Casual Friday Series

Functional Takes on Thyroid Disease and Patterns

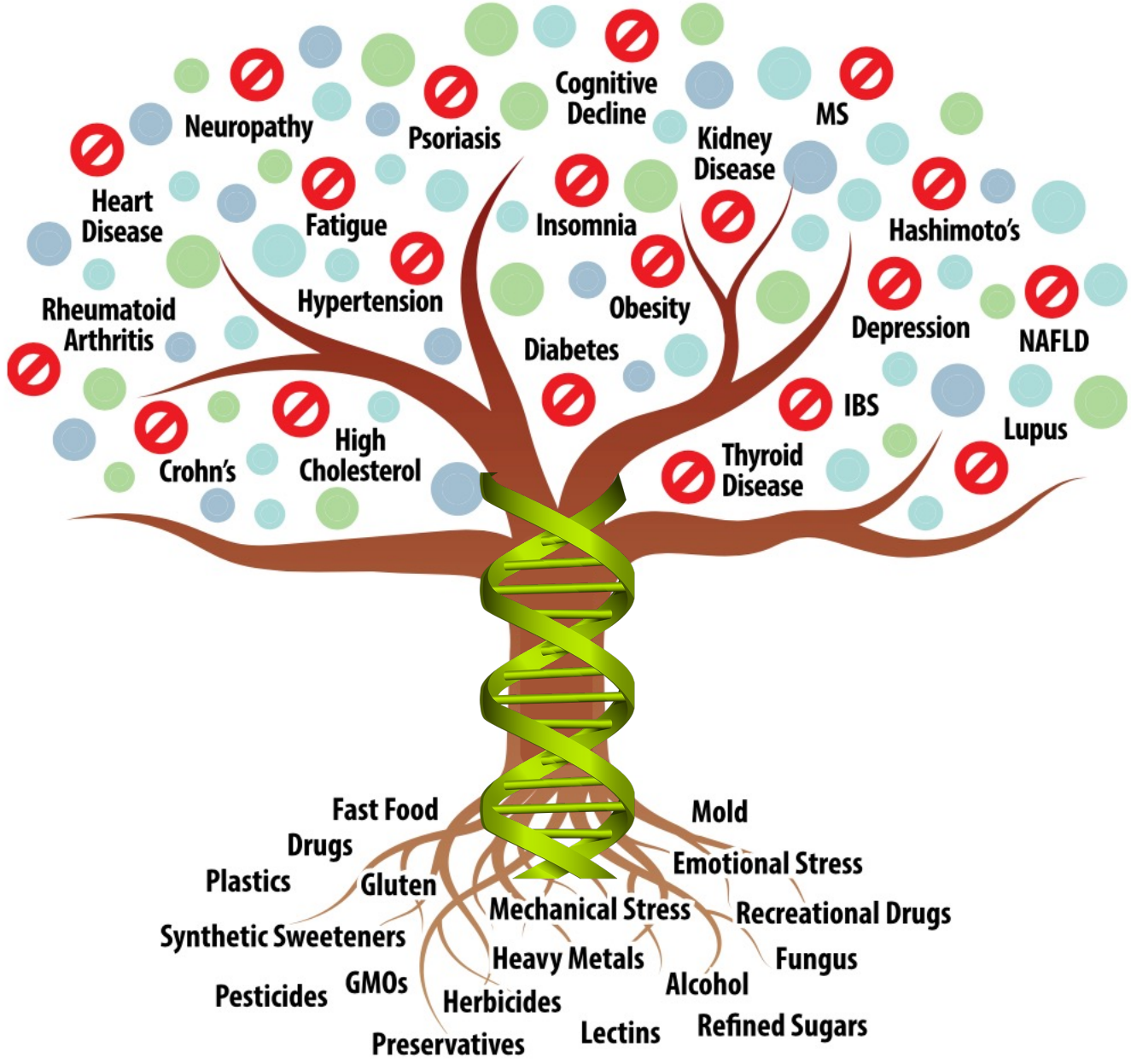
Part 3

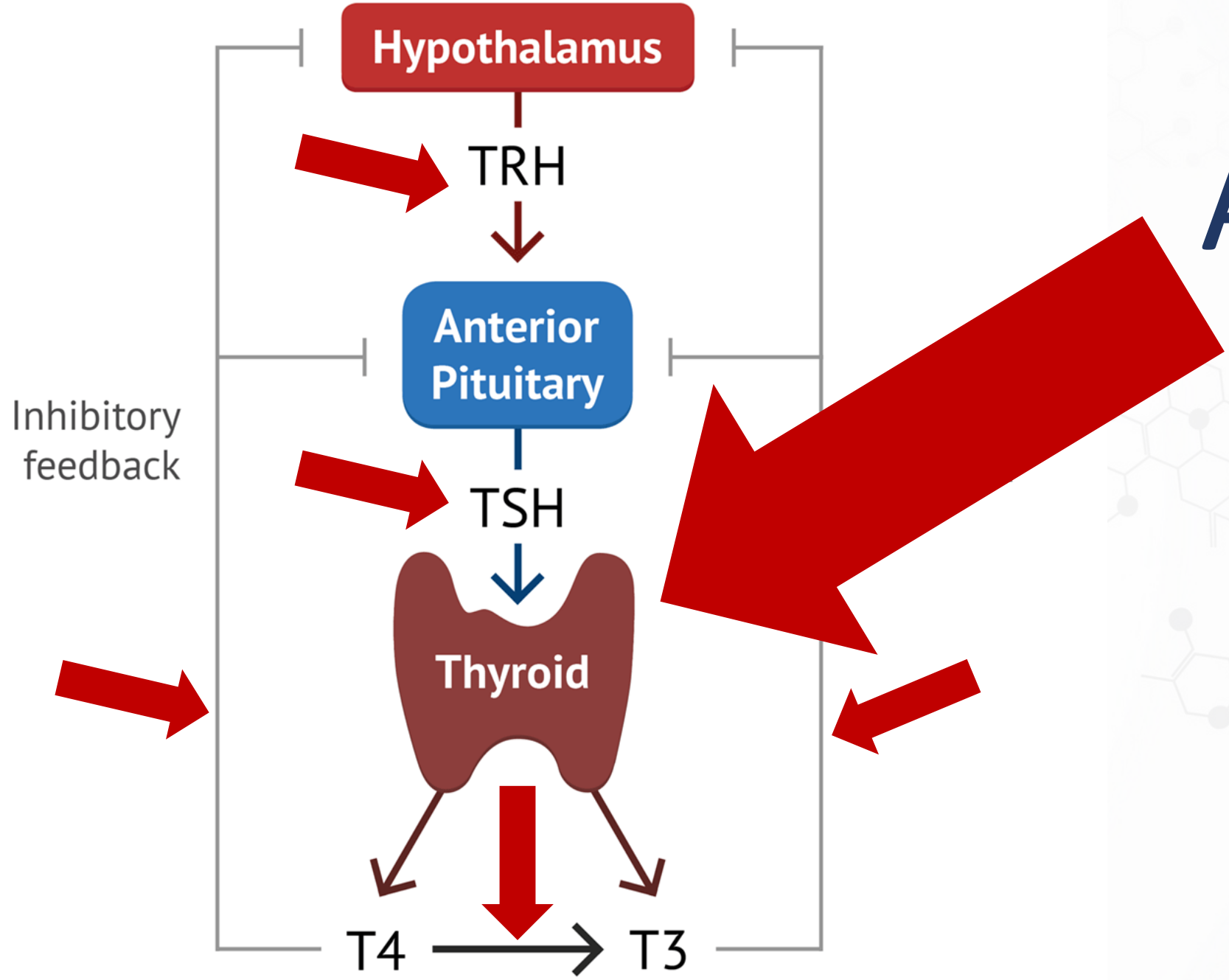
A Biogenetix Clinical Presentation

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.*


Neuropathy
Psoriasis
Cognitive Decline
MS
Kidney Disease
Heart Disease
Fatigue
Insomnia
Hashimoto's
Hypertension
Obesity
Depression
NAFLD
Rheumatoid Arthritis
Diabetes
IBS
Lupus
Crohn's
High Cholesterol
Thyroid Disease
Fast Food
Mold
Drugs
Emotional Stress
Plastics
Gluten
Mechanical Stress
Recreational Drugs
Synthetic Sweeteners
Heavy Metals
Fungus
Pesticides
GMOs
Herbicides
Alcohol
Lectins
Refined Sugars
Preservatives



https://medschool.co/images/detail/thyroidphysiology.gif

Basic Thyroid Markers

	Pathological	Functional
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

Pathological Patterns

1

Primary Hypothyroidism

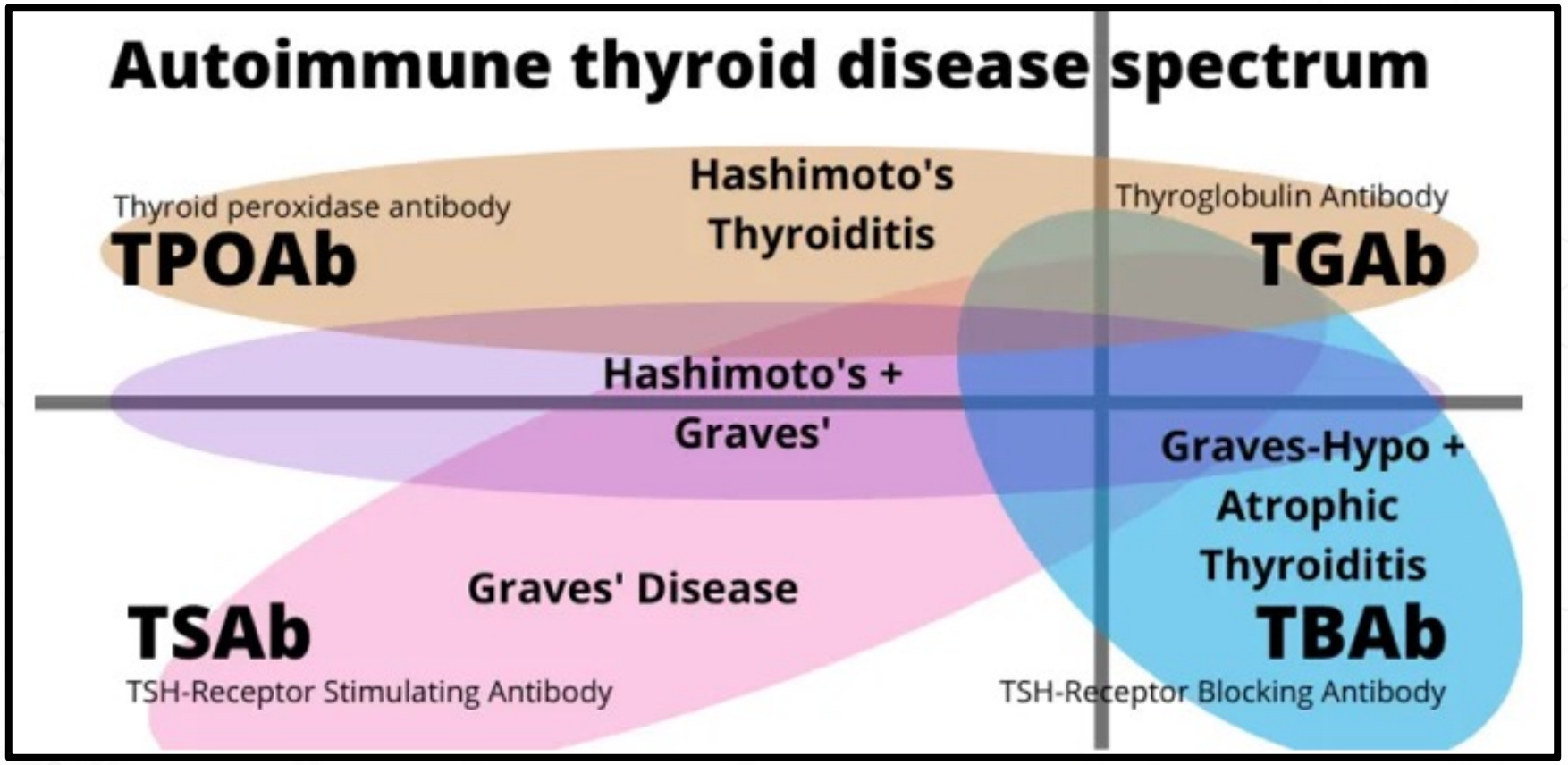
TSH	↑
TotalT4	↓/WNL
Total T3	↓/WNL
Reverse T3	↓/↑/WNL
T3 Uptake	↓/WNL
TBG	↓

2

Primary Hyperthyroidism

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

Autoimmune Workup



https://thyroidpatients.ca/2020/04/05/remissions-and-fluctuations-trab/

Review > Endokrynol Pol. 2014;65(2):150-5. doi: 10.5603/EP.2014.0021.

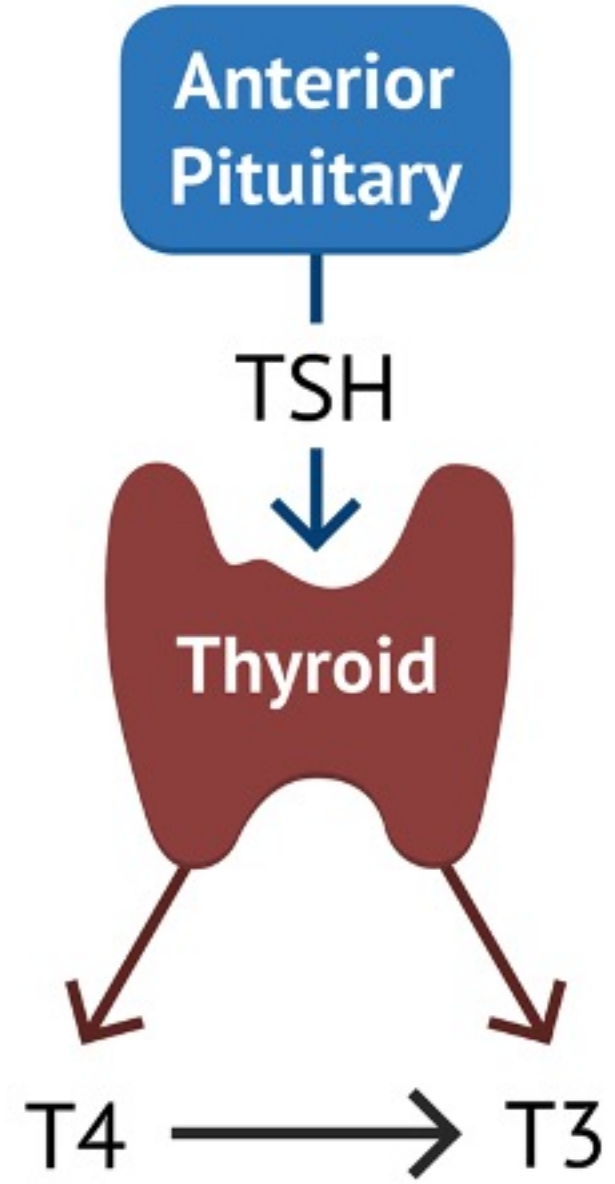
The role of the immune system and cytokines involved in the pathogenesis of autoimmune thyroid disease (AITD)

Hanna Mikoś, Marcin Mikoś, Monika Obara-Moszyńska, Marek Niedziela [1]

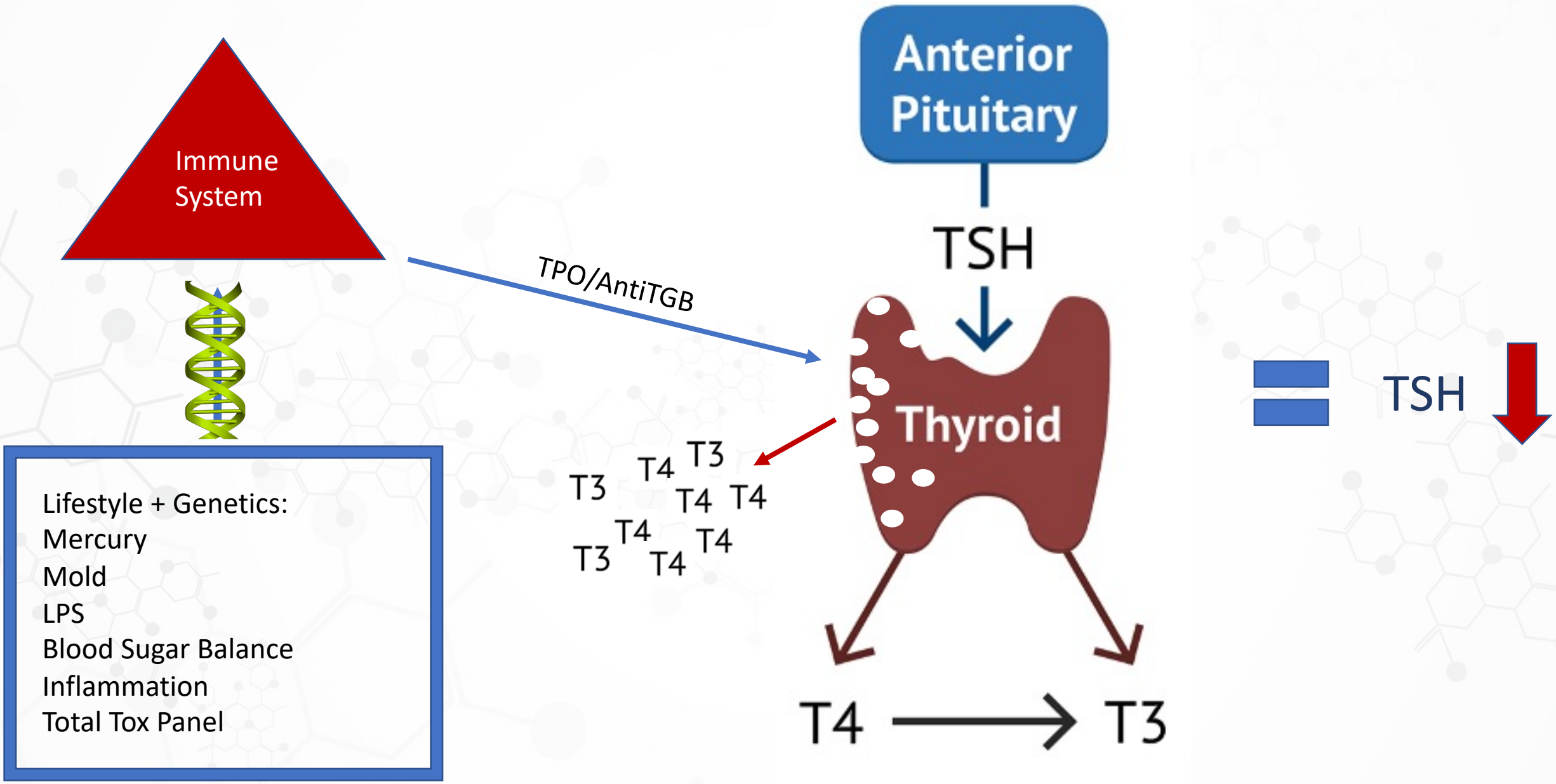
Affiliations + expand

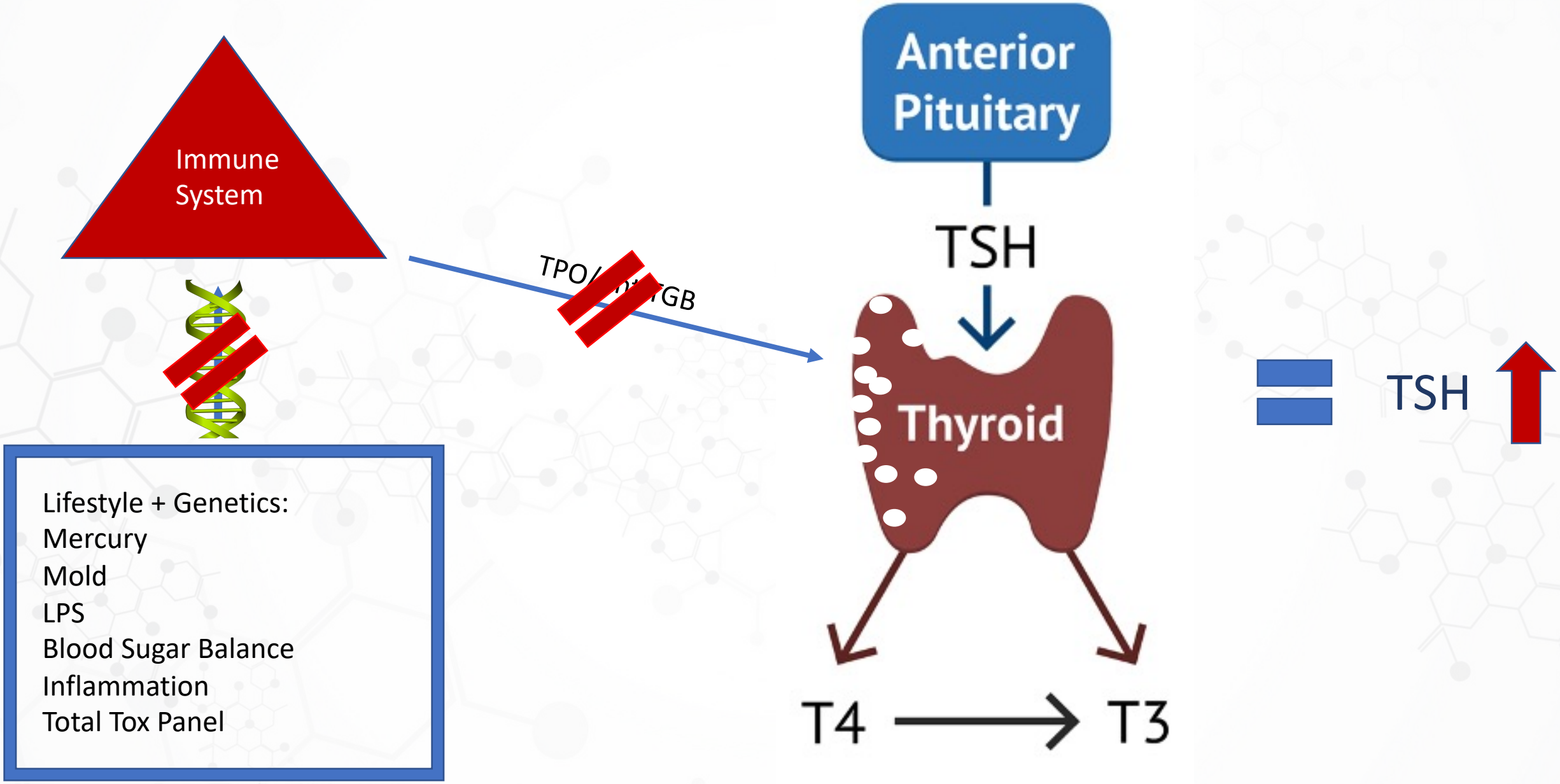
PMID: 24802739 DOI: 10.5603/EP.2014.0021

Autoimmune thyroid disease (AITD) is the most common organ-specific autoimmune disorder. AITD development occurs due to loss of immune tolerance and reactivity to thyroid autoantigens: thyroid peroxidase (TPO), thyroglobulin (TG) and thyroid stimulating hormone receptor (TSHR). This leads to infiltration of the gland by T cells and B cells that produce antibodies specific for clinical manifestations of hyperthyroidism in Graves' disease (GD) and chronic autoimmune thyroiditis (cAIT). In addition, T cells in Hashimoto's thyroiditis induce apoptosis in thyroid follicular cells, leading ultimately to the destruction of the gland. Cytokines are involved in the pathogenesis of thyroid diseases working in both the immune system and directly targeting the thyroid follicular cells. They are involved in the induction and effector phase of the immune response and



= TSH: WNL


Anterior Pituitary
TSH
Immune System
TPO/AntiTGB
Thyroid
T3 T4 T3 T4 T4 T3 T4 T4
T4 T3
TSH
Lifestyle + Genetics:
Mercury
Mold
LPS
Blood Sugar Balance
Inflammation
Total Tox Panel


Immune System
TPO/
TGB
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TSH
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T4
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Lifestyle + Genetics:
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Mold
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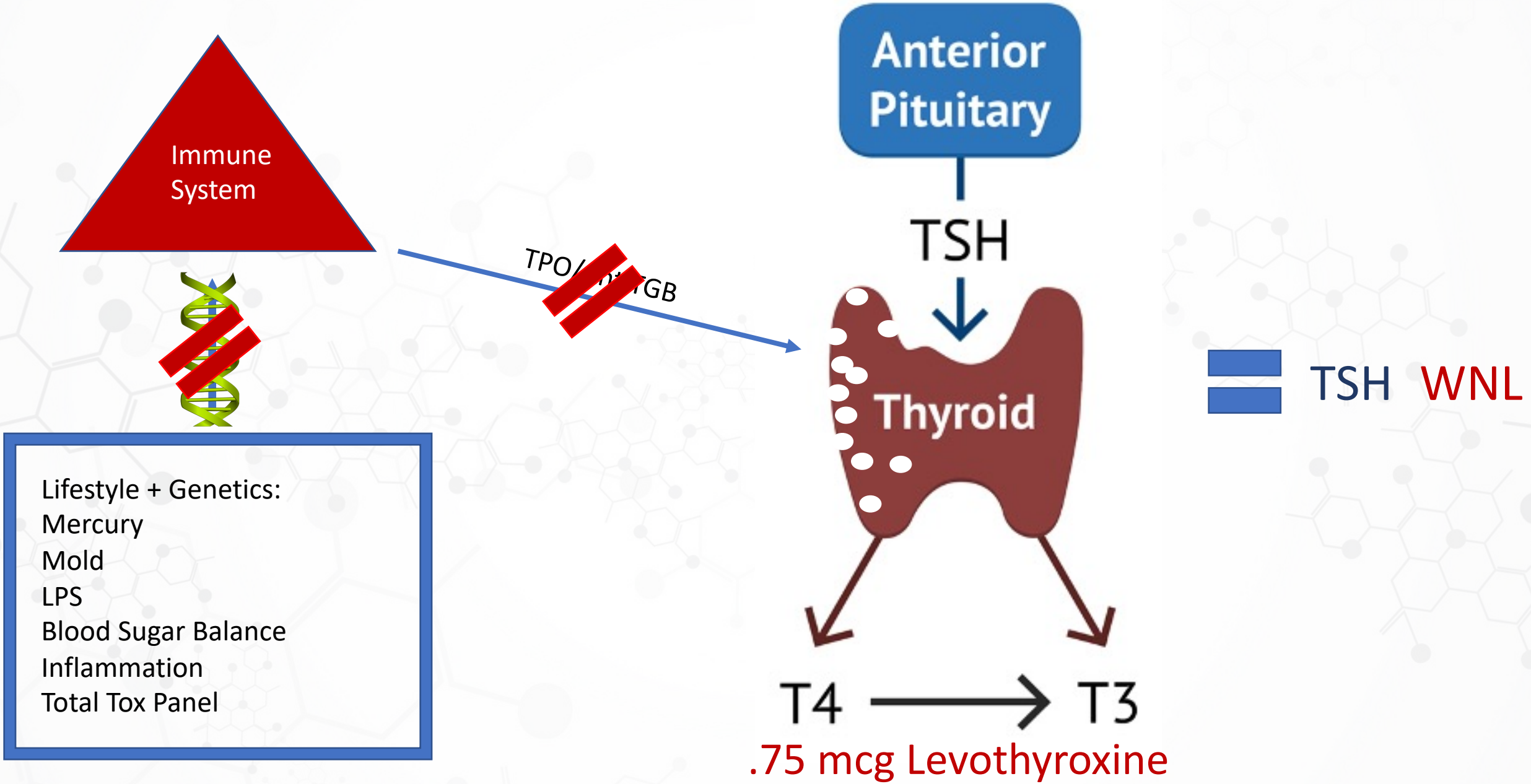
Immune System
TPO/TGB
Anterior Pituitary
TSH
Thyroid
T4
T3
.75 mcg Levothyroxine
TSH WNL
Lifestyle + Genetics:
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Inflammation
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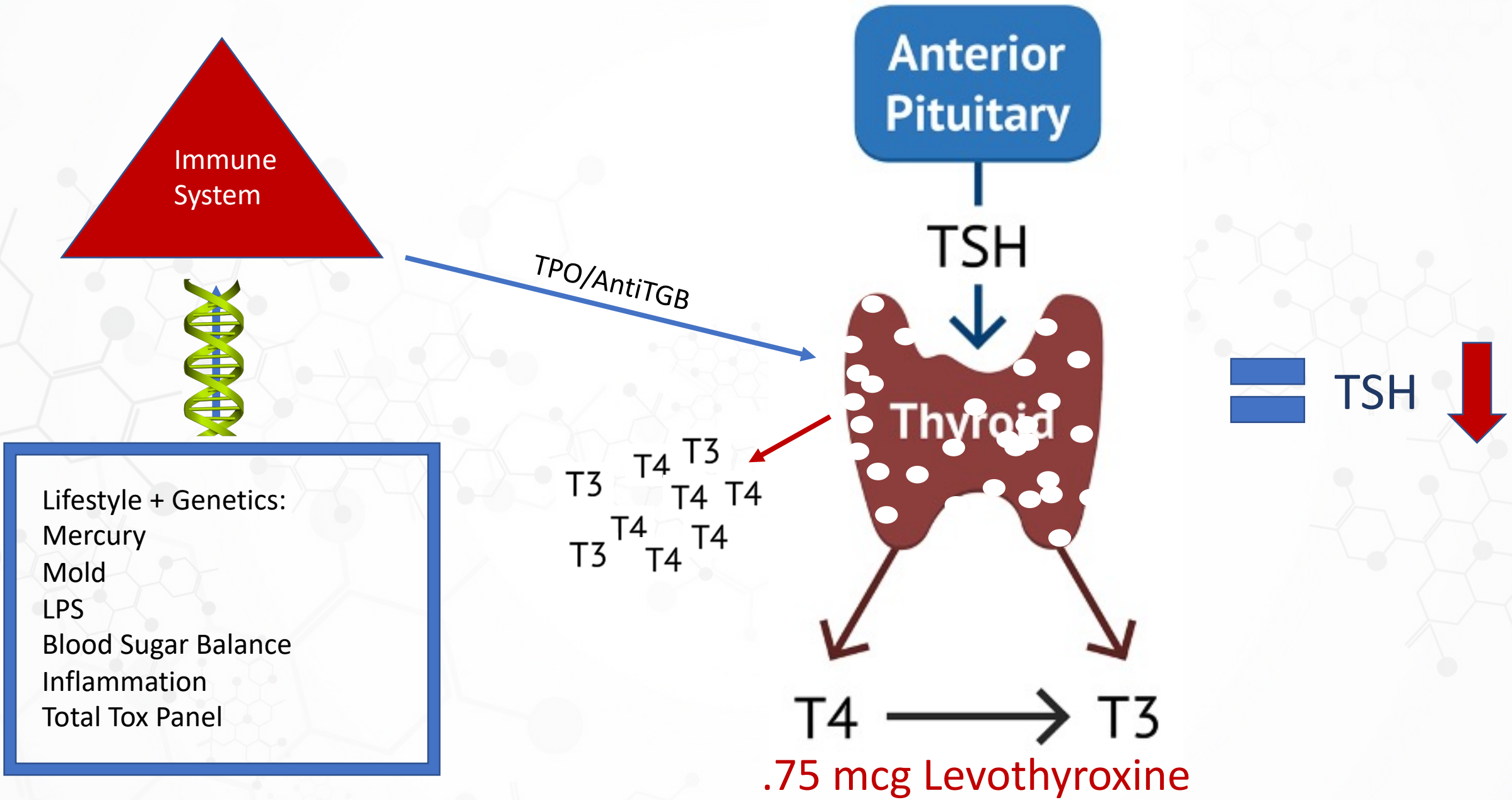
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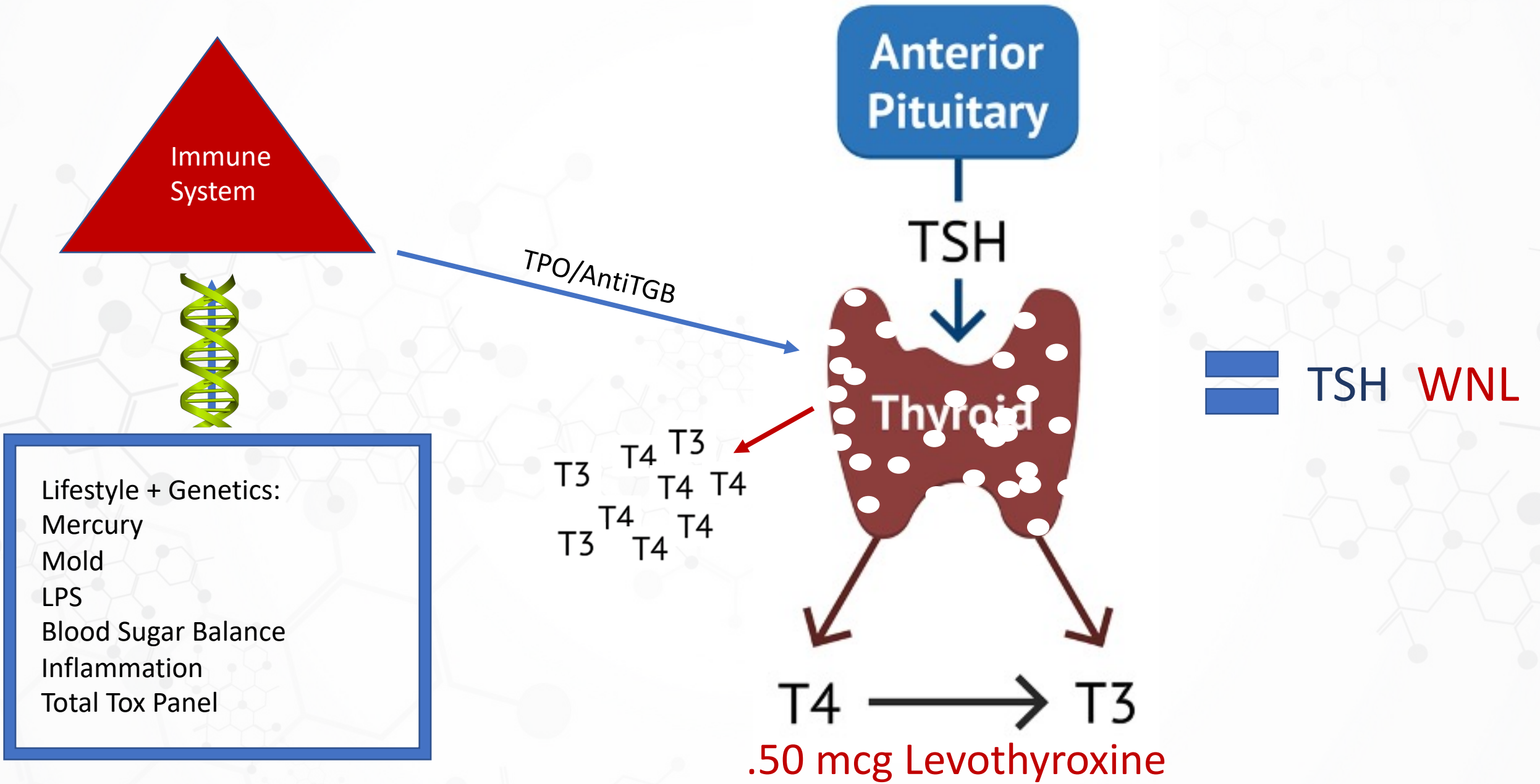
Anterior Pituitary
TSH
Immune System
TPO/AntiTGB
Thyroid
T3 T4 T3 T4 T4 T3 T4 T4 T4
T4 T3
.50 mcg Levothyroxine
TSH WNL
Lifestyle + Genetics:
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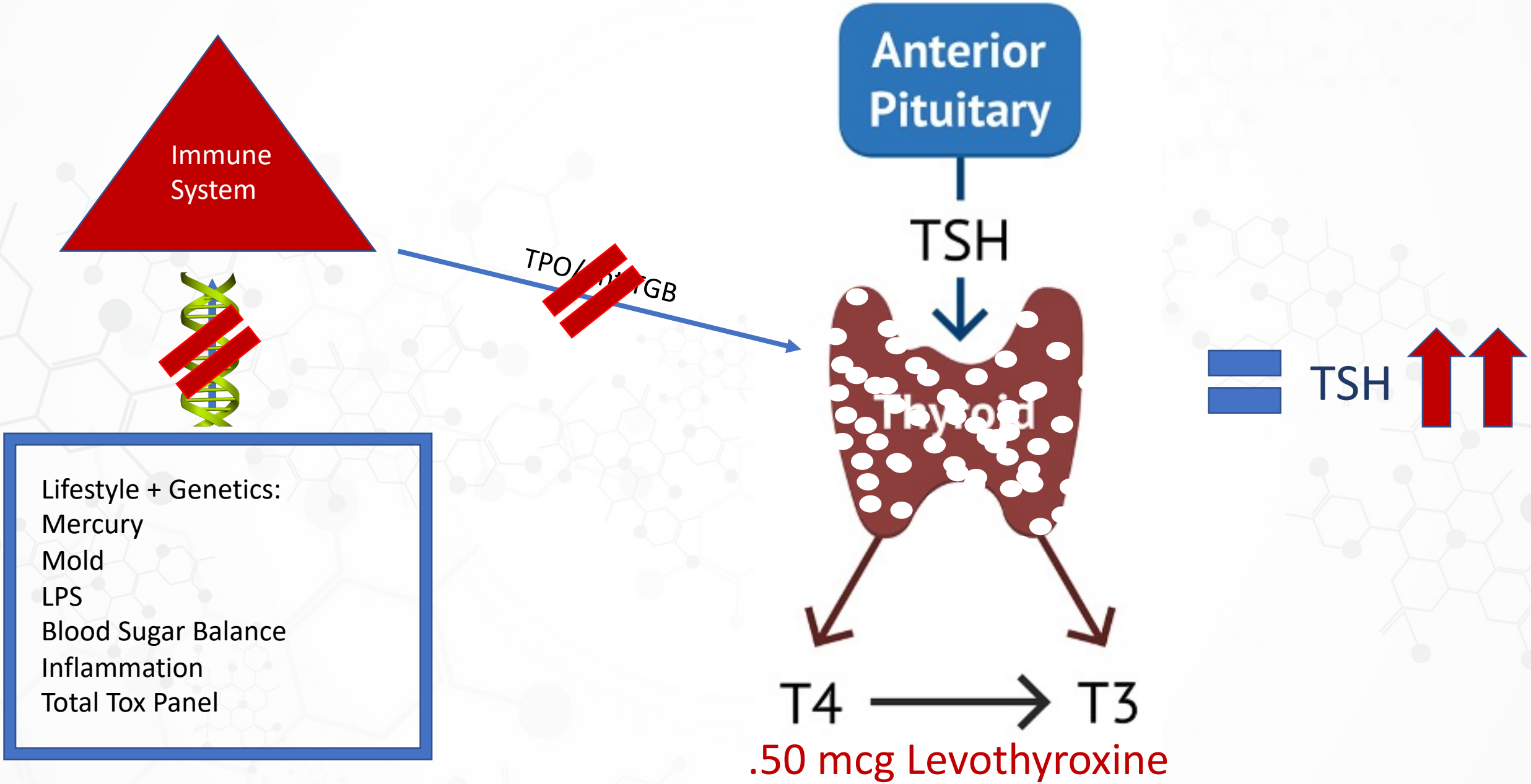
Inflammation
Total Tox Panel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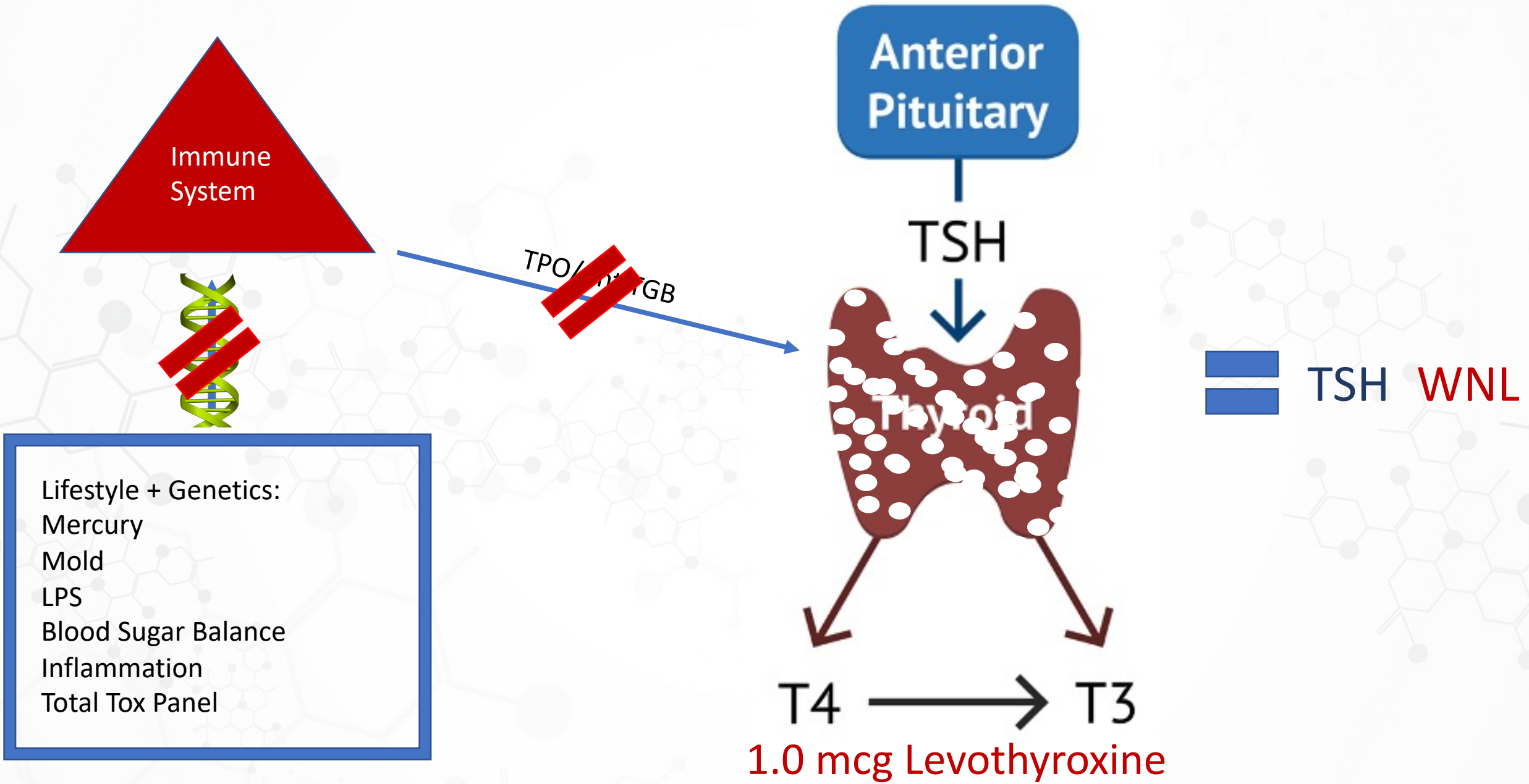
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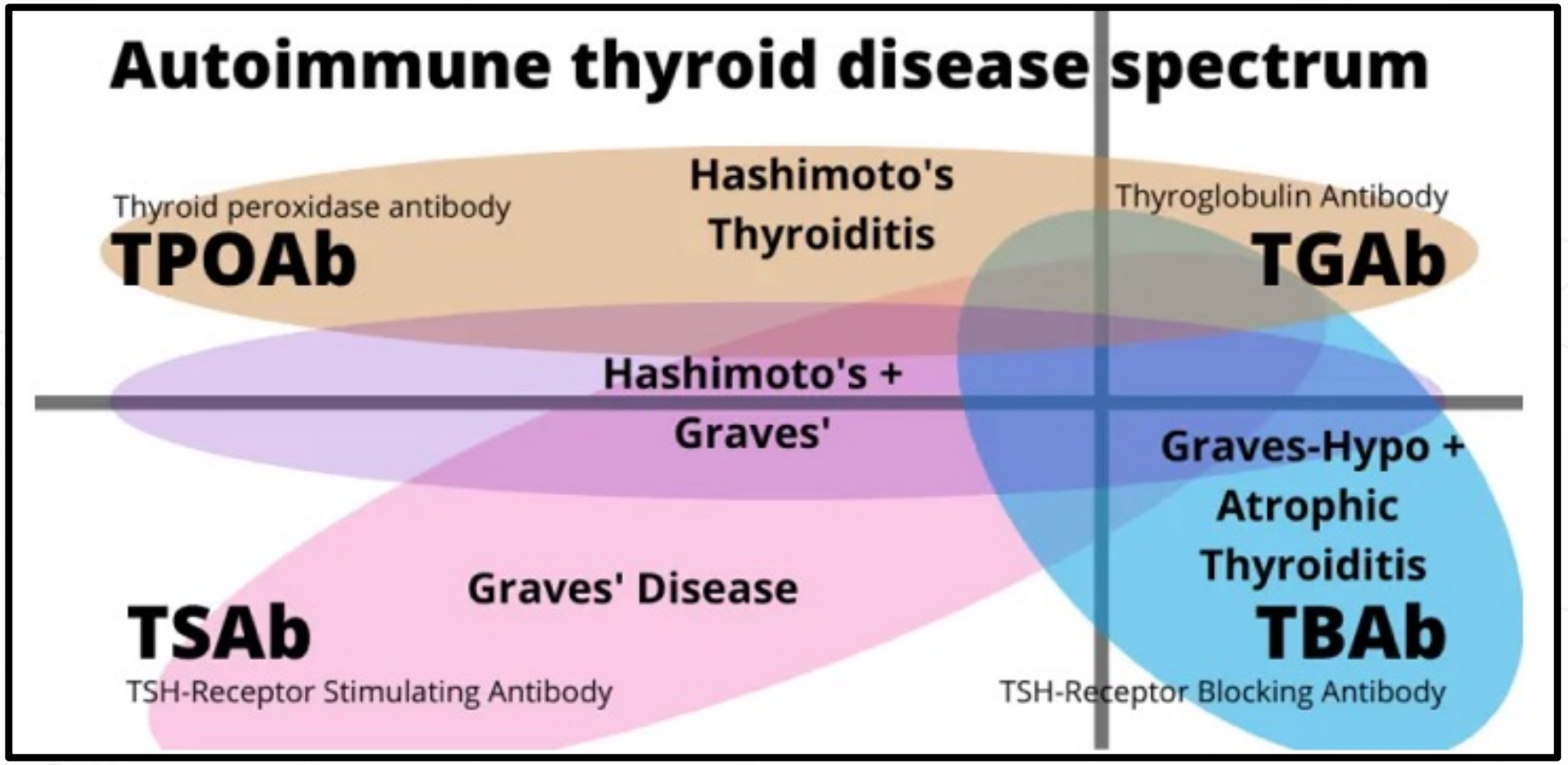
TSH WNL



https://thyroidpatients.ca/2020/04/05/remissions-and-fluctuations-trab/

In GD, thyroid stimulating immunoglobulins (TSI) bind to the TSH receptor (TSHR) and mimic TSH stimulation of the thyroid gland. Because TSI induced thyroid hormone secretion is not controlled by negative feedback, such stimulation causes uncontrolled hyperthyroidism.[8]

TSI are IgG antibodies that can cross the placental barrier and cause neonatal thyrotoxicosis in newborns delivered by mothers with GD.[9,10]

The TSH receptor contains a large extracellular domain that presents epitopes for a variety of autoantibodies, including TSI and Thyroid Blocking Immunoglobulins TBI.[11-13] In contrast to TSI, TBI bind to the TSH receptor and inhibit TSH stimulation of thyroid cells, leading to hypothyroidism. Commonly used Thyrotropin Receptor Autoantibody (TRAb) assays do not distinguish between TSI and TBI.

https://www.labcorp.com/tests/140749/thyroid-stimulating-immunoglobulin-tsi

“Hashimoto's thyroiditis, or inflammation of the thyroid gland, is an autoimmune disorder. That means it is caused by a malfunction in your immune system. Instead of protecting your thyroid tissue, your immune cells attack it. These immune cells can cause hypothyroidism(underactive thyroid), a goiter (enlarged thyroid), or both. Eventually, the thyroiditis process can even destroy your entire thyroid, if left undetected or untreated.”

“Doctors aren't entirely sure why the immune system, which is supposed to defend the body from harmful viruses and bacteria, sometimes turns against the body's healthy tissues.”

https://www.endocrineweb.com/conditions/hashimotos-thyroiditis/causes-hashimotos-thyroiditis

In Hashimoto's thyroiditis, large amounts of damaged immune cells invade the thyroid. These immune cells are called lymphocytes; this is where Hashimoto's other name—chronic lymphocytic thyroiditis—is derived from.

https://www.endocrineweb.com/conditions/hashimotos-thyroiditis/causes-hashimotos-thyroiditis

Thyroid Panel With TSH

Test	Current Result and Flag		Previous Result and Date	Units	Reference Interval
▼ **TSH** [01]	**0.095**	**Low**		uIU/mL	0.450-4.500
Thyroxine (T4) [01]	10.7			ug/dL	4.5-12.0
T3 Uptake [01]	28			%	24-39
Free Thyroxine Index	3.0				1.2-4.9

Triiodothyronine (T3)

Test	Current Result and Flag	Previous Result and Date	Units	Reference Interval
Triiodothyronine (T3) [01]	114		ng/dL	71-180

Thyroid Antibodies

Test	Current Result and Flag		Previous Result and Date	Units	Reference Interval
Thyroid Peroxidase (TPO) Ab [01]	8			IU/mL	0-34
▲ **Thyroglobulin Antibody** [01]	**1.3**	**High**		IU/mL	0.0-0.9

Thyroglobulin Antibody measured by Beckman Coulter Methodology

Meds: Levothyroxine

Thyroid Panel With TSH

Test	Current Result and Flag		Previous Result and Date		Units	Reference Interval
▼ **TSH** [01]	**<0.005**	**Low**	**0.006**	12/23/2021	uIU/mL	0.450-4.500
Thyroxine (T4) [01]	11.8				ug/dL	4.5-12.0
T3 Uptake [01]	36		35	11/12/2021	%	24-39
Free Thyroxine Index	4.2					1.2-4.9

Thyroxine (T4) Free, Direct

Test	Current Result and Flag		Previous Result and Date		Units	Reference Interval
▲ **T4,Free(Direct)** [01]	**2.40**	**High**	**1.93**	12/23/2021	ng/dL	0.82-1.77

Triiodothyronine (T3), Free

Test	Current Result and Flag		Previous Result and Date		Units	Reference Interval
▲ **Triiodothyronine (T3), Free** [01]	**5.0**	**High**	4.3	12/23/2021	pg/mL	2.0-4.4

Thyroid Antibodies

Test	Current Result and Flag	Previous Result and Date	Units	Reference Interval
Thyroid Peroxidase (TPO) Ab [01]	<8		IU/mL	0-34
Thyroglobulin Antibody [01]	<1.0		IU/mL	0.0-0.9

Thyroglobulin Antibody measured by Beckman Coulter Methodology

Meds: Synthroid

TSH

Test	Current Result and Flag	Previous Result and Date	Units	Reference Interval
TSH [01]	0.481		uIU/mL	0.450-4.500

Thyroxine (T4)

Test	Current Result and Flag	Previous Result and Date	Units	Reference Interval
Thyroxine (T4) [01]	6.4		ug/dL	4.5-12.0

T3 Uptake

Test	Current Result and Flag	Previous Result and Date	Units	Reference Interval
▼ **T3 Uptake** [01]	**21 Low**		%	24-39
Free Thyroxine Index	1.3			1.2-4.9

Triiodothyronine (T3)

Test	Current Result and Flag	Previous Result and Date	Units	Reference Interval
Triiodothyronine (T3) [01]	95		ng/dL	71-180

Thyroid Antibodies

Test	Current Result and Flag	Previous Result and Date	Units	Reference Interval
Thyroid Peroxidase (TPO) Ab [01]	**171 High**		IU/mL	0-34
▲ **Thyroglobulin Antibody** [01]	**69.6 High**		IU/mL	0.0-0.9

Thyroglobulin Antibody measured by Beckman Coulter Methodology

Thyroid Stim Immunoglobulin

Test	Current Result and Flag	Previous Result and Date	Units	Reference Interval
▲ **Thyroid Stim Immunoglobulin** [03]	**0.73 High**		IU/L	0.00-0.55

Meds: Methimazole

Diagnostics

- Blood + Ab
- Dutch
- Stool
- Total Tox

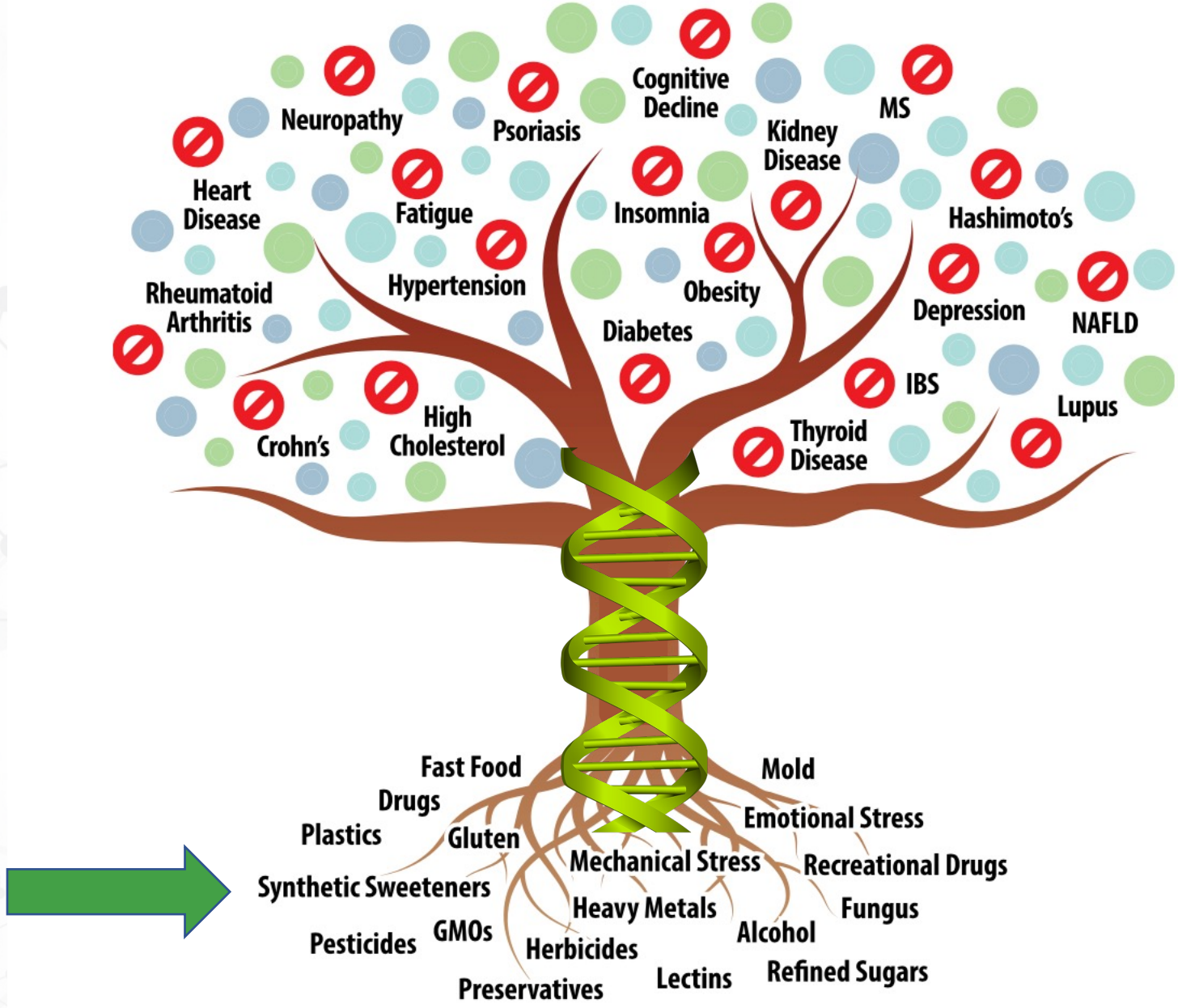
Intervention

- Building Blocks
- Drivers
- Detoxifiers

Results

- Subjective
- Objective
- Predictable
- Sustainable

NEXT WEEK: DEVELOPING PERSONALIZED INTERVENTIONS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