

# Overcoming Autoimmune Disease

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MICAH YU, MD MHA MHS ABOIM DIPABLM IFMCP



# About Me

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Internal Medicine Residency and Rheumatology Fellowship at Loma Linda University

Board certified in Integrative Medicine

Diplomate of American Board of Lifestyle Medicine

Certified in Functional Medicine at the Institute of Functional Medicine

Owner of the Dr. Lifestyle Clinic

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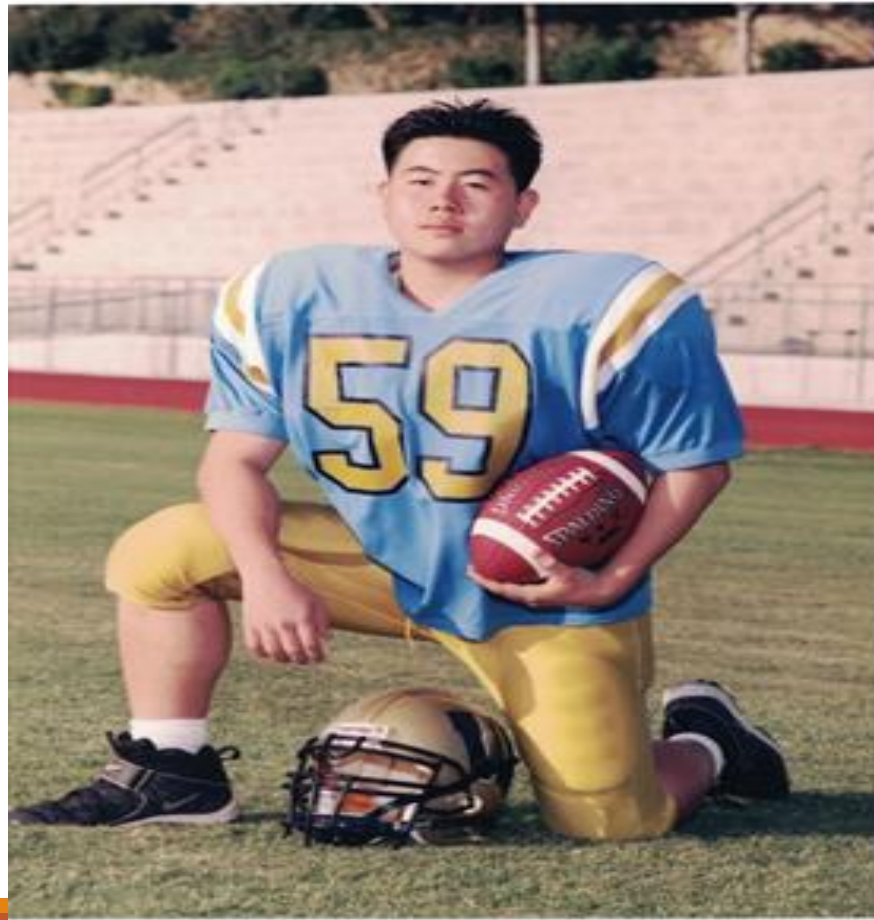
# Childhood

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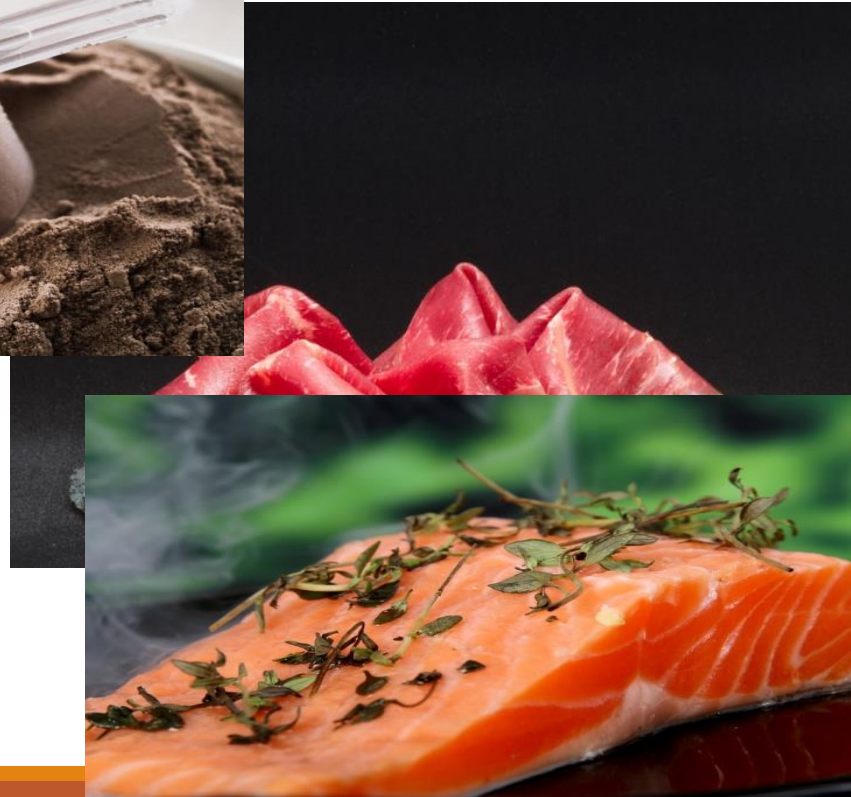
# High School

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# Proteinholic

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# Gout

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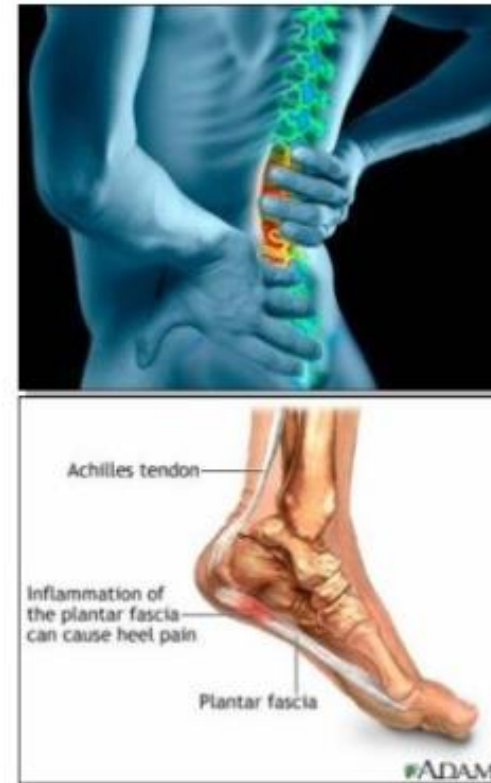
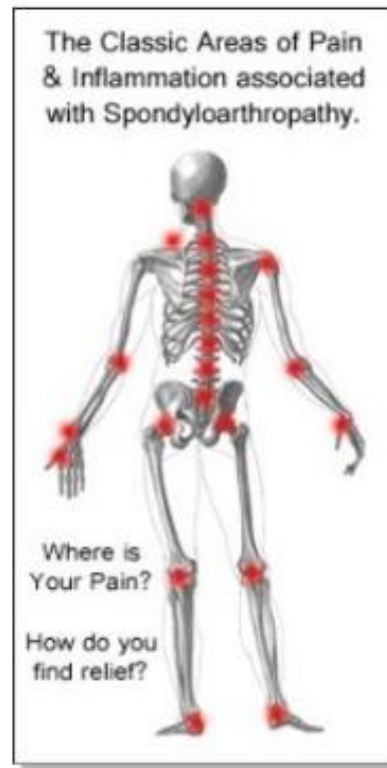
# Unexplained Symptoms

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# Spondyloarthritis

## What is Spondyloarthritis?



# Enough was enough

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# My Labs

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2016

Component	Your Value	Standard Range
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C-Reactive Protein
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0.9 mg/dL
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0.0 - 0.8 mg/dL
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2018

C-Reactive Protein
--------------------

1.0 mg/dL
-----------

0.0 - 0.8 mg/dL
-----------------

C-Reactive Protein
--------------------

<0.3 mg/dL
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0.0 - 0.8 mg/dL
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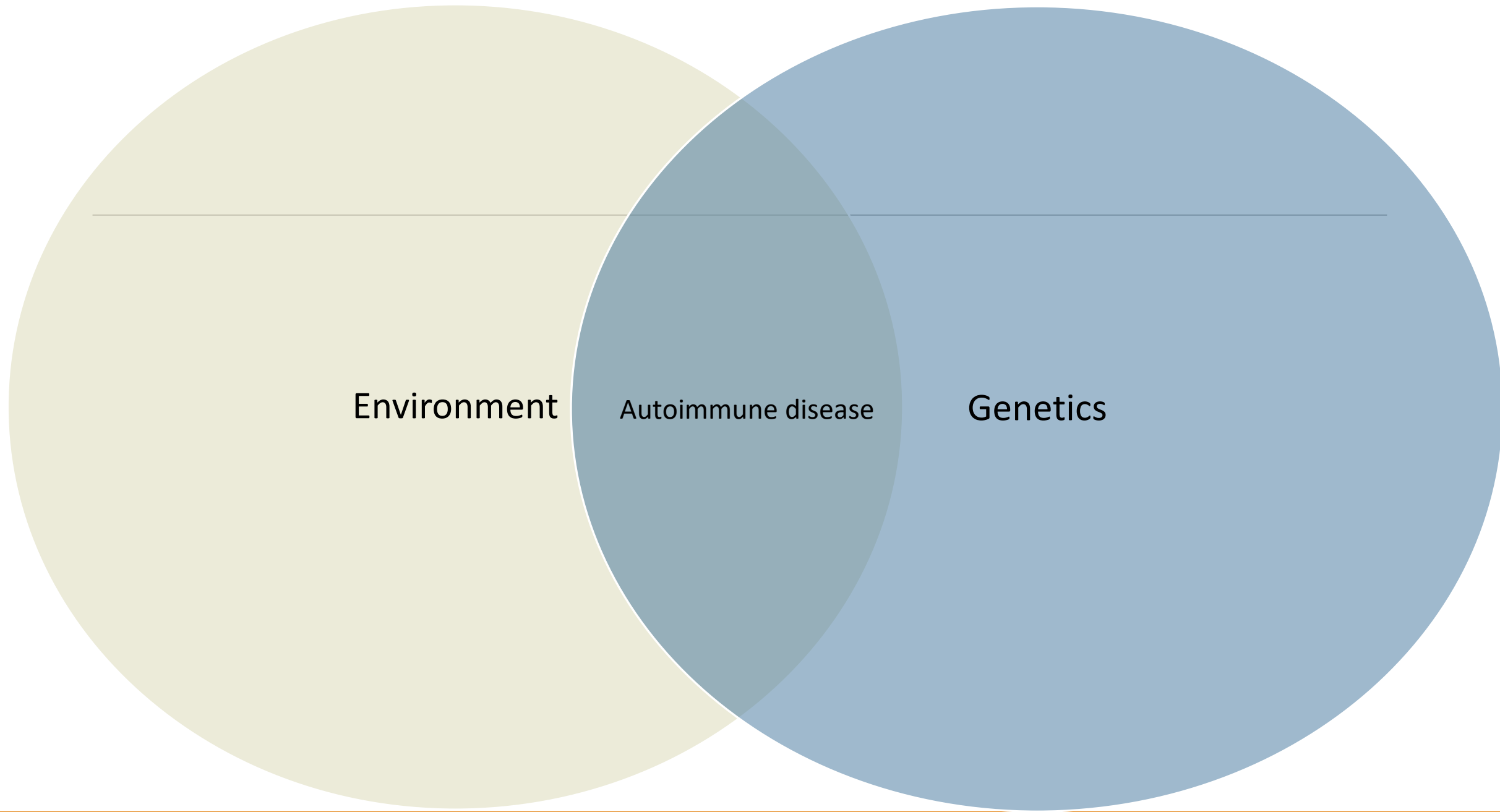
# Objectives

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Main Objective: Learn the components that contribute to autoimmune disease and how to resolve it

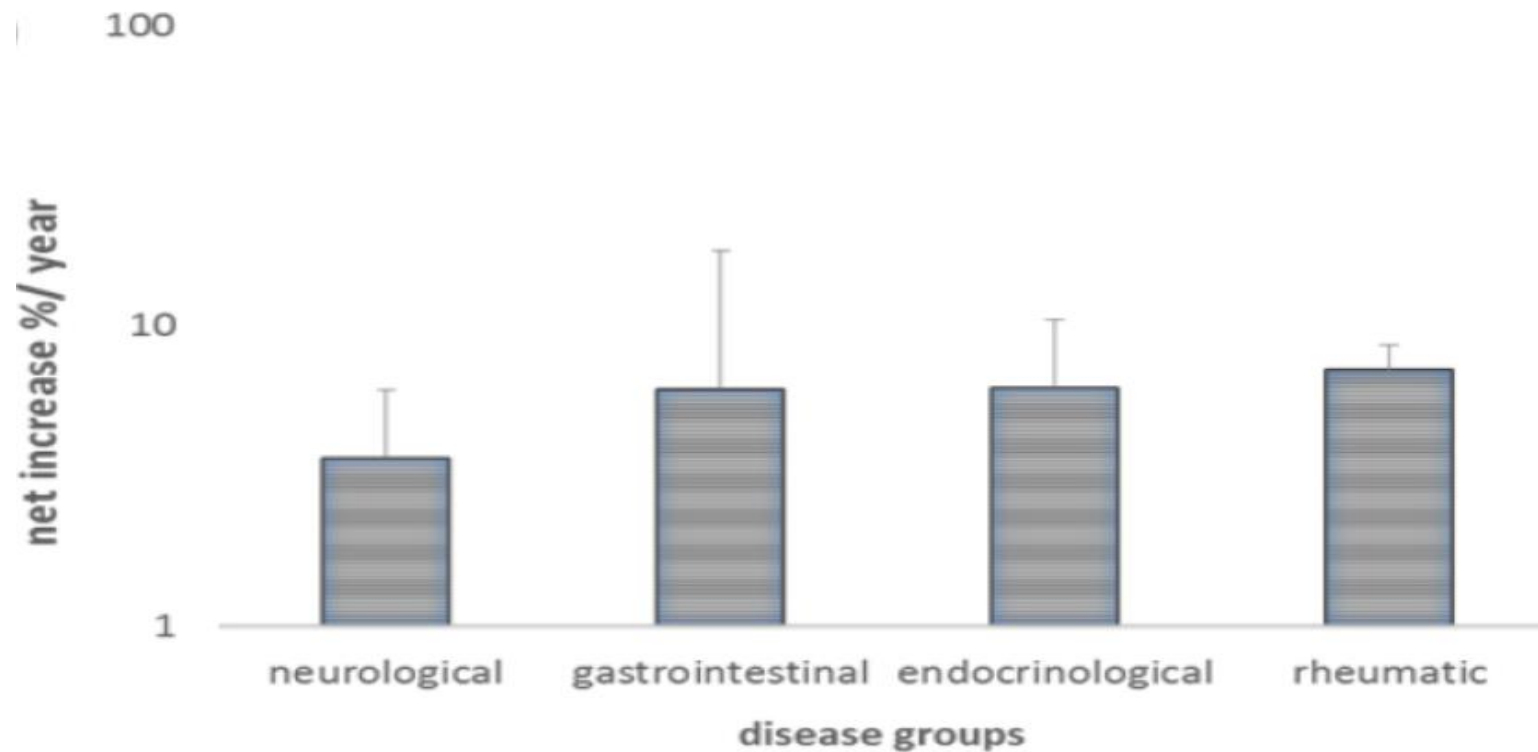
Learn components that are important to overcome autoimmune disease

- Microbiome
- Nutrition
- Herbs/Supplements
- Movement
- Energy Medicine
- Mind body medicine
- Environmental medicine



# Autoimmune Disease on the Rise

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[Home](#) > [News](#) > Autoimmune disorders found to affect around one in ten people

## Autoimmune disorders found to affect around one in ten people

PUBLISHED

6 MAY 2023

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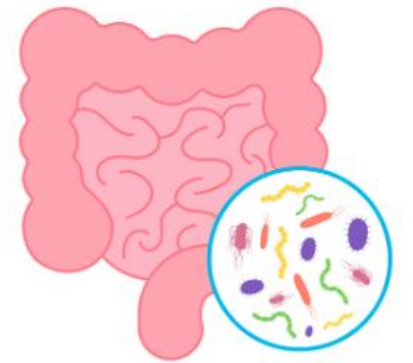
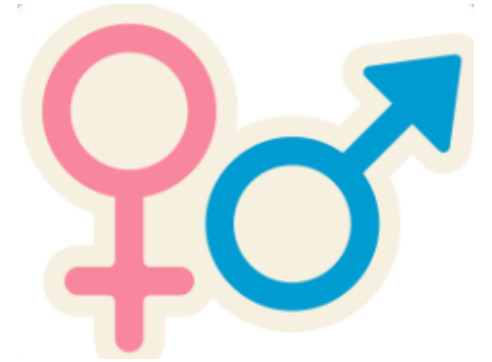
A new population-based study of 22 million people shows that autoimmune disorders now affect about one in ten individuals. The work, published in *The Lancet*, also highlights important socioeconomic, seasonal, and regional differences for several autoimmune disorders and provides new clues on possible causes behind these diseases.

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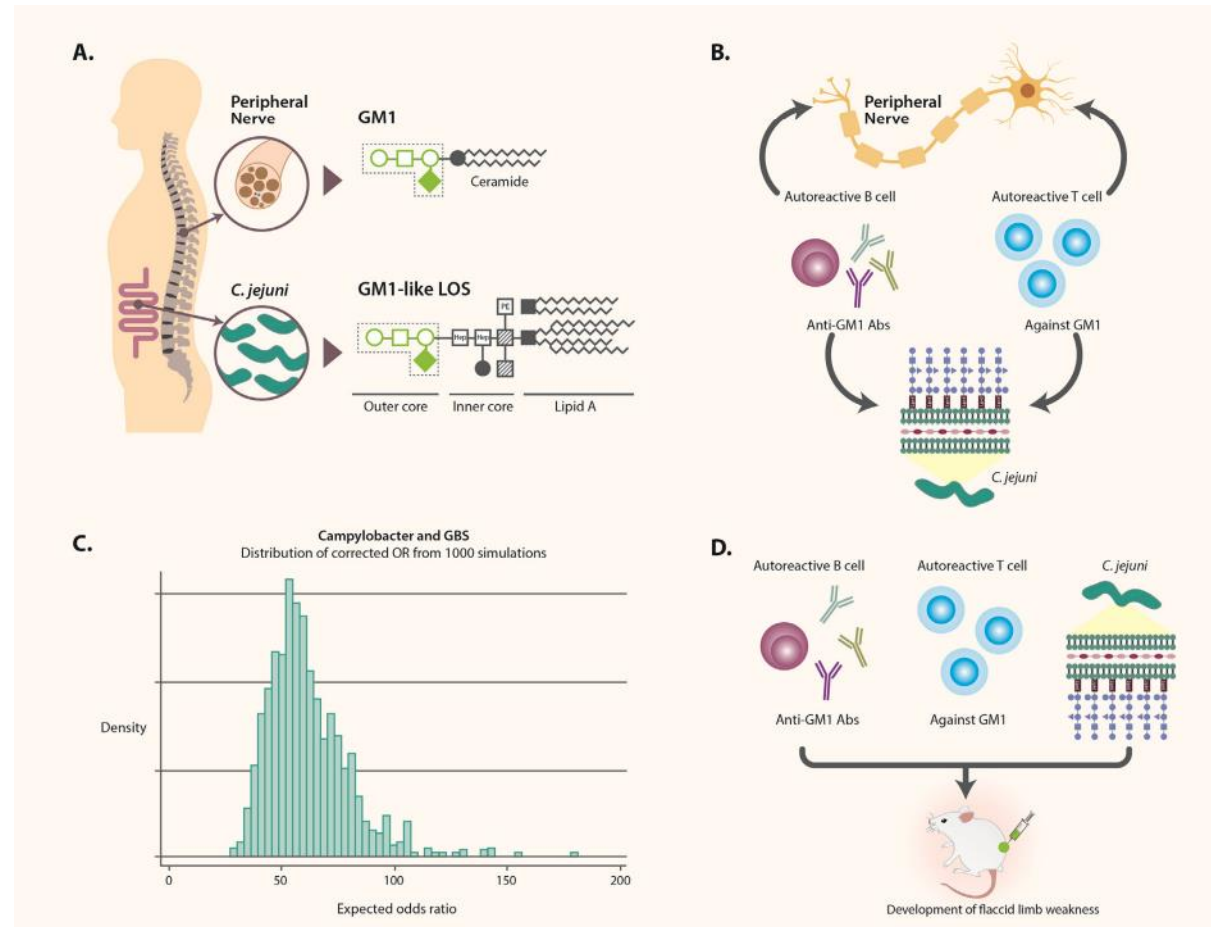
What causes Autoimmune Diseases?

# Different Risk Factors and Different Mechanisms

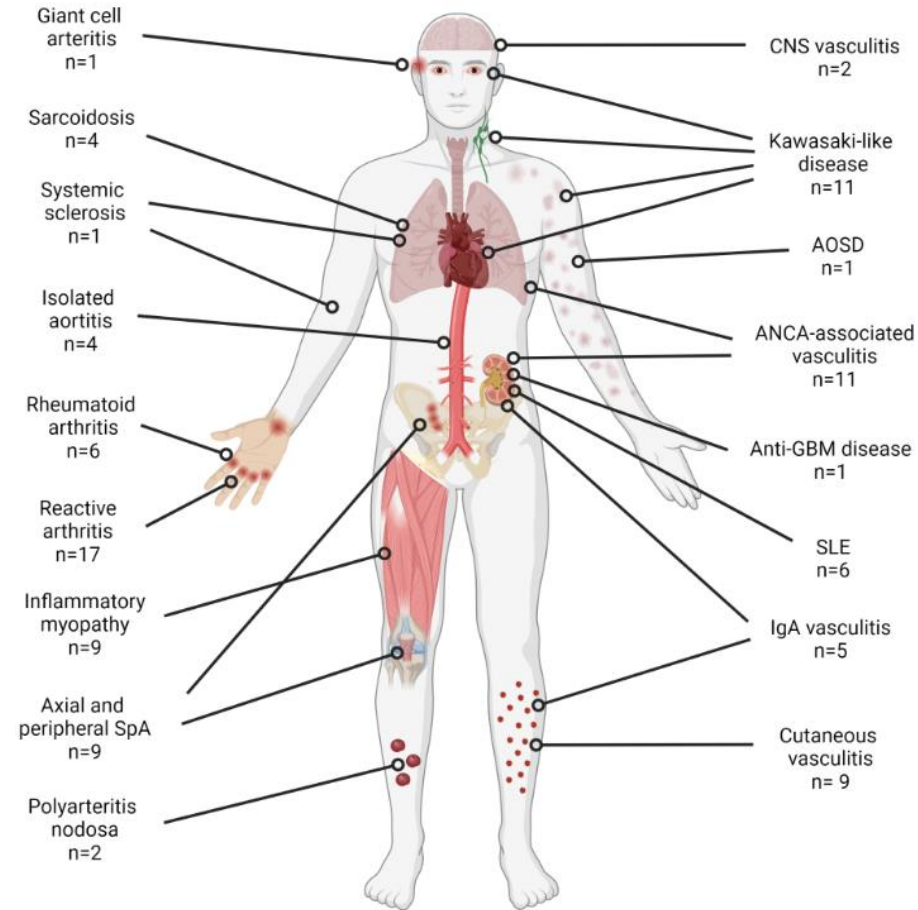
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# Molecular mimicry



# Covid 19 and Autoimmunity



# Objectives

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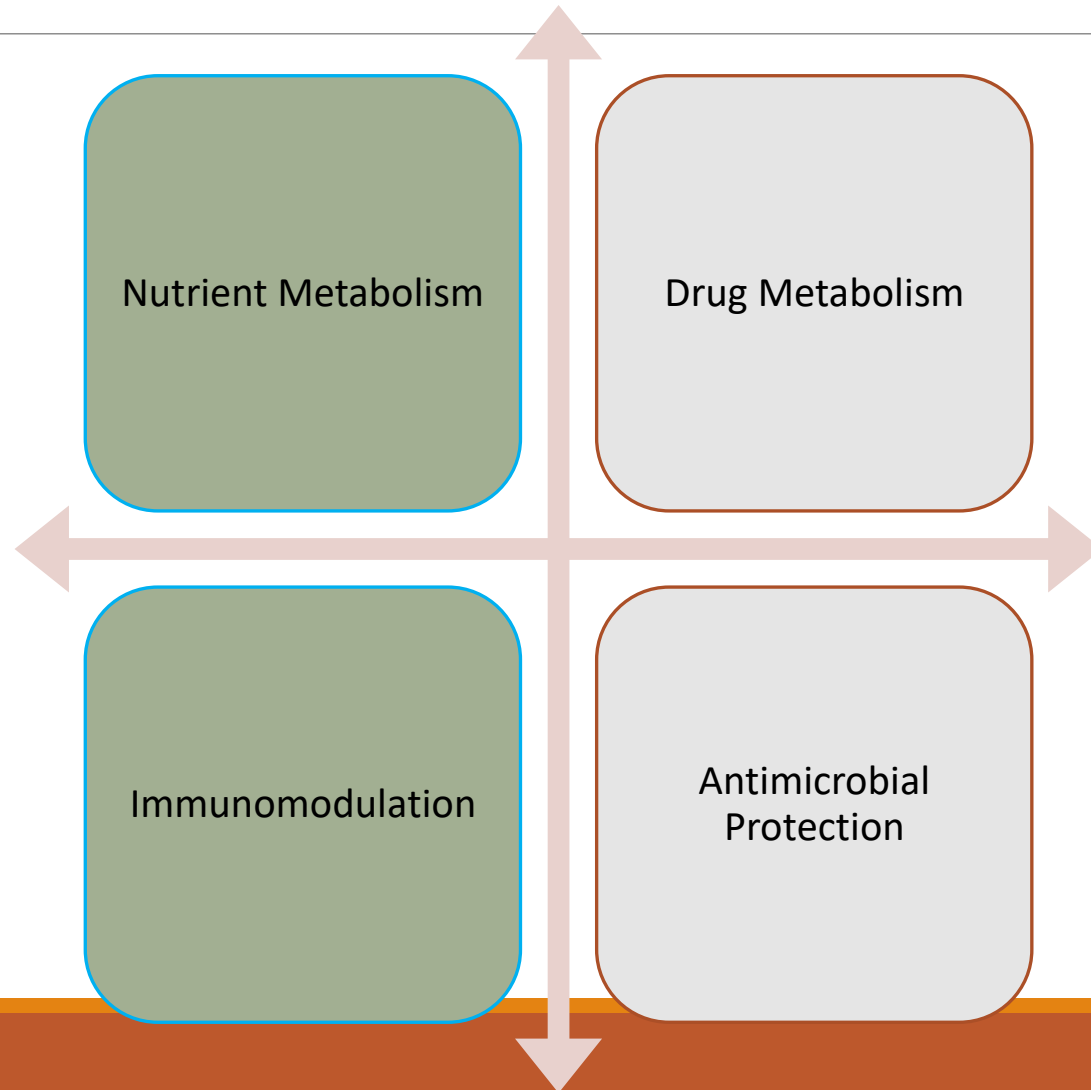
Main Objective: Learn the components that contribute to autoimmune disease and how to resolve it

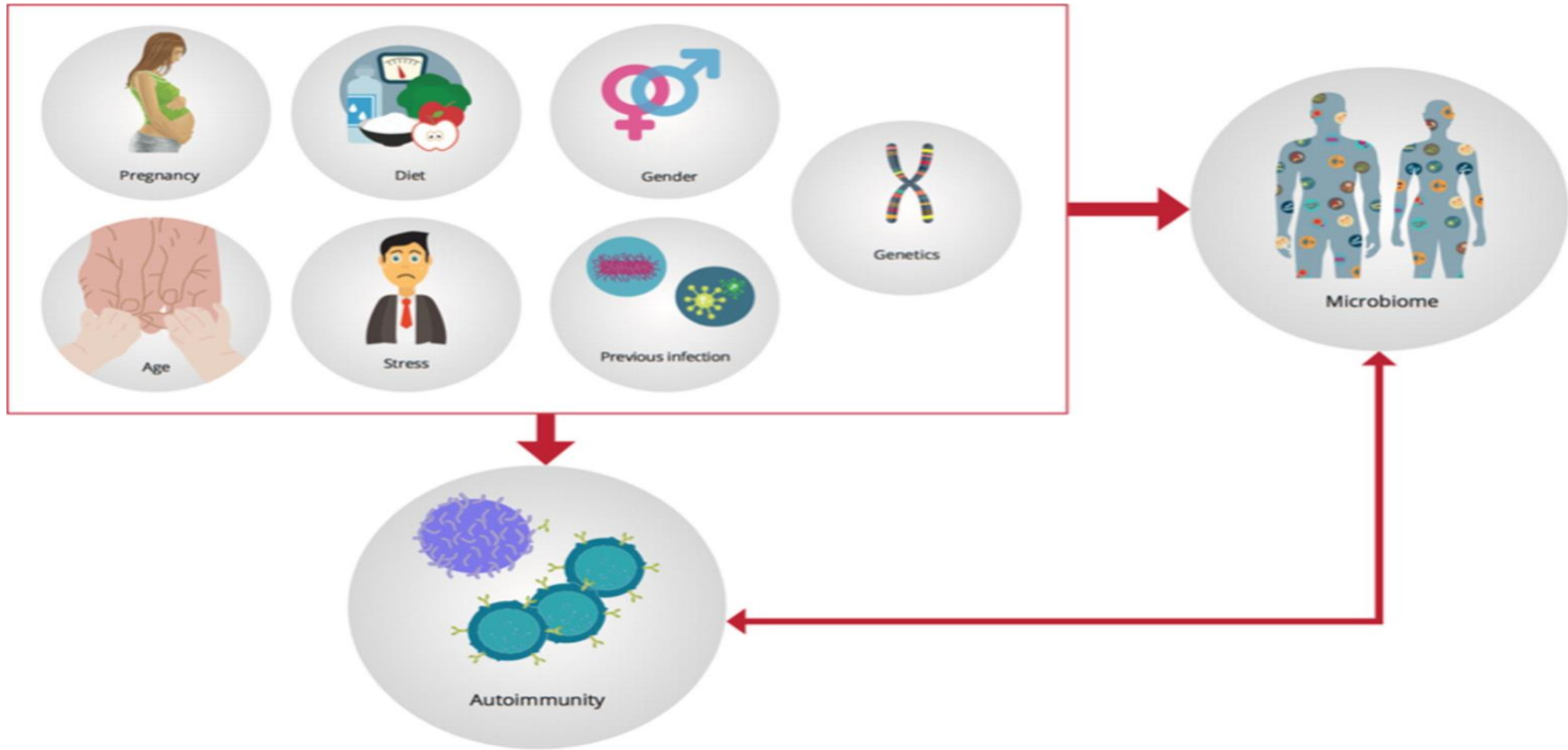
Learn components that are important to overcome autoimmune disease

- Microbiome
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# Role of Gut Microbiome

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# Gut dysbiosis

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Systemic Lupus Erythematosus

Ankylosing Spondylitis

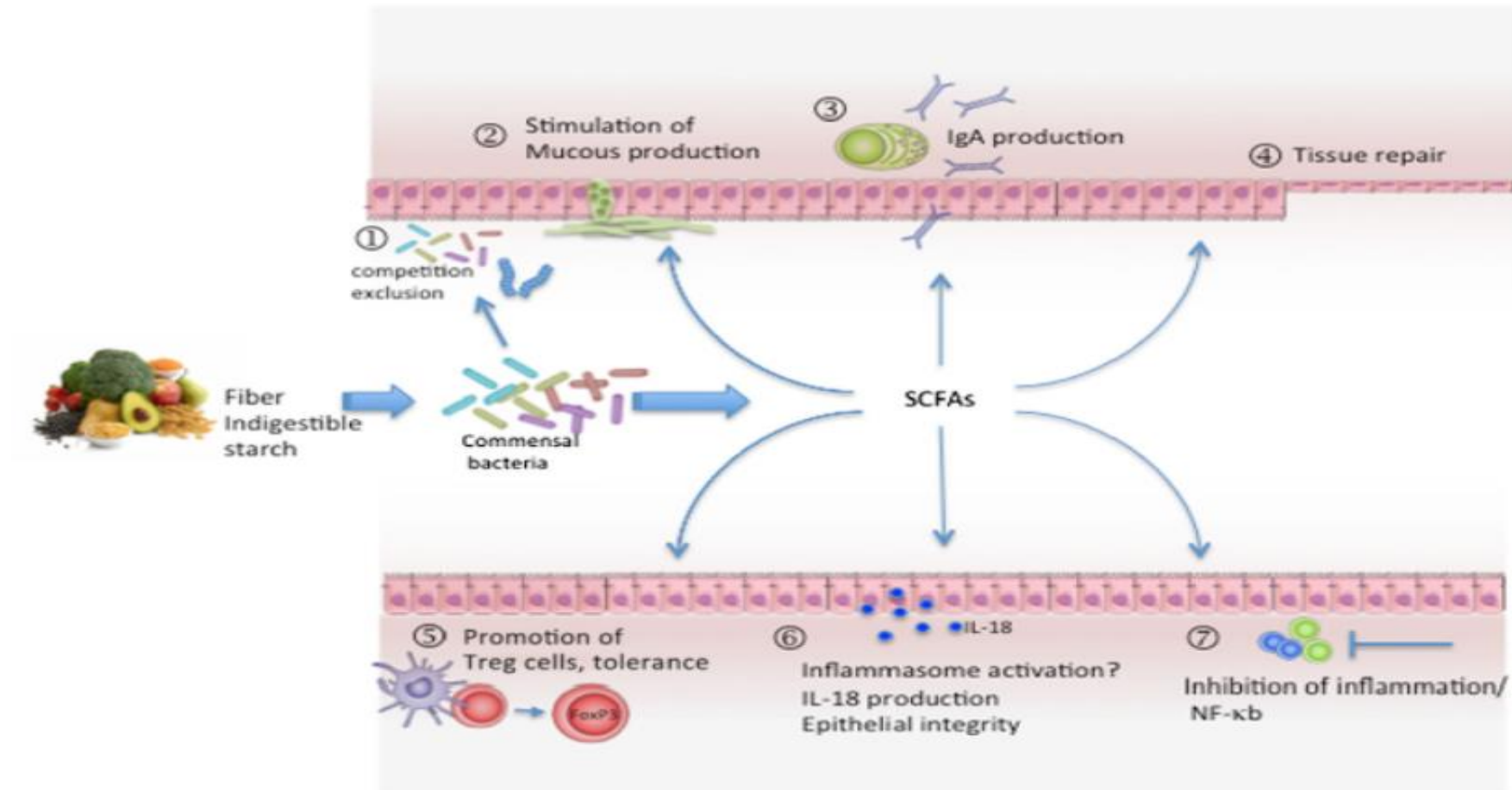
Psoriatic Arthritis

Rheumatoid Arthritis

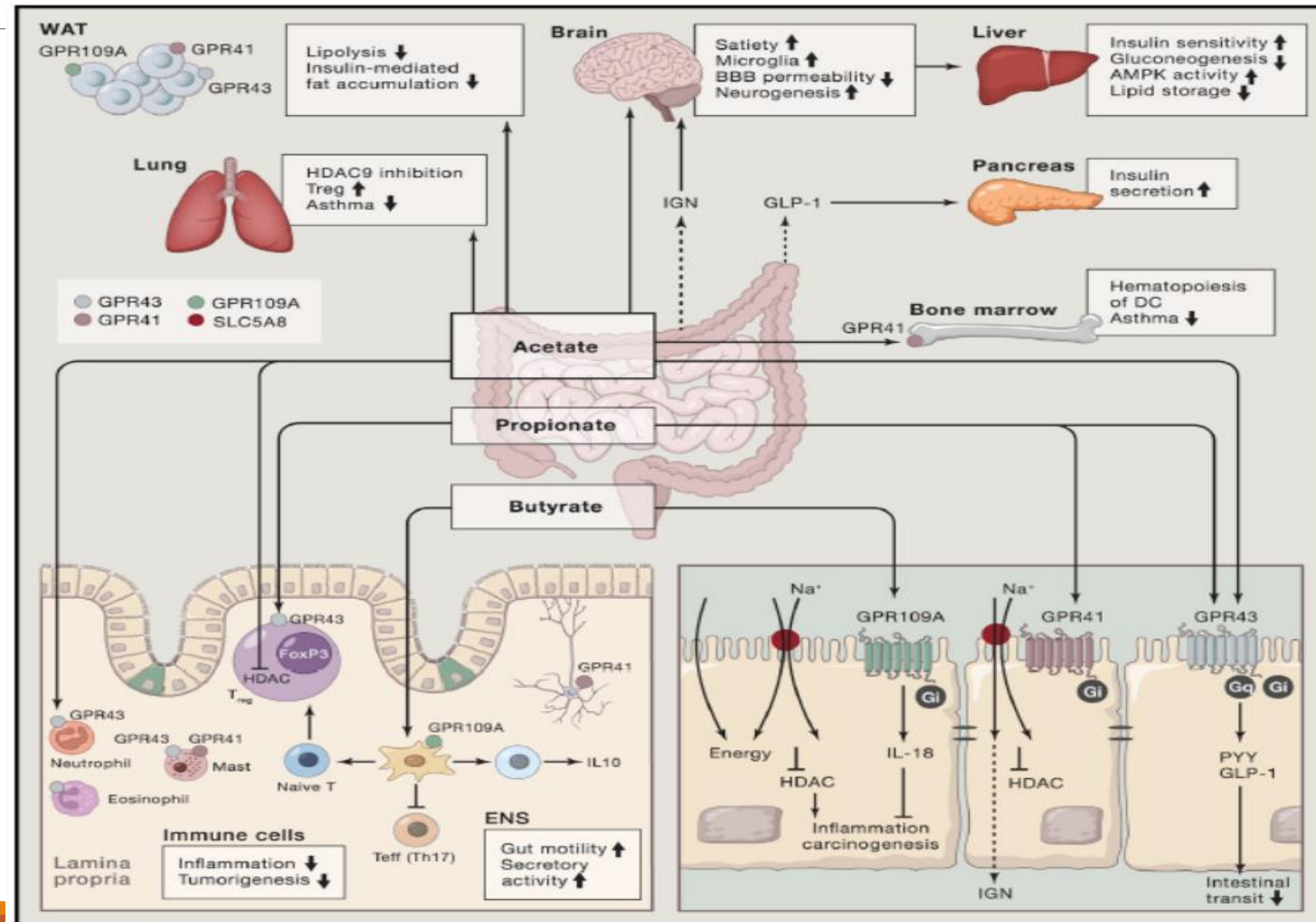
Sjogrens syndrome

Vasculitis

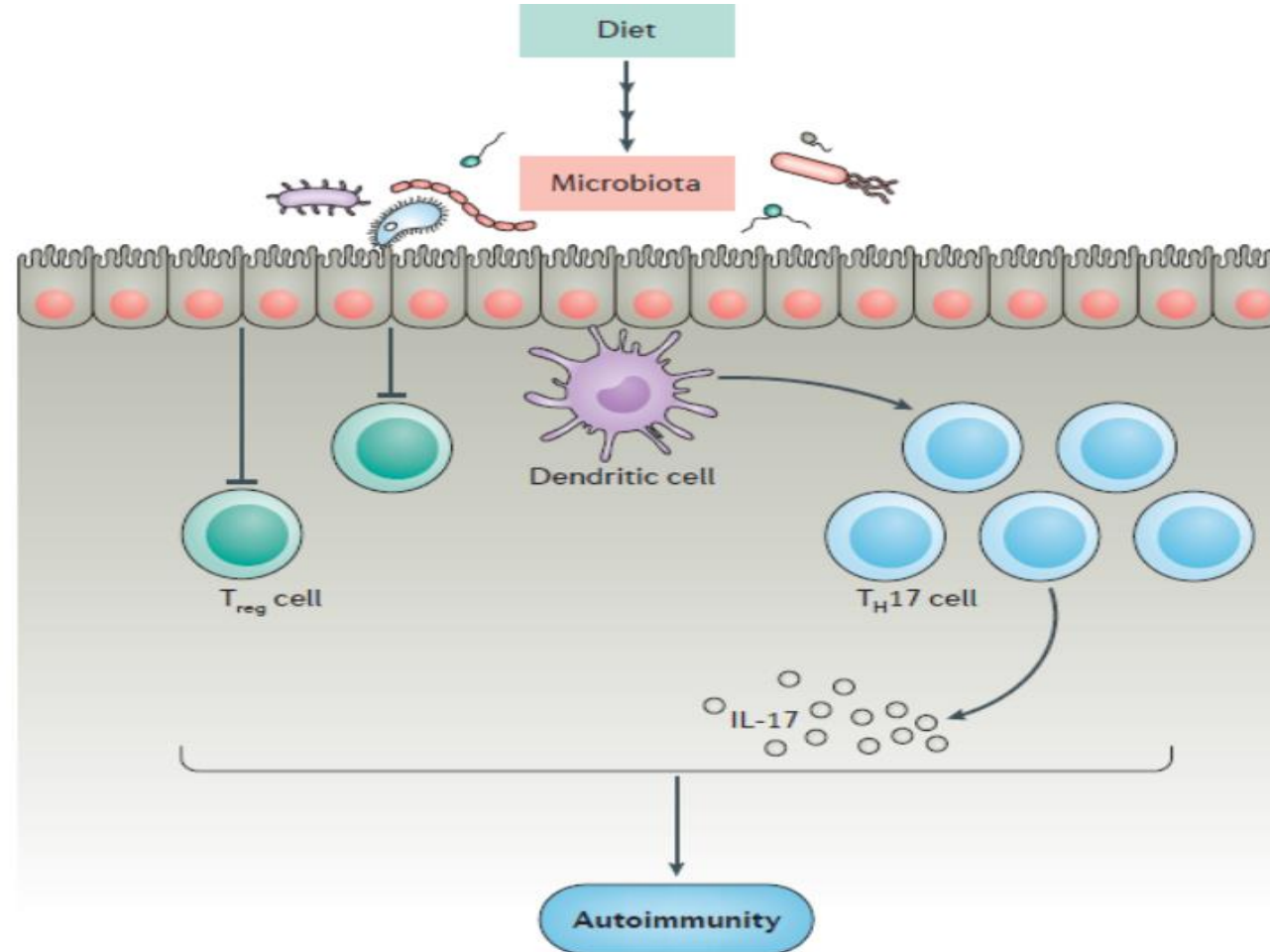
# Short Chain Fatty Acids Affect on the Gut Microbiome



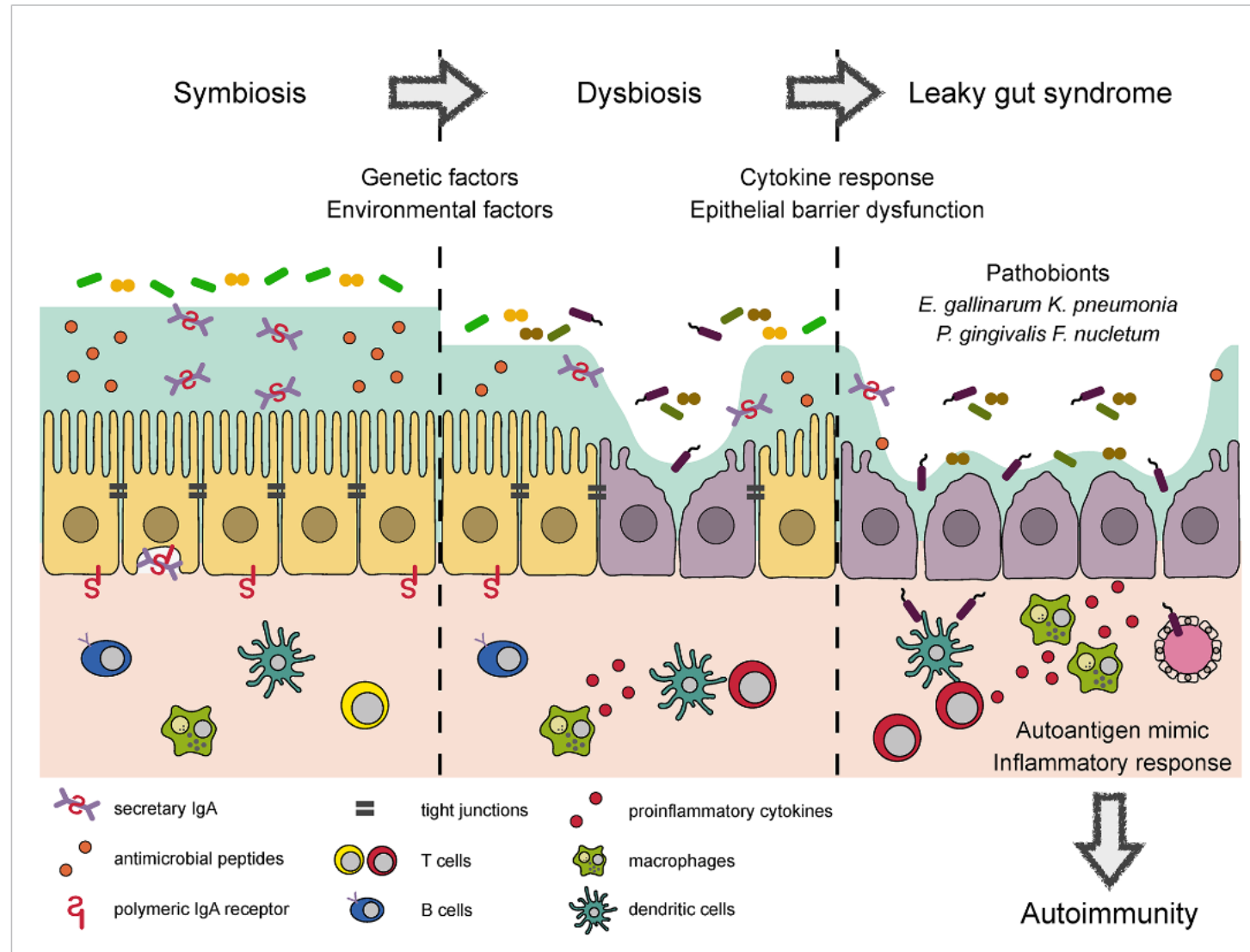
# Short Chain Fatty Acids and Systemic Effect



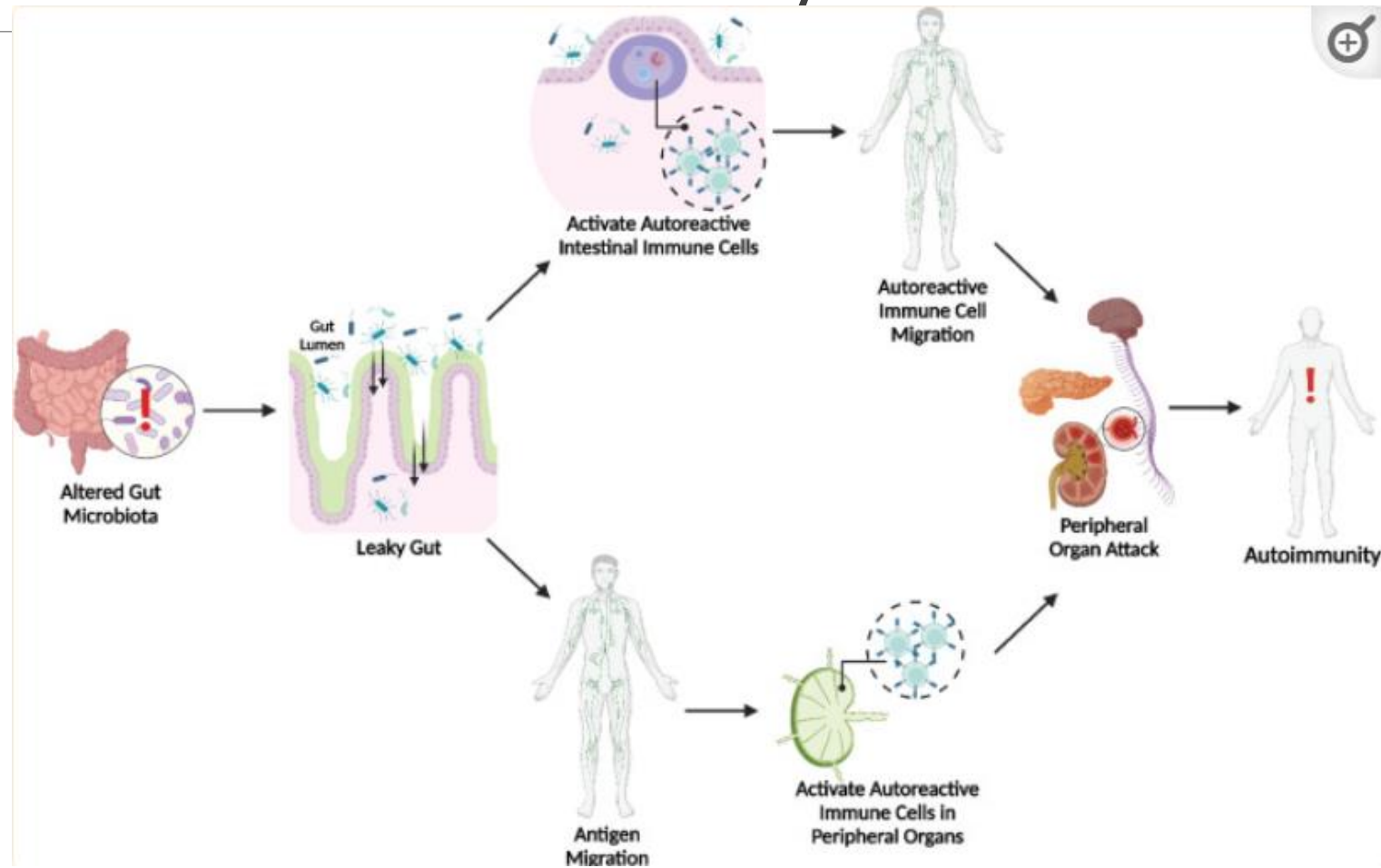
# Treg/Th17 balance



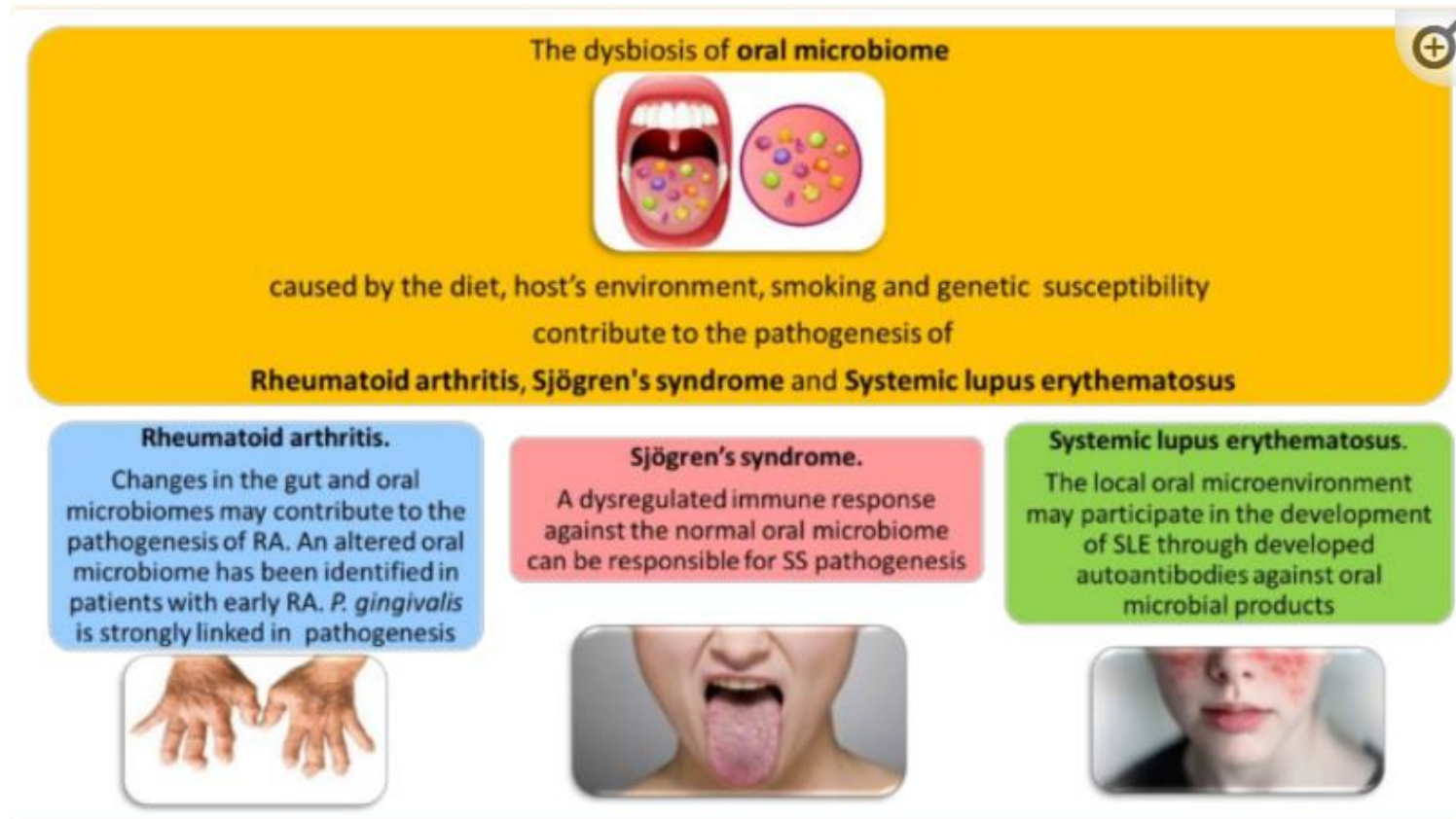
# From Symbiosis to Leaky Gut



# Altered Gut Microbiome Leading to Systemic Autoimmunity



# Oral Microbiome



# Objectives

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# Nutritional Interventions in Autoimmune Diseases

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# Standard American Diet

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This is what you don't want to eat



# Nutrition

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# Canada Food Guide and Eat Lancet

Have plenty of  
vegetables and fruits

Eat protein foods

Make water  
your drink  
of choice

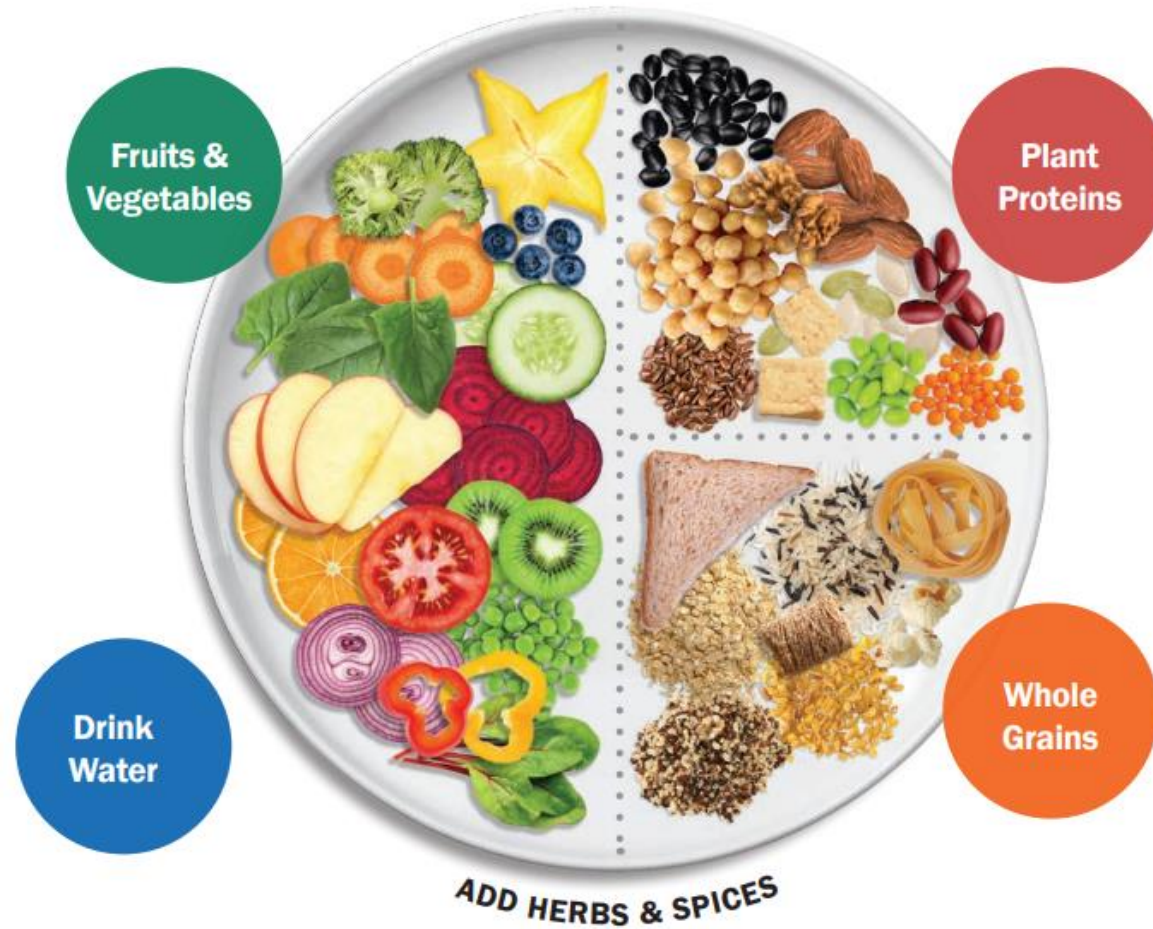
Choose  
whole grain  
foods



## A WHOLE FOOD, PLANT-BASED PLATE

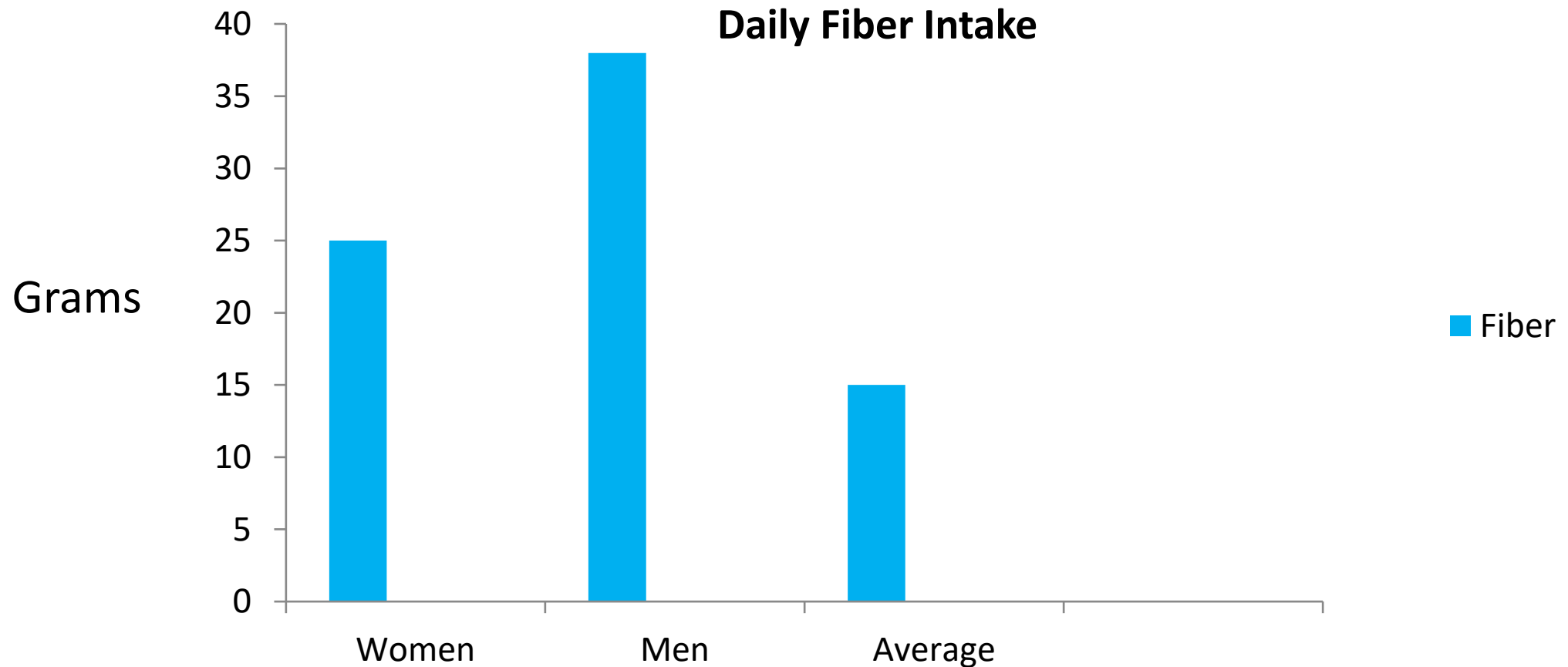
### *Nutrition Prescription for Treating & Reversing Chronic Disease*

The American College of Lifestyle Medicine Dietary Lifestyle Position Statement for Treatment and Potential Reversal of Disease: ACLM recommends an eating plan based predominantly on a variety of minimally processed vegetables, fruits, whole grains, legumes, nuts and seeds.



# USDA Recommendations for Fiber

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# Fiber and Inflammation

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Predicted Marginal Risk Ratios for Cardiometabolic Risk Factors, based on Quintiles of Dietary Fiber Intake and other Individual Covariates – Non-pregnant Adults 20+ Years in NHANES 1999–2010

	Predicted Marginal Risk Ratios (95% CI) <sup>a</sup>		
	Metabolic Syndrome	Inflammation	Obese
	Fully-Adj. <sup>b</sup>	Fully-Adj. <sup>b</sup>	Fully-Adj. <sup>b</sup>
Quintiles of Dietary Fiber			
0.0–8.1 g	1.00	1.00	1.00
8.1–12.0 g	0.91 (0.82–1.00)	0.90 (0.84–0.95)	0.94 (0.88–1.00)
12.0–16.2 g	0.85 (0.76–0.93)	0.86 (0.80–0.93)	0.89 (0.83–0.95)
16.2–22.4 g	0.84 (0.75–0.93)	0.76 (0.70–0.82)	0.85 (0.80–0.92)
22.5–147.6 g	0.78 (0.70–0.88)	0.66 (0.61–0.72)	0.77 (0.71–0.84)

Data from National Health and Nutrition Examination Survey, 1999–2010.

# Fiber

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Arthritis Care & Research  
Vol. 69, No. 9, September 2017, pp 1331–1339  
DOI 10.1002/acr.23158  
© 2016, American College of Rheumatology

ORIGINAL ARTICLE

## **Dietary Fiber Intake in Relation to Knee Pain Trajectory**

**ZHAOLI DAI, NA LU, JINGBO NIU, DAVID T. FELSON, AND YUQING ZHANG**

# Phytonutrients

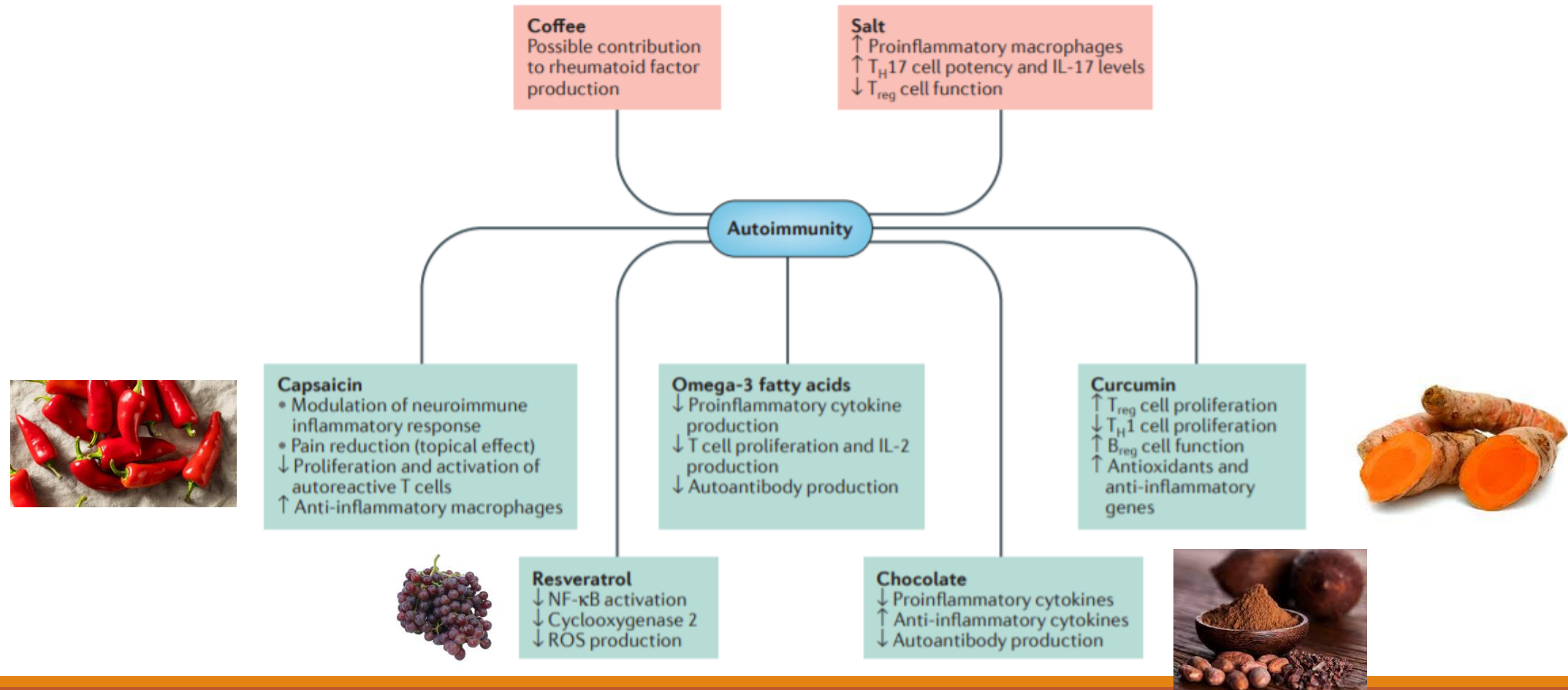


# Phytonutrients

Phytonutrient	Proposed Benefits	Food Sources	Fun Facts
<b>Beta-Carotene</b>	Immune System Vision Skin Health Bone Health	Pumpkin	Think orange and dark, leafy green veggies
		Sweet Potato Carrots Winter Squash Cantaloupe Apricots Spinach Collard Greens Kale Broccoli	
<b>Lycopene</b>	Cancer (Prostate) Heart Health	Tomatoes Pink Grapefruit Red Peppers Watermelon Tomato Products	The heating process makes lycopene easier for the body to absorb

Phytonutrient	Proposed Benefits	Food Sources	Fun Facts
<b>Lutein</b>	Eye Health Cancer Heart Health	Collard Greens Kale Spinach Broccoli Brussels Sprouts Lettuces Artichokes	This phytonutrient is found in the macula of the eye
<b>Resveratrol</b>	Heart Health Cancer Lung Health Inflammation	Red Wine Peanuts Grapes	1 cup of red grapes can have up to 1.25 mg of resveratrol <sup>1</sup>
<b>Anthocyanidins</b>	Blood Vessel Health	Blueberries Blackberries Plums Cranberries Raspberries Red Onions Red Potatoes Red Radishes Strawberries	Think red and purple berries
<b>Isoflavones</b>	Menopause Cancer (Breast) Bone Health Joint	Soybeans	½ cup of boiled soybeans offers 47 mg of

# Phytonutrients

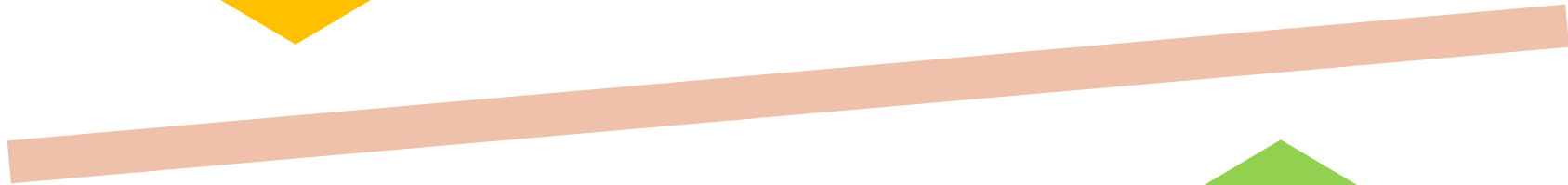


# Omega 3 and 6 Fatty Acids

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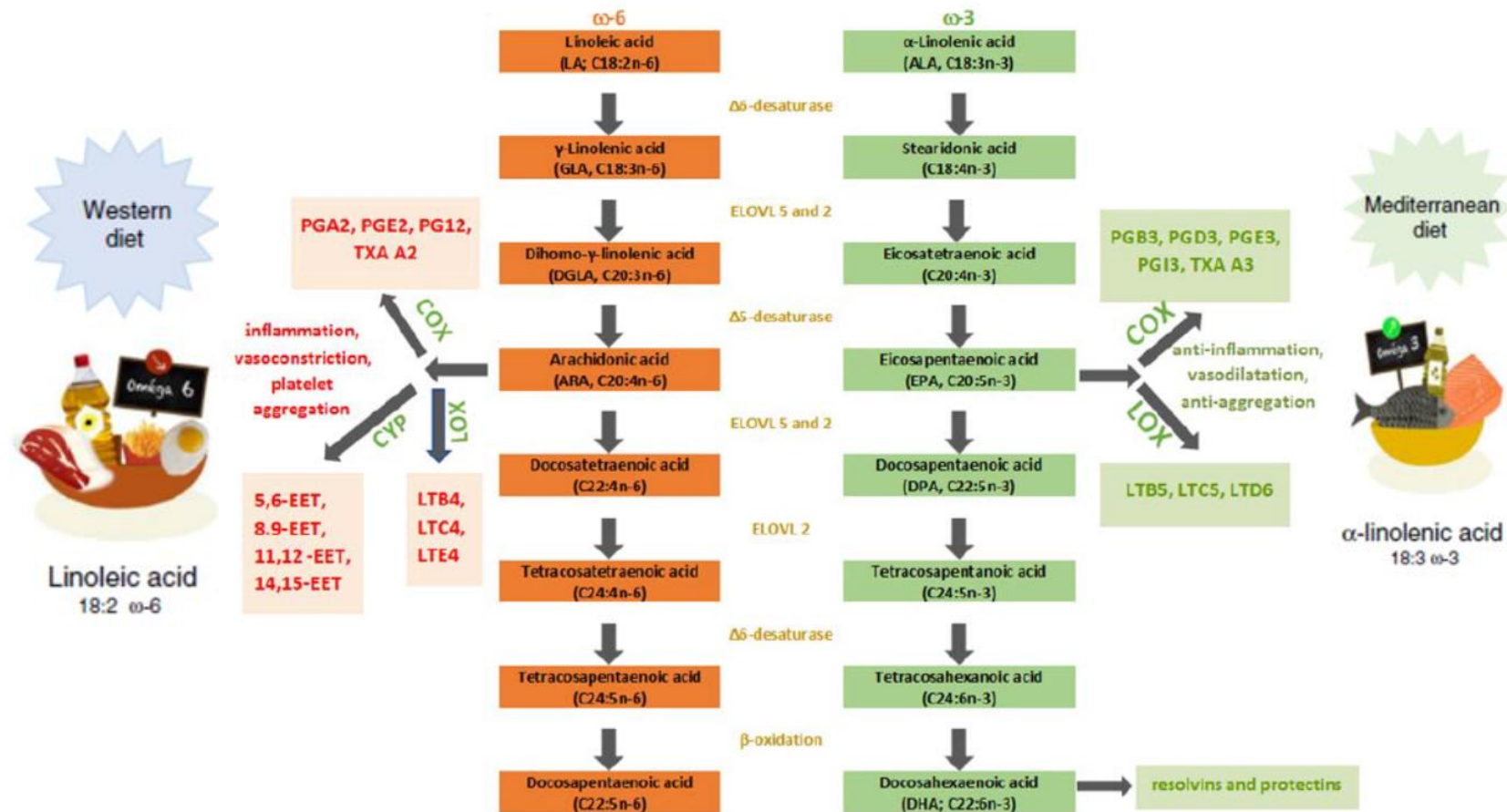
Omega 6



Omega 3



# Omega 3 and 6 Fatty Acids



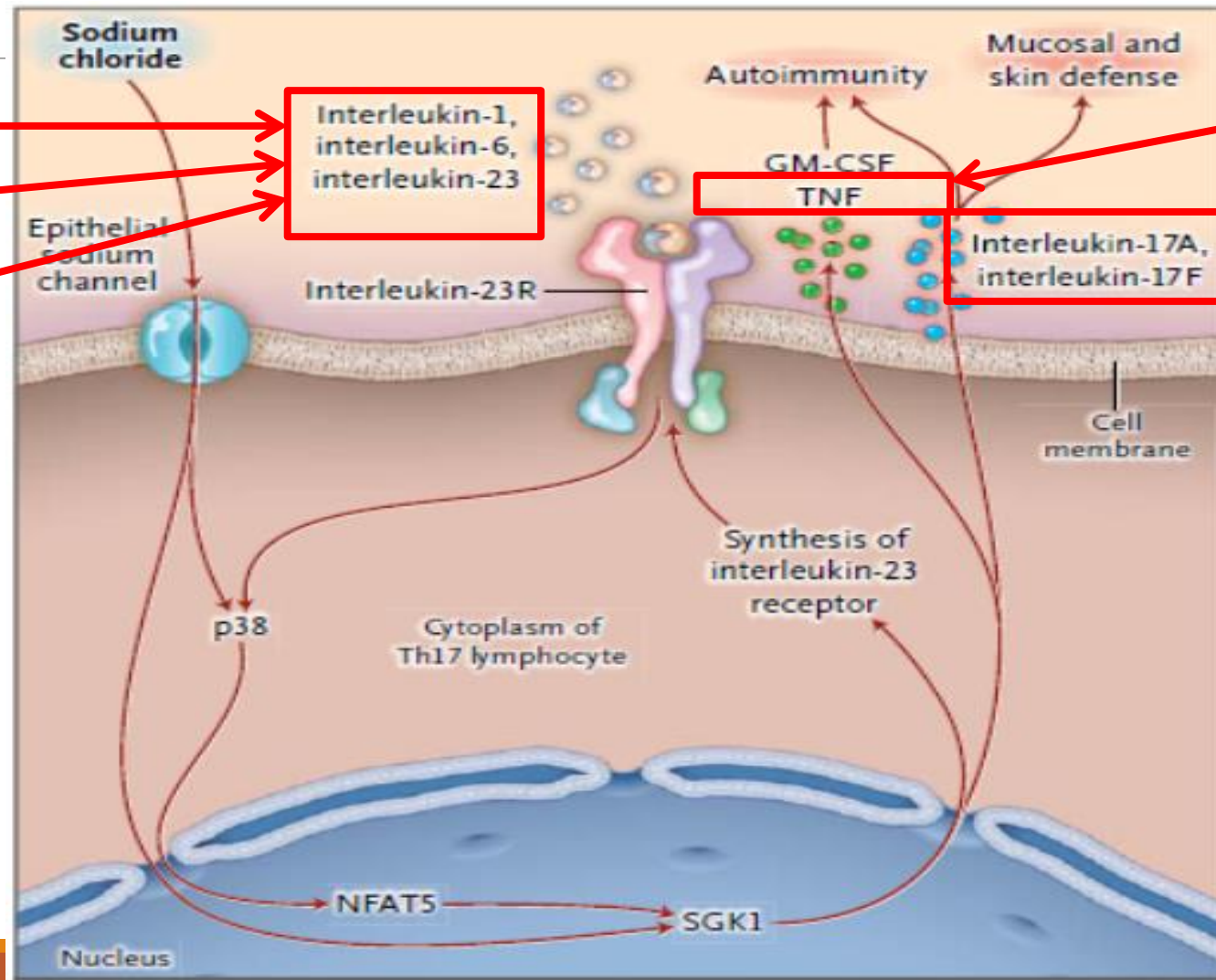
# Excess salt is inflammatory

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# Salty Taste to Autoimmunity

Anakinra  
Tocilizumab  
Ustekinumab



Adalimumab

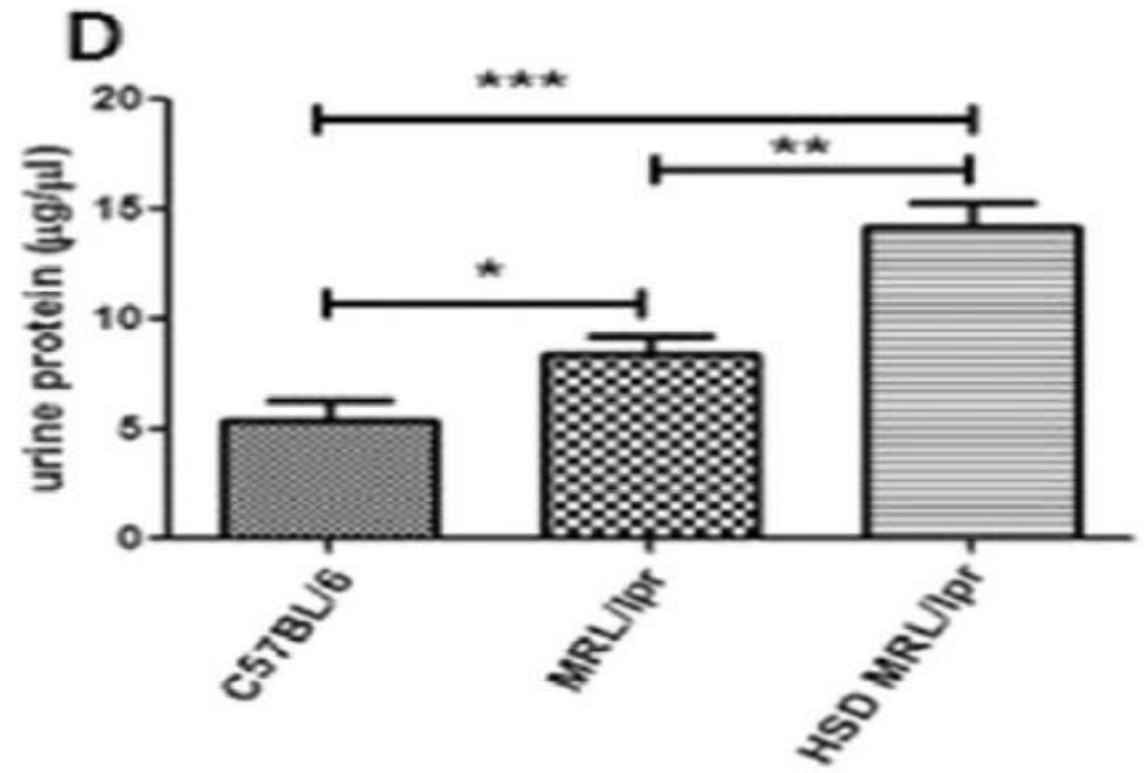
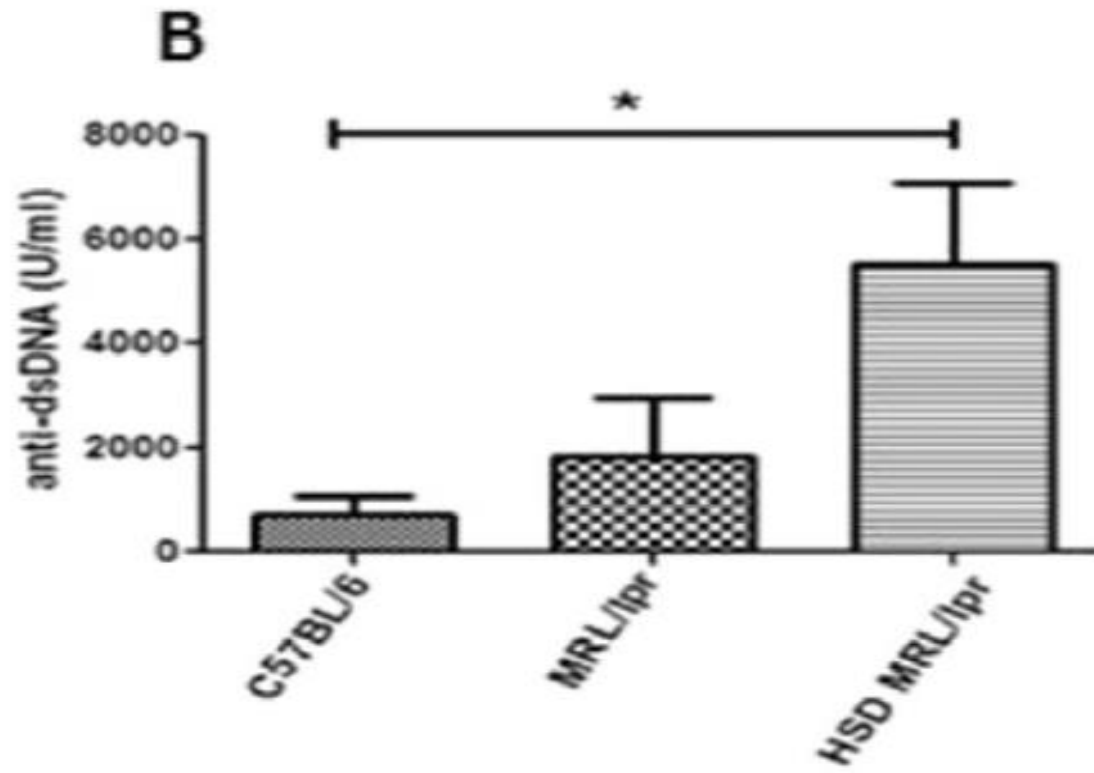
Secukinumab

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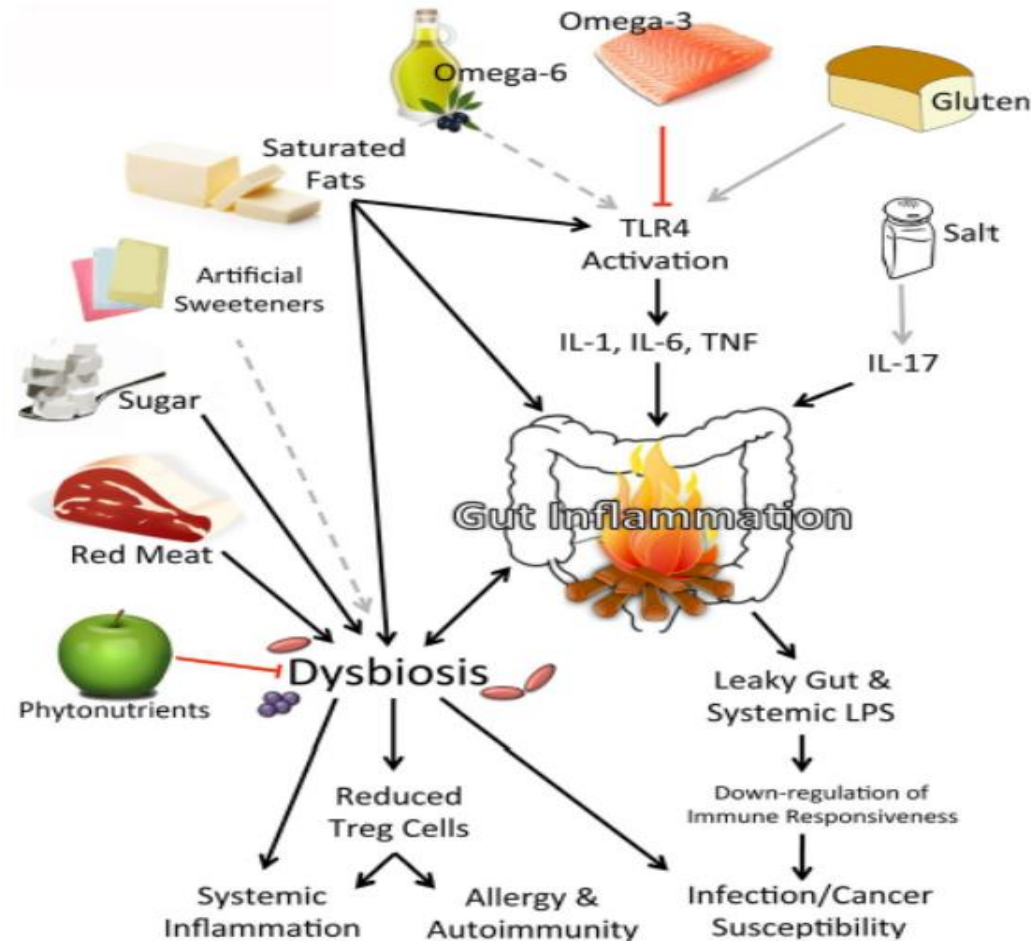
## Exacerbation of lupus nephritis by high sodium chloride related to activation of SGK1 pathway

Xi Yang<sup>1</sup>, Genhong Yao<sup>1</sup>, Weiwei Chen, Xiaojun Tang, Xuebing Feng, Lingyun Sun<sup>\*</sup>

*Department of Rheumatology and Immunology, The Affiliated Drum Tower Hospital of Nanjing University Medical School, Nanjing 210008 China*



# Western Diet and Inflammation



# Diet and Rheumatoid Arthritis

## THE LANCET

ORIGINAL ARTICLES | [VOLUME 338, ISSUE 8772, P899-902, OCTOBER 12, 1991](#)

### Controlled trial of fasting and one-year vegetarian diet in rheumatoid arthritis

[J Kjeldsen-Kragh, MD](#)  • [C.F Borchgrevink, MD](#) • [E Laerum, MD](#) • [M Haugen, BSc](#) • [M Eek, MD](#) • [O Frre, MD](#) • et al.









[Show all authors](#) • [Show footnotes](#)

Published: October 12, 1991 • DOI: [https://doi.org/10.1016/0140-6736\(91\)91770-U](https://doi.org/10.1016/0140-6736(91)91770-U)

SYSTEMATIC REVIEW



# The effects of the Mediterranean diet on rheumatoid arthritis prevention and treatment: a systematic review of human prospective studies

Casuarina Forsyth<sup>1</sup>  · Matina Kouvari<sup>2</sup>  · Nathan M. D'Cunha<sup>1,3</sup>  · Ekavi N. Georgousopoulou<sup>1,2,3</sup>  ·  
Demosthenes B. Panagiotakos<sup>1,2,4</sup>  · Duane D. Mellor<sup>1,3,5</sup>  · Jane Kellett<sup>1,3</sup>  · Nenad Naumovski<sup>1,3</sup> 

Received: 25 September 2017 / Accepted: 12 December 2017 / Published online: 18 December 2017

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# Objectives

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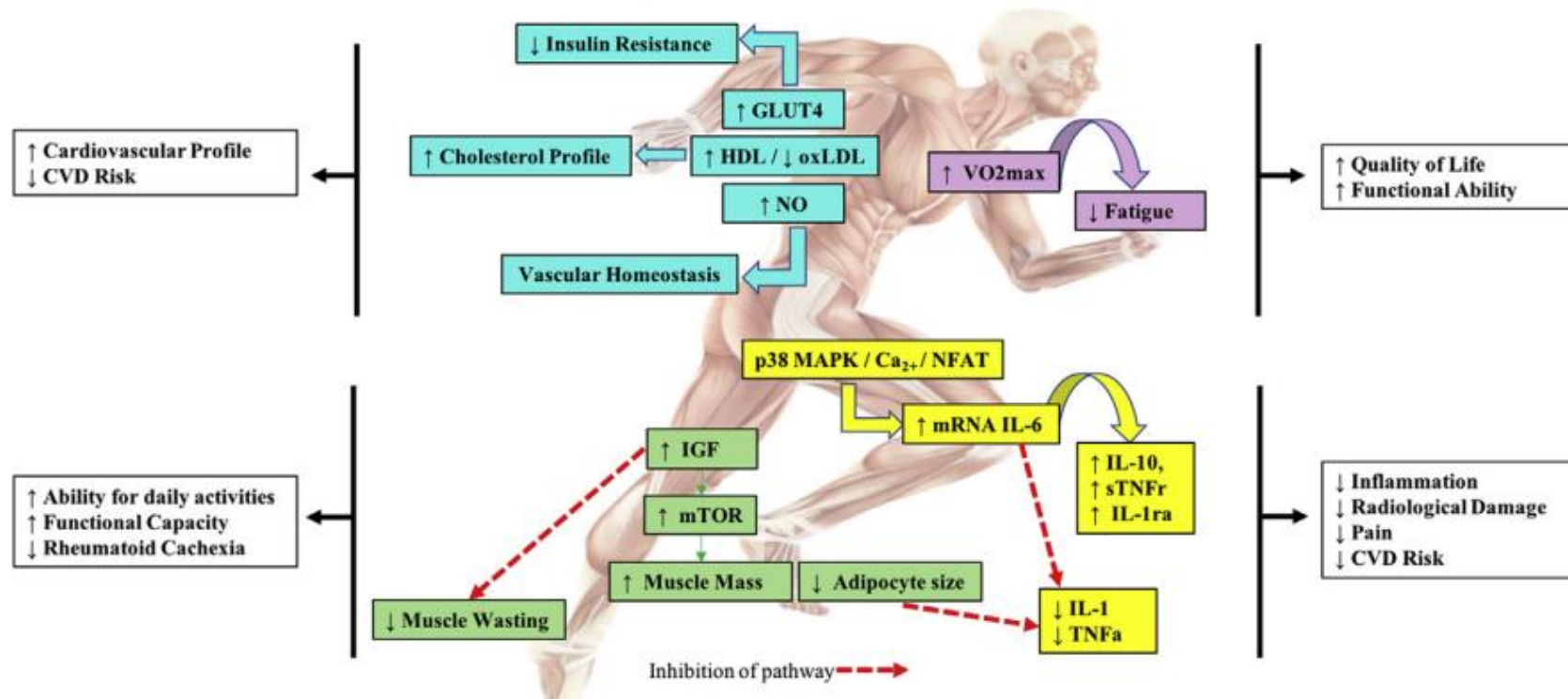
Main Objective: Learn the components that contribute to autoimmune disease and how to resolve it

Learn components that are important to overcome autoimmune disease

- Microbiome
- Nutrition
- Movement
- Herbs and Supplements
- Energy Medicine
- Mind body medicine
- Environmental medicine

# Movement as Medicine

G.S. Metsios, G.D. Kitas / Best Practice & Research Clinical Rheumatology xxx (xxxx) xxx



# Fibromyalgia and Exercise

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Review

> [Biomed Res Int.](#) 2017;2017:2356346. doi: 10.1155/2017/2356346. Epub 2017 Sep 20.

## Effectiveness of Therapeutic Exercise in Fibromyalgia Syndrome: A Systematic Review and Meta-Analysis of Randomized Clinical Trials

M Dolores Sosa-Reina <sup>1 2</sup>, Susana Nunez-Nagy <sup>3</sup>, Tomás Gallego-Izquierdo <sup>3</sup>,  
Daniel Pecos-Martín <sup>3</sup>, Jorge Monserrat <sup>1</sup>, Melchor Álvarez-Mon <sup>1 2</sup>

Affiliations + expand

PMID: 29291206 PMCID: [PMC5632473](#) DOI: [10.1155/2017/2356346](#)

**Free PMC article**

**Conclusions:** This study concludes that aerobic and muscle strengthening exercises are the most effective way of reducing pain and improving global well-being in people with fibromyalgia and that stretching and aerobic exercises increase health-related quality of life. In addition, combined exercise produces the biggest beneficial effect on symptoms of depression.

# Lupus and Exercise

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<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9720168/>

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# Objectives

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# Herbs and Supplements

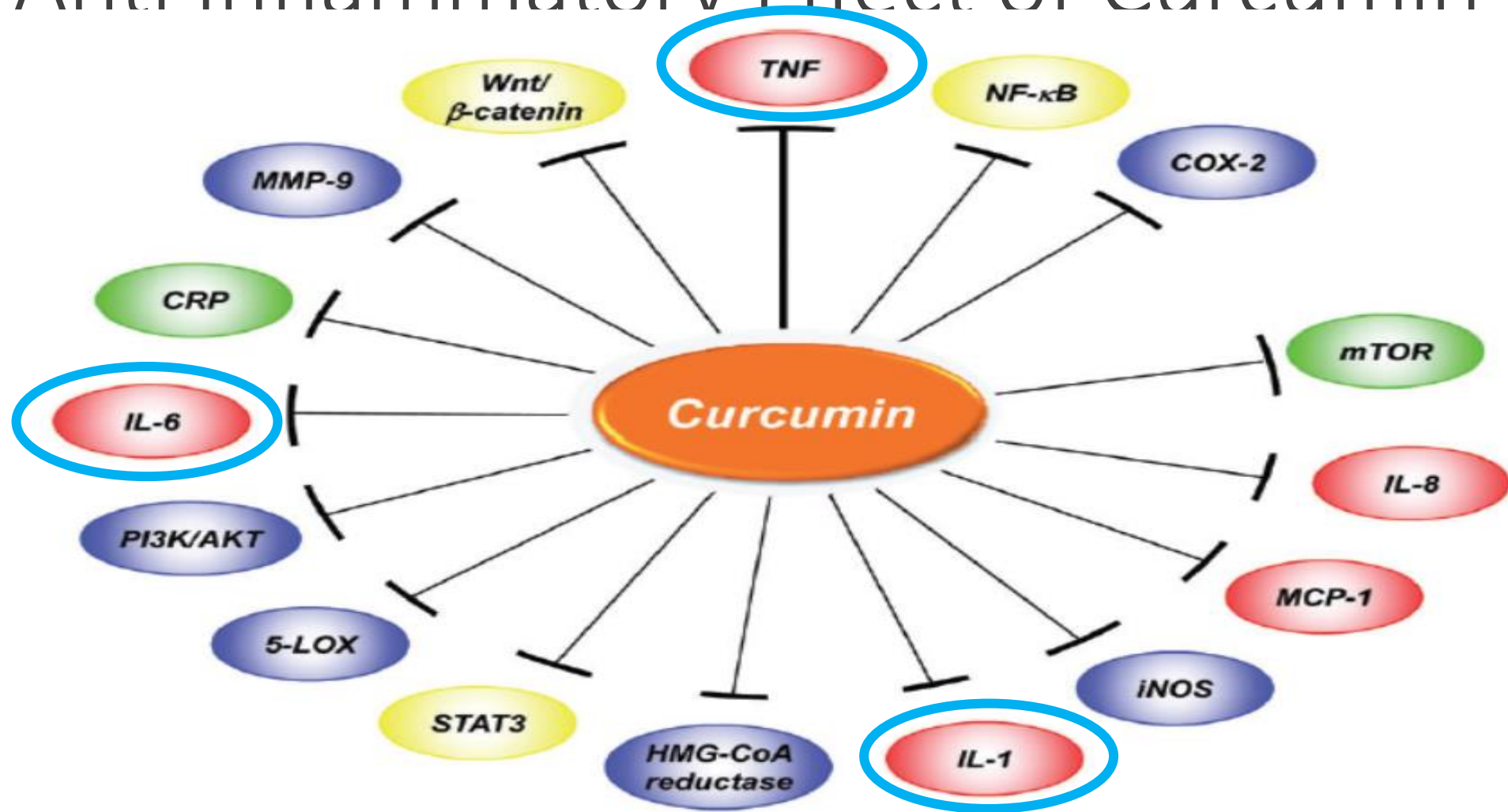


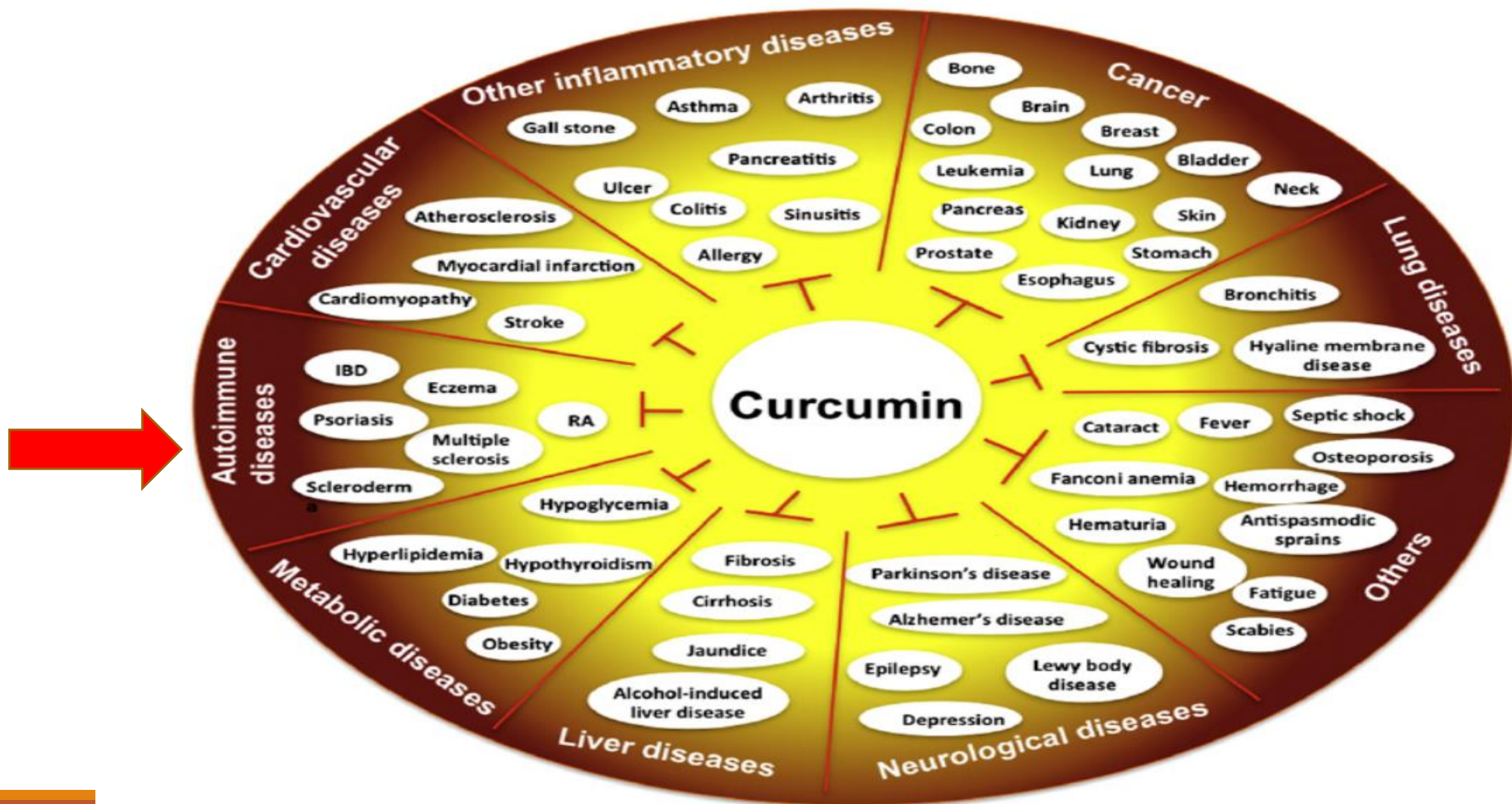
# Turmeric

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# Anti Inflammatory Effect of Curcumin





# Boswellia

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- Tree found in India



Research article

Open Access

## **A double blind, randomized, placebo controlled study of the efficacy and safety of 5-Loxin<sup>®</sup> for treatment of osteoarthritis of the knee**

Krishanu Sengupta<sup>1</sup>, Krishnaraju V Alluri<sup>2</sup>, Andey Rama Satish<sup>3</sup>, Simanchala Mishra<sup>4</sup>, Trimurtulu Golakoti<sup>5</sup>, Kadainti VS Sarma<sup>6</sup>, Dipak Dey<sup>7</sup> and Siba P Raychaudhuri<sup>8</sup>

- Main side effect is gastric irritation
- Average dose is 400-1200mg three times daily



# N-Acetylcysteine

Randomized Controlled Trial

► [Trials. 2023 Feb 21;24\(1\):129. doi: 10.1186/s13063-023-07083-9.](#)

## Effects of N-acetylcysteine on systemic lupus erythematosus disease activity and its associated complications: a randomized double-blind clinical trial study

Mitra Abbasifard <sup>1 2</sup>, Hossein Khorramdelazad <sup>3</sup>, Abdolrahman Rostamian <sup>4</sup>, Mohsen Rezaian <sup>5</sup>, Pooya Saeed Askari <sup>1</sup>, Gholamhosein Taghipur Khajeh Sharifi <sup>6</sup>, Moein Kardoust Parizi <sup>1</sup>, Mobina Taghipour Khajeh Sharifi <sup>7</sup>, Seyed Reza Najafizadeh <sup>8</sup>

Affiliations + expand

PMID: 36810107 PMCID: PMC9945717 DOI: 10.1186/s13063-023-07083-9

[Free PMC article](#)

# Omega 3 Fatty Acids in Rheumatic Diseases

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Clinical benefits appear at minimum dose of 3 grams of EPA and DHA for Rheumatoid Arthritis



# Sjogrens and Omega 3

➤ Clin Exp Rheumatol. 2020 Jul-Aug;38 Suppl 126(4):34-39. Epub 2020 Sep 3.

## **Omega-3 and omega-6 fatty acids in primary Sjögren's syndrome: clinical meaning and association with inflammation**

Carlos Y Castrejón-Morales<sup>1</sup>, Omar Granados-Portillo<sup>2</sup>, Ivette Cruz-Bautista<sup>3</sup>,  
Narilly Ruiz-Quintero<sup>4</sup>, Iliana Manjarrez<sup>5</sup>, Guadalupe Lima<sup>1</sup>, Diego F Hernández-Ramírez<sup>1</sup>,  
Miguel Astudillo-Angel<sup>1</sup>, Luis Llorente<sup>1</sup>, Gabriela Hernández-Molina<sup>6</sup>

Affiliations + expand

PMID: 32896265

**Free article**

# Vitamin D and the Immune System

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*Lupus* (2018) 0, 1–9

[journals.sagepub.com/home/lup](http://journals.sagepub.com/home/lup)

## **REVIEW**

### **Vitamin D in SLE: a role in pathogenesis and fatigue? A review of the literature**


MH Nguyen<sup>1,2</sup>, K Bryant<sup>2</sup> and SG O'Neill<sup>1,2</sup>

<sup>1</sup>Rheumatology Department, Liverpool Hospital, Australia; and <sup>2</sup>SWS Clinical School, University of New South Wales, and the Ingham Institute for Applied Medical Research, Australia

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Research | [Open Access](#) | [Published: 12 November 2021](#)

# Association between vitamin D deficiency and hypothyroidism: results from the National Health and Nutrition Examination Survey (NHANES) 2007–2012

[Sandeep Appunni](#), [Muni Rubens](#), [Venkataraghavan Ramamoorthy](#), [Anshul Saxena](#), [Raees Tonse](#), [Emir Veledar](#) & [Peter McGranaghan](#) 

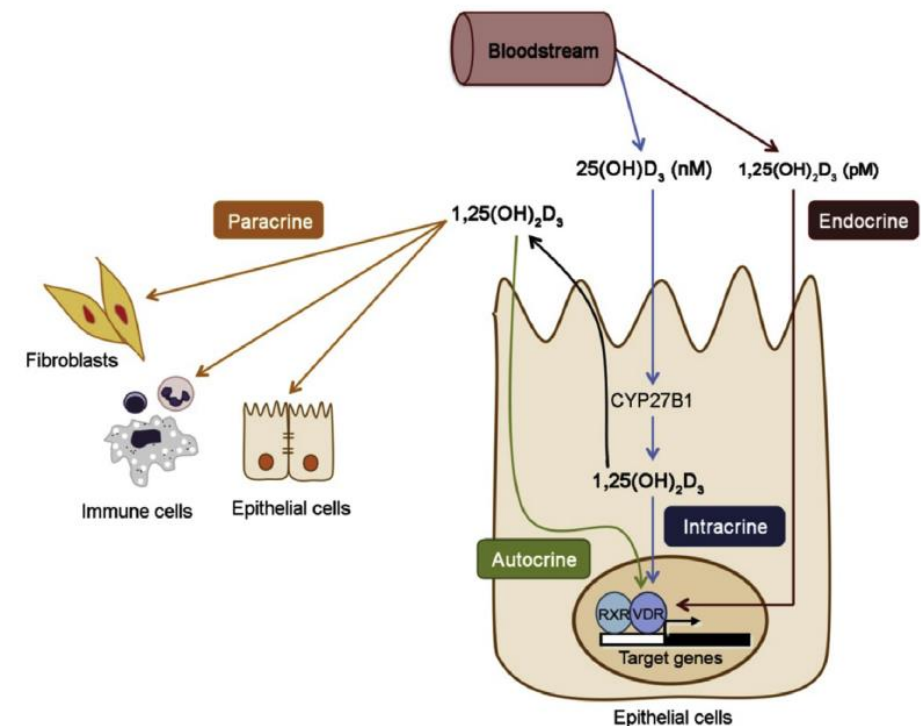
[BMC Endocrine Disorders](#) **21**, Article number: 224 (2021) | [Cite this article](#)

**30k** Accesses | **8** Citations | **213** Altmetric | [Metrics](#)

# Vitamin D and the Gut

Vitamin D helps with maintaining the gut barrier

Vitamin D deficiency has been associated with inflammation



# Objectives

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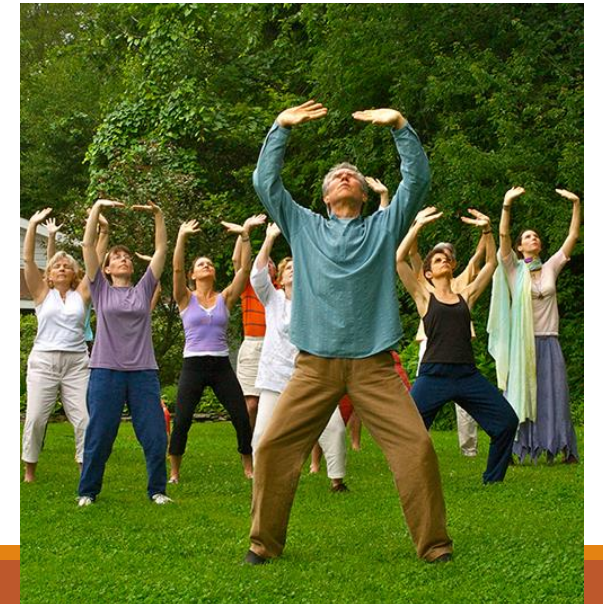
Learn components that are important to overcome autoimmune disease

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# Energy Medicine

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- Two types: veritable and putative
  - Veritable: can be measured
  - Putative: Yet to be measured with our current technology
- Includes Reiki, Qigong, Taichi, Yoga, Prayer, Acupuncture



# Tai Chi



**Table 3. Nonpharmacologic recommendations for the management of knee OA**

We strongly recommend that patients with knee OA should do the following:

Participate in cardiovascular (aerobic) and/or resistance land-based exercise

Participate in aquatic exercise

Lose weight (for persons who are overweight)

We conditionally recommend that patients with knee OA should do the following:

Participate in self-management programs

Receive manual therapy in combination with supervised exercise

Receive psychosocial interventions

Use medially directed patellar taping

Wear medially wedged insoles if they have lateral compartment OA

Wear laterally wedged subtalar strapped insoles if they have medial compartment OA

Be instructed in the use of thermal agents

Receive walking aids, as needed

Participate in tai chi programs

Be treated with traditional Chinese acupuncture\*

Be instructed in the use of transcutaneous electrical stimulation\*

We have no recommendations regarding the following:

Participation in balance exercises, either alone or in combination with strengthening exercises

Wearing laterally wedged insoles

Receiving manual therapy alone

Wearing knee braces

Using laterally directed patellar taping

\* These modalities are conditionally recommended only when the patient with knee osteoarthritis (OA) has chronic moderate to severe pain and is a candidate for total knee arthroplasty but either is unwilling to undergo the procedure, has comorbid medical conditions, or is taking concomitant medications that lead to a relative or absolute contraindication to surgery or a decision by the surgeon

# Tai Chi

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- Fibromyalgia
  - 52 week prospective randomized single blind trial
    - Tai chi vs aquatic therapy
    - Tai chi had similar or greater improvement in symptoms than aerobic exercise



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# Mind Body Medicine

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Deep breathing

Yoga

MSBR

Clinical Hypnosis

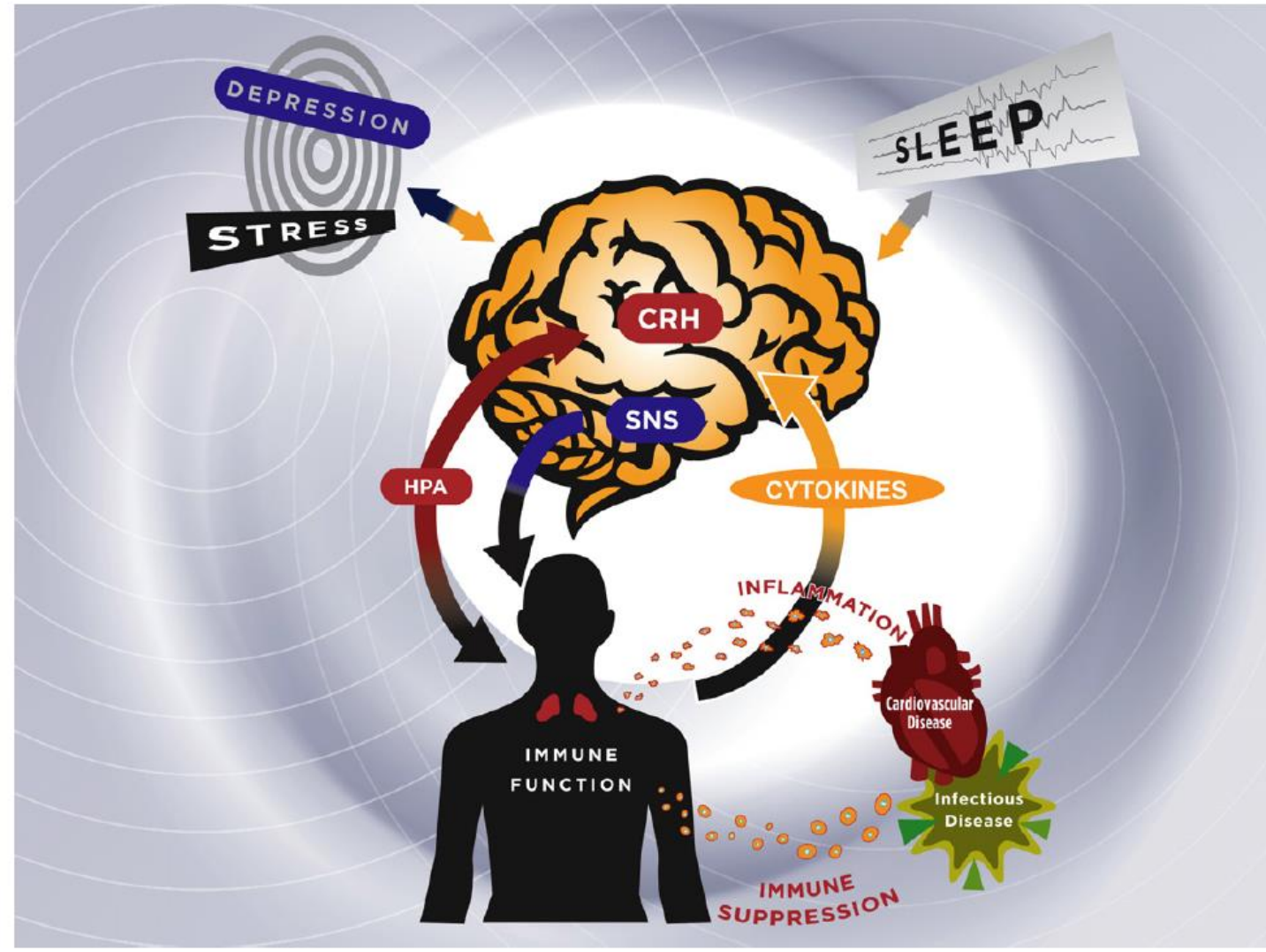
Biofeedback

Mindful Eating

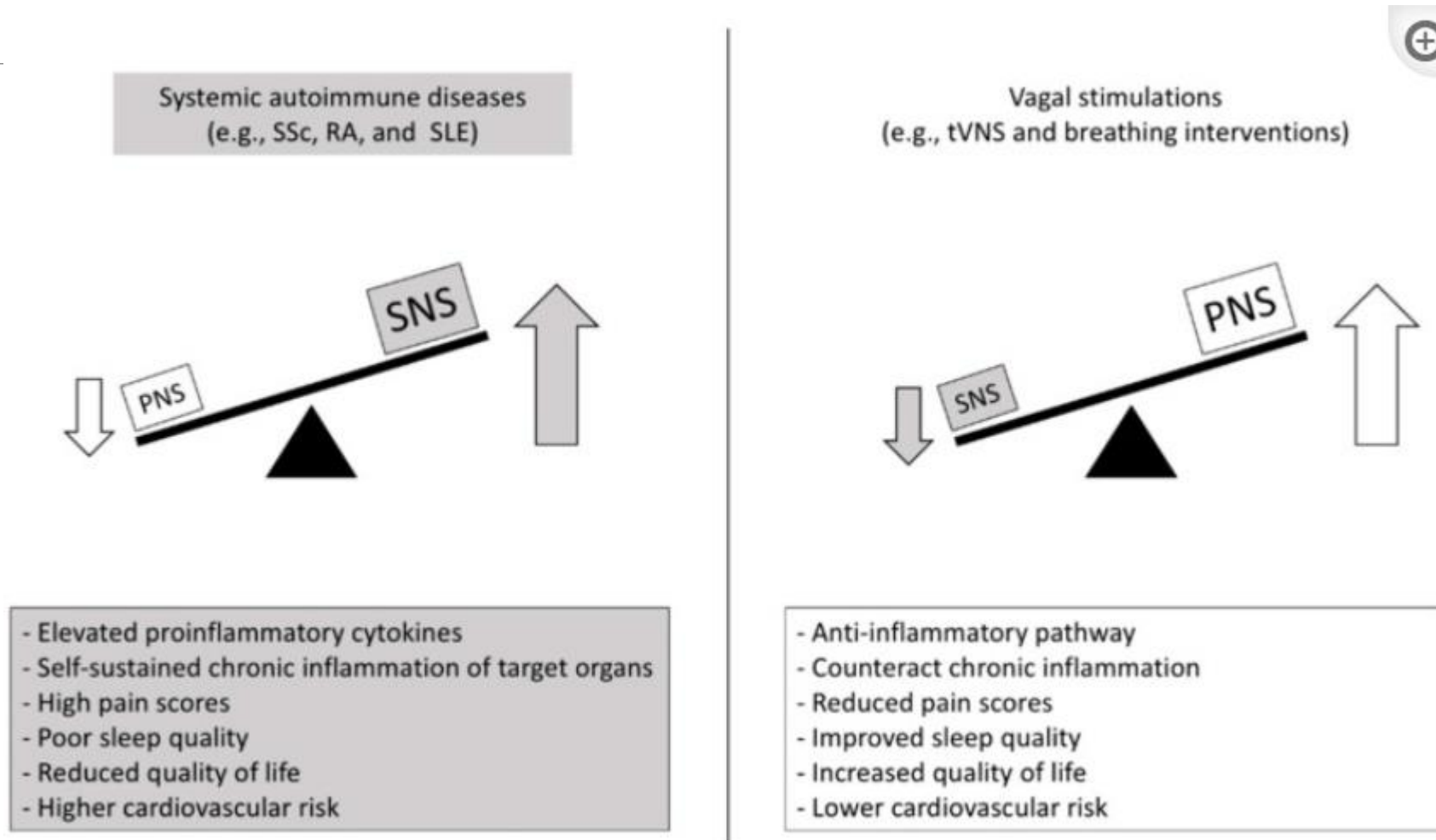
Guided Imagery



# Psychoneuroimmunology



# The importance of the vagus nerve



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# Environmental Medicine



# Pesticides

## Arthritis Care & Research

AMERICAN COLLEGE  
of RHEUMATOLOGY  
Empowering Rheumatology Professionals

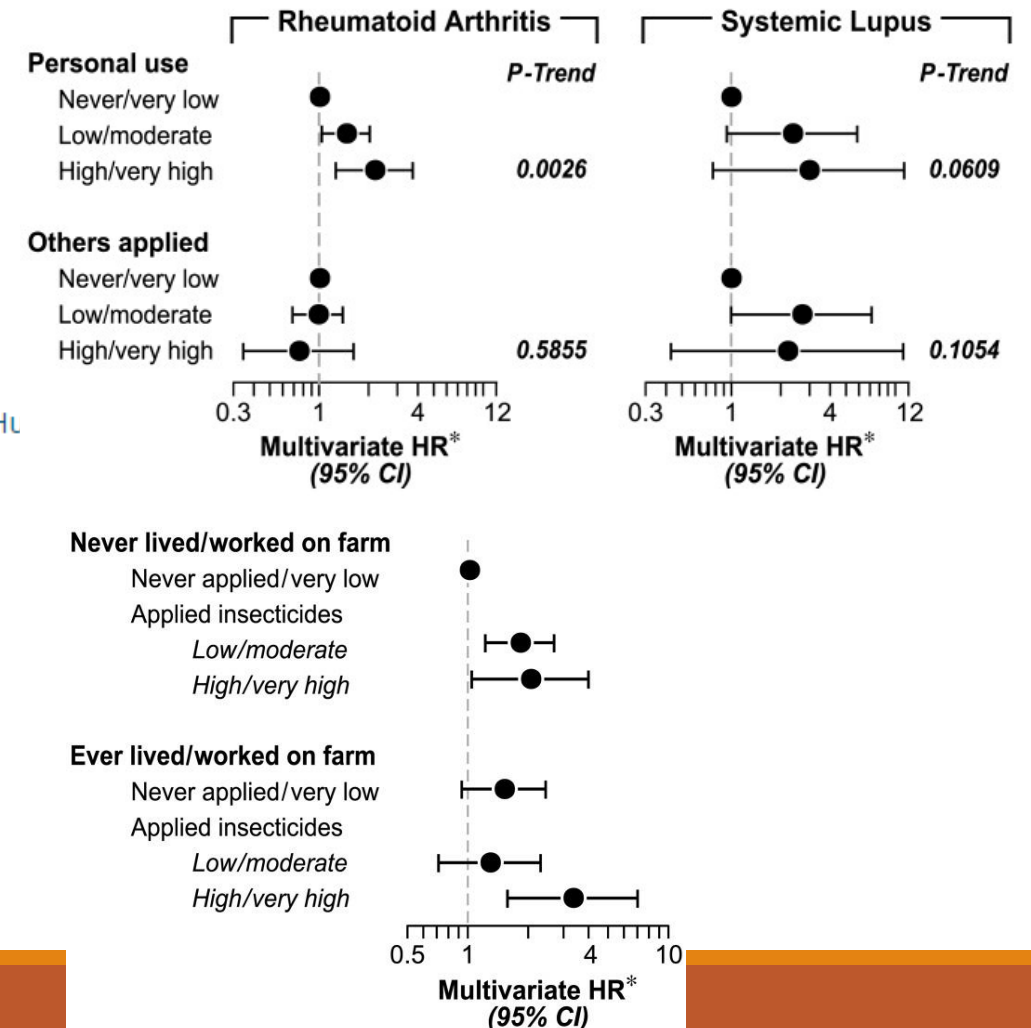
Autoimmune Disease | [Free Access](#)

### Insecticide use and risk of rheumatoid arthritis and systemic lupus erythematosus in the Women's Health Initiative Observational Study

Christine G. Parks✉, Brian T. Walitt, Mary Pettinger, Jiu-Chuan Chen, Anneclaire J. de Roos, Julie H. Gloria Sarto, Barbara V. Howard



Parks C. Arthritis Care and Research. 2011





# Environmental pollutants and the immune response

Takafumi Suzuki<sup>1</sup>, Takanori Hidaka<sup>1</sup>, Yoshito Kumagai<sup>2</sup> and Masayuki Yamamoto<sup>1</sup>✉

**Environmental pollution is one of the most serious challenges to health in the modern world. Pollutants alter immune responses and can provoke immunotoxicity. In this Review, we summarize the major environmental pollutants that are attracting wide-ranging concern and the molecular basis underlying their effects on the immune system. Xenobiotic receptors, including the aryl hydrocarbon receptor (AHR), sense and respond to a subset of environmental pollutants by activating the expression of detoxification enzymes to protect the body. However, chronic activation of the AHR leads to immunotoxicity. KEAP1-NRF2 is another important system that protects the body against environmental pollutants. KEAP1 is a sensor**

Autoimmune  
Diseases

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## The Potential Roles of Bisphenol A (BPA) Pathogenesis in Autoimmunity

[Datis Kharrazian](#)<sup>1, 2, \*</sup>

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### Abstract

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Bisphenol A (BPA) is a monomer found in commonly used consumer plastic goods. Although much attention in recent years has been placed on BPA's impact as an endocrine disruptor, it also appears to activate many immune pathways involved in both autoimmune disease development and autoimmune reactivity provocation. The current scientific literature is void of research papers linking BPA directly to human or animal onset of autoimmunity. This paper explores the impact of BPA on immune reactivity and the potential roles these mechanisms may have on the development

# Styrene

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- Considered a probable carcinogen by the International Agency for Research on Cancer
- 72,000 styrene exposed workers in the plastics industry.
- Association between occupational styrene exposure and systemic sclerosis



# Summary

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- Focus on fiber and phytonutrients as a foundation to helping overcome autoimmune disease, eating as close to a whole food plant based diet as possible
- Movement is medicine, don't forget to move everyday
- Herbs and supplements can be used as complementary to the foundation of a plant based diet
- Be mindful of stress levels and use strategies to minimize stress
- Environmental toxins are polluting our earth and our bodies, try to switch to nontoxic supplies
- We cannot control everything that happens to us, focus on what we can control

# Lifestyle Medicine as Treatment for Autoimmune Disease

Lauren Malinowski, DO; Micah Yu, MD; Susan Hull, DO

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