

# Integrative Medicine approach to reducing risk of chronic and autoimmune diseases



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## Part I: Understand the TIGER protocol

An approach to address the 5 drivers of inflammation and all chronic diseases —



**Toxins:** The Missing Puzzle Piece

**Infections:** Disrupting Immune Balance

**Gut:** The Foundation of (Immune) Health

**Eating:** Food Sensitivities & The Phase One Diet

**Rest:** Understanding Mental & Emotional Rest + Your Nervous System



## This is Maria\*

40-year-old Hispanic woman dealing with:

- Psoriasis
- High blood pressure
- Obesity
- Insulin resistance
- Fatty liver

**\*Disclaimer:** This is a fictional name/character and the information provided is only an example of typical patient case.



## This is Maria\*

- Diagnosed with gestational diabetes after her first pregnancy
- Developed metabolic syndrome  
(characterized by high blood pressure, insulin resistance, and obesity)
- Showed signs of a fatty liver  
(identified by abnormally high liver enzyme blood tests, which was likely related to the insulin resistance)
- Now, at 40 years old, even daily use of topical steroids did not solve her psoriasis.

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## This is Maria\*

Had no GI symptoms, but her microbiome was highly disrupted with her tests showing:

- Significant intestinal permeability
- High levels of the harmful bacteria pseudomonas
- Low levels of bifidobacteria and lactobacillus
- Absence of the beneficial bacteria Akkermansia
- Low levels of butyrate

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## 1 of 5

Americans suffers from some form of autoimmune condition

## 300%

increase in some autoimmune diseases over the past 10 years

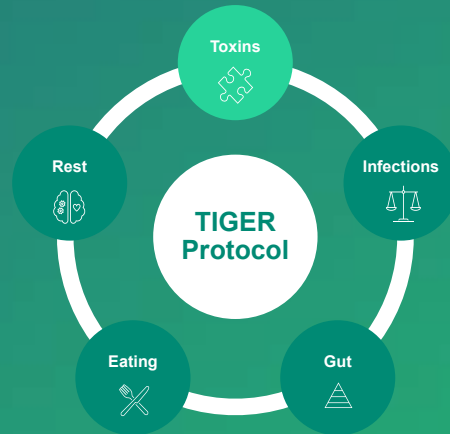
## Silent Epidemic

**Hundreds of millions** of people worldwide are struggling with autoimmunity.

The prevalence and cost of autoimmune disease are **greater than heart disease, cancer, and diabetes—combined.**

Sources: 2021 Bonafide Study "State of Menopause", 2020 Female Founders Fund Survey

## Toxins – The Missing Puzzle Piece



## Toxins – The Missing Puzzle Piece

- Globally, over **350,000** chemicals are registered for use
- EPA's Toxic Substances Control Act lists **86,000** compounds, of which **42,000** are in active use
- Most of these have not been tested for safety; chemicals are considered "*innocent until proven guilty*" in the U.S.
- Chronic, low-level exposure to multiple toxins is the norm

# Water

**45 states**

had perchlorate contamination in the water system



(Government Accountability Office report)

**>50 million**

Americans get their drinking water from groundwater potentially contaminated by pesticides and other agricultural chemicals



(U.S. Department of Agriculture)

**6 million**

people exposed to markedly elevated PFAs in the drinking water supplies



(Harvard study)

Rob Smith, "Study Finds Drugs Seeping Into Drinking Water," interview by Joan Rose, Talk of the Nation, NPR, March 10, 2008

**>40 million**

Americans' drinking water contained pharmaceuticals including antibiotics, hormonal drugs, and psychiatric medicines

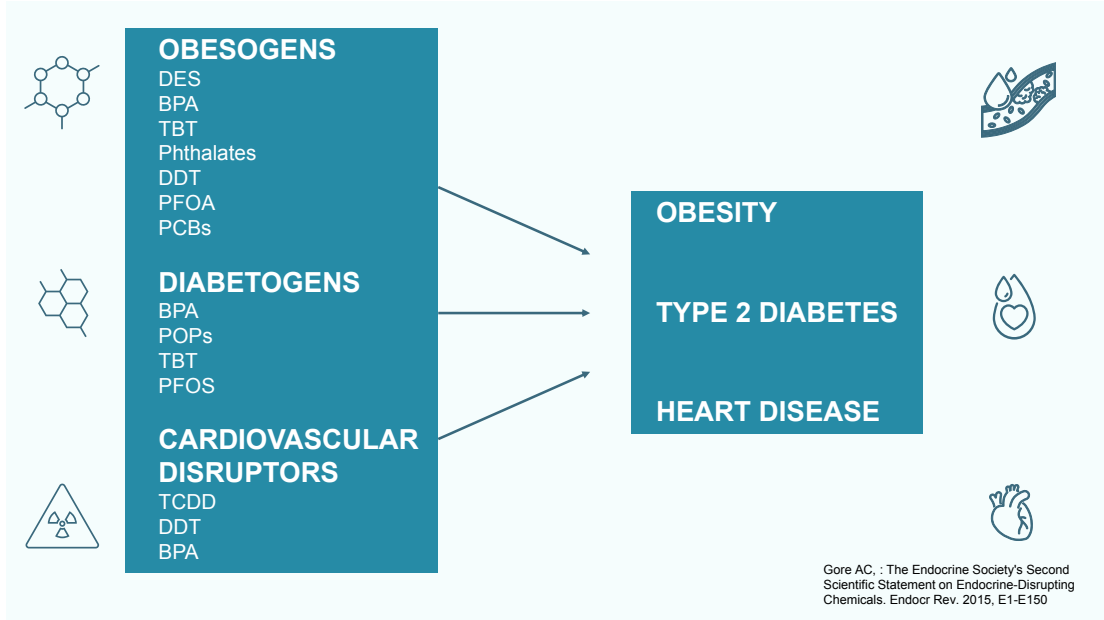


(Associated Press investigation)

**“There is universal agreement among scientists and physicians that the environmental toxins and chemicals to which we are increasingly exposed are interfering with the immune system’s ability to distinguish self from non-self.**

**Most of the risk of autoimmunity comes from environmental exposures rather than from genetic susceptibilities”**

*Dr. Douglas Kerr, MD, neurologist and autoimmune disease researcher at Johns Hopkins University*



**You may find this data overwhelming.**

**However, it's crucial to begin to understand it.  
My goal here is to empower you with this information.**

**The goal is not to live a toxin-free life.**

**It is impossible to completely avoid exposure to toxins, but you can  
enhance your detox capacity to effectively reduce levels of toxins.**



## The Power of Healing Toxins

Clearance of heavy metals can often help with autoimmune symptoms:

- In one published case, a woman with rheumatoid arthritis saw a complete resolution of symptoms after a year of chelation therapy removed high levels of cadmium from her system.

Fabrizia Bamonti et al., "Metal Chelation Therapy in Rheumatoid Arthritis: A Case Report. Successful Management of Rheumatoid Arthritis by Metal Chelation Therapy," *BioMetals* 24, no. 6 (December 2011): 1093-1098

## Infections – Disrupting Immune Balance



## Infections – Disrupting Immune Balance

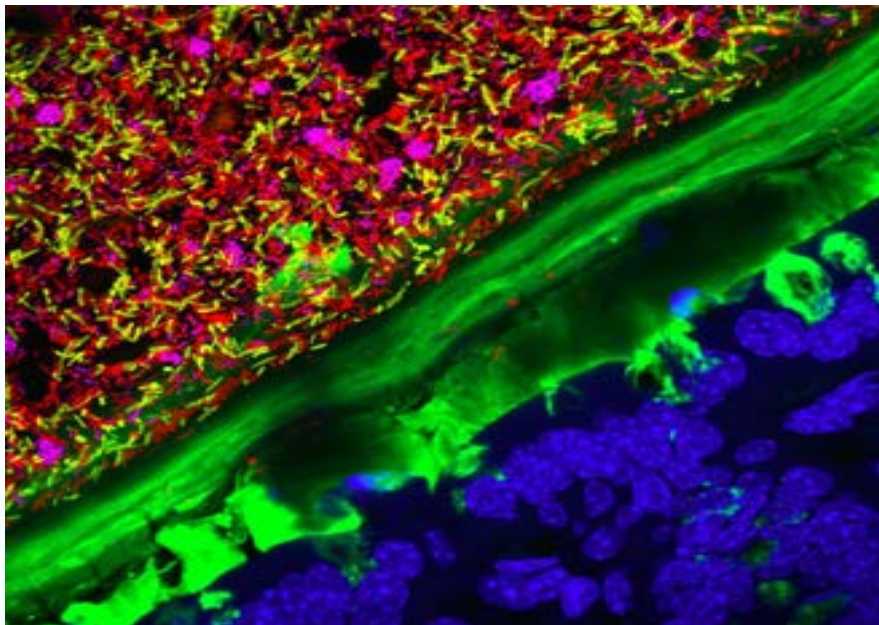
- Bacterial imbalance is most common and well-studied
- Other infections: mycobacteria, viruses, and fungi
- Parasites

## Gut – The Foundation of (Immune) Health



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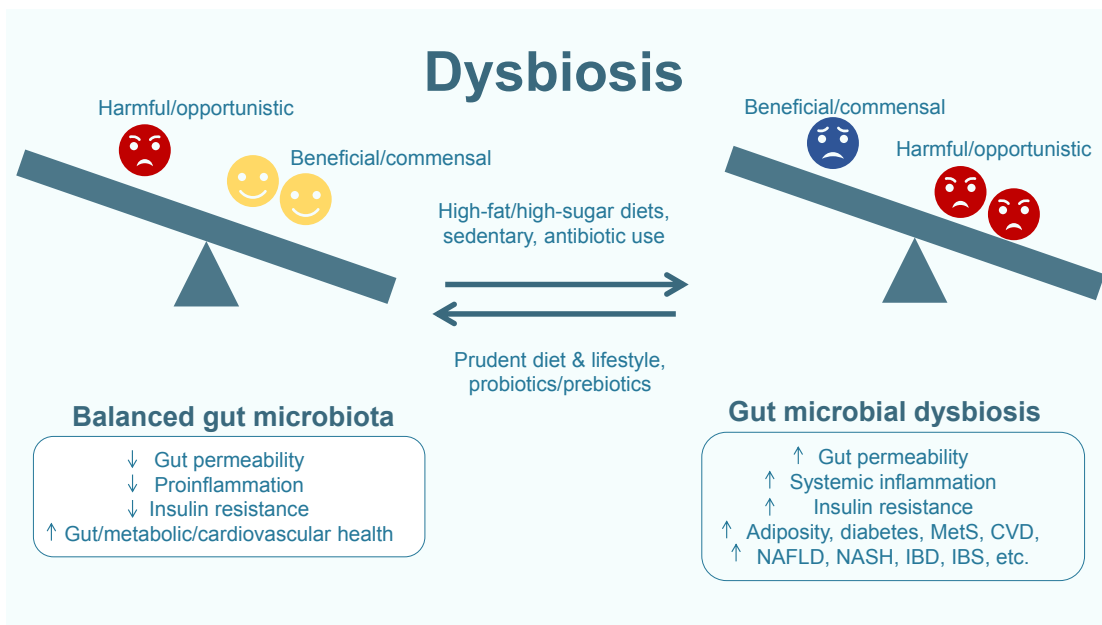
- The microbiome contains **40** trillion microorganisms from >1000 species (50% bacterial)
- 23,000 vs > 1 million genes
- **60%** of our immune system is located in our gut
- Increased intestinal permeability (leaky gut) is a key factor



# Classic gut findings in autoimmune disease

- Reduced microbiome diversity
- Dysbiosis
- Increased intestinal permeability

Romain Gerard et al., "An Immunological Link Between Candida Albicans Colonization and Crohn's Disease," Critical Reviews in Microbiology 41, no. 2 (June 2015): 135-139





## Eating – The Phase One Diet

- An elimination diet designed to feed your microbiome and heal the gut
- Avoid gluten, dairy, sugar, and certain other potential food sensitivities
- **The elimination diet should be followed by the eight-week reintroduction protocol that I outlined in my book because having more diversity in the diet is critical in the long run**
- Increased intestinal permeability will be addressed by the diet as well

## Broccoli Sprouts and Cruciferous Vegetables

- Broccoli sprouts are the **richest food source of sulforaphane**.
- A trick to **increase sulforaphane** in cooked cruciferous vegetables is to **add a source of myrosinase enzyme**, such as **mustard seed powder**, to them.
- When 1g of brown mustard powder was added to cooked broccoli, the bioavailability of sulforaphane was **increased by more than 400%**.



Olukayode Okunade et al., "Supplementation of the Diet by Exogenous Myrosinase via Mustard Seeds," Molecular Nutrition & Food Research 62, no. 18 (September 2018): e1700980

# Sulforaphane



- >2,000 research studies documenting benefits:
  - Reduces inflammation by activating the Nrf-2 pathway
  - Boosts the immune system by increasing activity of natural killer cells
  - Enhances brain function
  - Minimizes oxidative stress
  - Encourages antimicrobial activity

Greer McGuinness, "Sulforaphane Treatment for Autism Spectrum Disorder: A Systematic Review," EXCLI Journal 19 (June 26, 2020): 892-903



## Rest – Proper Rest and Understanding Stress



## Rest – Proper Rest and Understanding Stress



- A key root cause for the initial occurrence of autoimmunity, and a driver of flareups and exacerbations of autoimmune illnesses.
- Research has found that stress is involved in the development and progression of:
  - multiple sclerosis
  - rheumatoid arthritis
  - Lupus
  - autoimmune hepatitis
  - Graves' disease

Kasem Sharif et al., "The Role of Stress in the Mosaic of Autoimmunity: An Overlooked Association," *Autoimmunity Reviews* 17, no. 10 (October 2018): 967-983



## Addressing Stress Improves Outcomes

Research consistently shows that taking steps to address stress improves outcomes in autoimmunity.

- In patients with rheumatoid arthritis, the practice of Mindfulness Based Stress Reduction (MBSR) over a **six-month period led to 35% reduction in psychological distress and depressive symptoms, and improved parameters of well-being.**

Elizabeth K. Pradhan et al., "Effect of Mindfulness-Based Stress Reduction in Rheumatoid Arthritis Patients," *Arthritis & Rheumatology* 57, no. 7 (October 2007): 1134-1142

## Part II: Implement the TIGER Protocol

**Toxins:** Detoxify and Improve Liver Function

**Infections:** Identify and Eliminate Infections

**Gut:** Healing Your Gut (and Oral) Microbiome

**Eating:** Prebiotic Foods and the Phase Two Diet

**Rest:** Tools for Optimizing Rest



## Remember Maria?\*

As we discussed, Maria was struggling with obesity, fatty liver, and psoriasis that was not responding to topical steroid creams.

Started gut-healing protocol with prebiotic foods and supplements:

- Neem capsules
- red quinoa
- red rice
- pomegranate
- cranberry

\*Disclaimer: This is a fictional name/character and the information provided is only an example of typical patient case.



## Remember Maria?\*

Repeat testing 2 months later:

- Pseudomonas overgrowth had resolved
- Akkermansia levels above average
- Keystone bacteria improved  
(including lactobacillus and bifidobacteria)
- Short-chain fatty acids and butyrate increased significantly
- Intestinal permeability was normalizing

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## Remember Maria?\*

Conclusion of case:

- Previous ineffective weight loss strategies began to work
- Lost weight and returned to normal BMI
- Blood sugar and blood pressure improved
- Abnormal liver enzymes returned to normal levels
- Psoriasis finally respond to the topical steroids and condition improved

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## Toxins – Detoxify and Improve Liver Function



## Toxins – Reduce Toxin Exposure

- Opt for organic food when possible
- Filter your drinking water
- Open windows at home for increased air exchange
- Remove shoes indoors (reduces lead, pesticides, harmful bacteria)
- Regularly dust and vacuum
- Decline receipts or choose electronic receipts

# The Power of Reducing Toxin Exposure

Studies show that:

- Consuming a mostly organic diet can **lower** pesticide levels in the urine **by 80% in 5 days**
- Avoiding personal care products with phthalates, parabens, triclosan can **lower levels by 45% in 3 days**
- Handwashing and removing dust in the home can **lower** flame retardants in urine **by 43% in 1 week**



Hyland C. Organic diet intervention significantly reduces urinary pesticide levels in U.S. children and adults. Environ Res. 2019 Apr;171:568-575

## Toxins – Detoxify and Improve Liver Function

• “Pre-tox” is essential:

- Hydration
- Daily elimination
- Sweating



Jonathan Wilson et al., "An Investigation into Porch Dust Lead Levels," Environmental Research 137 (February 2015): 129-135. <https://www.sciencedirect.com/science/article/abs/pii/S0013935114004289>.

## Research on Saunas

- Sweating excretes lead, mercury, arsenic, cadmium, pesticides, flame retardants (PBDEs), BPA, phthalates and PCBs
- A study compared sweating from a sauna to sweating induced by exercise and found that sauna use led to better excretion in the sweat for several toxins.

Margaret E. Sears, "Arsenic, Cadmium, Lead, and Mercury in Sweat: A Systematic Review," Journal of Environmental and Public Health 2012



## Infections – Identify and Eliminate Infections

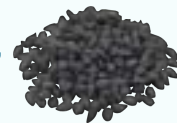


## Infections – Identify and Eliminate Infections

- Make your body environment i.e. the “terrain” inhospitable to pathogens
- Ensure acidic intestinal pH which limits growth of dysbiotic bacteria/yeast
- One of the biggest contributors to healthy pH are short-chain fatty acids (SCFAs), which are produced by our healthy bacteria
- Fermented foods contain organic acids such as lactic acid and acetic acid, that contribute to maintaining healthy GI acidity

## Antimicrobial Spices and Herbs

- **Garlic** – best to crush and then wait 10 minutes for the active ingredients to be synthesized before using
- **Black cumin** – has been shown to be beneficial in Hashimoto's, broad-spectrum antimicrobial and anti-inflammatory
- **Ajwain** – stimulates digestive fire according to Ayurveda



# Curcumin

- While turmeric is best known for its anti-inflammatory effects, it is a surprisingly potent antimicrobial.
- Research shows that it has significant antibacterial, antiviral, and antifungal effects.
- A study involving patients with rheumatoid arthritis (RA) found that curcumin was as effective as the anti-inflammatory diclofenac at reducing pain and disease activity in RA.



Binu Chandran and Ajay Goel, "A Randomized, Pilot Study to Assess the Efficacy and Safety of Curcumin in Patients with Active Rheumatoid Arthritis," *Phytotherapy Research* 26, no. 11 (November 2012): 1719-1725

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## Gut – Healing Your Gut (and Oral) Microbiome






## Gut – Healing Your Gut (and Oral) Microbiome



- Recall, we need to address dysbiosis (in the gut and the oral microbiome), leaky gut, and reduced diversity
  - **Infections** – address dysbiosis, reduce pathogen overgrowth
  - **Gut** – heal increased intestinal permeability
  - **Eating right** – my phase 2 diet high in prebiotic foods boosts **DIVERSITY**

## Gut – Healing Your Gut (and Oral) Microbiome



- Acidify intestinal pH in order to reverse dysbiosis and boost beneficial bacteria
  - Bone broth 
  - Fermented foods 
  - Prebiotic foods and fibers
  - Supplements – glutamine or colostrum 



## Acidify Intestine by Boosting SCFAs

The best way to increase production of short chain fatty acids is a high-fiber diet with a diverse blend of plenty of plant fiber, which will be used by the good bacteria to produce SCFAs.

Your bacteria use the fibers in these prebiotic foods to produce short-chain fatty acids.

## Eating – Prebiotic Foods and the Phase Two Diet



## Eating – Prebiotic Foods and the Phase Two Diet

- Nutrient-dense diet including prebiotic foods, fermented foods, and increased plant diversity
- Our ancestors evolved eating up to 100 different plant foods every single week.
- Each plant food contains different types of micronutrients that each feed different types of bacteria in your microbiome.

## Eating – the Phase Two Diet

- Try to eat at least **30-40** different types of plant foods every week, this includes:
  - fruits
  - vegetables
  - grains
  - legumes
  - nuts and seeds
  - spices



Food	Polyphenol content, mg per 100 grams (3.5oz)
Black elderberry	1359 mg
Blueberry	836 mg
Black currant	758 mg
Plum	377 mg
Cherry	274 mg
Blackberry	260 mg
Strawberry	235 mg
Raspberry	215 mg
Black grape	169 mg
Apple	136 mg
Peach	59 mg
Apricot	34 mg

## Best-tolerated prebiotic foods contain polyphenols.

### POLYPHENOL CONTENT IN FRUITS



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Food	Polyphenol content, mg per 100 grams (3.5oz)
Ground flaxseed	1528 mg
Chestnut	1215 mg
Hazelnut	495 mg
Pecan	493 mg
Soybean	246 mg
Almond	187 mg
Black bean	59 mg
White bean	51 mg
Walnut	28 mg

## Best-tolerated prebiotic foods contain polyphenols.

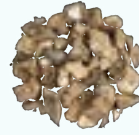
### POLYPHENOL CONTENT IN BEANS, NUTS AND SEEDS



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## Prebiotic foods you may not be aware of...

- Inulin: leeks and jicama
- Galacto-oligosaccharides: black beans and Jerusalem artichoke
- Resistant starch (three different types):
  - millet
  - plantain
  - cooked and chilled potatoes
- Arabinogalactans: radish and coconut



## Fermented foods

- Can boost microbiome diversity
- Study showed that **six** weeks of fermented foods
  - significantly reduced inflammation and markers of immune system dysregulation
  - while enhancing microbiome diversity



## Rest – Tools for Optimizing Rest



## Rest – Tools for Optimizing Rest



- Psychotherapy
- MBSR / Mindfulness
- Counseling
- Meditation
- Biofeedback
- Deep breathing
- Guided imagery
- Hypnosis

## Meditation changes brain structure

- Research on participants undergoing an 8-week MBSR program found increased gray matter in the hippocampus and the cingulate cortex
- Another study showed expansion of white matter brain regions that govern emotional reactivity
- Meditation increases the size of the prefrontal cortex, the area involved in cognition and decision-making

Adrienne A., "Dispositional Mindfulness Co-Varies with Smaller Amygdala and Caudate Volumes in Community Adults," PLoS One 8, no. 5 (May 22, 2013): e64574



## Meditation changes brain structure

- Regular practice shrinks the amygdala, the fear center of the brain
- This is how it reduces stress reactivity and enhances emotional skillfulness

Adrienne A., "Dispositional Mindfulness Co-Varies with Smaller Amygdala and Caudate Volumes in Community Adults," PLoS One 8, no. 5 (May 22, 2013): e64574



## Helps with weight loss and inflammation

- Meta-analysis of multiple studies show that meditation reduces cortisol and C-reactive protein levels
  - cortisol is associated with storing fat in our abdomen area (belly fat)
  - elevated C-reactive protein levels indicate inflammation

Adam Koncz (2021) Meditation interventions efficiently reduce cortisol levels of at-risk samples: a meta-analysis. Health Psychology Review, 15:1, 56-84



## More brain benefits

Meditation has been associated with:

- improved attention and awareness.
- increased amount of both gray and white matter
- reduced age-related atrophy and loss of brain cells, thus diminishing the negative impact of aging on the brain

Antoine Lutz et al., "Long-term Meditators Self-induce High-amplitude Gamma Synchrony During Mental Practice," PNAS 101, no. 46 (November 8, 2004): 16369-16373



## Review of Part II: Implement the TIGER Protocol

**Toxins:** Detoxify and Improve Liver Function

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*Next steps...*

## Racial and ethnic disparities in autoimmunity

Non-white women develop lupus at a younger age, have more serious complications, and die from it earlier than white women – about 13 years younger, on average

Minority populations with multiple sclerosis and other autoimmune diseases experience poorer outcomes due to social determinants of health

Autoimmune hepatitis – race/ethnicity was an independent risk factor, with non-white populations at greater risk

Racial Disparities in Rates of Death Among People with Lupus, Finds CDC Study. Lupus Research Alliance. May 10, 2019.






**Disparities in Environmental Exposures to Endocrine-Disrupting Chemicals and Diabetes Risk in Vulnerable Populations**  
Abstract Title: "Medical History" Abstract 1: Study "Area 101" and "Health in Context"  
Publication Date: 08/08/2023 | DOI: 10.1002/ehp2100

## Racial and ethnic disparities in root causes

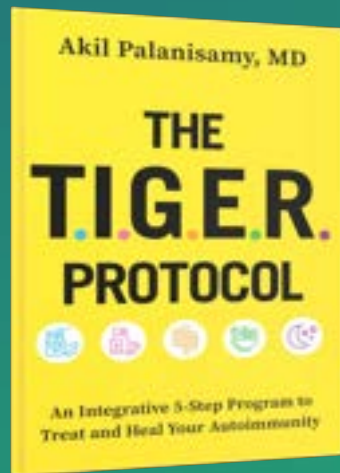
- Differential exposure to toxins
- Hispanic populations, both men and women
  - Higher exposures to cleaning chemicals, pesticides and agricultural chemicals



**The Environmental Injustice of Beauty: Framing Chemical Exposures from Beauty Products as a Health Disparities Concern**  
Joni A. Zito, PhD, MS<sup>1</sup> and Sharna Shamsunder, PhD, MS<sup>2</sup>  
<sup>1</sup>Department of Environmental and Occupational Health, George Washington University-Health Justice School of Public Health, Washington DC  
<sup>2</sup>Health and Environmental Policy Department, Occidental College, Los Angeles, CA

## Racial and ethnic disparities in root causes

- African-American populations, especially women
- Hair straightening products and skin lightening creams have been found to have high levels of toxins



*Further reading  
with 35+ recipes*

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