

Casual Friday Series

Functional Takes on Thyroid Disease and Patterns

A Biogenetix Clinical Presentation

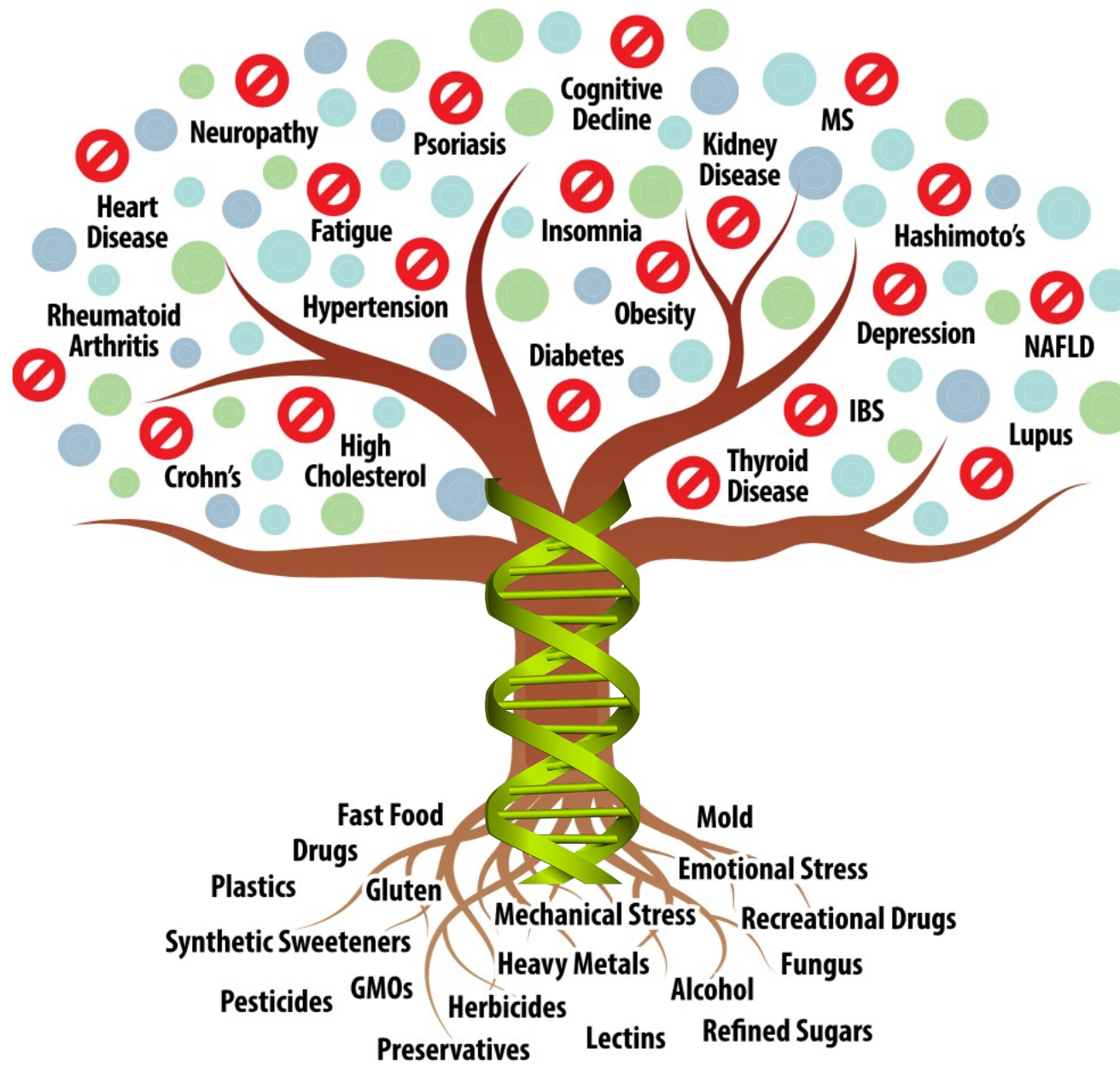
BIOGENETIX.COM

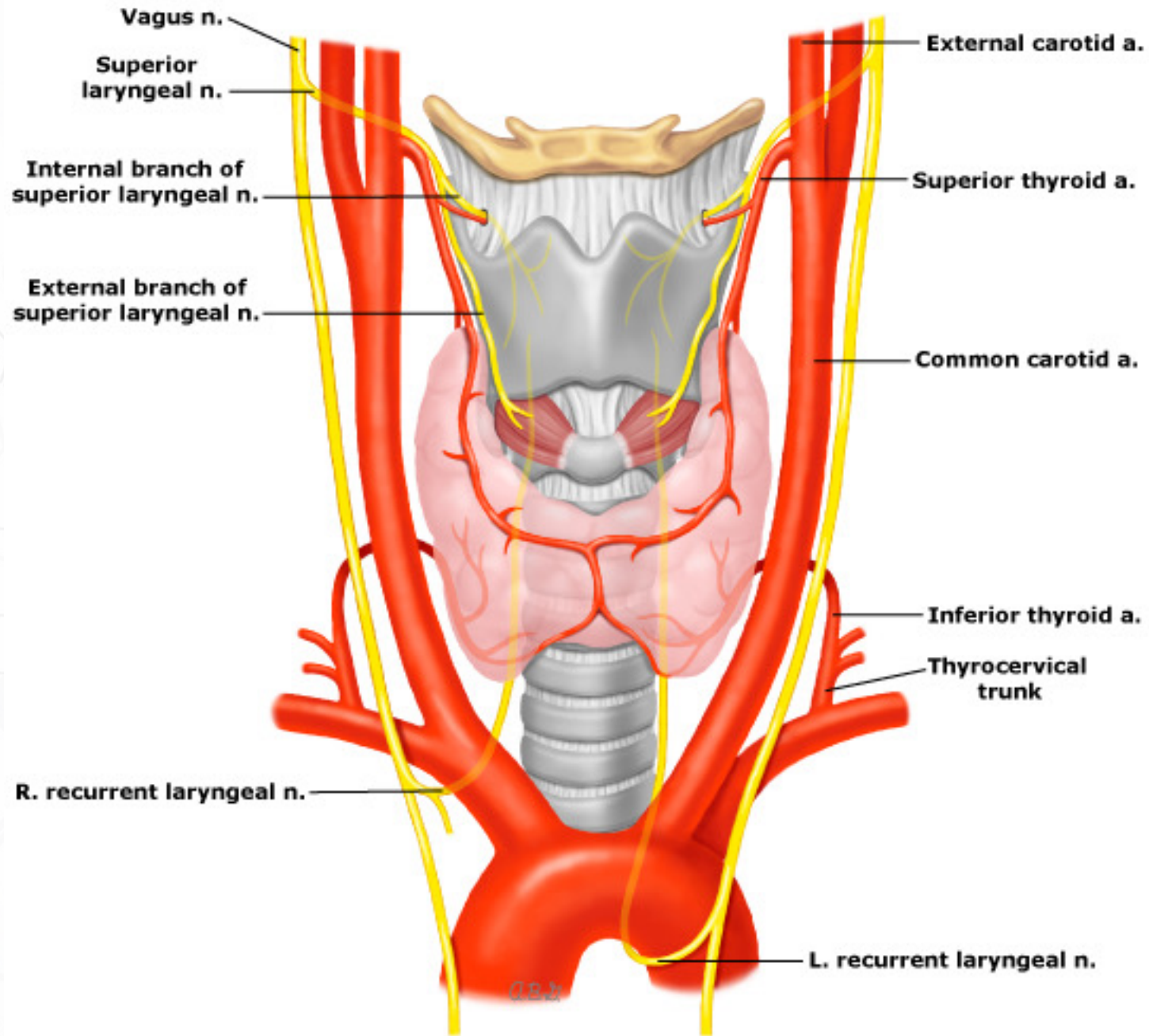


Disclaimer

- *Information in this presentation is not intended, in itself, to diagnose, treat, reverse, cure, or prevent any disease. While this presentation is based on medical literature, findings, and text, The following statements have not been evaluated by the FDA.*
- *The information provided in this presentation is for your consideration only as a practicing health care provider. Ultimately you are responsible for exercising professional judgment in the care of your own patients.*







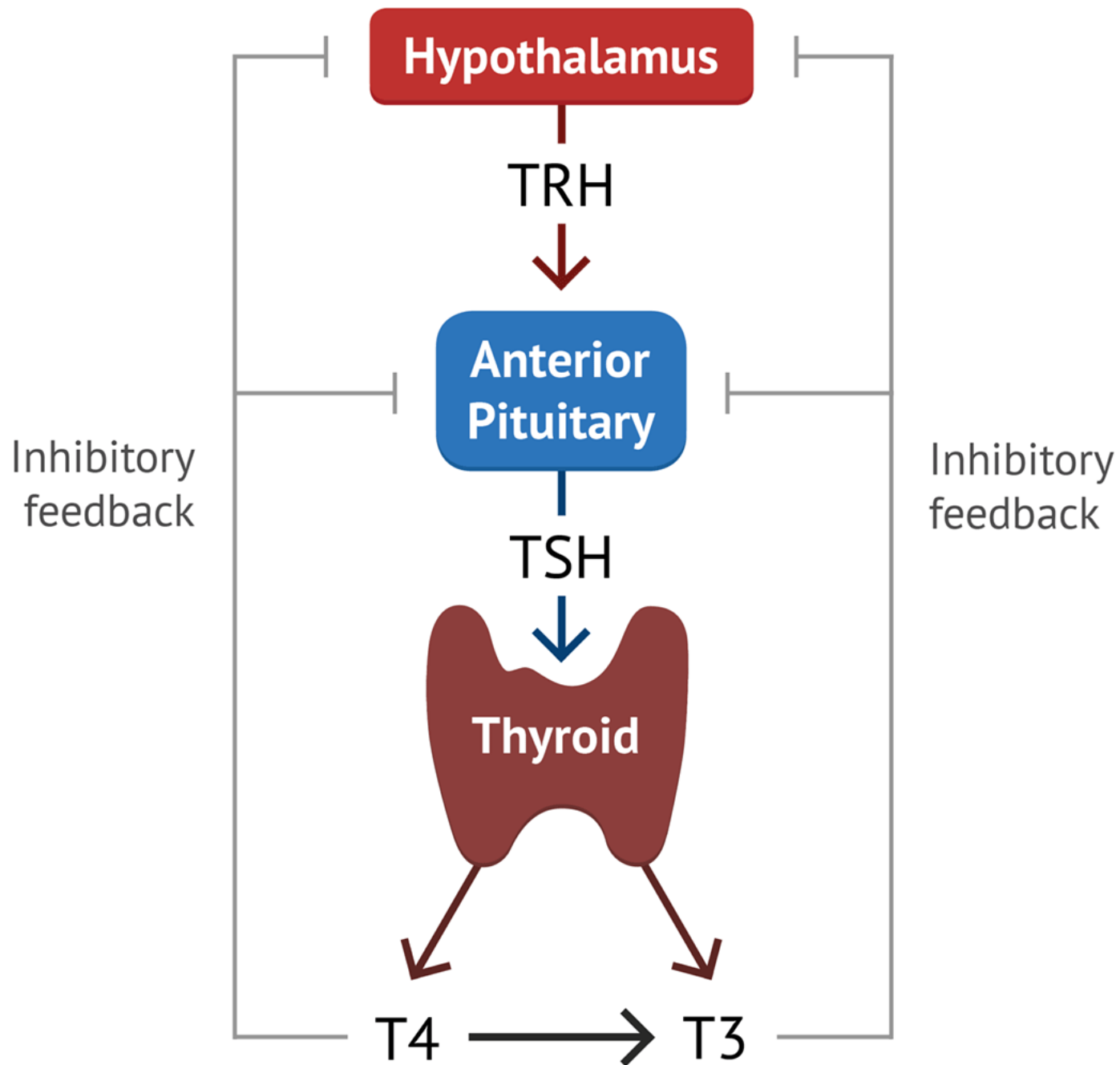
Thyroid Disease:

Thyroid disease can affect anyone – men, women, infants, teenagers and the elderly. It can be present at birth (typically hypothyroidism) and it can develop as you age (often after menopause in women).

Thyroid disease is very common, with an estimated 20 million people in the United States having some type of thyroid disorder. A woman is about five to eight times more likely to be diagnosed with a thyroid condition than a man.

You may be at a higher risk of developing a thyroid disease if you:

- Have a family history of thyroid disease.
- Have a medical condition (these can include pernicious anemia, type 1 diabetes, primary adrenal insufficiency, lupus, rheumatoid arthritis, Sjögren's syndrome and Turner syndrome).
- Take a medication that's high in iodine (amiodarone).
- Are older than 60, especially in women.
- Have had treatment for a past thyroid condition or cancer (thyroidectomy or radiation).



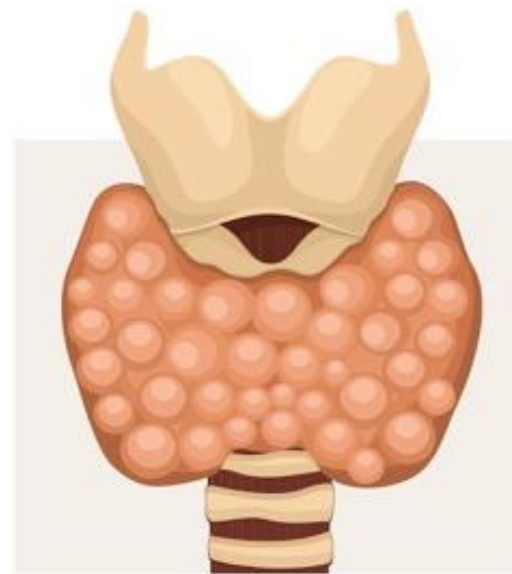
THYROID GLAND DISEASES



NORMAL



INFLAMMATION



GOITER



CANCER



Johns Hopkins Medicine notes:

- Nodules are present in nearly 50% of Americans by the time they are 60 yo.
- 95% of nodules are benign.

Mayo notes:

- 40% of people with nodules are aware of them d/t symptoms.
- 50% of people opt for resection of thyroid.





Hair dry, coarse,
sparse

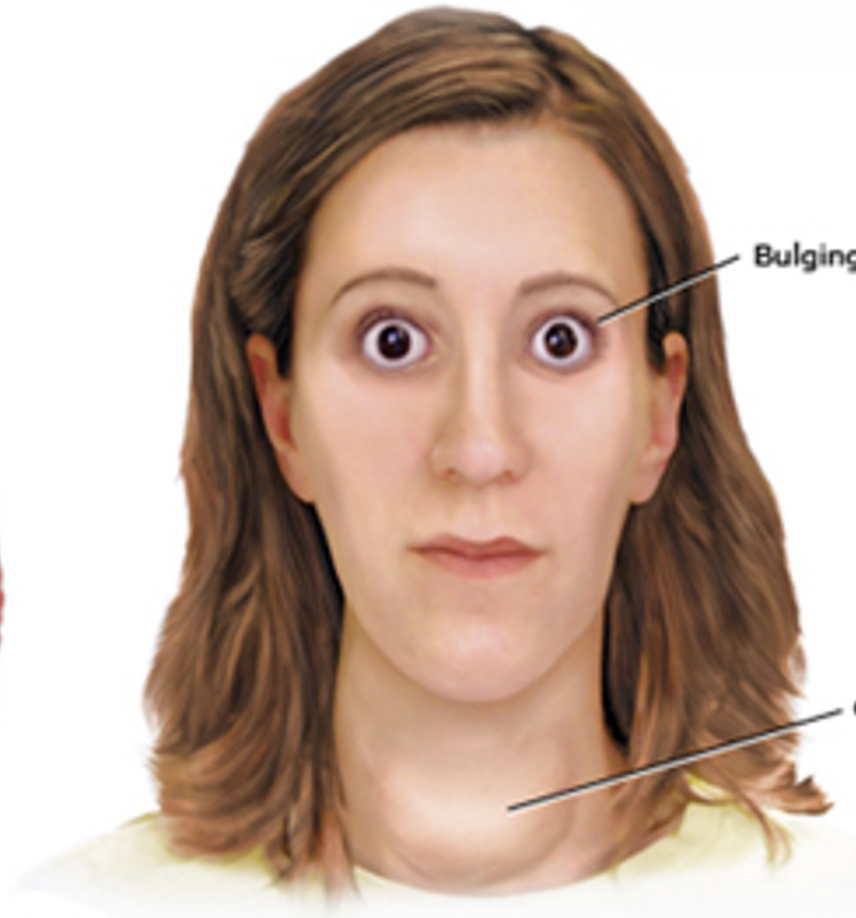
Lateral
eyebrows
thin

Periorbital
edema

Puffy dull face
with dry skin



Enlarged thyroid



Bulging eyes

Goiter



Basic Thyroid Markers

	<u>Pathological</u>	<u>Functional</u>
Thyroid Stimulating Hormone	.45-4.5 uIU/mL	1.8-3.0 uIU/mL
Total T4	4.5-12 ug/dL	6-12 ug/dL
Total T3	71-180 ng/dL	100-180 ng/dL
Reverse T3	9.2-24.1 ng/dL	9.2-24.1 ng/dL
T3 Uptake	24-39 %	28-38 %
Thyroid Binding Globulin (TBG)	13-39 ug/mL	13-39 ug/mL



Primary Hypothyroidism

Women are much more likely than men to develop hypothyroidism. The disease is also more common among people older than age 60.

Increased likelihood:

- have had a thyroid problem before, such as a goiter
- have had surgery to correct a thyroid problem
- have received radiation treatment to the thyroid, neck, or chest
- have a family history of thyroid disease
- were pregnant in the past 6 months
- have Turner syndrome, a genetic disorder that affects females
- have other health problems, including
 - Sjögren's syndrome, a disease that causes dry eyes and mouth
 - pernicious anemia, a condition caused by a vitamin B12 deficiency
 - type 1 diabetes
 - rheumatoid arthritis, an autoimmune disease that affects the joints
 - lupus, a chronic inflammatory condition

Hypothyroid Symptoms:

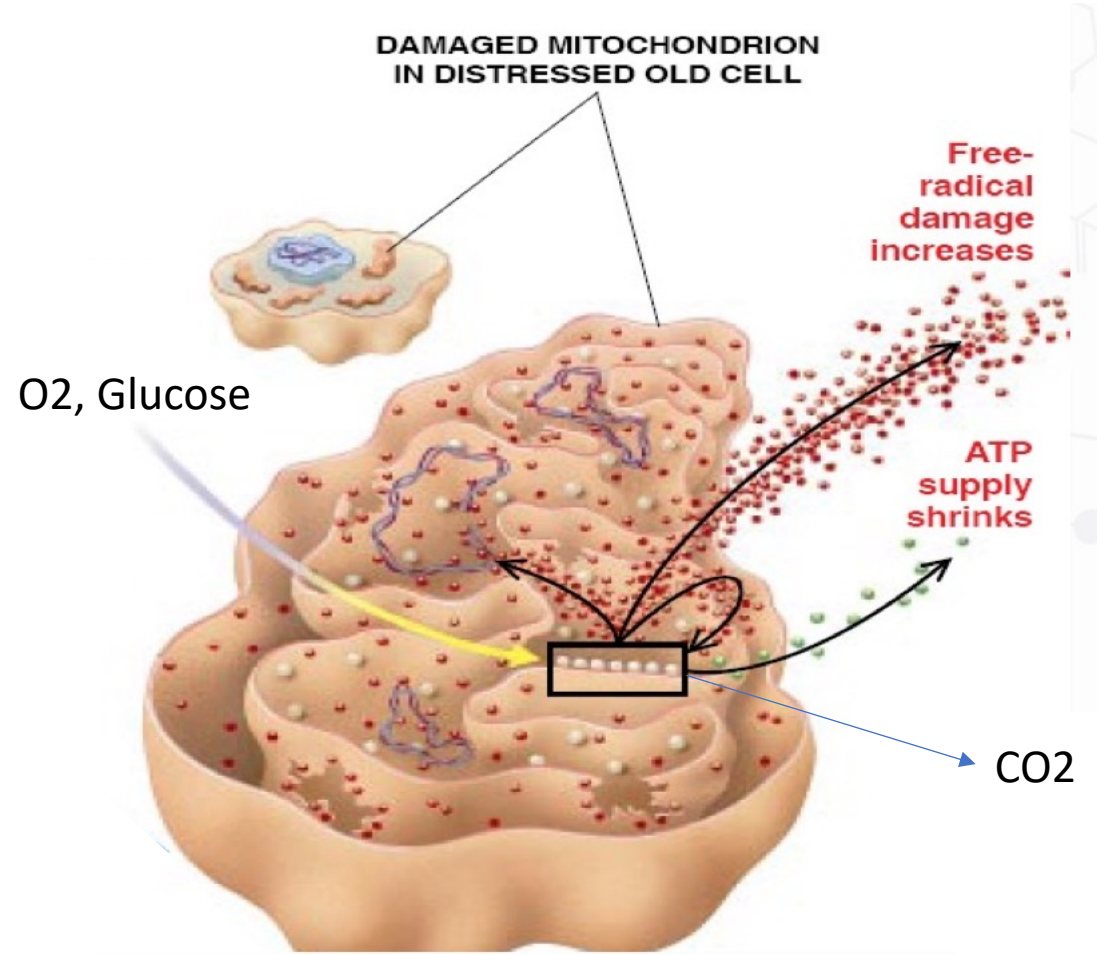
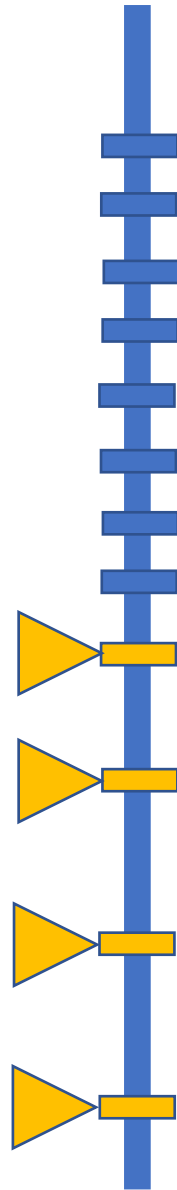
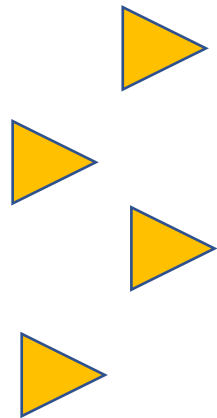
- fatigue
- weight gain
- a puffy face
- trouble tolerating cold
- joint and muscle pain
- constipation
- dry skin
- dry, thinning hair
- decreased sweating
- heavy or irregular menstrual periods
- fertility problems
- depression
- slowed heart rate
- goiter

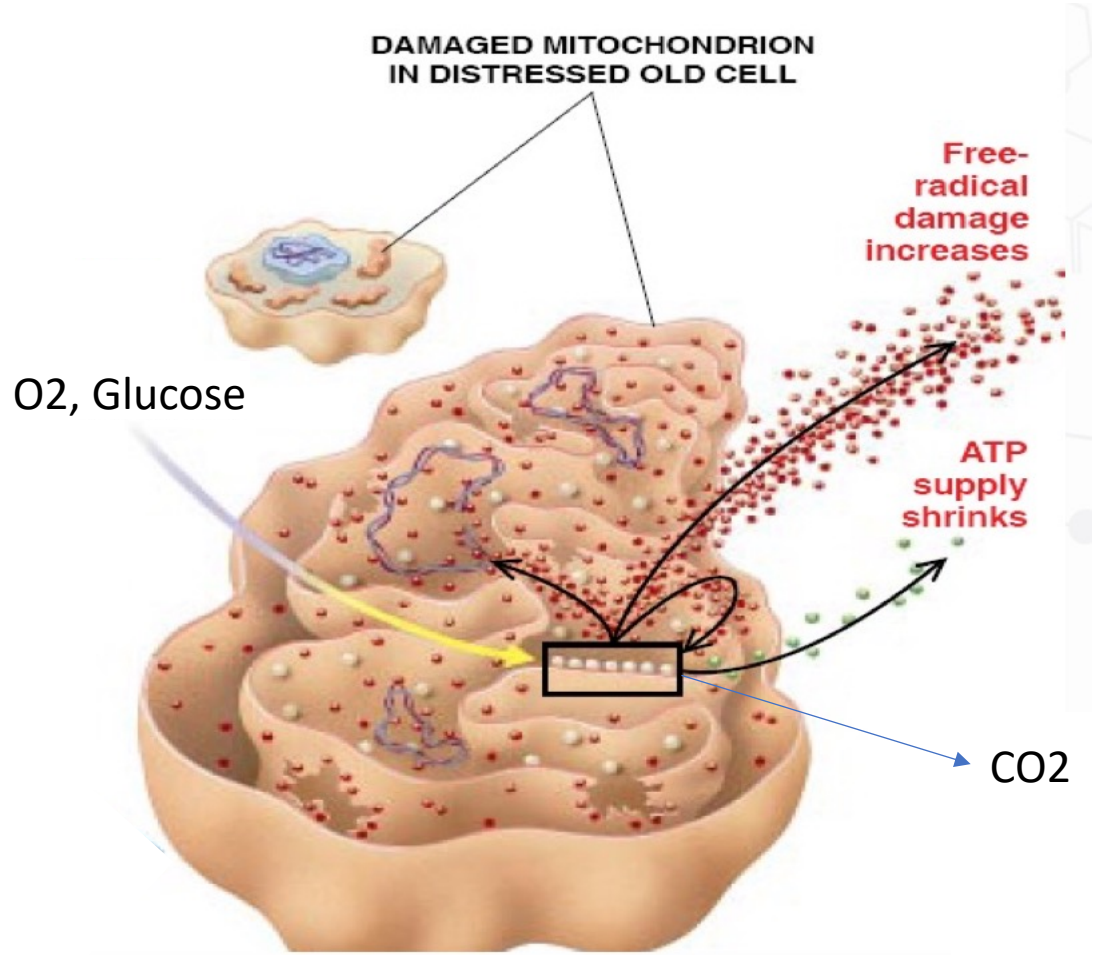
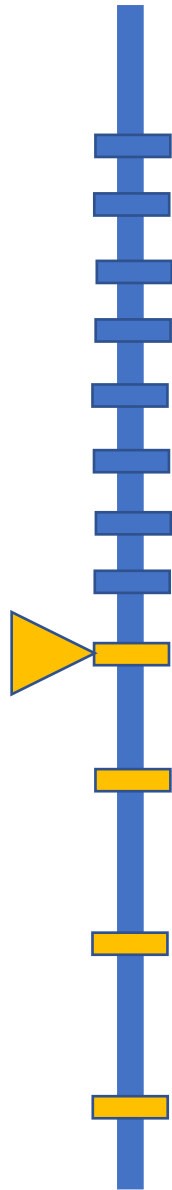
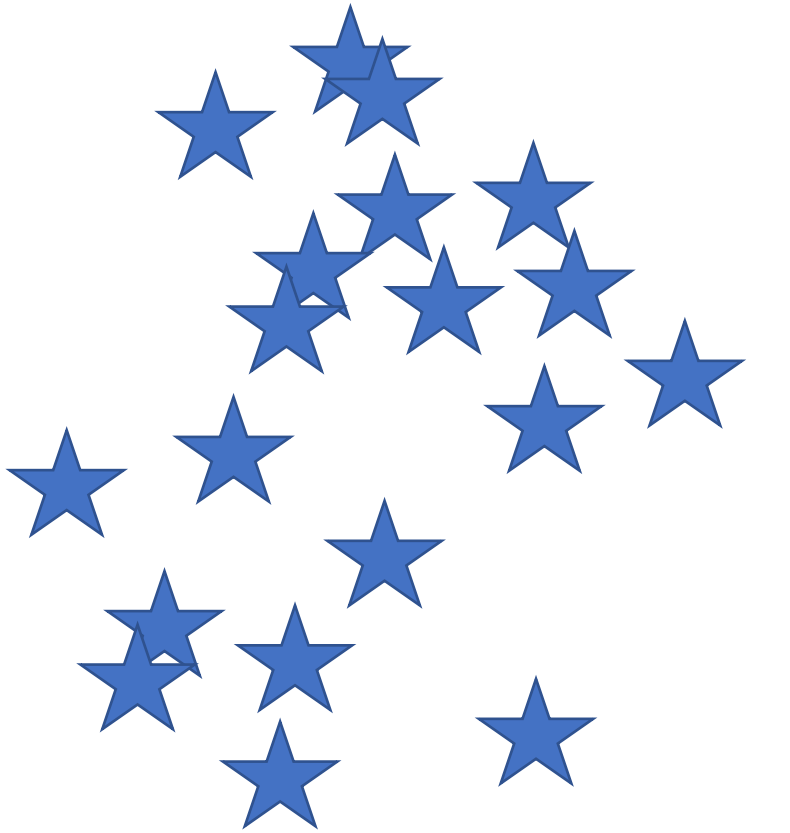


Causes of Hypothyroidism:

- Hashimoto's disease
- thyroiditis, or inflammation of the thyroid
- congenital hypothyroidism, or hypothyroidism that is present at birth
- surgical removal of part or all of the thyroid
- radiation treatment of the thyroid
- some medicines
- Less often, hypothyroidism is caused by too much or too little iodine in the diet or by pituitary disease.







Primary Hypothyroidism

TSH	↑
Total T4	↓/WNL
Total T3	↓/WNL
Reverse T3	↓/↑/WNL
T3 Uptake	↓/WNL
TBG	↓



	<u>Pathological</u>	<u>Functional</u>
TSH	.45-4.5 uIU/mL	1.8-3.0 uIU/mL
T4 Total	4.5-12 ug/dL	6-12 ug/dL
T3 Total	71-180 ng/dL	100-180 ng/dL
Reverse T3	9.2-24.1 ng/dL	9.2-24.1 ng/dL
T3 Uptake	24-39 %	28-38 %
TBG	13-39 ug/mL	13-39 ug/mL

TSH	1.9
TotalT4	7.2
Total T3	111
Reverse T3	26.3
T3 Uptake	26
TBG	-

Primary Hypothyroidism

TSH	↑
TotalT4	↓/WNL
Total T3	↓/WNL
Reverse T3	↓/↑/WNL
T3 Uptake	↓/WNL
TBG	↓



	<u>Pathological</u>	<u>Functional</u>
TSH	.45-4.5 uIU/mL	1.8-3.0 uIU/mL
T4 Total	4.5-12 ug/dL	6-12 ug/dL
T3 Total	71-180 ng/dL	100-180 ng/dL
Reverse T3	9.2-24.1 ng/dL	9.2-24.1 ng/dL
T3 Uptake	24-39 %	28-38 %
TBG	13-39 ug/mL	13-39 ug/mL

TSH	3.7
TotalT4	8.0
Total T3	101
Reverse T3	22.2
T3 Uptake	36
TBG	12

Primary Hypothyroidism

TSH	↑
TotalT4	↓/WNL
Total T3	↓/WNL
Reverse T3	↓/↑/WNL
T3 Uptake	↓/WNL
TBG	↓



	<u>Pathological</u>	<u>Functional</u>
TSH	.45-4.5 uIU/mL	1.8-3.0 uIU/mL
T4 Total	4.5-12 ug/dL	6-12 ug/dL
T3 Total	71-180 ng/dL	100-180 ng/dL
Reverse T3	9.2-24.1 ng/dL	9.2-24.1 ng/dL
T3 Uptake	24-39 %	28-38 %
TBG	13-39 ug/mL	13-39 ug/mL

TSH	5.7
TotalT4	5.5
Total T3	67
Reverse T3	9.5
T3 Uptake	26
TBG	-

Primary Hypothyroidism

TSH	↑
TotalT4	↓/WNL
Total T3	↓/WNL
Reverse T3	↓/↑/WNL
T3 Uptake	↓/WNL
TBG	↓



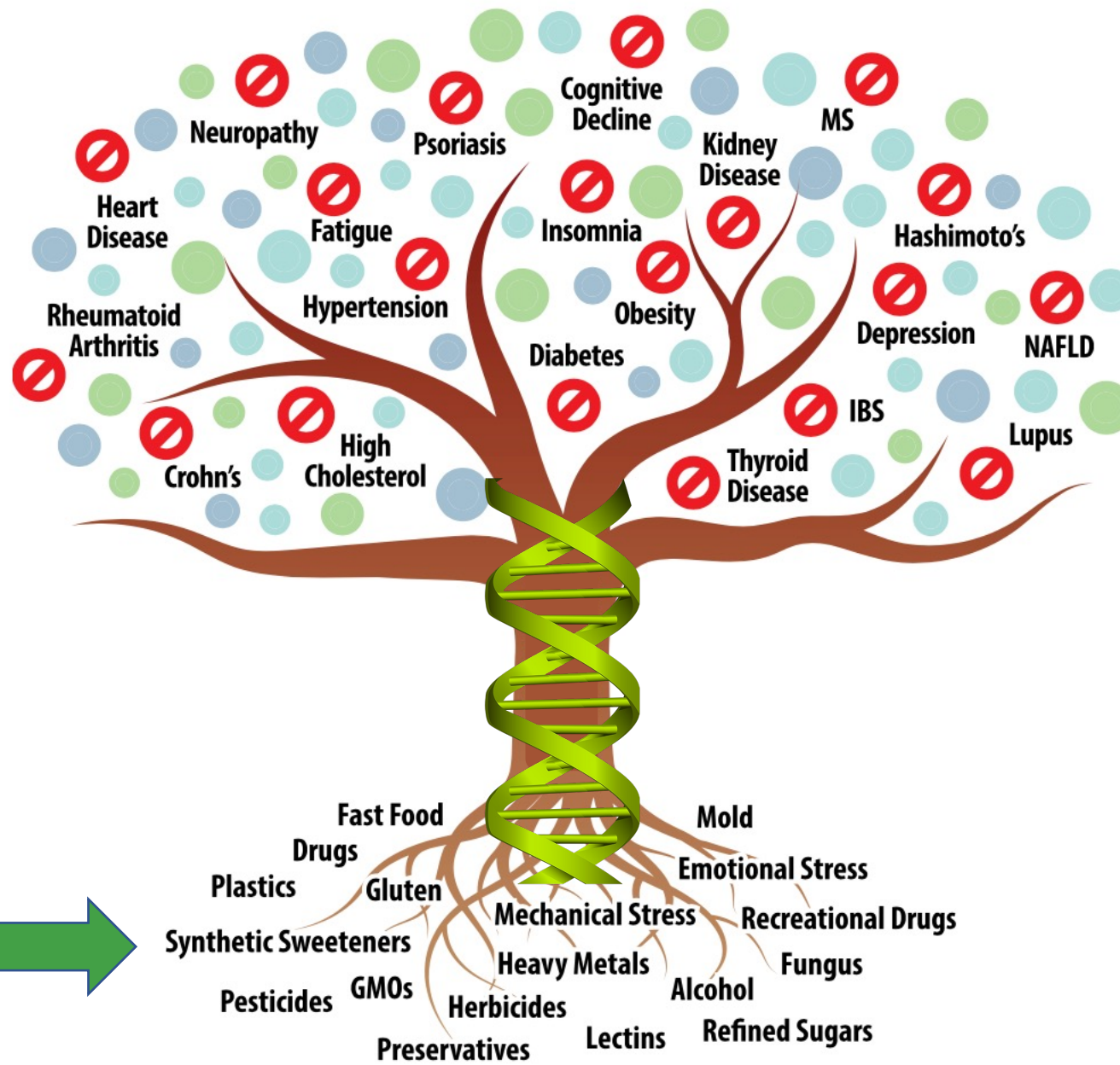
	<u>Pathological</u>	<u>Functional</u>
TSH	.45-4.5 uIU/mL	1.8-3.0 uIU/mL
T4 Total	4.5-12 ug/dL	6-12 ug/dL
T3 Total	71-180 ng/dL	100-180 ng/dL
Reverse T3	9.2-24.1 ng/dL	9.2-24.1 ng/dL
T3 Uptake	24-39 %	28-38 %
TBG	13-39 ug/mL	13-39 ug/mL

TSH	4.4
TotalT4	6.1
Total T3	98
Reverse T3	-
T3 Uptake	39
TBG	-

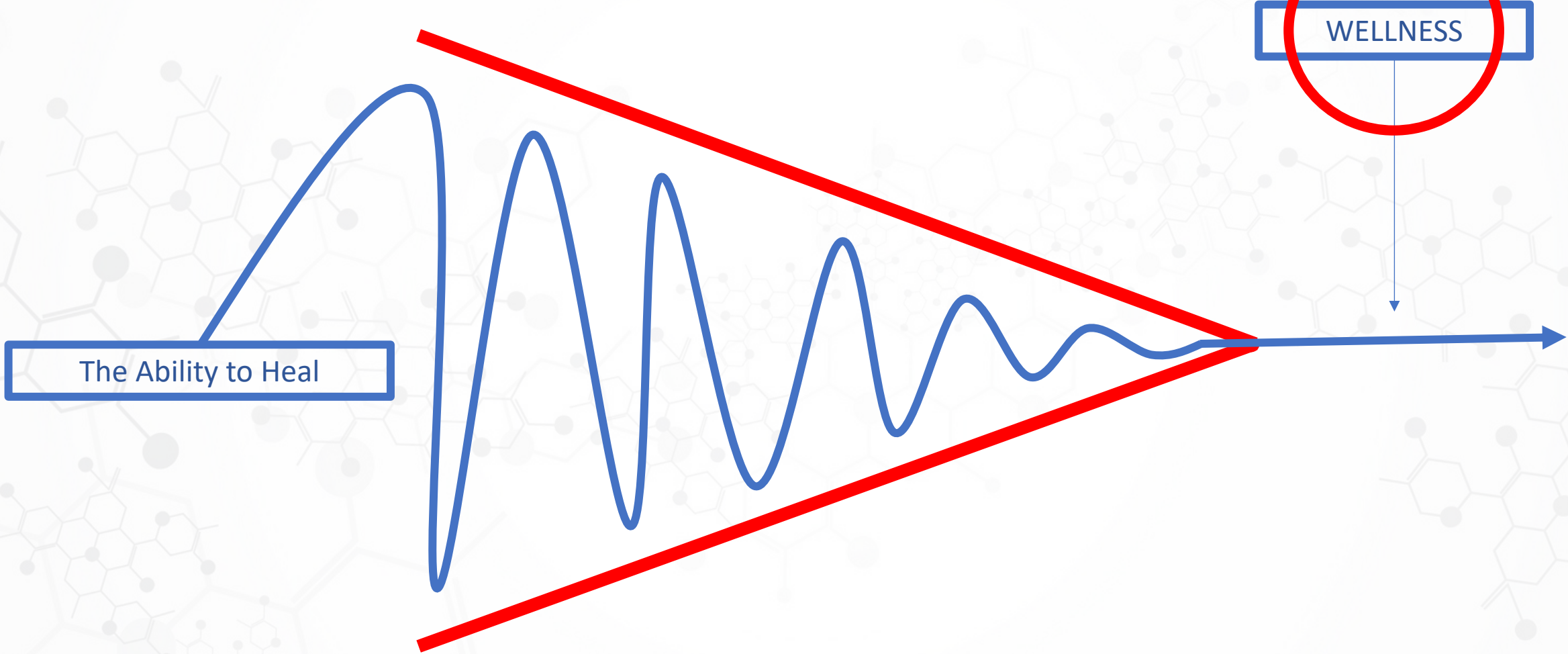
Primary Hypothyroidism

TSH	↑
TotalT4	↓/WNL
Total T3	↓/WNL
Reverse T3	↓/↑/WNL
T3 Uptake	↓/WNL
TBG	↓





The Wedge



Biogenetix: 833-525-0001



bruno@biogenetix.com



kim@biogenetix.com

