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INTEGRATIVE MEDICINE

# IMMUNE 101

HOW YOUR IMMUNE  
SYSTEM WORKS

# IMMUNE SYSTEM DIAGRAM

## LYMPHATIC SYSTEM-

CONSISTS OF BONE MARROW, SPLEEN, THYMUS, AND LYMPH NODES

### BONE MARROW

PRODUCES WHITE BLOOD CELLS, OR LEUKOCYTES

### LYMPH NODES

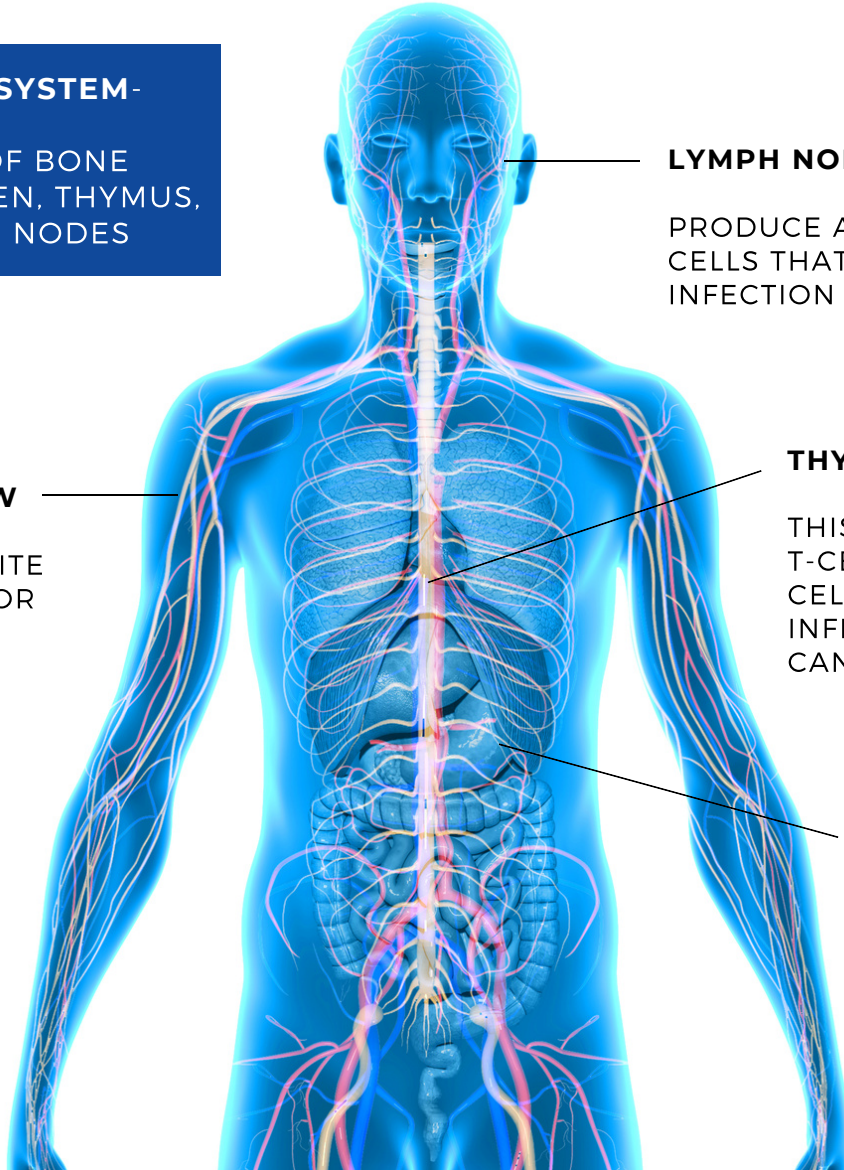
PRODUCE AND STORE CELLS THAT FIGHT INFECTION & DISEASE

### THYMUS

THIS ORGAN IS WHERE T-CELLS MATURE. T-CELLS HELP DESTROY INFECTED OR CANCEROUS CELLS.

### SPLEEN

THE LARGEST LYMPHATIC ORGAN IN THE BODY CONTAINS WHITE BLOOD CELLS THAT FIGHT INFECTION OR DISEASE



## LYMPHOCYTES AND LEUKOCYTES

THESE SMALL WHITE BLOOD CELLS PLAY A LARGE ROLE IN DEFENDING THE BODY AGAINST DISEASE. THE TWO TYPES OF LYMPHOCYTES ARE B-CELLS, WHICH MAKE ANTIBODIES THAT ATTACK BACTERIA AND TOXINS, AND T'CELLS, WHICH HELP DESTROY INFECTED OR CANCEROUS CELLS.

LEUKOCYTES ARE WHITE BLOOD CELLS THAT IDENTIFY AND ELIMINATE PATHOGENS.

Yes you can

## Support Your Immune System

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### H O W   Y O U R   I M M U N E S Y S T E M   W O R K S

- We have **innate immunity** - what we are born with...
- **Adaptive immunity** - what we develop- this is our opportunity

### K E Y   P L A Y E R S

- Your Gut is the largest immune organ
- The Gut - Immune System is the most important element of maintaining immunology

### A D D I T I O N A L   P L A Y E R S

- White blood cells
- T cells
- B cells
- NK cells
- Neutrophils
- Monocytes
- Macrophages
- Antibodies
- Complement factors
- Lymphatics
- Spleen
- Bone Marrow
- Thymus
- Adenoids
- Skin Liver

# A D A P T I V E I M M U N I T Y

## **T CELL MEDIATED RESPONSE-**

T CELLS LIVE IN THE BONE MARROW AND COME FROM THE THYMUS *\*\*\*THEY AMOUNT INITIAL VIRAL RESPONSE OR ATTACK\*\**

## **B CELL MEDIATED RESPONSE**

HUMORAL IMMUNITY SECRETE ANTIBODIES TO FIGHT OFF INFECTION *\*\*\*THIS IS HOW VACCINES WORK\*\**

WE NEED TO FOCUS ON T CELLS SINCE COVID 19 OR FUTURE BUGS ARE ONES WE DONT RECOGNIZE AND NEED THIS ARM OF OUR IMMUNE SYSTEM TO WORK

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## 3 P H A S E S O F I M M U N E R E S P O N S E

### **Recognition**

Recognize it's foreign- immune response starts

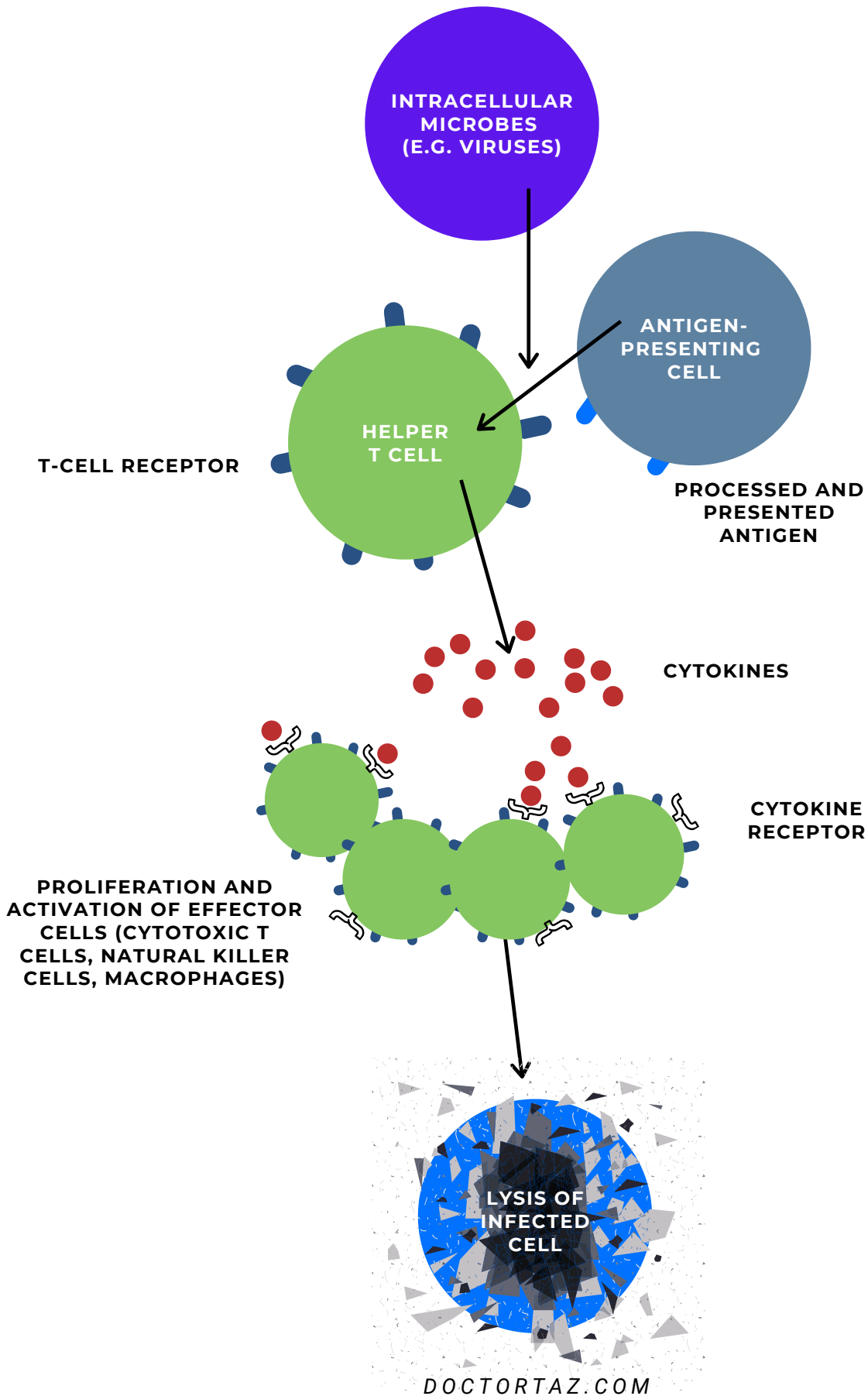
### **Attack**

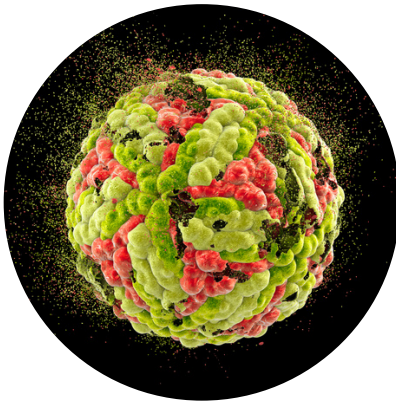
Activate macrophages, NK cells first, then release of cytokines

### **Memory**

We did this before- lets do it again!

# CELLULAR IMMUNITY





# THE CYTOKINES TO KNOW

*CYTOKINES ARE A LARGE GROUP OF PROTEINS,  
PEPTIDES OR GLYCOPROTEINS THAT ARE SECRETED  
BY SPECIFIC CELLS OF IMMUNE SYSTEM.*

## **INFLAMMATORY CYTOKINES**

**TNF ALPHA  
IL6  
GCSF  
GMCSF  
IL1**

## **PROTECTIVE CYTOKINES**

**IL2  
IL12  
IL17  
IL23  
IL10**

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# THE ULTIMATE GOAL

**Improve T cell mediated immunity,  
increase protective cytokines, and  
stop the cytokine storm**



## SIGN AND SYMPTOMS OF POOR IMMUNE FUNCTION

- Frequent Colds/ Viruses (greater than 2-3 per year)
- Frequent Antibiotic Use (more than 2-3 rounds per year)
- Digestive Disturbances - Reflux, Constipation, Bloating, IBS, IBD
- Joint Pain
- Chronic Fatigue
- Brain Fog
- Overweight/ Obesity



# LAB TESTS

## FOR IMMUNE FUNCTION

### IDEAL RANGES

CBC (WBC) 4-10 BILLION CELLS/L ESR  
(SEDIMENTATION RATE) <10 MM/HR

CRP <2 MG/ L

HOMOCYSTEINE <10 MCMILLAN/L

IGA LEVELS 80-350UG/DL

IGG LEVELS 6-16 G/L

IGG SUBCLASSES (1,2,3,4) VARIABLE

CD57/NK CELLS (ABSOLUTE) 60-98

CD57 NK CELLS (%LYMPHOCYTES) >4.65





## DISEASES OF POOR IMMUNE FUNCTION

- Autoimmune Diseases (lupus, sjogrens, rheumatoid arthritis, crohns, ulcerative colitis)
- Cancer
- Chronic Lyme Disease
- Chronic EBV
- Chronic Fatigue
- Obesity
- Pans/Pandas

## NUTRIENT DEFICIENCIES ASSOCIATED WITH IMMUNE DYSFUNCTION

- Vitamin D
- Vitamin C
- Vitamin A
- B vitamins
- Zinc
- Omega 3 fats
- Glutathione

# YOUR CHEAT SHEET



## GUT HEALTH

- Intake of probiotics
- Improve IL2, IL10



## FOOD

- Plant based foods- 6-8 servings per day
- High flavonoids foods: green tea, chocolate
- High Vitamin C foods
- High antioxidant foods
- High Vitamin A foods (retinoids)



## MICRONUTRIENT SUPPLEMENTATION

- Vitamin D
- Vitamin C
- Zinc



## HERBAL SUPPLEMENTS

- Astragalus - **The Defender** is a potent source of Astragalus and other immune-boosting ingredients
- Andrographis paniculata
- Pelagonium sidoides
- Allium sativum
- Panax ginseng

# 10 STEPS TO A SUPERCHARGED IMMUNE SYSTEM

## 1. Balance gut health

the largest immune organ of the body

- Take [Belly Fix](#) for daily gut support
- Add in probiotics- 50-100 billion cfu daily
- Add healthy fats
- Add gut builders- bone broth, non dairy kefir, kombucha

## 2. Eat an Immune Support Diet

- Anti inflammatory diet
- Increase plant based foods- leafy greens, carrots, sweet potato
- Add 1 green smoothie per day
- Drink 2-3 cups of green tea per day
- Garlic

## 3. Add in Immune Support Vitamins

- Vitamin D 2000 IU per day
- Vitamin C 2 grams per day
- Zinc 15 mg
- Additional- B Vitamins, Vitamin A 5000 IU per day

## 4. Add in Immune Supporting Herbs

- Astragalus - 1 gram daily
- Allium Satvum - 1 gram
- Elderberry - 500 mg daily

## 5. Prevent Cytokine Storm

follow this after 48 hours of symptoms

**Increase the following to 2x per day for 7 days only**

- Vitamin D 2000 IU Vitamin C
- 2 grams Zinc 15 mg
- Astragalus- 1 gram
- Andrographis- 1 gram
- Pelagonium sidoides - 250 mg
- Stop elderberry

# 10 STEPS TO A SUPERCHARGED IMMUNE SYSTEM

## 6. Sleep Consistently

- 8 hours per night for adults
- 10 hours for children and teens
- Take [Sleep Savior](#) to promote a healthy night's rest

## 7. Hydrate

- Warm water 3x daily to keep secretions and mucus low and support your lymphatics
- Speaking of lymphatics...

## 8. Don't forget your lymphatics

- Exercise
- Dry Brushing
- Herbal teas- echinacea, indigo root, goldenseal or parsley
- Yoga
- Massage
- Far infrared sauna

## 9. Lower Your Toxic Load

watch consumption and exposure to:

- Pesticides
- Phthalates
- Parabens
- Organophosphates
- Food Dyes
- Additives

Most common sources- food, body care, household supplies

## 10. Manage Your Stress/Emotions

- Move from *fear* to *hope*