

Overcoming Autoimmune Disease

MICAH YU, MD MHA MHS ABOIM DIPABLM IFMCP

About Me

Internal Medicine Residency and Rheumatology Fellowship at Loma Linda University

Board certified in Integrative Medicine

Diplomate of American Board of Lifestyle Medicine

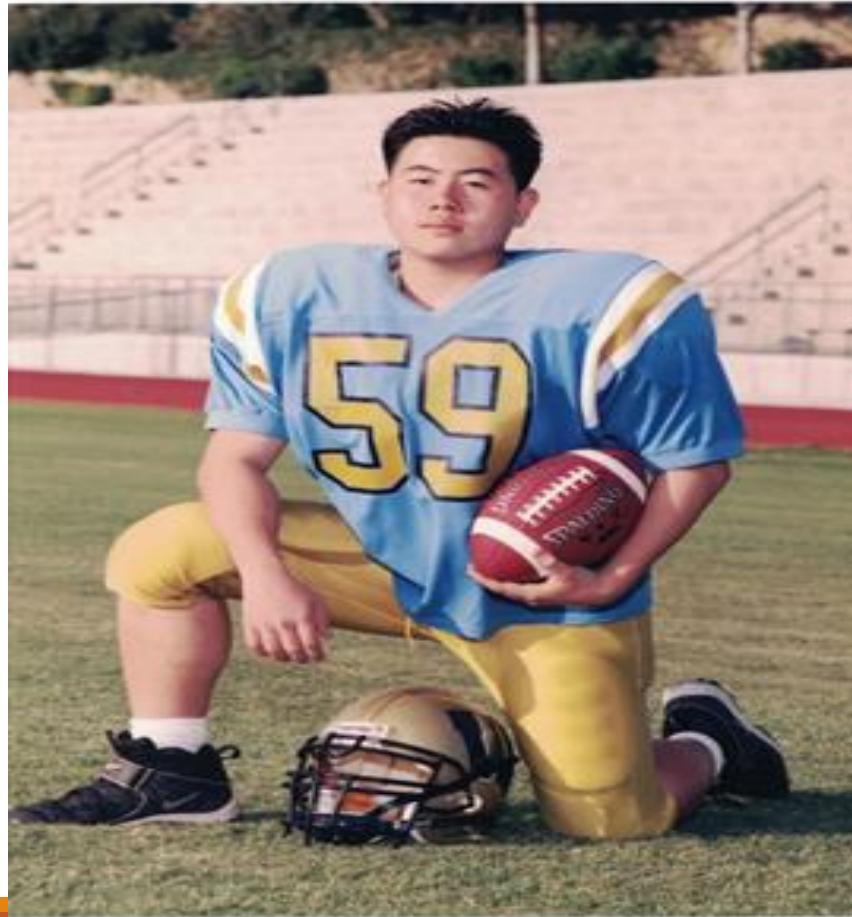
Certified in Functional Medicine at the Institute of Functional Medicine

Owner of the Dr. Lifestyle Clinic

Childhood



High School



Proteinholic



Gout



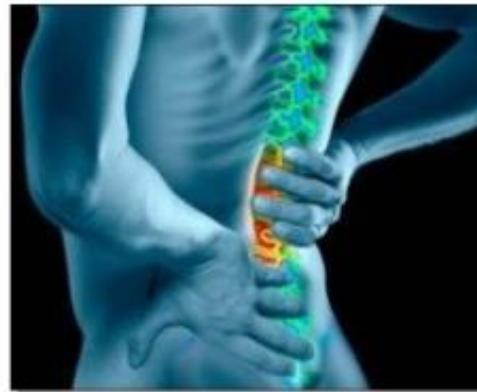
Unexplained Symptoms



Spondyloarthritis

What is Spondyloarthritis?

The Classic Areas of Pain & Inflammation associated with Spondyloarthritis.



Enough was enough



• 2009



2019

My Labs

2016

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

2018

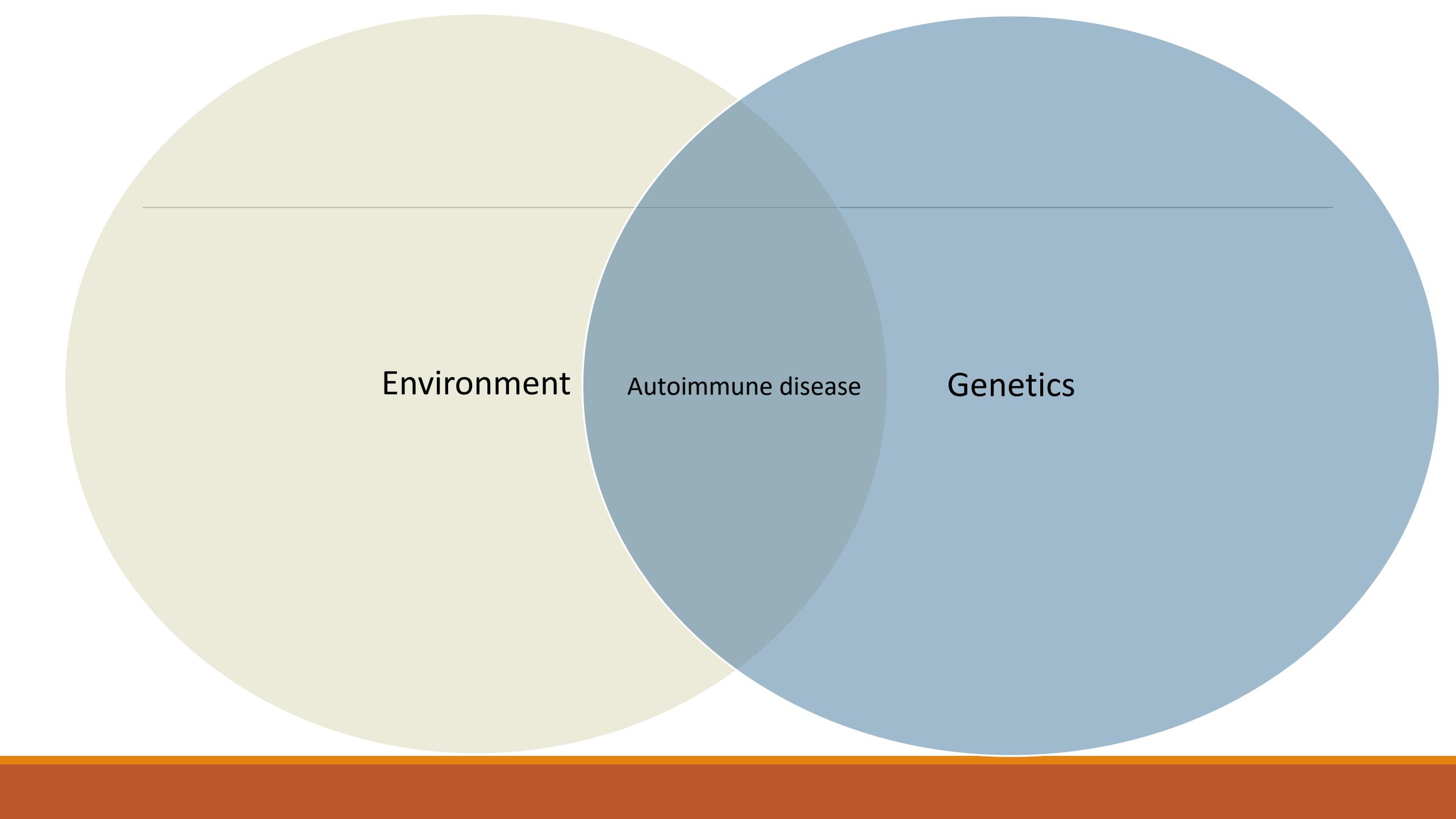
C-Reactive Protein	1.0 mg/dL	0.0 - 0.8 mg/dL
C-Reactive Protein	<0.3 mg/dL	0.0 - 0.8 mg/dL

Objectives

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



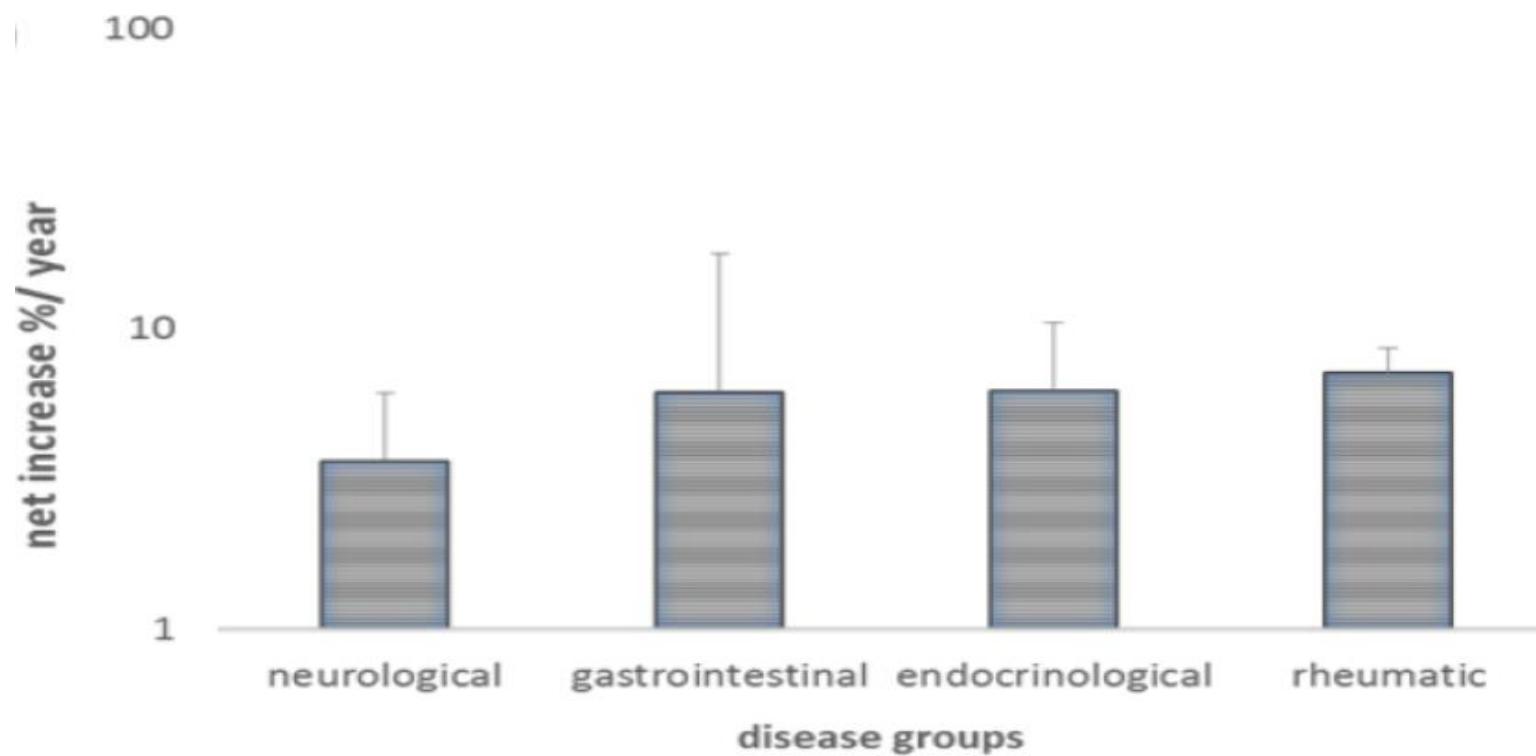
A Venn diagram illustrating the relationship between three concepts: Environment, Genetics, and Autoimmune disease. The diagram consists of three overlapping circles. The leftmost circle is light beige and labeled "Environment". The rightmost circle is light blue and labeled "Genetics". The middle circle, which overlaps both the Environment and Genetics circles, is a darker shade of blue and labeled "Autoimmune disease". The overlapping areas between the three circles represent the shared influences or mechanisms between these factors.

Environment

Autoimmune disease

Genetics

Autoimmune Disease on the Rise





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

GENETICS HEALTH MEDICAL SCIENCES RESEARCH

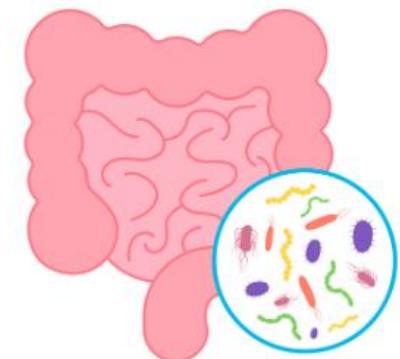
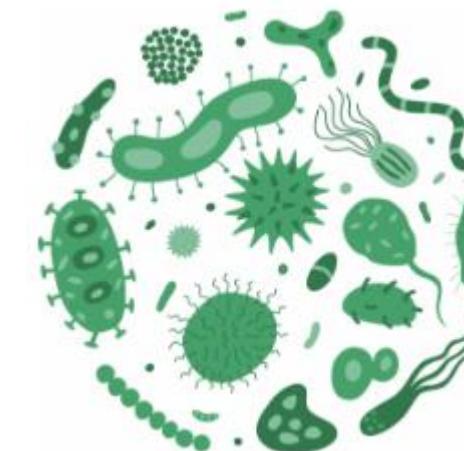
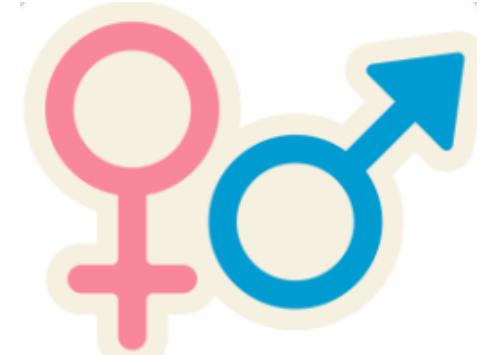
SHARE THIS



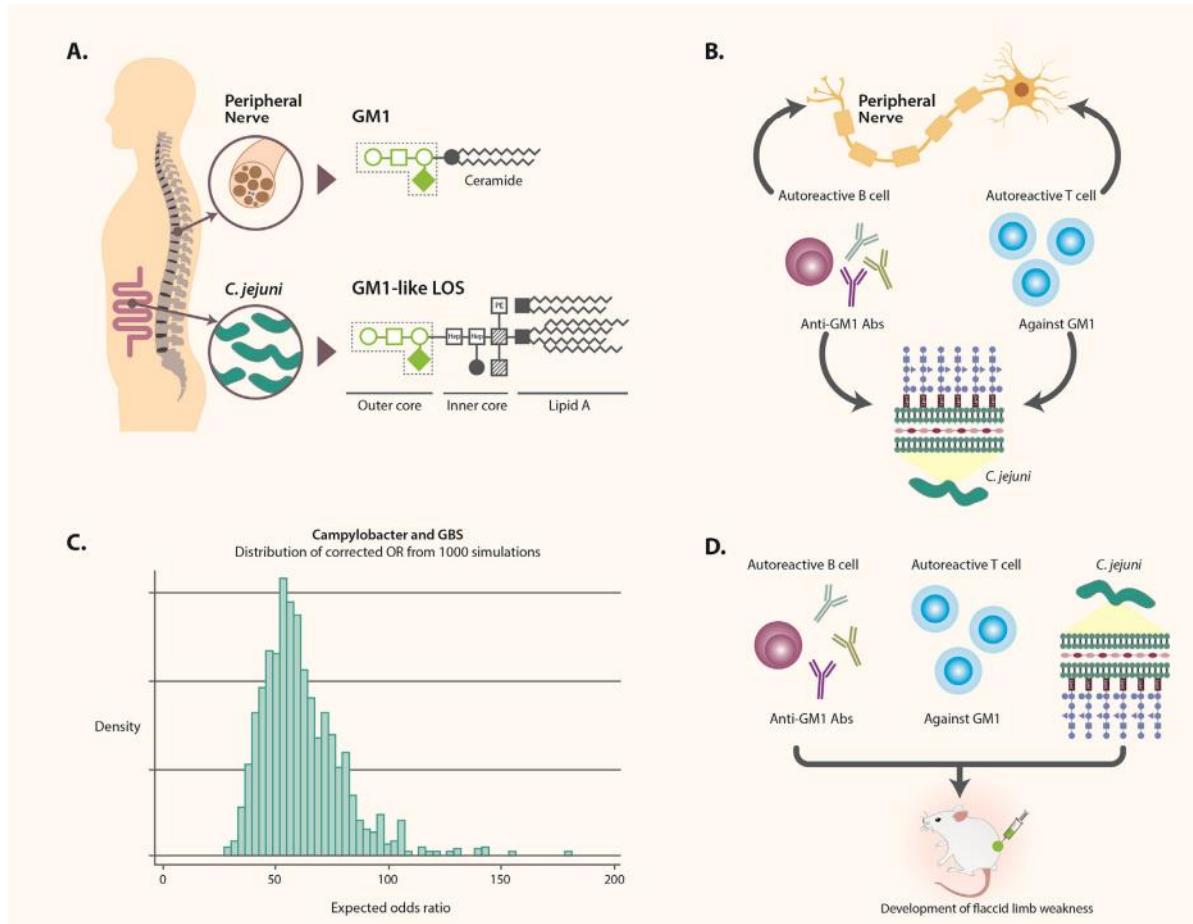
A new population-based study of 22 million people shows that autoimmune disorders now affect about one in ten individuals. The work, published in *The Lancet*, also highlights important socioeconomic, seasonal, and regional differences for several autoimmune disorders and provides new clues on possible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

What causes Autoimmune Diseases?

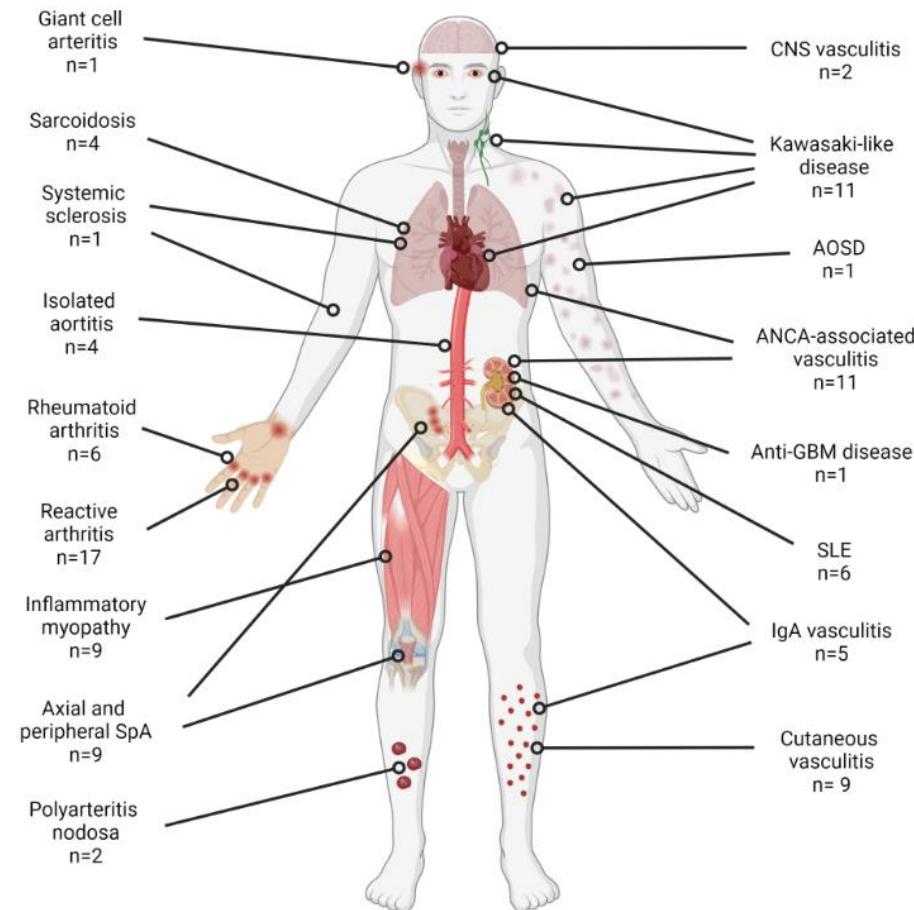
Different Risk Factors and Different Mechanisms



Molecular mimicry



Covid 19 and Autoimmunity



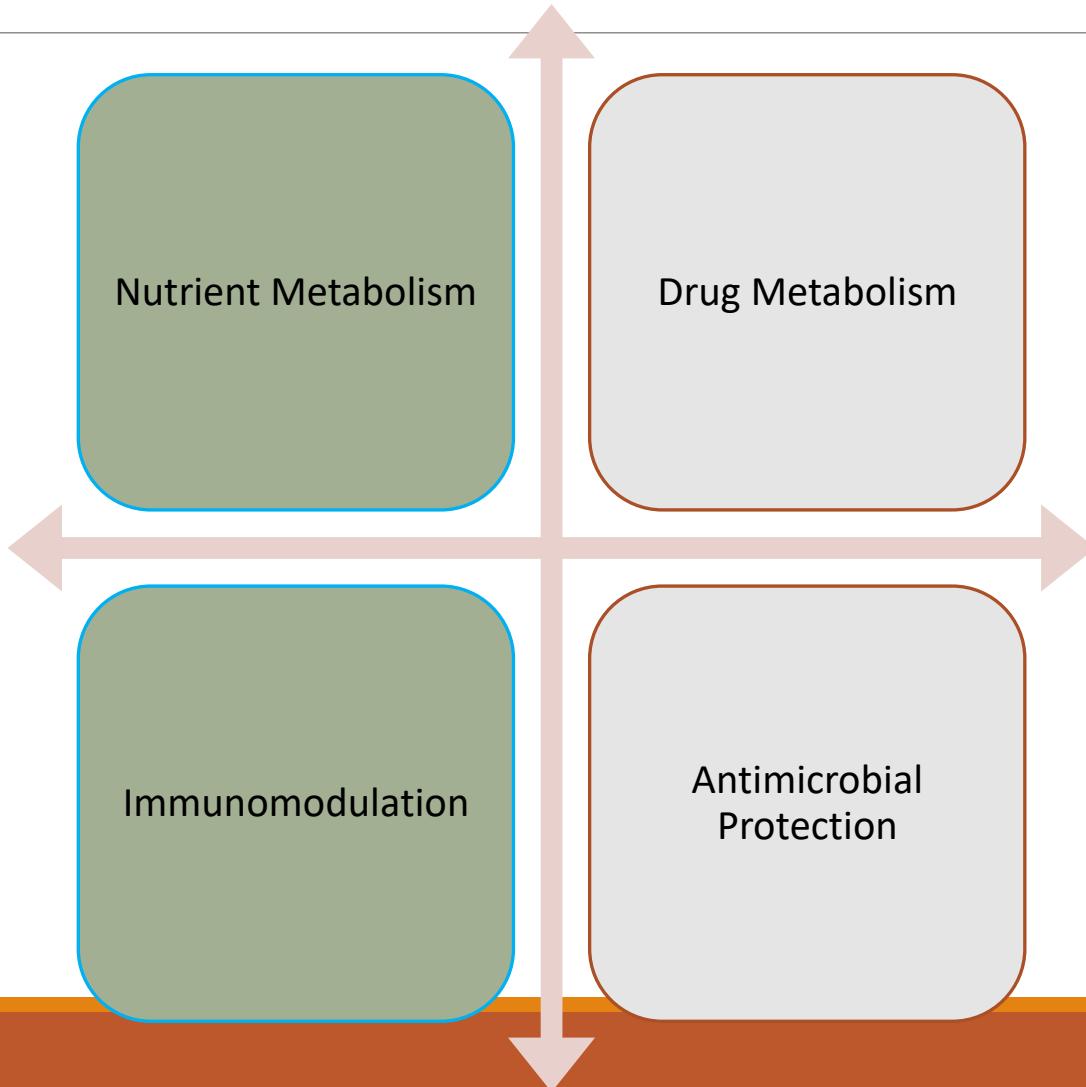
Objectives

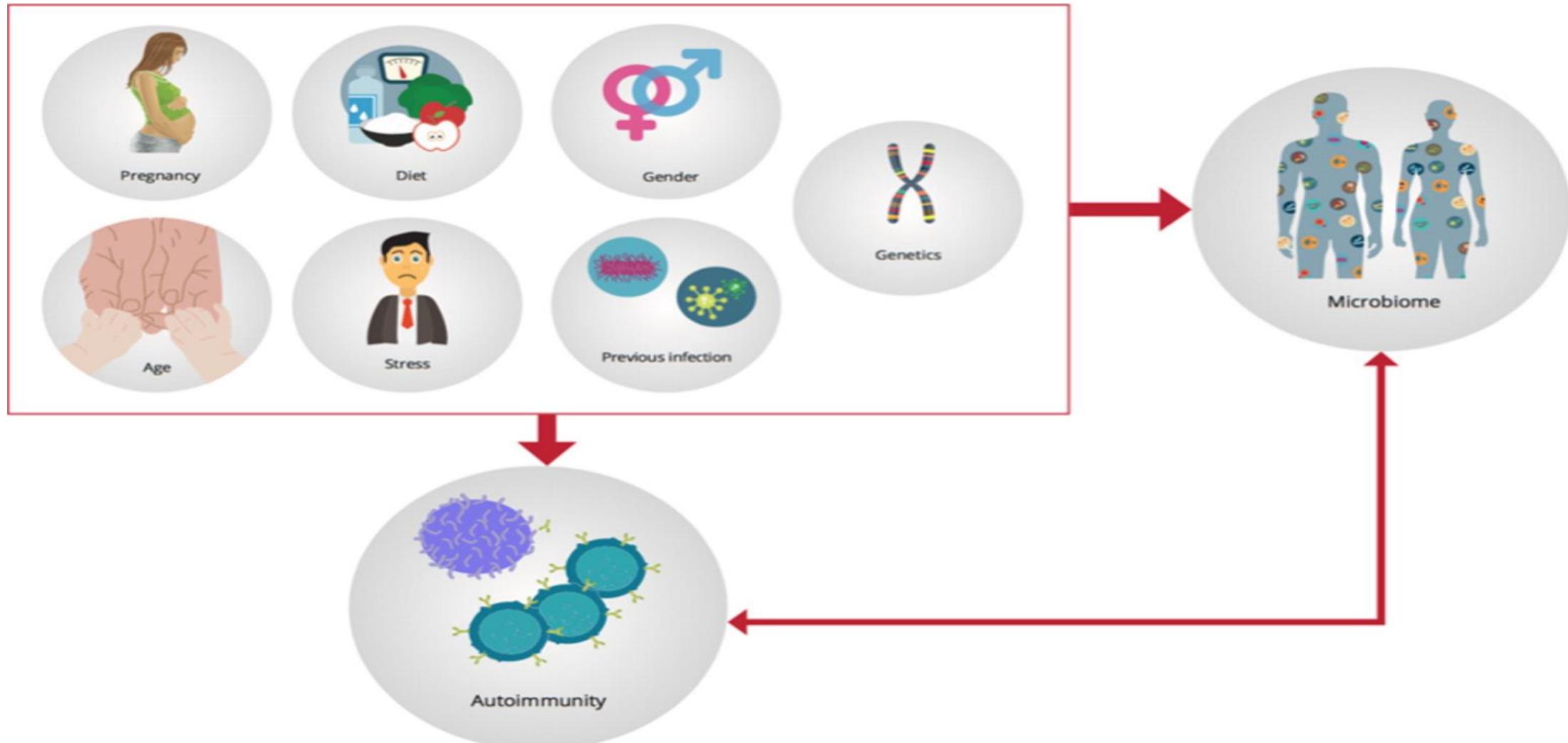
Main Objective: Learn the components that contribute to autoimmune disease and how to resolve it

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Role of Gut Microbiome





Gut dysbiosis

Systemic Lupus Erythematosus

Ankylosing Spondylitis

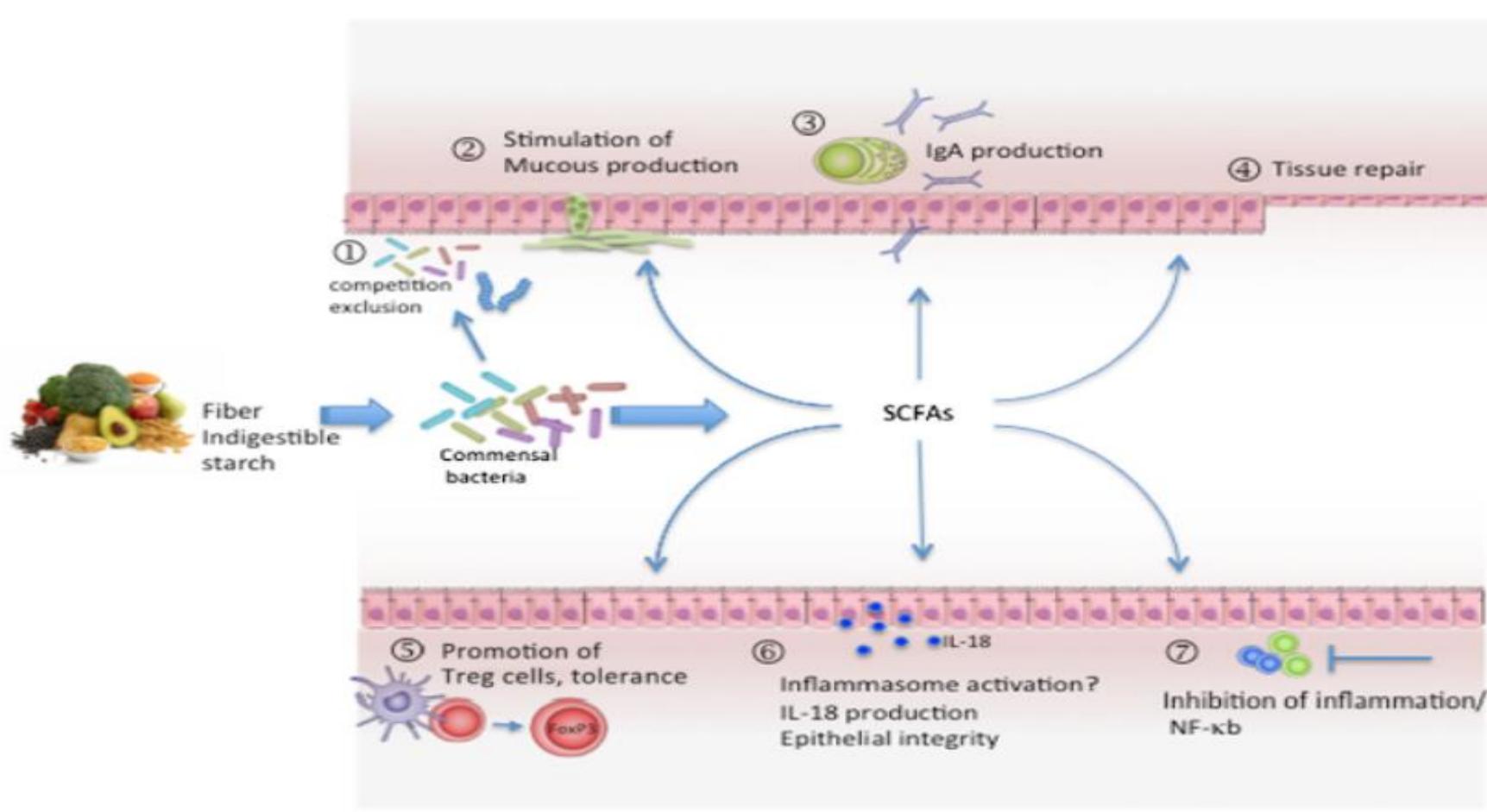
Psoriatic Arthritis

Rheumatoid Arthritis

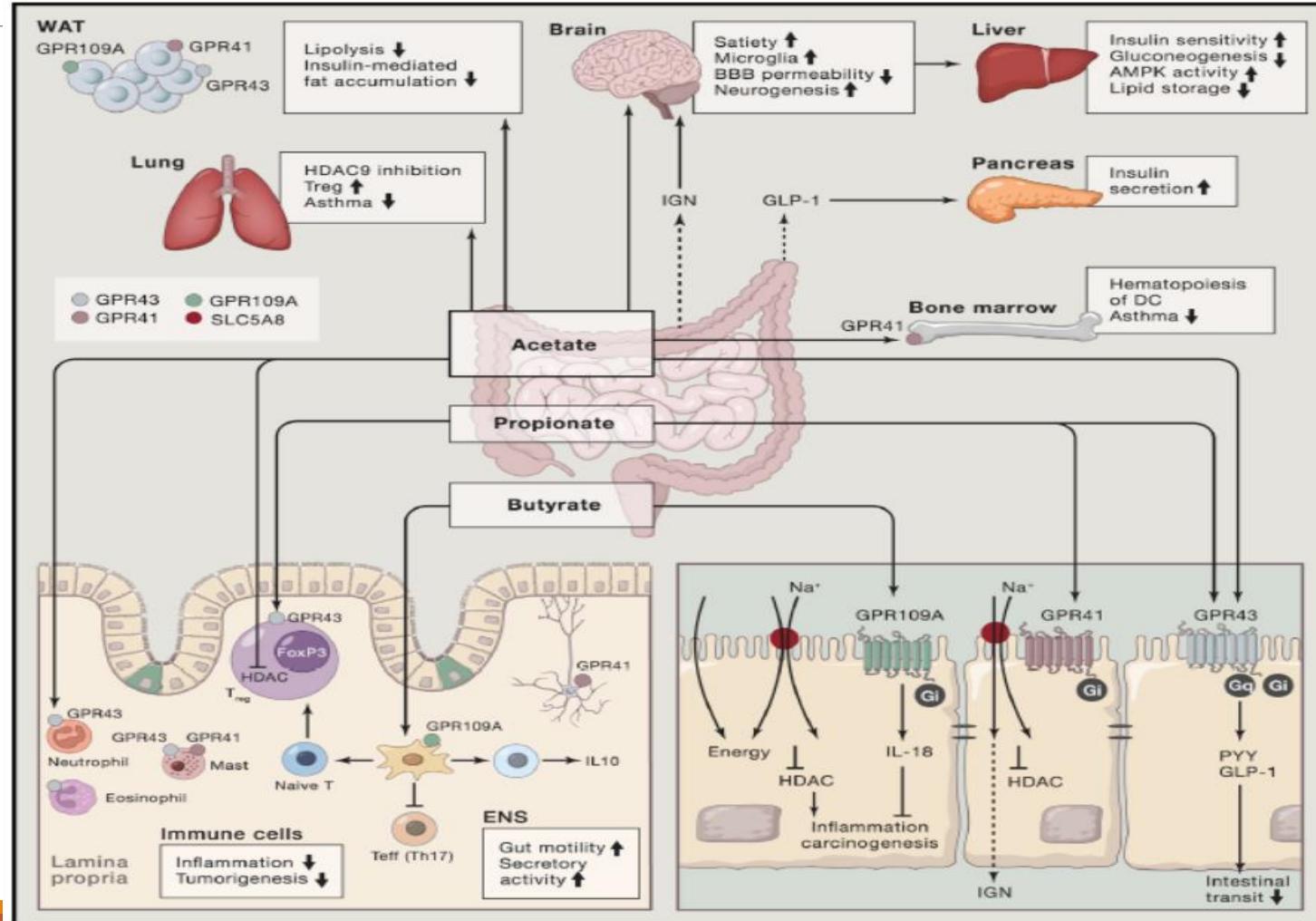
Sjogrens syndrome

Vasculitis

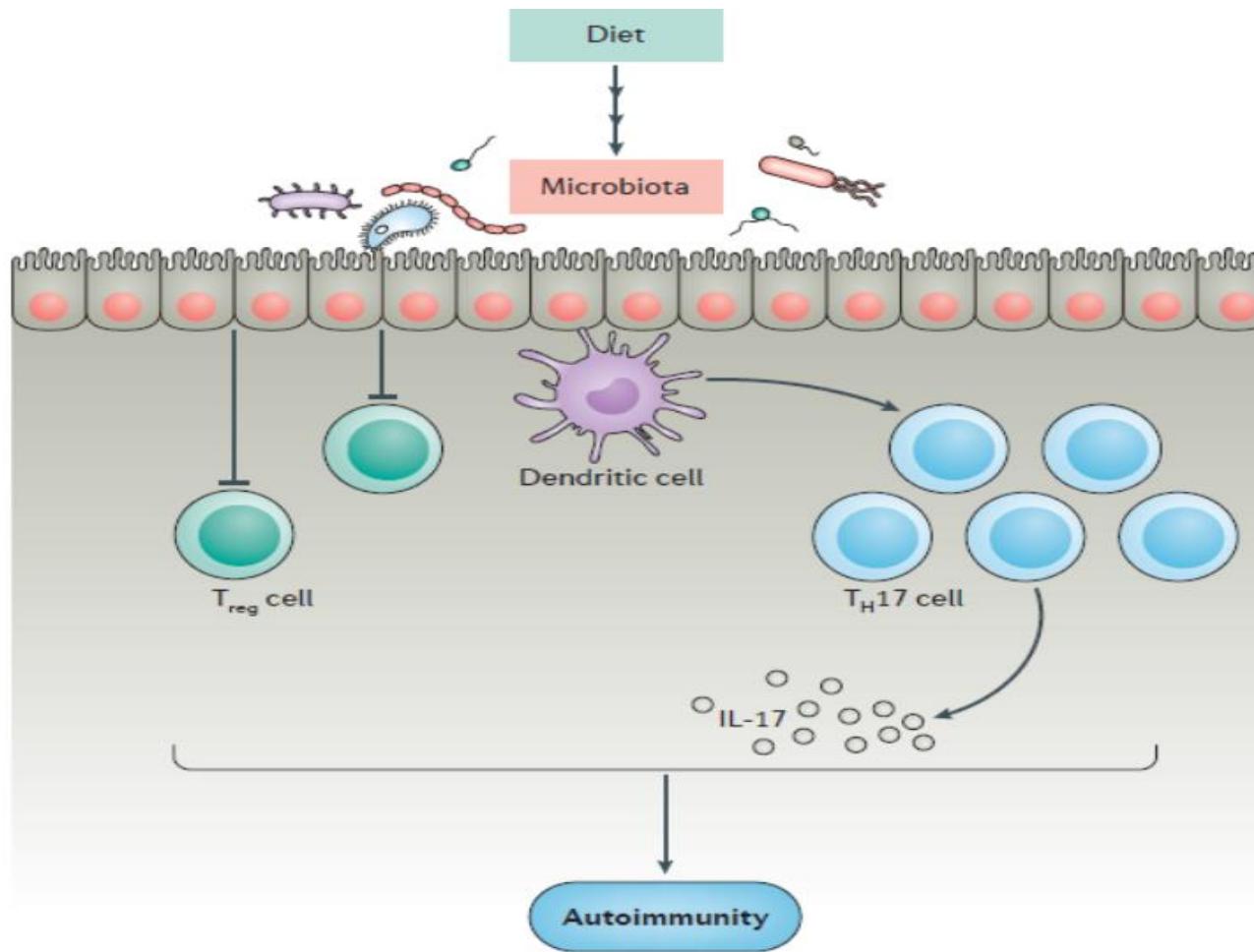
Short Chain Fatty Acids Affect on the Gut Microbiome



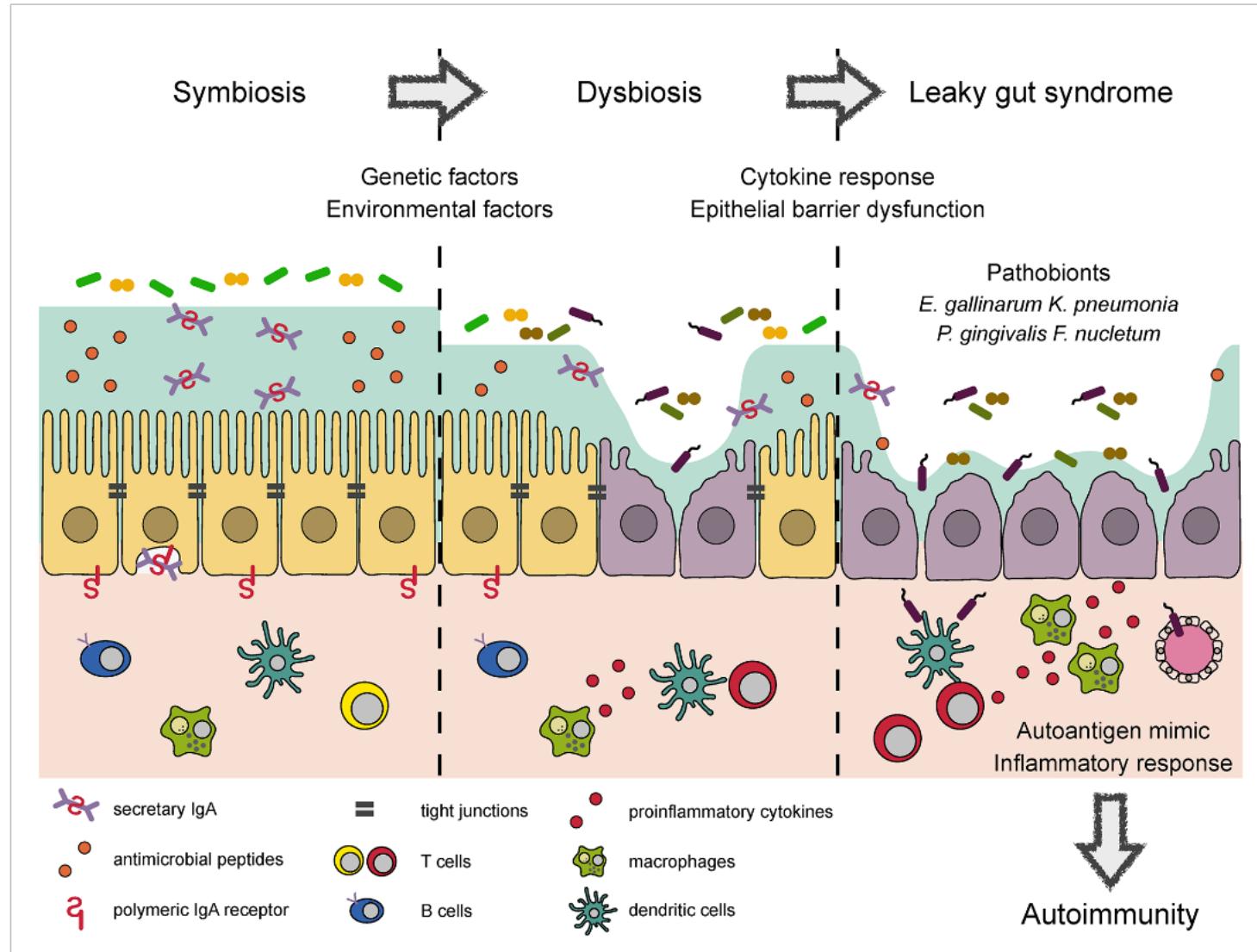
Short Chain Fatty Acids and Systemic Effect



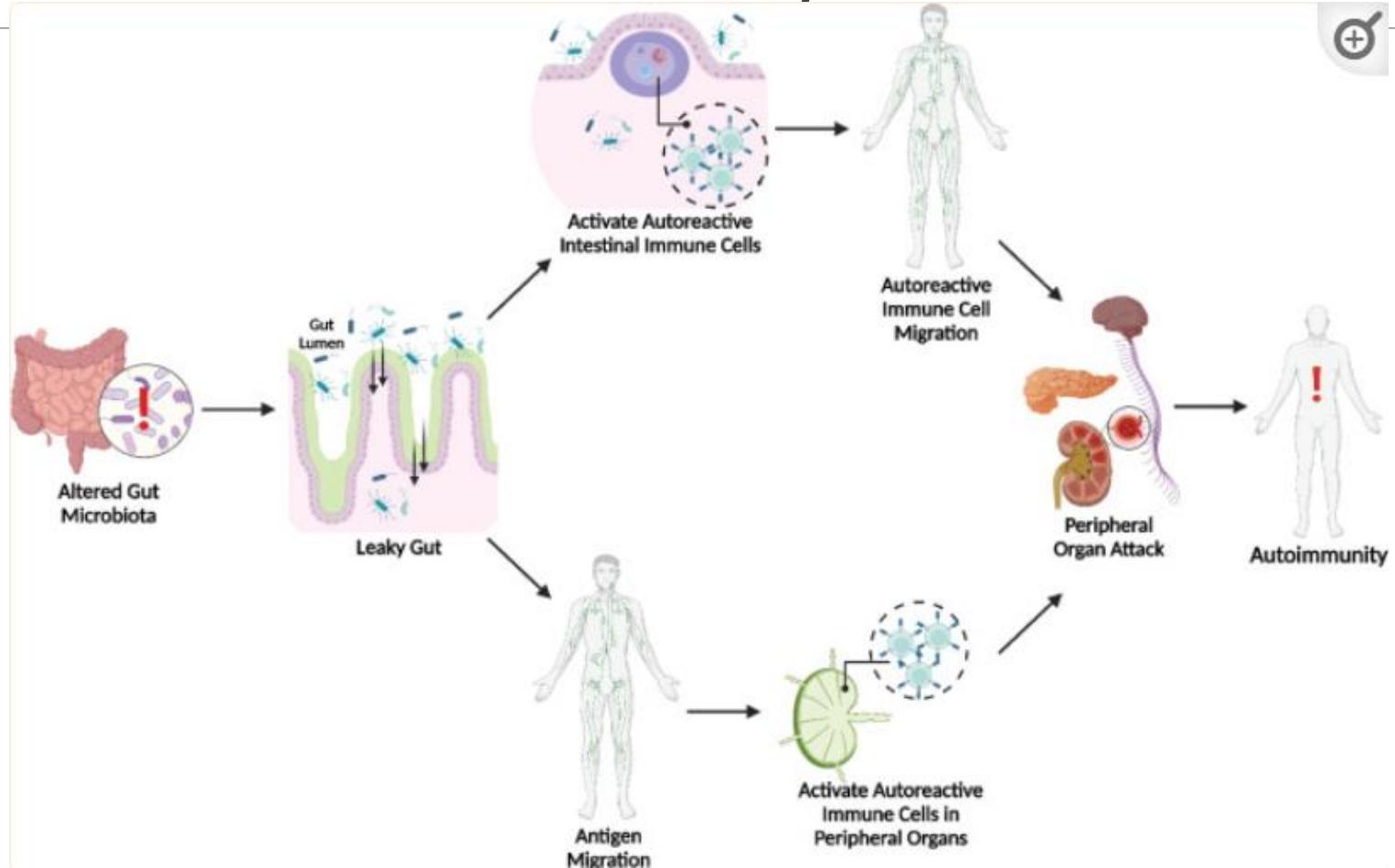
Treg/Th17 balance



From Symbiosis to Leaky Gut



Altered Gut Microbiome Leading to Systemic Autoimmunity



Oral Microbiome

The dysbiosis of oral microbiome



caused by the diet, host's environment, smoking and genetic susceptibility contribute to the pathogenesis of

Rheumatoid arthritis, Sjögren's syndrome and Systemic lupus erythematosus

Rheumatoid arthritis.

Changes in the gut and oral microbiomes may contribute to the pathogenesis of RA. An altered oral microbiome has been identified in patients with early RA. *P. gingivalis* is strongly linked in pathogenesis



Sjögren's syndrome.

A dysregulated immune response against the normal oral microbiome can be responsible for SS pathogenesis



Systemic lupus erythematosus.

The local oral microenvironment may participate in the development of SLE through developed autoantibodies against oral microbial products



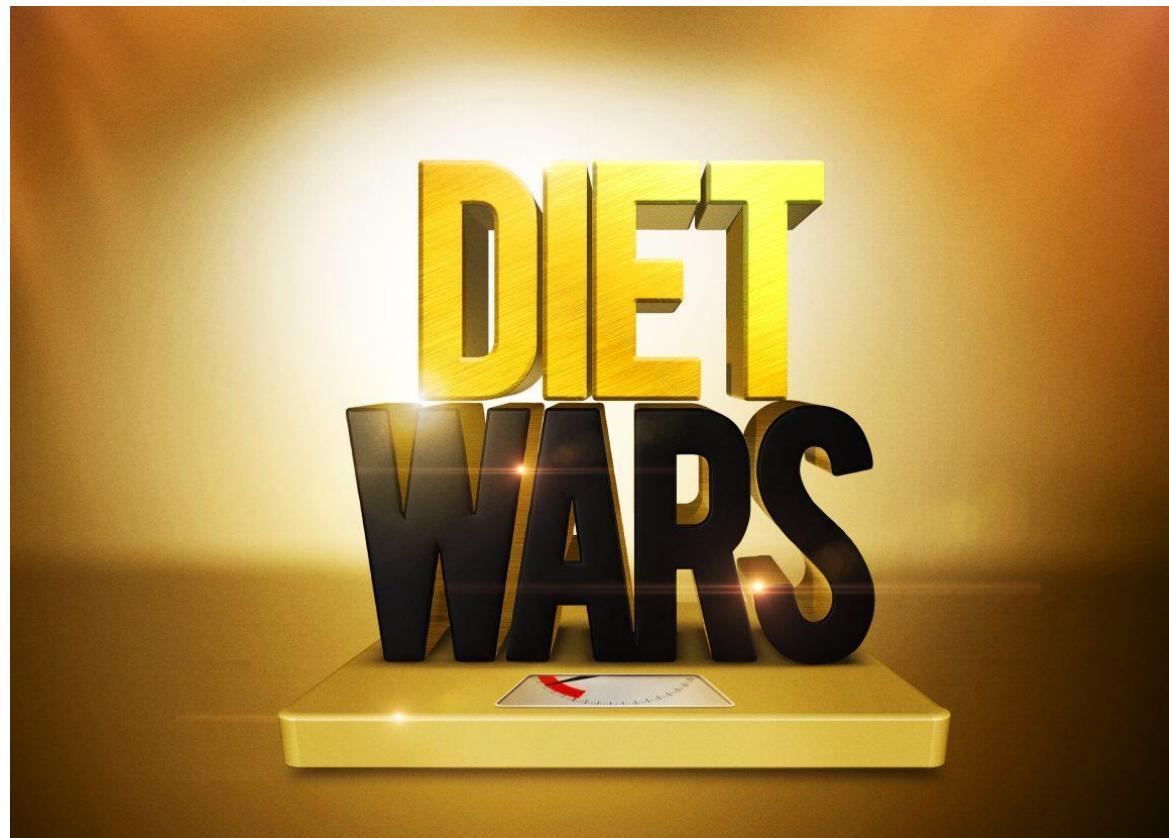
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Nutritional Interventions in Autoimmune Diseases



Standard American Diet

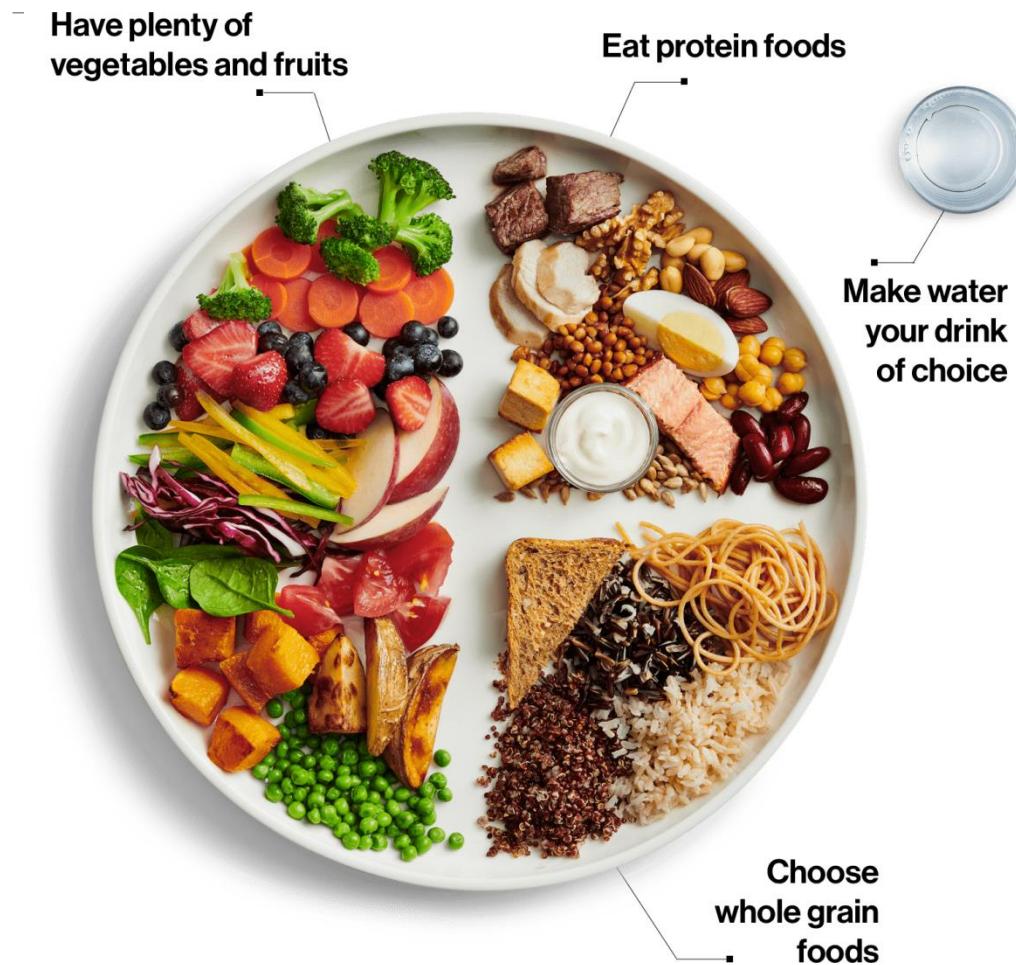
This is what you don't want to eat



Nutrition



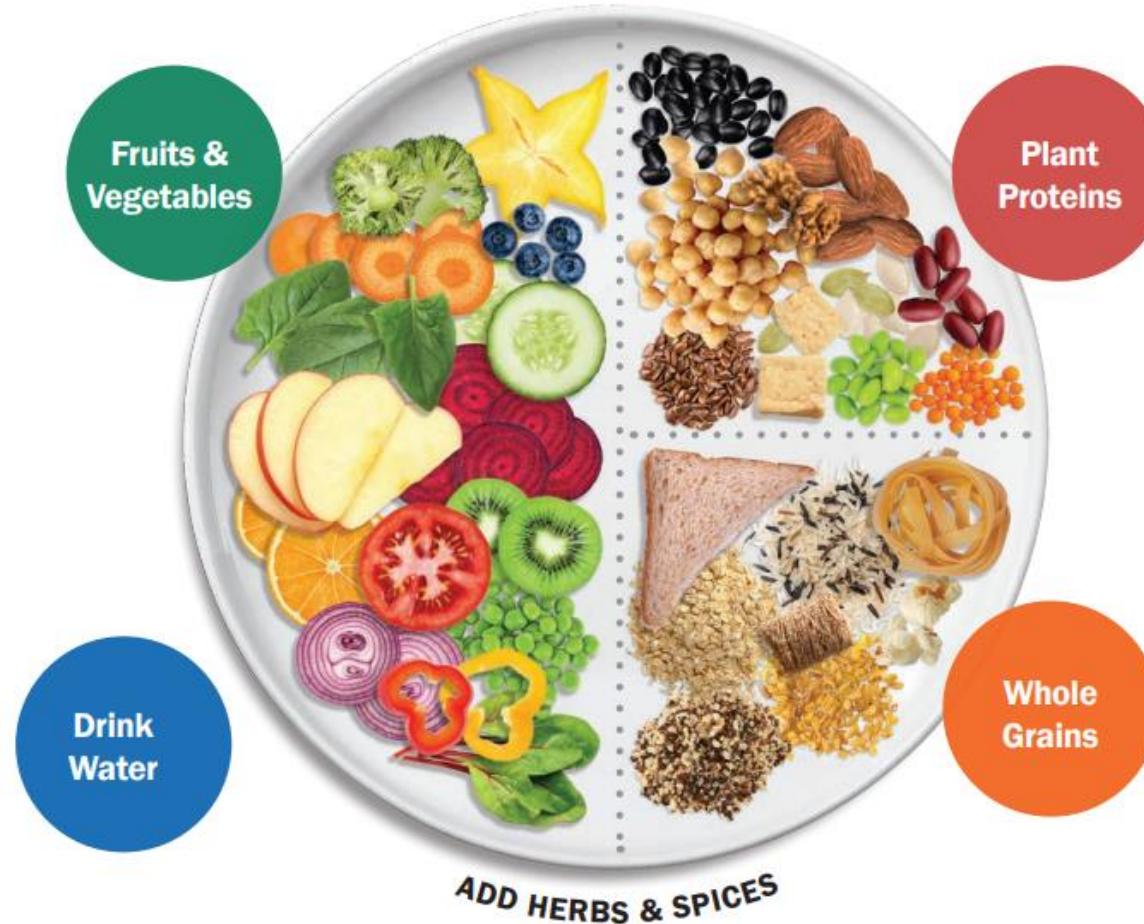
Canada Food Guide and Eat Lancet



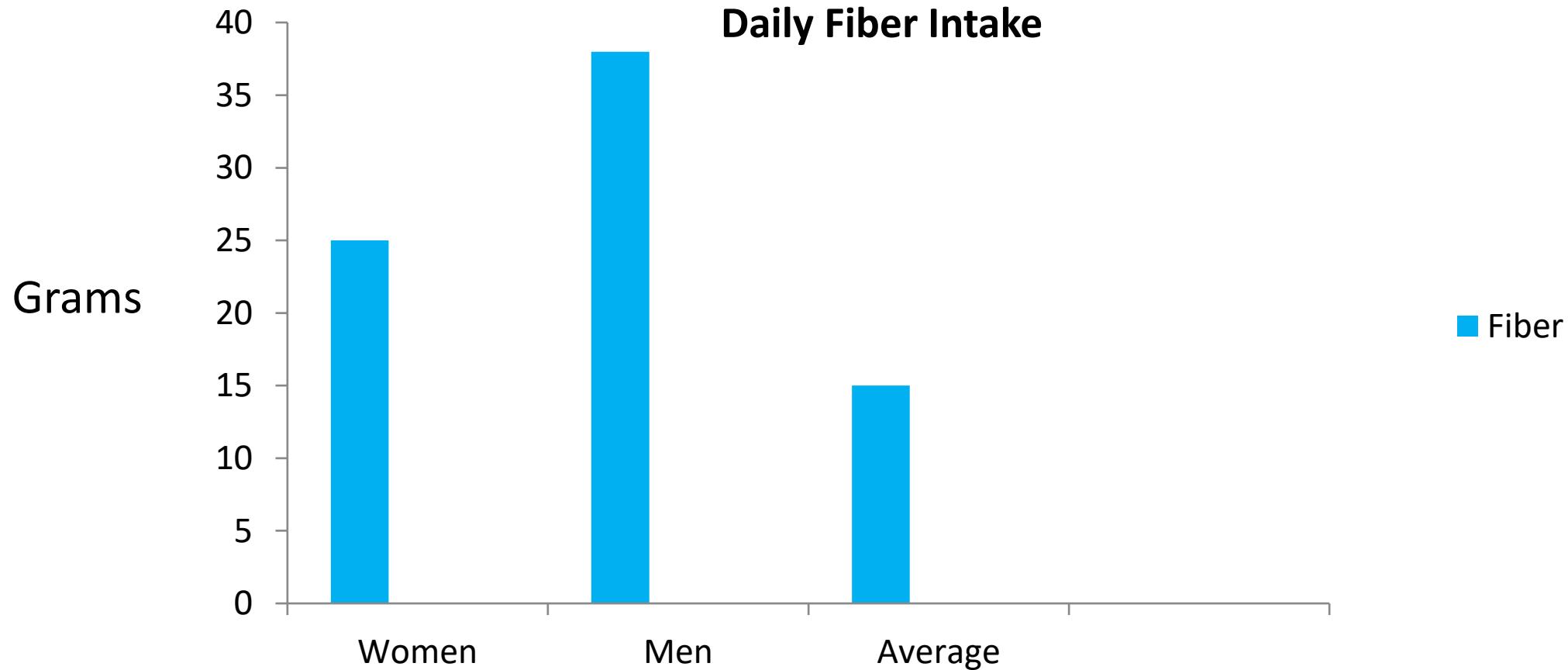
A WHOLE FOOD, PLANT-BASED PLATE

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



Fiber and Inflammation

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

Quintiles of Dietary Fiber	Predicted Marginal Risk Ratios (95% CI) ^a		
	Metabolic Syndrome	Inflammation	Obese
	Fully-Adj. ^b	Fully-Adj. ^b	Fully-Adj. ^b
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

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

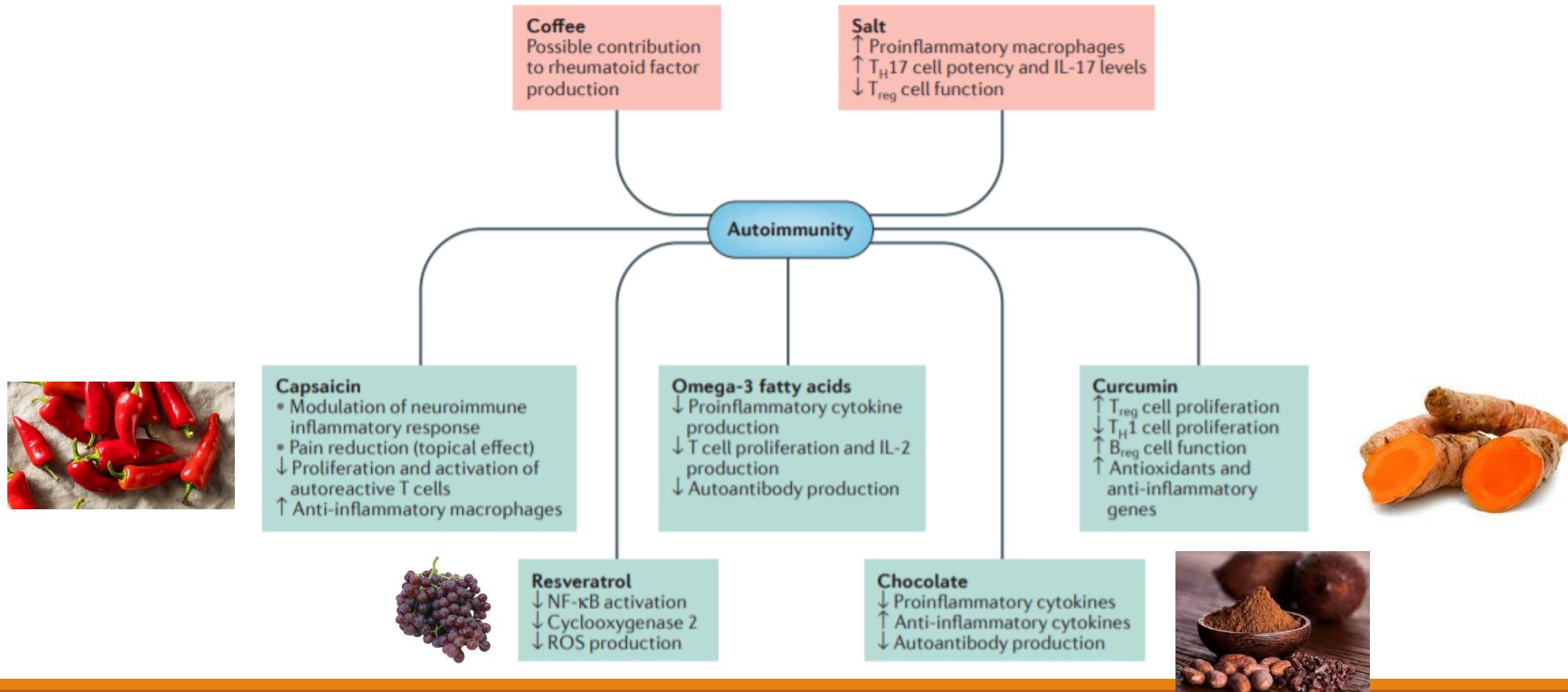
Phytonutrients



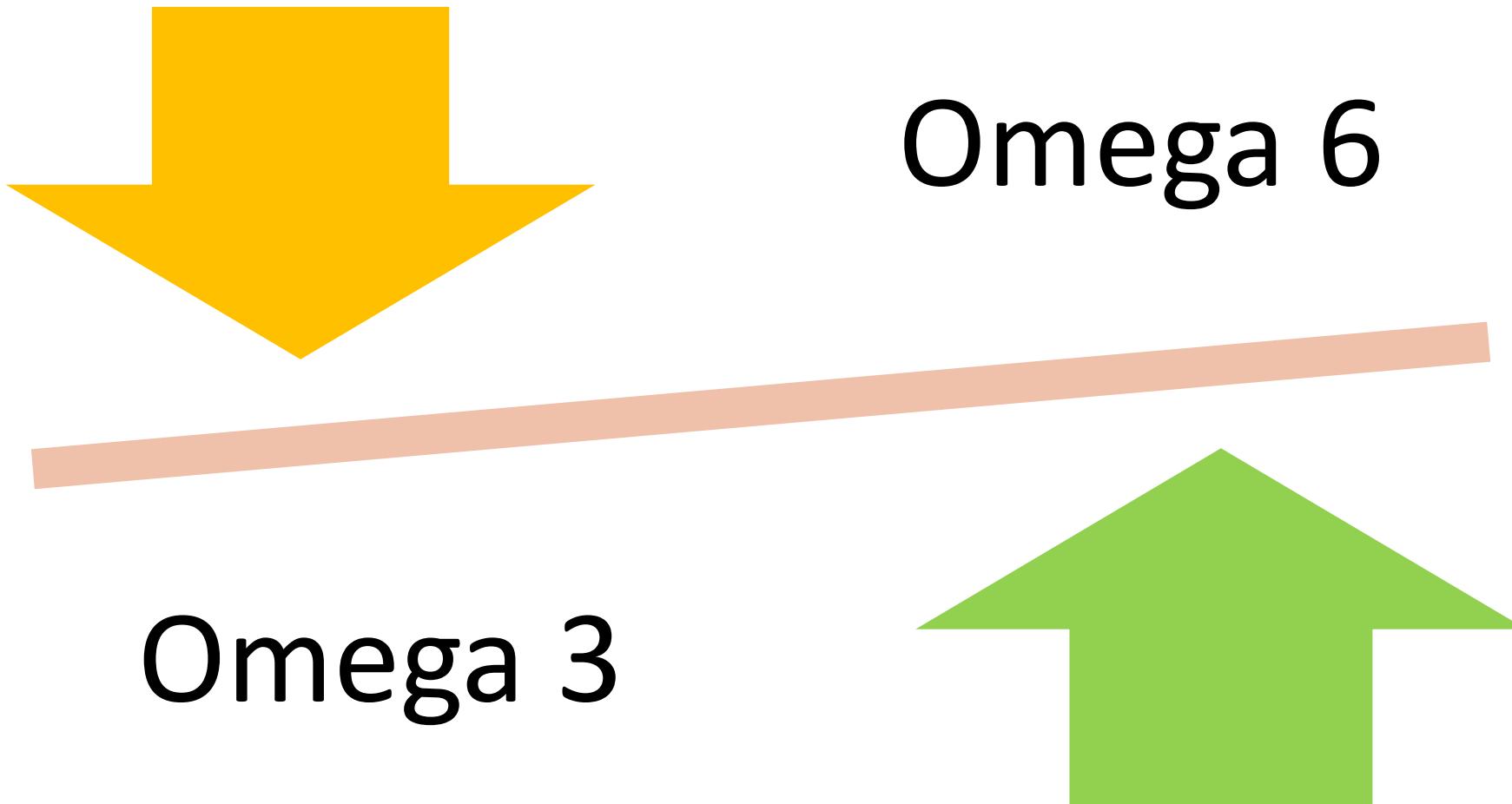
Phytonutrients

Phytonutrient	Proposed Benefits	Food Sources	Fun Facts	Phytonutrient	Proposed Benefits	Food Sources	Fun Facts
Beta-Carotene	Immune System Vision Skin Health Bone Health	Pumpkin Sweet Potato Carrots Winter Squash Cantaloupe Apricots Spinach Collard Greens Kale Broccoli	Think orange and dark, leafy green veggies	Lutein	Eye Health Cancer Heart Health	Collard Greens Kale Spinach Broccoli Brussels Sprouts Lettuces Artichokes	This phytonutrient is found in the macula of the eye
Lycopene	Cancer (Prostate) Heart Health	Tomatoes Pink Grapefruit Red Peppers Watermelon Tomato Products	The heating process makes lycopene easier for the body to absorb	Resveratrol	Heart Health Cancer Lung Health Inflammation	Red Wine Peanuts Grapes	1 cup of red grapes can have up to 1.25 mg of resveratrol ¹
				Anthocyanidins	Blood Vessel Health	Blueberries Blackberries Plums Cranberries Raspberries Red Onions Red Potatoes Red Radishes Strawberries	Think red and purple berries
				Isoflavones	Menopause Cancer (Breast) Bone Health Joint	Soybeans	½ cup of boiled soybeans offers 47 mg of

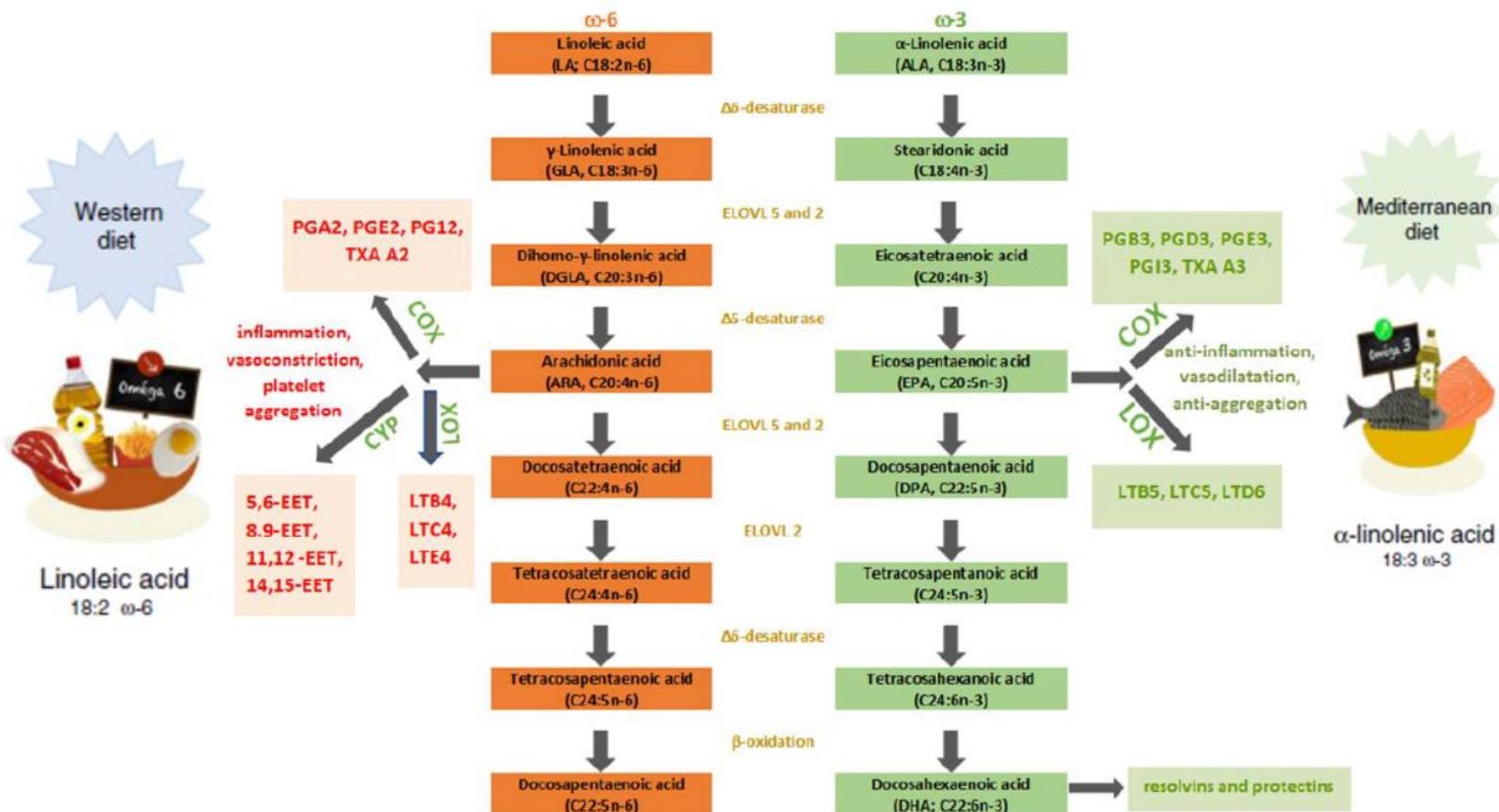
Phytonutrients



Omega 3 and 6 Fatty Acids



Omega 3 and 6 Fatty Acids



Excess salt is inflammatory



Salty Taste to Autoimmunity

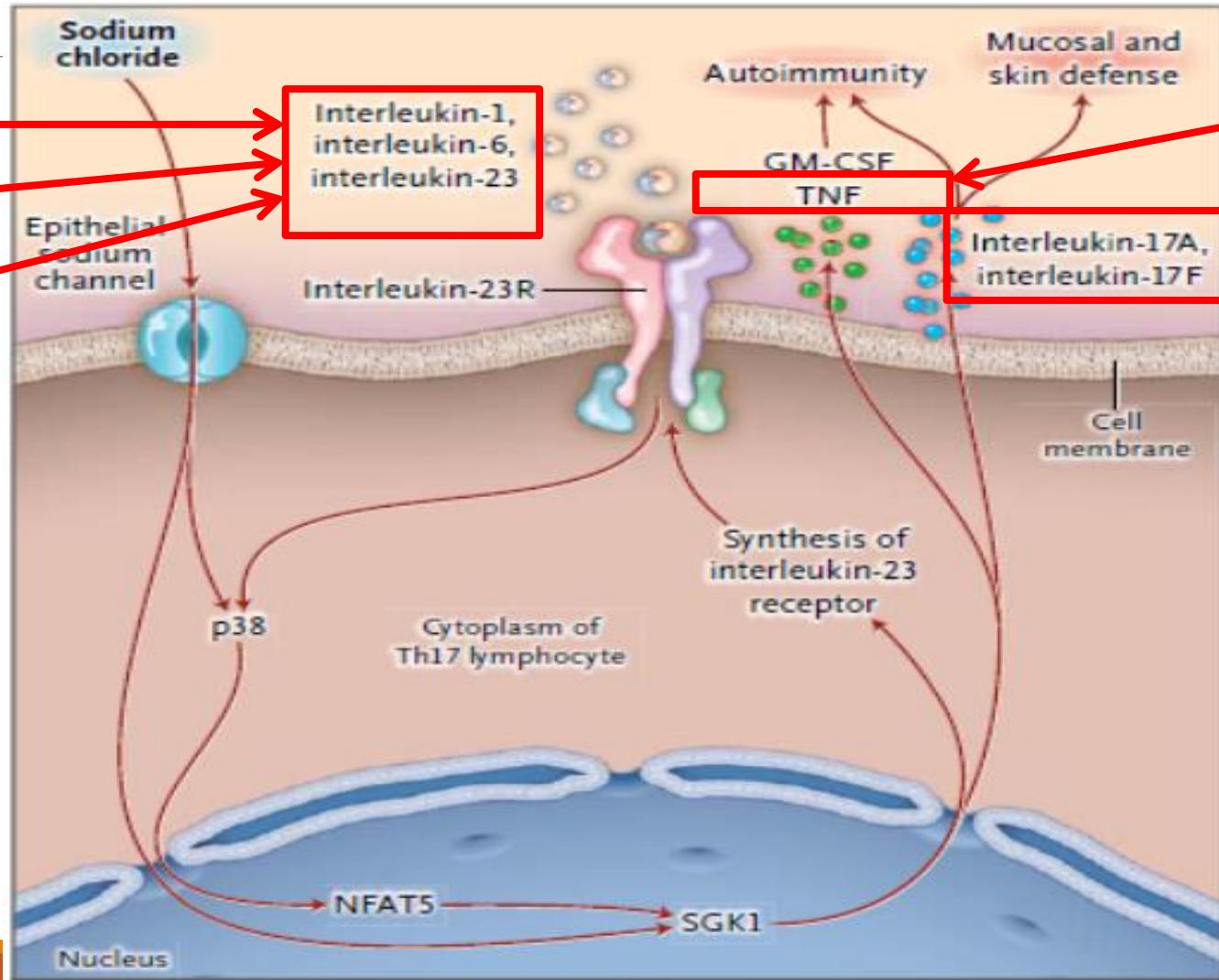
Anakinra

Tocilizumab

Ustekinumab

Adalimumab

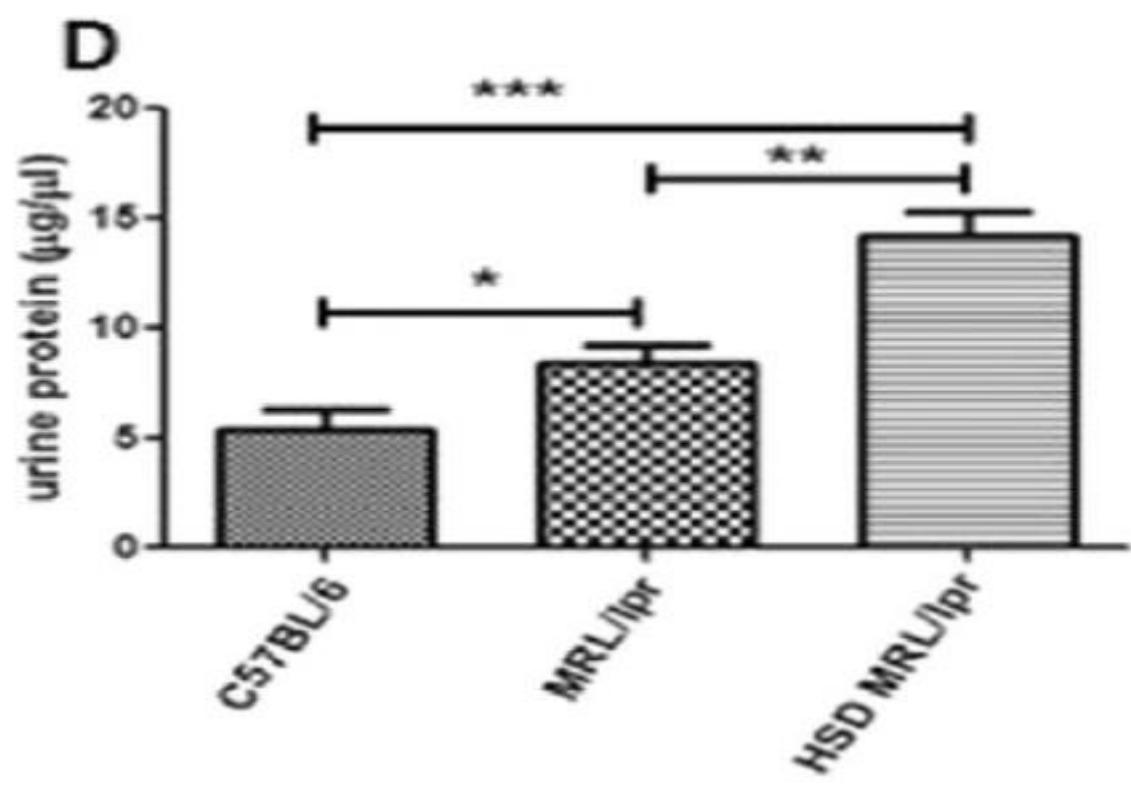
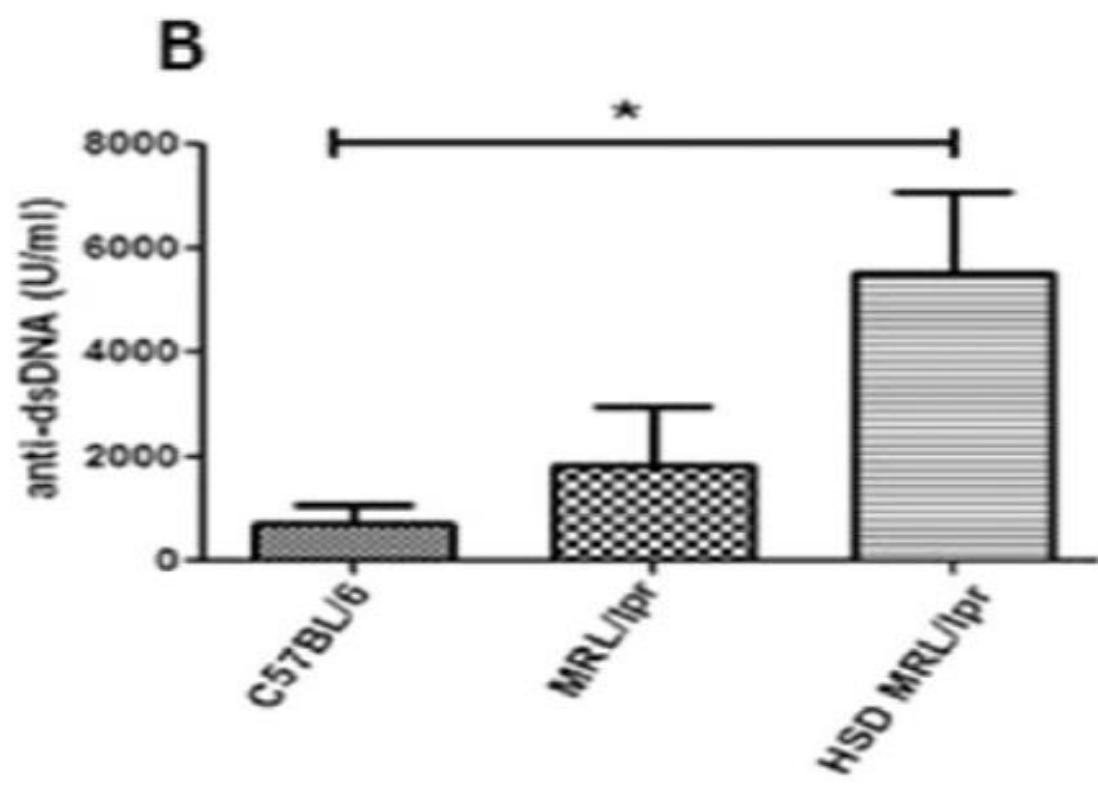
Secukinumab



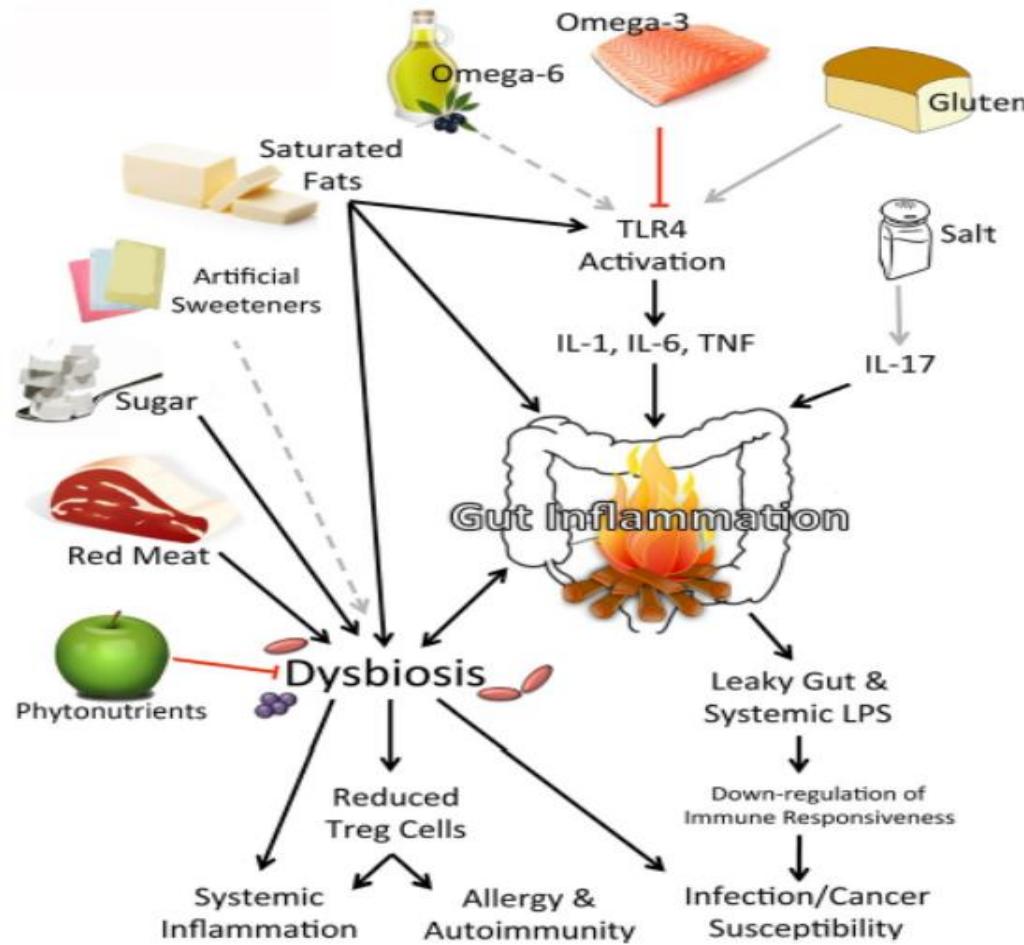
Exacerbation of lupus nephritis by high sodium chloride related to activation of SGK1 pathway

Xi Yang ¹, Genhong Yao ¹, Weiwei Chen, Xiaojun Tang, Xuebing Feng, Lingyun Sun *

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 Forsyth¹ · Matina Kouvari² · Nathan M. D'Cunha^{1,3} · Ekavi N. Georgousopoulou^{1,2,3} · Demosthenes B. Panagiotakos^{1,2,4} · Duane D. Mellor^{1,3,5} · Jane Kellett^{1,3} · Nenad Naumovski^{1,3}

Received: 25 September 2017 / Accepted: 12 December 2017 / Published online: 18 December 2017
© Springer-Verlag GmbH Germany, part of Springer Nature 2017

Objectives

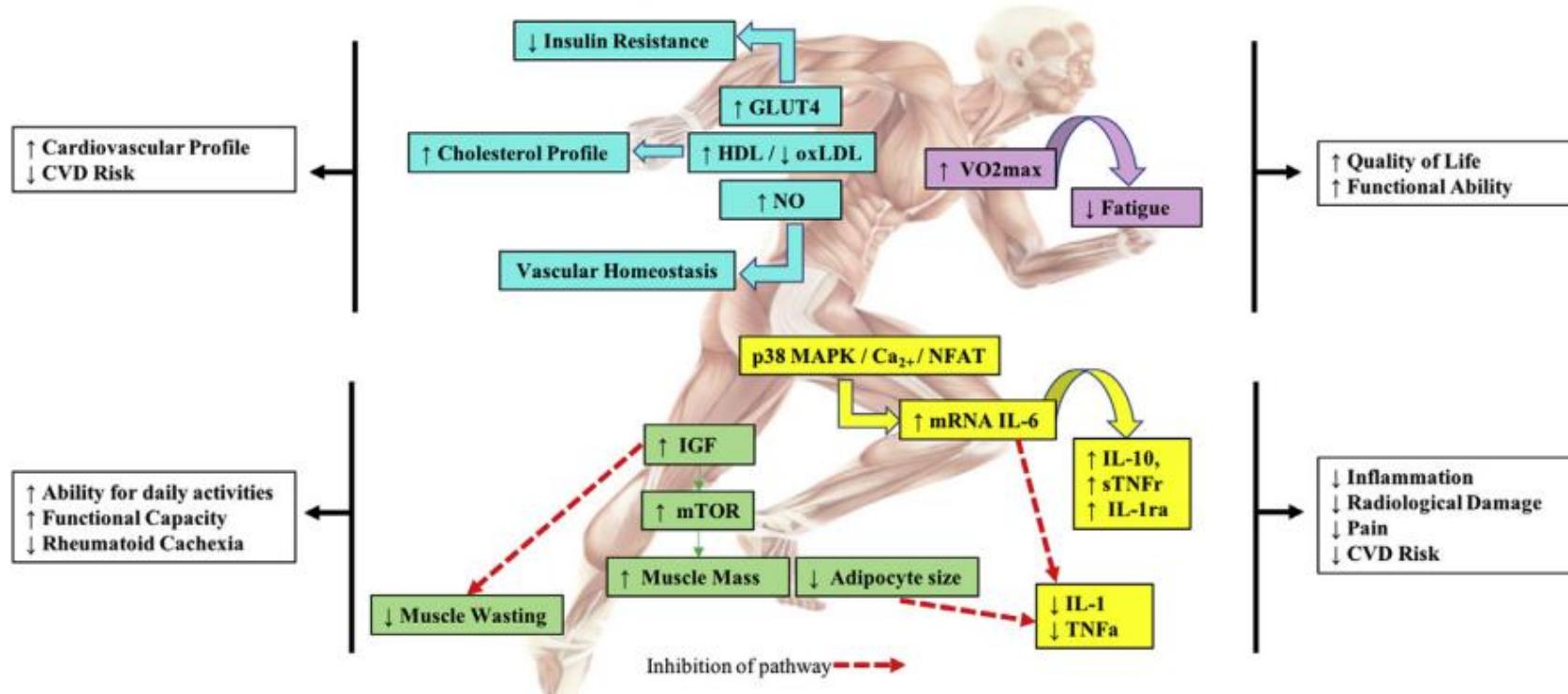
Main Objective: Learn the components that contribute to autoimmune disease and how to resolve it

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- Environmental medicine

Movement as Medicine

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



Fibromyalgia and Exercise

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 ^{1 2}, Susana Nunez-Nagy ³, Tomás Gallego-Izquierdo ³,
Daniel Pecos-Martín ³, Jorge Monserrat ¹, Melchor Álvarez-Mon ^{1 2}

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

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

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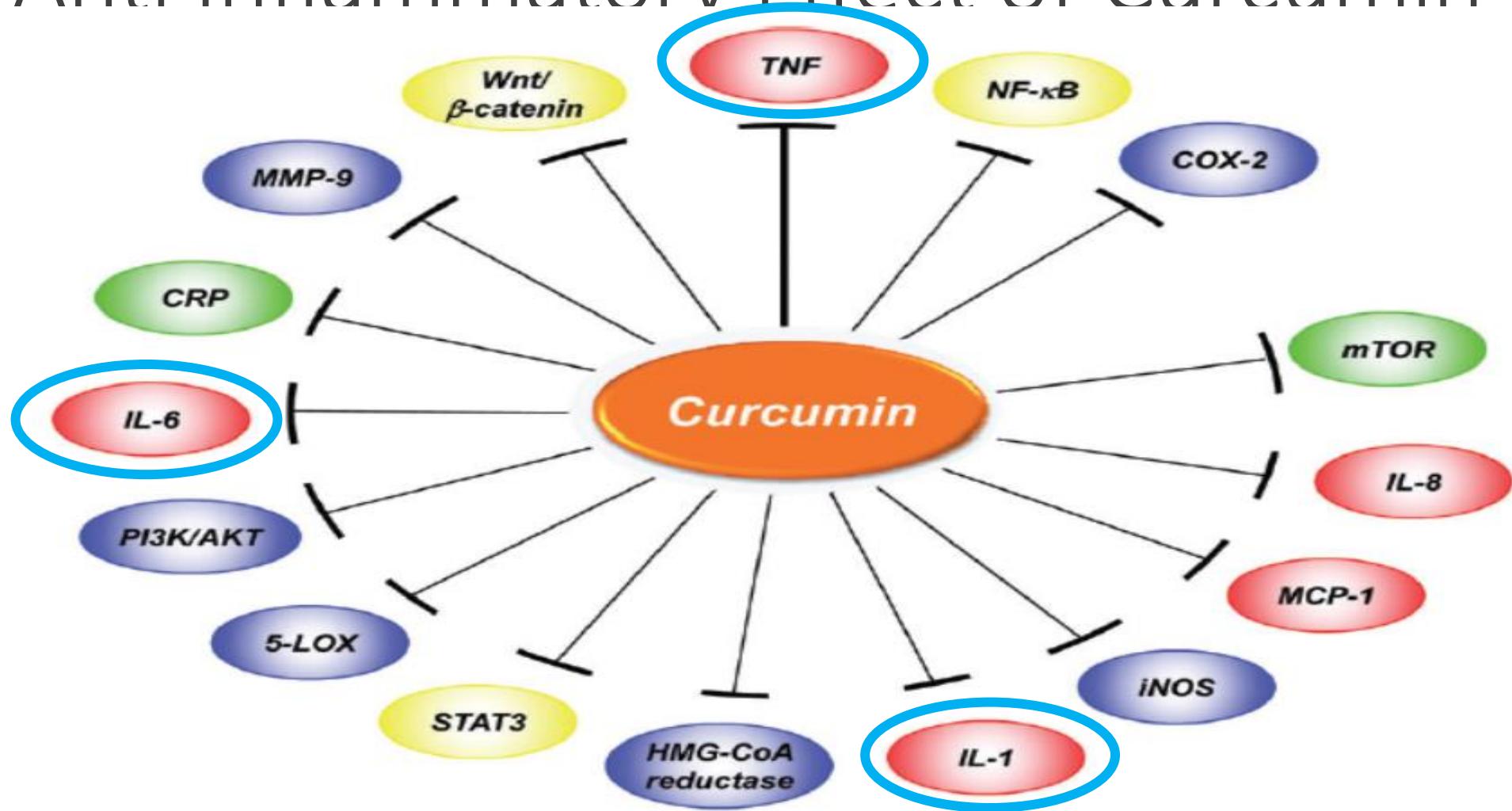
Herbs and Supplements

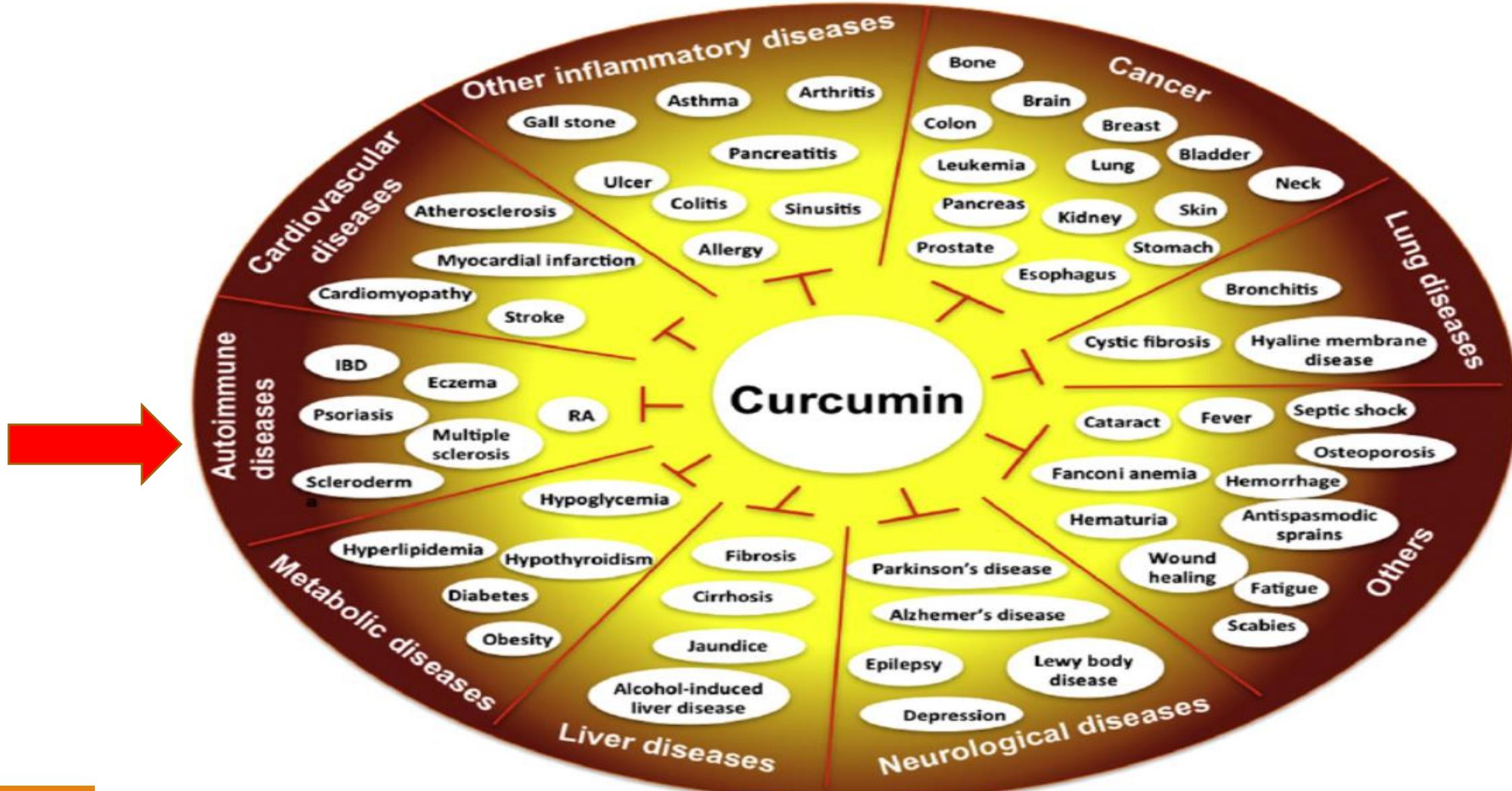


Turmeric



Anti Inflammatory Effect of Curcumin





Boswellia

- Tree found in India



Research article

Open Access

A double blind, randomized, placebo controlled study of the efficacy and safety of 5-Loxin® for treatment of osteoarthritis of the knee

Krishnan Sengupta¹, Krishnaraju V Alluri², Andey Rama Satish³, Simanchala Mishra⁴, Trimurtulu Golakoti⁵, Kadainti VS Sarma⁶, Dipak Dey⁷ and Siba P Raychaudhuri⁸

- 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 ^{1 2}, Hossein Khorramdelazad ³, Abdolrahman Rostamian ⁴, Mohsen Rezaian ⁵, Pooya Saeed Askari ¹, Gholamhosein Taghipur Khajeh Sharifi ⁶, Moein Kardoust Parizi ¹, Mobina Taghipour Khajeh Sharifi ⁷, Seyed Reza Najafizadeh ⁸

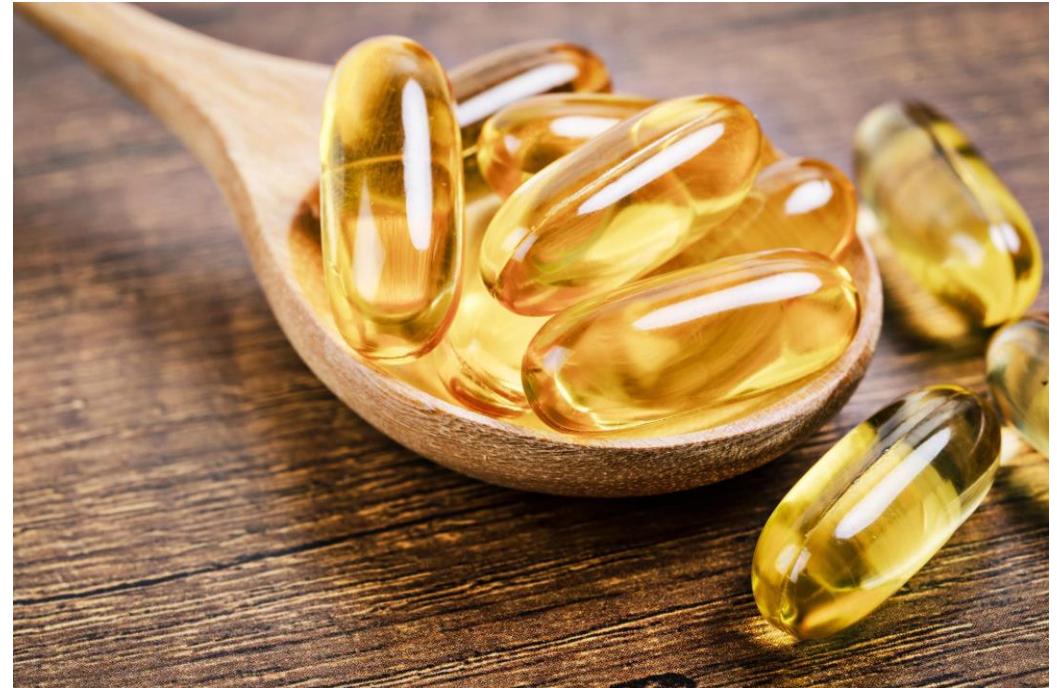
Affiliations + expand

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

Free PMC article

Omega 3 Fatty Acids in Rheumatic Diseases

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 ¹, Omar Granados-Portillo ², Ivette Cruz-Bautista ³,
Narly Ruiz-Quintero ⁴, Iliana Manjarrez ⁵, Guadalupe Lima ¹, Diego F Hernández-Ramírez ¹,
Miguel Astudillo-Angel ¹, Luis Llorente ¹, Gabriela Hernández-Molina ⁶

Affiliations + expand

PMID: 32896265

Free article

Vitamin D and the Immune System

Lupus (2018) 0, 1–9

journals.sagepub.com/home/lup

REVIEW

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

MH Nguyen^{1,2}, K Bryant² and SG O'Neill^{1,2}

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

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](#) 

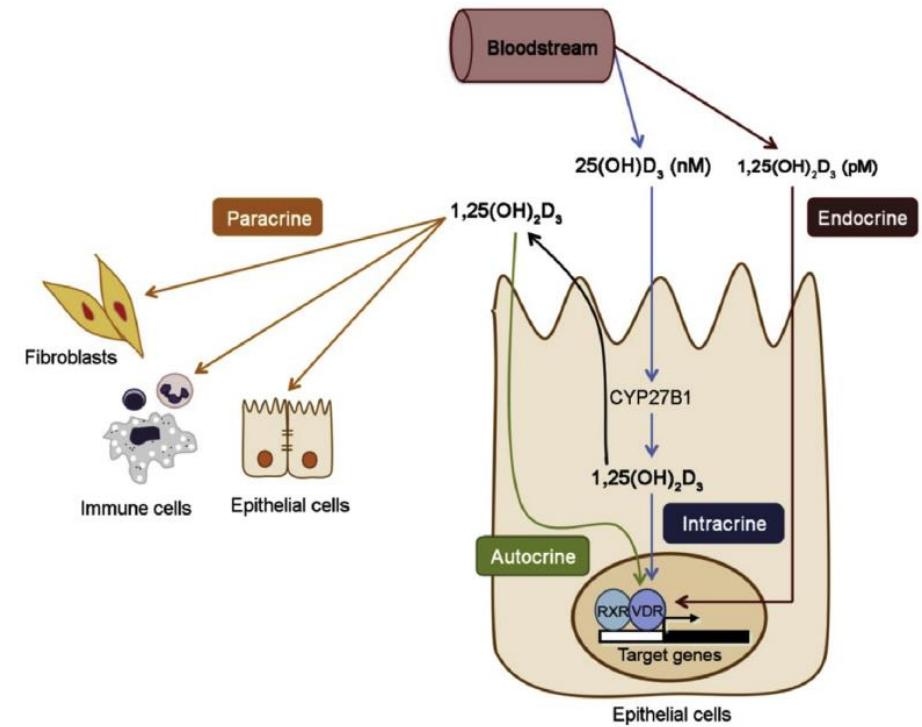
BMC Endocrine Disorders **21**, Article number: 224 (2021) | [Cite this article](#)

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

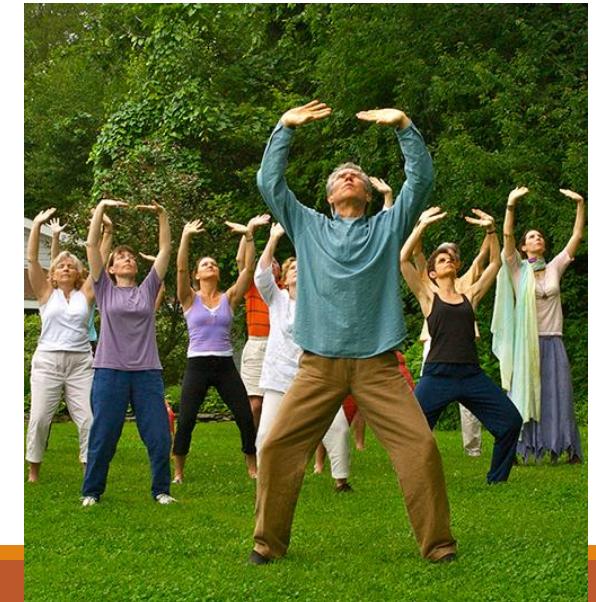
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Energy Medicine

- 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

- 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

Deep breathing

Yoga

MSBR

Clinical Hypnosis

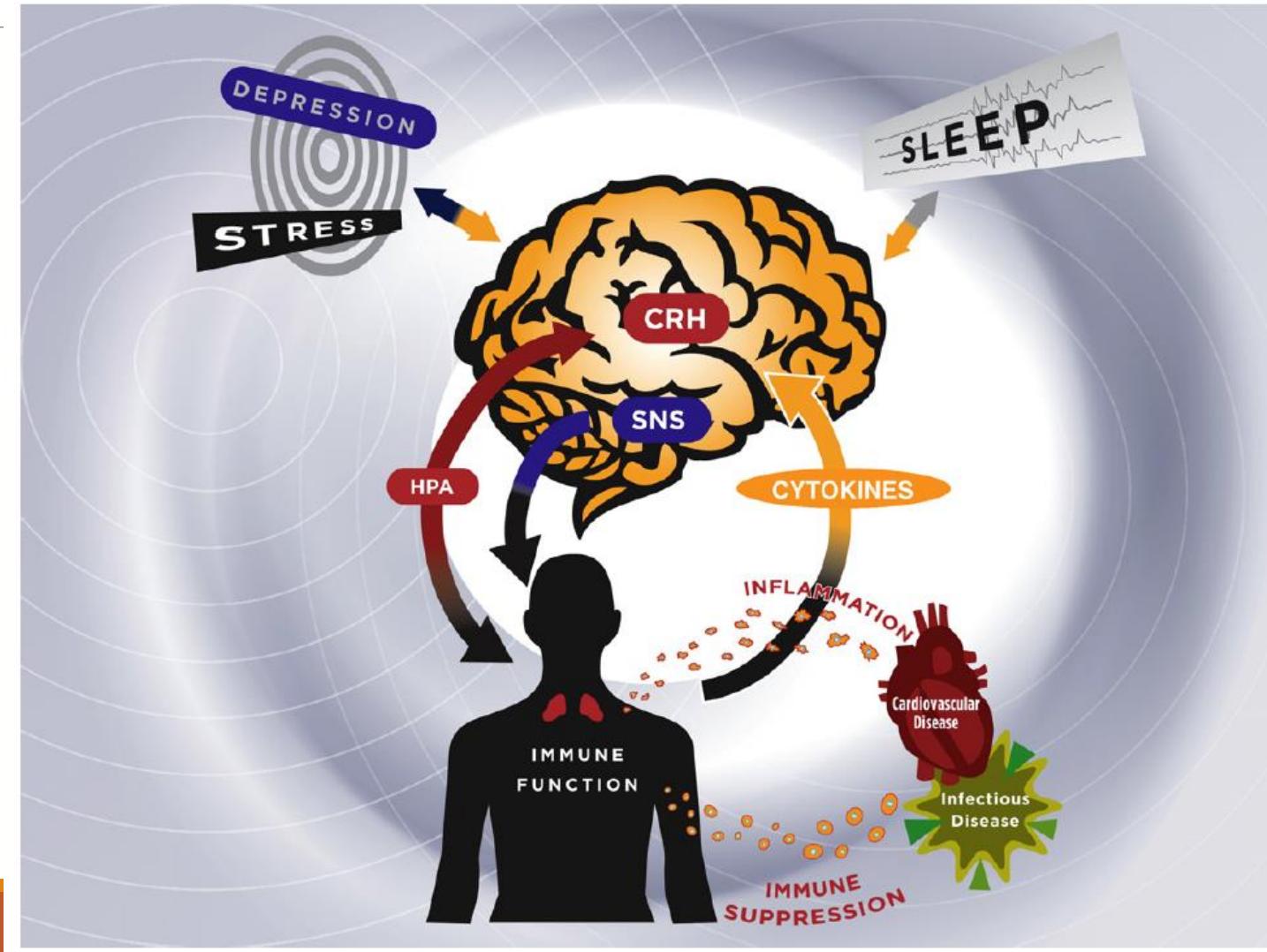
Biofeedback

Mindful Eating

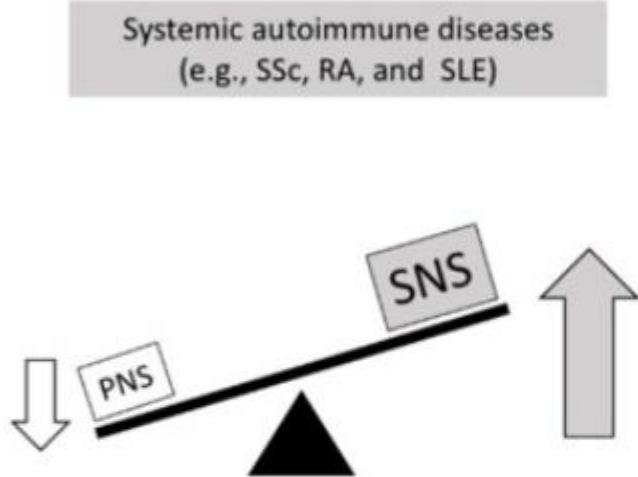
Guided Imagery



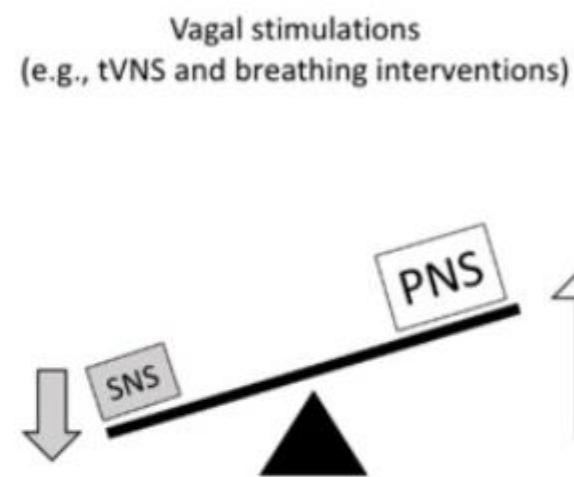
Psychoneuroimmunology



The importance of the vagus nerve



- Elevated proinflammatory cytokines
- Self-sustained chronic inflammation of target organs
- High pain scores
- Poor sleep quality
- Reduced quality of life
- Higher cardiovascular risk



- Anti-inflammatory pathway
- Counteract chronic inflammation
- Reduced pain scores
- Improved sleep quality
- Increased quality of life
- Lower cardiovascular risk



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Environmental Medicine



Pesticides

Arthritis Care & Research

AMERICAN COLLEGE
of RHEUMATOLOGY
Empowering Rheumatology Professionals

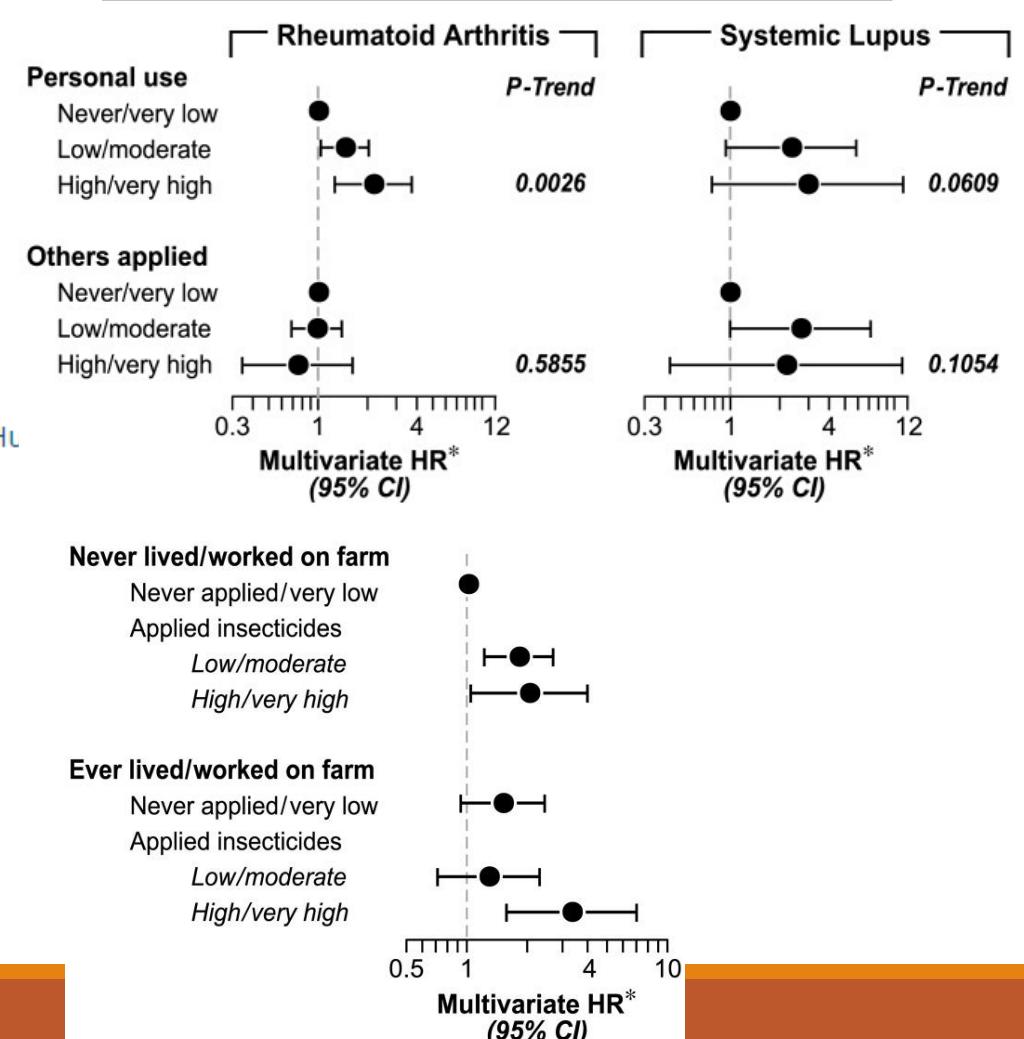
Autoimmune Disease |  Free Access

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-Chiuan 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 Suzuki¹, Takanori Hidaka¹, Yoshito Kumagai¹ and Masayuki Yamamoto¹✉

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 Dis. 2014; 2014: 743616.](#)

PMCID: [PMC3997912](#)

Published online 2014 Apr 7. doi: [10.1155/2014/743616](#)

PMID: [24804084](#)

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

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Autoimmune Dis

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

- 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

- 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

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