

Module 16

Infectious diseases and Autoimmune diseases

Because the **thymus gland** is in the centre of the body's defence mechanism, when the thymus is inhibited, the patient will have lowed resistance to infections.. In patients with adrenal exhaustion, the effect on the immune system is often reflected in the white cell differential.*

*Common Glandular Dysfunctions in General Practice by Walter H. Schmitt page 53

Neutrophils (PMN's) are produced in the bone marrow and Lymphocytes are produced in the lymphatic tissue, a differential showing relatively elevated neutrophils and relatively lowered lymphocytes is often seen in stressed patients which has resulted in a lowered lymphatic system function.

These patients will have a weak **infraspinatus** (thymus) and the **middle or lower trapezius** (spleen) and should receive vigorous therapy designed to improve lymphatic system function particularly of the thymus and spleen.

*Common Glandular Dysfunctions in General Practice by Walter H. Schmitt page 53

The **thymus** is also implicated in infections that last 7 days or longer. The thymus takes about a week to crank up to its full potential.

*Common Glandular Dysfunctions in General Practice by Walter H. Schmitt page 54

Use large doses of **Ascorbic acid** if the patient's tissues are alkaline. Otherwise use magnesium or potassium ascorbate to alkalise.
Test Vitamin C related muscles –
Deltoid, Serratus anterior,
Coracobrachialis)

*Common Glandular Dysfunctions in General Practice by Walter H. Schmitt page 54

Vitamin A is necessary for the integrity of the epithelial tissues.

B Complex vitamins should be avoided during infections.

Increase elimination especially of the lower bowel.

Reduce food intake.

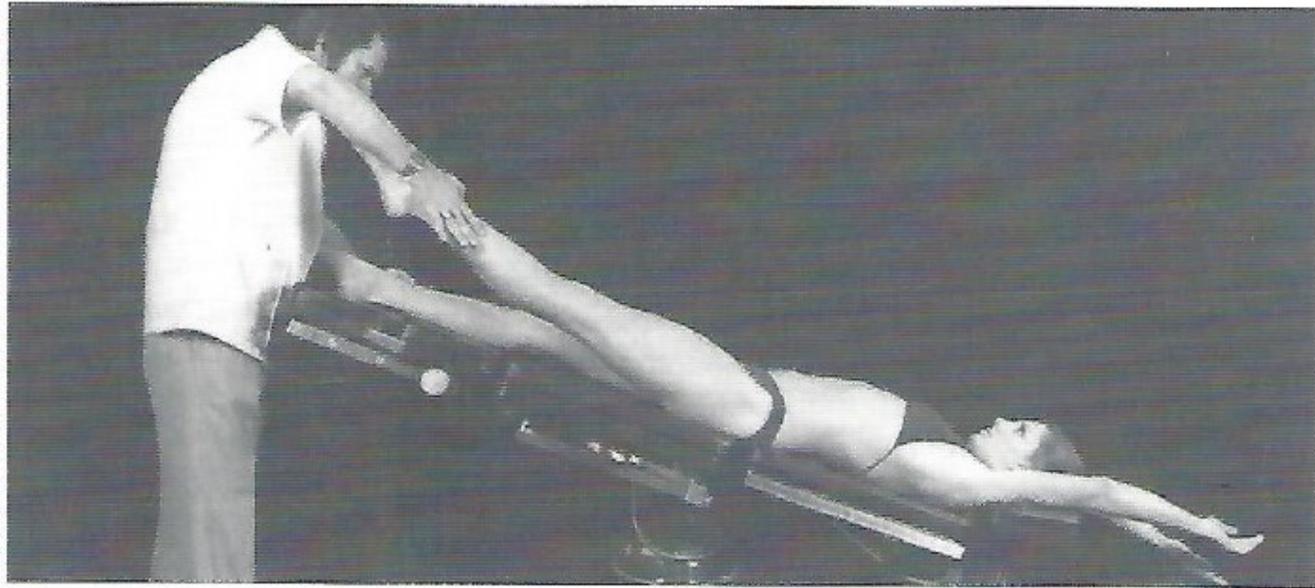
Lemon routine – rub skin all over (opens pores) and follow with a hot bath.

*Common Glandular Dysfunctions in General Practice by Walter H. Schmitt page 55

**Check patient for Retrograde
Lymphatics.**

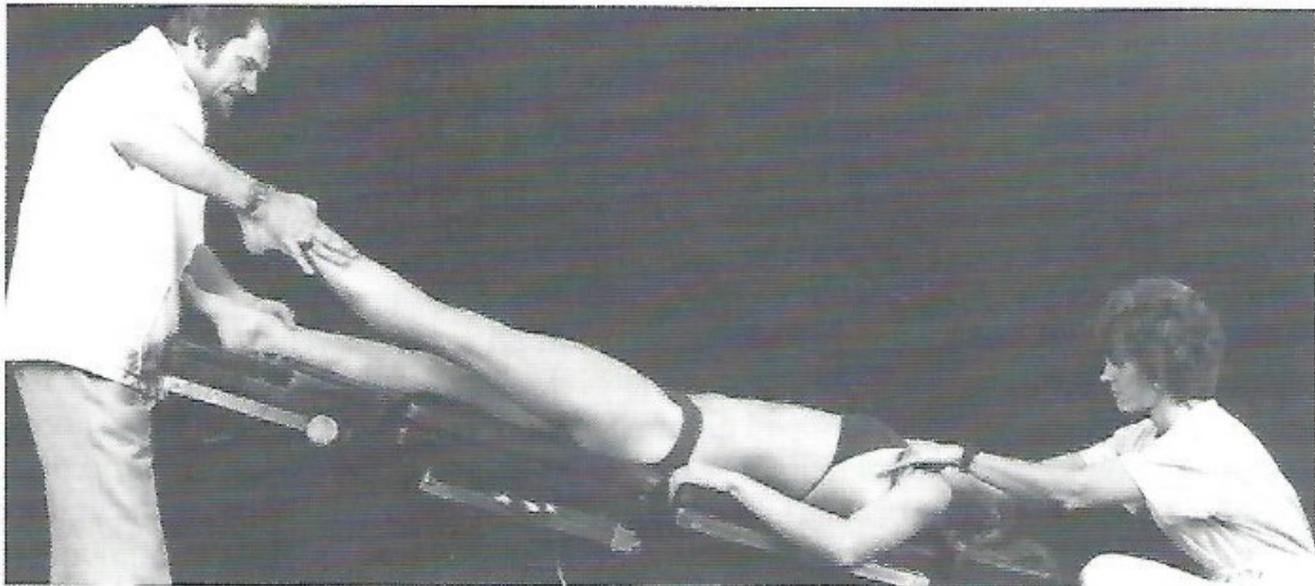
**Treat any positive
Neurolymphatic reflexes**

12—22. Retrograde position with shoulder flexed as shown. Positive test should be abolished (see text).



Applied Kinesiology Synopsis 2nd Edition by David Walther DC

12—23. Pectoral stretch being applied in retrograde position.



White Blood Cells are a group of Blood Cells that are an integral component of the Immune System where they are involved in defending the body against foreign organisms.

White Blood Cells are colourless, possess a nucleus and are far less numerous than Red Blood Cells.

Classification of White Blood Cells

Granulocytes: 70%
 Neutrophils* 65% (HOCl) **NA**
 Eosinophils 4% (H₂O₂) **GABA, Glycine, Taurine**
 Basophils 1% (Histamine) **Hist**
 (Mast cells)

Innate
immune
system

Agranulocytes 30%
 Monocytes* (NO*) **Dopamine**
 (Macrophages)

Adaptive
immune
system

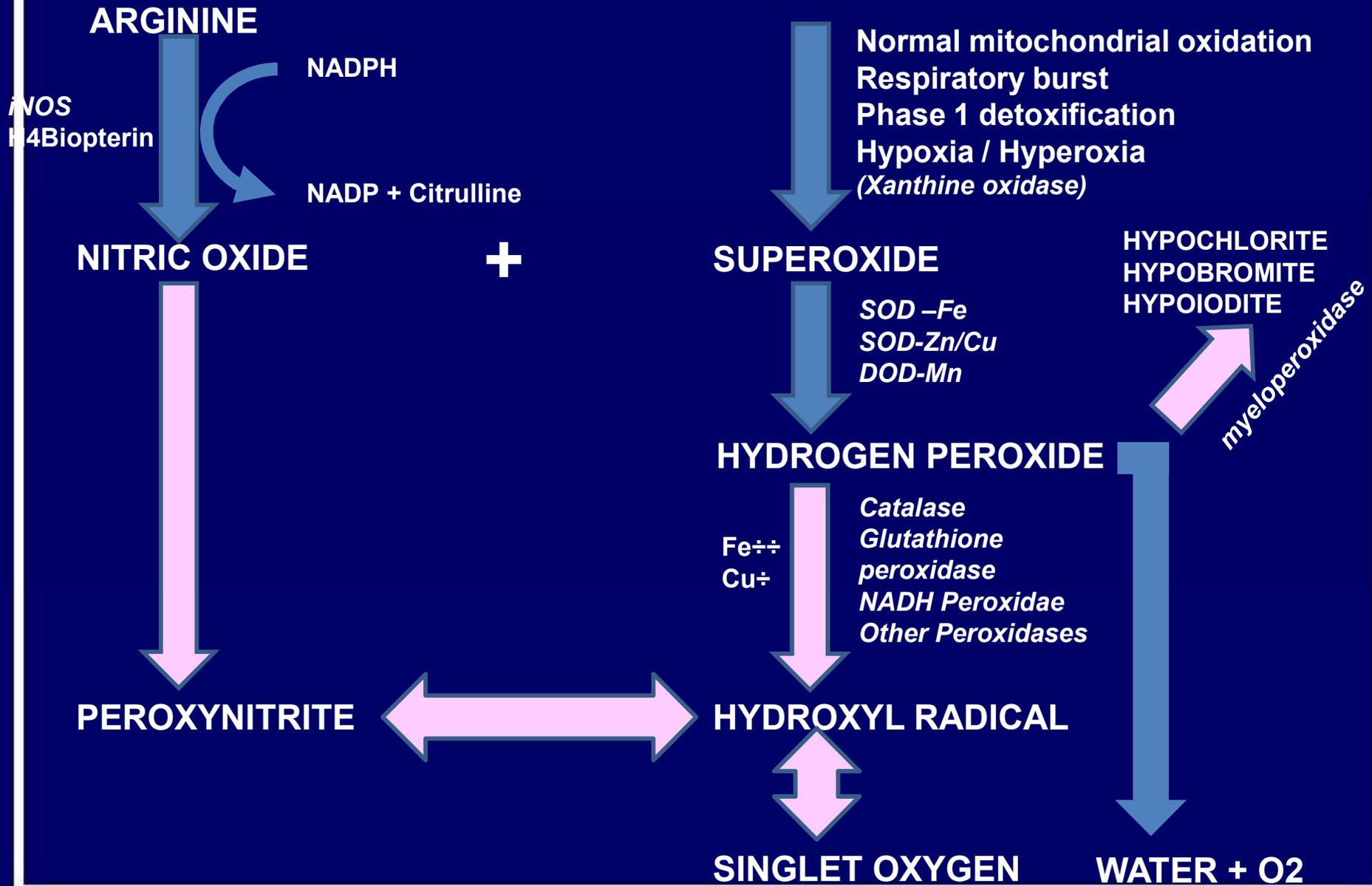
Lymphocytes: 25%
 B-Lymphocytes **Serotonin**
 T-Lymphocytes: **ACh**
 Helper T-Cells
 Memory T-Cells
 Killer T-Cells
 Suppressor T-Cells

Natural Killer Cells 15% **Excitatory**

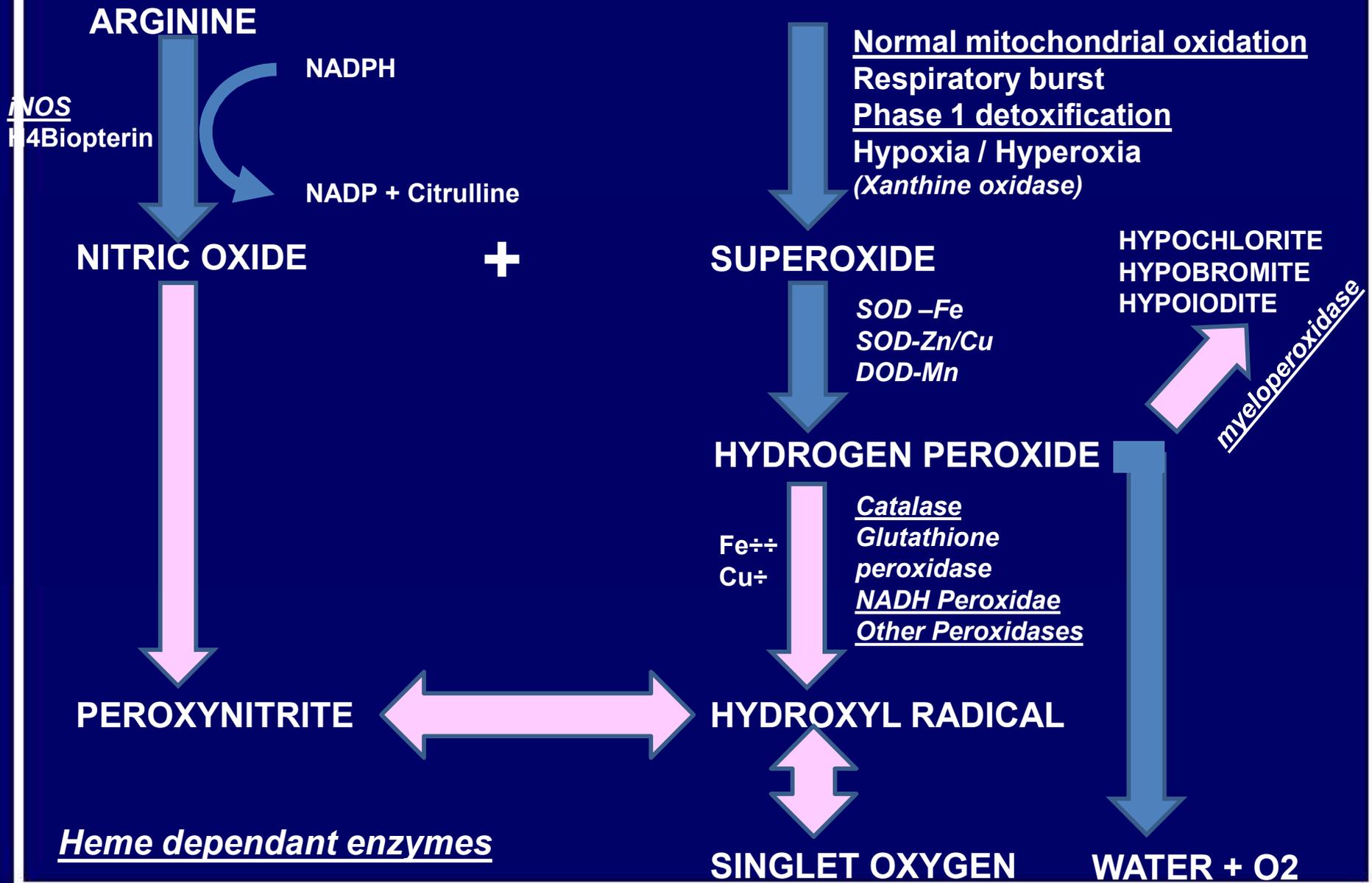
Phagocytes*

EMOTION	MERIDIAN	NEURO TRANSMITTER	NUTRITION	MUSCLE	COLOUR	IMMUNE	IMMUNE NUTRITION
Shame & Humiliation	Bl 1	↓ Serotonin	Tryptophan, B3, B6, Folic, Fe, Zn, Mg	Tibialis post Peroneals		↓ B cells	Vit C, Vit E, Astragalus, Echinacea, Ginseng, Immune WHY 600,
Anxiety & Fear	Kid 27	↑ Serotonin	Cu, B2, SAM (Mg, Zn), AcetylCo, Glutathione, Glucuronic, Sulfur	Kidney Iliacus Upper trap		↑ B cells	Omega 3, Flax oil, DHA, Astragalus, Chilli, Moly, Ginseng, Vit D, E, K, Sugar
Guilt & Blame	GB 1	↓ Acetylcholine	Acetyl CoA, Choline B1, Mn	Popliteus		↓ T cells	Sel, Astragalus, Horseradish, Cats claw, Echinacea, Glutamine
Pride & Scorn	Liv 14	↑ Acetylcholine	B, B3, Mn, Mg, Zn	PMS Rhomboids		↑ T cells	Sugar, Cortisol, Gamma & Xrays, Hg, Statins
Apathy & Despair	LI 20	↓ GABA	Glutamate, B6, Mg, Zn	TFL Hamstrings Quadratus lum		↓ Eosinophils	Zn, Cu, mn, Fe, Ginger, Turmeric, Mustard, Horseradish
Anger & Hate	Lung 1	↑ GABA	B6, Mg, Zn	Deltoid Coracobrach Serratus Ant		↑ Eosinophils	Catalase, Ginkgo biloba
Grief & Regret	CV 24	↓ Dopamine	Tyrosine, B3, B6, Folic, Fe, Zn, Mg	Supraspinatus Infraspinatus		↓ Monocytes	Mag mal
Craving & Desire	GV 27	↑ Dopamine	Cu, B2, SAM (Mg, Zn), AcetylCo, Glutathione, Glucuronic, Sulfur	Teres major		↑ Monocytes	Tobacco
Acceptance	St 1	↓ Histamine	Histidine, B6, Mg, Zn	PMC Neck flexors		↓ Basophils	Allergens
Willingness	Sp 21	↑ Histamine	Cu, B2, SAM (Mg, Zn),	Latissimus d Triceps		↑ Basophils	Mg, Vit E, Zn, Lutein / Zeaxanthine, Quercetin, Hesperadin
Reason	SI 19	↓ Noradrenalin	Tyrosine, B3, B6, Folic, Fe, Zn, Mg, B12, Cu, Vit C	Quadriceps Abdominals		↓ Neutrophils	I, Br, Cl, Sel, Zn, Ionic silver, Ginger, Turmeric, Mustard
Love	Ht 1	↑ Noradrenalin	Cu, B2, SAM (Mg, Zn), AcetylCo, Glutathione, Glucuronic, Sulfur	Subscapularis		↑ Neutrophils	Catalase, Sugars
Trust	TW 23	↓ Excitatory	Aspartate, B6, Zn, Glutamate, Mg	Teres min		↓ NK	Sel, Rhodiola, Vit A, B5, B12, C, D, E, Shark liver oil, Germanium
Courage	CX 1	↑ Excitatory	B2, Fe, Mg, B6, Vit C.	Gluteals Sartorius Gracilis		↑ NK	Glucocorticoids, Excess dietary fats

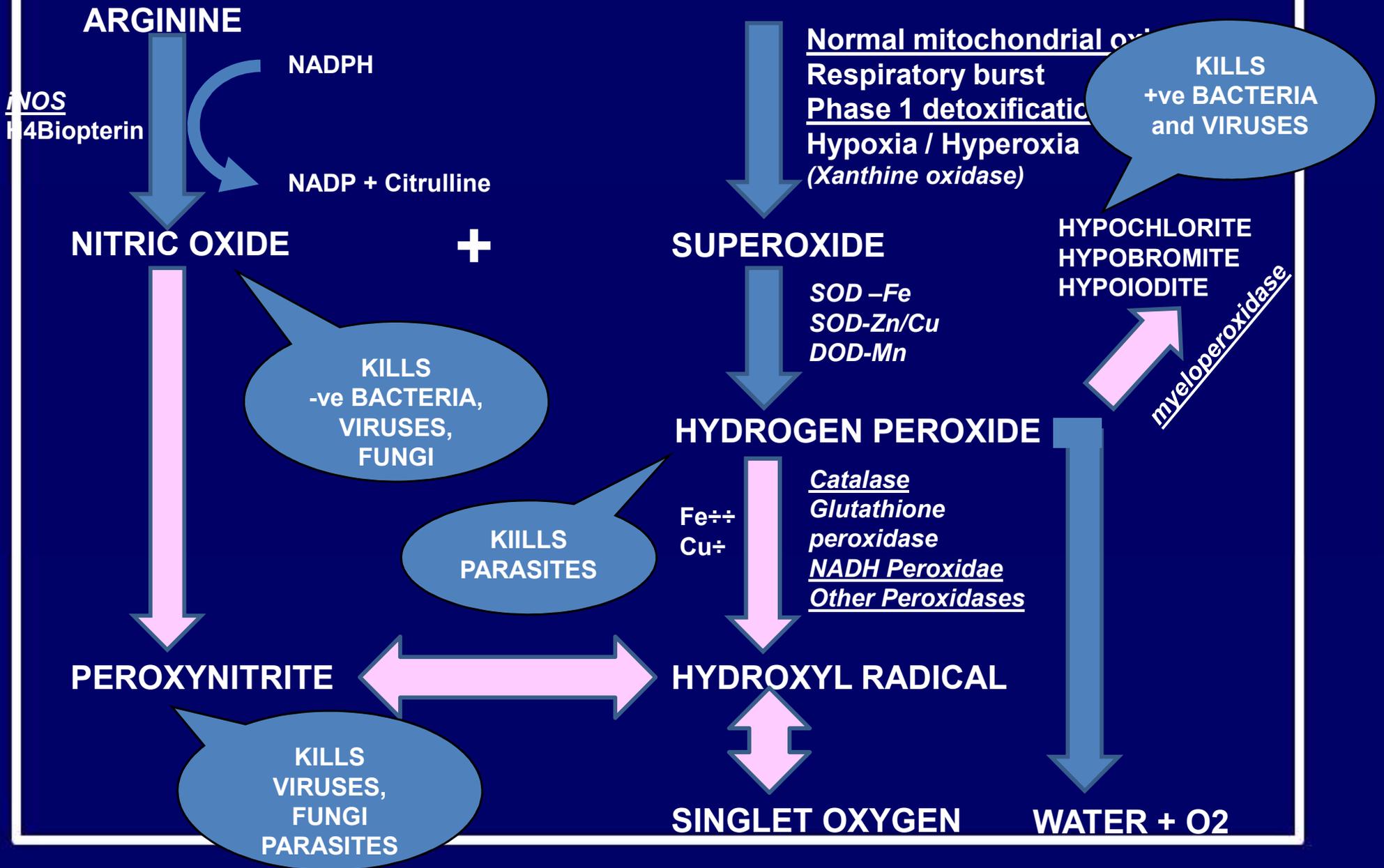
Reactive Oxygen Species



Reactive Oxygen Species



Reactive Oxygen Species



Bacteria

Bacteria are classified according to whether they function as

1. **Aerobes (needing oxygen)**
2. **Anaerobes (not requiring oxygen)**

This classification is further subdivided by the type of cell wall the bacteria contains.

- 1. Gram positive or**
- 2. Gram negative**

Gram positive cell walls contain 90% **peptidoglycan** composed of N. Acetyl Glucosamine and N. Acetyl Muraminic Acid.

They are stained **blue-violet** by a crystal violet stain.

Gram negative cell walls have two layers.

1. A thinner inner membrane which is composed of 20% peptidoglycan.
2. An outer **lipopolysaccharide (LPS)** membrane which contains the toxic Lipid A which is responsible for their pathogenic effects.

Most pathogenic **gram positive bacteria** will be killed by the **Halogen anions** induced by myeloperoxidase.

Colloidal / Ionic silver helps stimulate myeloperoxidase and inhibits catalase produced by many bacteria.

Most pathogenic **gram negative bacteria** will be killed by

Nitric oxide or by **Peroxynitrite**

as iNOS is stimulated by the gram negative lipopolysaccharide outer membrane.

Treating bacterial infections

Killing of bacteria within phagolysosomes appears to depend on the combined action of elevated pH, superoxide anion and further oxidative derivatives especially the Halogen species and on the action of certain bactericidal peptides (defensins) and other proteins (e.g. cathepsin G) present in phagocytic cells.

Acute infections require an immediate up-regulation of the immune system.

Superoxide is produced during the respiratory burst.

Most gram positive bacteria are killed by

Red Hypoiodite anion

Green Hypobromite anion

Blue Hypochlorite anion

Diagnosis:

Use positive MERIDIAN.

**Alternatively, cervical lymph nodes
or other area of pathogenic
inflammation positively TL's.**

Challenge from weakness against Nitric Oxide (NO). If Nitric Oxide negates then the infection is a gram negative. If Nitric Oxide does not negate then the infection is a gram positive.

Bacteria – Zinc

Vitamin C, Vitamin D, Vitamin A

Arginine

Olive leaf

Ginger

Echinacea, Goldenseal

Colloidal silver

Mannose

Black walnut tincture

Virus

Viruses are composed of coded **DNA or RNA** surrounded by a protein shell.

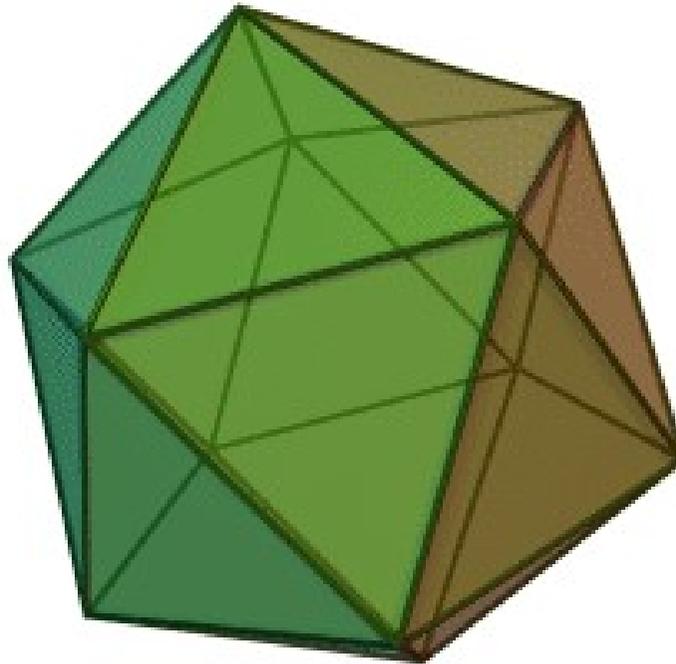
This shell is know as a **capsid** and is comprised of a series of subunits know as the **capsomers**.

The term **virion** denotes the complete infective virus particle.

The **capsid** is made up of the same type of protein molecules over and over again.

It possesses cubic symmetry thereby being able to rotate through a number of axes each giving an identical appearance.

**Each capsid is in fact an
ICOSAHEDRON**



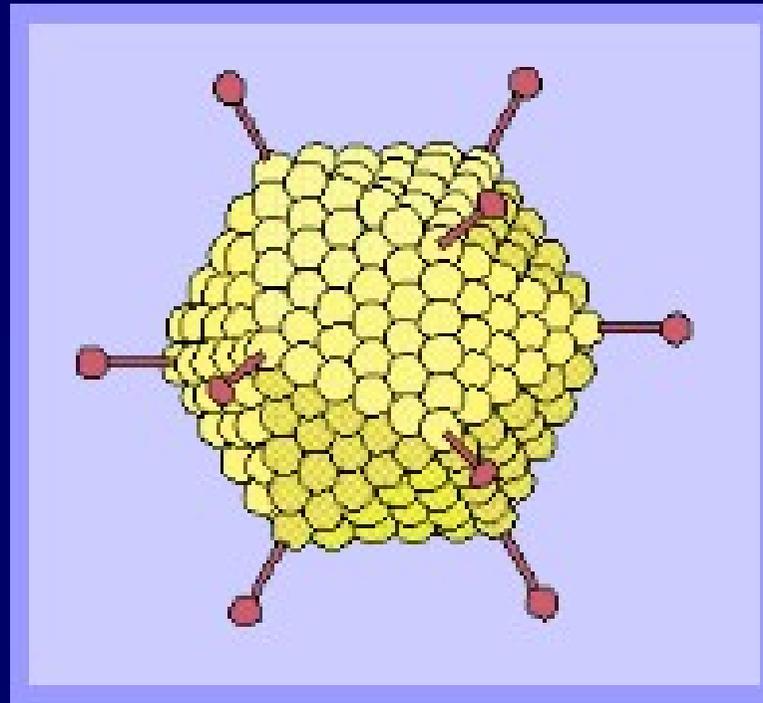
**composed of 20 facets, each an
equilateral triangle**

Viruses are classified as to whether they contain **DNA or RNA** infective material.

Classification

DNA containing viruses

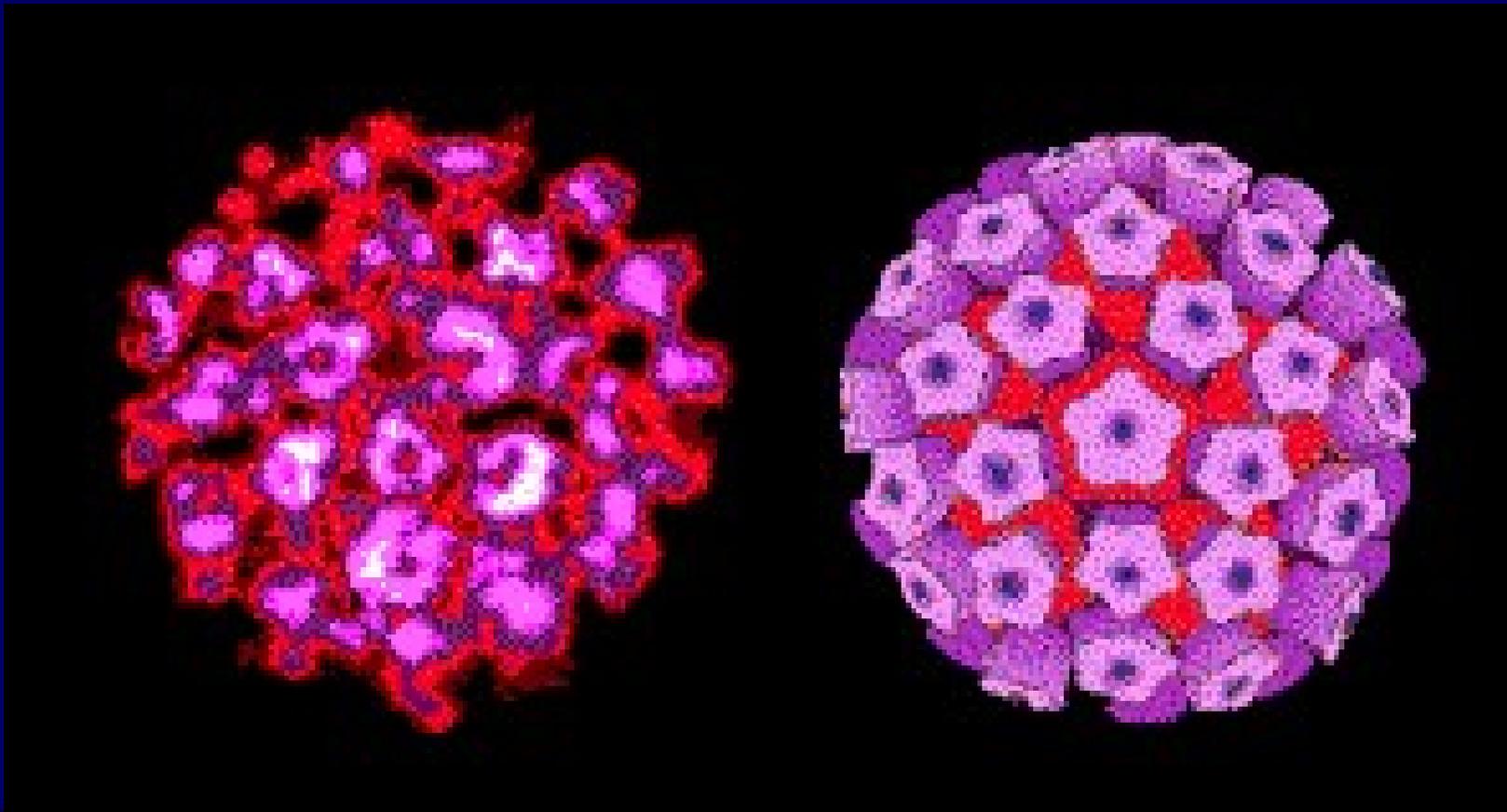
Adeno virus



DNA containing viruses

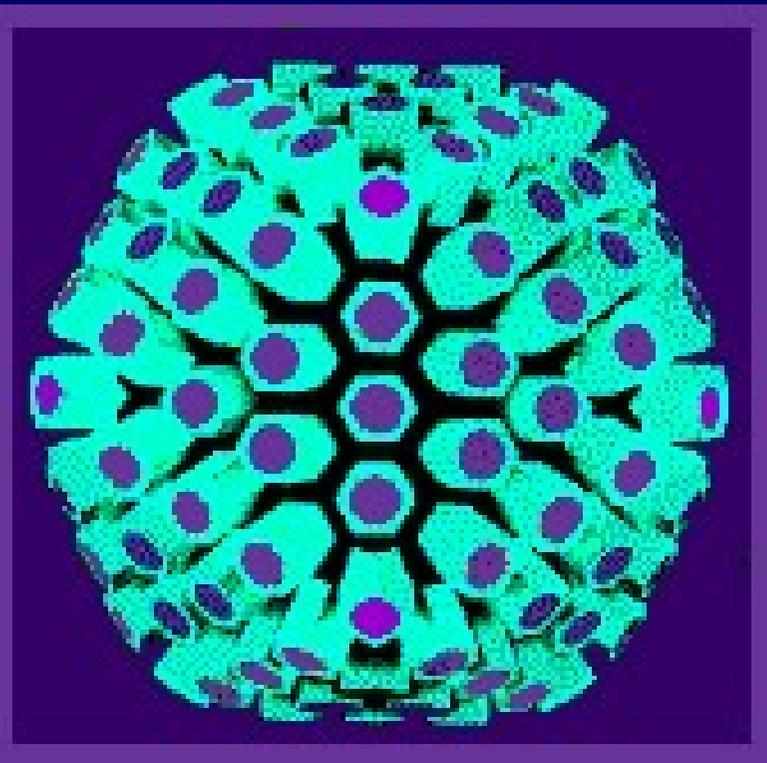
Papilloma virus

Human papilloma virus



DNA containing viruses

Herpes virus



Herpes simplex 1

Herpes simplex 2
(genitalia)

Herpes zoster

Cytomegalo virus

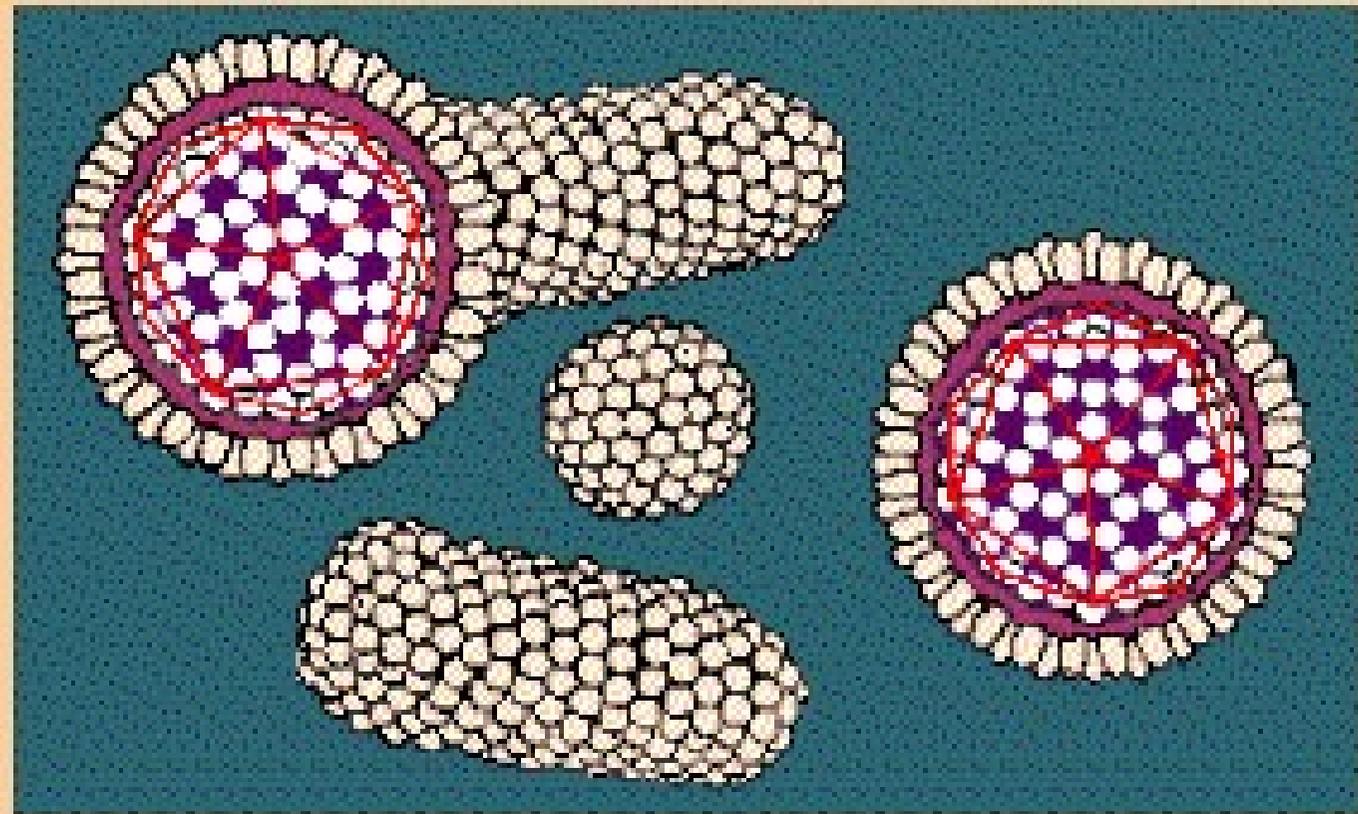
Varicella (chicken pox)

Epstein Barr

(Mononucleosis)

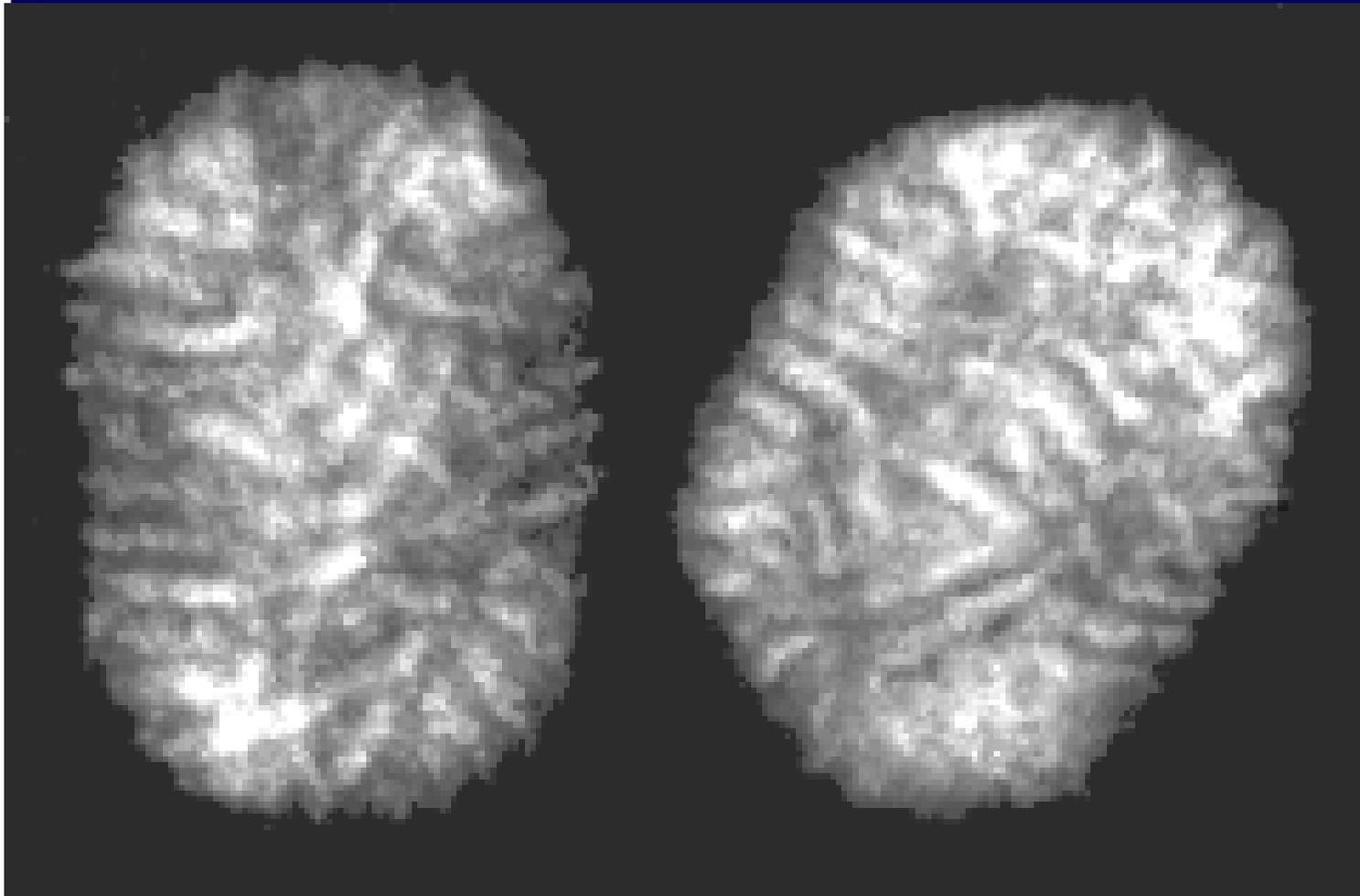
DNA containing viruses

Hepatitis B virus



DNA containing viruses

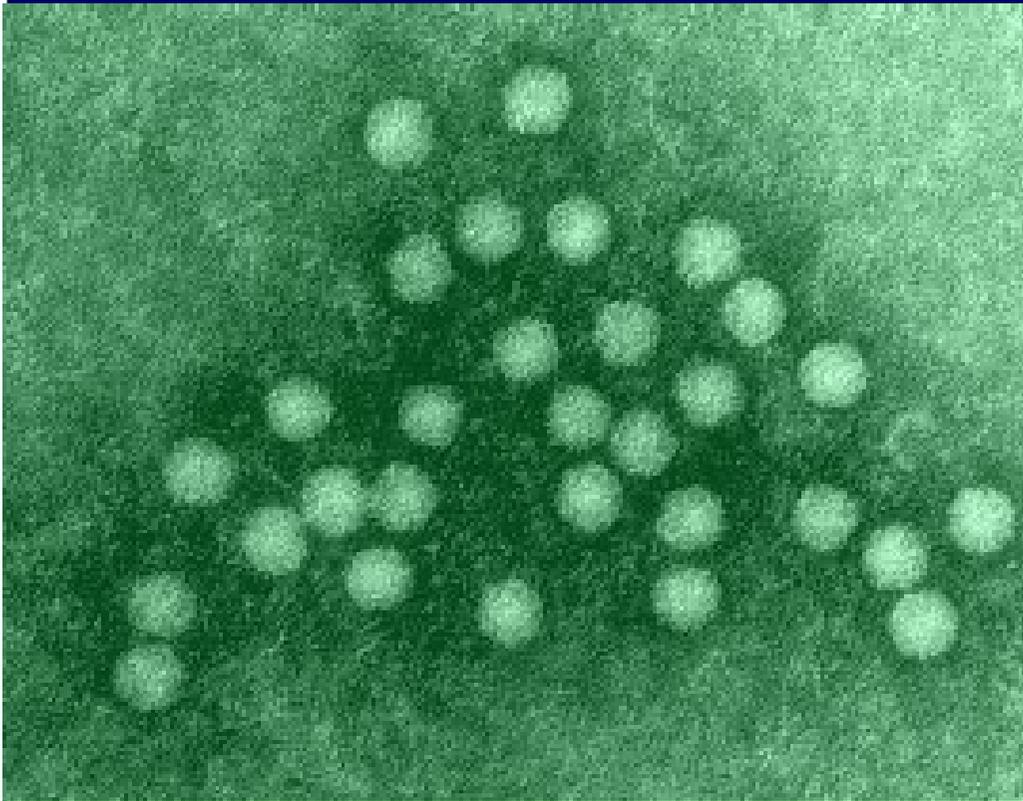
Molluscum contagiosum



DNA containing viruses

Parvo virus

(erythema infectiosum)

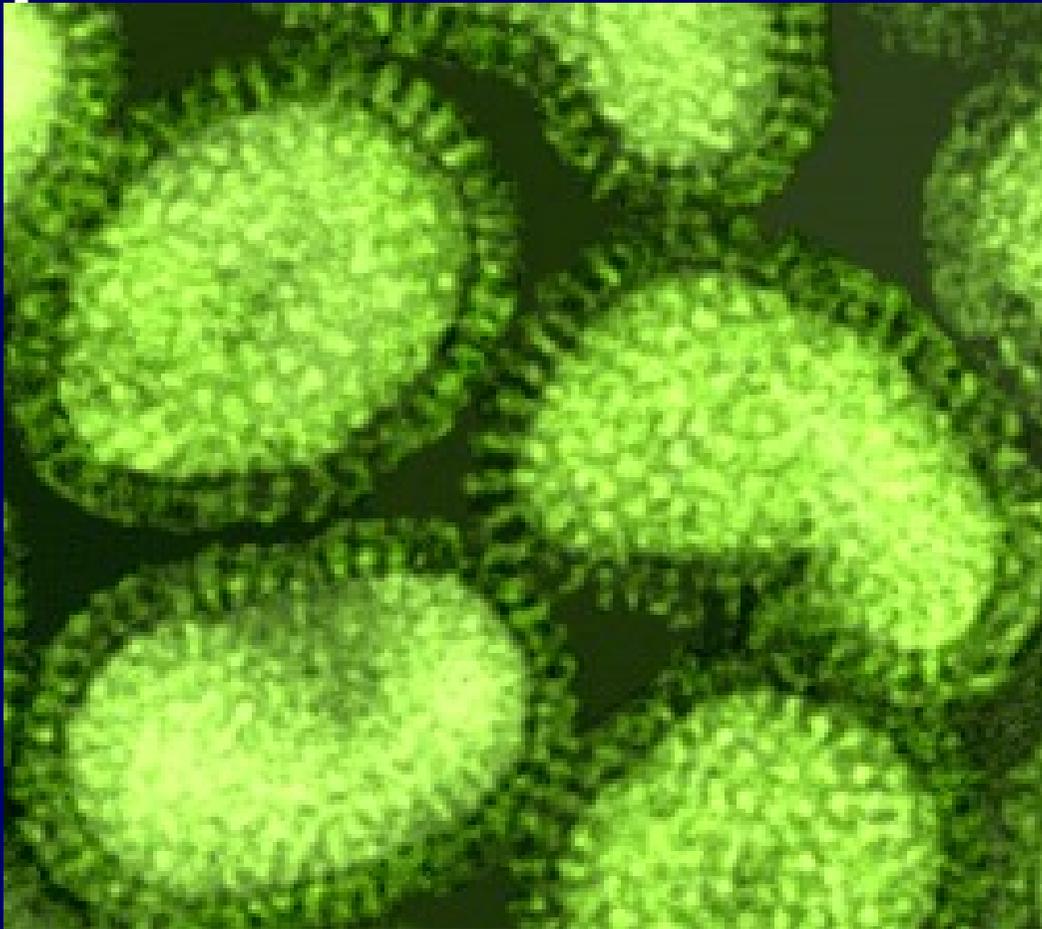


RNA containing viruses

Influenza virus

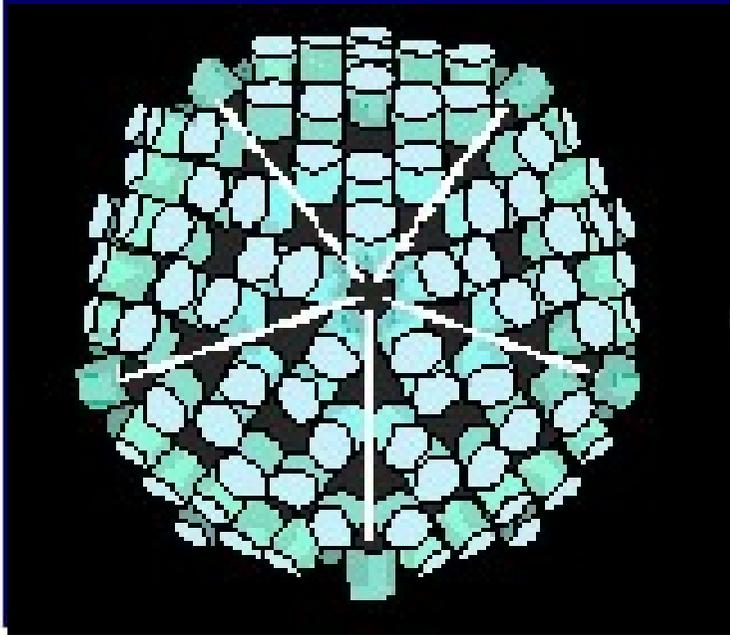
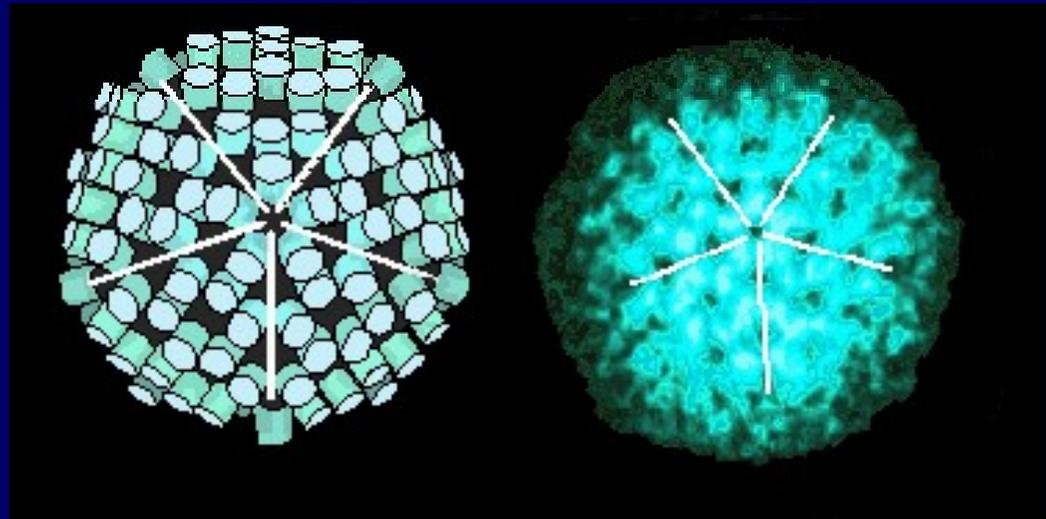
Influenza A

Influenza B



RNA containing viruses

Roto virus



RNA containing viruses

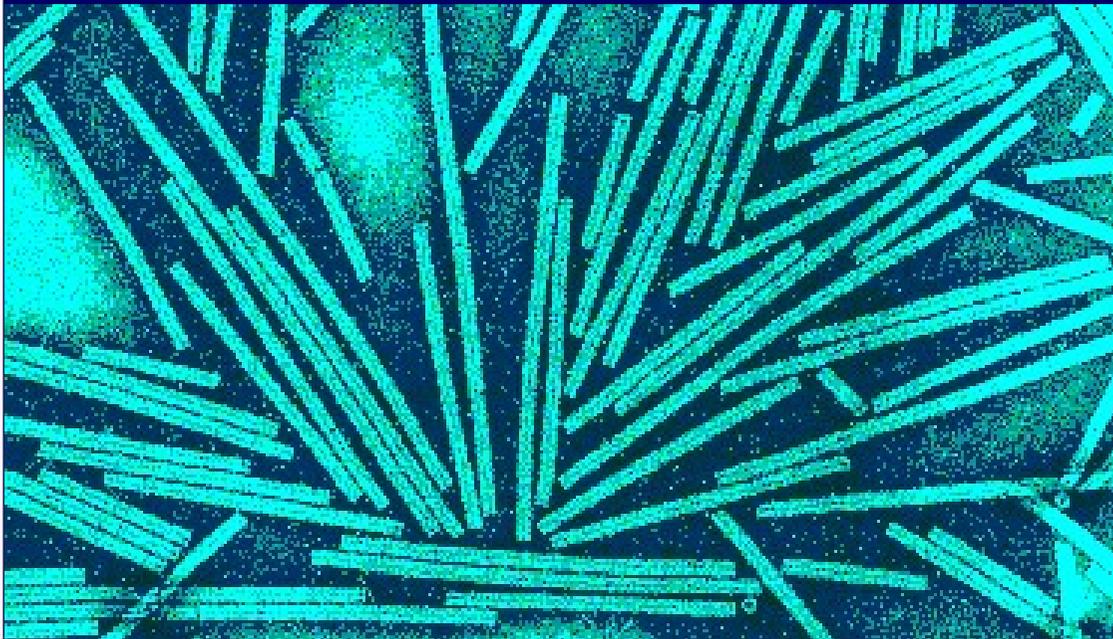
Paramyxoviruses

Morbilinum

Rubella

Parotitis

Parainfluenza



RNA containing viruses

Enteroviruses

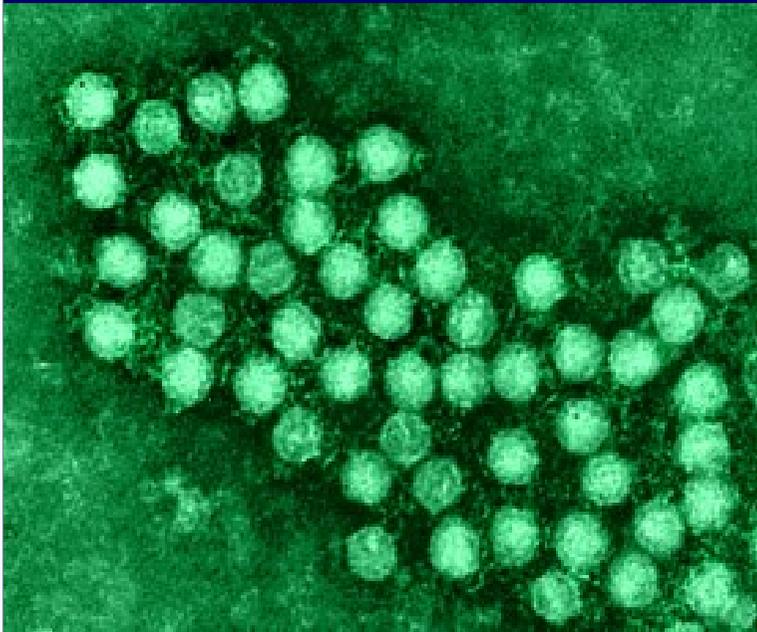
Poliomyelitis

Coxsackie A and B

Rhino virus

Echo virus

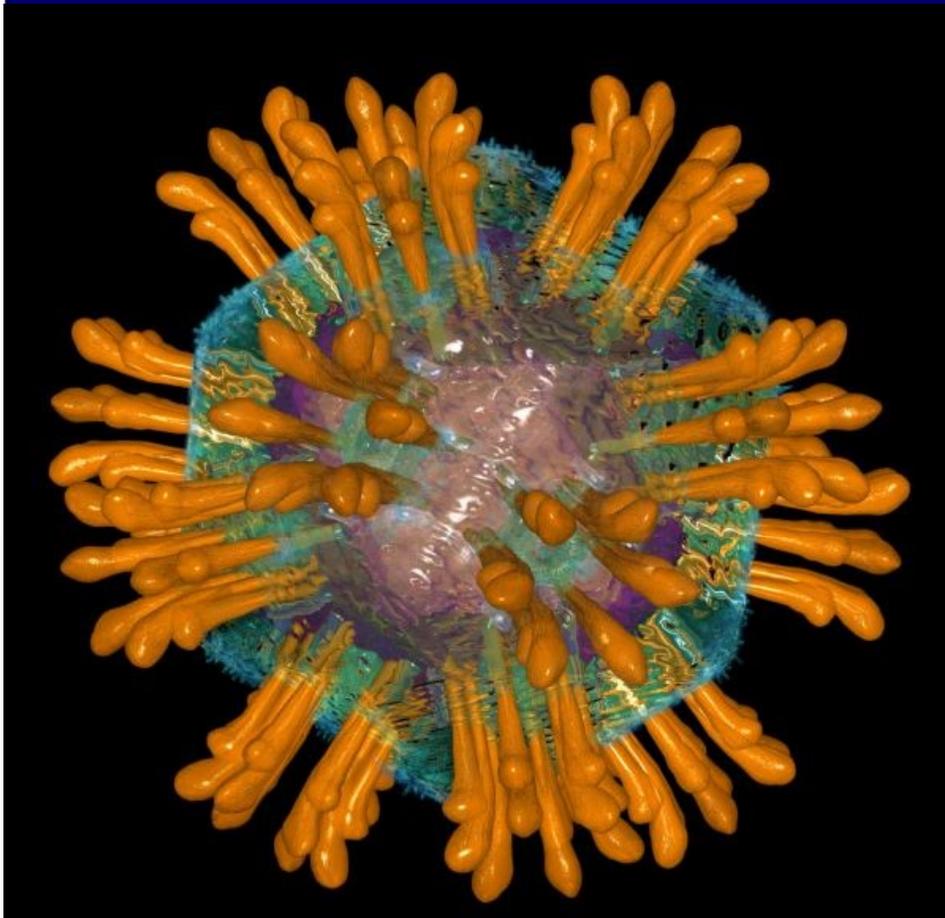
Hepatitis A



RNA containing viruses

Flaviviridae

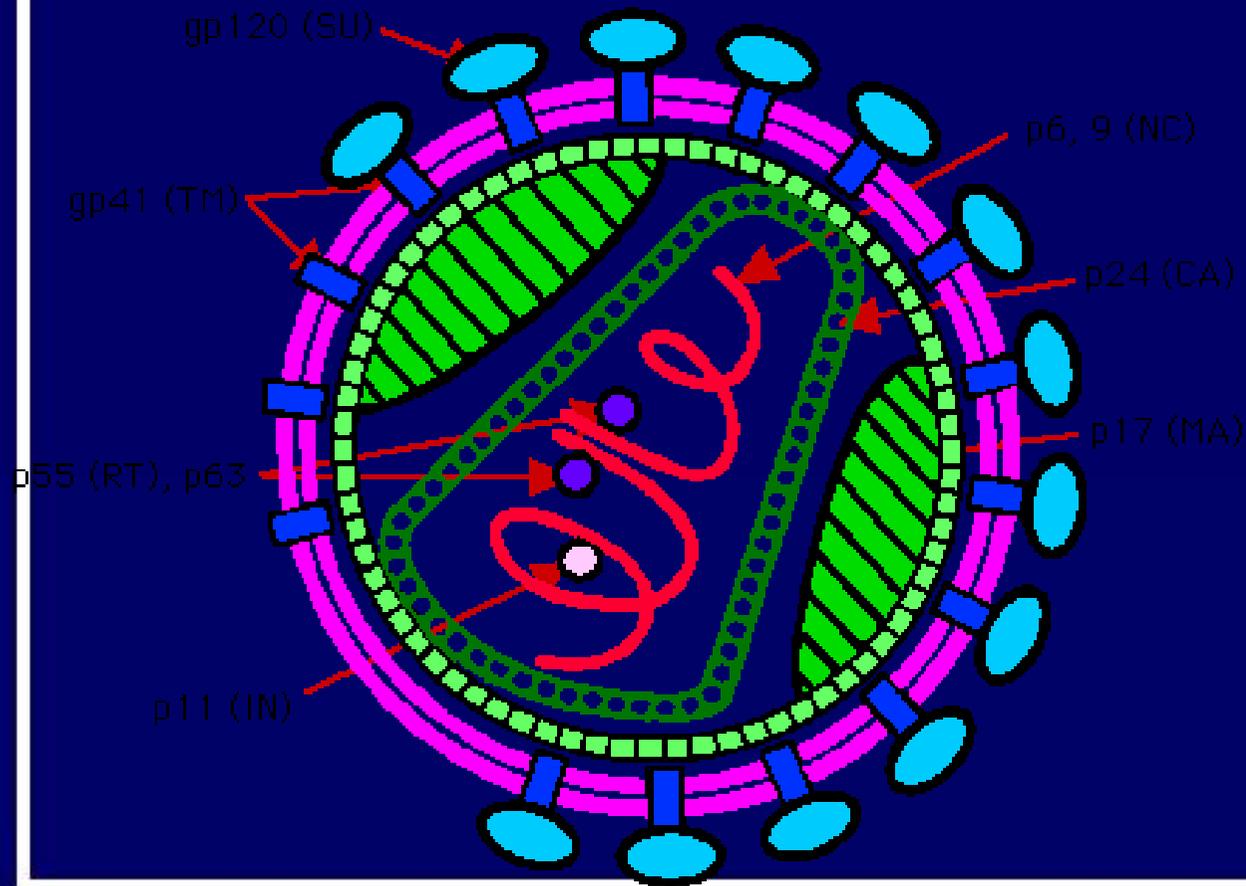
Hepatitis C



RNA containing viruses

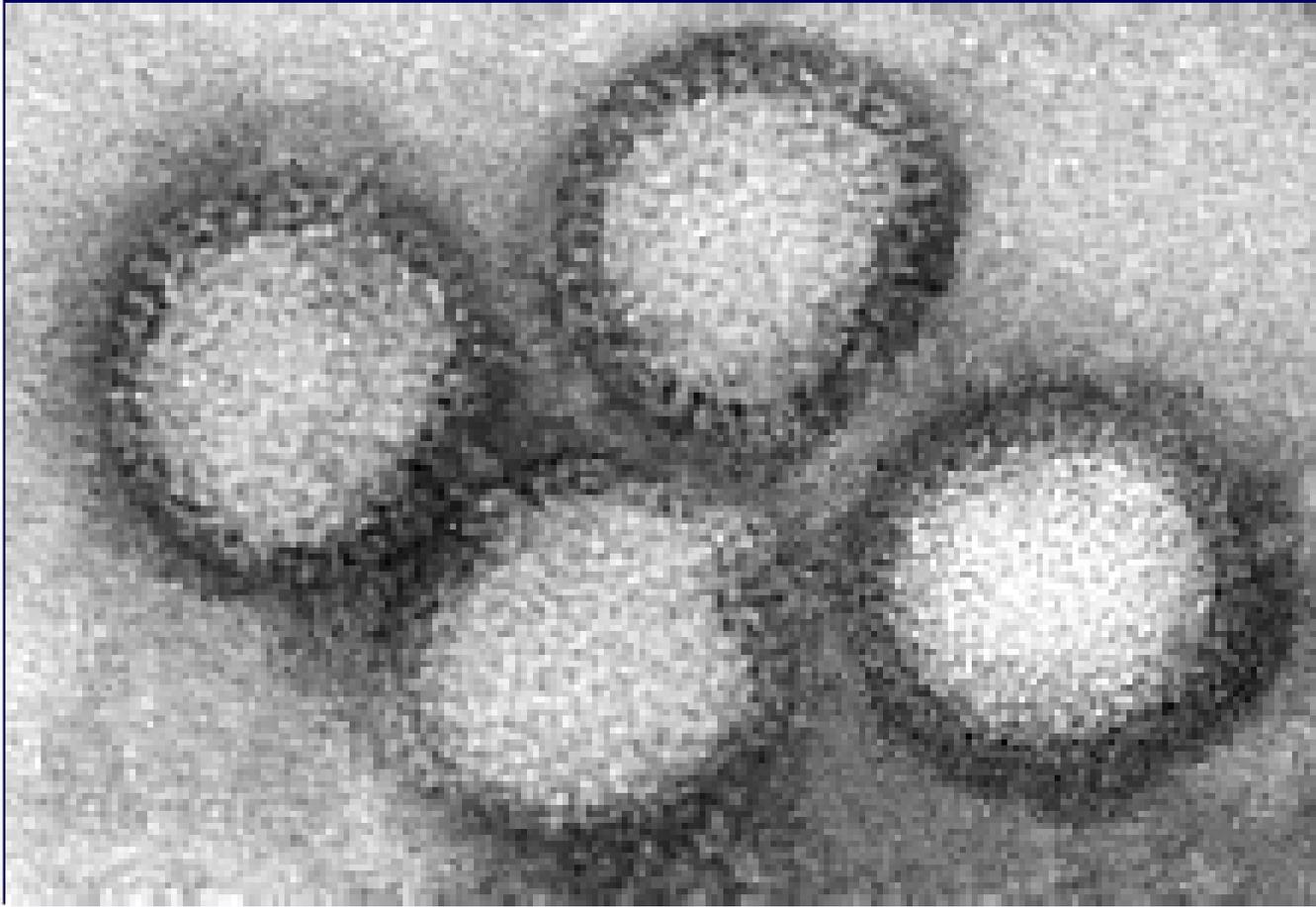
Human Immuno Deficiency

HIV



RNA containing viruses

**Rift Valley Fever Rift Valley
Fever Virus**



CLASSIFICATION

RNA containing viruses



RNA containing viruses

Ebola virus

Ebola hemorrhagic fever



Viral infections

Viruses can only replicate intracellularly. A virus invades a cell by puncturing the cell wall with hemagglutinin spikes, which cover the surface of the virus. Each spike is covered with the neuraminidase enzyme to breakdown cell wall structures.

The aim of treatment is

1. to disarm the viral spikes and inhibit the neuraminidase enzyme and

2. to aid the lymphocytes to produce specific ROS.

Most viruses are killed by either the halogen anions or nitrate radicals similarly to the killing of bacteria.

Diagnosis:

There is a positive

MERIDIAN. Alternatively, cervical lymph nodes or other area of pathogenic inflammation positively TL's.

Thymus, Spleen muscle weakness

PROCEDURE

**Basically the same as treating
BACTERIA**

**Virus – Ionic Iron, Calcium
Zinc**

Vitamin C, Vitamin A, Vitamin D

Echinacea

Astragalus

Olive leaf

Colloidal silver

Black walnut tincture

Selenium, Garlic

NAC

Parasites

Parasites are non-specifically attacked and killed by the **eosinophils** and specifically by the production of **IgA**. The large granules within eosinophils contain Eosinophil Peroxidase (EPO).

The EPO is present to regulate and protect the eosinophil from the H₂O₂ it produces to kill the parasite.

Most parasites are killed by H₂O₂ but some parasitic bacteria maybe killed by the Halogen radicals such as HOCl⁻.

Patients with parasites may weaken to **Phenol, Ammonia or Toluene**. Also to the different forms of **Lactic Acid**. These parasitic excretory chemicals inhibit probiotic growth.

Probiotics attach to intestinal cell surface receptors thus blocking the ability of parasites to adhere to the gut wall.

DIAGNOSIS:

Usually there is a positive St, SI, LI or Liv MERIDIAN. Alternatively, intestines (usually the descending colon or ICV) or other area of pathogenic inflammation positively TL's.

Challenge against

**Apple cider vinegar, Cloves,
Paprika to detach GUT eggs.**

**Bromelain as a proteolytic enzyme.
Pancreatic enzymes to digest
parasites.**

TREATMENT

Supplement patient with exact dose of negating nutrients / remedy accordingly 3-4 times per day.

TREATMENT

Prescribe food combining diet with no dairy products during treatment.

Parasites –

Protease enzyme

Iodine

Artemesia Annua

Black walnut tincture and caps

Wormwood

Wormwood combination

Spice mixes

Black walnut tincture

Coriander for cestodes

Cloves or nutmeg for nematodes

Pumpkin seeds for nematodes

**Trematodes require a direct
biochemical approach, rather than
a spice.**

Maintenance

Remember parasites reproduce in cycles and have two or more phases of development.

Therefore, when the patient tests clear prescribe a maintenance program i.e. single dose of the remedy twice a week for one month and then once a week for a further month or so.

Fungus

Moulds and spores proliferate on the **mucous membranes of the body** in an alkaline environment but may penetrate systemically, attach to any epithelial tissue and change form from a spore to a hyphae-forming mycelium.

They live symbiotically with the aerobic bacteria present in these locations.

Fungal cell walls

Contain 5-8 distinct layers composed of **Glucan** (chains of glucose molecules) and **Galactose** 48-60%, **Mannoprotein** (chains of mannose linked to serine, threonine or asparagine) 20-23%, **Protein** 3-6% (the amino acids in fungi are in the toxic D-form), **Chitin** (chains of N-Acetyl D. Glucosamine) 0.6-2.7%, **Lipid** 2%.

ETHANOL METABOLISM

ETHANOL



ALETALDEHYDE

1.cytochrome p450 (Zn, NADPH)

2.alcohol dehydrogenase (Zn, NAD)

3.catalase (Fe, Mg, NADPH)



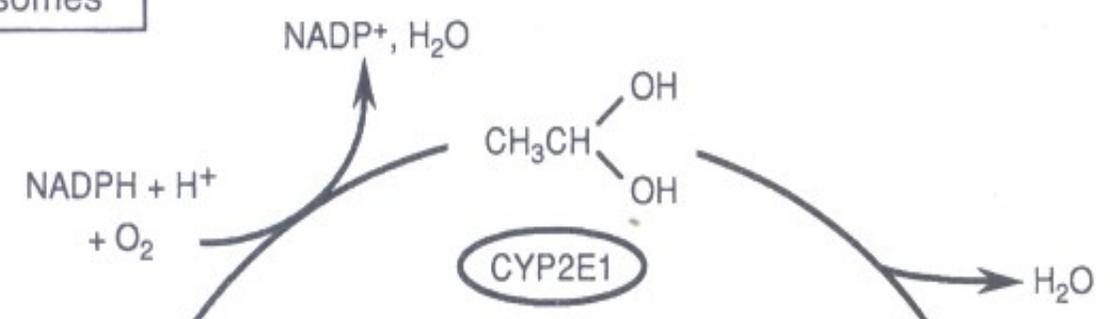
ACETIC ACID ← aldehyde dehydrogenase (oxidase)

(NAD, FAD, Mo, Fe)

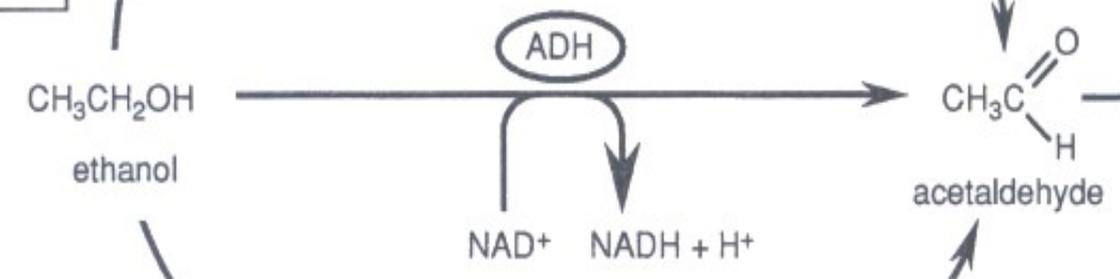
+

Superoxide

Microsomes



Cytosol



Peroxisomes

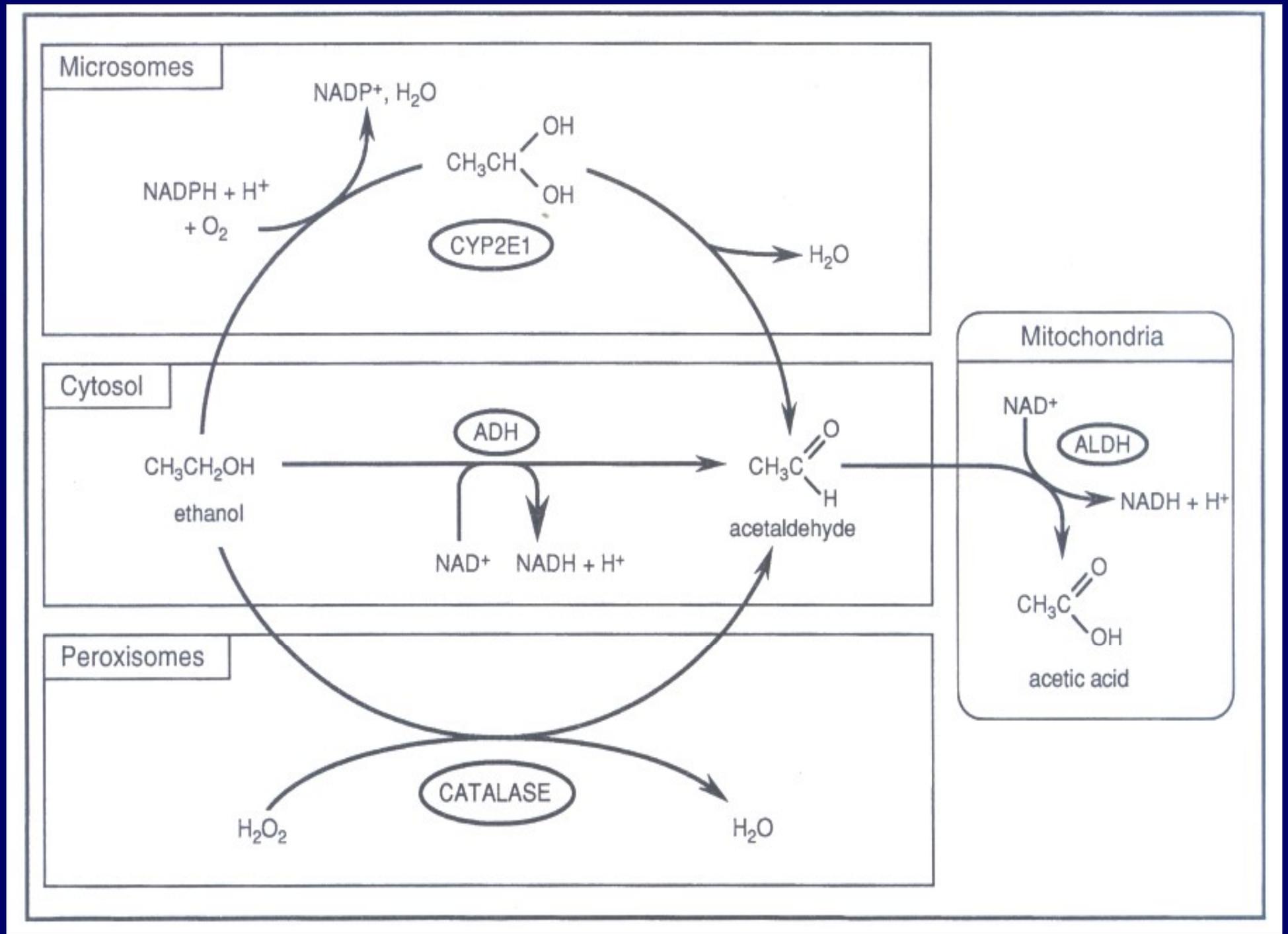


Mitochondria

$\text{NAD}^+ \rightarrow \text{NADH} + \text{H}^+$

ALDH

$\text{CH}_3\text{C}(=\text{O})\text{OH}$
acetic acid



There are 3 isozymes of ***alcohol dehydrogenase (ADH)***

- 1. ADH1
 - 2. ADH2
 - 3. ADH3
- ↑ in Japanese and Chinese

They are expressed mainly in the liver, kidneys, stomach, lungs.

Gastric ADH is mainly ADH3. It is
lower

in women

in alcoholics

in fasting

with certain drugs like aspirin.

There are 3 classes of ***aldehyde dehydrogenase (ALDH)***

1. ALDH1 in the cytosol oxidise xenobiotic aldehydes.
2. ALDH2 in the mitochondria oxidize simple aldehydes.
3. ALDH3 in the cytosol of the stomach

ALDH2 deficient in 50% of Japanese, Chinese and Vietnamese. Hence these people get facial flushing.

Disulfiram (Antabuse) causes an accumulation of aldehydes in alcoholics creating nausea and thus reducing consumption.

Acetic acid is rapidly oxidized to CO₂ and Water

Aldehyde oxidase is an alternative enzyme for oxidizing aldehydes.

It requires FAD, Molybdenum and Iron in a 1:1:4 ratio

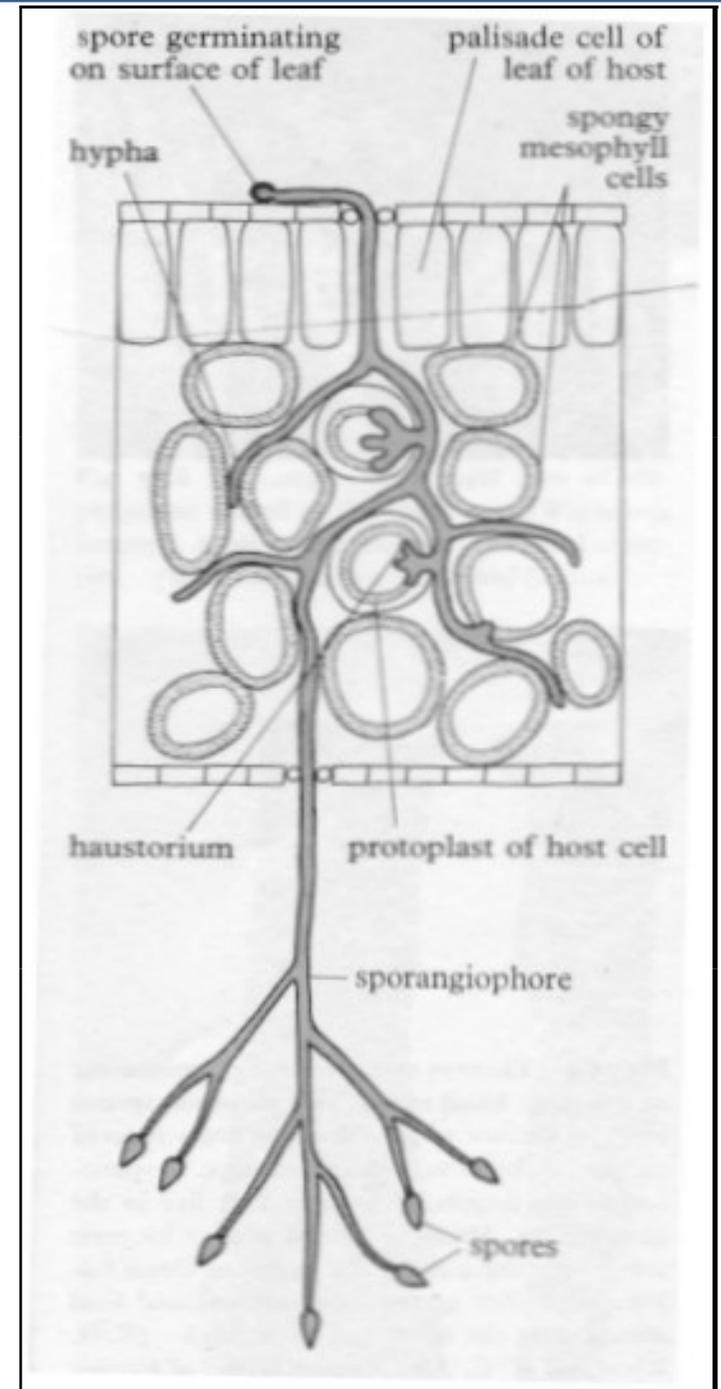
Defence against fungi

First line of defence against fungi is by the **macrophages** and is directed against the spores via phagocytosis. After germination and transformation into hyphae the **neutrophil** granulocytes form the second line of defence.

The **neutrophils** adhere to the surface of the mycelia triggering the respiratory burst and ROS production mainly $\text{NO}\cdot$ and ONNO^- .

This action can be enhanced by specific **opsonins**.

- **The younger leaves of deciduous plants contain an oily surface, which dries out during the summer and early autumn. The older lower leaves first dry out and then are attacked by moulds such as mildew.**
- **Evergreen plant leaves maintain their oily surface all the year round and are fungal resistant.**
- **When a fungus invades an unhealthy leaf it attacks via its upper surface.**



Mycosis diagnosis

- **Patients with mycosis will weaken to either Ethanol (or Methanol), Acetaldehyde (or Formaldehyde), Acetic Acid (or Formic acid), CO₂ and specific Fungal antigens.**
- **Candida albicans produces the metabolite D. Arabinitol in systemic invasion.**

Gut pH

**HCl pepsin or Apple Cider
Vinegar to lower gut pH.
Amylase enzymes.**

Fungi –

Zinc

Oregano

Probiotics

Undecylenic acid

Coconut oil

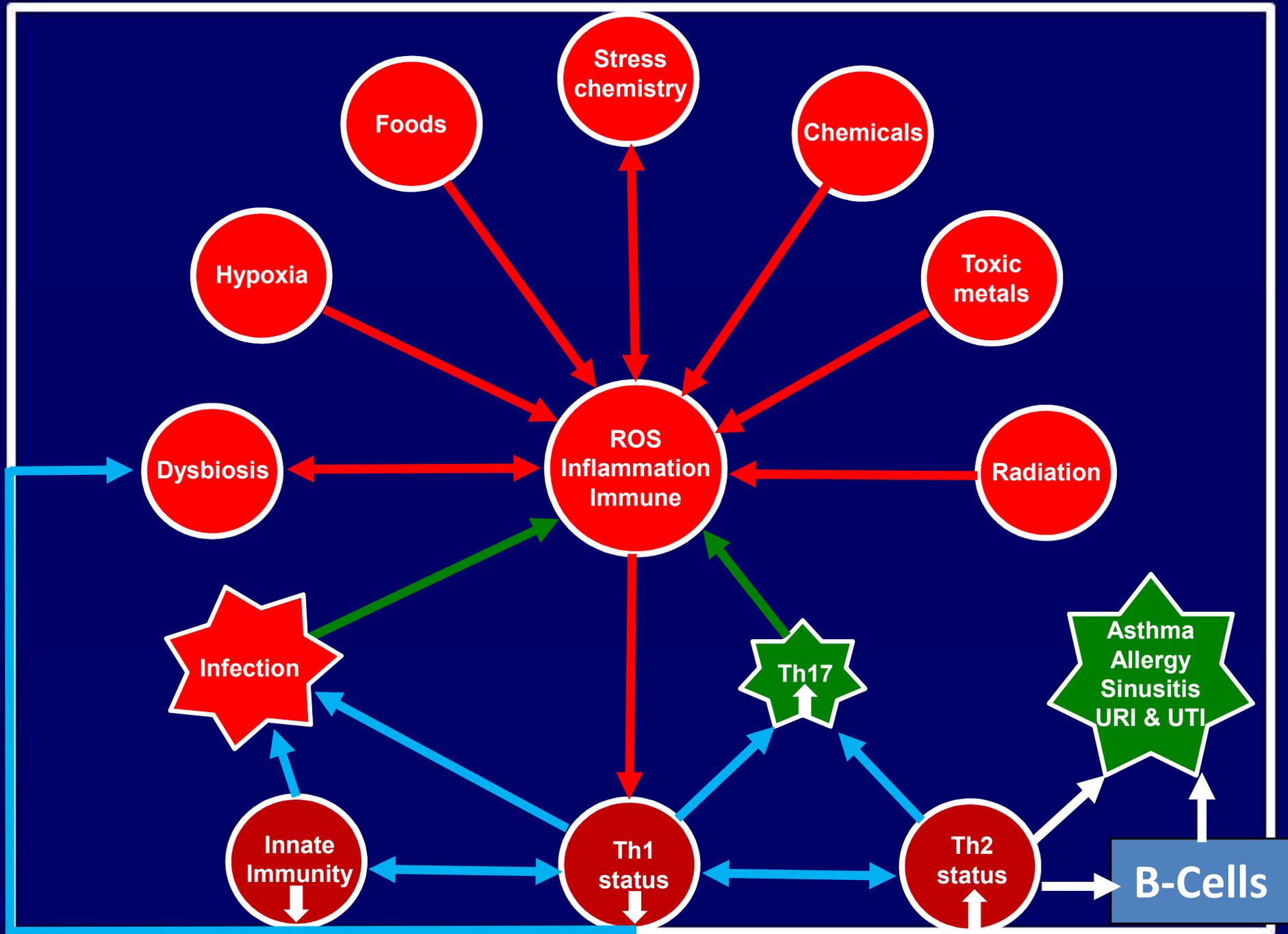
Pau D'arco tincture or caps

Always check for EFAs



AUTOIMMUNE

When the Body
Attacks Itself



Cell mediated immunity

Antibody mediated immunity

Autoimmune diseases tend to have one of three characteristic pathological effects which characterize them as:

- 1. Damage to or destruction of tissues**
- 2. Altered organ growth**
- 3. Altered organ function**

Autoimmune disorders: MedlinePlus Medical

Encyclopedia". www.nlm.nih.gov. Archived from the original on 2016-01-12. Retrieved 2016-01-21.

Autoimmunity is the presence of self-reactive immune response (e.g., auto-antibodies, self-reactive T-cells), with or without damage or pathology resulting from it.

Certain organs – thyroiditis

Harrison's Principles of Internal Medicine: Volumes 1 and 2, 18th Edition (18 ed.). McGraw-Hill Professional. 2011-08-11. ISBN 9780071748896. Archived from the original on 2016-05-29

Or involve a particular tissue in different places, eg.

Goodpasture's disease affects the basement membranes in lung & kidney.

Harrison's Principles of Internal Medicine: Volumes 1 and 2, 18th Edition (18 ed.). McGraw-Hill Professional. 2011-08-11. ISBN 9780071748896. Archived from the original on 2016-05-29

Normally the **adaptive immune system** produces T cells & B cells that are capable of being reactive with self-antigens. **BUT** these are usually killed prior to becoming active – placed into a state of anergy or removed by regulatory cells

Harrison's Principles of Internal Medicine: Volumes 1 and 2, 18th Edition (18 ed.). McGraw-Hill Professional. 2011-08-11. ISBN 9780071748896. Archived from the original on 2016-05-29

- **When these mechanisms fail leads to a reservoir of self-reactive cells that become active.**
- **Prevention of self reactive cells takes place in thymus as the T cell is developing into a mature immune cell.**

Harrison's Principles of Internal Medicine: Volumes 1 and 2, 18th Edition (18 ed.). McGraw-Hill Professional. 2011-08-11. ISBN 9780071748896. Archived from the original on 2016-05-29



In both autoimmune and inflammatory diseases, the condition arises through aberrant reactions of the **human adaptive AND innate immune systems**. In autoimmunity, the patient's immune system is activated against the body's own proteins.

In chronic inflammatory diseases, neutrophils and other leukocytes are constitutively recruited by cytokines and chemokines, leading to tissue damage.

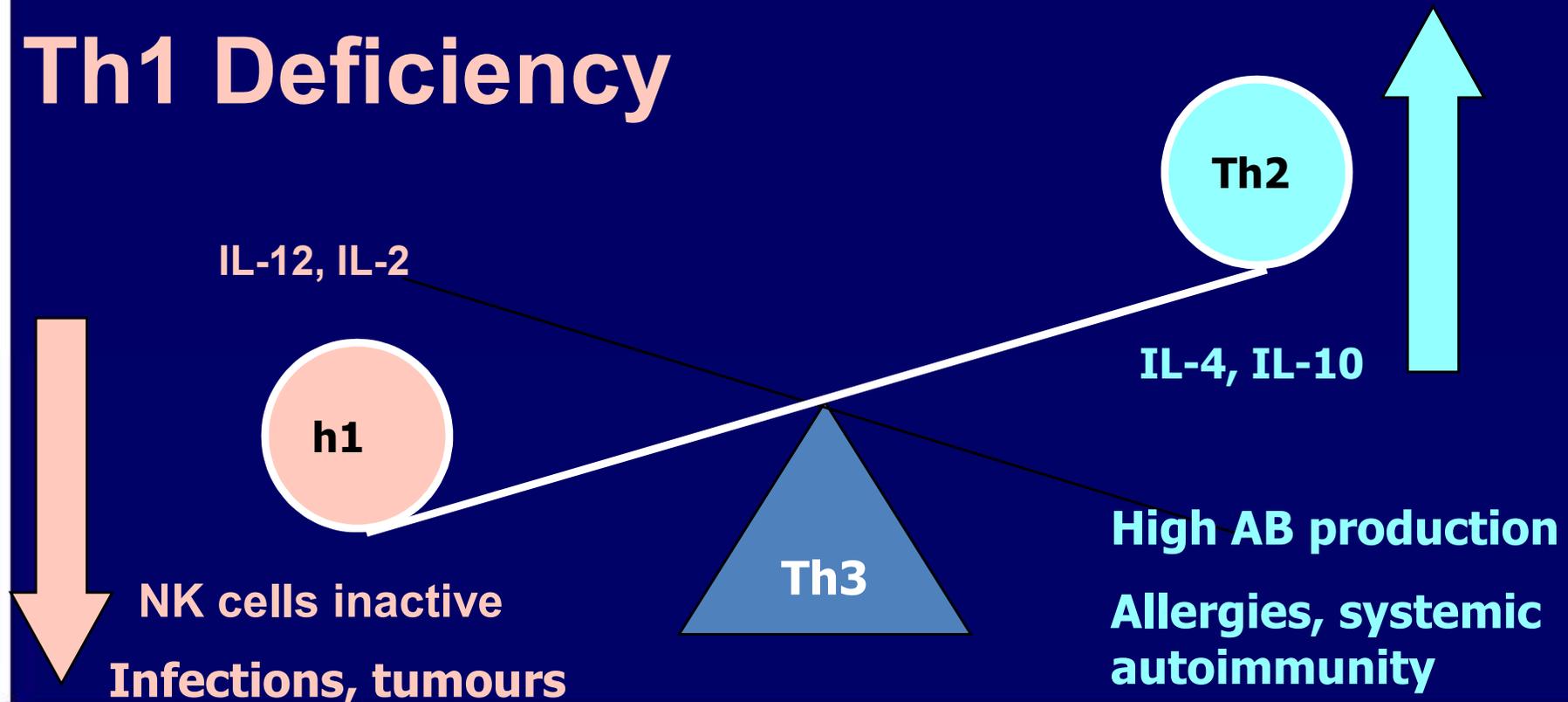
Mukundan L, Odegaard JI, Morel CR, Heredia JE, Mwangi JW, Ricardo-Gonzalez RR, Goh YP, Eagle AR, Dunn SE, et al. (Nov 2009). "PPAR-delta senses and orchestrates clearance of apoptotic cells to promote tolerance". *Nat Med*.

The Immune System

Th2 weakens – Th1 strengthens

Th2 Excess

Th1 Deficiency



All chronic diseases have the following in common.

Autoimmune diseases are typical examples

- 1. Oxidative stress**
- 2. Inflammation**
- 3. Immune system**

Molecular Mimicry describes a situation in which a foreign antigen can initiate an immune response in which a T or B cell component cross-recognises self.

The cross reactive immune response is responsible for the autoimmune disease state.

Wucherpfennig KW, Strominger JL (1995). "Molecular mimicry in T cell-mediated autoimmunity: viral peptides activate human T cell clones specific for myelin basic protein". *Cell*. 80 (5): 695–705. doi:10.1016/0092-8674(95)90348-8. PMID 7534214

Molecular Mimicry

Similarity between molecules found on some disease-causing microorganisms and on specific body cells or tissues.

Stimulates the immune system to set up a self reactive response where it attacks healthy body cells or tissues.

Wucherpfennig KW, Strominger JL (1995). "Molecular mimicry in T cell-mediated autoimmunity: viral peptides activate human T cell clones specific for myelin basic protein". *Cell*. 80 (5): 695–705. doi:10.1016/0092-8674(95)90348-8. PMID 7534214

Molecular Mimicry

The immune system acts in this way because the 2 molecules – the disease causing organism and the body's cells or tissues share a sequence in the protein molecule or structural similarities. e.g. in Type 1 Diabetes with pancreas beta cells.

Wucherpfennig KW, Strominger JL (1995). "Molecular mimicry in T cell-mediated autoimmunity: viral peptides activate human T cell clones specific for myelin basic protein". *Cell*. 80 (5): 695–705. doi:10.1016/0092-8674(95)90348-8. PMID 7534214

Secrets of your cells

The basic job of our immune system is to recognise “self” & “other”, while collaborating with the brain, gut, thoughts, beliefs and hormones.

Sondra Barrett PhD “Secrets of Your Cells – Discovering Your Body’s Inner Intelligence”. 2013 ISBN 978-1-60407-819-0

- **In AI the recognition of “self” is compromised – our own cells are no longer identified as “ours” – become the enemy**
- **In addition to mistaken identity, this response fails to be suppressed**

Sondra Barrett PhD “Secrets of Your Cells – Discovering Your Body’s Inner Intelligence”. 2013 ISBN 978-1-60407-819-0

Autoimmune diseases

Addison's disease

Celiac

Crohn's

Endometriosis

Inflammatory bowel disorder

Multiple sclerosis

Myasthenia gravis

Polymyalgia rheumatica

Polymyositis

Psoriasis

Rheumatoid arthritis

Scleroderma

Sjogren's syndrome

System Lupus Erythematosus

Temporal arteritis

Thyroiditis / Hashimoto's / Graves

Type 1 Diabetes

Vasculitis

Vitiligo

Common elements – A/I Disease

- **Hereditary – genetics**
- **Environmental factors**
- **Viral infection**
- **Psychological stress**
- **Mutations in HLA genes**
- **Molecular mimicry – viral proteins, engulfed molecules**

Common elements – A/I Disease

- **Damaged self structures targeted for apoptosis mistakenly exposed to immune system**
- **Hormonal factors**
- **Vitamin D deficiency**
- **Vitamin A deficiency**

Challenge with Th1 and Th2 markers

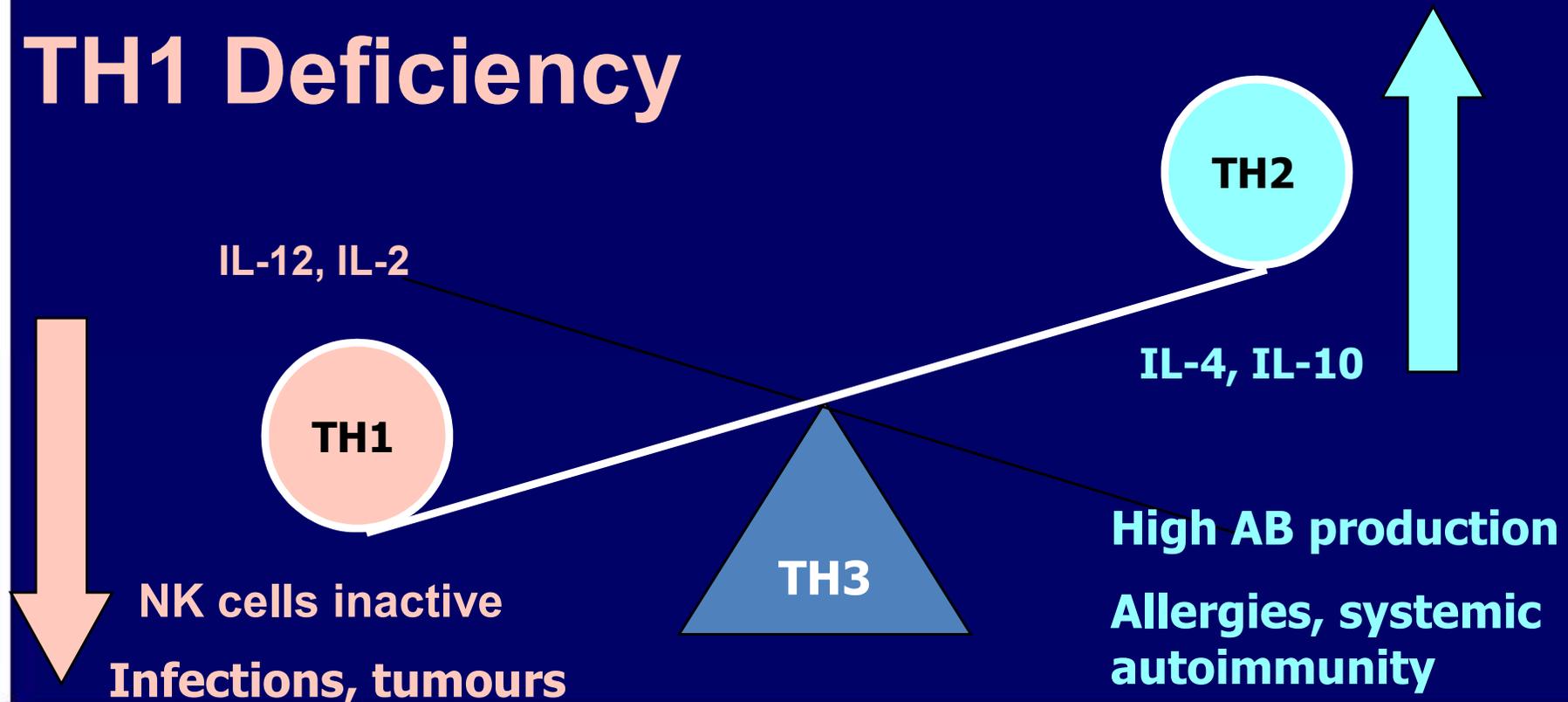
**Th1 Weakens – Th2 strengthens
or
Th2 weakens – Th1 strengthens**

The Immune System

TH2 weakens – TH1 strengthens

TH2 Excess

TH1 Deficiency



The Immune Connection

When there is **lowered immune system** function we need to increase immune system activity.

When there is an **increased system** function we need to decrease immune system activity as in autoimmune disorders.

It is generally recognized that there are **two parts** of the human immune system

1. The innate immune system

2. The adaptive immune system

The question is:
what part(s) of the **immune system** should we increase or decrease?

Innate immune system?

Adaptive immune system?
(TH1 or TH2)

The solution in the majority of patients is to optimize **innate immune** function rather than focus only on adaptive immune response.

Immune system

Innate
(inborn)

Adaptive
(acquired)

Non specific

TH1

TH2

ROS and
Complement
cascade

Specific

In the **innate immune system** the body's initial response is to eliminate microbes & infections immediately or within hours.

Innate immune system

Non-specific defence against pathogens.

Activates complement system.

No long-lasting or protective immunity for the host.

The adaptive immune system does this.

Innate immune system

Complement cascade

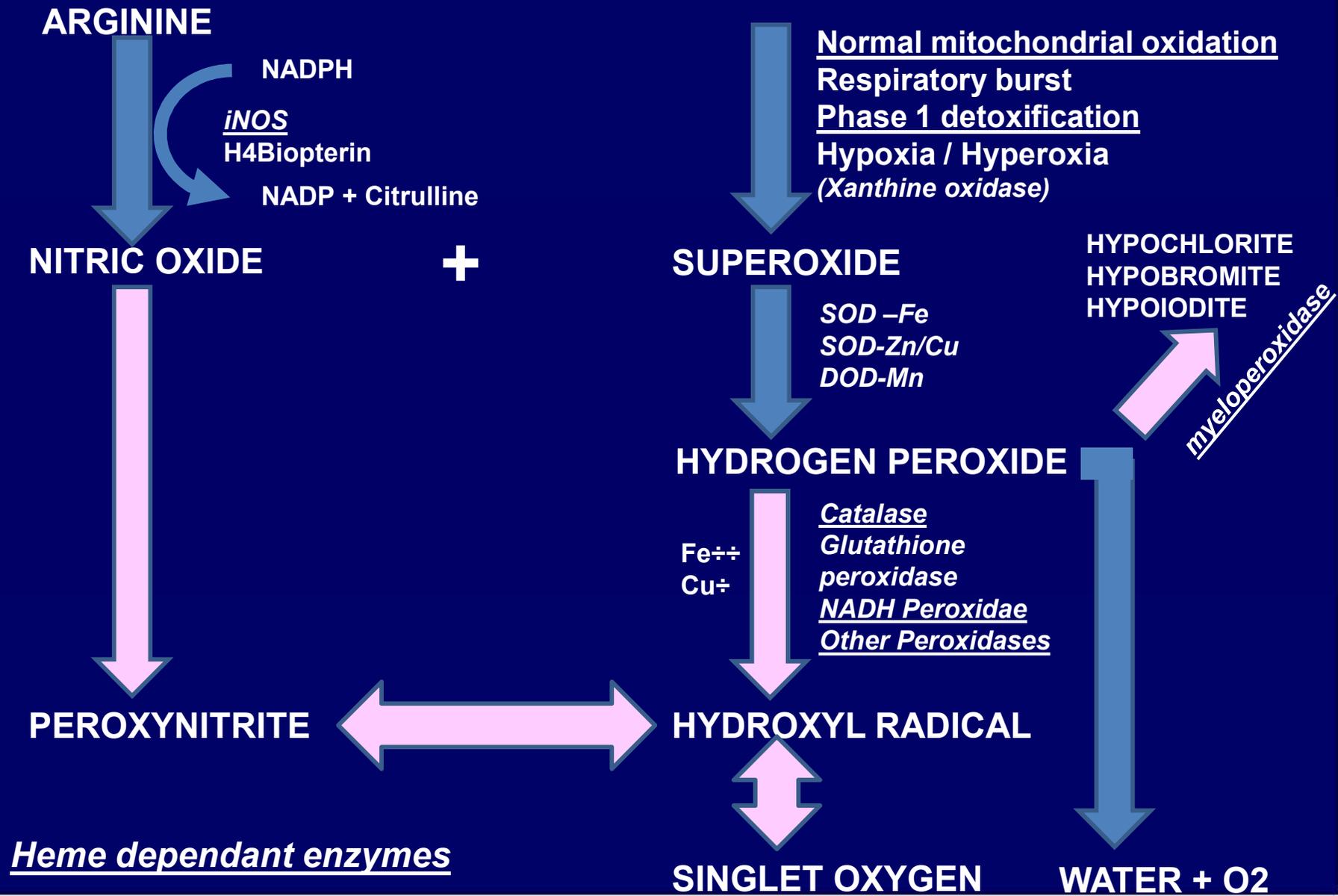
Triggers inflammation ***

Identifies & removes foreign substances

Attracts phagocytes

Activates adaptive immune system

Reactive Oxygen Species



Reactive Oxygen Species

ARGININE

NADPH

iNOS

H4Biopterin

NADP + Citrulline

NITRIC OXIDE

+

SUPEROXIDE

Normal mitochondrial oxygen

Respiratory burst

Phase 1 detoxification

Hypoxia / Hyperoxia

(*Xanthine oxidase*)

KILLS
+ve BACTERIA
and VIRUSES

HYPOCHLORITE
HYPOBROMITE
HYPOIODITE

myeloperoxidase

KILLS
-ve BACTERIA,
VIRUSES,
FUNGI

KILLS
PARASITES

HYDROGEN PEROXIDE

Catalase

Glutathione

peroxidase

NADH Peroxidase

Other Peroxidases

Fe²⁺
Cu⁺

PEROXYNITRITE

HYDROXYL RADICAL

KILLS
VIRUSES,
FUNGI
PARASITES

SINGLET OXYGEN

WATER + O₂

Innate Immune Challenge

- 1. Superoxide = Superoxide + NADPH**
- 2. H₂O₂ = H₂O₂**
- 3. Hypochlorite = Hypochlorite**
- 4. Hydroxyl Radical = Superoxide + NADPH + H₂O₂**
- 5. Nitric oxide = Nitric oxide**
- 6. Peroxynitrite = Superoxide + NADPH + Nitric oxide**

Screening remedies for innate immune response

- 1. Ginger to boost the respiratory burst to produce Superoxide.**
- 2. Zinc / Copper for SOD to convert Superoxide to H₂O₂.**
- 3. Colloidal Silver to block catalase / stimulate myeloperoxidase.**
- 4. Maybe Iodine / Bromine / Chlorine**

Screening remedies for innate immune response

- 5. Arginine to stimulate Nitric oxide**
- 6. Maybe Vitamin C and Zinc as iNOS cofactors.**
- 7. Selenium to inhibit viral replication**

Screening remedies for innate immune response

Vitamin D

Astragalus

Golden seal

Cayenne

Olive leaf

Black walnut

Vitamin C + Iron

Glucosamine

Echinacea

Garlic

Ginger

Lemon balm

Bilberry

The Adaptive Immune System

Immune system

Innate
(inborn)

Adaptive
(acquired)

Non specific

TH1

TH2

ROS and

Cellular

Humeral

Complement
cascade

Phagocytosis

Antibodies

It takes **5-7 days** after encountering a new antigen for the adaptive immune system to reach full activity...
...why a “cold” lasts about a week.

Adaptive immune system - T-cells & B-cells

T Lymphocytes mature in thymus

T Helper cells

T Regulatory (T suppressors)

**B Lymphocytes mature in bone
marrow. Make antibodies**

Spleen

Helper T- Cells are a type of T-Lymphocyte white blood cell. Helper T-Cells stimulate B-Lymphocytes and other types of T-Lymphocytes to activate an immune response to Antigens. Helper T-Cells stimulate the conversion of B-Lymphocytes to Plasma Cells.

Plasma Cells are responsible for the production and transport of **Antibodies (Immunoglobulins)** in response to **Antigens**.

Helper T-Cells stimulate the growth of NK Lymphocytes.

Helper T-Cells counterbalance the function of Suppressor T-Cells

Ideally, **TH1 Helper** T-Cells should be in equal balance with **TH2 Helper** T-Cells.

When either subset of Helper T-Cells dominate, illness results.



A shift to **a dominance in one pathway over another has been linked with tissue specific autoimmunity and hyper-inflammatory conditions.**

An excess of one pathway is at the expense of the other pathway.

Stimulate Th1 cells

Zinc

Omega 3

L. Acidophilus

L. Casei

L. Rhamnosus

L. Paracasei

L. Salivarius

B. Longum

L. Brevis

S. Boulardei

Astragalus

Melatonin

Chlorella

Lemon balm

Echinacea

Reishi

mushroom

Smart Vitamin C

Olive leaf tinc.

Almonds

NTs

Acetyl CoA

Choline

Thiamine tri

Manganese

NAC

Glutathione

Dairy

Thyroxin

BCAAs

Vitamin D

Th2 IMMUNE REACTIONS

Antibody-Mediated Immunity

**Help B-cells produce antibodies
(e.g. IgE, IgG)**

**Non-living: foods, pollens (some
parasites)**

**Extracellular Immunity (includes
traditional allergic reactions)**

Th2 Helper T-Cells are primarily responsible for the Humoral Immunity arm of the Immune System which involves the differentiation of B-Lymphocytes which leads to Antibodies responding to and limiting the damage induced by **extracellular** detrimental micro-organisms.



Inhibit Th2 cells

Turmeric

Star anise

Ginger

Cinnamon

L. Reuteri

L. Plantarum

L. Salivarius

L. Lactic

NAC

Glutathione

Rice

Olive leaf tincture

Astragalus

Glutathione

Bilberry

Black cumin oil

Bromelain

Omega 3

Milk thistle

NTs

Vitamin B2

Vitamin B3

Manganese

Zinc

Magnesium

SAMe

UVA light

Vit D

**Th1 and Th2 modulating
compounds:**

Probiotics

Vitamin A

Vitamin E

**T-regulatory supporting
compounds:**

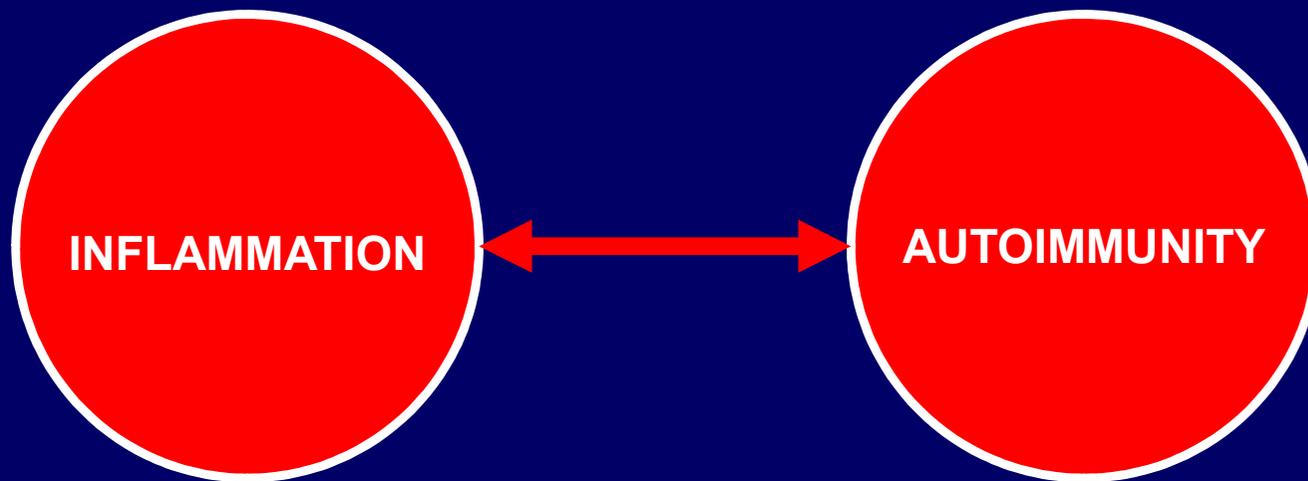
Vitamin D

EPA and DHA

New Insights

- **Inflammation caused by persistent infection triggers autoimmunity**
- **Interplay between innate and adaptive immune systems**
- **Th17 cells**
- **Th17 Vs T reg cells**

RELATIONSHIP BETWEEN INFLAMMATION AND AUTOIMMUNITY



Samuel F. Yanuck "Immunology Home Runs for Non-Immunologists" Cogence Immunology

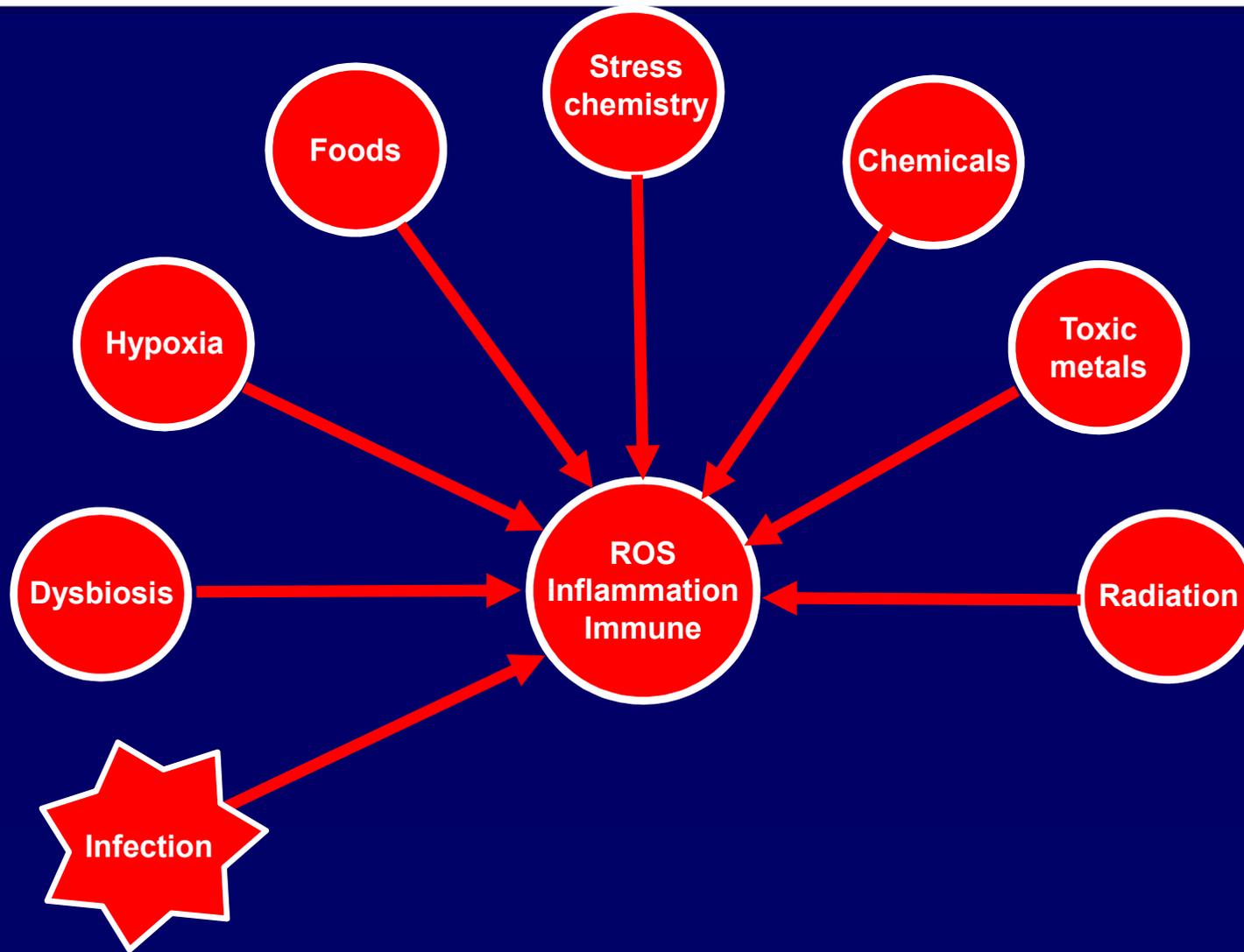
- **Inflammation drives autoimmunity & autoimmunity drives inflammation**
- **NFKappa B and STAT3 both drive neutrophils into tissue**
- **Neutrophils drive the inflammatory tissue destruction**

Samuel F. Yanuck "Immunology Home Runs for Non-Immunologists" Cogence Immunology.

- **NFKappaB and STAT3 are co-activators**
- **Reducing over active STAT3 promotes T regulatory cells encouraging tolerance**

- **Th17 extracellular bacteria**
Fungi
Autoimmunity
- **Th1 intracellular pathogens**
NOT Autoimmunity
- **Th2 Extracellular parasites**
Allergy
Asthma
- **T reg regulation of immune responses, tolerance**

- **Stat3 is a transcription factor which is encoded by STAT3 gene**



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Dysbiosis Testing

- **Check individual digestive enzymes**
- **Parasites and fungal overgrowth**
- **Re-balance gut flora**
- **5 R Program – Remove, Replace, Re-inoculate, Repair, Regenerate**

A positive challenge to the immunoglobulin markers:

IgA - parasites

IgE – short term half life – 2-3 days - allergen

IgG – longer response half life – 18-21 days – allergen

IgM – similar to IgG
(Strength to weakening)

Common Allergens

**Gluten – Wheat, Rye, Barley,
Oats**

**Cow's milk- Casein
Lactose**

**Cheese Especially mature
Cooked**

**Egg- White
Yolk**

Fish



Common Recognised Allergens

Tree nuts - Brazil, Hazelnuts,
Almonds, Walnuts

Ground nuts - Peanuts

Shell fish

Soya products

Citrus fruits

Chocolate

Tea

Coffee



Common Recognised Allergens

Maize (Corn)

Lupin

Yeast

Rice - arsenic

Mustard

Celery and Celeriac

Onion / Garlic



Common Allergens

Tyramine foods

Chocolate, Old avocado, Old banana, Old cheese, Fermented foods



Solanene foods

Potatoes, Tomatoes, Aubergines, Peppers, Chilli

Common food and drink chemicals

Alpha Solanene*

Betaine

Caffeine

Cysteine

Glutamate

Histamine

Isothiocyanate*

Malondialdehyde*

Oxalates

Salicylates

Sulfites

Thiobromine

Atropine*

Tyramine

Uric acid

Infections Bacteria

Zinc

Vitamin C, Vitamin D, Vitamin A

Arginine Olive leaf

Ginger Echinacea

Golden seal Colloidal silver

Selenium

Mannose, Other Saccharides

Black walnut tincture



Infections Virus

Ionic Iron, Calcium, Zinc

Vitamin C, Vitamin A, Vitamin D

Echinacea

Astragalus

Olive leaf

Garlic

Colloidal silver

Black walnut tincture

Selenium

Glucosamine

NAC for Post virus



Infections Parasites

Protease – half hour after meal

Iodine

Artemesia Annua

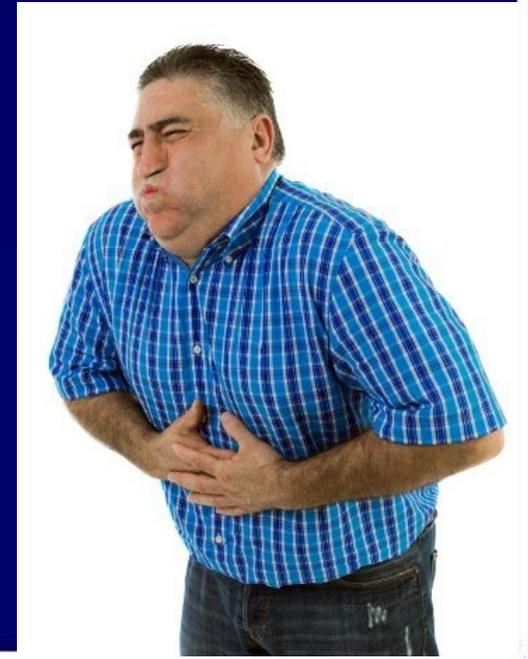
Black walnut tincture and caps

Wormwood

Wormwood combination

Saccharides

Probiotics



Infections Fungi

Amylase – half hour after meal

Zinc

Oregano

Probiotics

Coconut oil

Pau D'arco tincture or caps

Always check for EFAs



Infections GUT -Lipopolysaccharides

Digestive enzymes

Prebiotics - Inulin

Probiotics

Fibre – Psyllium

Chlorella

Water

Check for Folates, Zinc, Glutamine.



Toxins – Toxic metals

Black walnut

Coriander herb

Coriander spice

Lemon balm

Lipoic acid

Yarrow

Glutathione

Vitamin C for nickel

Potassium ascorbate

NAC



High success rates

Seventy-six percent of chronic fatigue patients in a clinical trial experienced health improvement after removing dental restorations containing allergenic metals, as identified by the MELISA test (2). An additional study of patients with autoimmune diseases showed that 71% of those with positive responses in MELISA improved after having their fillings removed (3). In a further study, patients with fibromyalgia were tested for allergy to metals with MELISA. By reducing their exposure to metals identified as problematic, significant health benefits were seen. 50% of patients no longer fulfilled the criteria for fibromyalgia diagnosis; the remaining 50% all reported an improvement in their symptoms (4).

Metal allergy testing. Exposure to metals in dental fillings and implants, joint prostheses, pacemakers, environmental pollutants and jewellery can lead to health problems in susceptible individuals. <http://www.melisa.org>

Toxins – Chemicals

Glutathione

Black walnut

Coriander spice

Lemon balm

Yarrow

Chlorella

Zinc

Taurine

NAC

Rosemary

Other spices

Potassium ascorb

Ornithine



Toxins – Radiation

Chlorella

Coriander spice

Vitamin C complex (Rutin)

Turmeric

Ornithine

Taurine

Yarrow



Oxygen Deficiency - Hypoxia

Iron

Adenosylcobalamin

Magnesium

Zinc

Pyridoxal-5-phosphate

Riboflavin-5-phosphate

Folinic / CH_2H_4 Folate, 5MTHF



Cortisol Deficiency

Magnesium

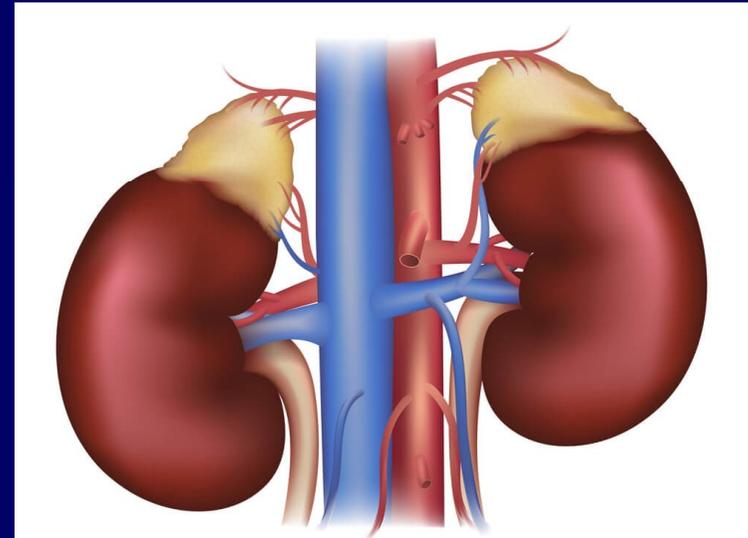
Zinc, Molybdenum

Pyridoxal-5-phosphate

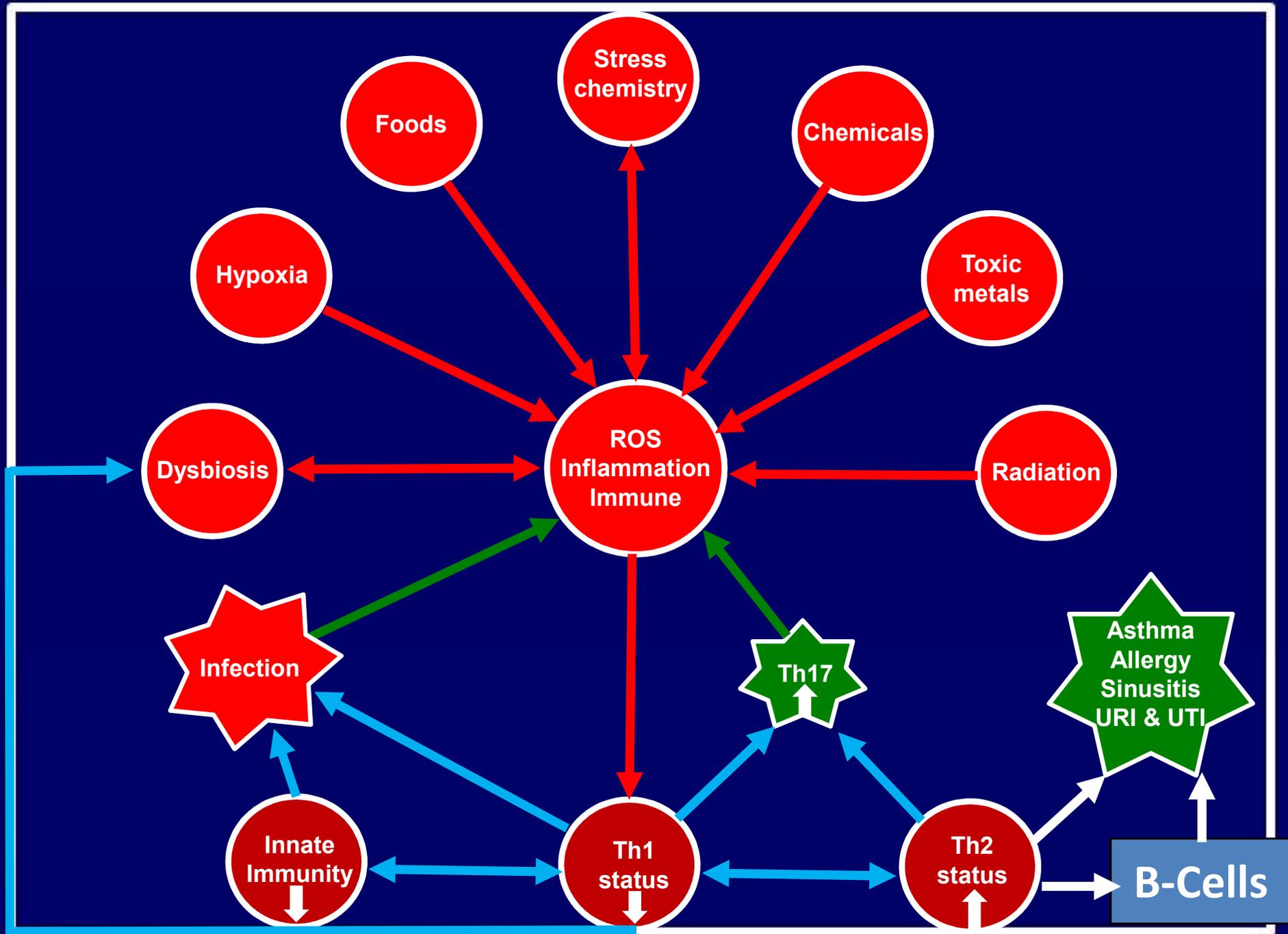
Riboflavin-5-phosphate

Vitamin C

Adrenal extract

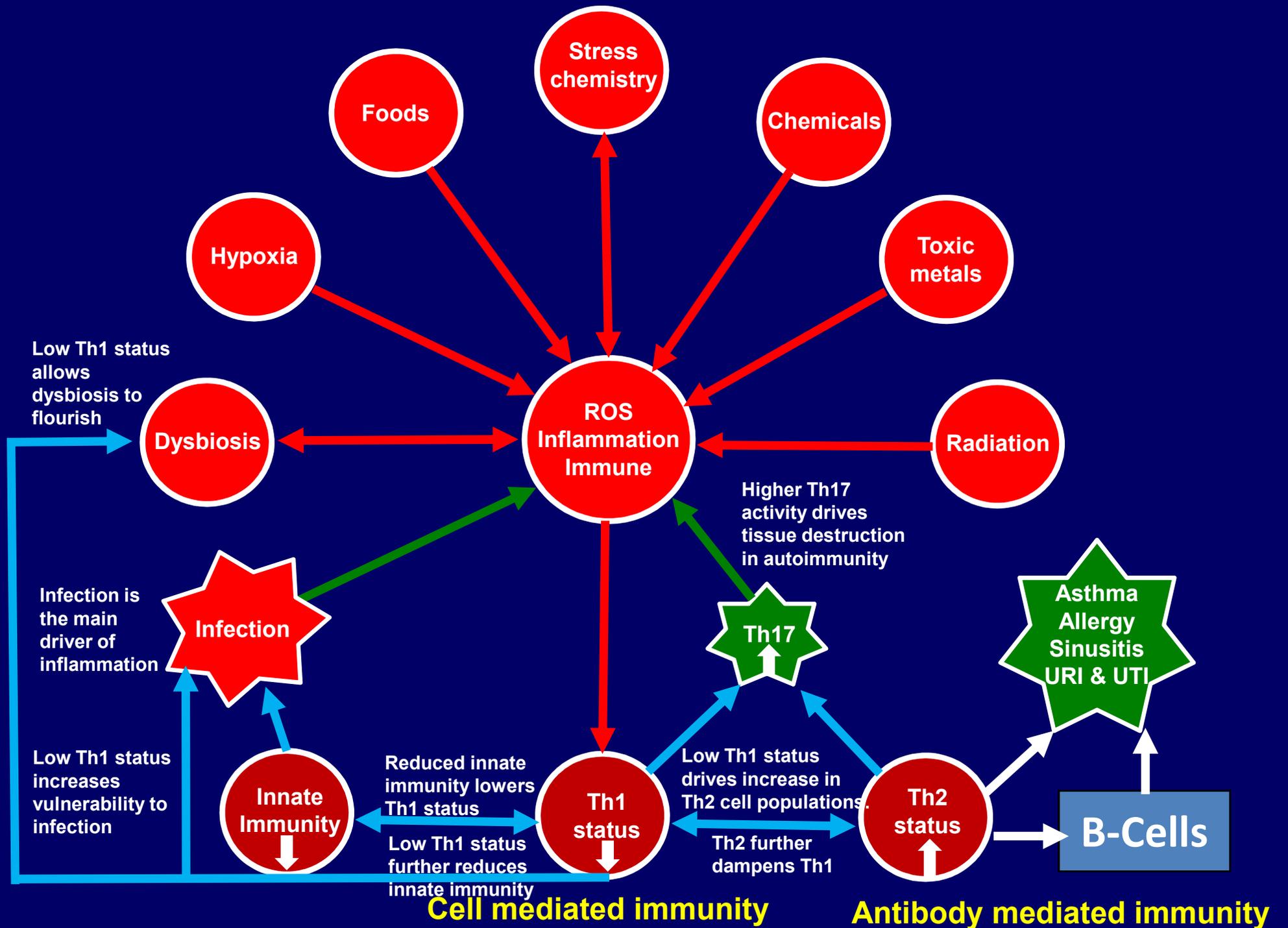


Consequences of Inflammation on the Immune System



Cell mediated immunity

Antibody mediated immunity



Chronic Infection

- **Infection is the main driver of inflammation**
- **Reduced innate immunity lowers TH1 status**
- **Low TH1 further reduces innate immunity**
- **Low Th1 drives Th2 cell proliferation**

Chronic Infection

- **A combination of low innate immunity, low Th1 and high Th2 leads to increased Th17**

Chronic illness

- **Elements of chronic illness, inflammation, dysbiosis, stress biochemistry**
- **Leads to key immune system changes – innate immunity down, Th1 down, Th2 up**
- **Consequences of these changes are Th17 up,**

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Chronic illness

- **Th2 up leading to asthma, allergy, sinusitis, URI**
- **Low Th1 increases vulnerability to infection and allows dysbiosis to flourish**

Hollow space pathogens

- **It is essential to address hollow space pathogens like dysbiosis, sinusitis, chronic UTIs**
- **Hollow space chronic pathogen burden leads to persistent Th17 response & autoimmune destruction**

Hollow space pathogens

- **Around 70% of the immune system is localised in the gastrointestinal tract with the mucosa having around 200 times the surface area of the skin**

A brief history of TH17, the first major revision in the TH1/TH2 hypothesis of T-cell mediated tissue damage. Nat. Med. 2007 Feb, 13(2): 139-45, Steinman, L

Importance of Th17

**High Th17 activity drives
tissue destruction in
Autoimmune Disease**

Function of Th17 cells

- **Subset of proinflammatory T helper cells defined by their production of IL-17**
- **Related to T regulatory cells & the signals that cause Th17 to differentiate inhibit Treg differentiation**

Hartigan-O'Connor DJ, Hirao LA, McCune JM, Dandekar S (May 2011). "Th17 cells and regulatory T cells in elite control over HIV and SIV". *Current Opinion in HIV and AIDS*. 6 (3): 221–7.

Function of Th17 cells

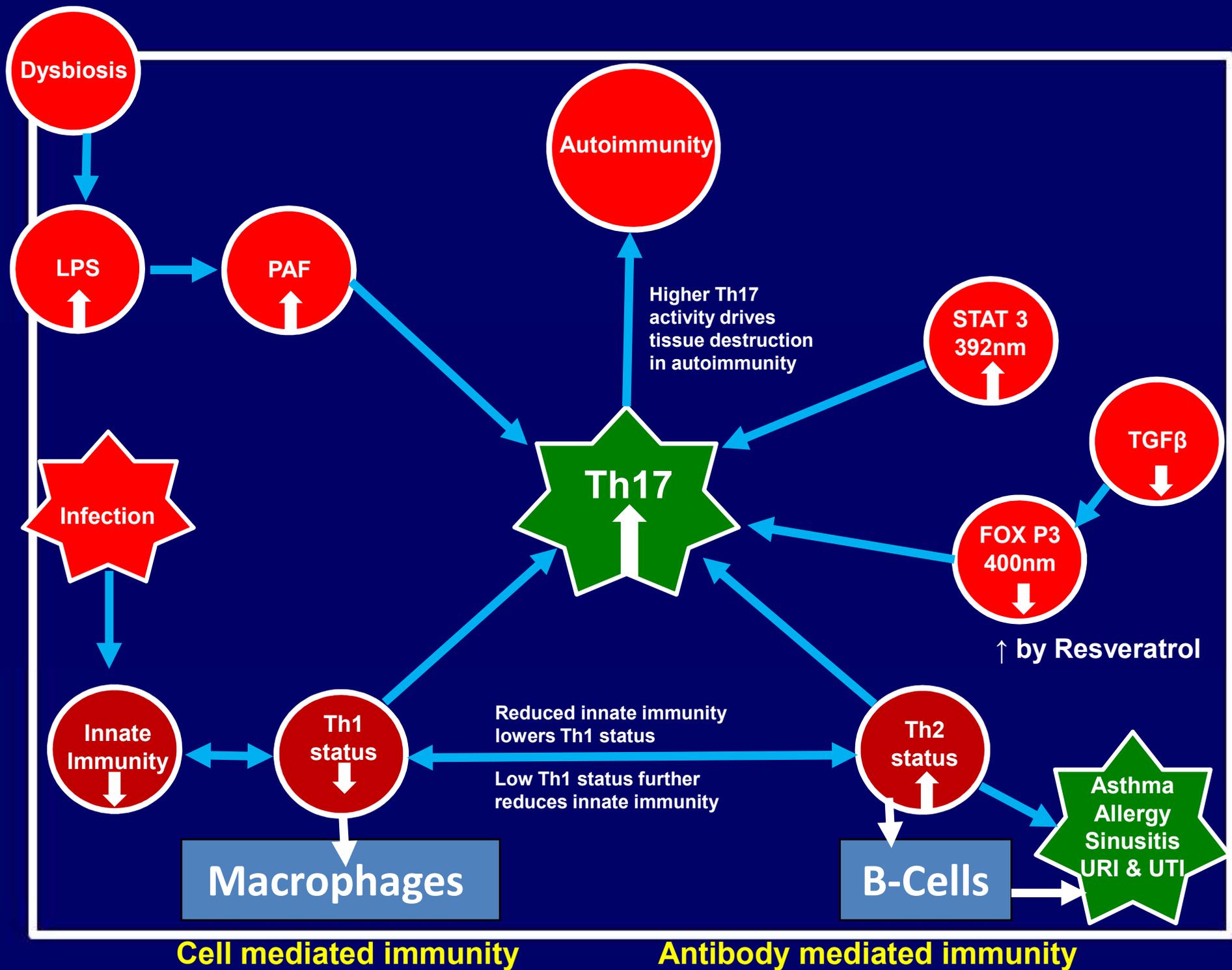
- **Play a role in the adaptive immune system protecting the body against pathogens**
- **Maintain the mucosal barriers**
- **Implicated in Auto-immune and inflammatory disorders**

Hartigan-O'Connor DJ, Hirao LA, McCune JM, Dandekar S (May 2011). "Th17 cells and regulatory T cells in elite control over HIV and SIV". *Current Opinion in HIV and AIDS*. 6 (3): 221–7.

New Research on Th17

“A major role for the cytokine IL-17 has now been described in various models of immune-mediated tissue injury, including organ-specific autoimmunity in the brain, synovium, intestines, allergic disorders of the lung and skin”

A brief history of TH17, the first major revision in the TH1/TH2 hypothesis of T-cell mediated tissue damage. Nat. Med. 2007 Feb, 13(2): 139-45, Steinman, L



Cell mediated immunity

Antibody mediated immunity

Over-expression of STAT3

- Transcription factor which is encoded by STAT3 gene. On chromosome 17q, W/L 392nm
- Turn genes on & off to make sure they are expressed in the right cell at the right time in the right amount

Akira S, Nishio Y, Inoue M, Wang XJ, Wei S, Matsusaka T, Yoshida K, Sudo T, Naruto M, Kishimoto T (April 1994). "Molecular cloning of APRF, a novel IFN-stimulated gene factor 3 p91-related transcription factor involved in the gp130-mediated signaling pathway". *Cell*. **77** (1): 63–71. doi:10.1016/0092-8674(94)90235-6. PMID7512451.

Over-expression of STAT3

- **STAT3 is essential for the differentiation of the Th17 helper T cells**
- **Gain-of-function mutations in the gene have been reported to cause multi organ early onset auto-immune diseases**

Yang XO, Panopoulos AD, Nurieva R, Chang SH, Wang D, Watowich SS, Dong C (March 2007). "STAT3 regulates cytokine-mediated generation of inflammatory helper T cells". *The Journal of Biological Chemistry*. **282** (13): 9358–63. doi:10.1074/jbc.C600321200. PMID 17277312

Over-expression of STAT3

- **STAT3 activated by IL-5, IL-6, EGF, Interferons**
- **TEST – weak to STAT3 (weak to 392 wavelength)**
- **Gene mutation is usually a requirement for a co-enzyme**

Lim CP, Cao X (November 2006). "Structure, function, and regulation of STAT proteins". *Molecular bioSystems*. 2 (11): 536–50. doi:10.1039/B606246F PMID17216035..

T-regulatory cells (T regs)

- Tregs formerly known as T suppressor cells, are a subpopulation of T cells that modulate the Immune system
- Maintain tolerance to self antigens and prevent autoimmune disease

Bettelli E, Carrier Y, Gao W, Korn T, Strom TB, Oukka M, Weiner HL, Kuchroo VK (May 2006).

"Reciprocal developmental pathways for the generation of pathogenic effector TH17 and regulatory T cells". *Nature*. **441** (7090): 235–8. doi:10.1038/nature04753. PMID 16648838.

T-regulatory cells (T regs)

- **Immunosuppressive – suppress or downregulate induction & proliferation of effector T cells**
- **Involved in shutting down immune responses after invading organisms have been eliminated**

Shevach EM (2000). "Regulatory T cells in autoimmunity*". *Annual Review of Immunology*. **18**: 423–49. doi:10.1146/annurev.immunol.18.1.423. PMID10837065.

T-regulatory cells (T regs)

- **Suppress immune responses of other cells, important “self-check” built into the immune system to prevent excessive reactions**

Shevach EM (2000). "Regulatory T cells in autoimmunity*". *Annual Review of Immunology*. 18: 423–49. doi10.1146/annurev.immunol.18.1.423. PMID 10837065

T-reg Vs Th17

- Th17 are pro-inflammatory & are produced under similar environments to Tregs
- TH17 are produced under the influence of Transforming Growth Factor Beta (TGF- β), IL-6

Zhou L, Chong MM, Littman DR (May 2009). "Plasticity of CD4+ T cell lineage differentiation". *Immunity*. **30** (5): 646–55. doi:10.1016/j.immuni.2009.05.001. PMID 19464987.

T-reg Vs Th17

- T regs are produced under the influence of solely TGF- β
- So the difference between a pro-inflammatory cell & a pro-regulatory scenario is the presence of a single interleukin

Zhou L, Chong MM, Littman DR (May 2009). "Plasticity of CD4+ T cell lineage differentiation". *Immunity*. **30** (5): 646–55. doi10.1016/j.immuni.2009.05.001. PMID 19464987

FOXP3 gene expression

- **Major transcription factor controlling T reg cells**
- **Defects in FOXP3 function causes autoimmunity or immunodeficiency**
- **Identified as a master regulator for T reg lineage**

Hori S, Nomura T, Sakaguchi S (February 2003). "Control of regulatory T cell development by the transcription factor Foxp3". *Science*. **299** (5609): 1057–61. doi:10.1126/science.1079490 PMID 12522256.

FOXP3 gene expression

- **Can act as a transcriptional activator or suppressor depending on specific factors acting on it**
- **FOXP3 gene converts naïve T cells to T reg cells**

Hori S, Nomura T, Sakaguchi S (February 2003). "Control of regulatory T cell development by the transcription factor Foxp3". *Science*. **299** (5609): 1057–61. doi:10.1126/science.1079490. PMID 12522256.

FOXP3 gene expression

- So this suggests that FOXP3 is capable of regulating the expression of suppression mediating molecules

Hori S, Nomura T, Sakaguchi S (February 2003). "Control of regulatory T cell development by the transcription factor Foxp3". *Science*. **299** (5609): 1057–61. doi:10.1126/science.1079490. PMID 12522256.

FOXP3 gene

- **Low level of FOXP3 allows TH17 proliferation to take over and not enough Treg**

Hori S, Nomura T, Sakaguchi S (February 2003). "Control of regulatory T cell development by the transcription factor Foxp3". *Science*. **299** (5609): 1057–61. doi:10.1126/science.1079490. PMID 12522256.

High Platelet Activating Factor

- High PAFs induces Th17 cell differentiation
- PAF is a lipid mediator causing platelet aggregation, inflammation & allergic response
- Produced by a variety of cells, especially those

Zimmerman GA, McIntyre TM, Prescott SM, Stafforini DM (May 2002). "The platelet-activating factor signaling system and its regulators in syndromes of inflammation and thrombosis". *Critical Care Medicine*. **30** (5 Suppl): S294–301. doi:10.1097/00003246-200205001-00020. PMID 12004251

High Platelet Activating Factor

- **Involved in host defence, platelets, endothelial cells, neutrophils, monocytes & macrophages**
- **Continually produced by these cells but in low quantities**

Zimmerman GA, McIntyre TM, Prescott SM, Stafforini DM (May 2002). "The platelet-activating factor signaling system and its regulators in syndromes of inflammation and thrombosis". *Critical Care Medicine*. **30** (5 Suppl): S294–301. doi:10.1097/00003246-200205001-00020 PMID 12004251

High Platelet Activating Factor

- It causes platelets to aggregate & blood vessels to dilate
- Causes an inflammatory response in allergic reactions
- It is produced in larger quantities by inflammatory cells

Zimmerman GA, McIntyre TM, Prescott SM, Stafforini DM (May 2002). "The platelet-activating factor signaling system and its regulators in syndromes of inflammation and thrombosis". *Critical Care Medicine*. **30** (5 Suppl): S294–301. doi:10.1097/00003246-200205001-00020. PMID 12004251.

High Platelet Activating Factor

- **Toxins such as fragments of destroyed bacteria induce the synthesis of PAFs**
- **PAF synthesis is activated by inflammatory agents**

Zimmerman GA, McIntyre TM, Prescott SM, Stafforini DM (May 2002). "The platelet-activating factor signaling system and its regulators in syndromes of inflammation and thrombosis". *Critical Care Medicine*. **30** (5 Suppl): S294–301. doi:10.1097/00003246-200205001-00020. PMID 12004251.

Transforming Growth Factor B

- **TGFb is a protein that controls the rate of transcription of genetic material from DNA to messenger RNA**
- **Controls cell division, cell growth & cell death, expressed in right amount**

Eisenstein, Eli M.; Williams, Calvin B. (2009-05-01). "The Treg/Th17 Cell Balance: A New Paradigm for Autoimmunity". *Pediatric Research*. 65 (5 Part 2): 26R–31R. doi:10.1203/PDR.0b013e31819e76c7

Transforming Growth Factor B

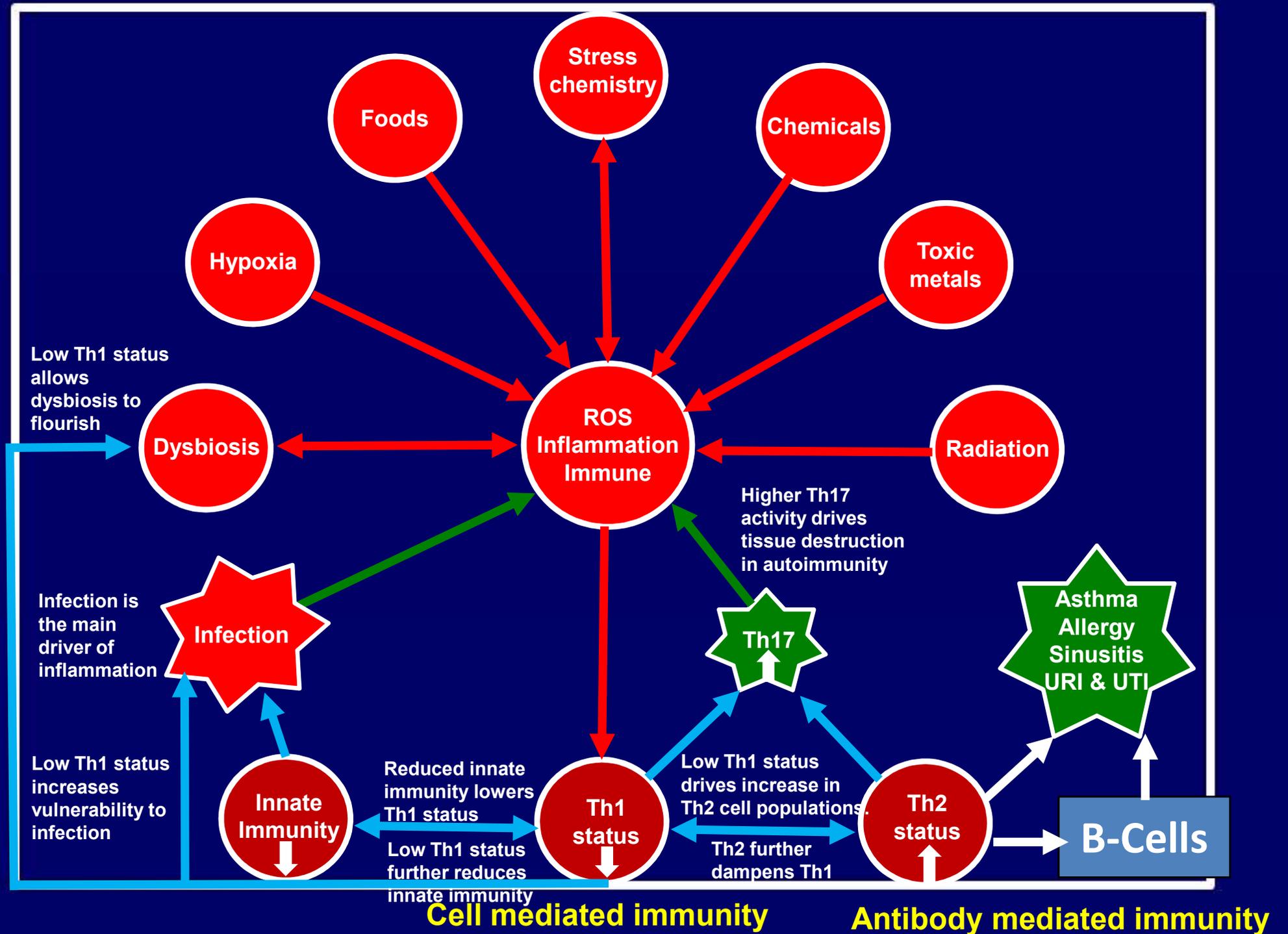
- TGFb induces Th17 cell differentiation in a concentration dependant manner
- Low levels favour Th17
- Higher levels favour T reg cells

Eisenstein, Eli M.; Williams, Calvin B. (2009-05-01). "The Treg/Th17 Cell Balance: A New Paradigm for Autoimmunity". *Pediatric Research*. 65 (5 Part 2): 26R–31R.

doi:10.1203/PDR.0b013e31819e76c7

Th17 Resolution

- **Identify the virus and treat, causing Th1 to increase, Th2 to decrease and Th17 to decrease**
- **Quercetin**
- **Acetyl carnitine/Alpha Lipoic Acid/NADH**



Nutritional Remedies

Essential Fatty Acid Deficiency

Borage seed oil GLA

Evening primrose oil GLA

Omega 3 EPA+DHA

DHA

Omega 3,6 and 9

Flax seed oil Hempseed oil

Wheat germ oil

Black cumin seed oil

Sea buckthorn



Mineral Deficiency

Calcium

Magnesium

Selenium

Zinc

Vitamin Deficiency

Vitamin A

Vitamin D

Vitamin A

Diet



Retinyl palmitate

Small intestine
Bile, Zn

Carotenoids

Retinol

Vit E + O₂
dioxygenase (Fe)
As
Hg

NAD, Zn
retinol
dehydrogenase

11-*cis*-retinal

all trans Retinal

Mg-ATP
Eyes

NAD, FAD
retinaldehyde
dehydrogenase

Bone and teeth, Immune,
Epithelial integrity
Gene transcription,
Skin, Cellular health Embryo,
Reproduction
Hematopoiesis

all trans Retinoic acid

Vitamin A, in the retinoic acid form, plays an important role in gene transcription. Once retinol has been taken up by a cell, it can be oxidized to retinal (retinaldehyde) by retinol dehydrogenases and then retinaldehyde can be oxidized to retinoic acid by retinaldehyde dehydrogenases which is tightly regulated, due to its activity as a ligand for nuclear receptors.

Vitamin effects on the immune system: vitamins A and D take centre stage

[J. Rodrigo Mora](#),* [Makoto Iwata](#),[‡] and [Ulrich H. von Andrian](#)[§]

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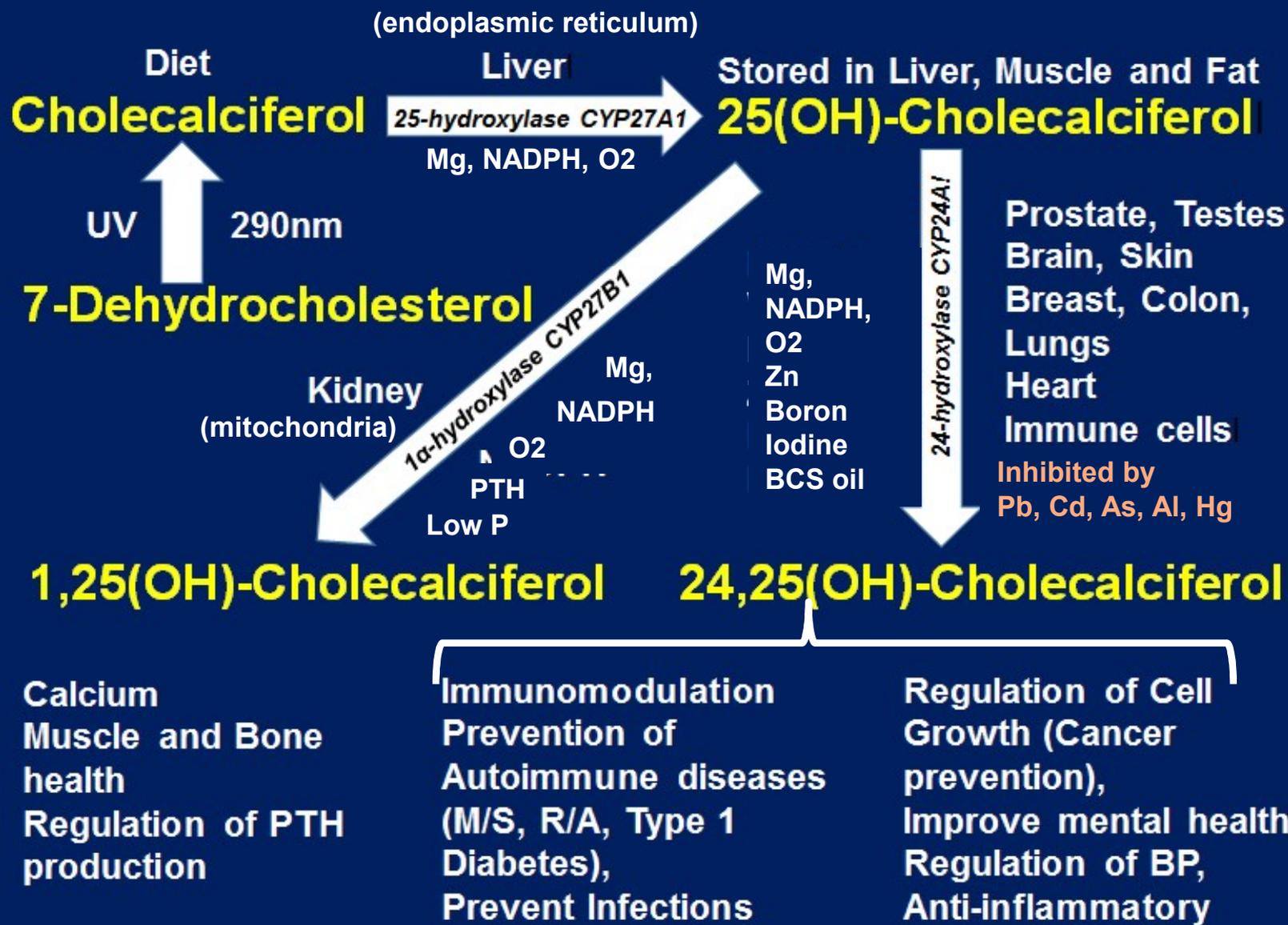
Abstract

Go to:

Vitamins are essential constituents of our diet that have long been known to influence the immune system. Vitamins A and D have received particular attention in recent years as these vitamins have been shown to have an unexpected and crucial effect on the immune response. We present and discuss our current understanding of the essential roles of vitamins in modulating a broad range of immune processes, such as lymphocyte activation and proliferation, T-helper-cell differentiation, tissue-specific lymphocyte homing, the production of specific antibody isotypes and regulation of the immune response. Finally, we discuss the clinical potential of vitamin A and D metabolites for modulating tissue-specific immune responses and for preventing and/or treating inflammation and autoimmunity.

Vitamin D





1,25(OH)-Cholecalciferol

24,25(OH)-Cholecalciferol

Mg,
NADPH,
O₂
Zn
Boron
Iodine
BCS oil

24-hydroxylase CYP24A1

Inhibited by
Pb
Cd
As
Al
Hg

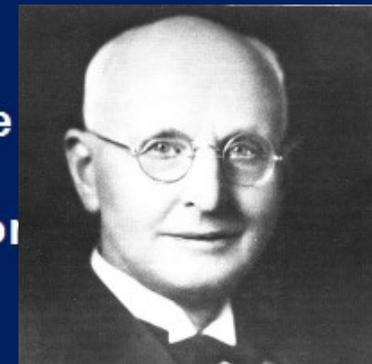
1-hydroxylase CYP27B1

Mg,
NADPH,
O₂

**1, 24, 25(OH)-Cholecalciferol
Calcitriol
(Activator X)**

Calcitriol (1 α , 24, 25-Trihydroxy D₃) is the hormonally active form of vitamin D with three hydroxyl groups. Hormone modulator

Weston Price



The VDR may be involved in cell proliferation and differentiation. Vitamin D affects the immune system, and VDRs are expressed in several white blood cells, including monocytes and activated T and B cells.

Watkins RR, Lemonovich TL, Salata RA (May 2015). "An update on the association of vitamin D deficiency with common infectious diseases". *Canadian Journal of Physiology and Pharmacology*

In vitro, vitamin D increases expression of the **tyrosine hydroxylase** gene in adrenal medullary cells, and affects the synthesis of neurotrophic factors, nitric oxide synthase, and glutathione.

Puchacz E, Stumpf WE, Stachowiak EK, Stachowiak MK (February 1996). "Vitamin D increases expression of the tyrosine hydroxylase gene in adrenal medullary cells". Brain Research. Molecular Brain Research.

**TH1 and TH2 modulating
compounds:**

Probiotics

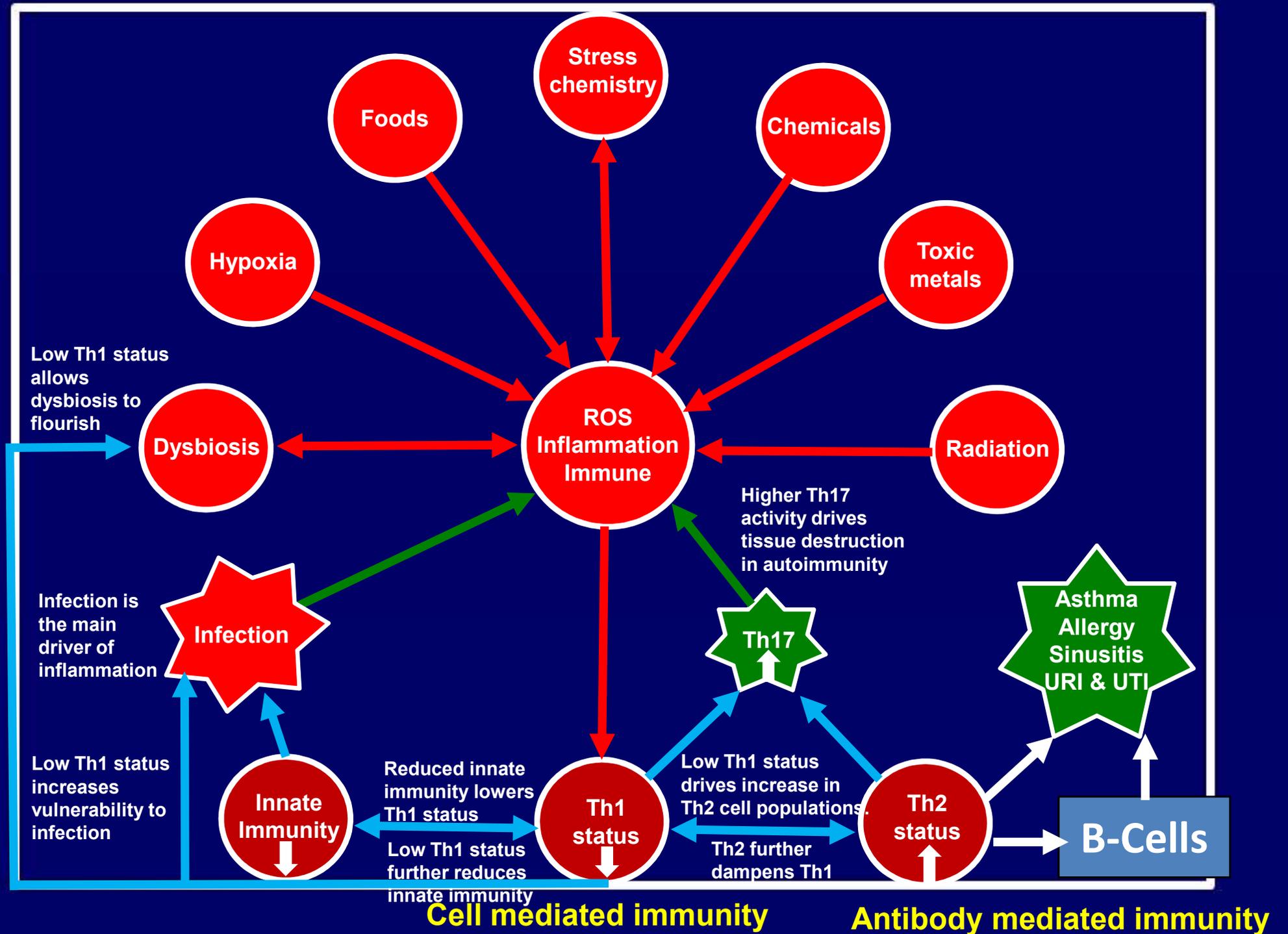
Vitamin A

Vitamin E

**T-regulatory supporting
compounds:**

Vitamin D

EPA and DHA

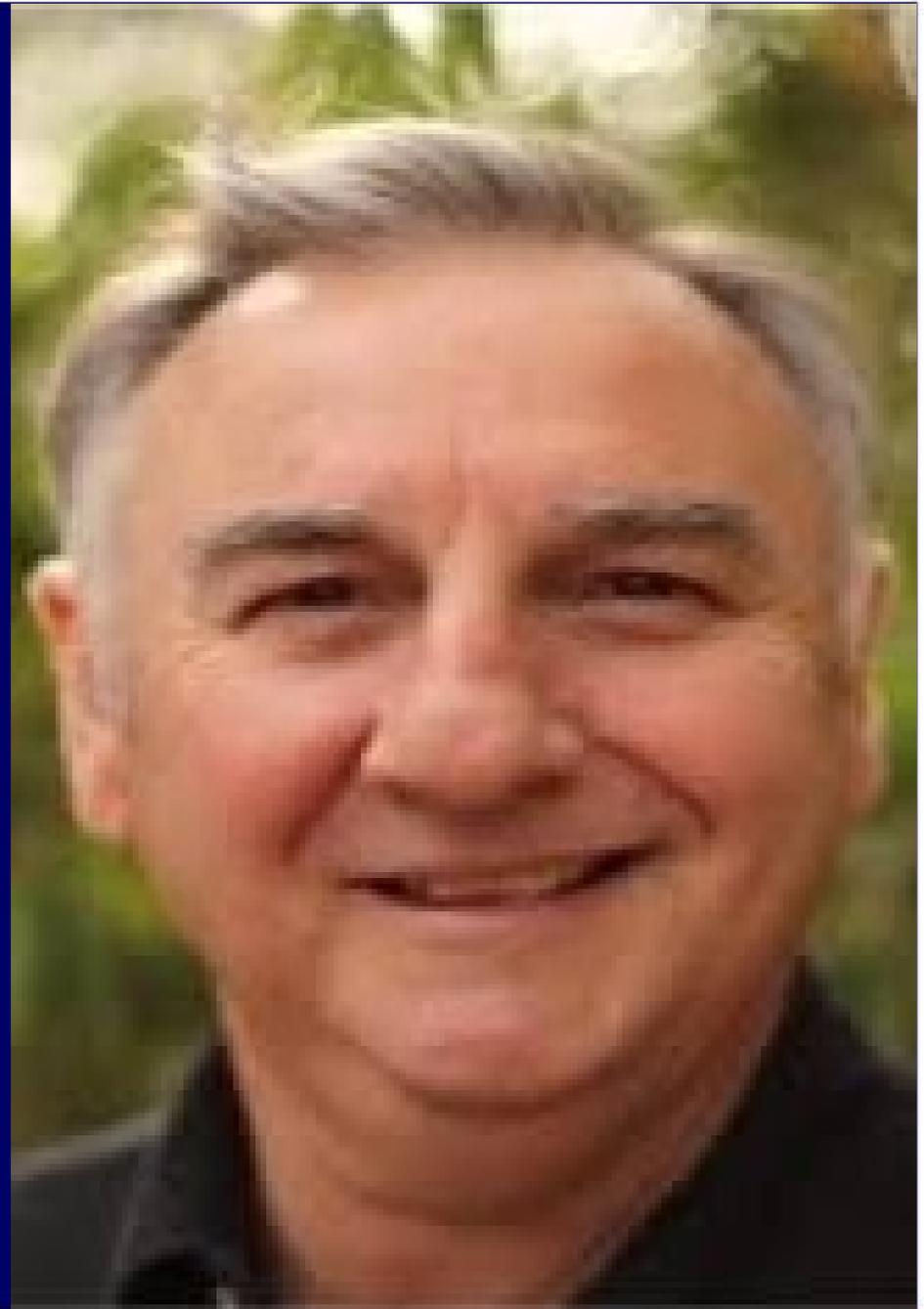


Testing for Autoimmunity

- **Th1/Th2 Status**
- **Th17 Status**
- **Genetic involvement – STAT3
& FOXP3/TGFb**
- **IgE, IgG, IgM**
- **Inflammation – PAF,
NFKappaB**

Autoimmune diseases and Applied Kinesiology

Eric Pierotti



Specific muscle to organ association have identified the **Infraspinatus** muscle as being specific to the Thymus gland and generally indicative of immune function. Other authors (*Portelli, Marcellino*) have cited the **mid deltoid** as also diagnostic of thymus gland problems.

In my experience (Pierotti) in almost all cases tested (over 100) neither the infraspinatus nor the mid deltoid have ever shown to be inhibited in “the clear” as we would expect with obvious immune dysfunction.

However,

A challenge to the area of the thymus gland by a firm but gentle striking of the mid body of the sternum with a lateral edge of a closed fist over 4-5 repetitions elicited and unusual and consistently reproducible response on patients with T- cell dysfunction.

**Bilateral inhibition of the
Infraspinatus**

OR

**Bilateral inhibition of the Mid
Deltoid**

**Cross checking with specific cytokine biomarkers found the following pattern;
Bilateral Infraspinatus inhibition
correlated with;**

TH2 excess

**Bilateral Mid deltoid inhibition
correlated with;**

TH1 excess

**Bilateral posterior Deltoid inhibition
correlated with**

Th17 excess (CRAS)

The resultant **inhibition** once initiated persists for quite some time and allows the benefit of challenging for specific nutrients, botanicals or other therapeutic aids necessary for successful treatment of the dysfunction.