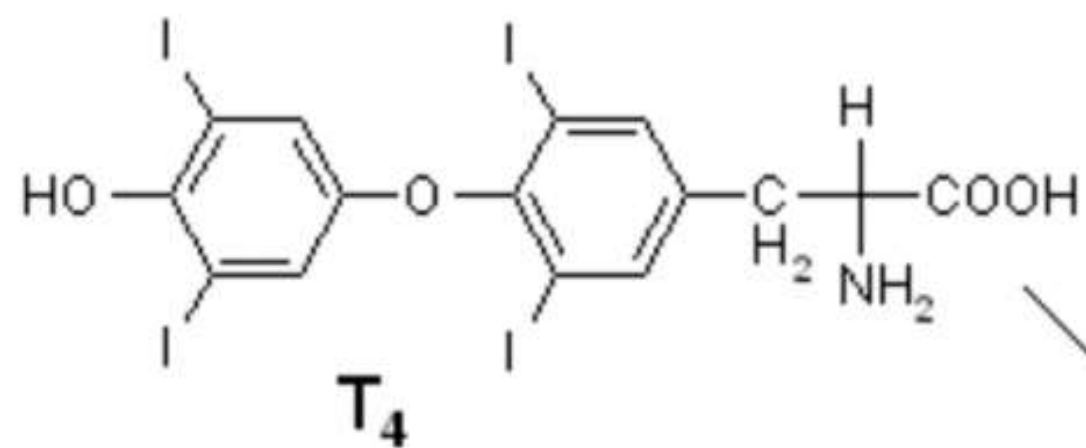


**Thyroid Binding Globulin**





*Beta blockers, antiarrhythmic, antianginal, and corticosteroid drugs are 5'-deiodinase inhibitors J Clin Endocrinol Metab 1975;41:911; Thyroid 1991;1:273-77; Acta Endocrinol (Copenh) 1983;103:254-258; J Clin Invest 1975;55:218; Clin Invest 1976;58:25)*





# T4 to T3 Conversion Enhancers

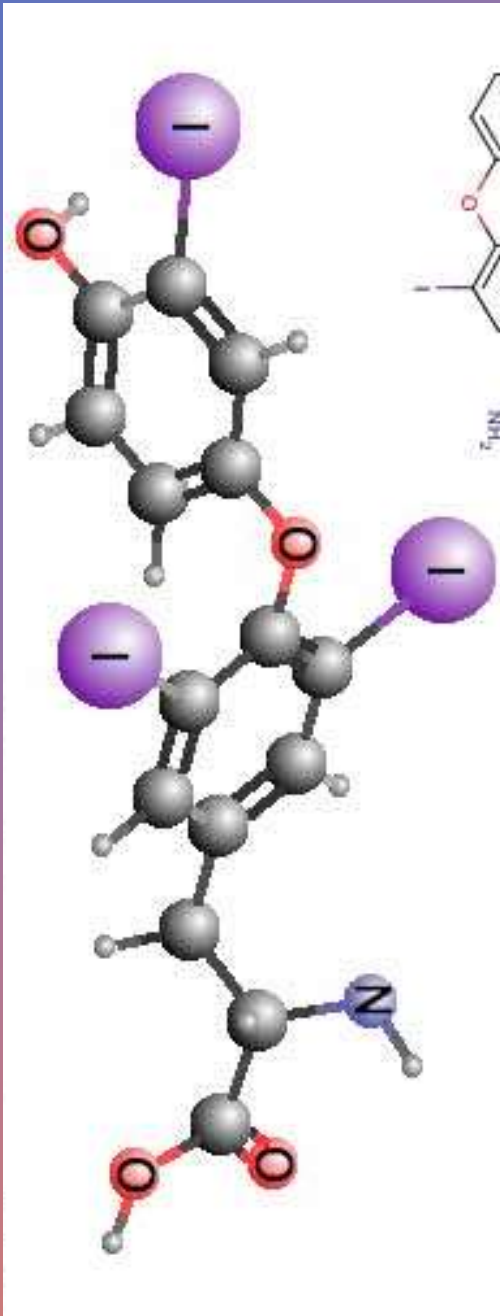
- ✓ Selenium
- ✓ Zinc
- ✓ Vitamin D
- ✓ Iron
- ✓ Iodine
- ✓ Vitamins B6 and B12
- ✓ Copper
- ✓ Ashwagandha
- ✓ Blood Sugar Balance
- ✓ Low stress



# Inducers of Reverse T3

- ✓ Illness
- ✓ Immune challenges
- ✓ Stress
- ✓ Inflammation (IL-6)
- ✓ Blood sugar imbalances
- ✓ Fasting or famine
- ✓ Toxins
- ✓ Impaired liver function
- ✓ Impaired kidney function
- ✓ Heavy metals, especially mercury and lead

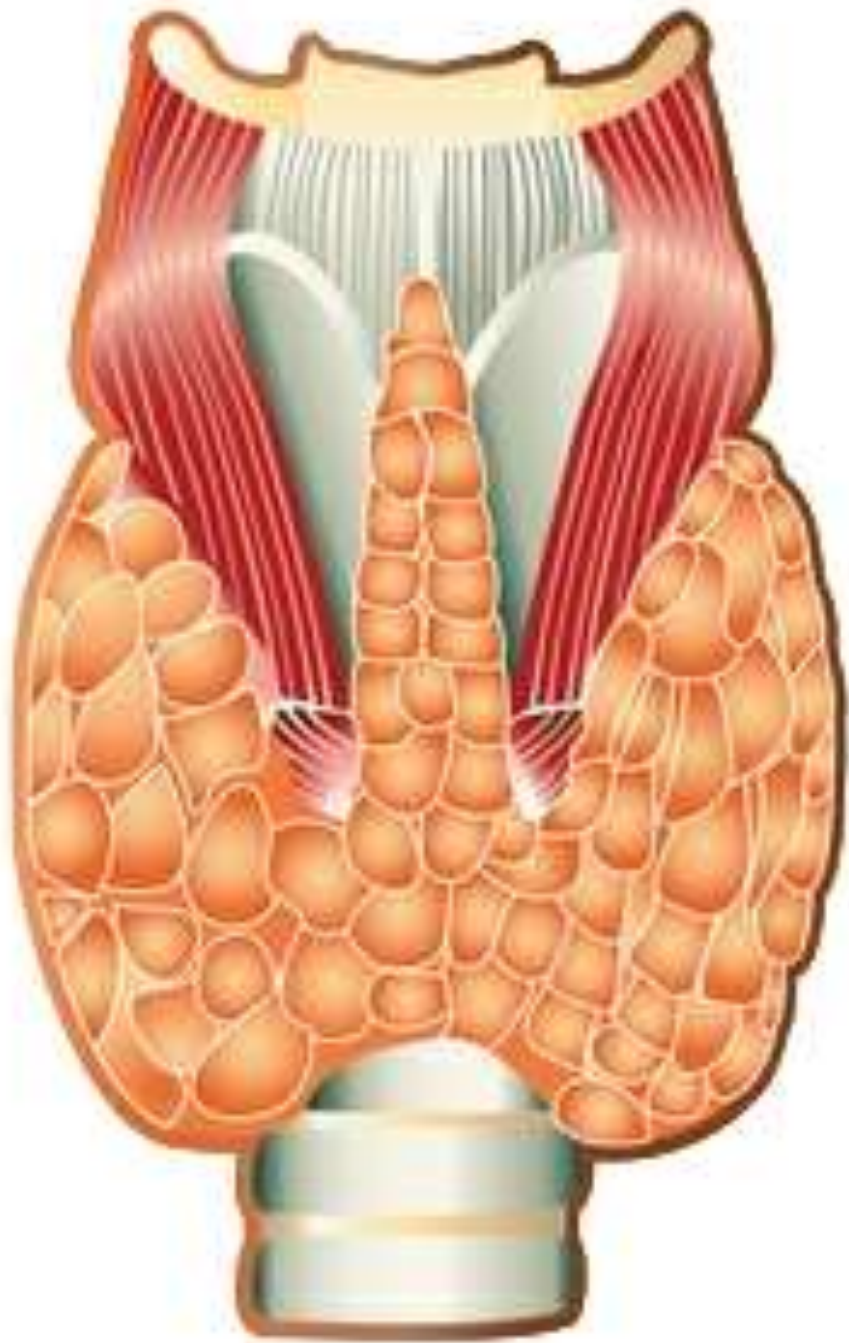




# How T3 Increases Metabolic Rate

- Pumps sodium and potassium across cell membranes to maintain resting membrane potential
- Acts on mitochondria to increase ATP synthesis
- Increases the synthesis of Na<sup>+</sup>/K<sup>+</sup> pumps, markedly increasing ATP consumption.
- The resulting increased metabolic rate increases thermogenesis (heat production).





# Substances Involved in Thyroid Function

- TRH
- TSH
- T4 (thyroxine), Free T4
- T3 (triiodothyronine), Free T3
- Thyroid Binding Globulin
- Thyroid Peroxidase
- Thyroglobulin
- Receptors



# Types of Thyroid Dysfunction

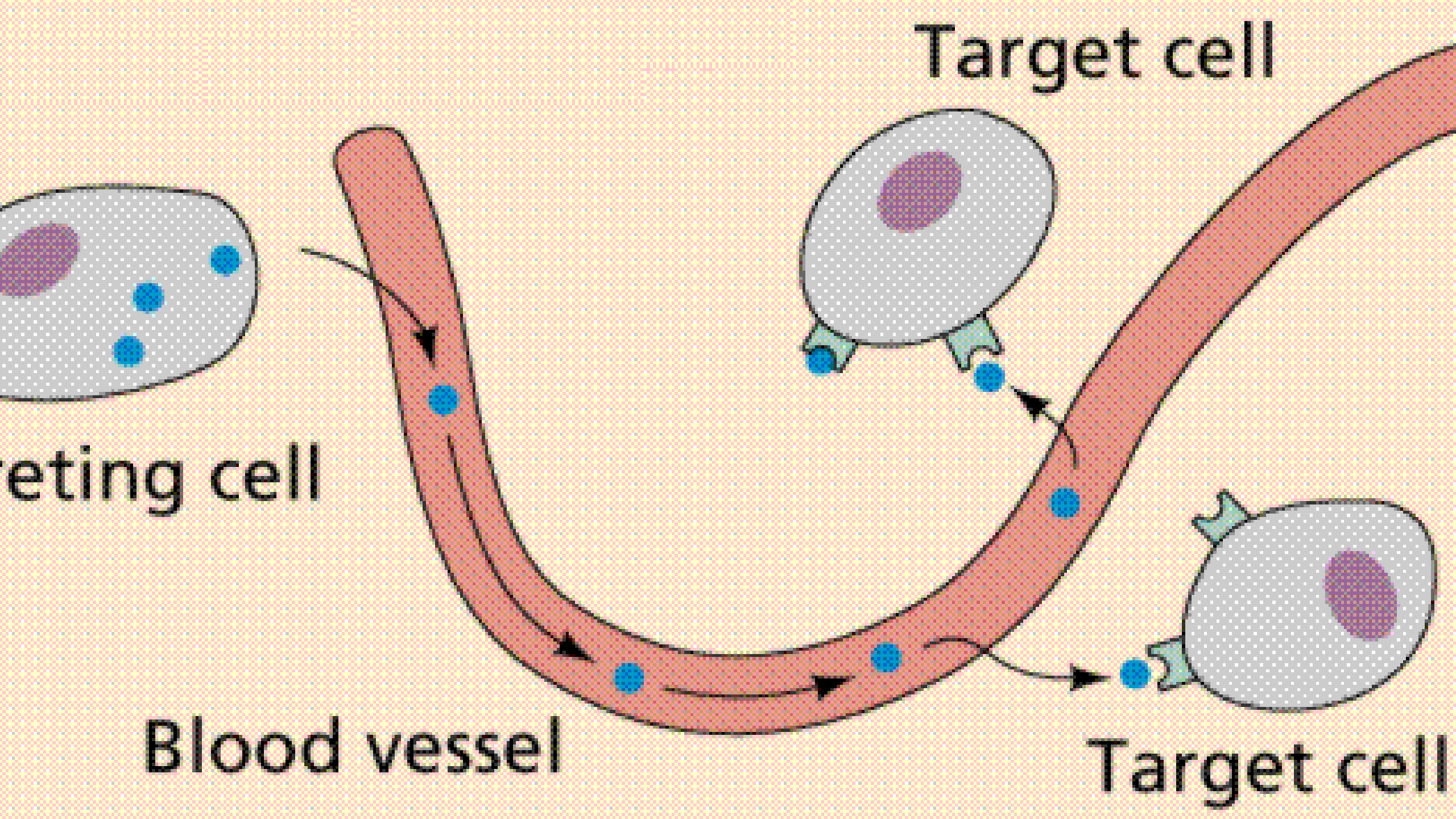
- Hypothyroidism
- Hyperthyroidism
- Autoimmune Thyroid Conditions
  - Graves' Disease
  - Hashimoto's Thyroiditis
- Subclinical Thyroid Conditions
  - Binding Protein Problems
  - Conversion Problems
  - Thyroid Receptor Resistance
  - Wilson's Temperature Syndrome
- Cancer





# Thyroid Receptor Resistance







## Symptoms of Thyroid Receptor Resistance

- Deficiency symptoms of thyroid hormone
- Poor response to hormone administration
- Toxic side-effects of excess in the blood
- Interactions with other hormones



## Causes of Receptor Resistance

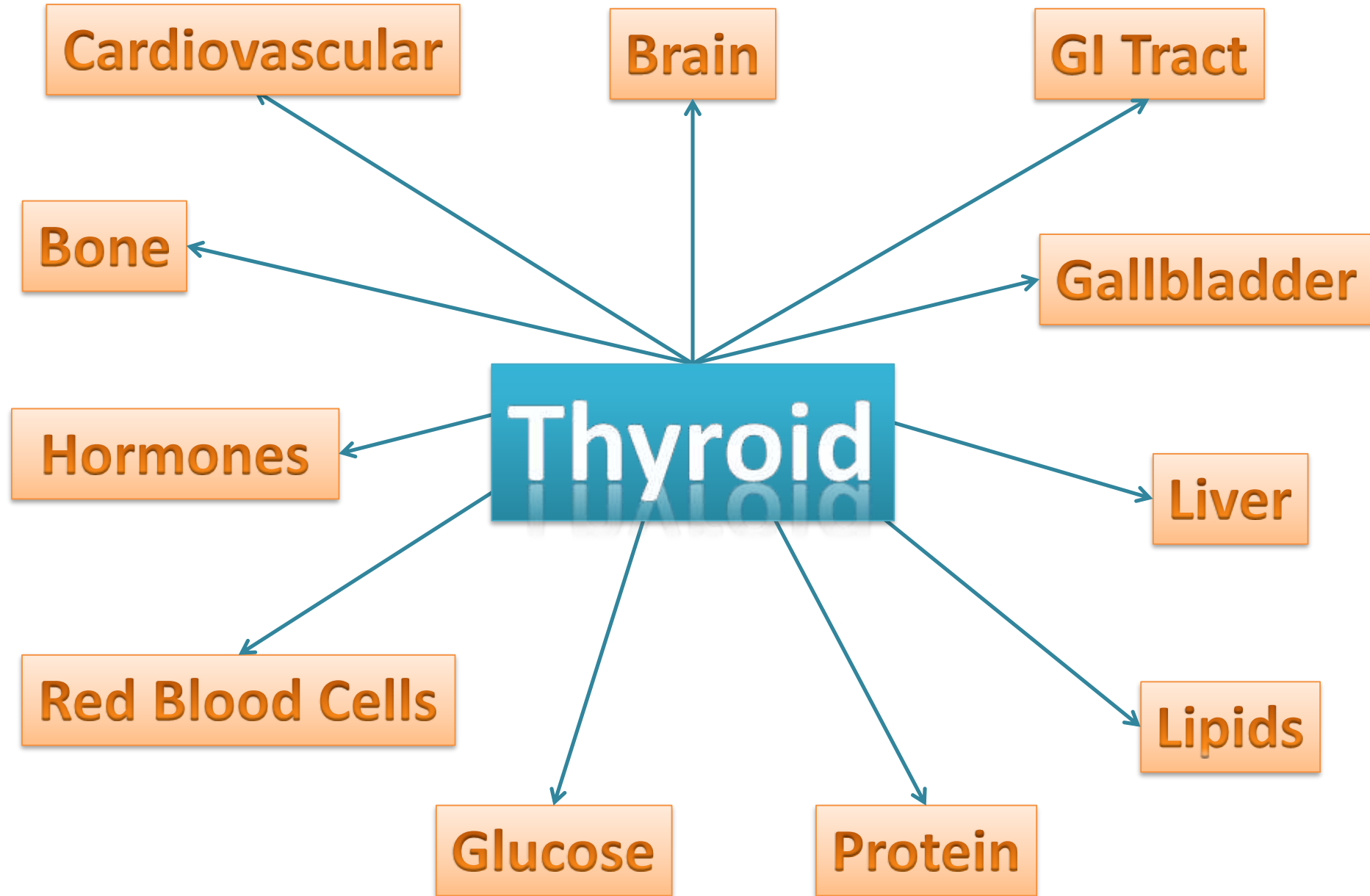
- Inflammation
- Nutrient deficiencies
- Chemical and toxins
- Excess exposure
- Insulin



# Thyroid Resistance Causes

- Cortisol
- Homocysteine
- Inflammation - cytokines
- Vitamin A Deficiency
- Pituitary
- Genetics: *THRB THRA*



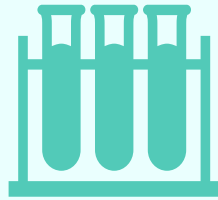




# The **C.A.P.E.** Process



CONNECT



ASSESS



PLAN



EMPOWER



## The Workbook

# The Functional Approach to Balancing the Adrenals & Thyroid



DR. RITAMARIE LOSCALZO



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# CONNECT

- Sincere Care and Interest
- Connect to Values
- Identify Big WHY & Vision
- Map out goals





# Connect



# Listen to Their Story





90%



# ASSESS

- Comprehensive history
- Scorecards
- Physical signs
- Lab Testing
- Genetic Testing



Based upon your health profile for the past 30 days, please select the appropriate number, from 0 - 3' on all questions (0 as least/never/no and 3 as most/always/yes). Check the number you feel best applies, then add the number of checks in each column to create your score.

**Point Scale:**

**0 = Never** or almost never have the experience/effect.

**1 = Mild** experiences/effects

**2 = Moderate** experiences/effects

**3 = Severe/chronic** experiences/effects

For all **yes/no** questions, 0 = no and 3 = yes

ASSESS



**Adrenal Symptom Question**

0 1 2 3

Are there nights when you cannot stay asleep?

Do you experience afternoon headache(s)?

Do you crave salt?

Are you a slow starter in the morning?

Do you experience afternoon fatigue?

Do you experience dizziness when standing up quickly?

Do you experience headache(s) with exertion or stress?

Do you tend to be a "night person"?

Do you have difficulty falling asleep?

Do you tend to be keyed up, and/or have trouble calming down?

Is your blood pressure above 120/80?

Scorecards & Symptoms



# Adrenal Assessment Scorecard

Name				
Based upon your health profile for <b>the past 30 days</b> , please select the appropriate number, from '0 - 3' on all questions (0 as least/never/no and 3 as most/always/yes). Check the number you feel best applies, then add the number of checks in each column to create your score.				
<b>Point Scale:</b> <b>0 = Never</b> or almost never have the experience/effect. <b>1 = Mild</b> experiences/effects <b>2 = Moderate</b> experiences/effects <b>3 = Severe/chronic</b> experiences/effects For all <b>yes/no</b> questions, 0 = no and 3 = yes				
Adrenal Symptom Question	0	1	2	3
Are there nights when you cannot stay asleep?				
Do you experience afternoon headache(s)?				
Do you crave salt?				
Are you a slow starter in the morning?				
Do you experience afternoon fatigue?				
Do you experience dizziness when standing up quickly?				
Do you experience headache(s) with exertion or stress?				
Do you tend to be a "night person"?				
Do you have difficulty falling asleep?				
Do you tend to be keyed up, and/or have trouble calming down?				
Is your blood pressure above 120/80?				
Do you experience headache(s) after exercising?				
Do you feel wired or jittery after drinking coffee?				
Do you clench your jaw?				
Are you calm on the outside, but troubled on the inside?				


# Thyroid Assessment Scorecard


Name				
Based upon your health profile for <b>the past 30 days</b> , please select the appropriate number, from '0 - 3' on all questions (0 as least/never/no and 3 as most/always/yes). Check the number you feel best applies, then add the number of checks in each column to create your score.				
<b>Point Scale:</b> <b>0 = Never</b> or almost never have the experience/effect. <b>1 = Mild</b> experiences/effects <b>2 = Moderate</b> experiences/effects <b>3 = Severe/chronic</b> experiences/effects For all <b>yes/no</b> questions, 0 = no and 3 = yes				
<b>Low Thyroid (Hypo) Symptom Question</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>
Do you have difficulty losing weight?				
Are you mentally sluggish or notice a reduced initiative?				
Are you easily fatigued and/or sleepy during the day?				
Are you sensitive to cold and/or have cold hands and feet?				
Do you have chronic constipation?				
Have you experienced excessive hair loss and/or coarse hair?				
Do you have morning headaches that wear off during the day?				
Do you have a loss of lateral eyebrow hair (about 1/3 of the brow line)?				
Do you experience seasonal sadness?				
Are you tired, sluggish?				
Do you require excessive amounts of sleep to function properly?				
Do you struggle with increase in weight gain even with low-calorie diet?				
Do you ever experience depression, lack of motivation?				





## Score Interpretation


Use each section's percentage score to determine which hormones/glands need to be addressed more urgently than others.

 **0-10%** - Overall good balance. Sound nutrition and healthy habits will maintain good balance.

 **11-20%** - In need of a tune up to restore balance before serious illness sets in. Diet and lifestyle improvements should shift to normal.

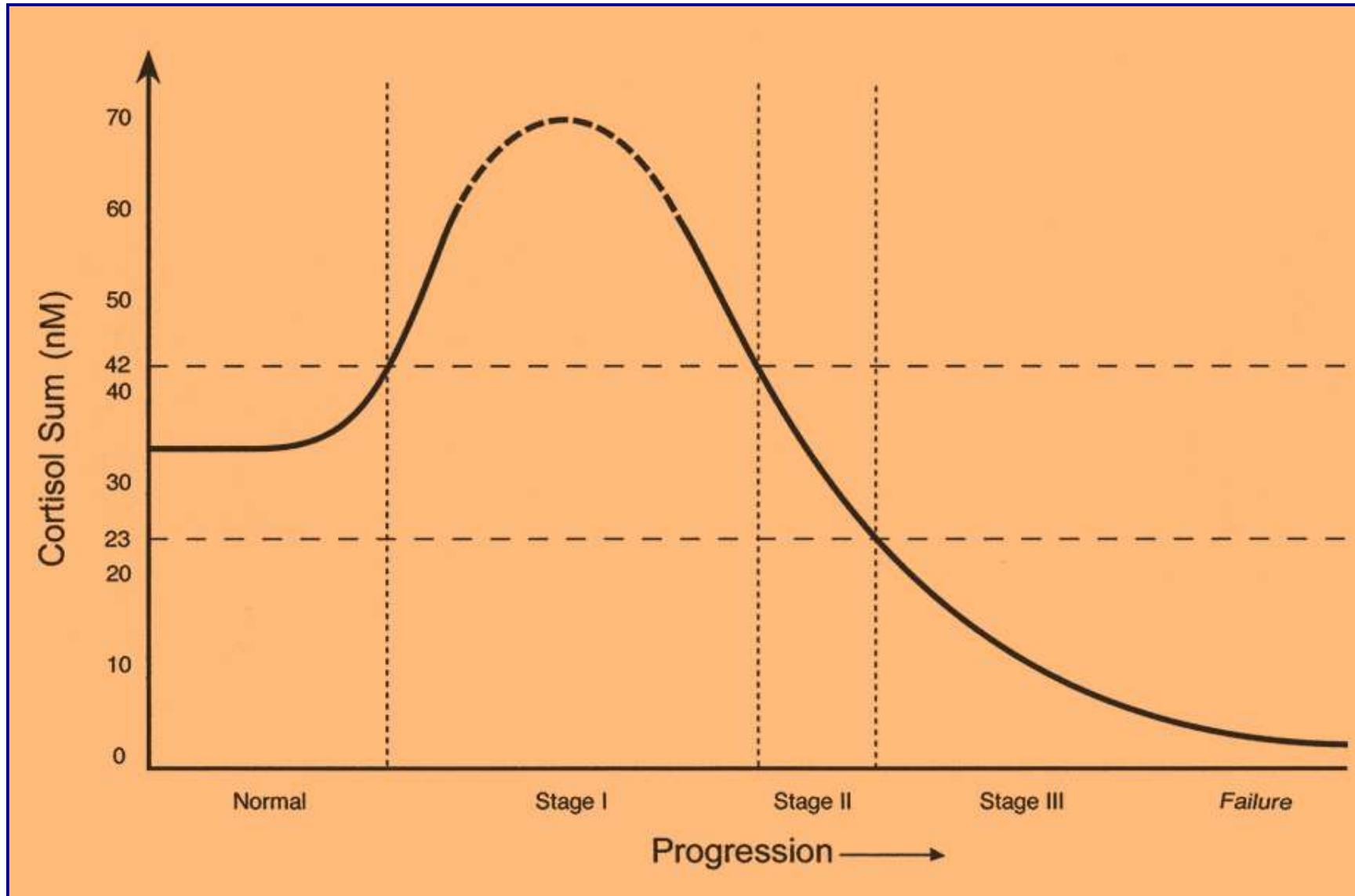
 **21-35%** - Things are out of balance and need attention.

 **36-50%** - Very compromised and likely to significantly affect your state of health, well-being and energy level.

 **51-100%** - Severely compromised and requires immediate attention.



# Progression of Stages in Adrenal Dysfunction



# Adrenal Fatigue – Stage 1

## Tired and Wired

- ✓ Sympathetic Dominant State
- ✓ Slump in Mid-Afternoon
- ✓ Wired at Bedtime



# Adrenal Fatigue – Stage 2

## Reserves Becoming Depleted

- ✓ Sympathetic Dominant State
- ✓ Low Reserves
- ✓ Immune System Compromised





# Adrenal Fatigue – Stage 3 Exhaustion

- ✓ Sympathetic Dominant State
- ✓ Suffering From Negative Effects of Chronic Elevated Cortisol
- ✓ Low Libido
- ✓ Sex Hormone Imbalances
- ✓ Accelerated Aging
- ✓ Poor Memory



# Adrenal vs. Thyroid Major Symptoms

Sign or Symptom	Hypothyroid Tendency	Hypoadrenal Tendency
Body temperature	Low and consistent	Low and fluctuates
Energy pattern	Generally sluggish	“Wired and tired”
Body type	Difficulty losing fat	Difficulty gaining muscle
Blood pressure	Normal to high	Low to normal
Total cholesterol	High	Low
Facial color	Reddish	Pale
Sweating	Scanty or none	Profuse
Bowels	Sluggish / constipated	Irritable or hyper functioning

# Symptoms of Low Thyroid

- ✓ Low energy
- ✓ Sluggish digestion
- ✓ Weight gain or inability to lose weight
- ✓ Dry skin, hair loss, brittle nails
- ✓ Low blood pressure
- ✓ Thinning hair
- ✓ Cold hands and feet
- ✓ Sensitivity to cold
- ✓ Low body temperature or always feeling chilled



- ✓ Constipation
- ✓ Frequent infections
- ✓ Hoarse voice
- ✓ Ringing in the ears
- ✓ Puffy eyes
- ✓ Joint aches
- ✓ Loss of libido
- ✓ Headaches, dizziness
- ✓ Insomnia
- ✓ Depression and/or mental dullness
- ✓ Elevated cholesterol



# Symptoms Of Excess Thyroid

- ✓ Feeling hot
- ✓ Increased appetite
- ✓ Weight loss without trying
- ✓ Fatigue at the end of the day
- ✓ Difficulty falling asleep
- ✓ Trembling of the hands
- ✓ A hard or irregular heartbeat (palpitations)



- ✓ Irritability
- ✓ Increased bowel movements
- ✓ Light or absent menstrual periods
- ✓ Shortness of breath
- ✓ Chest pain
- ✓ Hair loss
- ✓ Muscle weakness

# The Most Common Thyroid and Adrenal Related Symptoms



fatigue



brain fog



blood sugar swings



depression



anxiety



focus issues



mood swings



dry skin



memory loss



sleep disturbance



depressed immune system function



constipation



hair loss



and more...

# ASSESS



## Physical Signs



## Thyroid Assessment - Temperature Monitoring


Take temperature under tongue using either a digital or mercury-free metal thermometer. The non-digital ones tend to be a little bit more accurate but are harder to find. For daily average, exclude the first morning temperature. Take temperature upon awakening and again 3 hours later for a total of 3 times throughout the day, as close as possible to 3 hours apart.

<b>Name:</b>			
<b>Day 1</b>		<b>Time</b>	<b>Temperature</b>
	Awakening		
	Time 1 (3 hours later)		
	Time 2 (3 hours later)		
	Time 3 (3 hours later)		
<b>Average Daily Temperature</b> <b>(Times 1-3, excluding temperature upon awakening)</b>			
<b>Day 2</b>		<b>Time</b>	<b>Temperature</b>
	Awakening		
	Time 1 (3 hours later)		
	Time 2 (3 hours later)		
	Time 3 (3 hours later)		
<b>Average Daily Temperature</b> <b>(Times 1-3, excluding temperature upon awakening)</b>			
<b>Day 3</b>		<b>Time</b>	<b>Temperature</b>

## Temperature Tracking Chart

<b>Name</b>				<b>Age</b>	
<b>Date</b>			<b>*Date of LMP</b>		
	<b>Arising Temp.</b>	<b>3 Hours Temp.</b>	<b>6 Hours Temp.</b>	<b>9 Hours Temp.</b>	
<b>Under Arm Reading</b>					
<b>Mouth Reading</b>					
	<b>Meal 1</b>	<b>Meal 2</b>	<b>Meal 3</b>	<b>Snacks (if any)</b>	
<b>Meal Time</b>					
<b>Foods</b>					
<b>Exercise / Activity Time(s)</b>					

## Adrenal Assessment: Physical Symptoms

<b>Name:</b> <input style="width: 150px;" type="text"/>		<b>Date:</b> <input style="width: 100px;" type="text"/>	
With the help of a friend or family member, perform the blood pressure and adrenal stress eye examination procedures.			
<b>Blood Pressure</b>			
Seated, legs uncrossed		If difference between left and right is > 10, top or bottom, there may be a blockage.	
Left arm:			
Right arm:			
<b>Lying, face up</b>			
<b>Standing</b>		Systolic blood pressure (top number) should increase by 10 when you stand up. If it does not or if it decreases, it's suggestive of adrenal stress. The more time it takes to restore the blood pressure to what it should be is suggestive of the degree of adrenal distress. Measure once a minute for up to 5 minutes. Stop when pressure increases by 10 points.	
Immediately upon arising:			
1m:			
2m:			
3m:			
4m:			
5m:			
<b>Adrenal Stress Eye Examination</b>			
		<b>Pupil Constriction:</b> In a darkened room, shine a small penlight in one eye. Pupil should constrict. Continue to shine light and count how many seconds pupil stays constricted. Stop at 20 seconds or upon dilation of pupil.	
If a pupil does not contract when a bright light shines on to it, this indicates dulled nerve reflexes, weak adrenal glands, or an overstimulated sympathetic nervous system, often from fear as a hidden, chronic condition. Adrenal weakness is indicated if pupil does not remain constricted for 10 seconds or longer. Adrenal stress is indicated if the pupils begin to expand and contract repeatedly when exposed to bright light for 30 seconds.			
<b>Pupil Constriction</b> - seconds held:			



## Adrenal Assessment

Circle the choice under each score (0, 1, 2, 3) that best describes your test results and physical symptoms. Then add your column scores to calculate your overall adrenal health score.

Adrenal Tests and Symptoms	0	1	2	3
1. Blood pressure upon standing	Incr: 10	Same	Decr <= 10	Decr >10
2. Pupil constriction with bright light	20 sec	10-20 sec	<10 Sec	<5 sec
3. Rib margin tenderness	Absent	Mild	Moderate	Severe
4. Brown discoloration below eyelids	Absent	Mild	Moderate	Severe
5. Black discoloration below eyelids	Absent	Mild	Moderate	Severe
6. Dark gray or reddish back of tongue	Absent	Mild	Moderate	Severe
7. Ulcerations or canker sores	Absent	Mild	Moderate	Severe
8. Bad breath	Absent	Mild	Moderate	Severe
9. Rough, red, flaky cuticles	Absent	Mild	Moderate	Severe
10. Tongue – inflammation around perimeter	Absent			Present
11. Tongue – crack down the middle	Absent			Present
<b>Total Adrenal (total possible is 33)</b>				
<b>% Adrenal Score ("<u>your score</u>"/33*100)</b>				

# Thyroid Physical Assessment

Body Sign	What to Look For
Temperature - Oral	first AM - below 98
	plot throughout the day
Achilles reflex	sluggish
Between 2nd and 3rd ribs near sternum on right	tenderness
Calf Bone	edema
Rib Borders	tenderness
Hair	dry, thin
Nails	cracked
Skin	dry, flaky, hives, lesions or roughness on the shins, and blister-like bumps on the face
Neck	mass
Blood Pressure	low
Pulse	Low
face	puffiness and eyebrow loss
Eyes	protrusion, eyelid retraction and other potentially thyroid-related signs
Movement	Tremor, shakiness
Speech	Shakiness, slowness, hoarseness of voice
Hands and feet	Swelling

# Low Thyroid Signs

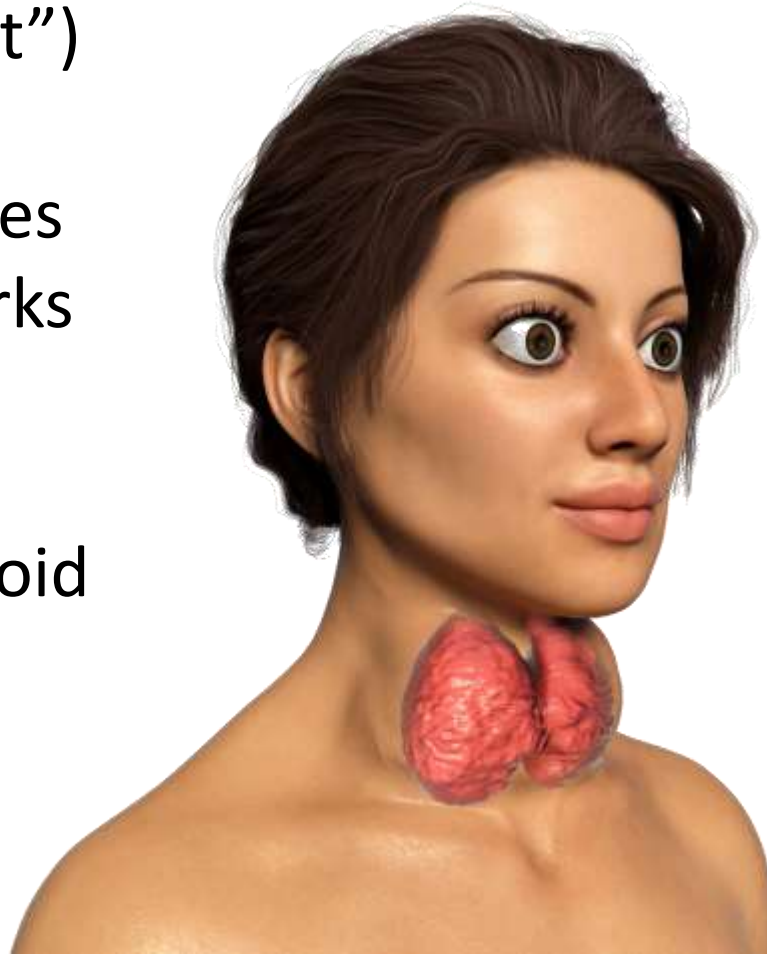
- ✓ “Goose flesh” at the backs of arms or thighs
- ✓ Scalloped edges and teeth marks on tongue
- ✓ Cold hands and feet
- ✓ Non-pitting edema (Myxedema)





# Hyper Thyroid Signs

- ✓ Severe proptosis, periorbital edema, and eyelid retraction (Eyes “bug-out”)
- ✓ Scalloped edges and teeth marks on tongue
- ✓ Enlarged Thyroid



# ASSESS



# Lab Testing



# Home and Office Testing





# Home and Office Assessments Related to Hormone Balance

- Nutrient Assessments
  - Minerals
  - Vitamin C
- pH Balance
- Blood Sugar
- Ketones
- HRV
- Blood Pressure
- Temperature



# Functional Lab Testing

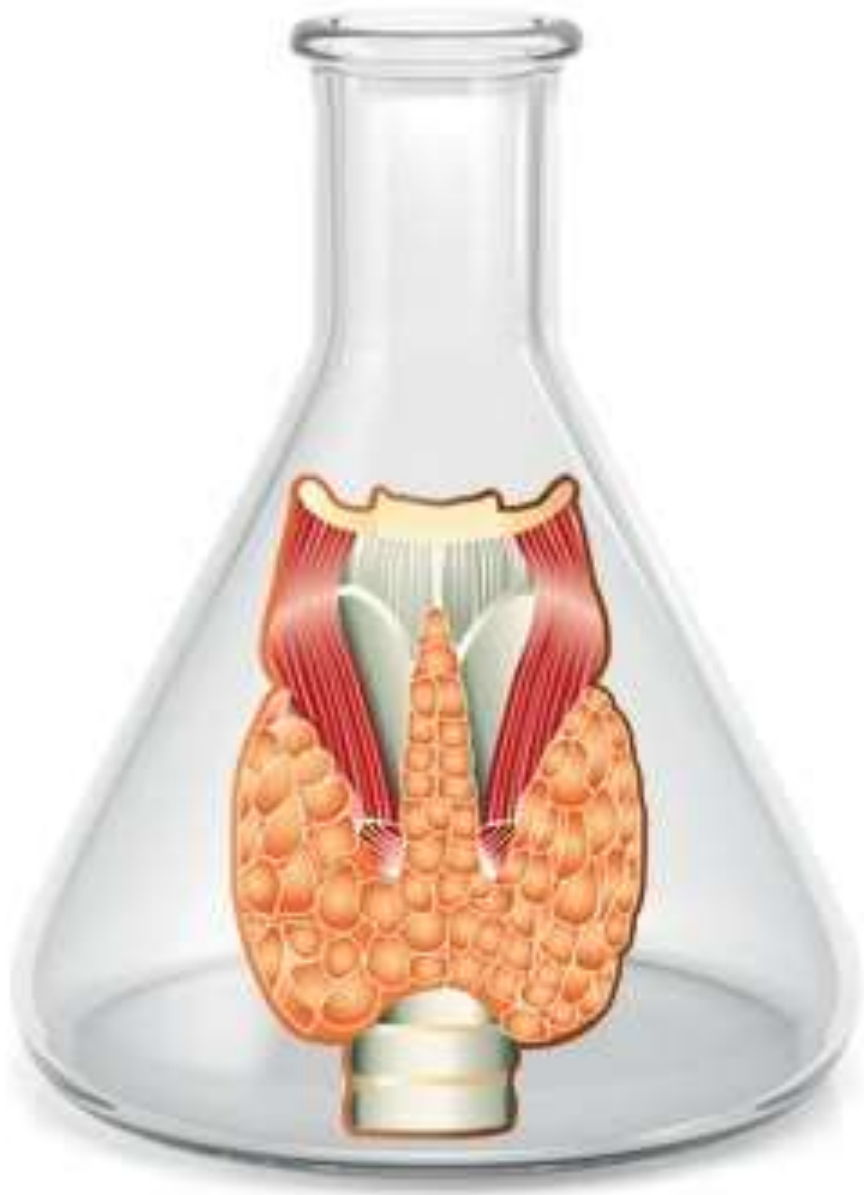
- Steroid Hormone Panels - DUTCH and 24-hour urine
- Salivary Cortisol Testing
- Blood Chemistry



# Thyroid Assessment







# Complete Thyroid Lab Assessment

- TSH
- Total T4 (thyroxine)
- Total T3 (triiodothyronine)
- Free T4 (1-1.4), Free T3
- Thyroid Antibodies – all 0 or close to it
  - Thyroid Peroxidase
  - Antithyroglobulin
  - Thyroid-Stimulating Immunoglobulin
- Thyroid-Binding Globulin
- Reverse T3 (ratio T3:rT3 at least 20)
- Vitamin D
- Lipid Panel
- Homocysteine
- Vitamin A
- Hs-CRP
- Fasting Insulin

# Complete Thyroid Panel

NAME of TEST	US Units	Lab Range	Ideal Range
TSH: Thyroid-stimulating hormone	μIU/mL	0.3-5.7	1.5-3.0
Total T4 or TT4 (total thyroxine)	μg/mL	4.5-12.5	6.0-12.0
Total T3 or TT3 (total triiodothyronine)	ng/dL	100.0-180.0	100.0-180.0
Free T4 or FT4 (thyroxine, free)	ng/dL	0.7-2.0	1.0-1.5
Free T3 or FT3 (triiodothyronine, free)	pg/dL	2.0-4.4	3.0-4.5
Thyroglobulin antibody screen (or antithyroglobulin)	IU/mL	0.0-1.0	0.0-1.0
Thyroid peroxidase (TPO) antibodies	IU/mL	0.0-34.0	0.0-2.0
Thyroxine-binding globulin (TBG)	μg/mL	18.0-27.0	18.0-27.0
Reverse T3 or RT3 (reverse triiodothyronine)	ng/dL	90.0-350.0	Ratio 1:20 to FT3 90.0-350.0

# Dr. Bruce Rind's Thyroid Scale

Relative Scale																				
-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Low										Optimal										High

Thyroid Scale Diagram																																										
Labs	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10																					
FT4	0.10	0.17	0.18	0.25	0.26	0.33	0.34	0.41	0.42	0.49	0.50	0.65	0.66	0.81	0.82	0.97	0.98	1.13	1.14	1.29	1.30	1.80	1.81	2.20	2.21	2.60	2.61	3.00	3.01	4.00	4.01	5.00	5.01	6.00	6.01	8.00	8.01	10.0	10.01	15.00	15.01	99.0
FT3	0.30	0.34	0.35	0.39	0.40	0.49	0.50	0.59	0.60	0.68	0.70	0.79	0.80	0.89	0.90	0.99	1.00	1.09	1.10	1.19	1.20	1.30	1.31	1.40	1.41	1.50	1.51	1.60	1.61	1.70	1.71	1.80	1.81	1.90	1.91	2.00	2.01	2.10	2.11	2.20	2.21	4.00
FT3	140	157	158	175	176	193	194	211	212	229	230	247	248	265	266	283	284	301	302	319	320	337	338	355	356	373	374	384	385	402	403	420	421	438	439	456	457	474	475	492	493	600

## Thyroid Scale Diagram - Healthy

[illegible]

### Thyroid-Scale-Diagram-Hypothyroid

[illegible]

החלטת הוועדה: **לדחות את הצעת החוק.**

Labs	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
TSH							0.80														
FT4															1.65						

### Thyroid Scale Diagram - Adrenal Fatigue

[illegible]

### Thyroid Scale Diagram - Adrenal Fatigue w/Support

[illegible]

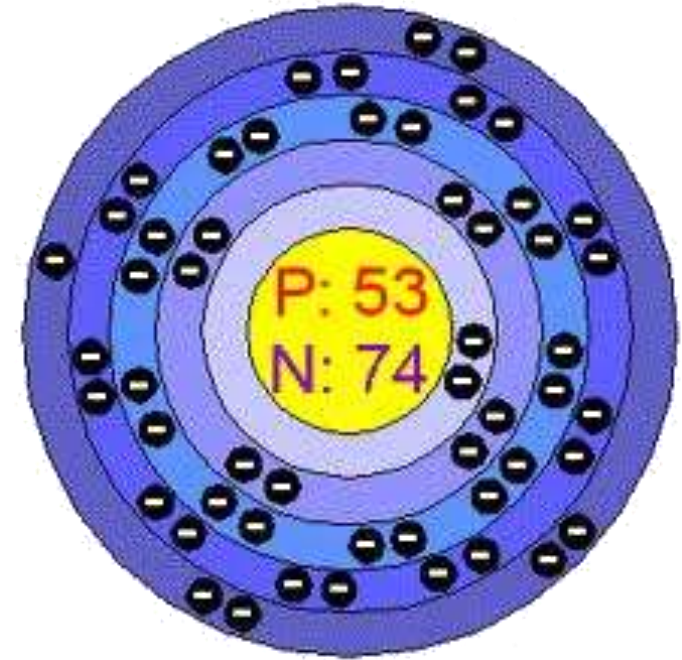


# The Iodine Dilemma

- ✓ **Dr. Datis Kharrazian, Dr, Alan Christensen** say  
Avoid iodine in Hashimoto's
- ✓ **Dr. David Brownstein:** Lots of iodine

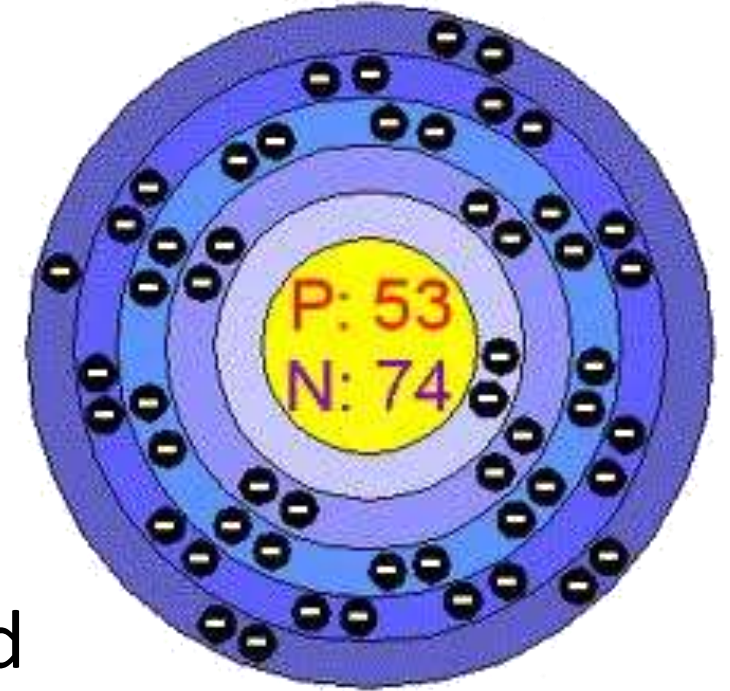
## What's TRUE?

- ✓ We **NEED** Iodine to make Thyroid Hormone
- ✓ **Iodine Sodium Transporter:** (NIS) Concentrates iodine from blood into thyroid
- ✓ Deficiencies and epidemic of low stomach acid
- ✓ Land is deficient; sea vegetables not popular
- ✓ According to Brownstein, Japanese consume 13g/d
- ✓ Testing: Iodine Load vs. Iodine Patch



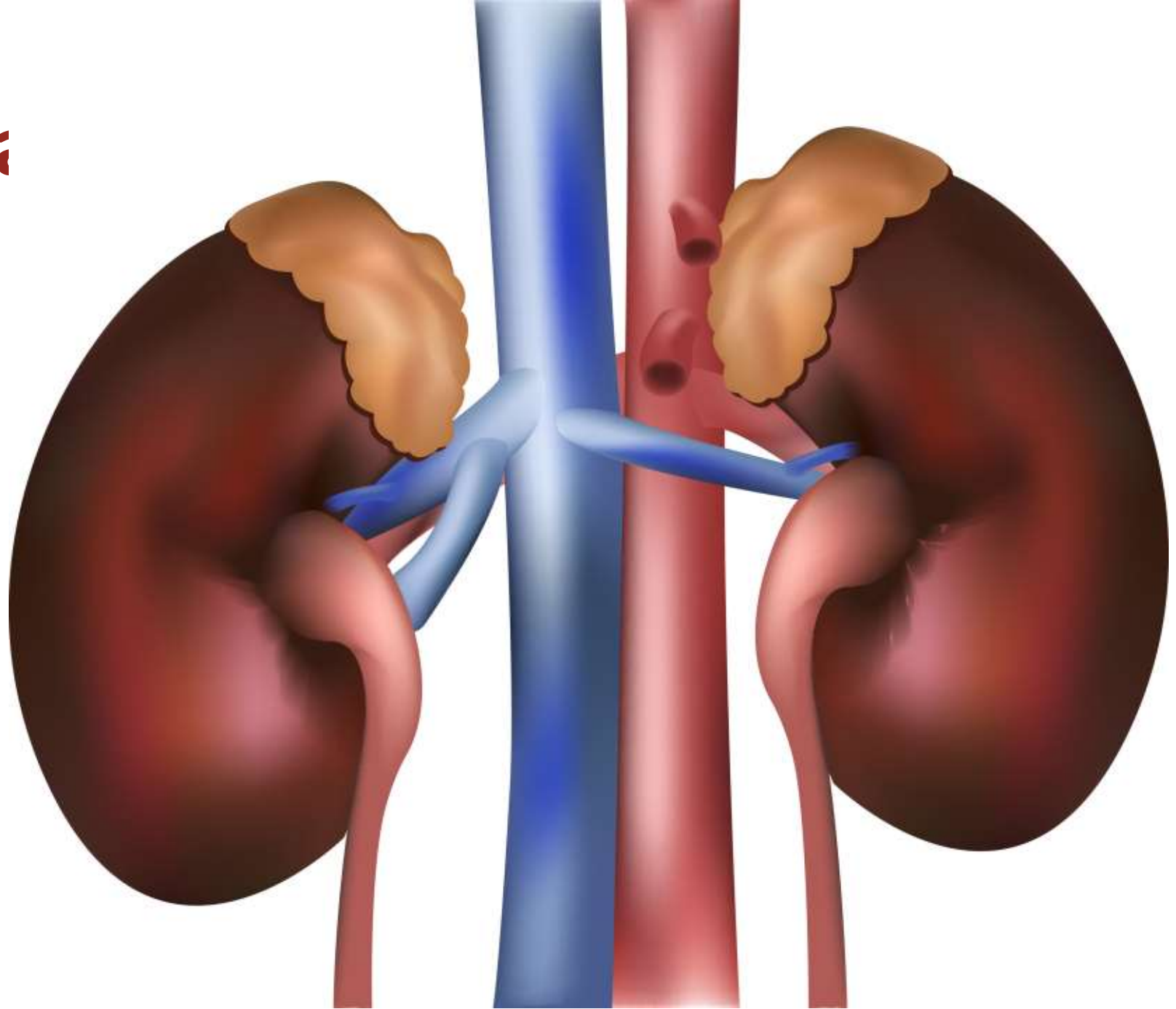
# How To Do an Iodine Load Test

- ✓ Stop ingesting iodine and iodine containing foods 24 to 48 hours before the test.
- ✓ Discard first morning urine.
- ✓ Take 4 tablets of Iodoral® (50mg).
- ✓ Start collection of urine following instructions from the lab.
- ✓ The first void on the following morning should be included in the urine collection.
- ✓ If total urine volume is above 3 liters, follow instructions supplied with the kit.



# Testing Adrenal Function

- ✓ Blood
- ✓ Saliva
- ✓ Urine



# dutch

Dried Urine Test for Comprehensive Hormones



**Now A Single Test  
Gives You the  
Full Picture!**

**Simply. Better. Testing.**





# Hormone Testing Summary

## Key (how to read the results):



## Sex Hormones

See Pages 2 and 3 for a thorough breakdown of sex hormone metabolites

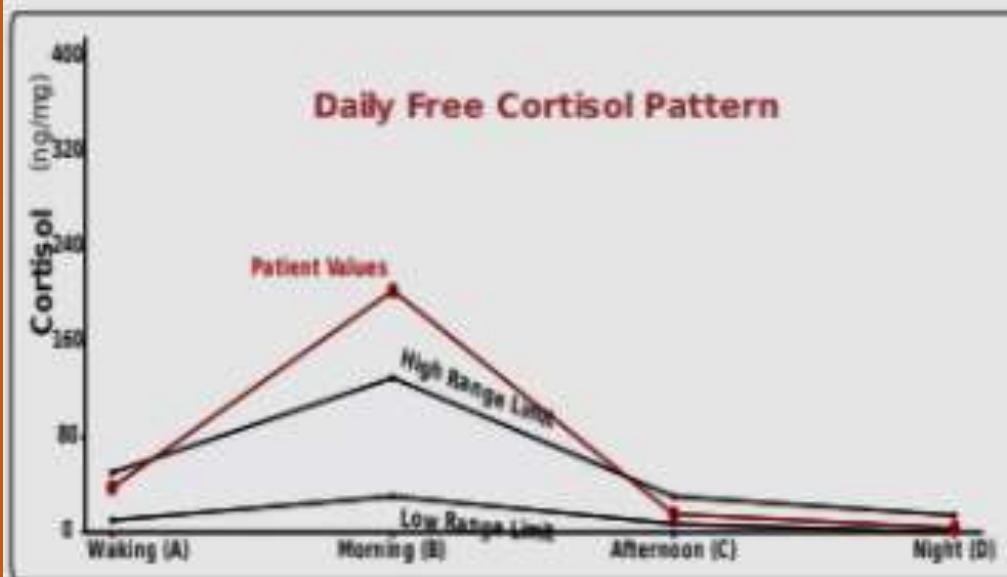


Progesterone Serum Equivalent is a calculated value based on urine pregnanediol.



## Adrenal Hormones

See pages 4 and 5 for a more complete breakdown of adrenal hormones



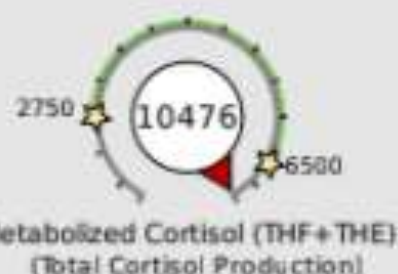
Free cortisol best reflects tissue levels. Metabolized cortisol best reflects total cortisol production.

## Total DHEA Production

Age	Range
20-39	1300-3000
40-60	750-2000
>60	500-1200



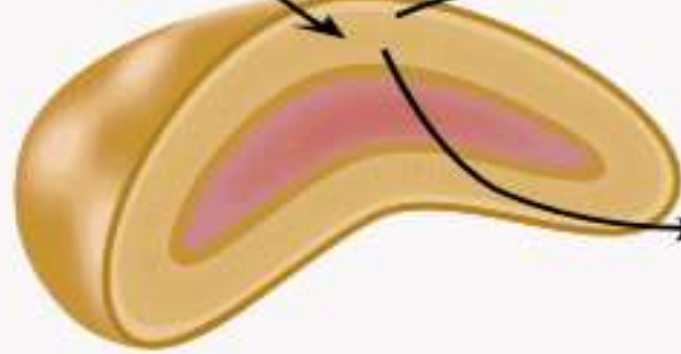
cortisol  
metabolism



The following videos (which can also be found on the website under the listed names along with others) may aid your understanding:

[DUTCH Complete Overview](#) [Estrogen Tutorial](#) [Female Androgen Tutorial](#) [Cortisol Tutorial](#)

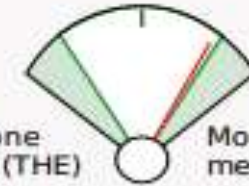
**PLEASE BE SURE TO READ BELOW FOR ANY SPECIFIC LAB COMMENTS. More detailed comments can be found on page 8.**



**Cortisol**

**Cortisol Metabolism**

Metabolized Cortisol (THF+THE)  
(Total Cortisol Production)

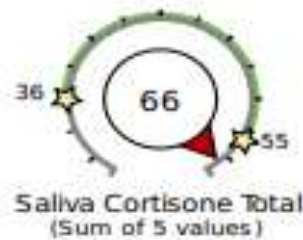
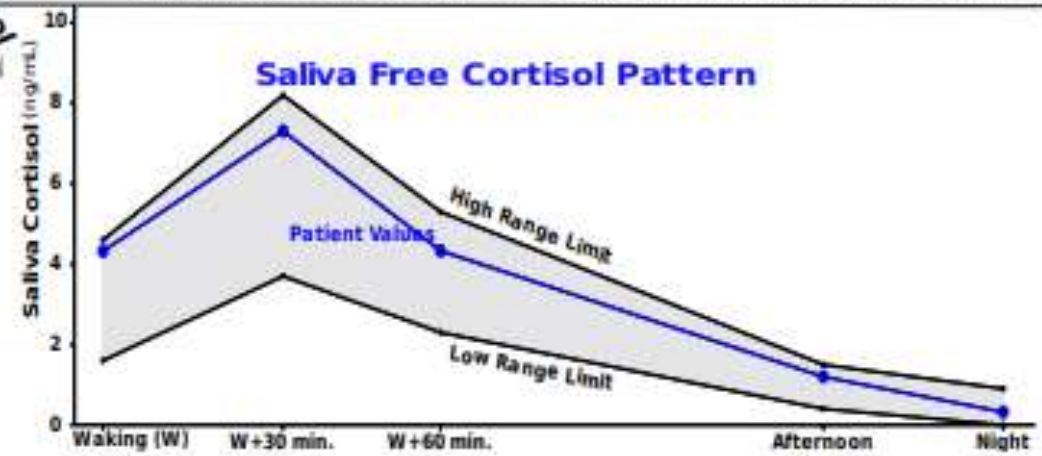
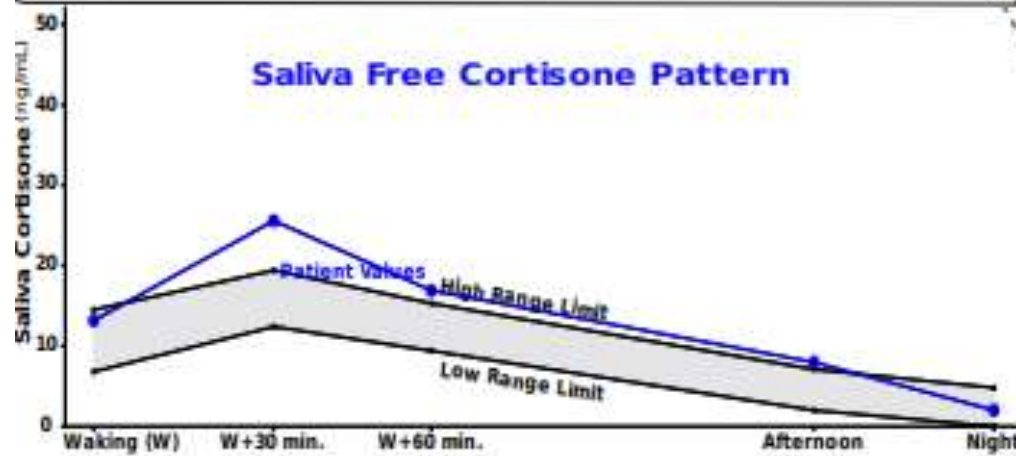


More cortisone  
metabolites (THE)

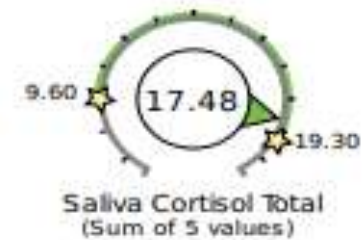
More cortisol  
metabolites (THF)

NOTE: This 11b-HSD index measures the balance of cortisol and cortisone metabolites which best reflects the overall balance of active cortisol and inactive cortisone systemically

**Circulating Free Cortisol**

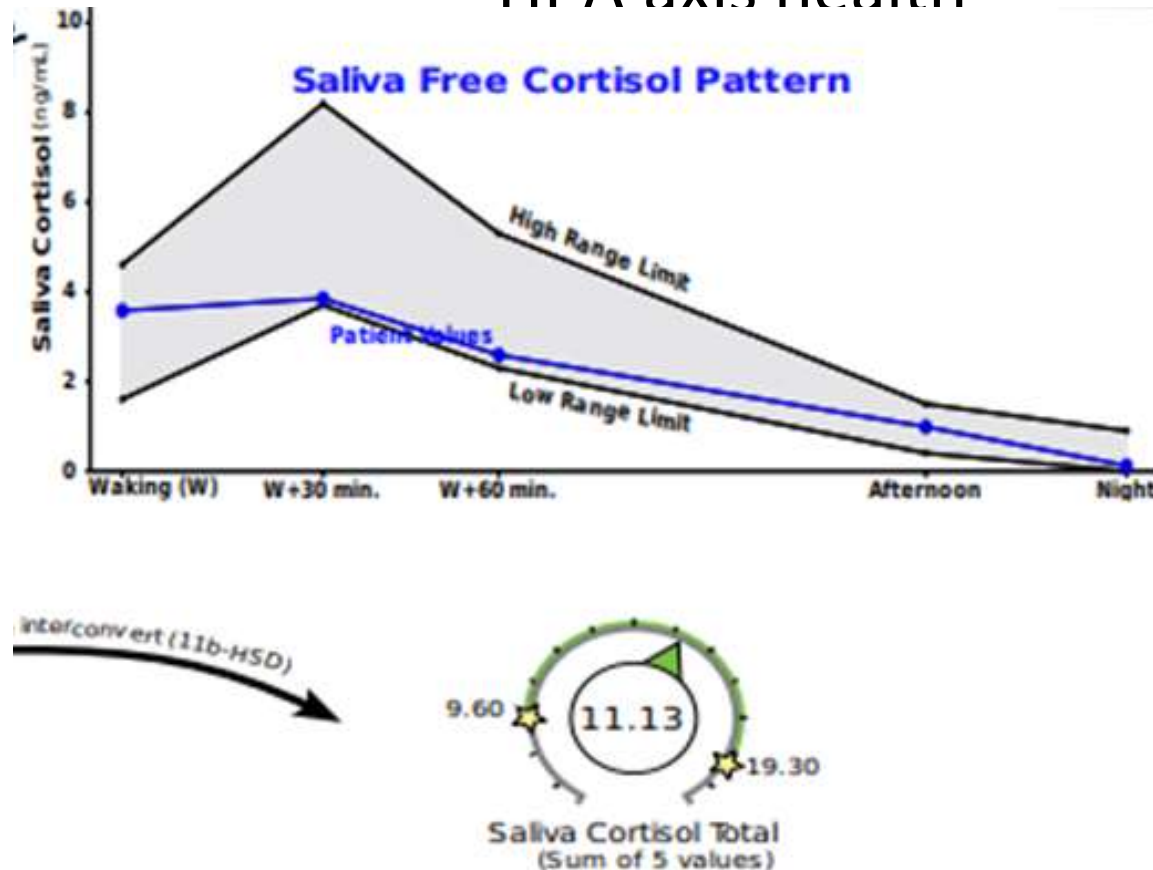


**Cortisol and Cortisone interconvert (11b-HSD)**



# Cortisol Awakening Response (CAR) and HPA Axis Health

The magnitude of the morning cortisol increase is correlated to HPA axis health





# Hormone Testing Summary

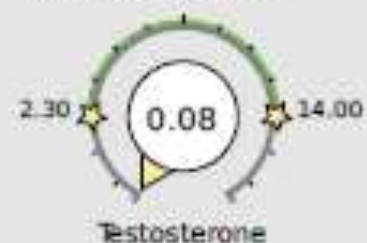
## Key (how to read the results):



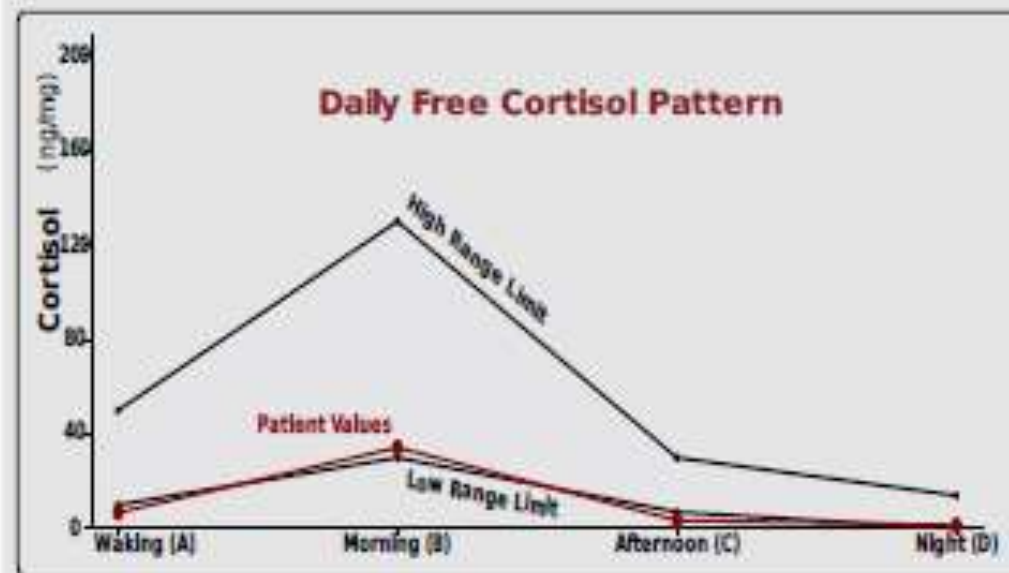
## Sex Hormones

 See Pages 2 and 3 for a thorough breakdown of sex hormone metabolites

Progesterone Serum Equivalent is a calculated value based on urine pregnanediol.



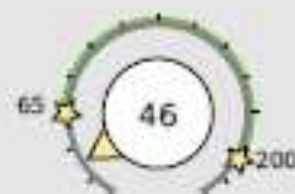
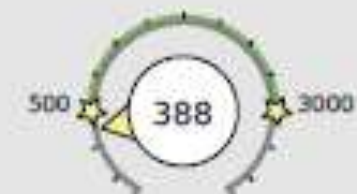
## Adrenal Hormones

 See pages 4 and 5 for a more complete breakdown of adrenal hormones

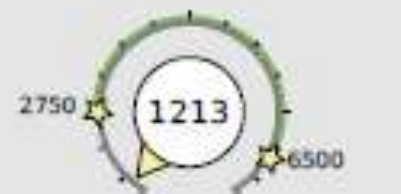
Free cortisol best reflects tissue levels. Metabolized cortisol best reflects total cortisol production.

## Total DHEA Production

Age	Range
20-39	1300-3000
40-60	750-2000
>60	500-1200



cortisol  
metabolism



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# Hormone Testing Summary

## Key (how to read the results):



## Sex Hormones

See Pages 2 and 3 for a thorough breakdown of sex hormone metabolites

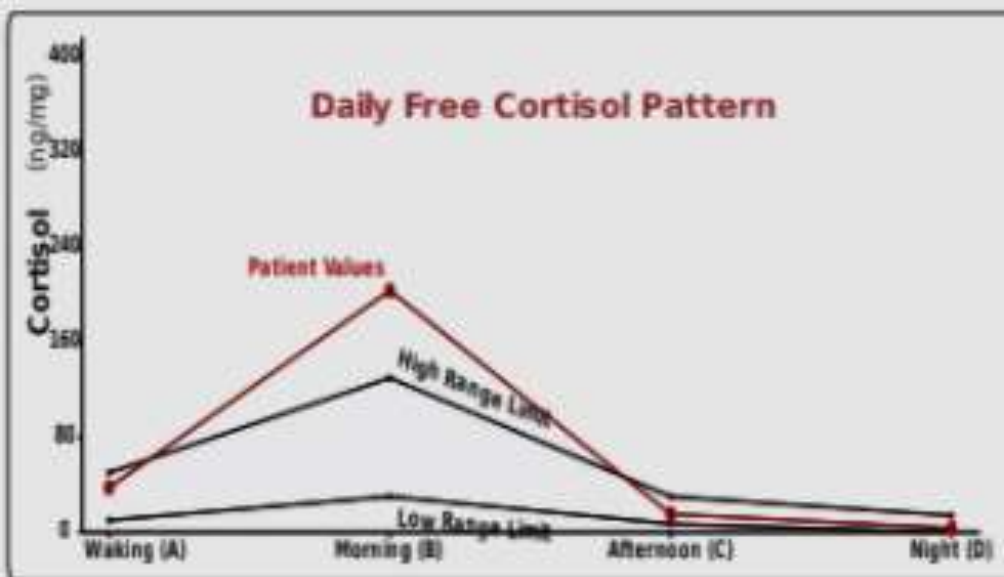


Progesterone Serum Equivalent is a calculated value based on urine pregnanediol.



## Adrenal Hormones

See pages 4 and 5 for a more complete breakdown of adrenal hormones



Free cortisol best reflects tissue levels. Metabolized cortisol best reflects total cortisol production.

## Total DHEA Production

Age	Range
20-39	1300-3000
40-60	750-2000
>60	500-1200



Total DHEA Production  
(DHEAS + Etiocholanolone + Androsterone)



24hr Free Cortisol  
(A+B+C+D)

cortisol  
metabolism



Metabolized Cortisol (THF+THE)  
(Total Cortisol Production)

The following videos (which can also be found on the website under the listed names along with others) may aid your understanding:

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**PLEASE BE SURE TO READ BELOW FOR ANY SPECIFIC LAB COMMENTS. More detailed comments can be found on page 8.**

# Cortisol Awakening Response (CAR)

- ✓ Part of the DUTCH Plus or can be ordered separately
- ✓ Evaluates the Cortisol pattern in first hour of the day
- ✓ Magnitude of CAR is correlated to HPA Axis Health
- ✓ Measured as the % difference between the waking and 30-minute (peak) cortisol
- ✓ Then the % difference between the waking and 60-minute (recovery) cortisol.
- ✓ Can detect HPA Axis imbalance even when the free cortisol is normal
- ✓ Up and down pattern reflects natural response to stress - waking up considered a mini “stress test”

# Cortisol Awakening Response

- Salivary Cortisol (5)
- Salivary Cortisone (5)
- Best to collect on a relatively “normal” day.
- If sleep is significantly disturbed, wait for another day.



Instructional video: [www.dutchtest.com/video/car-collection-instructions](http://www.dutchtest.com/video/car-collection-instructions)



# Collection Rules

- ✓ Avoid caffeine and alcohol on collection day and the night before.
- ✓ Avoid exercise on collection day.
- ✓ Do not brush teeth until after collections #3 and #5.
- ✓ Do not floss the day of collection or until ALL samples are collected.

# Collection Timing

1. Upon awakening – within 5 minutes at most
2. 30 minutes after awakening
3. 60 minutes after awakening
4. 4-5 pm
5. 10pm to midnight
6. If awakened overnight - immediately

*<https://dutchtest.com/wp-content/uploads/2020/03/DUTCH-CAR-Instructions-FINAL-PRINT-REF033120.pdf>*

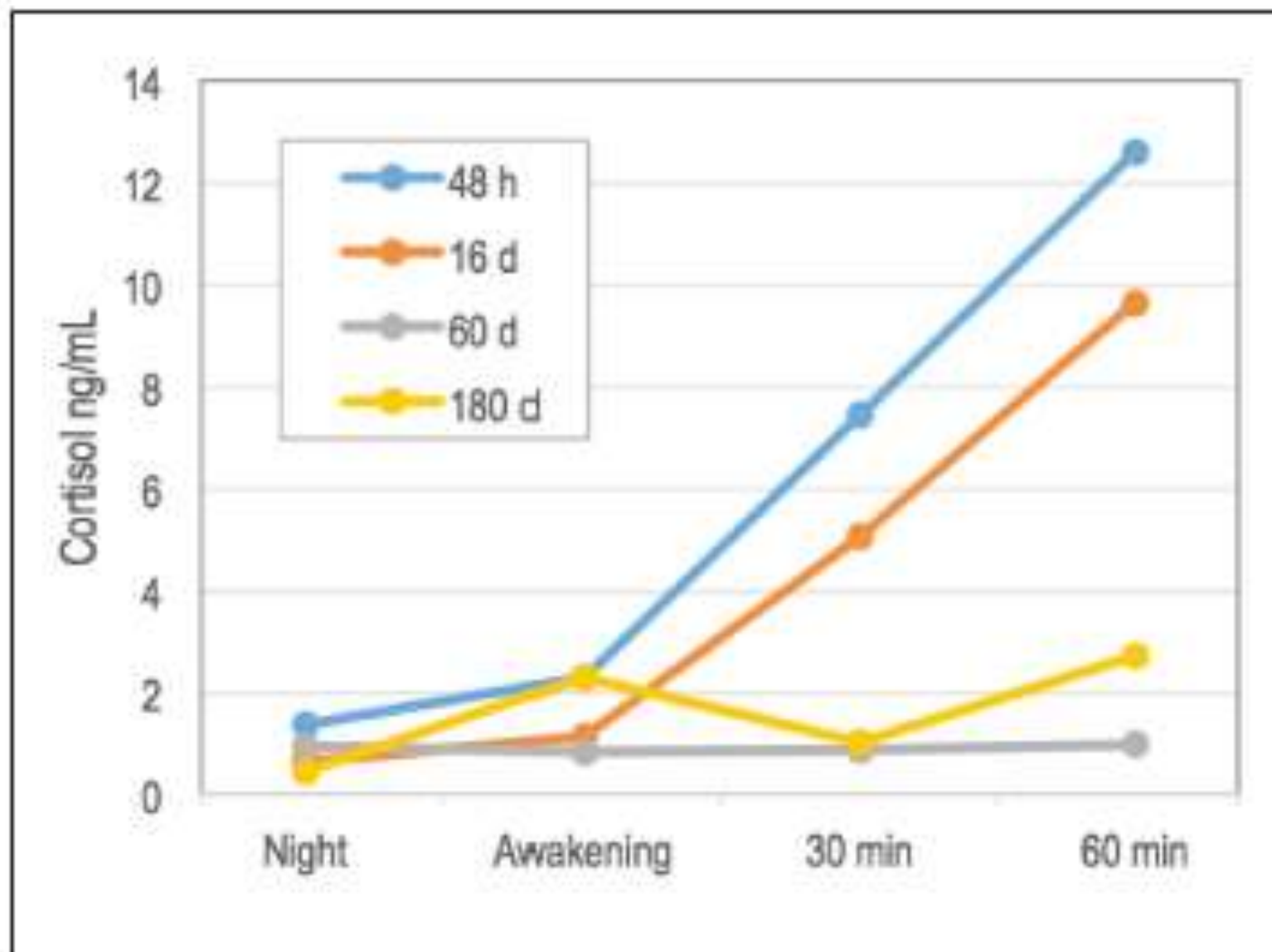
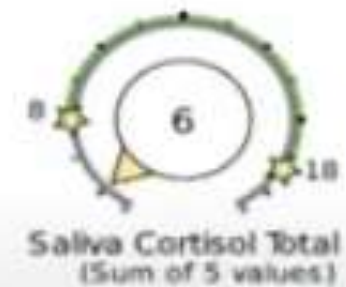
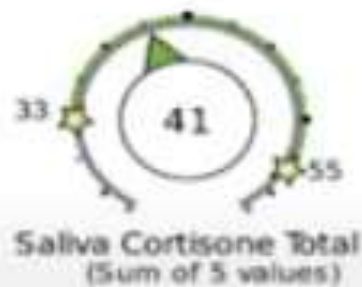
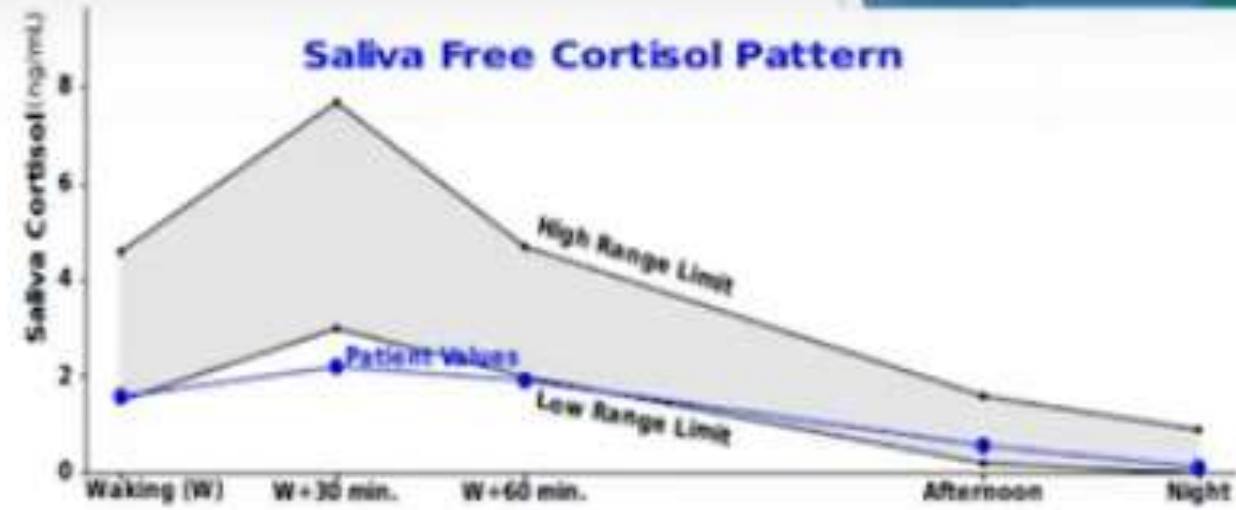
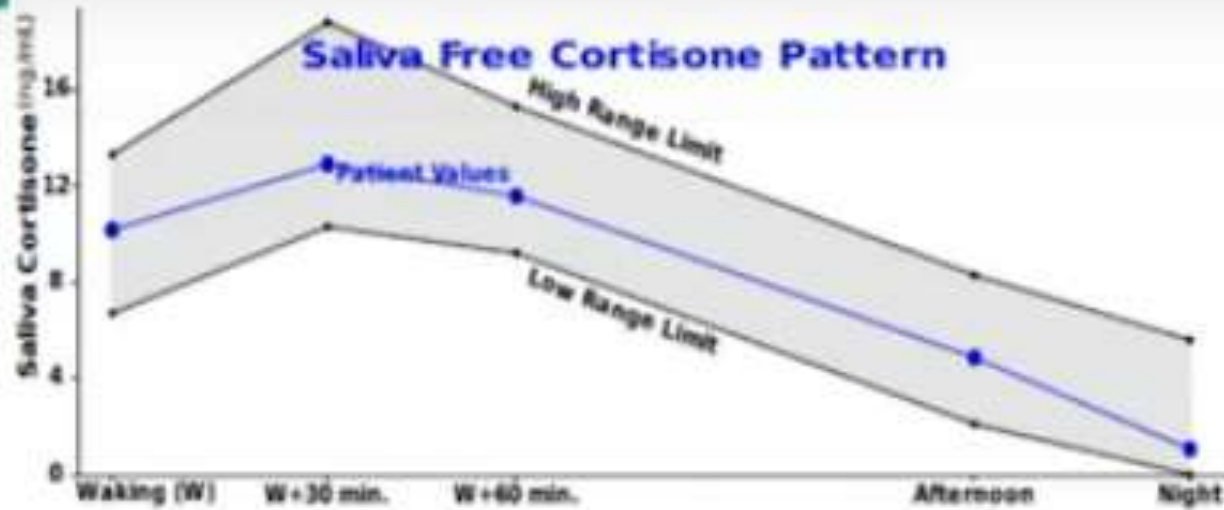


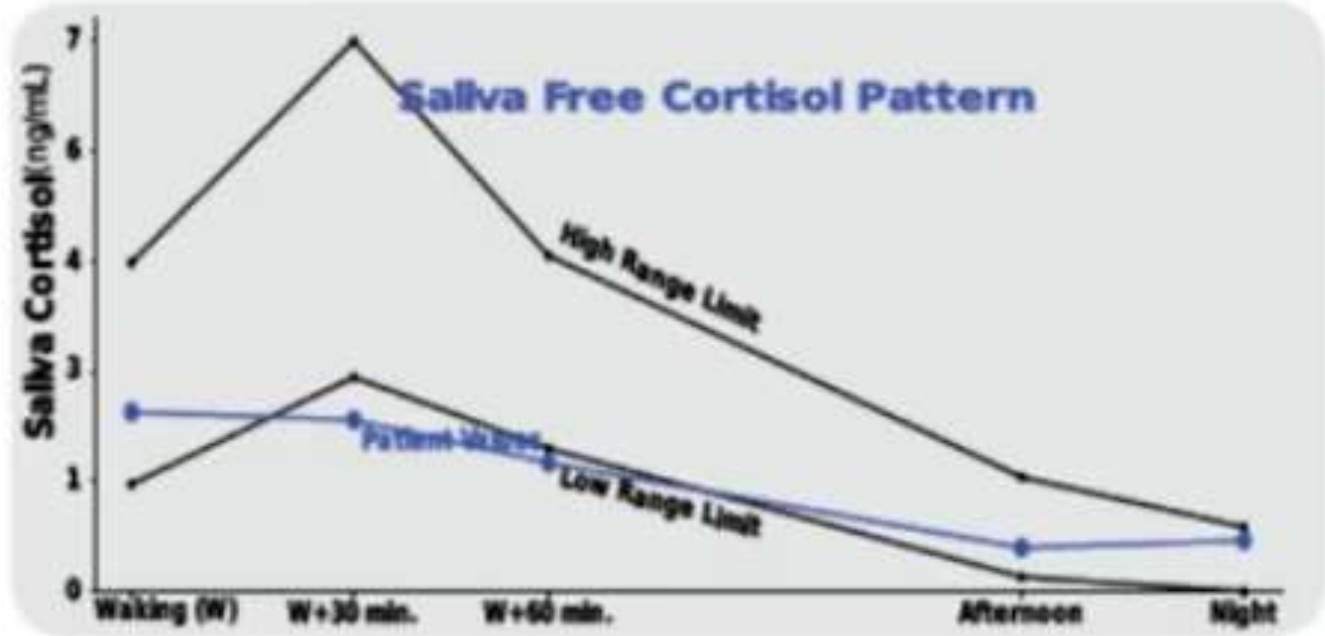
Figure 1. Cortisol awakening response before (48 hours and 16 days after traumatic event) and after (60 and 180 days) diagnosis of posttraumatic stress disorder.

# LOW CAR

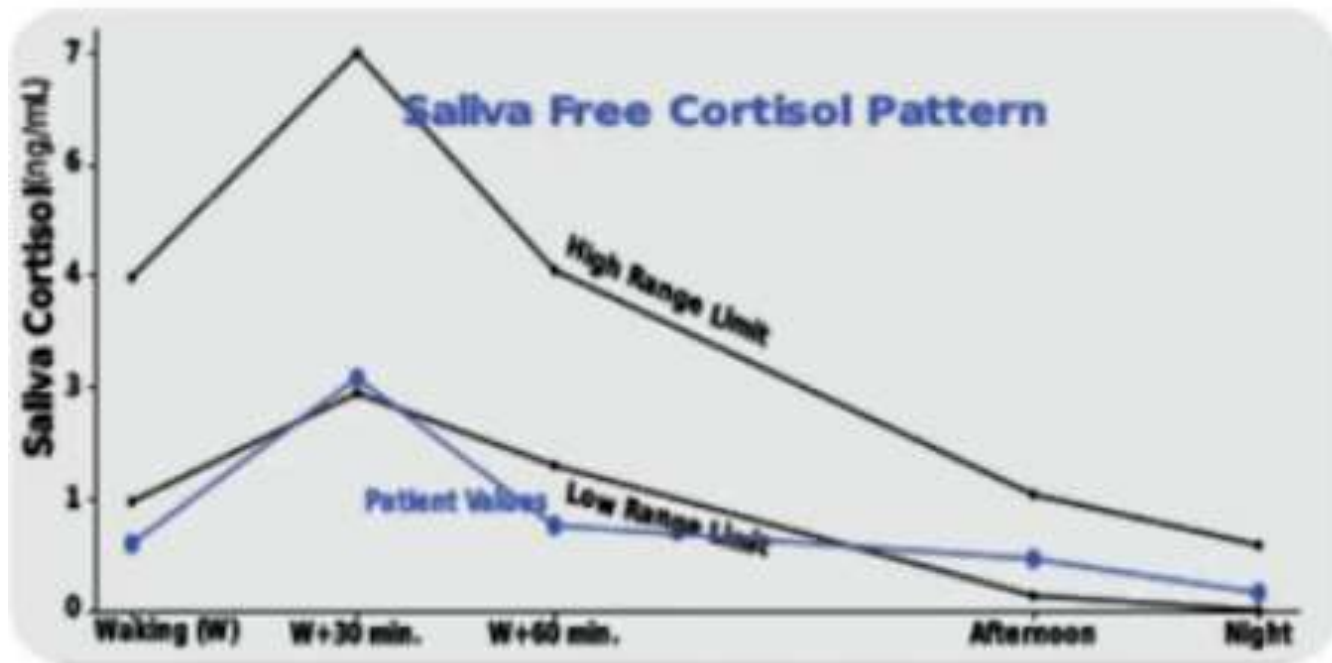




**Worse dysfunction  
– due to the low  
CAR**



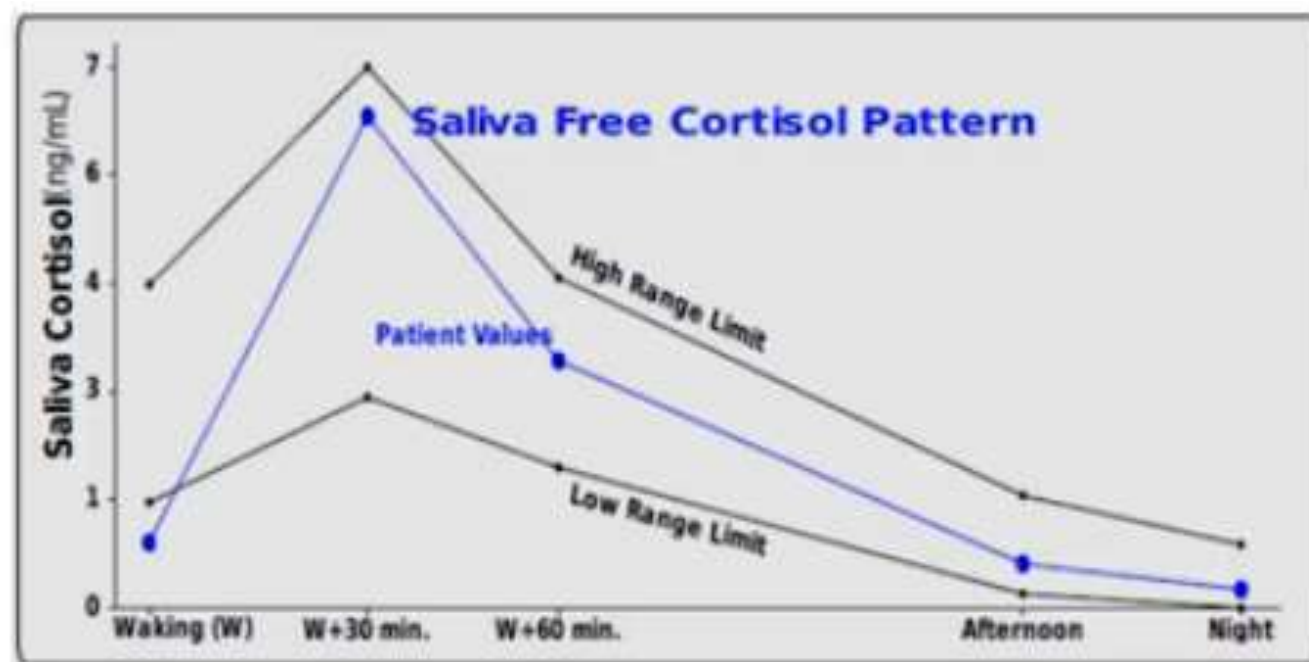
**Better overall even  
though similar total  
cortisol**



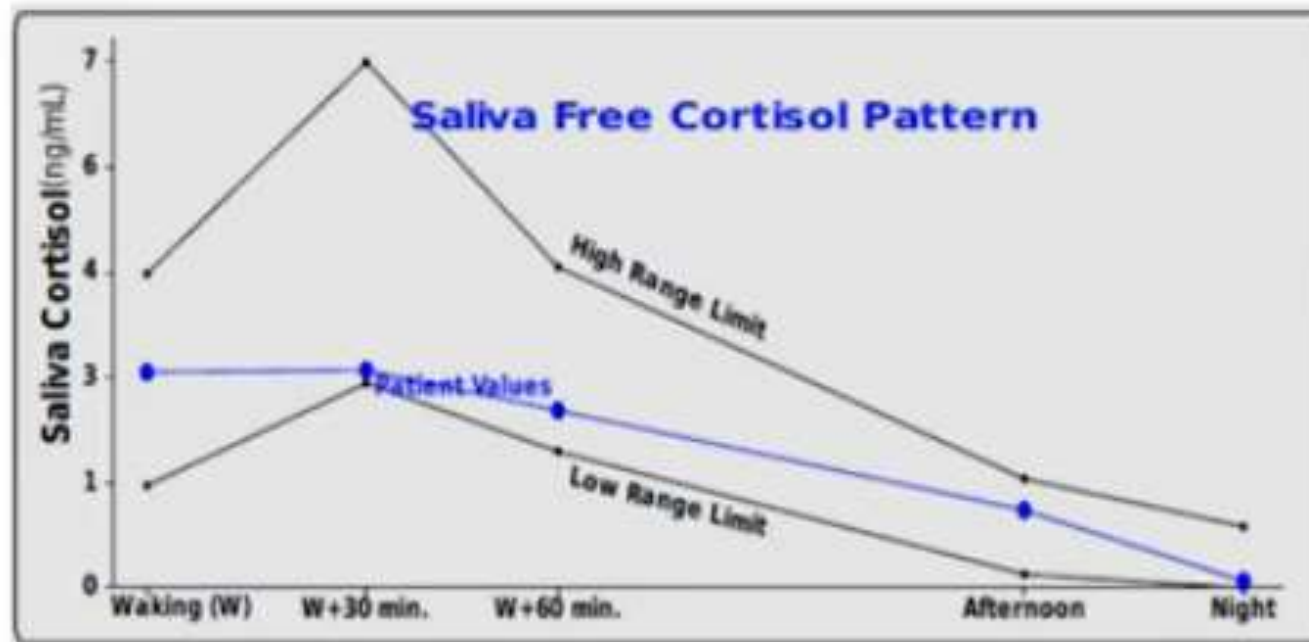
# Low CAR Causes

- ✓ Underactive HPA Axis
- ✓ Excessive psychological burnout
- ✓ Seasonal affective disorder (SAD)
- ✓ Sleep apnea
- ✓ Poor sleep
- ✓ PTSD
- ✓ Chronic fatigue

## Exaggerated Cortisol Awakening Response



## Not Responding to Stress



# Elevated CAR Causes

- ✓ Major depressive disorder
- ✓ Over-reactive HPA axis
- ✓ Anticipatory stress for the day
- ✓ Glycemic dysregulation
- ✓ Pain upon awakening

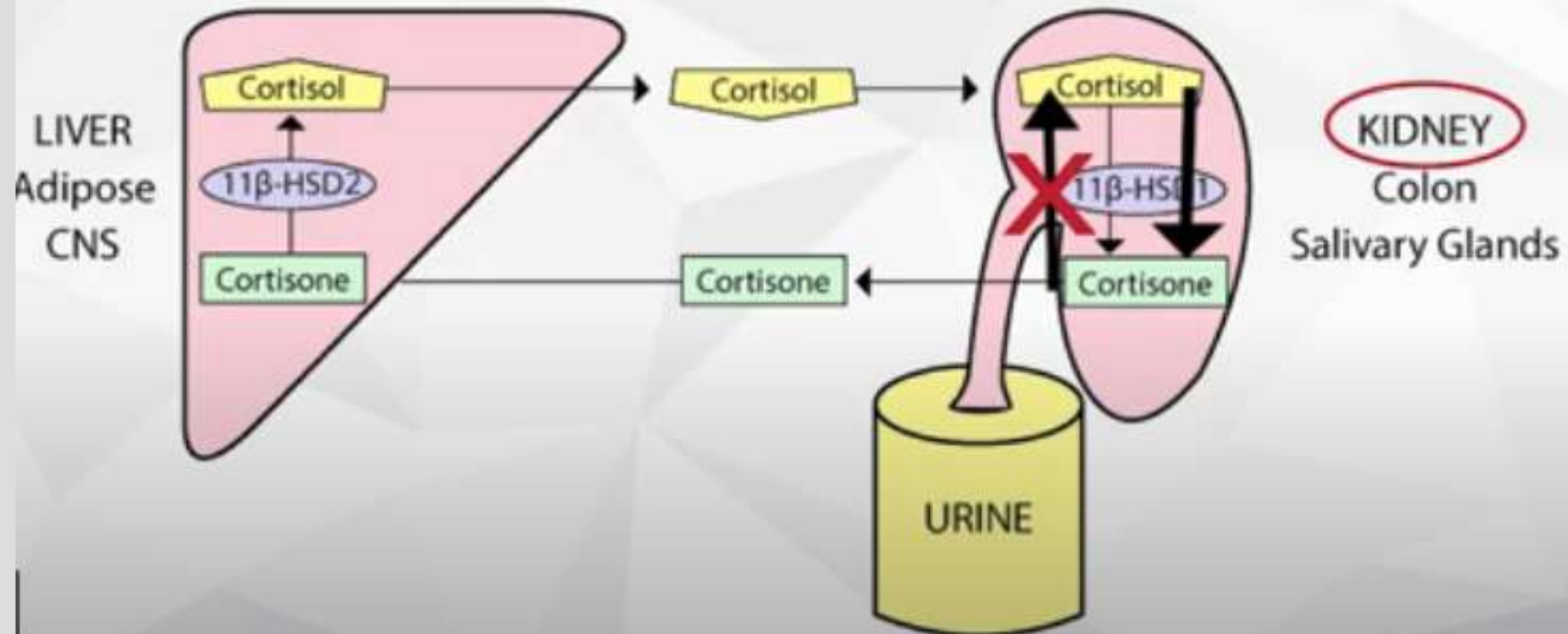


# Cortisone vs Cortisol

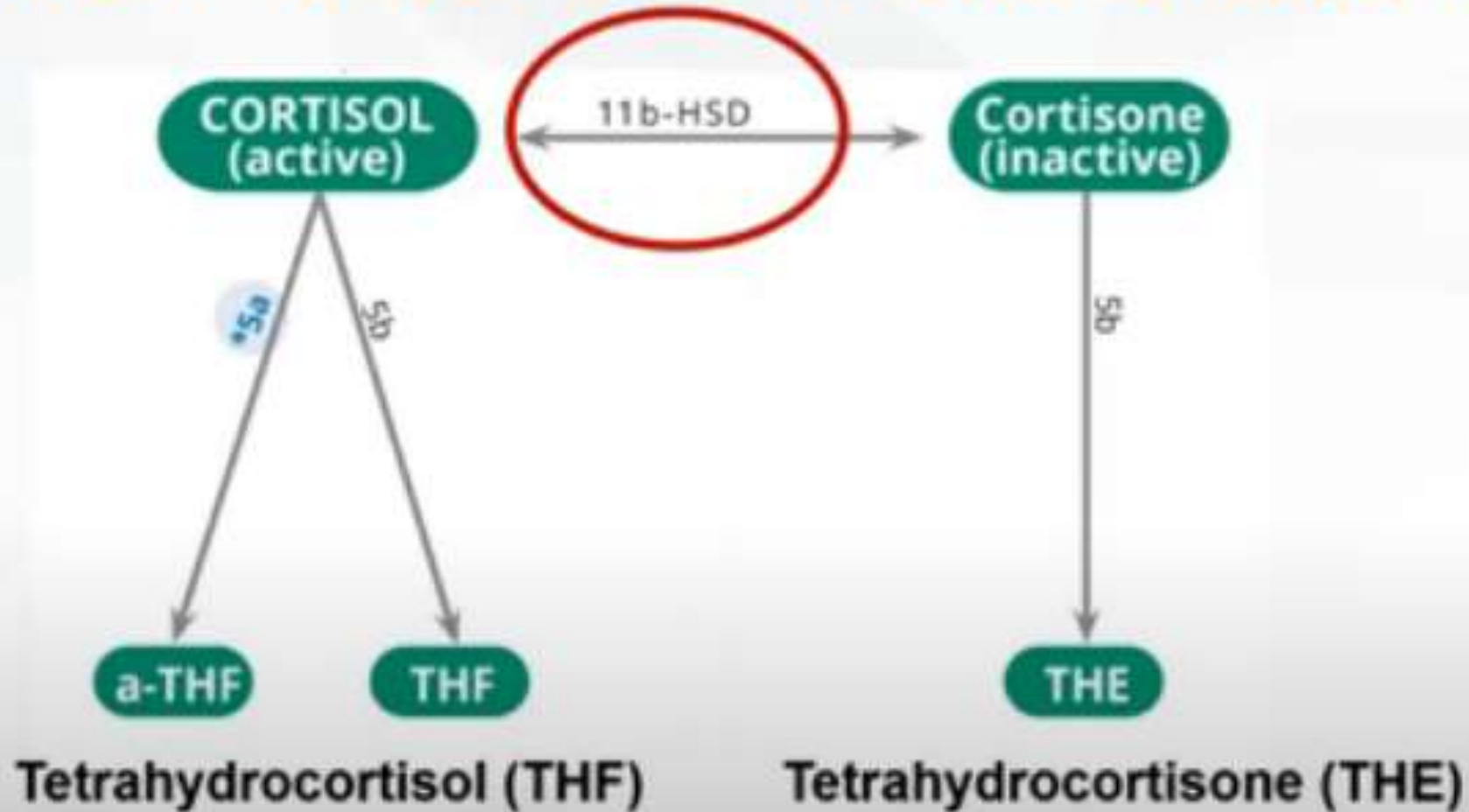
- ✓ Cortisone is a shadow – kidney deactivates – also salivary glands and colon
- ✓ It can be reactivated to cortisol in liver and fat cells
- ✓ Ratio of cortisol and cortisone metabolites is best representation of overall dominance
- ✓ If metabolites opposite and favor cortisol it indicates reactivation and can be a sign of inflammation, or taking licorice extract

# The Cortisol - Cortisone Connection

Urine represents local kidney activity  
for free cortisol → cortisone

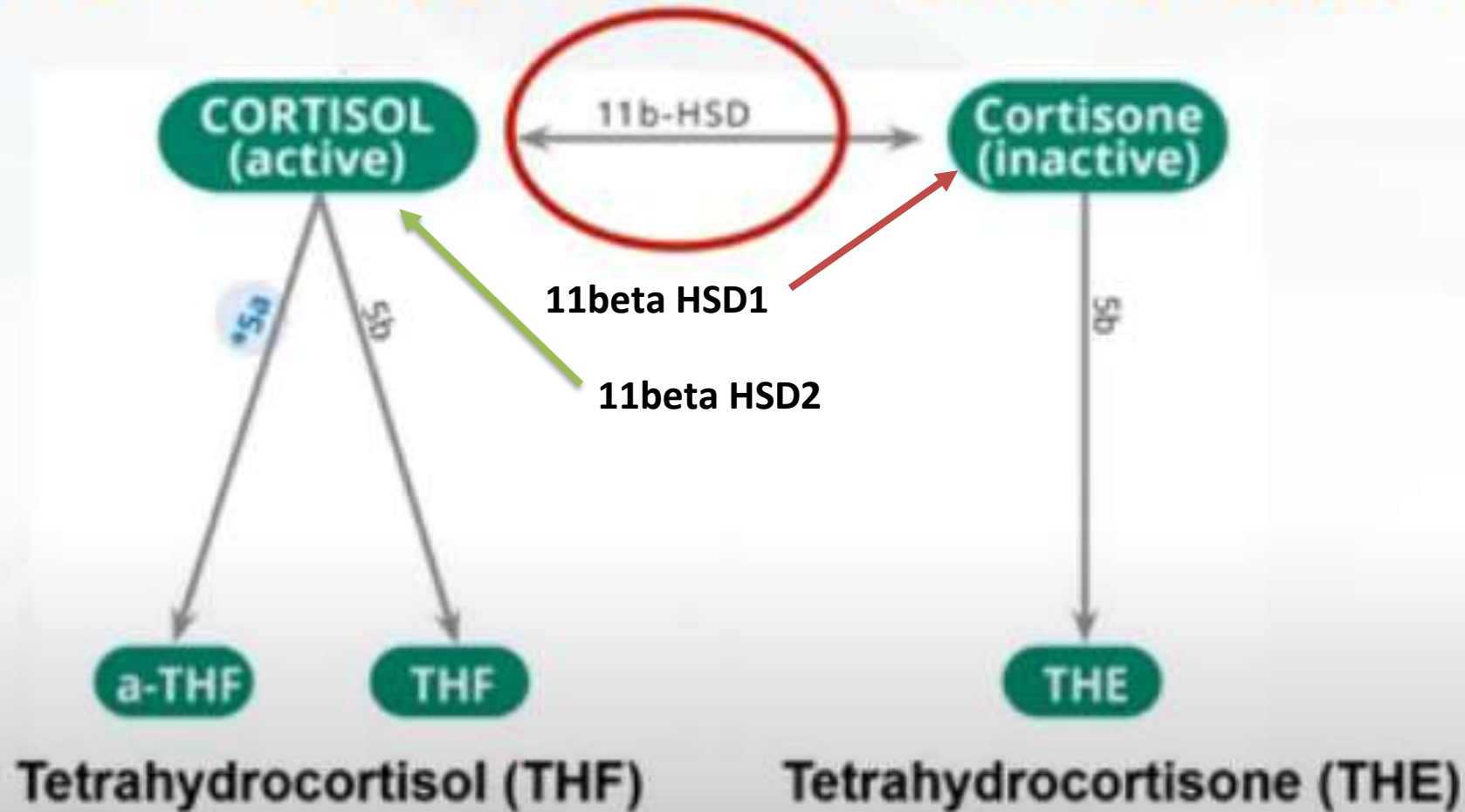


# How is cortisol metabolized?



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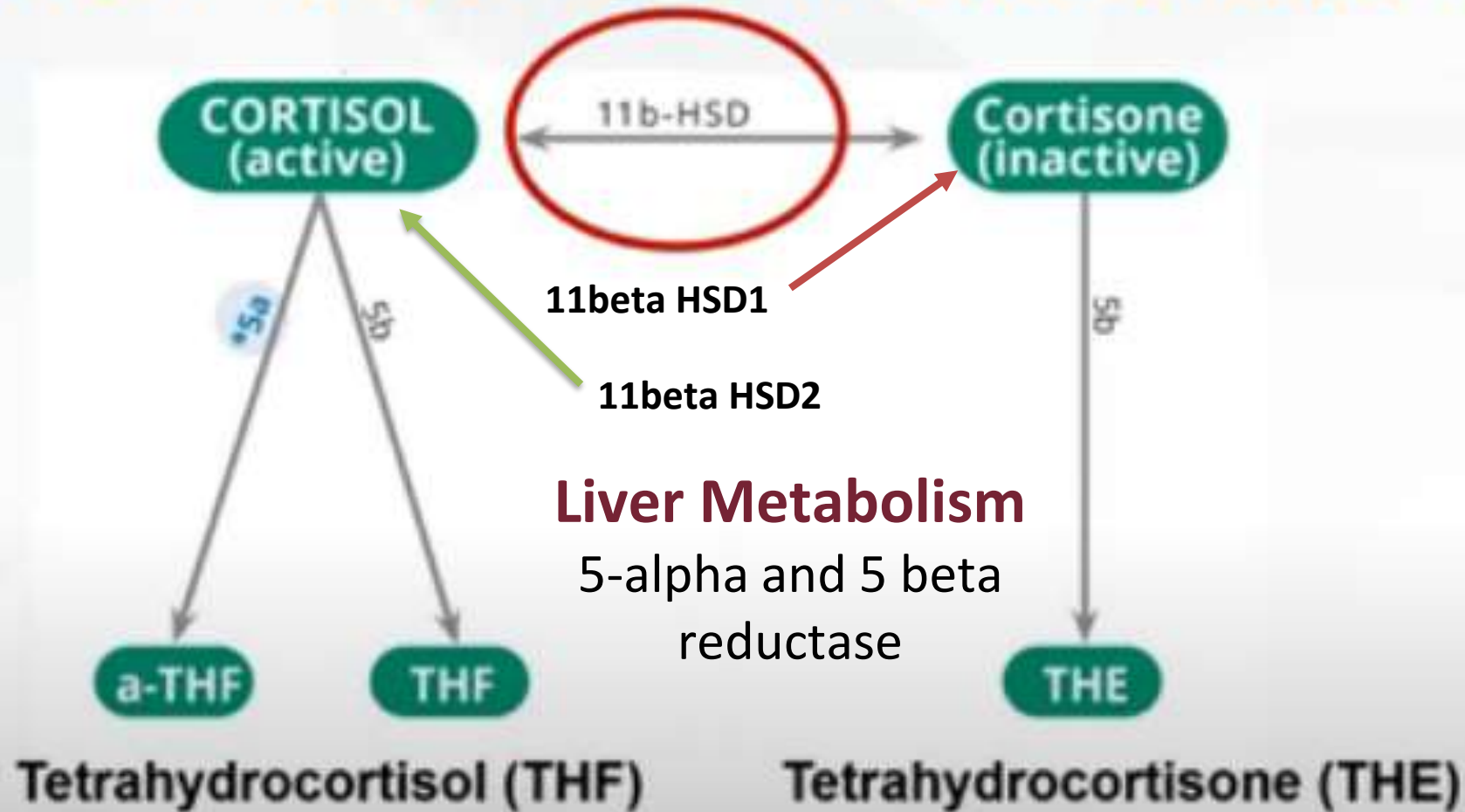
# How is cortisol metabolized?



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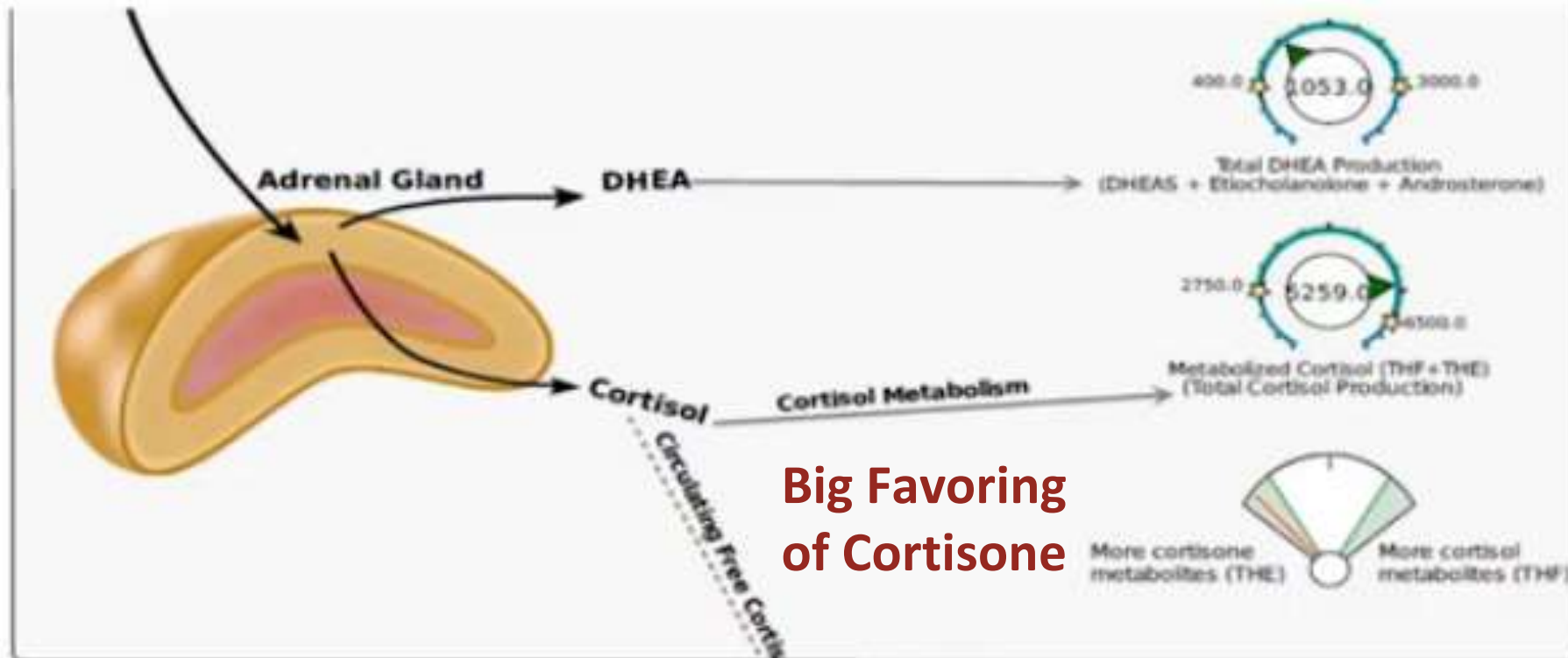
# How is cortisol metabolized?



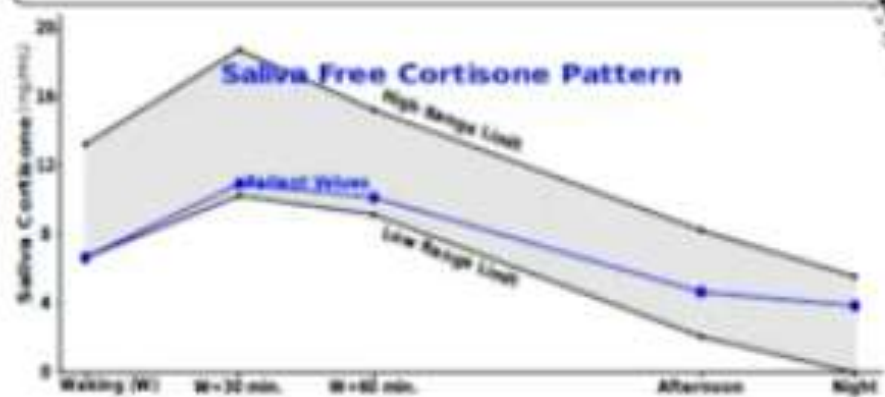
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# Interpretation Considerations

- ✓ Do cortisone and cortisol patterns match
- ✓ Predominance of metabolites
  - Kidney deactivates cortisol to prevent it hitting aldosterone receptor and raising blood pressure
  - Favoring cortisone – why?
- ✓ If taking hydrocortisone cream – maybe contamination and higher cortisol shows
- ✓ Licorice blocks deactivation of cortisol to cortisone
- ✓ Make sure collecting properly for CAR

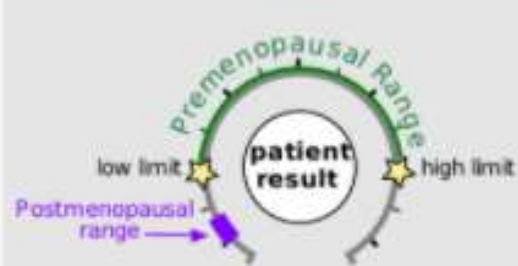


**Big Favoring  
of Cortisone**

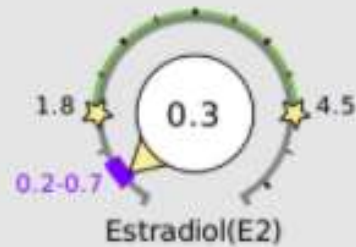


# Hormone Testing Summary

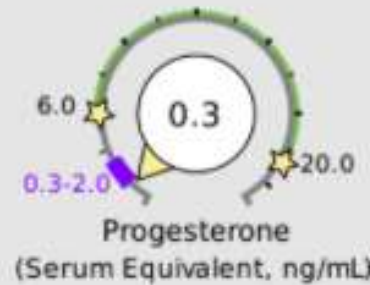
## Key (how to read the results):



## Sex Hormones See Pages 2 and 3 for a thorough breakdown of sex hormone metabolites



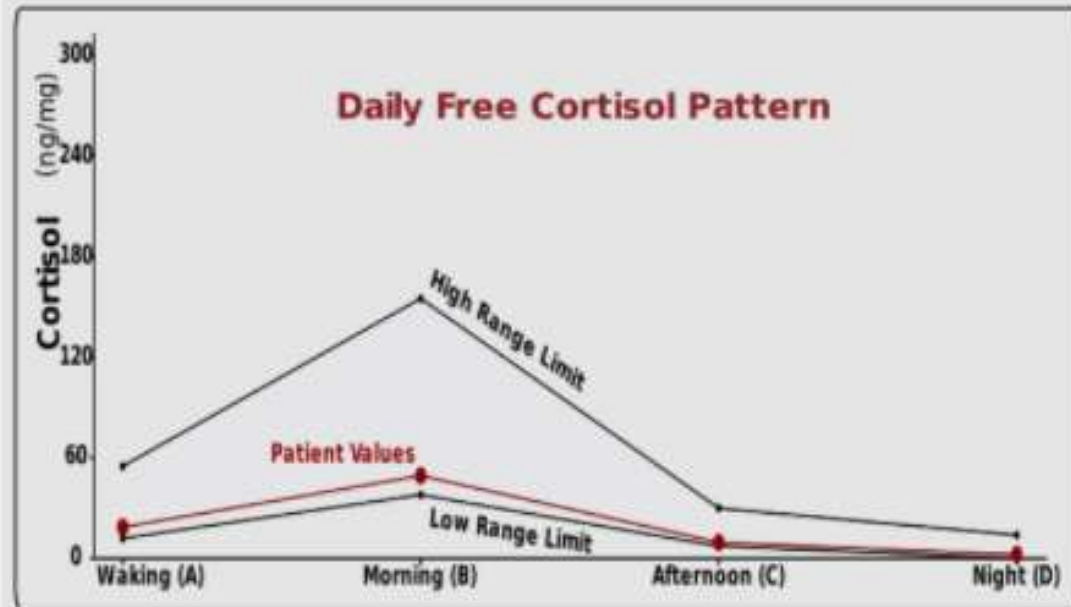
Total Estrogen (see next page) has been replaced here by Estradiol.



Progesterone Serum Equivalent is a calculated value based on urine pregnanediol.



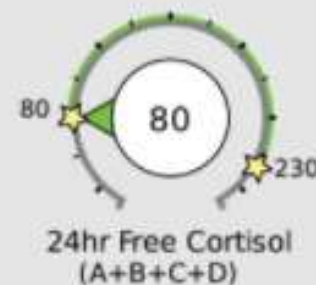
## Adrenal Hormones See pages 4 and 5 for a more complete breakdown of adrenal hormones



Free cortisol best reflects tissue levels. Metabolized cortisol best reflects total cortisol production.

## Total DHEA Production

Age	Range
20-39	1300-3000
40-60	750-2000
>60	500-1200



cortisol  
metabolism



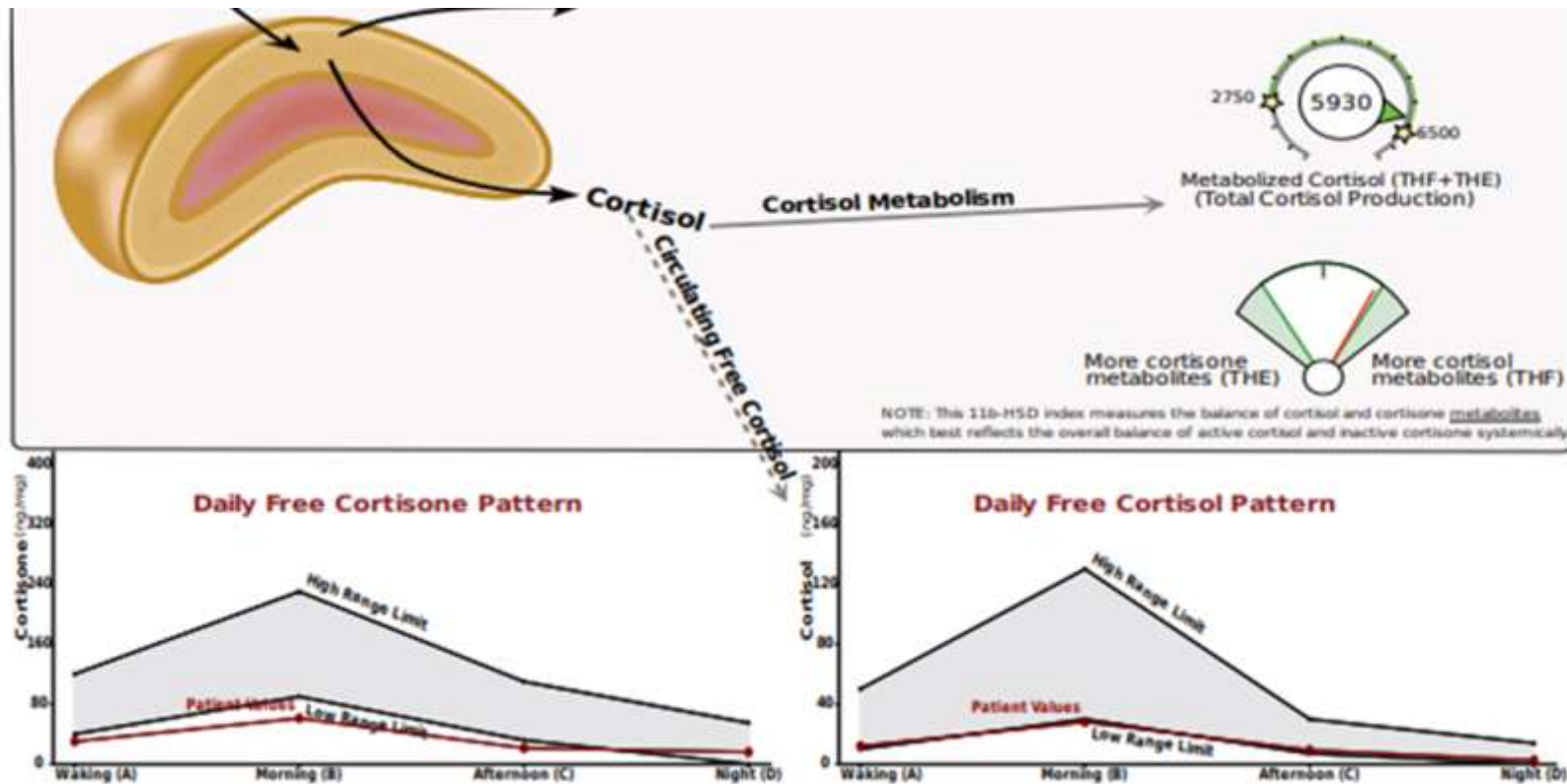


# Metabolites: 4 Main Patterns

1. High Free Cortisol, High Metabolized
2. Low Free Cortisol, Low Metabolized
3. High Free Cortisol, Low Metabolized
4. Low Free Cortisol, High Metabolized

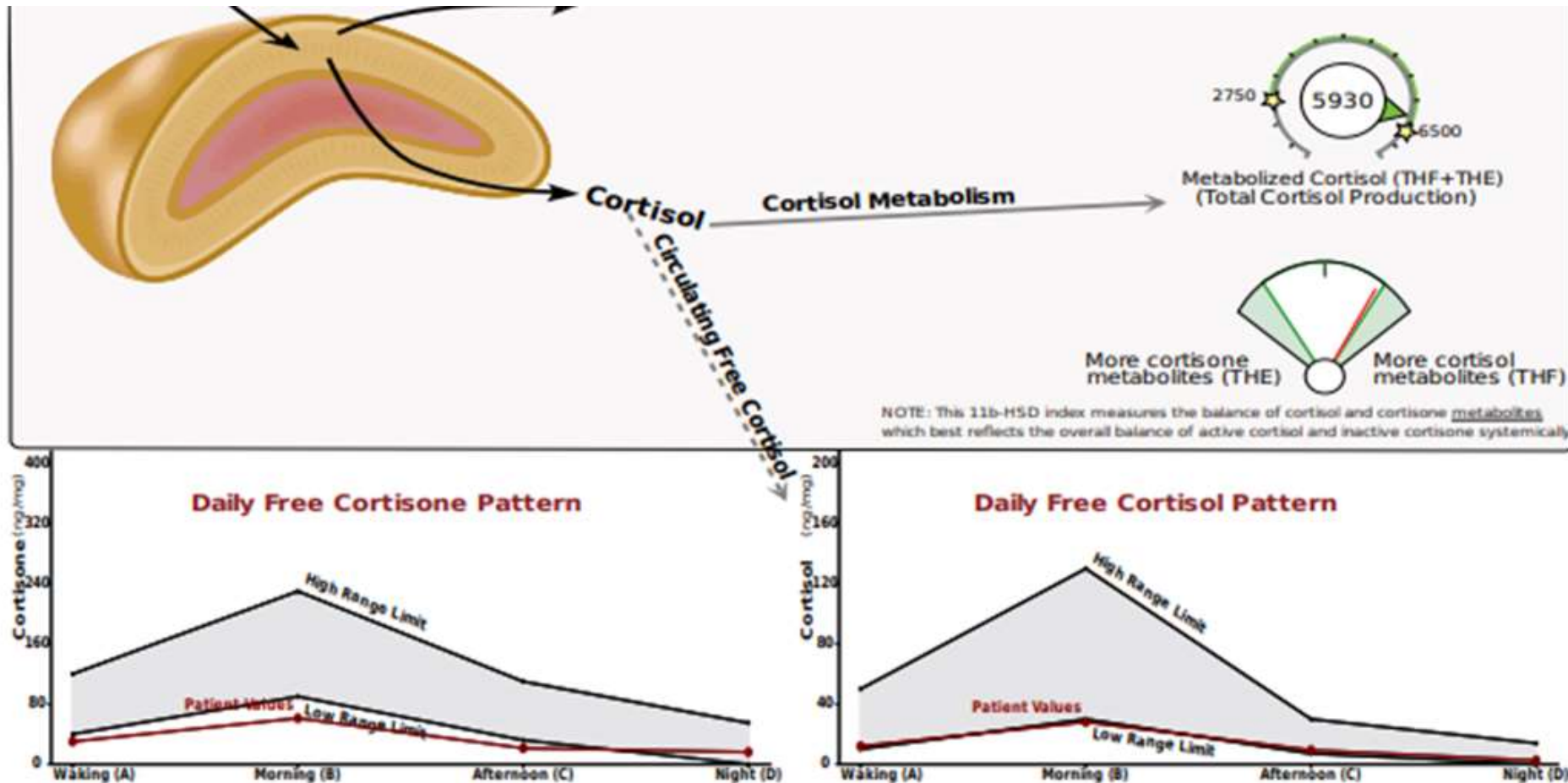
# Low Free Cortisol

- ✓ Low metabolites, low cortisone = overall low production
  - If favor cortisol metabolites – hanging on
  - If favor cortisone – cortisol being deactivated



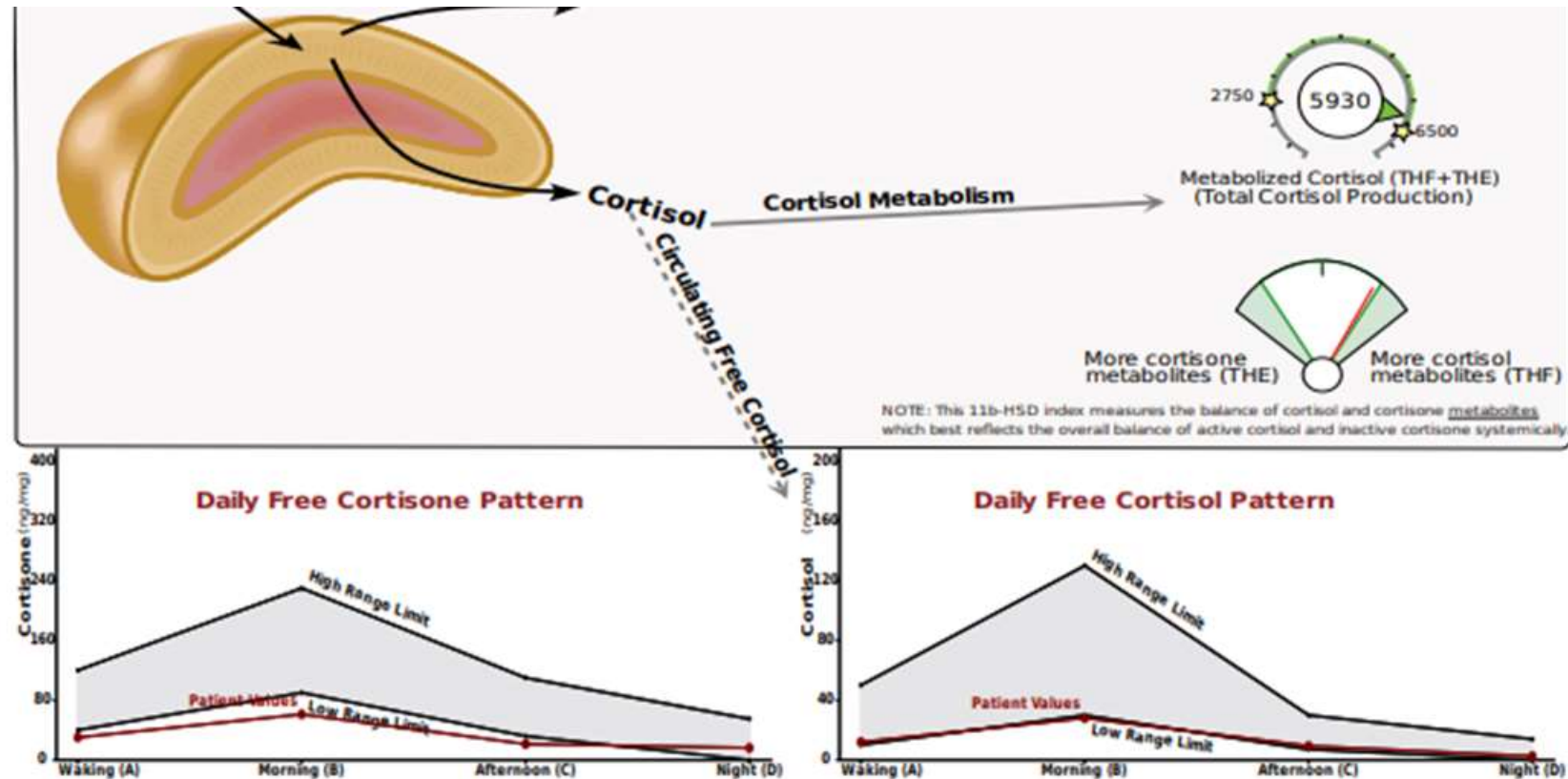
# High Free Cortisol

High cortisone, High metabolites = overall high production



# High Free Cortisol

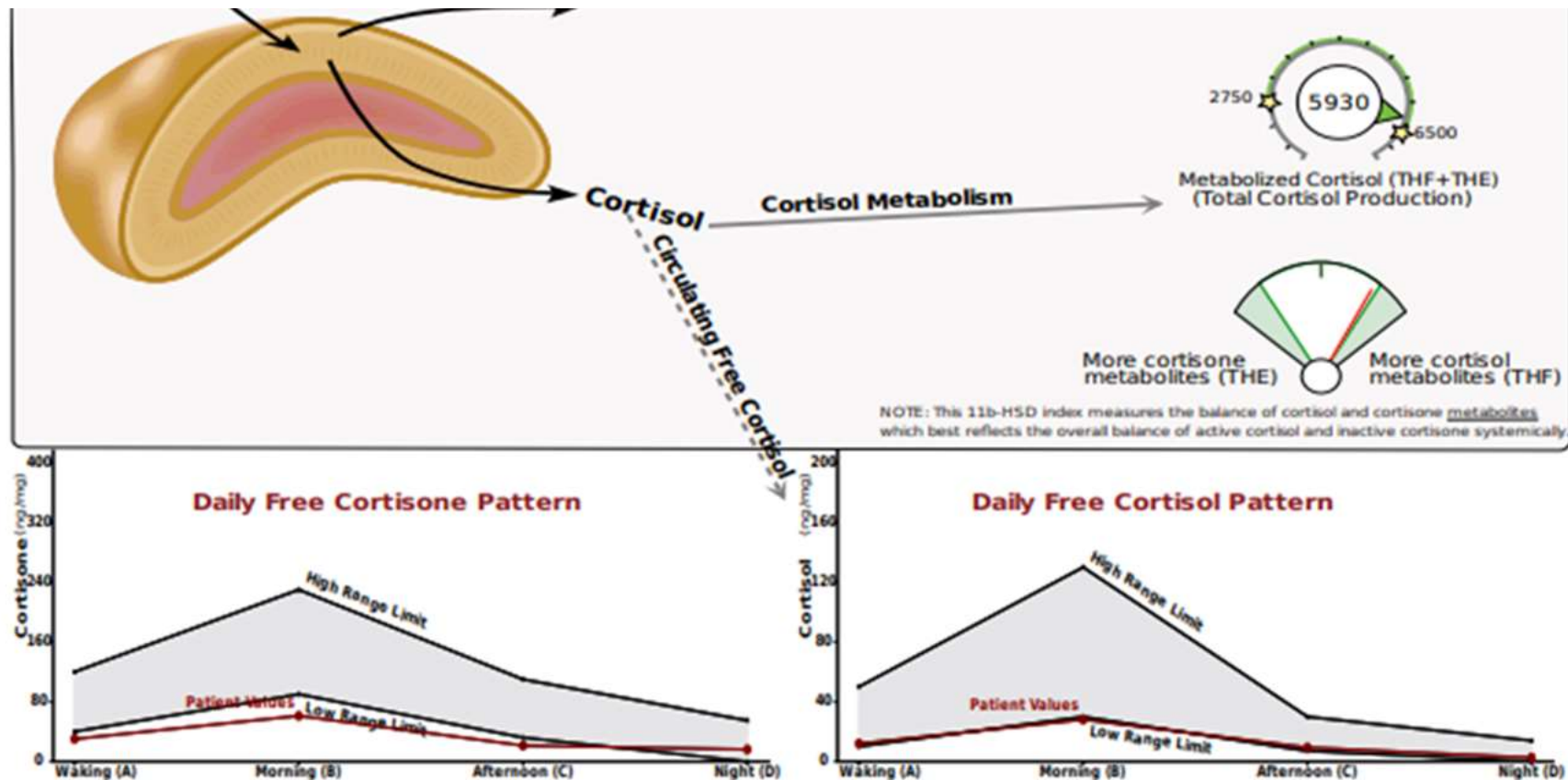
High cortisone, Low or Normal metabolites = Sluggish metabolism and clearance – hypothyroid and / or poor liver function / anorexia





# Low Free Cortisol

Normal or High metabolites – elevated clearance – obesity, hyperthyroid, long term stress, steroid use



# Hormone Testing Summary

Key (how to read the results):



## Sex Hormones

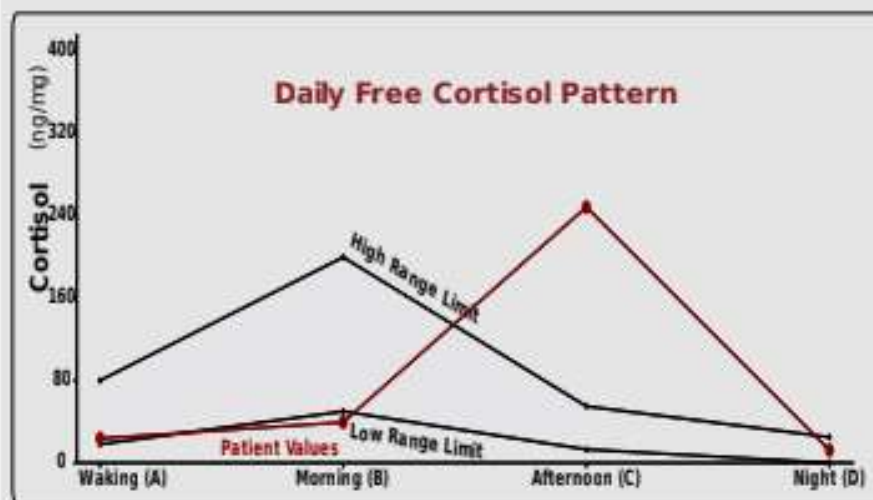


## Testosterone

Age	Range
18-25	50-115
26-40	40-95
41-60	30-80
>60	25-60

## Adrenal Hormones

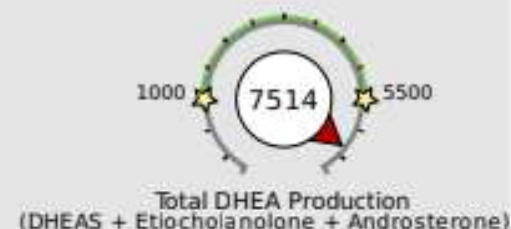
See pages 4 and 5 for a more complete breakdown of adrenal hormones



Free cortisol best reflects tissue levels. Metabolized cortisol best reflects total cortisol production.

## Total DHEA Production

Age	Range
20-39	3000-5500
40-60	2000-4000
>60	1000-2500



cortisol  
metabolism



The following videos (which can also be found on the website under the listed names along with others) may aid your understanding:

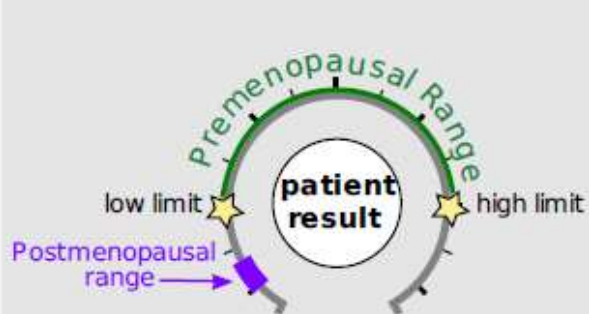
[DUTCH Complete Overview](#) [Estrogen Tutorial](#) [Male Androgen Tutorial](#) [Cortisol Tutorial](#)

**PLEASE BE SURE TO READ BELOW FOR ANY SPECIFIC LAB COMMENTS. More detailed comments can be found on page 8.**

- The patient shows significantly higher free cortisol compared to metabolized cortisol. It may be advisable to check thyroid hormones if you have not. See comments in the notes for more details.

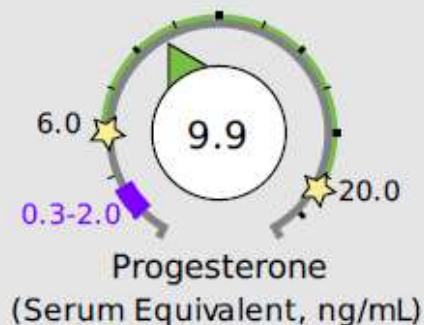
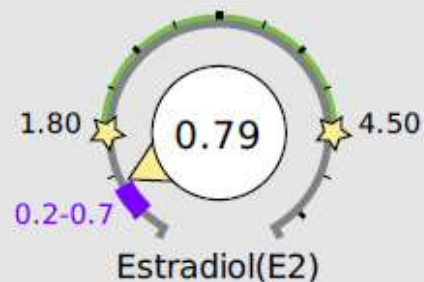
Typically, the "B" sample in the early morning is collected about 120 minutes after the waking sample. In this case the sample appears to have been collected 300 minutes after the waking sample. An early collection may increase the value, and longer time periods could lower the "B" value.

## Key (how to read the results):

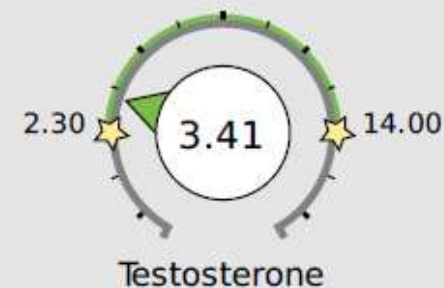


## Sex Hormones

See Pages 2 and 3 for a thorough breakdown of sex hormone metabolites

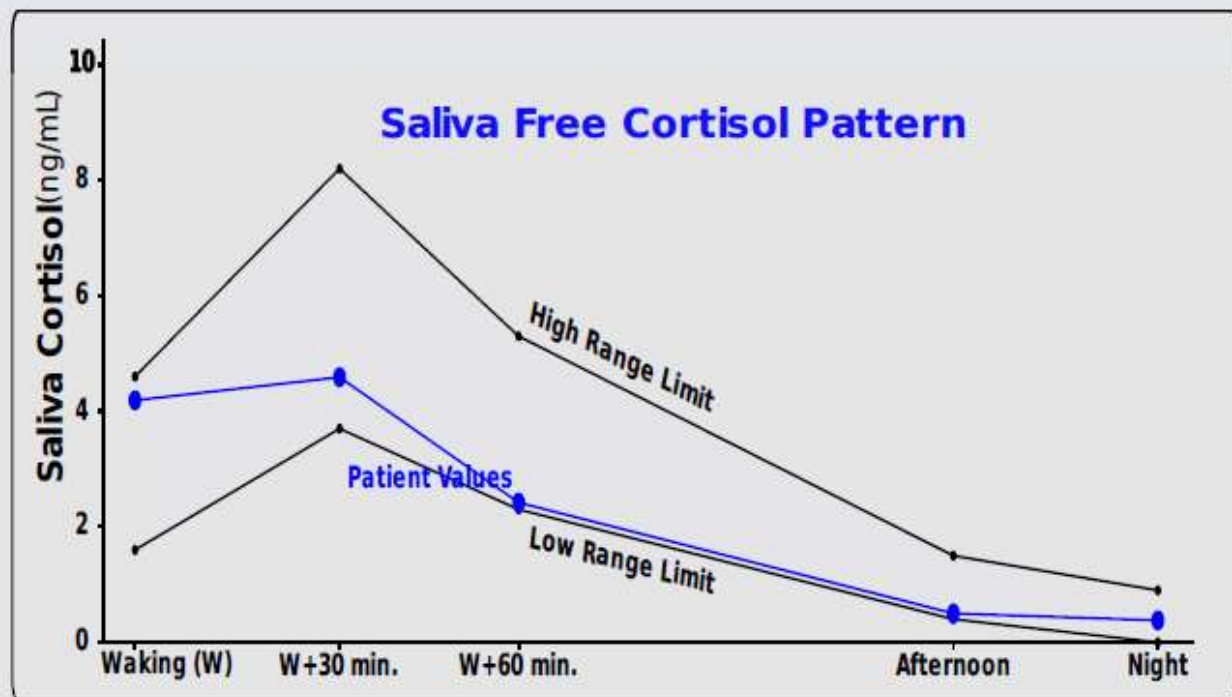


Progesterone Serum Equivalent is a calculated value based on urine pregnanediol.



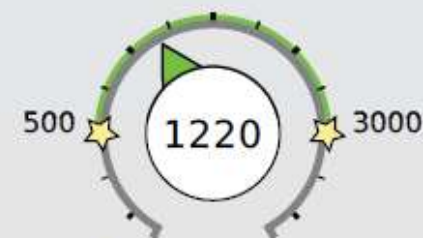
## Adrenal Hormones

See pages 4 and 5 for a more complete breakdown of adrenal hormones



## Total DHEA Production

Age	Range
20-39	1300-3000
40-59	750-2000
>60	500-1200



Total DHEA Production  
(DHEAS + Etiocholanolone + Androsterone)



Saliva Cortisol Total  
(Sum of 5 values)

cortisol  
metabolism



Metabolized Cortisol (THF+THE)  
(Total Cortisol Production)

Free cortisol best reflects tissue levels. Metabolized cortisol best reflects total cortisol production.



# Hormone Testing Summary

**Key (how to read the results):**



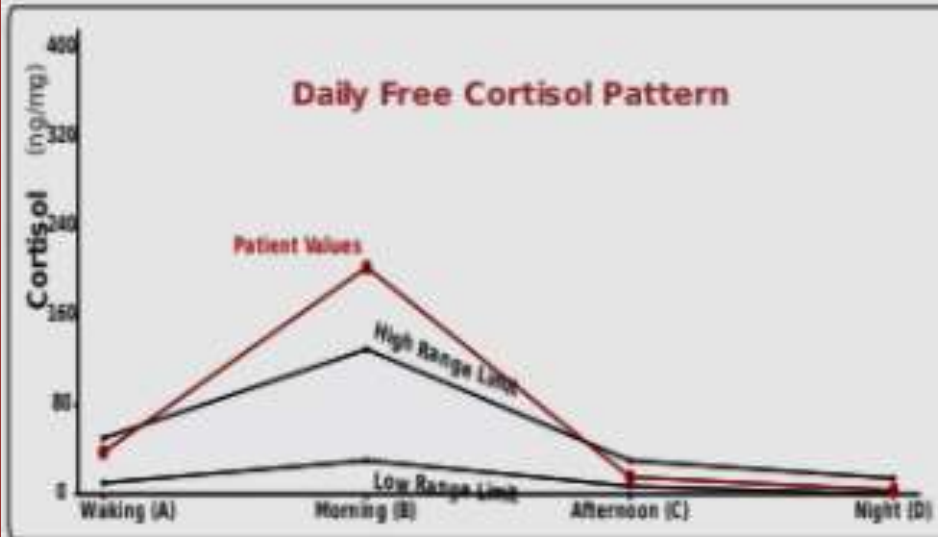
**Sex Hormones** See Pages 2 and 3 for a thorough breakdown of sex hormone metabolites



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**Adrenal Hormones** See pages 4 and 5 for a more complete breakdown of adrenal hormones



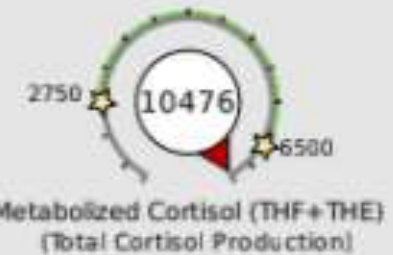
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**Total DHEA Production**

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40-60	750-2000
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cortisol  
metabolism



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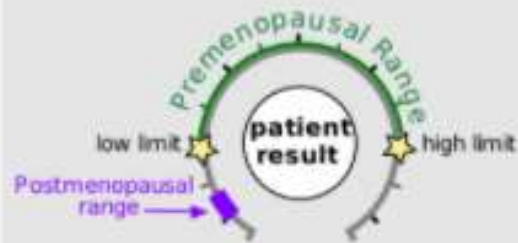
[DUTCH Complete Overview](#) [Estrogen Tutorial](#) [Female Androgen Tutorial](#) [Cortisol Tutorial](#)

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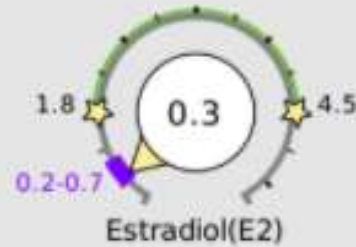


# Hormone Testing Summary

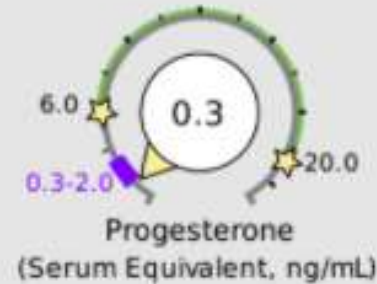
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## Sex Hormones See Pages 2 and 3 for a thorough breakdown of sex hormone metabolites



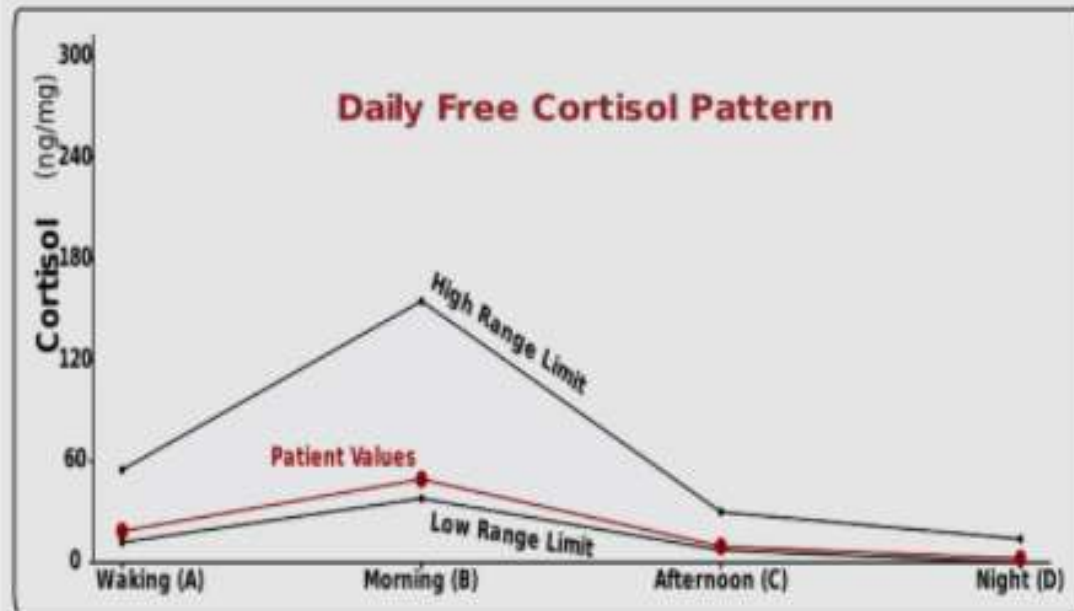
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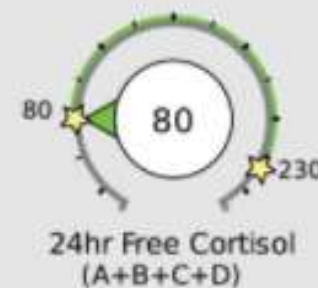
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Free cortisol best reflects tissue levels. Metabolized cortisol best reflects total cortisol production.

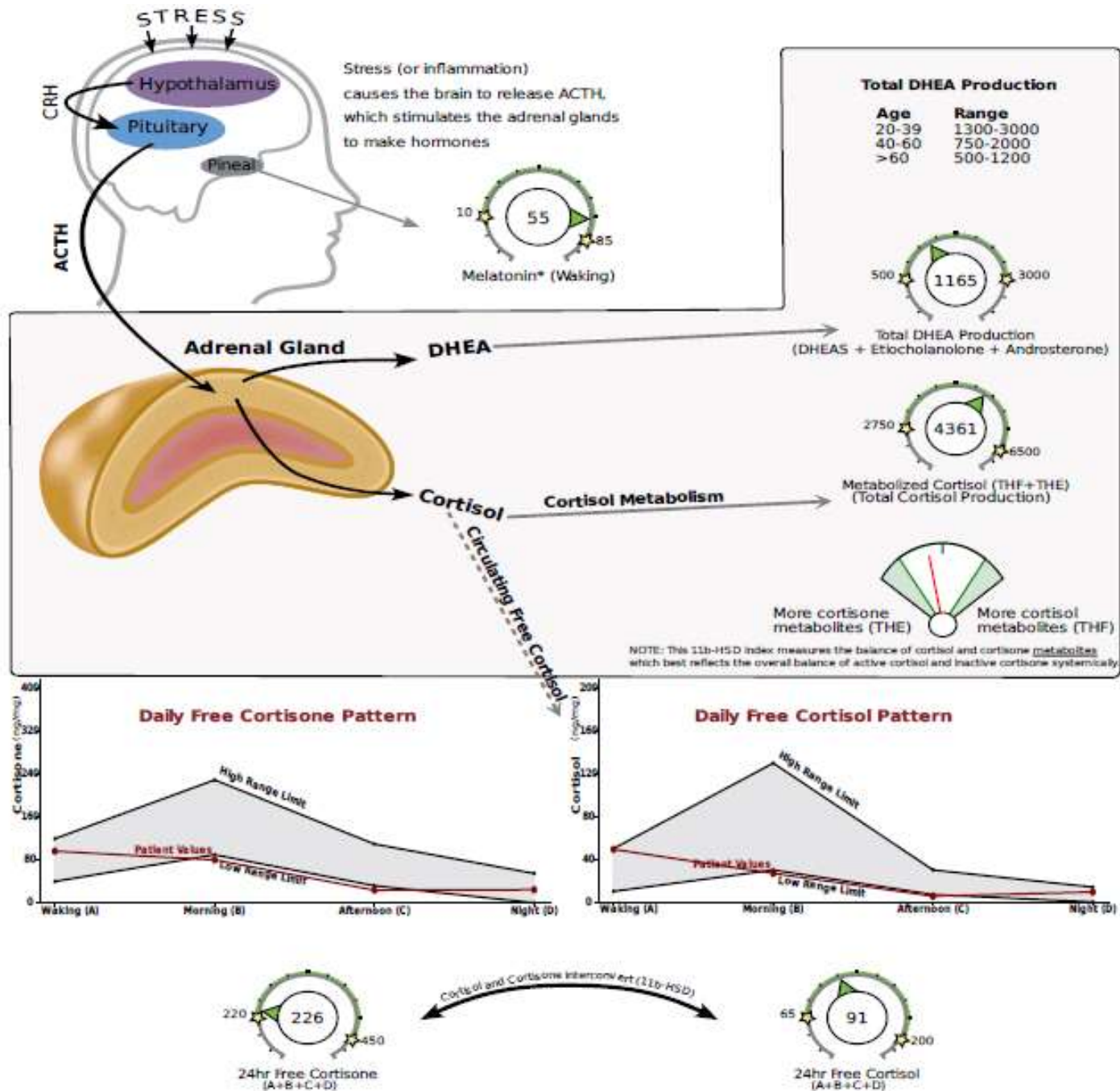
## Total DHEA Production

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20-39	1300-3000
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cortisol  
metabolism





# Hormone Testing Summary

**Key (how to read the results):**



## Sex Hormones

See Pages 2 and 3 for a thorough breakdown of sex hormone metabolites

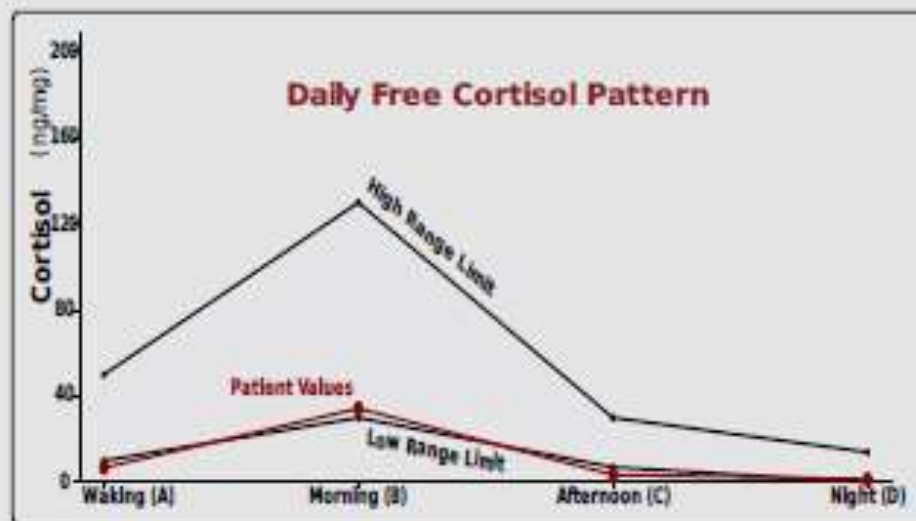


Progesterone Serum Equivalent is a calculated value based on urine pregnanediol.



## Adrenal Hormones

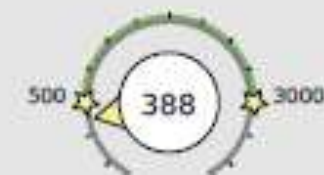
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Free cortisol best reflects tissue levels. Metabolized cortisol best reflects total cortisol production.

## Total DHEA Production

Age	Range
20-39	1300-3000
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Total DHEA Production  
(DHEAS + Etiocholanolone + Androsterone)



24hr Free Cortisol  
(A+B+C+D)

cortisol  
metabolism



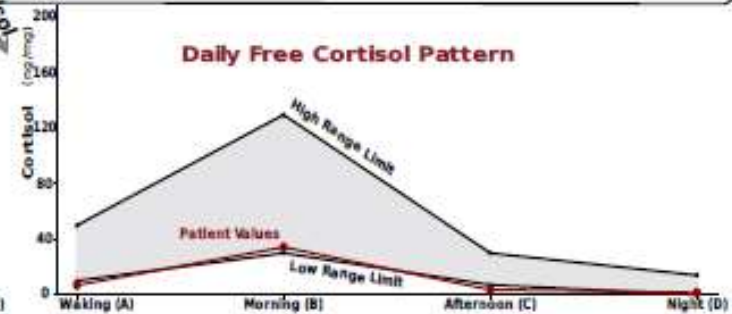
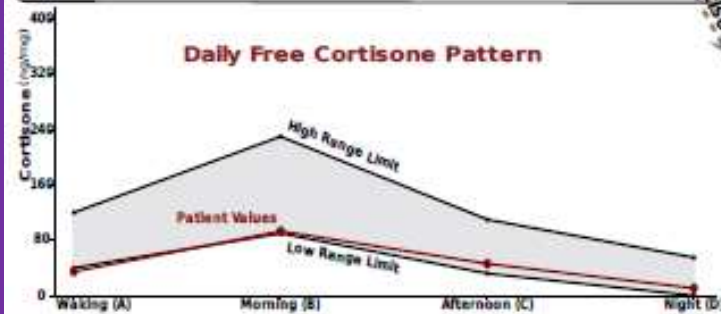
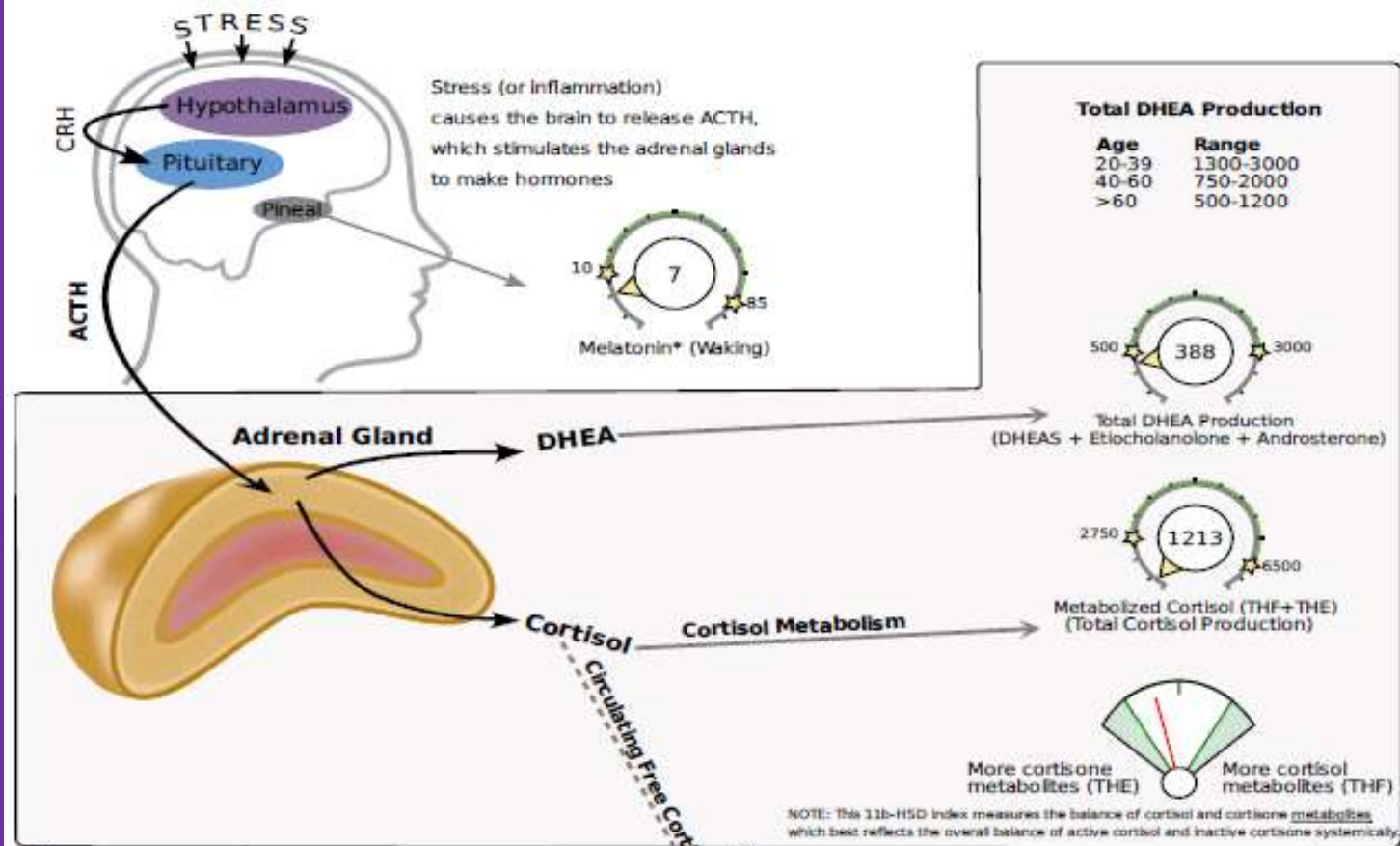
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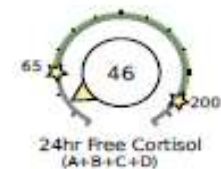
[DUTCH Complete Overview](#) [Estrogen Tutorial](#) [Female Androgen Tutorial](#) [Cortisol Tutorial](#)

**PLEASE BE SURE TO READ BELOW FOR ANY SPECIFIC LAB COMMENTS. More detailed comments can be found on page 9.**





Cortisol and Cortisone Interconvert (11b-HSD)





## Key (how to read the results):

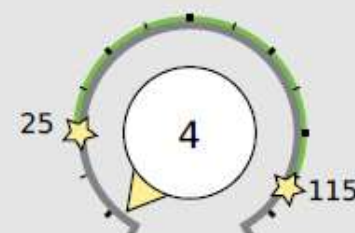


**April 2018**

## Sex Hormones



Total Estrogen  
(Sum of 8 Estrogen Metabolites)



Testosterone

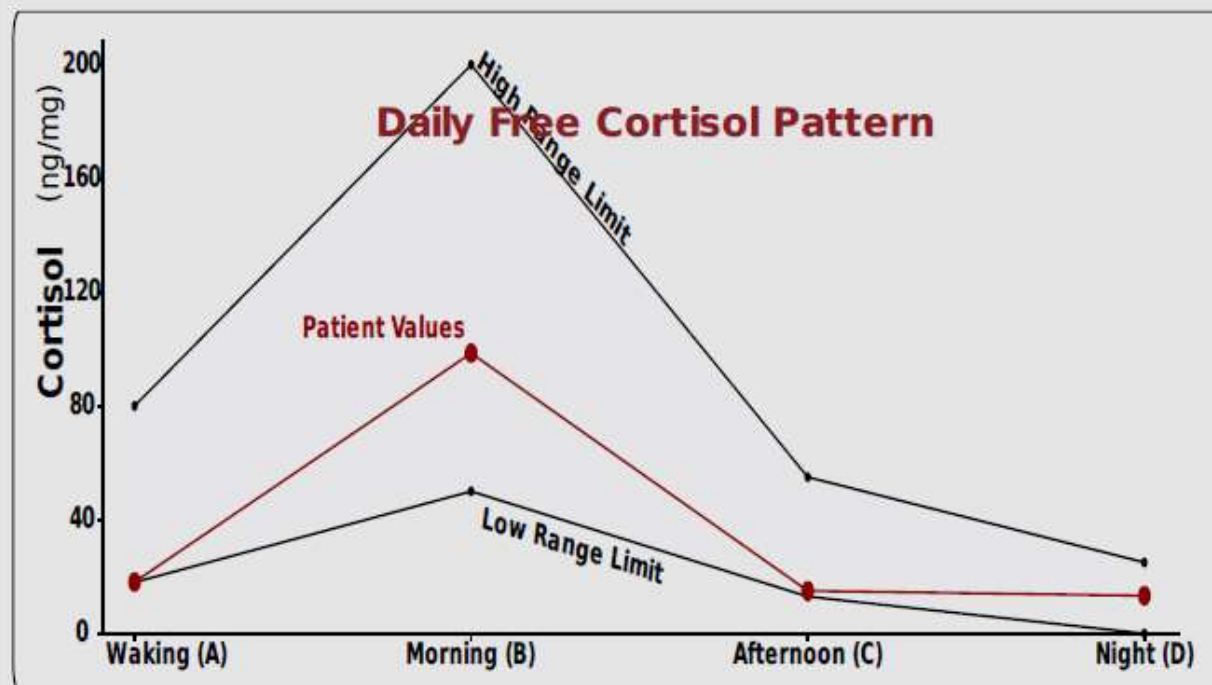
See Pages 2 & 3 for a thorough breakdown of sex hormone metabolites

## Testosterone

Age	Range
18-25	50-115
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41-60	30-80
>60	25-60

## Adrenal Hormones

See pages 4 and 5 for a more complete breakdown of adrenal hormones



## Total DHEA Production

Age	Range
20-39	3000-5500
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Total DHEA Production  
(DHEAS + Etiocholanolone + Androsterone)



24hr Free Cortisol  
(A+B+C+D)

cortisol  
metabolism



Metabolized Cortisol (THF+THE)  
(Total Cortisol Production)

Free cortisol best reflects tissue levels. Metabolized cortisol best reflects total cortisol production.

# Hormone Testing Summary

## Key (how to read the results):



## Sex Hormones

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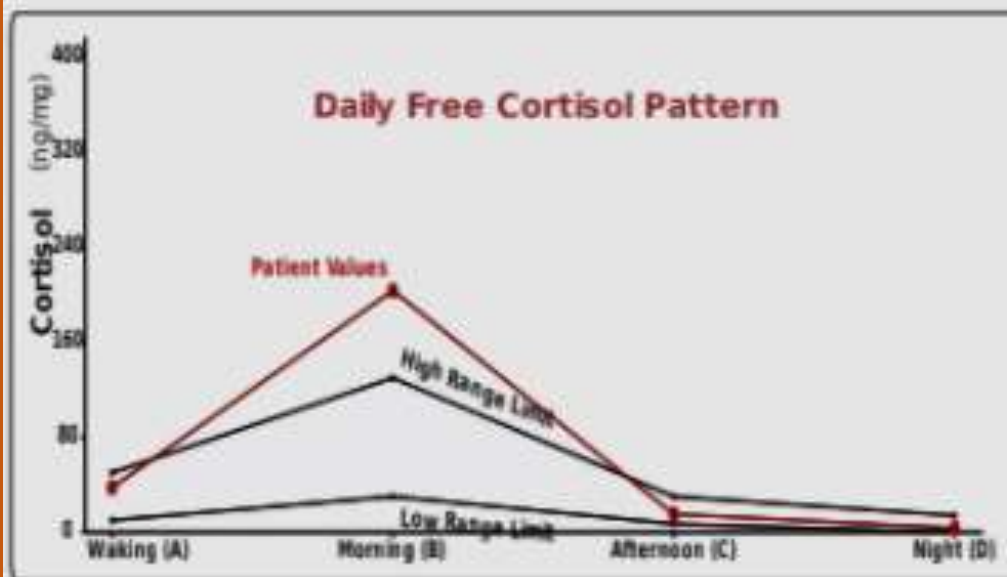


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24hr Free Cortisol  
(A+B+C+D)

cortisol  
metabolism



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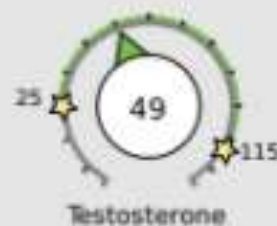


# Hormone Testing Summary

Key (how to read the results):



## Sex Hormones

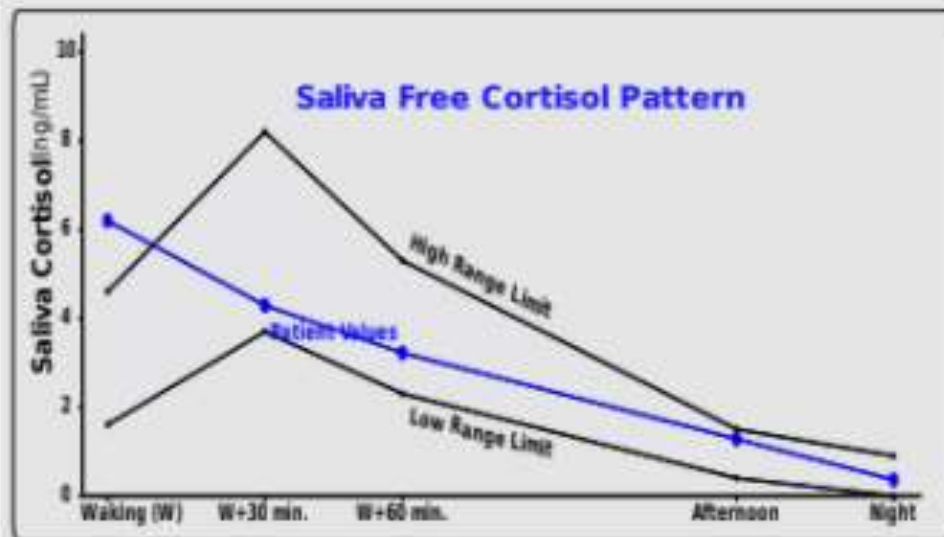


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Total DHEA Production  
(DHEAS + Etiocholanolone + Androsterone)



Saliva Cortisol Total  
(Sum of 5 values)

cortisol  
metabolism



Metabolized Cortisol (THF+THE)  
(Total Cortisol Production)

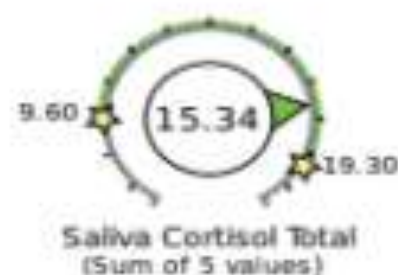
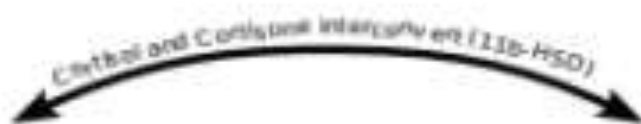
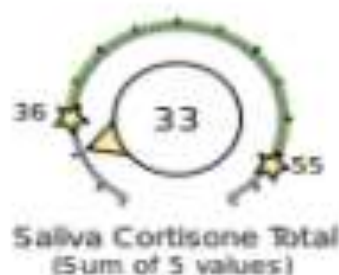
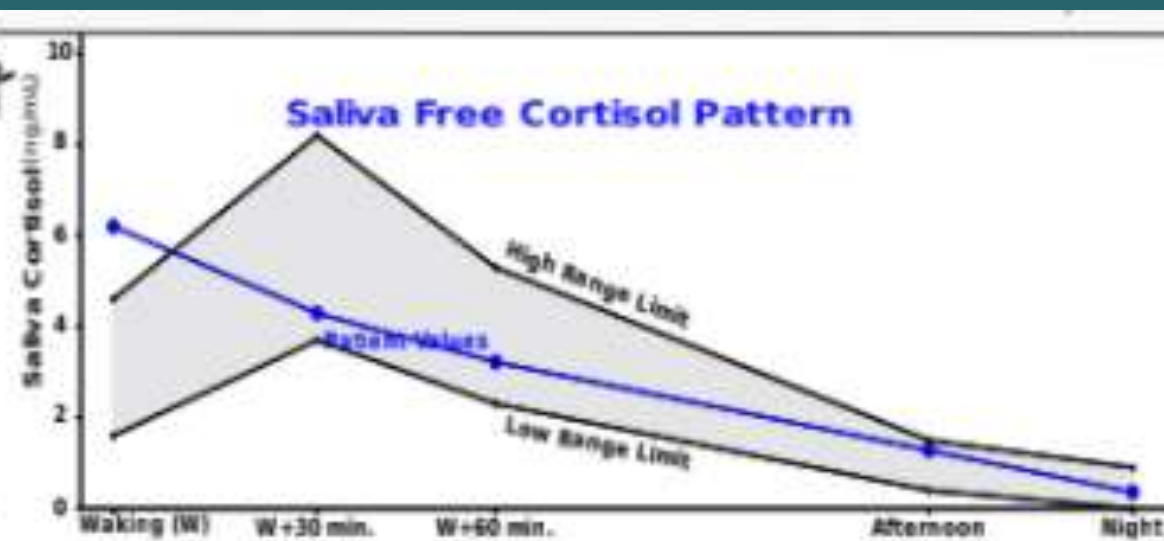
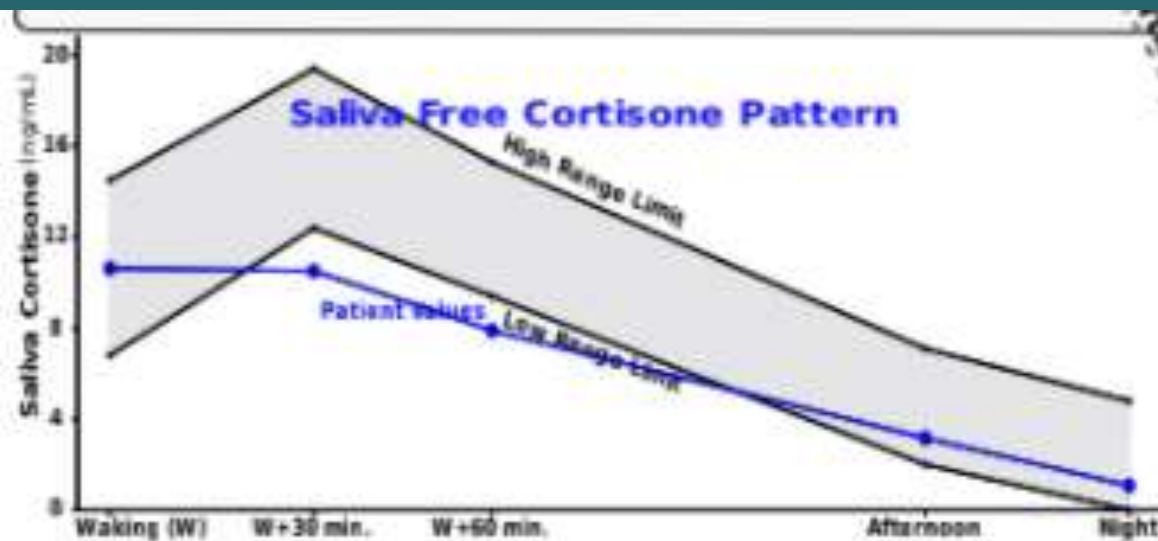
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[DUTCH Plus Overview](#) (quick overview) [Estrogen Tutorial](#) [Male Androgen Tutorial](#) [Cortisol/CAR Tutorial](#)

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- The patient collected an "Insomnia" salivary sample in the middle of the night. The cortisol result for this sample was 1.23ng/mL (expected range 0-0.9). Please see page 4 for cortisol and cortisone results for this sample.

The Cortisol Awakening Response (CAR) actually showed a decrease in this case. Normal results show an increase of 50-160%. See page 5



- The patient submitted an insomnia salivary sample. The cortisol result for this sample was 1.23ng/mL (expected range 0-0.9) The cortisone result for this sample was 3.06 ng/mL (expected range 0-4.8)

The Cortisol Awakening Response (CAR) is the rise in salivary cortisol between the waking sample and the sample collected 30 (as well as 60) minutes later. This "awakening response" is essentially a "mini stress test" and is a useful measurement in addition to the overall up-and-down (diurnal) pattern of free cortisol throughout the day. **This patient shows a waking cortisol of 6.2 and was actually lower at 4.29 after 32.0 minutes. This implies potential dysfunction in the HPA-axis or possibly improper collection.** Expected increases differ depending on the methods used. Preliminary research shows that 50-160% or 1.5-4.0ng/mL increases are common. These guidelines are considered research only. **This patient shows a salivary cortisol of 3.22 measured 60 minutes after waking. Generally this result is a little higher than the waking sample but is not in this case. To date, data suggests that expected results may be 0-70% higher, and this guideline is considered for research only.**



August 2019

# Hormone Testing Summary

Key (how to read the results):



## Sex Hormones

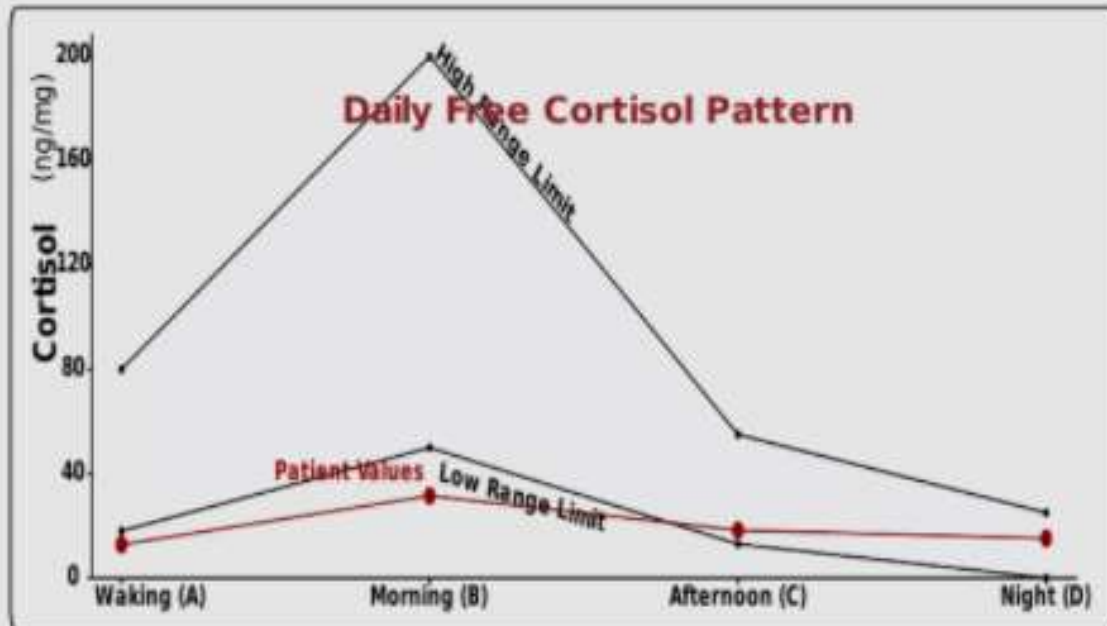


## Testosterone

Age	Range
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## Adrenal Hormones

See pages 4 and 5 for a more complete breakdown of adrenal hormones



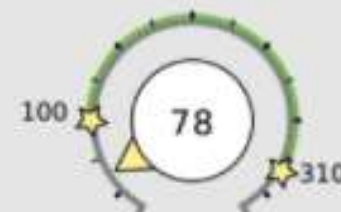
Free cortisol best reflects tissue levels. Metabolized cortisol best reflects total cortisol production.

## Total DHEA Production

Age	Range
20-39	3000-5500
40-60	2000-4000
>60	1000-2500



Total DHEA Production  
(DHEAS + Etiocholanolone + Androsterone)



24hr Free Cortisol  
(A+B+C+D)

cortisol  
metabolism



Metabolized Cortisol (THF+THE)  
(Total Cortisol Production)

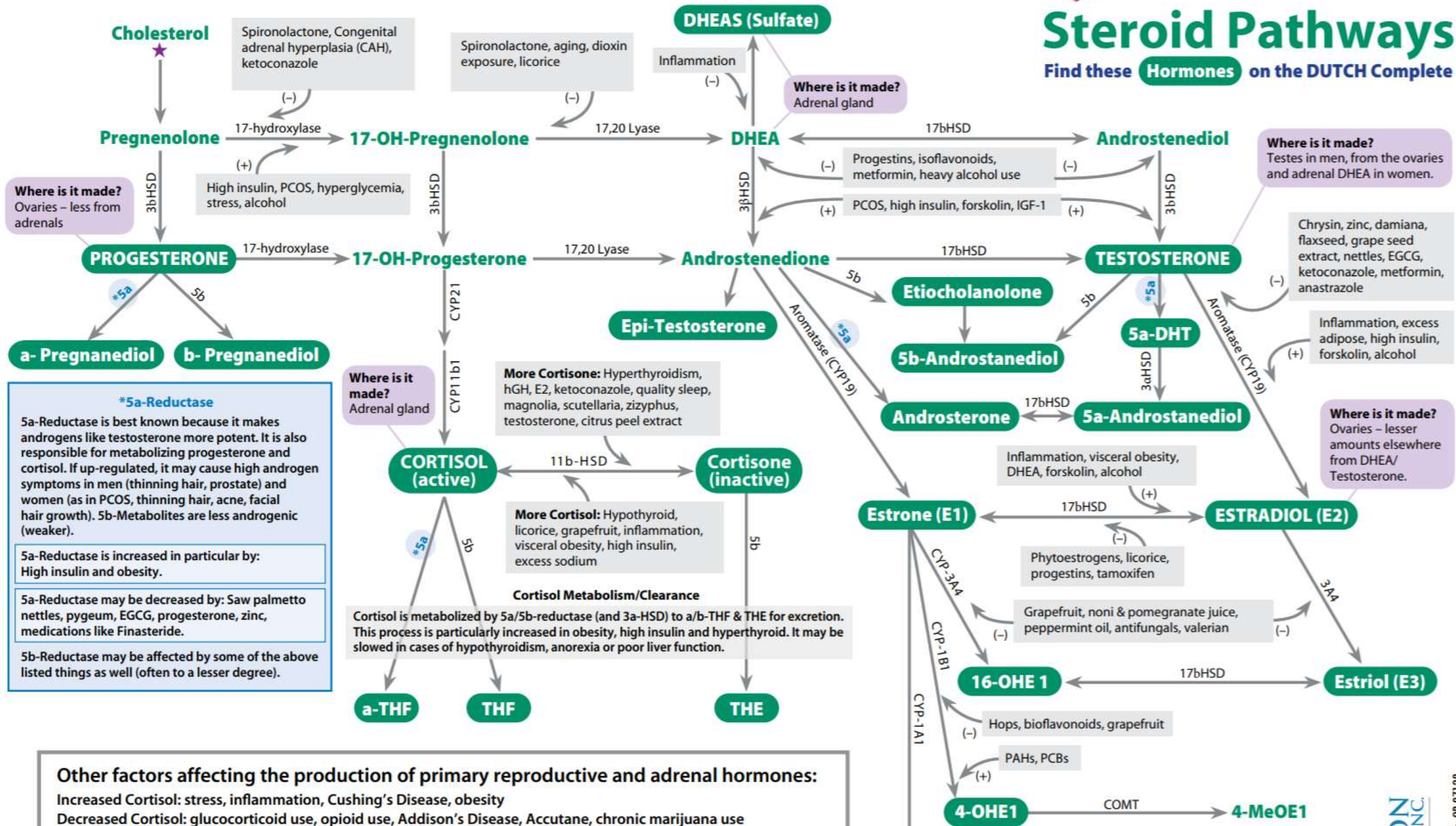
Category	Test		Result	Units	Normal Range
Nutritional Organic Acids					
Vitamin B12 Marker (may be deficient if high) - (Urine)					
	Methylmalonate (MMA)	Within range	0.7	ug/mg	0 - 2.5
Vitamin B6 Markers (may be deficient if high) - (Urine)					
	Xanthurenate	Within range	0.40	ug/mg	0.12 - 1.2
	Kynurenate	Within range	1.3	ug/mg	0.8 - 4.5
Glutathione Marker (may be deficient if low or high) - (Urine)					
	Pyroglutamate	Below range	19.1	ug/mg	28 - 58
Neurotransmitter Metabolites					
Dopamine Metabolite - (Urine)					
	Homovanillate (HVA)	Below range	2.1	ug/mg	3 - 11
Norepinephrine/Epinephrine Metabolite - (Urine)					
	Vanilmandelate (VMA)	Below range	1.1	ug/mg	2.2 - 5.5
Melatonin (*measured as 6-OH-Melatonin-Sulfate) - (Urine)					
	Melatonin* (Waking)	Below range	7.4	ng/mg	10 - 85
Oxidative Stress / DNA Damage, measured as 8-Hydroxy-2-deoxyguanosine (8-OHdG) - (Urine)					
	8-OHdG (Waking)	Low end of range	0.8	ng/mg	0 - 5.2



Category	Test		Result	Units	Normal Range
<b>Nutritional Organic Acids</b>					
Vitamin B12 Marker (may be deficient if high) - (Urine)					
	Methylmalonate (MMA)	High end of range	1.8	ug/mg	0 - 2.2
Vitamin B6 Markers (may be deficient if high) - (Urine)					
	Xanthurenate	Within range	0.4	ug/mg	0 - 1.4
	Kynurenate	Within range	3.1	ug/mg	0 - 7.3
Glutathione Marker (may be deficient if low or high) - (Urine)					
	Pyroglutamate	Above range	76.2	ug/mg	32 - 60
<b>Neurotransmitter Metabolites</b>					
Dopamine Metabolite - (Urine)					
	Homovanillate (HVA)	Low end of range	5.6	ug/mg	4 - 13
Norepinephrine/Epinephrine Metabolite - (Urine)					
	Vanilmandelate (VMA)	Within range	4.9	ug/mg	2.4 - 6.4
Melatonin (*measured as 6-OH-Melatonin-Sulfate) - (Urine)					
	Melatonin* (Waking)	Within range	31.4	ng/mg	10 - 85
Oxidative Stress / DNA Damage, measured as 8-Hydroxy-2-deoxyguanosine (8-OHdG) - (Urine)					
	8-OHdG (Waking)	Within range	2.2	ng/mg	0 - 5.2

Category	Test	Result	Units	Normal Range
<b>Nutritional Organic Acids</b>				
Vitamin B12 Marker (may be deficient if high) - (Urine)				
	Methylmalonate (MMA)	Above range	3.4	ug/mg 0 - 3
Vitamin B6 Markers (may be deficient if high) - (Urine)				
	Xanthurenate	Within range	0.6	ug/mg 0 - 2.1
	Kynurenate	Within range	5.5	ug/mg 0 - 9.3
Glutathione Marker (may be deficient if low or high) - (Urine)				
	Pyroglutamate	Above range	113.8	ug/mg 43 - 85
<b>Neurotransmitter Metabolites</b>				
Dopamine Metabolite - (Urine)				
	Homovanillate (HVA)	Within range	9.5	ug/mg 4.8 - 19
Norepinephrine/Epinephrine Metabolite - (Urine)				
	Vanilmandelate (VMA)	Above range	8.4	ug/mg 2.8 - 8
Serotonin Metabolite - (Urine)				
	5-Hydroxyindoleacetate (5HIAA)	Above range	10.6	ug/mg 3 - 10
Melatonin (*measured as 6-OH-Melatonin-Sulfate) - (Urine)				
	Melatonin* (Waking)	Within range	33.6	ng/mg 10 - 85
Oxidative Stress / DNA Damage, measured as 8-Hydroxy-2-deoxyguanosine (8-OHdG) - (Urine)				
	8-OHdG (Waking)	Within range	5.7	ng/mg 0 - 8.8





# Blood Markers for Cortisol

- Cortisol
- Low sodium (139-142)
- High potassium (4-4.4)
- Low NA/K ratio (32-34)
- Low-normal Glucose (82-88)
- Low normal bicarb (25-28)
- Increased lymph (30%)
- Increased Eosinophils (<3%)



# Patterns of Thyroid Imbalance





# Patterns of Thyroid Imbalance

## Hypothyroid Patterns

- ✓ Primary Hypothyroid
- ✓ Pituitary and Hypothalamic Hypothyroid
- ✓ Autoimmune Thyroiditis (Hashimoto's)
- ✓ Thyroid Under Conversion
- ✓ Increased Thyroid Binding Globulin
- ✓ Thyroid Receptor Resistance





# Patterns of Thyroid Imbalance

## Hyperthyroid Patterns

- ✓ Primary Hyperthyroid
- ✓ Pituitary and Hypothalamic Hyperthyroid
- ✓ Autoimmune – Grave's Disease
- ✓ Thyroid Over Conversion
- ✓ Decreased Thyroid Binding Globulin



Determining Thyroid Pattern Chart												
	Units	Ideal Low	Ideal High	Primary Hypo Thyroid	Pituitary Hypo Thyroid	Auto Immune Hypo Thyroid	Auto Immune Hyper Thyroid	Under Conversion T4 to T3	Over Conversion T4 to T3	High Thyroid Binding Globulin	Low Thyroid Binding Globulin	Thyroid Resistance
TSH		1.8	3.0	H	L	N or H	L	N	N	N	N	N
Total T4	ug/d	6.0	12.0	N or L	N or L	N or L	N or H	N or H	N or L	N	N	N
Free T4	ng/dL	1.0	1.5	N or L	N or L	N or L	N or H	N or H	N or L	L	H	N
T3 Uptake	md/dl	28.0	38.0	N or L	N	N or L	N	L	HN or H	L	H	N
Free T3	pg/mL	300.0	450.0	N or L	N or L	N or L	N or H	L	HN or H	L	H	N
Reverse T3 (rT3)	pg/ml	90.0	350.0	N	N	N	N	L	N	N	N	N
Thyroid Antibodies		0	2	N	N	H	H	N or H	N	N	N	N
PLUS												
Cholesterol	mg/dl	0	200	N or H			N or L					
Triglycerides	mg/dL	35	160	H			L					
Calcium	mg/dL	8.7	10.5	N or H			N or L					
Possible Causes				deficiency of iodine or cofactors such as Se, Mg, Cu, niacin, riboflavin, B6 and zinc	serotonin or dopamine deficiency, excess cytokines (inflammation), excess cortisol (stress) excess	antibodies to thyroid peroxidase, thyroglobulin (binding protein), TSH, T3 or T4	N or L antibodies to TSH, or viral	deficiency of cofactors, serotonin, dopamine, gut dysbiosis, inflammation (increased cytokines), excess cortisol (stress)	excess testosterone	excess estrogen	excess testosterone	inflammation (elevated cytokines), excess cortisol (stress), deficiency of Vitamin A, elevated homo cysteine

Pattern-Specific Thyroid Nutrition Chart									
Nutrients	Primary Hypo Thyroid	Pituitary Hypo Thyroid	Auto Immune Hypo Thyroid	Auto Immune Hyper Thyroid	Under Conversion T4 to T3	Over Conversion T4 to T3	High Thyroid Binding Globulin	Low Thyroid Binding Globulin	Thyroid Resistance
Antioxidants: Glutathione, SOD and precursors: NAC, Protandim, Oxicell	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ashwagandha	✓								
Beet							✓		
Betaine HCl							✓		
Bugleweed				✓					
Cabbage juice				✓					
Choline							✓		
Dandelion							✓		
Enzymes: bromelain, protease 250 - 500 mg 3x/day between meals			✓	✓					
Essential fatty acids	✓	✓	✓	✓	✓				✓
Gamma oryzanol (rice bran)		✓							
Goto kola							✓		
Guggulu	✓				✓	✓		✓	
Iodine	✓								
Iron	✓								
L-arginine		✓							
Lemon balm				✓					



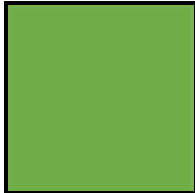
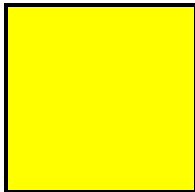
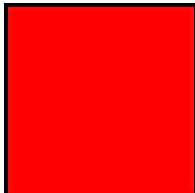
# ASSESS



## Genetics



# SNP Interpretation

	<b>Homozygous Negative (-/-)</b>	You did not inherit a "risk allele"/ mutation / minor allele.
	<b>Heterozygous (+/-)</b>	You inherited one of two "risk alleles"/ mutation /minor alleles.
	<b>Homozygous Positive (+/+)</b>	You inherited two of two "risk alleles"/ mutation / minor allele. Sometimes It may appear red If there is only one out of one minor allele present.

# Important Thyroid Related Genes

- ✓ **DIO1 and 2** - Conversion of T4 to T3, degradation of T3 and T4
- ✓ **FOX1** - encodes protein crucial for maturation of the thyroid, suppresses Thyroid peroxidase (TPO), regulates thyroglobulin
- ✓ **PDE8B** - Encodes an enzyme that breaks down cAMP, the messenger used by TSH to stimulate the thyroid to produce hormones
- ✓ **CTLA-4** - Codes a protein which transmits an inhibitory signal to T cells to slow down/prevents autoimmune process
- ✓ **MTHFR, MTR, MTRR** – related to homocysteine, which damages receptors
- ✓ **BCM01** – codes for Beta carotene to Vitamin A conversion, important for receptors
- ✓ **TSHR** - TSH receptors on thyroid cells
- ✓ **TPO** - encodes for thyroid peroxidase - adds iodine atoms to tyrosine on thyroglobulin



# Adrenal Related SNPs

- ✓ **FKBP54** - rs9470080, rs9394309, rs7748266 and rs1360780
- ✓ **GJA8** - rs201161441, rs6657114, rs6671502
- ✓ **TRPA1** - rs75470088
- ✓ **PDGFD** - rs7116655, rs361283, rs361284, rs590216, rs603781, rs591118, rs589796, rs2515080, rs684212, rs517401, rs671851, rs2515083, rs620426, rs619954, rs574494, rs619114, rs618648, rs5794293, rs623031
- ✓ **KRT8P9** - rs111566682
- ✓ **PSMD3** - rs9912981, rs3859188, rs71355433, rs7222556, rs9916279, rs8080546, rs11654706, rs11078932, rs58212353, rs2012
- ✓ **CSF3** - rs2827
- ✓ **MED24** - rs11555254, rs2302778, rs7503939, rs17850739,
- ✓ **LRP1B** - rs142320277



# Adrenal Related SNPs

- ✓ **GBA3** - rs111863753
- ✓ **HMGN3** - rs13220233
- ✓ **PDE7B** - rs149647891
- ✓ **SCGN** - rs5875060
- ✓ **ANKS1B** - rs191087489, rs143638033, rs142161979
- ✓ **ELSPBP1** - rs137939366
- ✓ **NOS1** - rs12815584, rs77562913, rs76830467,† rs75992652, rs34406980, rs150941488
- ✓ **IGH** - rs201541519
- ✓ **SLC2A10** - rs117420762
- ✓ **BCL2L13** - rs149352662, rs189673743, rs140179402

# Thyroid And Gene Interaction

- Gluten intolerance and TPO antibodies in Hashimoto's (**CTL4**)
- Vitamin A deficiency (**BCMO1**)
- ↑homocysteine (**MTHFR**)
- MTHFR impacts **Vitamin B2**, needed for conversion of iodine and tyrosine to T4
- Other nutrients: selenium, iron, zinc, B12, magnesium, and D3 all needed for a healthy thyroid



# WHAT TO ADVISE FOR CTLA-4 SNPs

- Avoid Gluten and cross reactive grains
- Heal leaky gut
- Reduce toxic load
- Test inflammatory markers and antibodies
- Include natural anti-inflammatory foods and herbs – turmeric, ginger, fresh fruits and veggies
- Minimize sugar and processed foods
- Test and supplement Vitamin D if needed
- Optimize omega 3 to 6 ratio in foods
- Minimize stress



# GENOMICS INTERPRETATION

Genetic Detoxification: [www.geneticdetoxification.com](http://www.geneticdetoxification.com)

True Report Nutrigenomics:  
[www.true.report/23andme-test-interpretation-analysis/](http://www.true.report/23andme-test-interpretation-analysis/)

Genetic Genie: [www.Geneticgenie.org](http://www.Geneticgenie.org)

Self Decode: [www.selfdecode.com](http://www.selfdecode.com)

StrateGene: [www.SeekingHealth.org](http://www.SeekingHealth.org)

Sterling's App: [www.MTHFRsupport.com](http://www.MTHFRsupport.com)

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

Opus23: <https://datapunk.net/opus23/>





# PLAN

- Lifestyle
- Nutrients
- Foods
- Herbs
- Hormones

*Map out a personalized program to remove obstacles and rebalance hormones*

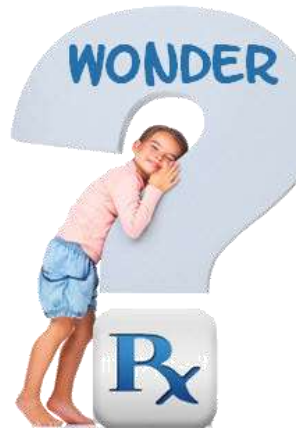
# Standard Western Medicine Approach to Thyroid Dysfunction

- Test TSH
- If high, test T4 and prescribe synthetic T4
- If low, suspect Graves' disease and do a scan
- If Graves', prescribe anti-thyroid drugs and radioactive iodine to kill the thyroid then prescribe synthetic T4

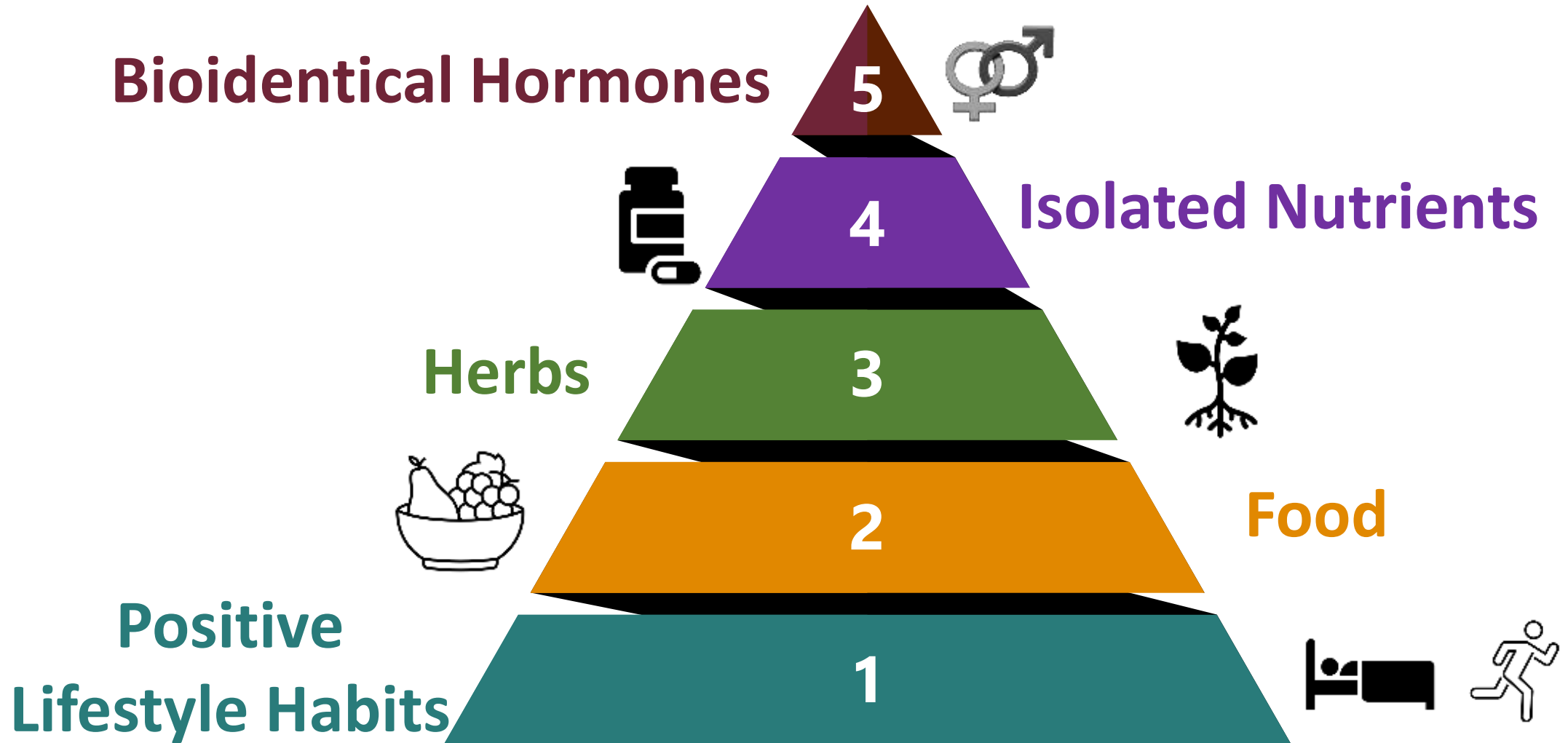




# Low Thyroid Causes



# Plan Hierarchy





A glass of water is centered in the image, surrounded by a variety of fresh fruits and vegetables, including bananas, apples, and leafy greens. The word "DIET" is written in large, bold, red letters across the bottom of the image.

**DIET**

# DIET

- ✓ Tap water: chlorine, fluoride, medication residues, chemicals
- ✓ Pesticides
- ✓ Preservatives
- ✓ Artificial colors and flavors
- ✓ GMOs & Irradiated food
- ✓ Sugar and flour
- ✓ Bromine: in processed baked goods, some hard plastics, citrus-flavored sodas, etc.
- ✓ Fluoride: in toothpastes, urban drinking water



# Gluten Intolerance

- ✓ Autoimmune reaction: attacks thyroid; anti-thyroid antibodies
- ✓ Hashimoto's Thyroiditis
- ✓ Gluten intolerance leads to inflammation
- ✓ 6 months gluten-free can clear antibodies





# BLOOD SUGAR SWINGS

✓ Blood sugar imbalances weaken and imbalance:

- gut
- lungs
- brain
- hormone levels
- adrenal glands
- detoxification pathways

✓ This leads to

- impaired metabolism
- weakened thyroid function

✓ As long as you ***have blood sugar dysregulation, whatever you do to fix your thyroid isn't going to work!***





A close-up photograph of a person with light-colored hair, wearing a dark suit jacket over a white shirt. They have a wide-eyed, open-mouthed expression of shock or intense stress, with both hands pressed against their cheeks. The background is a plain, light color.

**STRESS**

# Stress and Thyroid Function

- ✓ **Excess cortisol damages thyroid receptors** and causes thyroid resistance.
- ✓ **Insufficient cortisol lowers thyroid receptor sensitivity.**
- ✓ **Excess cortisol decreased T4 to T3 conversion.**
- ✓ **Excess cortisol increases blood sugar and insulin**, which decreases thyroid function.
- ✓ **Cortisol and corticotropin-releasing hormone** inhibit TSH.
- ✓ **Cortisol is needed to sensitize the thyroid receptors**,
  - too little will negatively affect thyroid activity.
  - too much cortisol will decrease thyroid conversion into its active form.



# ENVIRONMENTAL TOXINS AND RADIATION



# ENVIRONMENTAL TOXINS

- ✓ **Bromine:** in processed baked goods, some hard plastics, citrus-flavored sodas, etc.
- ✓ **Fluoride:** in toothpastes, urban drinking water
- ✓ **Chlorine:** in drinking water
- ✓ **Bisphenol A:** in plastics and dental amalgams
- ✓ **Triclosan:** in antibacterial hand wash and soaps
- ✓ **Radioactive Iodine:** from nuclear fallout and contrast imaging





# Pesticide Exposure

- ✓ Aldrin, DDT, and lindane:  
*1.2 times risk*
- ✓ Fungus killers: *1.4-fold risk*
- ✓ Chlordane (organochlorine):  
*1.3-fold risk*
- ✓ Benomyl and maneb/mancozeb  
*tripled and doubled risk*
- ✓ Herb killer paraquat: *nearly doubled the risk*



# Radiation

## ✓ Radioactive iodine:

- Binds to receptors and displaces real iodine
- Increases risk of thyroid cancer

## ✓ X-rays: Damage to sensitive thyroid tissue

## ✓ CT scans



**Always wear thyroid protection when getting x-rays**

# SMOKING

- ✓ Reduced serum T3 and T4 levels in heavy smokers
- ✓ Reduced thyrotropin (hypothalamus) concentrations
- ✓ Increased incidence of goiter
- ✓ Increased risk of thyroid cancer
- ✓ Increased incidence of Graves' disease (hyperthyroid)
- ✓ Increased thyroid-associated ophthalmopathy



# Medications Affecting the Thyroid

- ✓ antibiotics
- ✓ antidepressants
- ✓ diabetic medication
- ✓ hypertensive medication
- ✓ pain medication
- ✓ antacids
- ✓ cholesterol-lowering medications
- ✓ growth hormone modulators
- ✓ anti-nausea medications



- ✓ diuretics
- ✓ amphetamines
- ✓ Adderall
- ✓ anti-inflammatory
- ✓ arrhythmia medications
- ✓ hormone replacement
- ✓ steroids and androgens
- ✓ anti-addiction drugs
- ✓ arrhythmia meds
- ✓ psychoactive medications, i.e., lithium, thorazine



A top-down view of a white bowl filled with a variety of fresh, colorful ingredients. The bowl contains a mix of red berries (possibly raspberries or strawberries), green leafy vegetables (like spinach or kale), yellow corn cobs, and orange slices. The ingredients are arranged in a somewhat circular pattern, with the red berries at the top, green vegetables at the bottom, and yellow corn and orange slices in the middle. The bowl is set against a plain white background.

# **Nutrient Imbalances**



## Nutrient Imbalances That Impact Thyroid

- **Iodine:** vital part of the thyroid molecule
- **Riboflavin** -convert iodine and tyrosine to thyroid hormone
- **Selenium** - converts T4 to T3 & convert iodine and tyrosine to thyroid hormone
- **Vitamin A** – regulates TSH production
- **Vitamin D3** and bioflavonoid - protect against thyroid cancer
- **Zinc** - for hypothalamus and pituitary stimulation
- **Iron** - for TPO to initiate the first two steps in thyroid hormone synthesis
- **Vitamin B12** – for enzyme that activates thyroid hormone



## Thyroid Resistance Support

- Adrenal Support
- Stress Management
- B Vitamins especially B6, folate and B12
- Vitamin A
- Anti-inflammatories



# Plants That Support HPAT Function

- ✓ Ashwagandha
- ✓ Black Cumin Seed
- ✓ Chaga
- ✓ Cordyceps
- ✓ Turmeric
- ✓ Sea Vegetables
- ✓ Rehmannia
- ✓ Ginseng
- ✓ Magnolia







# Black Cumin Seed (Nigella Sativa)



## Black Cumin - Results of a Double Blind Placebo Controlled Study Effects

- TSH dropped by an average of 2.29 points
- T3 increased by 0.14 points
- T4 increased by 0.82 points
- Anti TPO decreased by over 146 points
- VEGF (Vaso-Endothelial Growth Factor) decreased by over 1421 points
- Weight loss - 2.9 lbs and ½ inch around waist without changing diet

# Cordyceps Improves HPAT Function

A photograph of several dried Cordyceps sinensis mushrooms, showing their characteristic thick, brown, segmented bodies and long, thin, dark stems. The mushrooms are arranged in a cluster, with some stems extending upwards and others lying horizontally. The background is a plain, light-colored surface.

- Cordycepin - the main bioactive and also known as 3'-deoxyadenosine
- Adenosine provides energy via mitochondrial support - increased oxygen utilization of ATP production
- Can balance cortisol levels
- Contains ergosterol and ergosterol palmitate – Vitamin D precursors
- Glucosamine
- Stabilization of blood sugar metabolism
- Reduces thyroid antibodies

<https://pubmed.ncbi.nlm.nih.gov/23927879/>

<https://drhedberg.com/cordyceps-hashimotos-disease/>



# Turmeric



- Anti-inflammatory and antioxidant – thyroid autoimmune
- Helps with Inflammatory bowel diseases like Crohn's and colitis
- Improves phase 2 liver detoxification
- Contains vitamin B6 for hormone balance





# Kelp (Laminaria Digitata)



- Contains T3 and T4
- Source of iodine
- Source of tyrosine
- High in minerals
- Supports thyroid function



## Siberian ginseng (*Eleutherococcus senticosus*)

- True Adaptogen
- Can prevent excess levels of adrenaline and cortisol impact on the body
- Helps stabilize thyroid function.
- Lowers the over-reactivity of the HPA axis
- Increases NK cells and mitigates impact of chemo – cancer
- Improves eye health – glaucoma, myopia
- Approved in Germany for CFS, impaired concentration
- Arthralgias in TCM
- Insomnia



# American Ginseng (Xi Yang Shen)

- Grows from Canada to Georgia- slow growing
- Mildly stimulating adaptogen
- May inhibit breast cancer growth – MCF-7
- Milder than Asian Ginseng
- Mild depression
- Age related memory loss
- Post competition immune depletion
- Chronic fatigue
- Stress induced asthma







## Adaptogens Defined

Nontoxic substances and especially a plant extract that is held to increase the body's ability to resist the damaging effects of stress and promote or restore normal physiological functioning  
– *Miriam Webster*



# Background on Adaptogens

- Term first used in 1964 by Russian scientists studying Eleuthero (*Eleutherococcus senticosus*) and noticing it's wide range of actions that were not easily defined by more traditional herbal actions.
- Classic definition is that they increase natural resistance to stressors.
- Said to influence the hypothalamic-pituitary-adrenal axis (HPA)
- Bring balance to the sharp peaks and valleys in energy and mood from stress
- Newer research indicated that only 3 plants that meet the classical definition of an adaptogen:
  - Eleuthero (*Eleutherococcus senticosus*)
  - Rhodiola (*Rhodiola rosea*)
  - Schisandra (*Schisandra chinensis*).
- If severely and chronically fatigued, adaptogens not curative and can actually do harm.

# Classifications of Adaptogens



ASHWAGANDHA



BACOPA



LICORICE



DONG QUAI



MILK THISTLE



HYSSOP



CORDYCEPS



MORINGA OLEIFERA



ASTRAGALUS



ELEUTHERO



MACA



JIAOGULAN



GOTU KOLA



SUMA



SCHISANDRA



AMLA



RHODIOLA



FO-TI



MAITAKE



HOLY BASIL



GINSENG

- Warming Adaptogens (Yang Tonics)
- Cooling Adaptogens
- Moistening Adaptogens (Yin Tonics)
- Drying Adaptogens
- Blood Tonics\*
- Chi Tonics



# Cooling Adaptogens

- American Ginseng (*Panax quinquefolius*)
- Goji (*Lycium chinensis*) - somewhat neutral, though anti-inflammatory and antioxidant...
- Licorice (*Glycyrrhiza glabra*) - neutral to cool
- Ophiopogon (Mai Men Dong)
- Peony (*Paeonia lateriflora*)
- Reishi (*Ganoderma lucidum*) - though it is slightly warming too....
- Rhodiola (*Rhodiola rosea*) - slightly cooling though quite stimulating
- Shatavari (*Asparagus racemosus*)

# Drying Adaptogens

- Ashwaganda (*Withania somnifera*)
- Asian Ginseng (*Panax ginseng*)
- Astragalus (*Astragalus membranaceus*)
- Cordyceps (*Cordyceps chinensis*)
- Devil's Club (*Oplopanax horridus*)
- Eleuthero (*Eleutherococcus senticosus*)
- Schizandra (*Schisandra chinensis*) - extremely astringent and drying.
- Rhodiola (*Rhodiola rosea*) - extremely astringent and drying.





# Ashwagandha and HPAT Axis

- Normalizes cortisol levels
- Can increase catecholamine production
- Stimulates T3 and T4 synthesis
- Reduces vitamin C depletion under times of stress
- Beneficial in both the “resistance” and “exhaustion” phases of adrenal fatigue.



# Black Cumin Effects

- Thymoquinone - protects cells from autoimmunity and speeds repair of damaged cells.
- Studies from rats have shown that *Nigella* can:
  - Decrease thyroid inflammation
  - Improve the cell's response to T3
  - Improve weight loss
- Anti-inflammatory - decreases autoimmune attack on thyroid
- Study in Hashimotos - patients given 2 grams a day of powdered *Nigella sativa* for 8 weeks
  - decrease in treatment group of
    - Weight and BMI
    - IL-23 levels
    - Anti-TPO antibodies
    - TSH
  - Increase in T3 and T4





# Chaga and HPAT Function

- Reduces Thyroid antibodies
- Antioxidant Properties
- Supports gut health
- Balances immune system
- Anti-inflammatory

## **Supplies essential HPAT nutrients**

- B vitamins
- Calcium
- Vitamin D
- Iron
- Zinc
- Potassium
- Magnesium
- Selenium
- Copper



# Cordyceps Nutrients Support HPAT Function

- Sodium
- Potassium
- Calcium
- Magnesium
- Iron
- Zinc
- Selenium: selenomethionine, selenite, and selenate





# Bladderwrack (*Fucus Vesiculosus*) Constituents

- Precursor of active thyroid hormone – T<sub>2</sub>
- Iodine
- Calcium
- Magnesium
- Potassium
- Sodium
- Fucophorethols
- Mucopolysaccharides
- Algin



# Rehmannia

- Anti-inflammatory
- Supports adrenal cortex
- Lowers blood sugar
- Protects against steroid use and chemo
- Uncured vs cured (processed)
- Lowers blood pressure
- Uncured - Clears heat
  - Antihemorrhagic
  - Mild laxative
  - Chronic nephritis





## Panax Ginseng (Korean)

- Adrenals- supports HPA axis
- Improves cognitive function – attention span concentration
- Lowers blood sugar by improving sensitivity and increasing insulin
- Antioxidant and free radical scavenger
- Increases energy and reduces fatigue
- Stimulating – blocks GABA receptors and acetylcholine receptors
- Improves vaginal tissue during menopause

# Magnolia

- Lowers cortisol
- Decreases anxiety 5 times more powerfully than Valium
- Improves acetylcholine levels - short-term memory
- Lowers blood sugar
- May decrease risk of Alzheimer's
- Used to treat menstrual cramps, abdominal pain, abdominal bloating and gas, nausea, indigestion, coughs, and asthma.
- "Honokiol" and "Magnolol" - up to 1000 times more potent than vitamin E in antioxidant activity.







ASHWAGANDHA



BACOPA



LICORICE



DONG QUAI



MORINGA OLEIFERA



ASTRAGALUS



ELEUTHERO



MACA



SCHISANDRA



AMLA



RHODIOLA



FO-TI



MAITAKE



HOLY BASIL



GINSENG

# What are Adaptogens

- Non-toxic plants
- Herbal pharmaceuticals
- Help the body resist stressors of all kinds - physical, chemical and biological
- Used for centuries in Chinese and Ayurvedic healing traditions
- Enjoying increased popularity in the modern world



# Adaptogens

*Restore overall balance and strengthen functioning without impacting the balance of an individual organ or body system.*

- Eleuthero
- Rhodiola
- Schisandra
- "American" ginseng
- "Asian" ginseng
- Cordyceps



# Warming Adaptogens

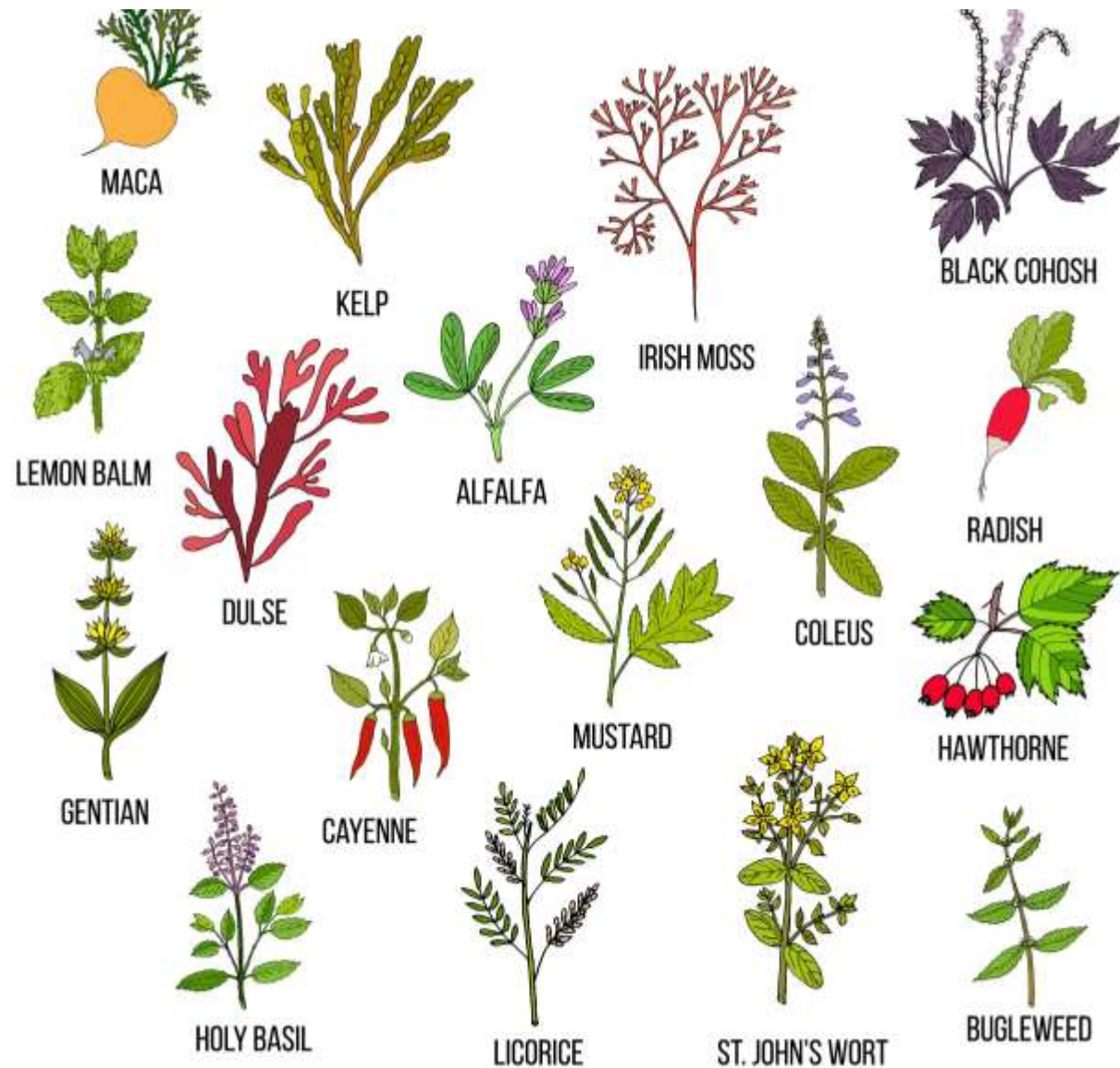
- Ashwaganda (*Withania somnifera*)
- Asian Ginseng (*Panax ginseng*)- The red form is the hottest, the white form is less so)
- Astragalus (*Astragalus membranaceus*)
- Cordyceps (*Cordyceps chinensis*)
- Devil's Club (*Oplopanax horridus*)
- Eleuthero (*Eleutherococcus senticosus*)
- Schizandra (*Schisandra chinensis*)



# Moistening Adaptogens (Yin Tonics)

- American Ginseng (*Panax quinquefolius*)
- Astragalus (*Astragalus membranaceus*)
- Asian Ginseng (*Panax ginseng*) – *moistening but not considered a yin tonic.*
- Codonopsis (*Codonopsis tangshen*)
- Devil's Club (*Oplopanax horridus*) - *autumn harvest is more moist*
- Goji (*Lycium chinensis*)
- He Shou Wu (*Polygonum multiflorum*)
- Licorice (*Glycyrrhiza glabra*)





# Herbs to Support Underactive Thyroid

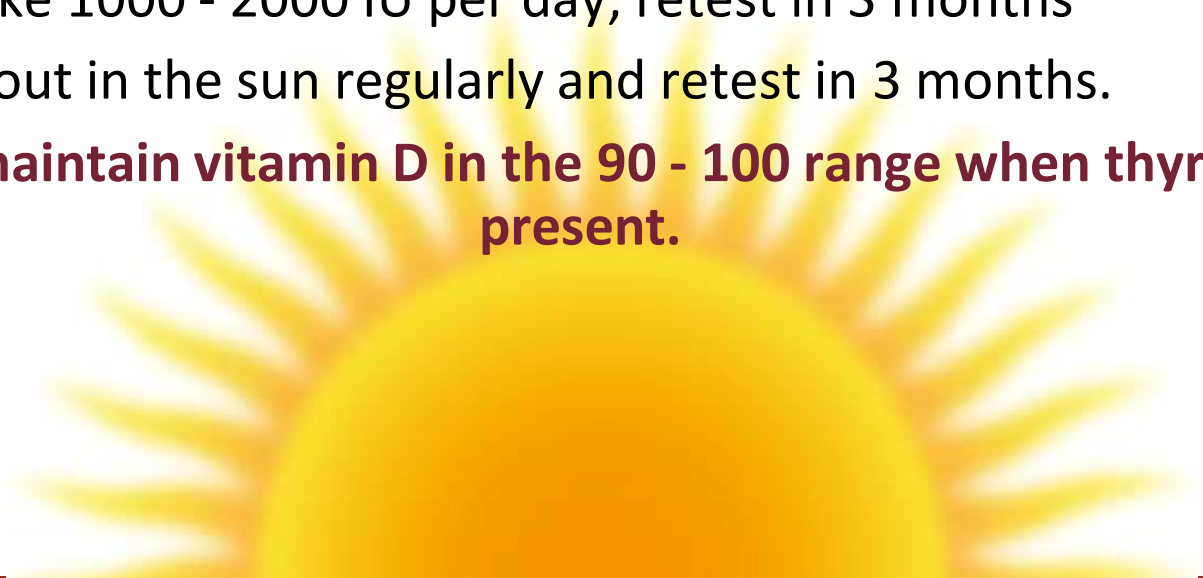
# Vitamin D With Hashimotos



*Optimal Range: 90.0 -100.0 in the presence of antibodies*

- ✓ **Vitamin D <20:** Take 20 000 IU every day for a week or up to a month, then 10 000 IU for 2 months, then retest
- ✓ **Vitamin D 20-30:** Take 10 000 IU for 3 months, then retest
- ✓ **Vitamin D 30-40:** Take 6000 IU for 3 months, then retest
- ✓ **Vitamin D 40-60:** Take 4000 - 6000 IU per day; retest in 3 months
- ✓ **Vitamin D 60-90:** Take 2000 - 4000 IU per day; retest in 3 months
- ✓ **Vitamin D 80-100:** Take 1000 - 2000 IU per day; retest in 3 months
- ✓ **Vitamin D >100:** Get out in the sun regularly and retest in 3 months.

**It's a good idea to maintain vitamin D in the 90 - 100 range when thyroid antibodies are present.**



# Herbs to Support Overactive Thyroid



- Bugleweed
- Lemon Balm
- Motherwort



# Lemon Balm (*Melissa Officinalis*)



- In mint family
- For hyperthyroid
- Inhibits TSH
- Blocks attachment of antibodies to the **thyroid** cells that cause Grave's disease (hyperthyroidism)
- Carminative
- Headaches
- Antiviral
- Slows progression of Alzheimer's
- Mild antidepressant

# Bugleweed (*Lycopus americanus*)

- For hyperthyroid
- Mint family - calms the nerves
- Inhibits thyroid hormone production by
  - decreasing levels of TSH
  - impairing thyroid hormone synthesis

*(Kohrle J, Auf'mkolk M, Winterhoff H. Iodothyronine deiodinases: inhibition by plant extracts. Acta Endocrinol.1981; 96:15-16).*



# Thyroid Balancing Step by Step

1. Avoid toxic exposures and optimize detoxification pathways
2. Decrease/manage stress
3. Optimize digestion
4. Balance blood sugar
5. Support adrenals
6. Get quality sleep
7. Do gentle exercise
8. Eat whole-foods, antioxidant-rich diet and drink thyroid balancing elixirs
9. Add key nutrients and herbs
10. Enjoy fresh air and sunshine
11. Have fun





# Autoimmune Hypothyroid

## Causes:

- ✓ Leaky gut
- ✓ Food allergies
- ✓ Gluten and dairy
- ✓ Stress



## Nutritional Approaches:

- ✓ Balance blood sugar
- ✓ Repair gut
- ✓ Support adrenals
- ✓ Support T regulatory cells
  - Vitamin D
  - Glutathione cream, precursors or patch
  - Essential fatty acids
- ✓ Balance T cells: TH1 & TH2

# Thyroid Under Conversion & Increased TBG

## Under Conversion from T4 to T3:

- Causes hypo-type symptoms

## Causes:

- Deficiency 5'deiodinase cofactors
- Gut dysbiosis
- Elevated cytokines
- Elevated cortisol
- Elevated estrogen

## Nutritional Support:

- Insulin resistance diet
- Healing leaky gut, dysbiosis
- Detoxification program for liver
- Iron
- Iodine
- Selenium
- Guggulu
- Anti-inflammatories, EFAs
- Antioxidants
- Phosphatidylserine, 2000 mg/day

# Thyroid Resistance

## Causes:

- ✓ Cortisol
- ✓ Homocysteine
- ✓ Inflammation
- ✓ Deficiency of Vitamin A

## Nutritional Support:

- ✓ Adrenal Support
- ✓ Stress Management
- ✓ B Vitamins (methyl)
- ✓ Vitamin A
- ✓ Anti-inflammatories





# Thyroid Nourishing Diet



- ✓ **Gluten-free**
- ✓ **Green leafy vegetables**
- ✓ **Sea vegetables:** kelp, bladderwrack, dulse, nori, more
- ✓ **Garlic and onions**
- ✓ **Low-glycemic fruits**
- ✓ **Coconut**
- ✓ **Omega-3 rich foods:** hemp seeds, chia seeds, flax seeds, algae, and deep ocean fish
- ✓ **Probiotic and prebiotic rich foods:** kefir, rejuvelac, sauerkraut, coconut yogurt, seed yogurt, Jerusalem artichoke, chicory - improves T3 production
- ✓ **Eliminate dietary stressors:** caffeine, alcohol, sugar, refined foods

# Overview of Thyroid Nutrition

- ✓ **Vitamins:** Vitamin A, Vitamin B, Vitamin D
- ✓ **Trace Minerals:** Iodine, Selenium, Zinc, Iron, Magnesium
- ✓ **Antioxidants:** Glutathione, SOD
- ✓ **Amino Acids:** Tyrosine, Phenylalanine, Arginine
- ✓ **Herbs:** Ashwagandha, Guggulu, Rosemary, Sage
- ✓ **Foods:** Bladderwrack, Kelp (Digitata), Avoid Gluten



# Key Thyroid Herbs

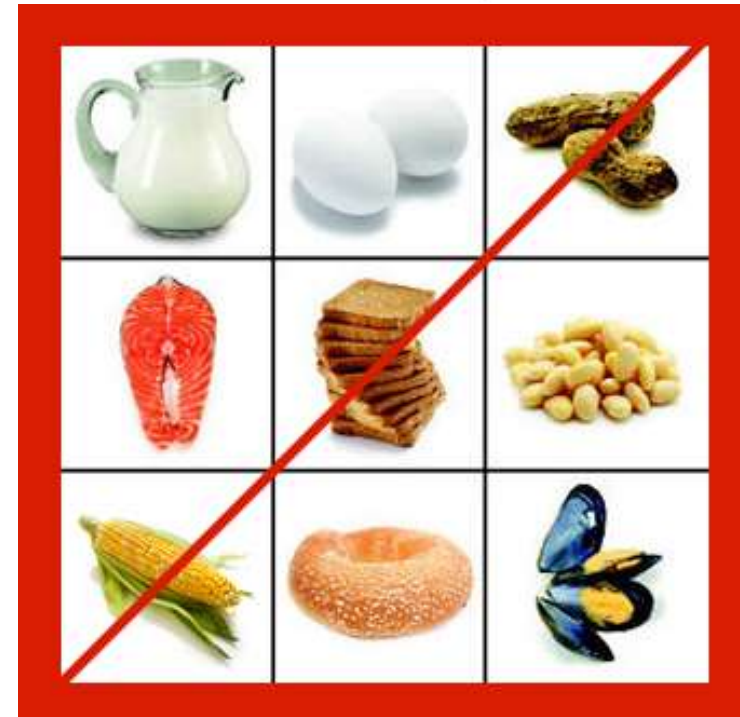
- ✓ **Ashwagandha:** stimulates T3 and T4 synthesis and increase antioxidants, including SOD
- ✓ **Guggulu:** supports thyroid function through its role in conversion of T4 to T3 in the liver
- ✓ **Rosemary:** contains carnosic acid that supports pituitary-thyroid signaling
- ✓ **Coleus Forskohlii:** supports the production and release of thyroid hormones
- ✓ **Mushrooms:** regulates the immune system, controls inflammation
- ✓ **He Shou Wu:** overall endocrine balance





# Adrenal Supportive Food Guidelines

- ✓ Do not restrict salt
- ✓ Avoid foods 3 hours before bedtime
- ✓ Start your day with green protein:  
low carb, moderate protein and  
fat breakfast with omega-3 fats
- ✓ Do not allow yourself to become overly hungry
- ✓ Gluten-free diet
- ✓ Eliminate caffeine
- ✓ Eliminate alcohol
- ✓ Eating for blood sugar balance –  
say no to refined foods



# Herbs for Adrenals

- ✓ Ashwagandha
- ✓ Licorice
- ✓ Eleuthero
- ✓ Panax ginseng
- ✓ Siberian ginseng
- ✓ Schizandra
- ✓ Astragalus
- ✓ Devil's club
- ✓ Codonopsis
- ✓ Maca
- ✓ Rhodiola
- ✓ Pine pollen
- ✓ Holy basil
- ✓ Shilajit
- ✓ Ginkgo
- ✓ Rhemannia
- ✓ He sho wu
- ✓ Cordyceps
- ✓ Reishi
- ✓ Chaga
- ✓ Lemon balm
- ✓ Chamomile
- ✓ Hops



# Pituitary/Hypothalamus Hypothyroidism

## Causes:

- Stress: adrenal
- Post partum
- Shut down from over medication
- Neurotransmitter imbalances: especially dopamine and serotonin



## Nutritional Support:

- Sage Leaf
- L-arginine
- Zinc
- Magnesium
- Manganese
- Phosphatidylserine
- Antioxidants
- B Vitamins



# Thyroid Under Conversion & Increased TBG

## Under Conversion from T4 to T3:

- Causes Hypo type symptoms

## Causes:

- Deficiency 5'deiodinase cofactors
- Gut Dysbiosis
- Elevated Cytokines
- Elevated Cortisol
- Elevated Estrogen

## Nutritional Support:

- Insulin Resistance Diet
- Healing Leaky Gut, Dysbiosis
- Detoxification Program for Liver
- Iron
- Iodine
- Selenium
- Guggulu
- Anti-inflammatories, EFAs
- Antioxidants
- Phosphatidylserine  
2000 mg/day

# Thyroid Over Conversion & Decreased TBG

## Over Conversion from T4 to T3:

- Causes Receptor Burnout

## Causes:

- Increased Testosterone
- Insulin Resistance / Diabetes
- PCOS



## Nutritional Support:

- Insulin Resistance Diet
- Detoxification Program for Liver
- Selenium
- Guggulu
- Antioxidants
- Phosphatidylserine 2000 mg/day

# Increased Thyroid-Binding Globulin

## Causes:

- Oral Contraceptives
- Estrogen



## Nutritional Support:

- MSM, Trimethylglycine
- Choline
- Beet
- Betaine HCl
- Vitamin C
- Taurine
- Liver Detox Support
- Phosphatidylcholine



# Autoimmune Hypothyroid

## Causes:

- ✓ Leaky gut
- ✓ Food allergies
- ✓ Gluten and dairy
- ✓ Stress



## Nutritional Approaches:

- ✓ Balance blood sugar
- ✓ Repair gut
- ✓ Support adrenals
- ✓ Support T-regulatory cells
  - Vitamin D
  - Glutathione cream, precursors or Protandim
  - Essential fatty acids
- ✓ Balance T-cells: TH1 & TH2

# Effects of Low Thyroid on Other Body Systems

- ✓ Sluggish activity
- ✓ Decreased cellular turnover
- ✓ Decreased cellular energy
- ✓ Increased cholesterol
- ✓ Decreased rate of glucose uptake by cells
- ✓ Decreased rate of glucose absorption in the gut
- ✓ Slowed response of insulin to elevated blood sugar
- ✓ Slowed clearance of insulin from the blood



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# EMPOWER

- Self Care Tools
- Recipes
- Videos
- Checklists
- Resources to Support Follow-Through









# Adrenal Nourishing Breakfast

- ✓ Start your day with greens: low carb, moderate protein and fat breakfast with an omega-3 fat source
  - Green smoothie
  - Green juice
  - Green powder
  - Protein powder
  - Chia pudding
  - Hemp milk shake
  - Dehydrated grain-free bread with flax/coconut butter
- ✓ Adrenal support herbal tea: licorice, ginseng, lemon balm -- No caffeine



# Adrenal Nourishing Lunch



*Photo by Annette Nolan*  
<http://www.itsallaboutyou.ca>

- ✓ Large veggie salad with omega-3 rich salad dressing and seed toppings
- ✓ Green blender soups
- ✓ Cut up vegetables with dips made with healthy fats – coconut, avocado, omega-3 rich seeds, raw nuts, soaked and sprouted
- ✓ Wraps using green leaves and nori sea vegetable and filled with greens, sprouts, sauerkraut and topped with an omega-3 rich dressing or spread

# Adrenal Nourishing Dinner

- ✓ Large veggie salad with omega-3 rich salad dressing and seed toppings
- ✓ Green blender soups
- ✓ Wraps using green leaves and nori sea vegetable and filled with greens, sprouts, sauerkraut, and topped with an omega-3 rich dressing or spread
- ✓ Steamed vegetables
- ✓ “Big Bowl” – filled with steamed and/or raw veggies and a blended vegetable sauce made from the steam water, vegetables, and a fat to thicken: chia seed, avocado, tahini, nut butter, coconut, or raw nuts or seeds



*Photo by Annette Nolan*  
<http://www.itsallaboutyou.ca>



# Healing Elixir Base Recipe

## Ingredients:

- ✓ **Liquid base:** herbal tea, nut or seed milk, fresh juice, or water – 2 cups
- ✓ **Fat source:** nut butter, avocado, chia gel, soaked nuts, seeds, coconut
- ✓ **Herbs:** several teaspoons to several tablespoons
- ✓ **Flavorings:** essential oils, extracts, carob, vanilla, raw cacao
- ✓ **Sweetener**
- ✓ **Salt:** sea salt or kelp

## Directions:

- ✓ If you're using a tea base, boil water and allow herbs to steep 10 minutes or longer to get to full flavor and strength.
- ✓ Put water, fat, herbs, flavorings, sweetener, and salt in blender.
- ✓ Blend until smooth, then adjust flavorings and sweeteners to taste.

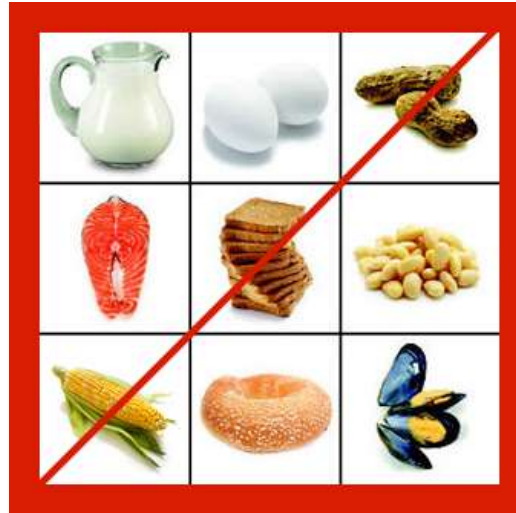


# Elimination Diet

## ✓ Common allergens

- Gluten
- Dairy
- Egg
- Peanuts
- Corn
- Soy

## ✓ Known allergens



- ✓ Frequently eaten foods
- ✓ “Trigger” foods (cravings)
- ✓ Foods that irritate the delicate digestive lining
- ✓ Known intolerances – don’t digest well

# Foods That Disrupt HPAT

- ✓ Charred meat: heterocyclic amines
- ✓ Processed high glycemic foods: flour, sugar, grains
- ✓ Chemical-laden foods
- ✓ Foods in cans and plastic
- ✓ Hydrogenated and oxidized fats
- ✓ Caffeine
- ✓ Dairy
- ✓ Gluten
- ✓ Excess alcohol





# Foods That Support HPAT

- ✓ Coconut oil
- ✓ Omega-3 fats
- ✓ Brassicas
- ✓ Sea vegetables
- ✓ Brazil nuts
- ✓ Cumin
- ✓ Pomegranate
- ✓ **Adaptogenic herbs:** ashwagandha, eleuthero, medicinal mushrooms
- ✓ Probiotic foods: yogurt, kimchi, kefir

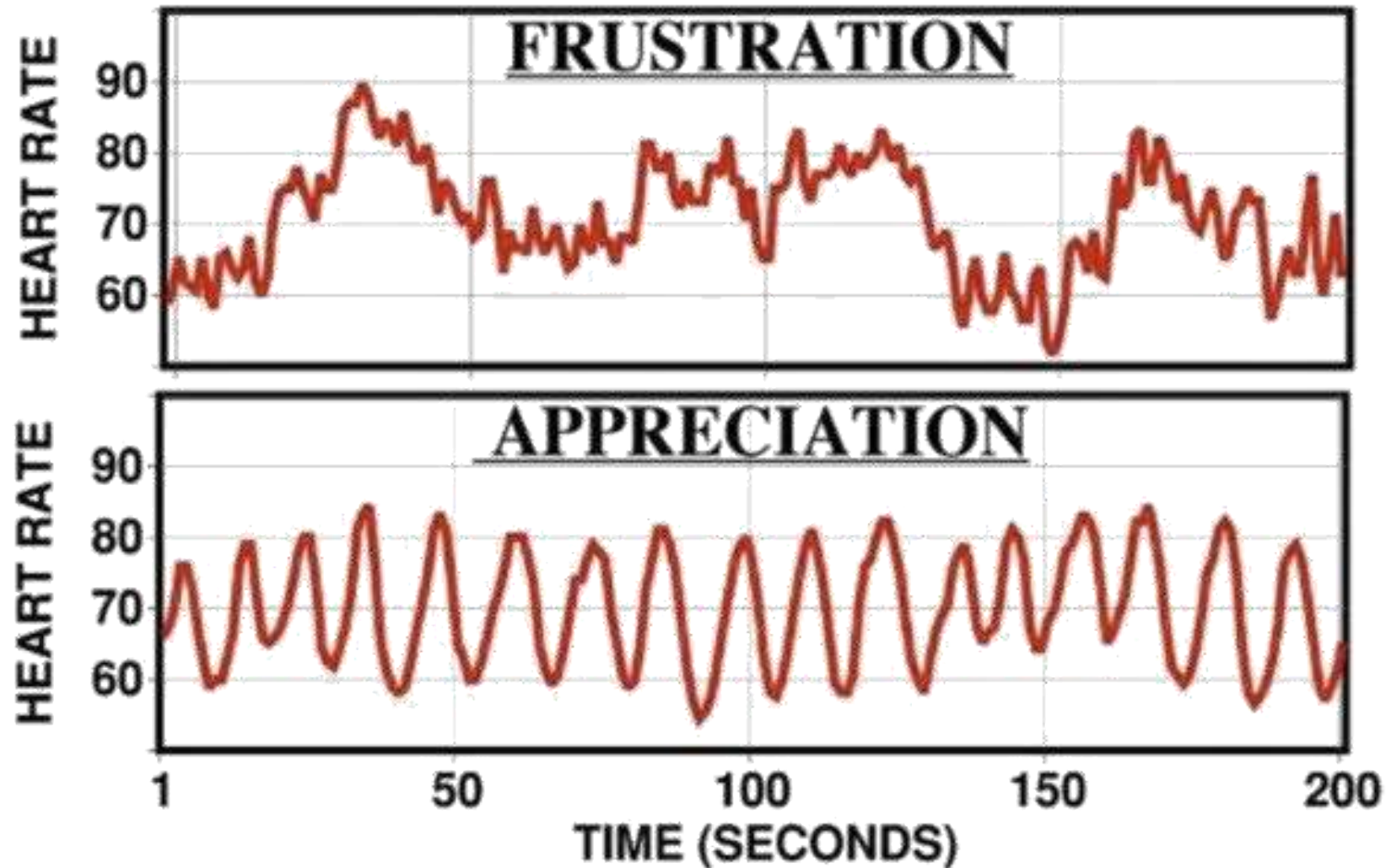


# Thyroid/Adrenal Support Elixir

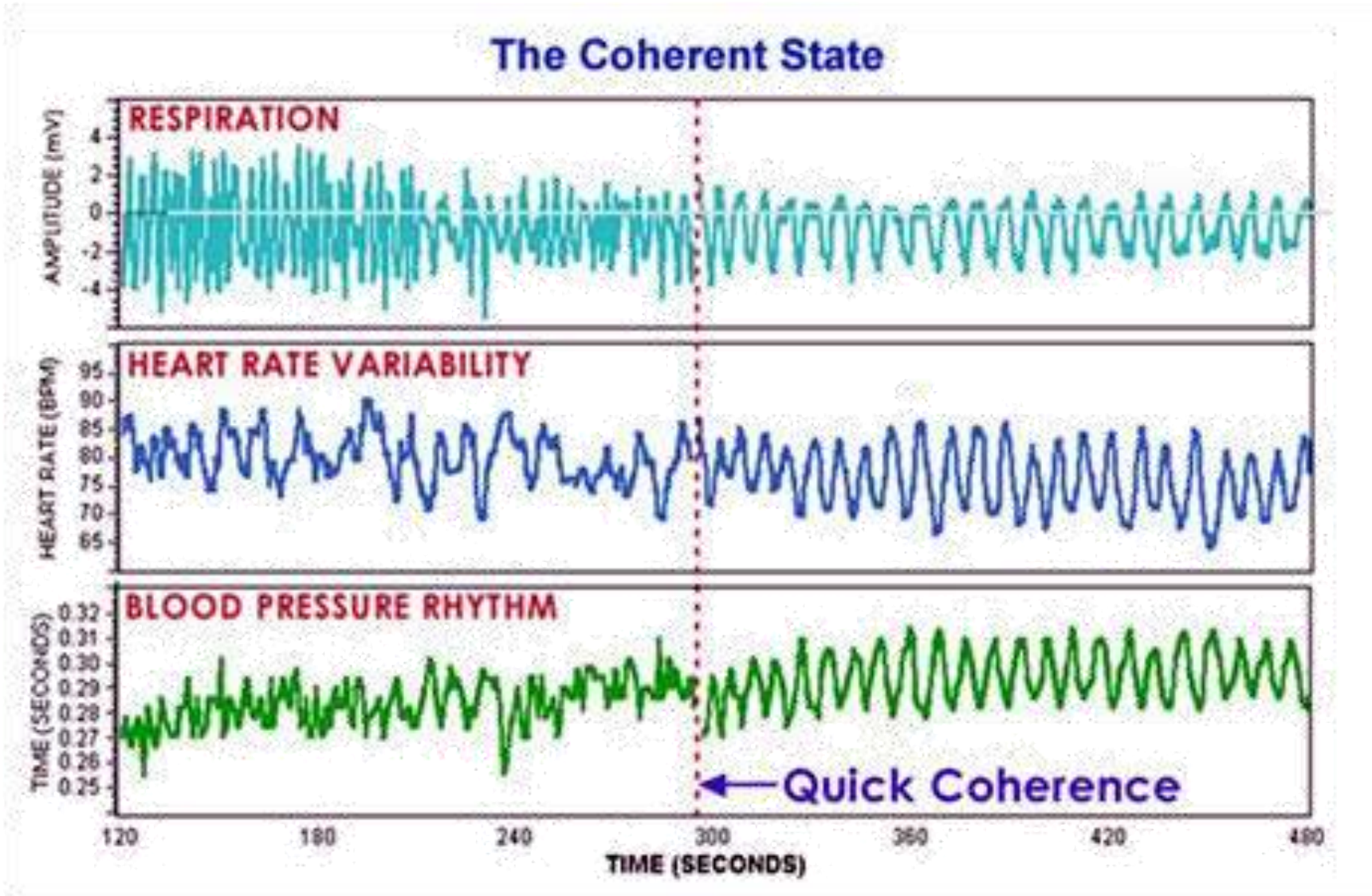
- ✓ 2 teaspoons nettle leaf plus 16 ounces purified water
- ✓ 4 large Brazil nuts
- ✓ 1 tablespoon raw organic walnuts
- ✓ 1 tablespoon hemp seeds
- ✓ 1 tablespoon coconut butter (**Artisana**) OR  
2 tablespoons dried coconut
- ✓ 1/2 teaspoon kelp powder
- ✓ 1/2 teaspoon bladderwrack powder
- ✓ 1/2 teaspoon coleus powder (optional)
- ✓ 1/2 teaspoon shilajit powder
- ✓ 1/2 teaspoon cordyceps mushroom powder
- ✓ 1/2 teaspoon ashwagandha powder
- ✓ 2 tablespoons raw carob powder or raw cacao powder
- ✓ 1/4 teaspoon stevia green leaf powder, or 6-8 drops your choice flavored liquid **Sweet Leaf Stevia**, or 1 teaspoon **Zero** or **Lakanto**



# Effect of Stress on Heart Rhythm



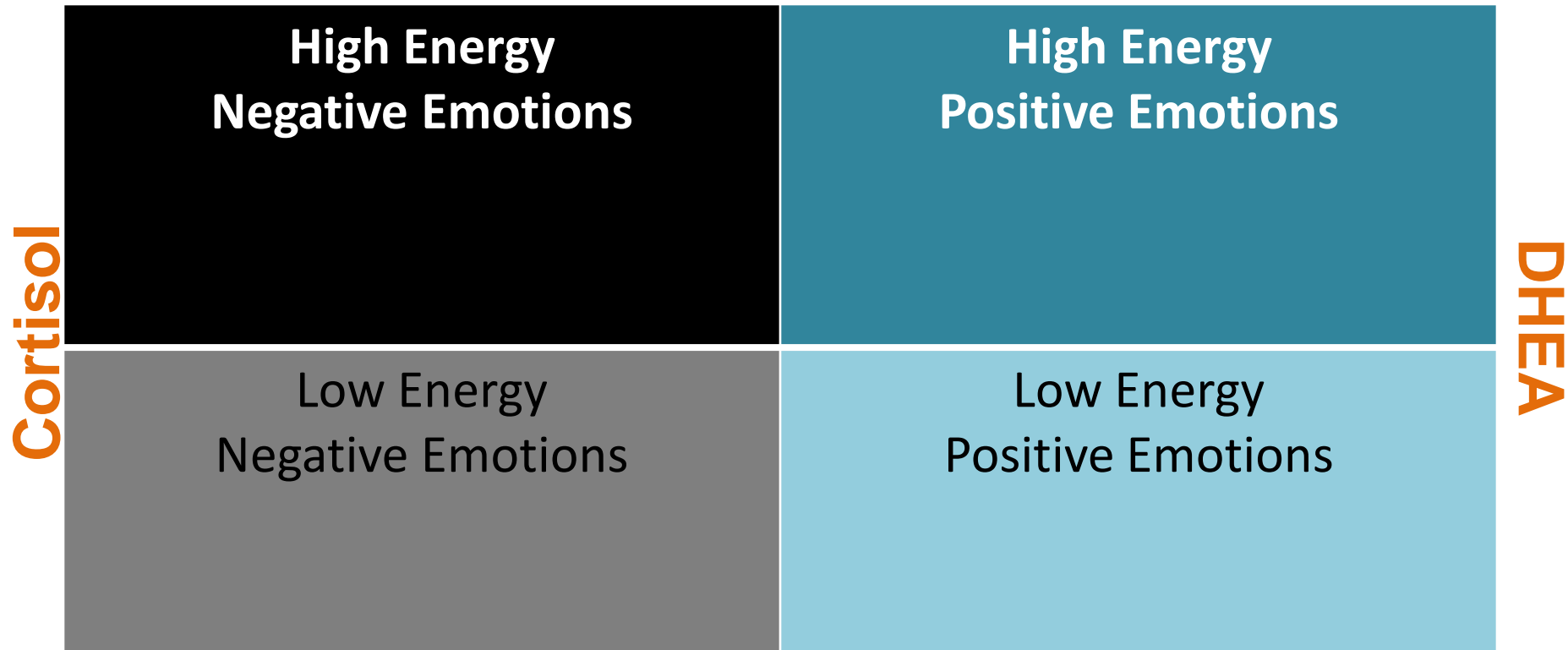
# Ahhhhh...Happy Adrenals





# Emotional Landscape

Adrenaline



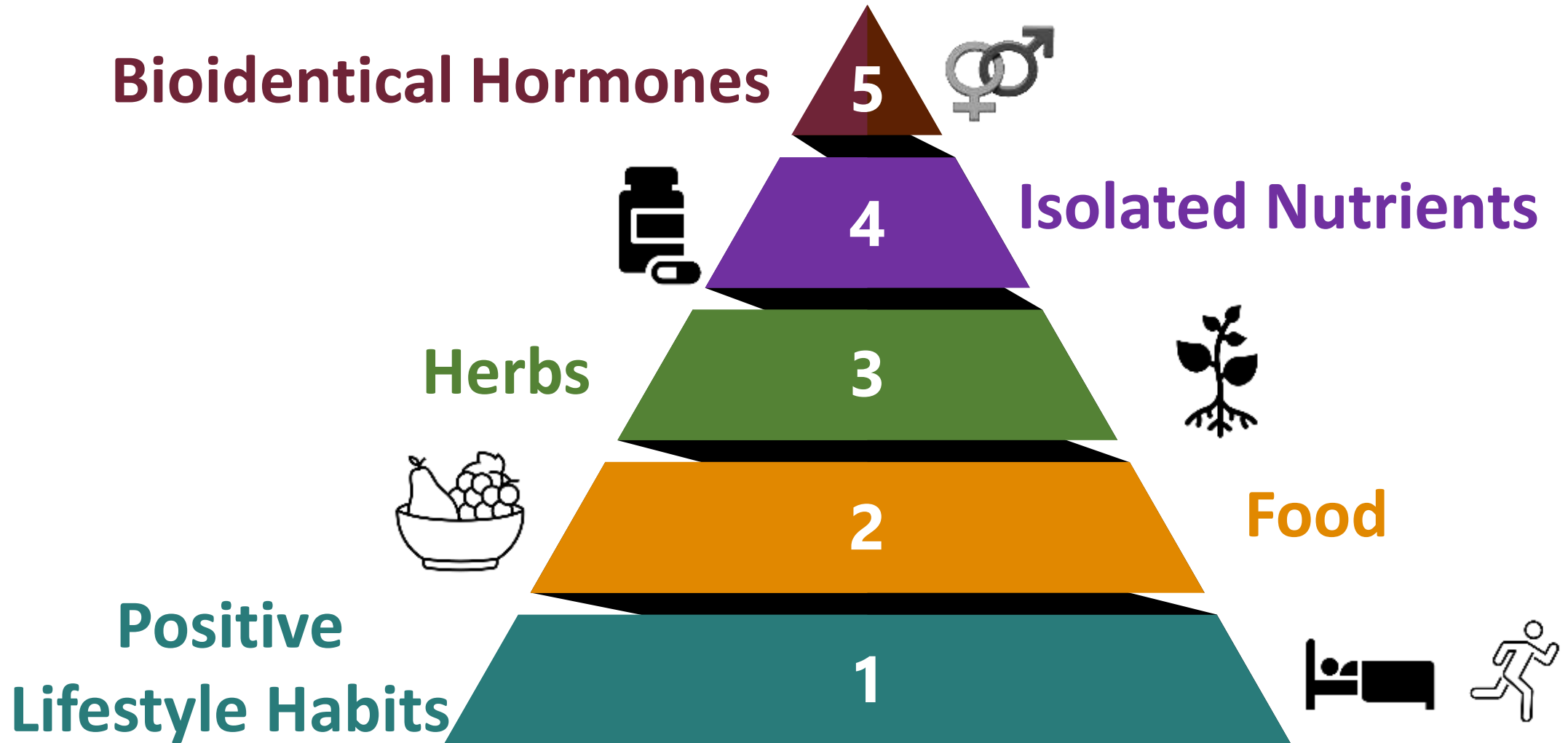
Acetylcholine

# Actions That Rebalance HPAT Axis

- ✓ Chill Out
- ✓ De-Stress Activities
- ✓ Hormone Reset Actions
- ✓ Movement
- ✓ Sleep
- ✓ Diet
- ✓ Nutrients
- ✓ Herbs
- ✓ Bio-identical Hormones



# Plan Hierarchy





# Nutritional Endocrinology Method