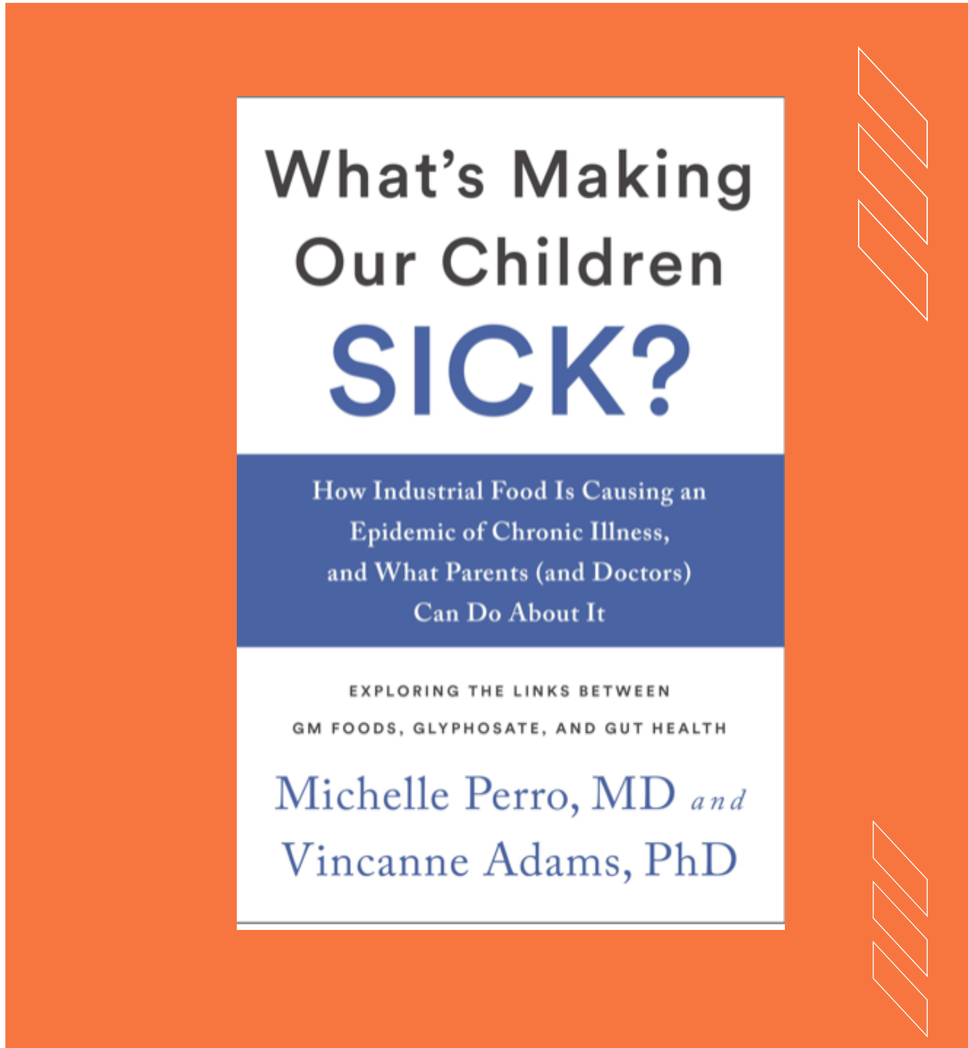
GMO Science
educate to regenerate

FAKE FOOD, CHILDREN, AND THE LINKS TO AUTOIMMUNITY

Michelle Perro, MD, DHom
CEO, www.gmoscience.org
March 2025



Agenda

- Overview of rising autoimmune disorders in children
- Defining ‘fake food’
- Nutritional deficiencies, harmful additives, and contaminants
- Impacts on children’s health
- Solutions and strategies
- Call to action

The epidemiology of inflammatory bowel disease: Clues to pathogenesis?

MINI REVIEW article

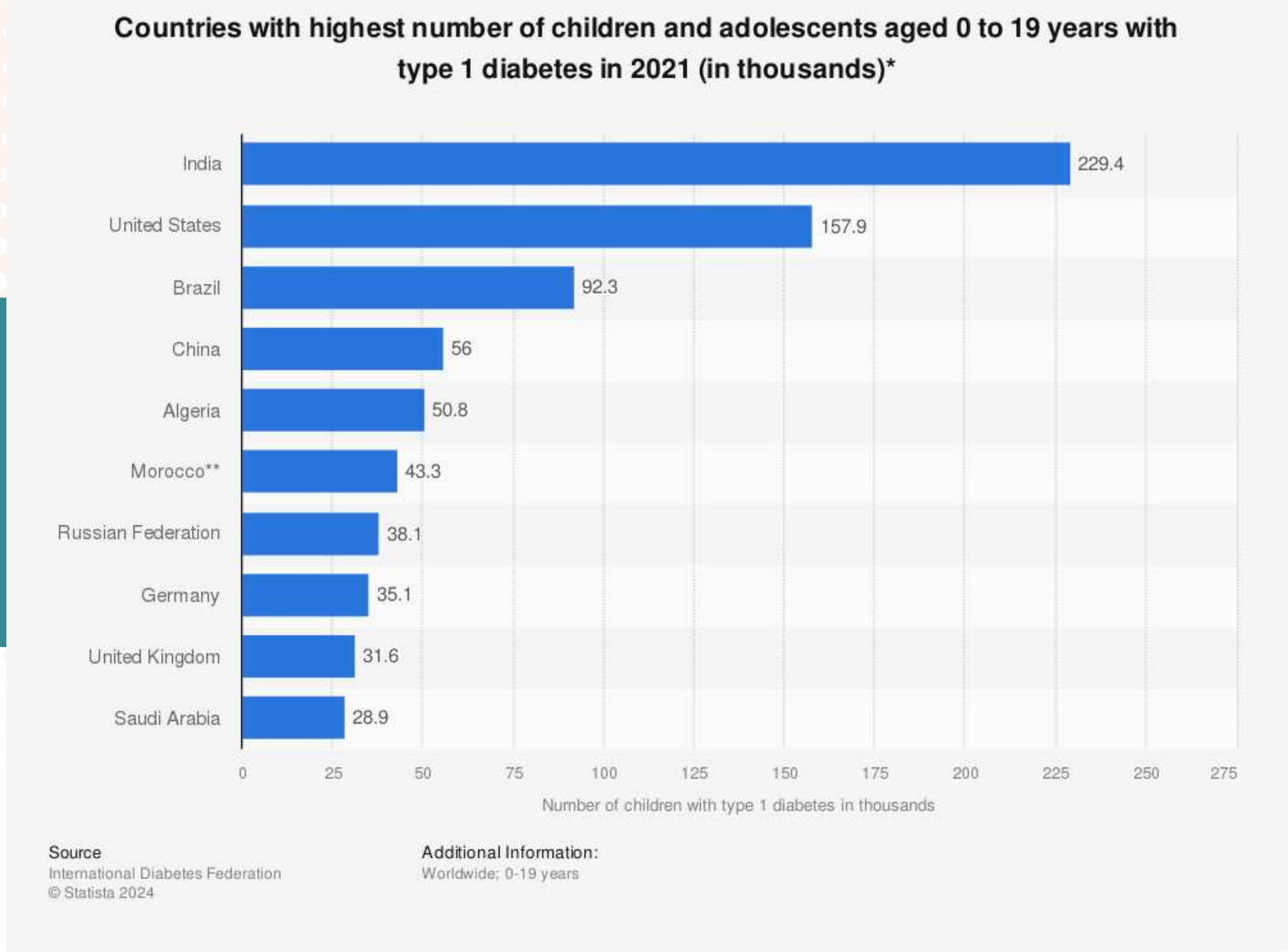
Front. Pediatr., 16 January 2023

Sec. Pediatric Gastroenterology, Hepatology and Nutrition

Volume 10 - 2022 |
https://doi.org/10.3389/fped.2022.1103713

- Increased over past 50 years
- Incidence ~ 1 in 10,000 children
- Strong role of environmental factors
- Diet linked to intestinal inflammation
- Not likely a single disease, but a group of disorders - final common pathway inability to resolve inflammation
- Dysbiosis a major factor

Then and Now



Type 1 Diabetes

- Type 1 DM 1.9 per 1,000 kids in the US
- 3-4% annual increase over the last 3 decades

Changing Pattern of Childhood Celiac Disease Epidemiology: Contributing Factors

Alina Popp[1,2†] Markku Mäki[1*†]

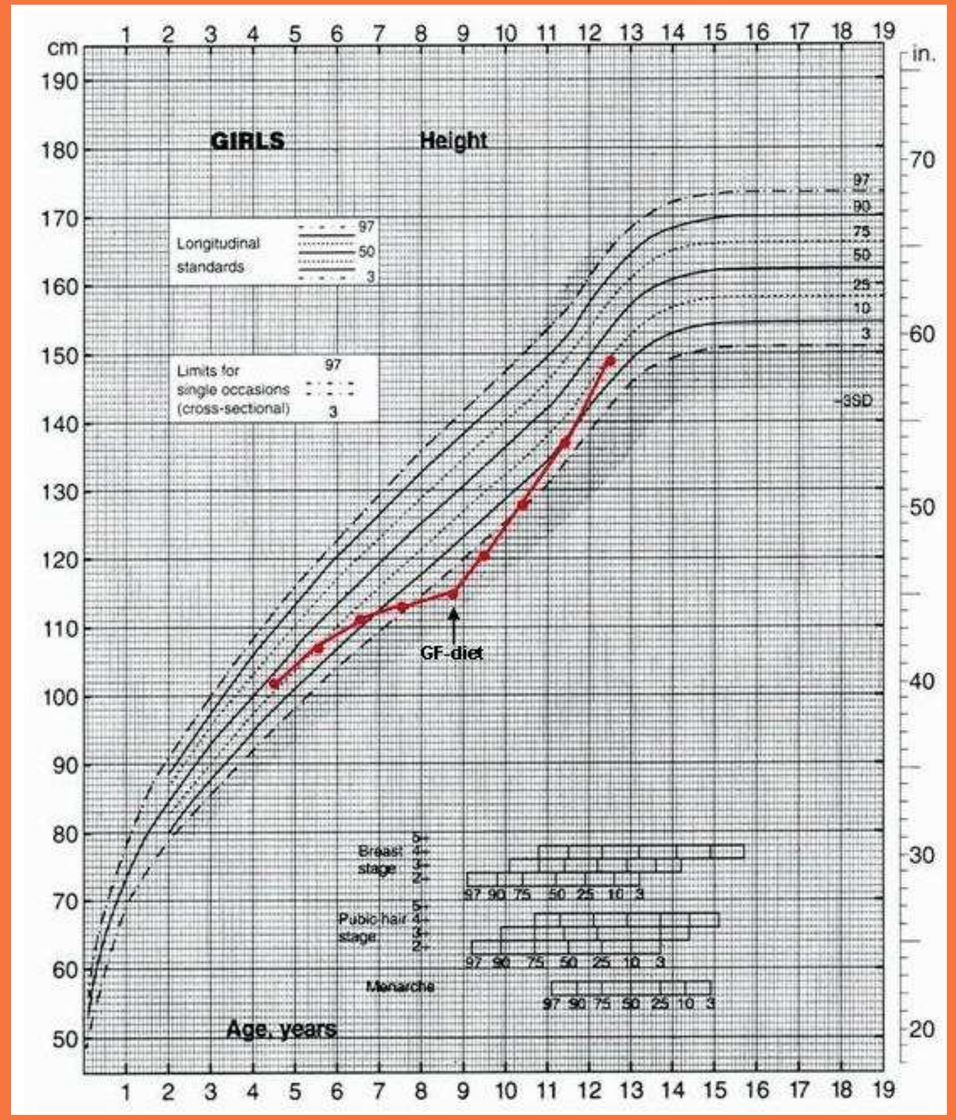
- 1 in 100 children globally
- Autoimmunity in genetically susceptible individuals from gluten ingestion

REVIEW article

Front. Pediatr., 28 August 2019

Sec. Pediatric Gastroenterology, Hepatology and Nutrition

Volume 7 - 2019 |
https://doi.org/10.3389/fped.2019.00357



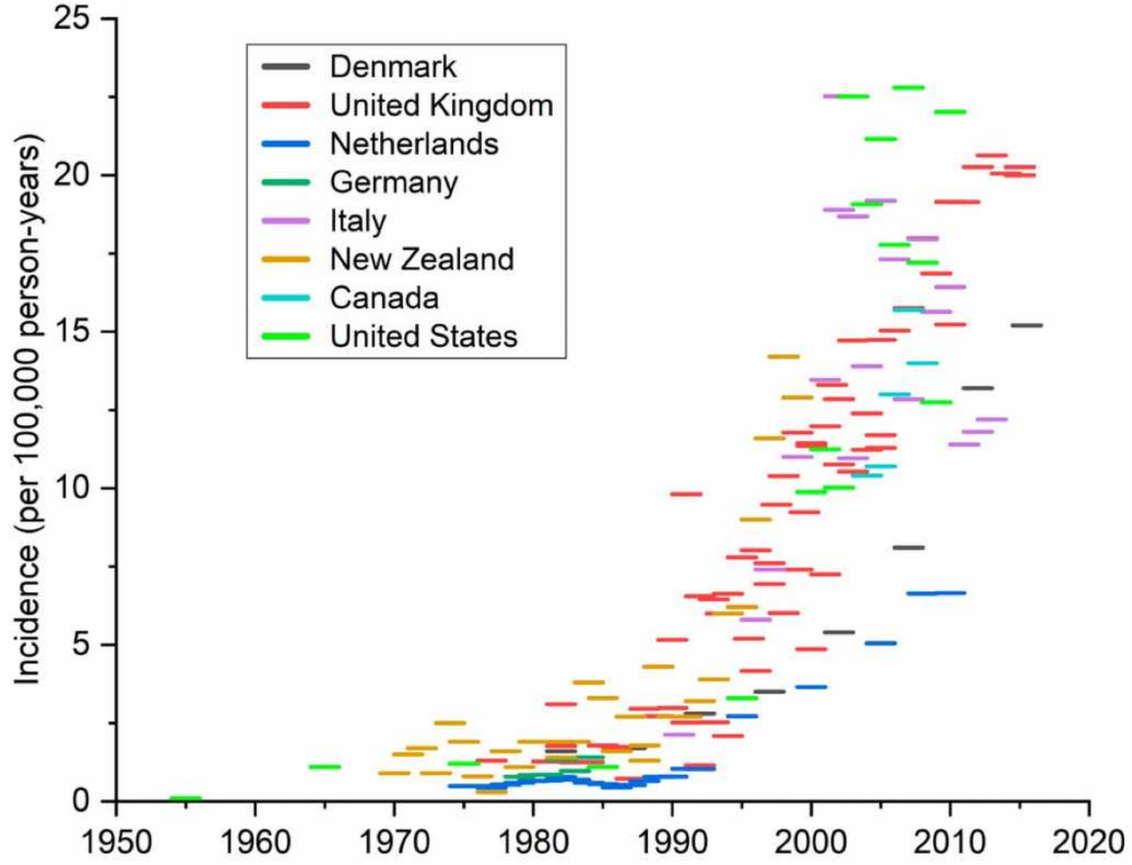


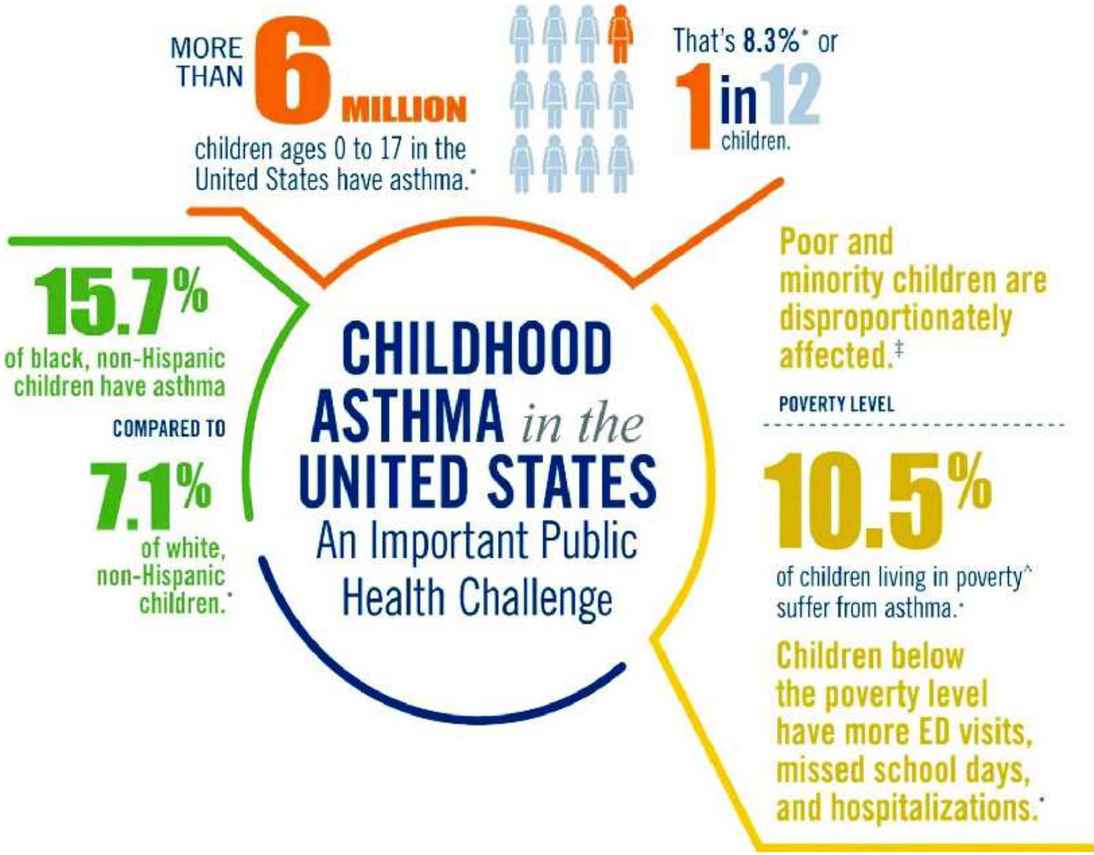
Figure 5. Trends in the incidence of celiac disease over time among all ages, by country.

Am J Gastroenterol 2020;00:1–19. https://doi.org/10.14309/ajg.0000000000000523

Asthma and Autoimmunity?

Abstract

The last decade has witnessed a growing interest in autoinflammation, which is related to an increase in knowledge about the immunopathogenesis of a broad spectrum of diseases, not only of immunological but also of allergic/inflammatory nature, such as asthma. Contrary to the belief that asthma and autoimmune diseases have little to share, a growing body of research supports autoimmune mechanisms underpinning disease severity in a subset of asthmatics, particularly severe asthmatics. Existing evidence suggests a plausible theory of breach of tolerance in asthma patients. The presence of autoantibodies as a hallmark of autoinflammation and the development of autoimmunity (clinical manifestations caused by autoantibody-mediated inflammation) in asthma are parts of a spectrum of immunological phenomena, following the pattern that innate and adaptive immune responses constitute the immunological continuum. Besides, cutting-edge molecular techniques have revealed common genetic variants between asthma and the wide spectrum of autoimmune diseases.

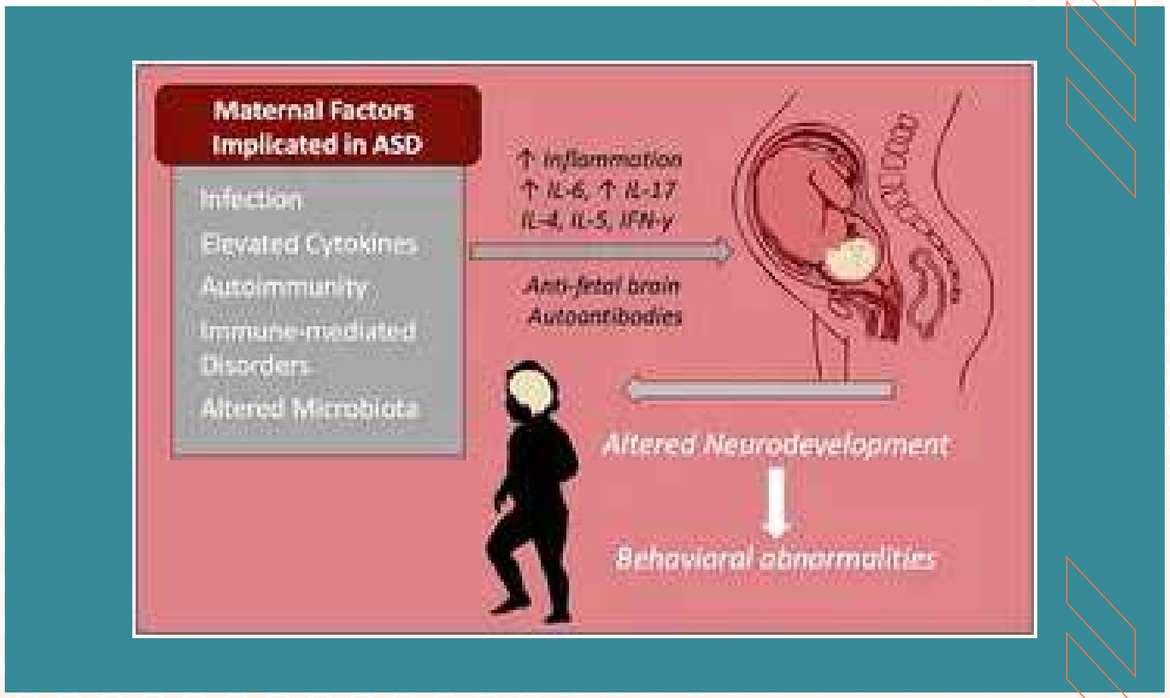


https://doi.org/10.1016/B978-0-323-85415-3.00013-1

Childhood Asthma-Us, 2016;EPA; Data Source: 2016 National Health Survey

All autoimmune diseases in children are rising in incidence

- Juvenile Idiopathic Arthritis
- Autoimmune Hypothyroidism (Hashimoto’s Thyroiditis)
- Autoimmune Hyperthyroidism (Graves’ Disease)
- Lupus
- IBD/Celiac
- Type I DM
- PANS/PANDAS
- Autism Spectrum Disorder
- Maternal Immune Activation (MIA)



Volume 12 - 2018 | Volume 12 - 2018 |

What is Fake Food?

Ultra-processed products made from refined ingredients and additives, lacking nutritional value and linked to inflammation, metabolic disorders, and autoimmune conditions.

BIOMILQ™
Human milk for babies

What’s the problem with ultraprocessed foods?

- **Industrially formulated foods:** Made from refined ingredients, additives, synthetic compounds.
- **Minimal whole ingredients:** Lack of fruits, vegetables, unprocessed grains.
- **High in additives:** Preservatives, artificial flavors, colors, emulsifiers, stabilizers; enhance taste (palatants), texture, and shelf life.
- **Nutritionally imbalanced:** Low in fiber, vitamins, minerals; high in sugar, unhealthy fats, sodium.
- **Engineered for overconsumption:** Designed for hyper-palatability, triggering cravings and overeating.
- **Examples:** Sugary cereals, packaged snacks, sodas, processed meats, and ready-to-eat meals.
- **Health concerns:** Linked to inflammation, gut dysbiosis, obesity, diabetes, and autoimmune disorders.

Kraft Heinz Pulls Lunchables From National School Lunch Program

The move comes months after a Consumer Reports investigation documented lead and high levels of sodium in supermarket versions of the highly processed meals

By Kevin Loria

November 13, 2024

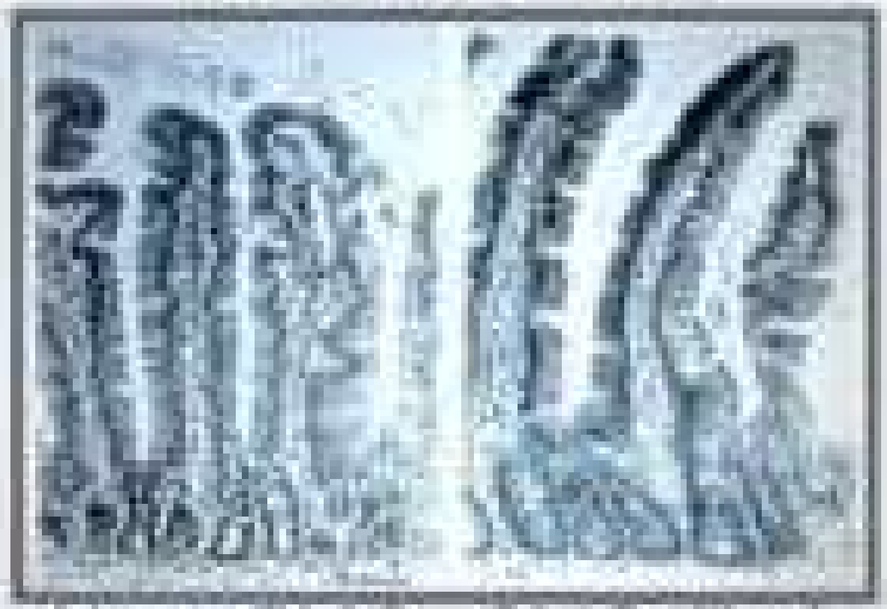
INGREDIENTS:

Wheat Flour, Water, Sugar, Glycerin, Soybean Oil, Yeast, Vital Wheat Gluten, Mono and Diglycerides, Salt, Xanthan Gum, Calcium Propionate, Sorbic Acid, Natural and Artificial Flavor, Enzyme, Tomato Paste, Modified Food Starch, Garlic Powder, Onion Powder, Spice, Citric Acid, Dried Basil, Sea Salt, Potassium Sorbate, Pork, Mechanically Separated Chicken, Beef, Pork Stock, Dextrose, Lactic Acid Starter Culture, Oleoresin of Paprika, Flavoring, Sodium Ascorbate, Sodium Nitrite, BHA, BHT, Pasteurized Part-Skim Milk, Milk Protein Concentrate, Sodium Citrate, Milkfat, Cheese Culture, Cellulose Powder

What's the problem with GMOs?

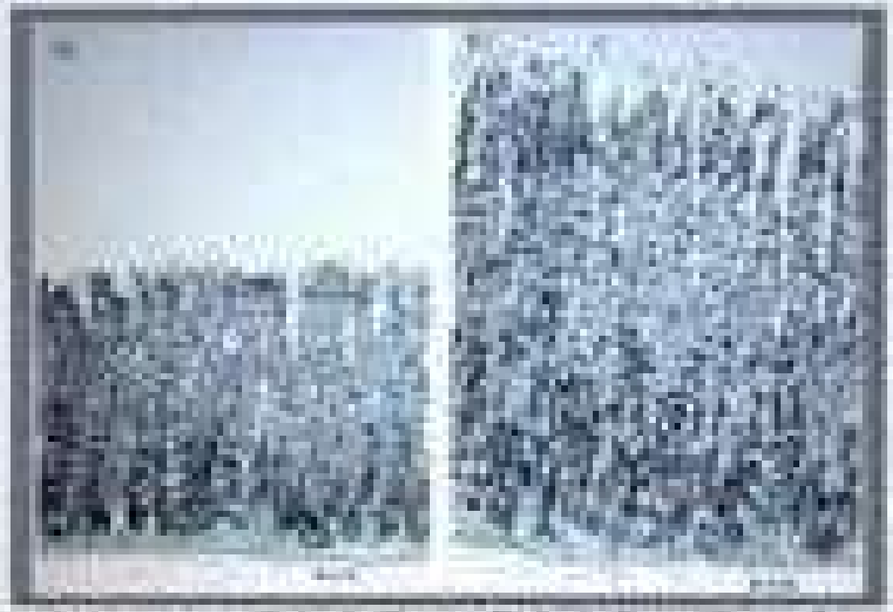
- **Herbicide residues:** GMO crops are engineered to tolerate glyphosate; increased herbicide use and exposure to residues linked to endocrine disruption, gut microbiome imbalance, and cancer risks.
- **Allergenicity:** Introduce new allergens and increase allergenicity.
- **Antibiotic resistance:** GMOs use antibiotic-resistant marker genes contributing to antibiotic resistance in humans.
- **Nutrient alterations:** Decreased nutrient composition, reducing beneficial compounds and introducing anti-nutrients.
- **Dysbiosis:** GMOs and associated pesticides disrupt gut bacteria, swap plasmids, and contribute to inflammation and immune dysregulation.
- **Environmental concerns:** Cross-pollination with non-GMO crops and biodiversity loss create ecological and food security issues.
- **Long-term safety uncertainty:** Limited long-term studies on the health effects of GMO consumption leave gaps in understanding their full impact.

Intestinal Wall



Non-GMO GMO-Fed

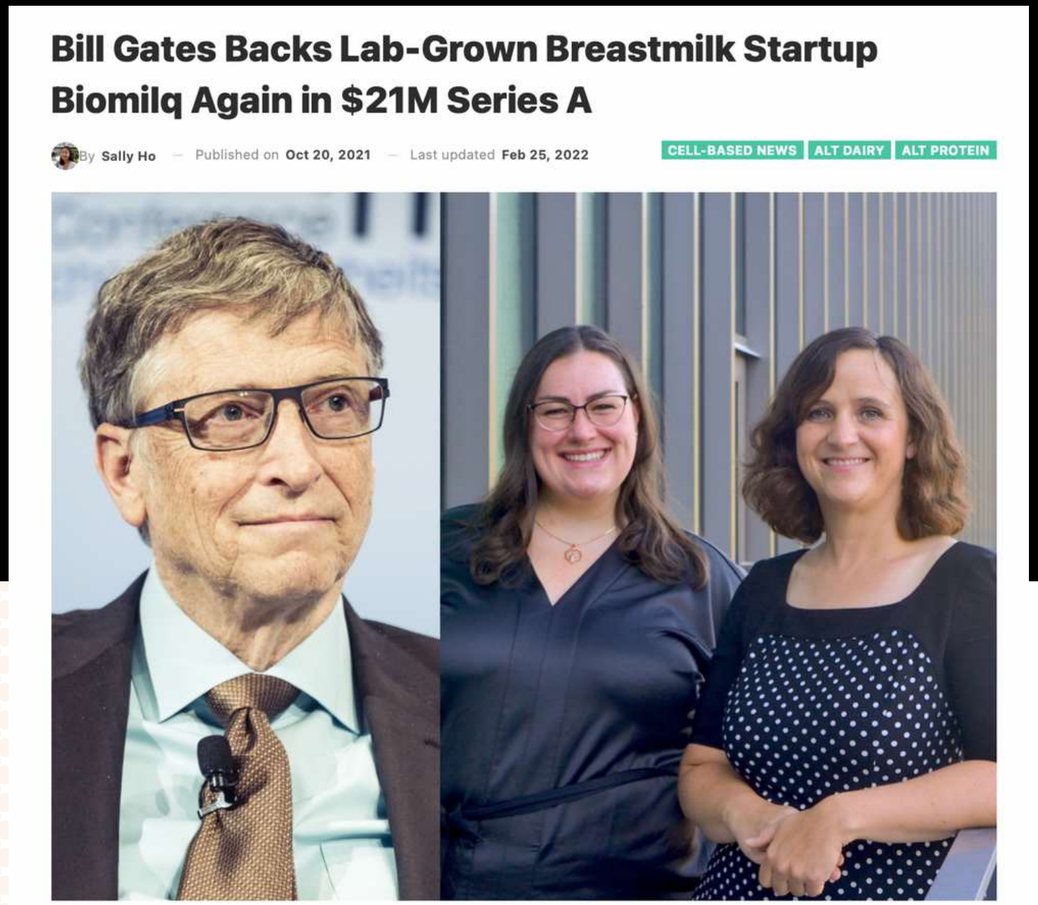
Stomach lining



Non-GMO GMO-Fed

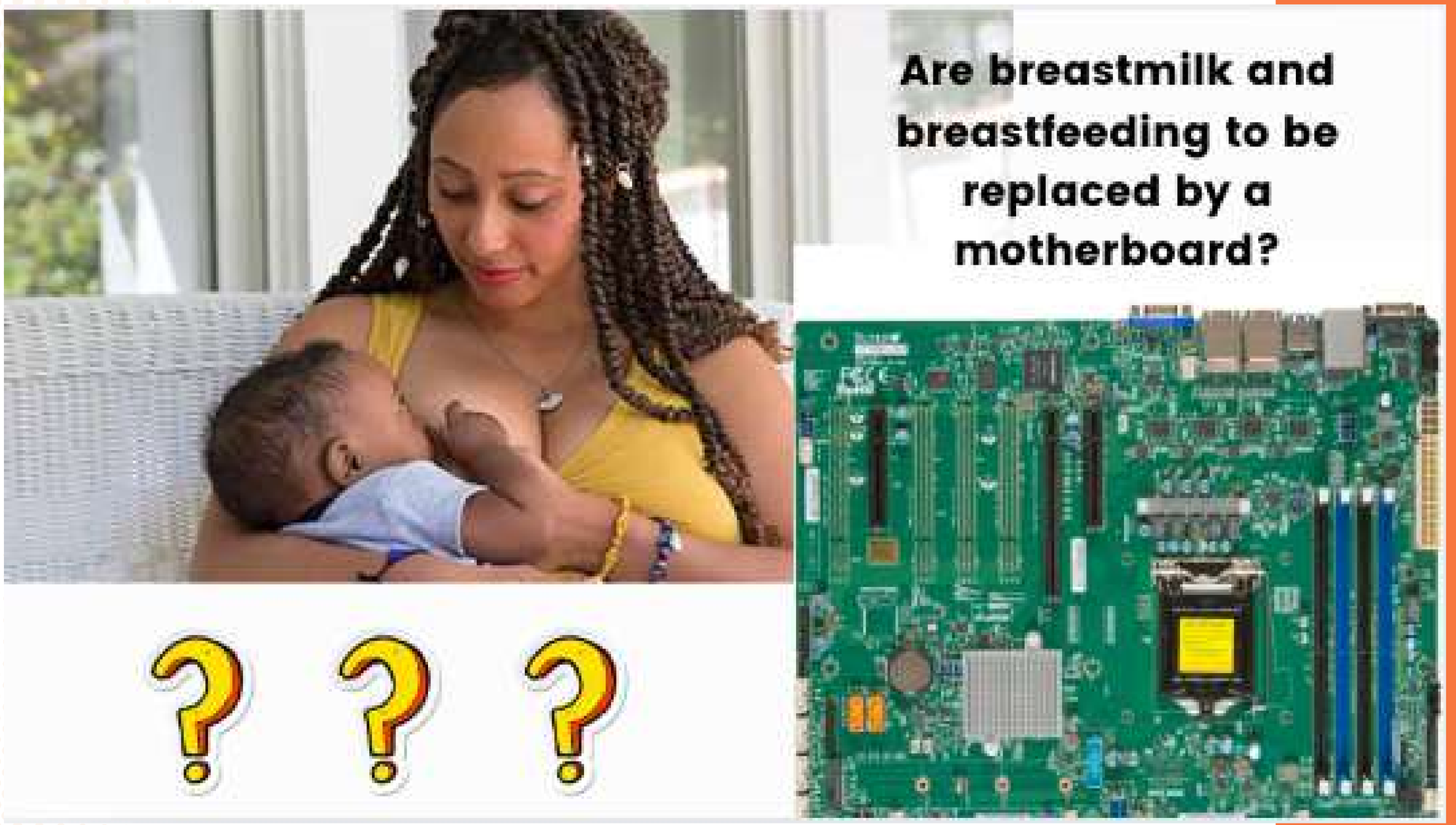
Burger Nutrition Comparison

Nutrition information serving size	 Ground beef 80% lean, 20% fat (100 grams)	 Beyond Burger (113 grams)	 Impossible Burger (113 grams)	 Morning Star Black Bean (67 grams)	 Boca Burger (71 grams)
Calories	270 calories	290 calories	240 calories	110 calories	100 calories
Saturated Fat	6.7g	5g	8g	0.5g	1g
Protein	26g	20g	19g	9g	13g
Sodium	75mg	450mg	370mg	320mg	350mg



What's the problem with Biomilq?

- **Lack of immunological benefits:** Synthetic breast milk cannot replicate the immunity/bioactive compounds present in breast milk (critical for immune system development).
- **Absence of dynamic nutrient adaptation:** Has a fixed nutrient profile that may not fully support growth and development.
- **Processing concerns:** Produced using biotechnology; issues with contamination, residual processing chemicals, and genetic modifications.
- **Missing beneficial microbiota:** Breast milk contains probiotics and prebiotics that support gut microbiome; synthetic versions lack or cannot fully replicate.
- **Allergenicity and sensitivities:** Introduces new allergens due to processing methods and novel proteins.
- **Long-term safety unknowns:** No research exists on the long-term health impacts of consuming lab-grown breast milk.
- **Ethical and regulatory concerns:** Questions about oversight, transparency, and ethics.
- **Cost and accessibility issues:** Redirect funding to nursing moms/lactation support.


Are breastmilk and breastfeeding to be replaced by a motherboard?

What’s the problem with cellular meat?

- **Lack of long-term safety data:** No data on long-term health effects.
- **Processing additives/residues:** Growth media, antibiotics, and scaffolding materials used in production introduce contaminants/allergens.
- **Nutritional composition variability:** Lack key nutrients naturally found in conventional meat; fatty acids, vitamins (e.g., B12), and trace minerals.
- **Hormonal and growth factor concerns:** Use of growth factors and hormones to stimulate cell growth pose endocrine disruption when residual traces remain in the final product.
- **Structural and functional differences:** Does not replicate natural muscle fibers, collagen, and connective tissues; impact digestion and absorption.
- **Microbial contamination risks:** Bioreactor environments introduce pathogens or contaminants not typically encountered in conventional meat processing.
- **Allergenicity and immune responses:** Novel proteins or additives trigger allergies or immune reactions.
- **Environmental and ethical questions:** While marketed as sustainable, relies on energy-intensive processes and raises ethical questions about its impact on food security and agriculture.

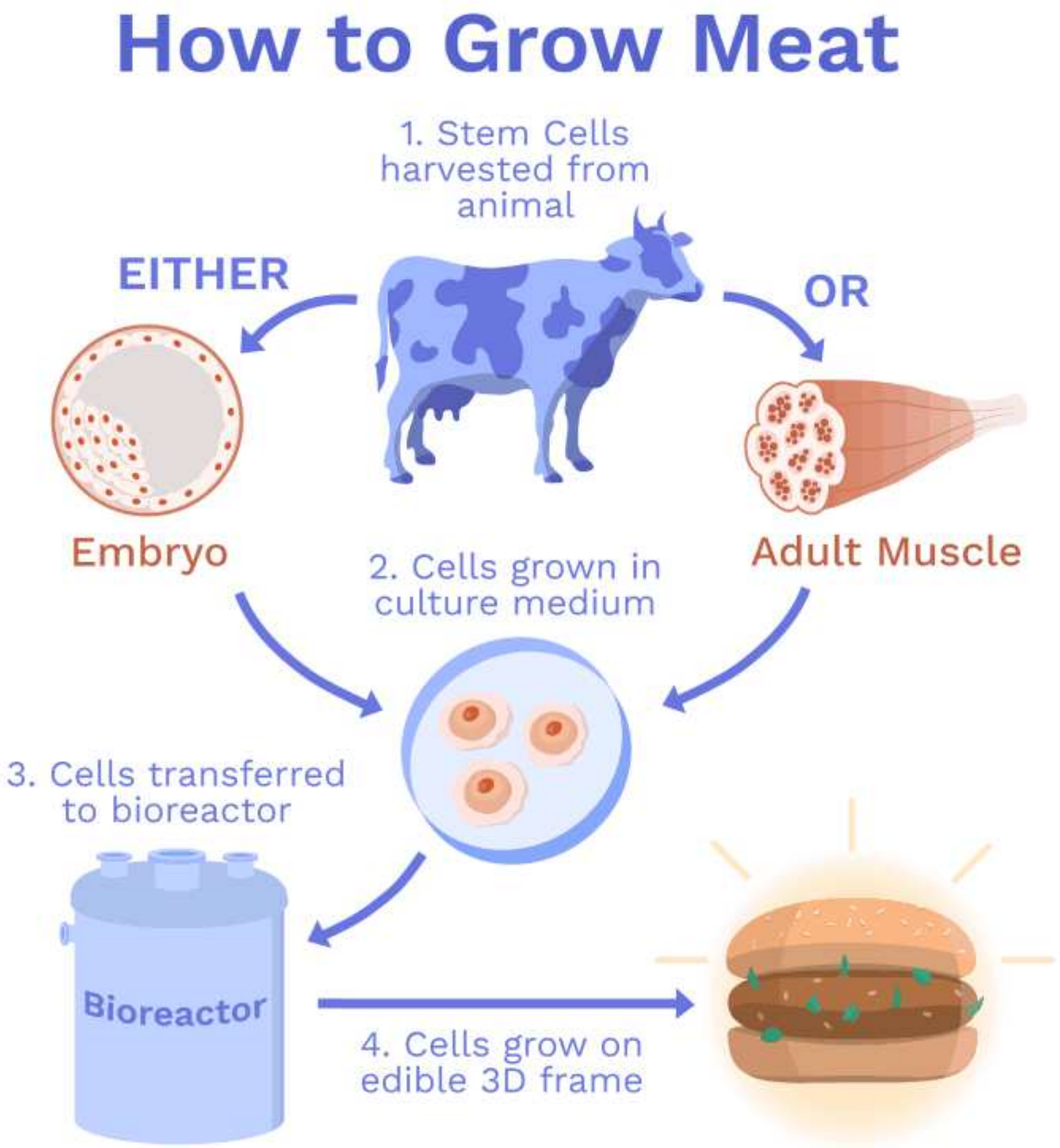
Lab-Grown Meat Companies

- Aleph Farms - Israel - beef
- SciFi Foods - US - beef
- Avant Meats - Hong Kong - Fish
- BioCraft Pet Nutrition - Delaware - Pet food
- Bene Meat - Czech - Pet food
- Believer (Future Meat Technologies) - Israel - Various meats
- Biftek - Ankara, Turkey - Beef
- BioBQ - Texas - Beef
- BlueNalu - San Diego, CA - Seafood
- BioTech Foods - Spain - Pork
- Bond Pet Foods - Boulder, Colorado - Chicken for pets
- Cell Ag Tech - Malaysia - Beef
- CellX - China - Seafood, Chicken, Wagyu Beef
- Clear Meat - India - Chicken/EcoMeat
- Cubiq Foods - Spain - Lab-grown animal fat
- Finless Foods - California - Fish
- Fork and Good - US - Pork
- Forsea foods - Israel - Seafood/Eel meat

www.labgrownmeat.com/list-of-lab-grown-meat-companies/

Lab-Grown Meat Companies

- Gaia Foods - Singapore - Red meat
- GOOD Meat (Eat Just) - California - Chicken (First to be approved by FDA and USDA)
- Gourmey - France - Foie Gras and Poultry
- Uncommon Bio - UK - Pork
- Hoxton Farms - UK - Fat
- IntegriCulture, Inc. - Japan - Foie Gras and Technology (‘Space Salt’: Allow the public to grow their own meat at home)
- Meatable - Netherlands - Beef, Chicken, and Pork
- Steakholder foods - Israel and Belgium - Foie Gras - 3D bioprinting technology and only lab-grown meat company on the stock exchange
- Mewery - Czech - Pork - first European company cultivating pork on microalgae base
- Mirari Foods - Switzerland - Beef - uses only ‘natural non-GMO cells
- Mission Barns - California - Fat
- Mosa Meat - Netherlands - Beef
- Primeval Foods - UK and US - Bushmeat (lions, zebras, and tigers)
- Shiok Meats - Singapore - Crab, Lobster, and Shrimp
- SuperMeat - Israel - Poultry
- Upside Foods - San Francisco - Previously ‘Memphis Meats” - Various meats
- Vow - Australia - Various Meats
- Wildtype Foods - San Francisco - Seafood - ‘Sushi-grade’



www.alestiklal.net/en/article/amidst-legal-and-health-contoversies-can-lab-grown-meat-resolve-the-global-food-crisis

Environmental impacts of cultured meat: A cradle-to-gate life cycle assessment

Derrick Risner, Yoonbin Kim, Cuong Nguyen, Justin B. Siegel, Edward S. Spang

doi: https://doi.org/10.1101/2023.04.21.537778

The scientists defined the global warming potential as the carbon dioxide equivalents emitted for each kilogram of meat produced. The study found that the global warming potential of lab-based meat using these purified media is four to 25 times greater than the average for retail beef.

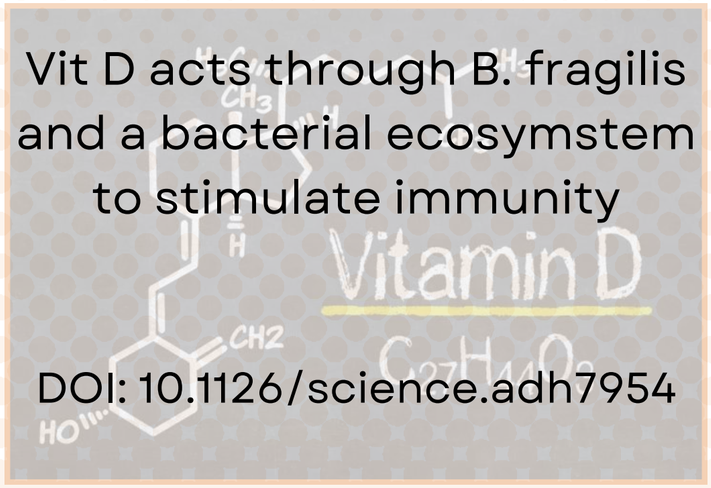
www.goodmeat.co/process

Unraveling the Impacts on Children's Immunologic Well-Being

United States Patent
Abraham

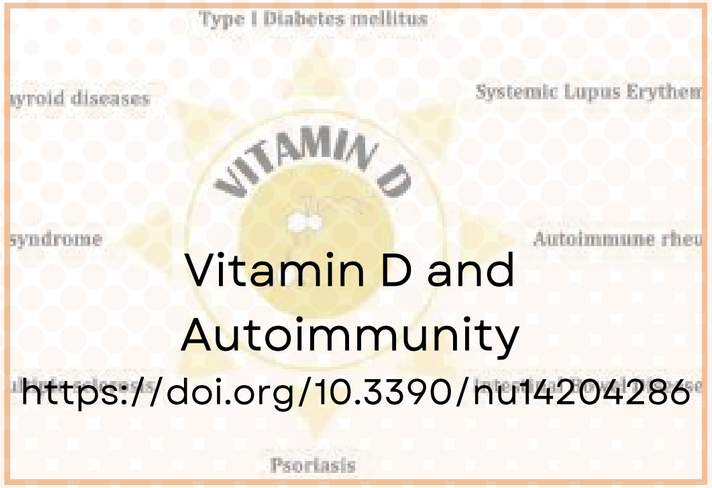
(10) **Patent No.:** **US 7,771,736 B2**
(45) **Date of Patent:** **Aug. 10, 2010**

Bacteroides fragilis is sensitve to glyphosate
https://doi.org/10.1016/j.jhazmat.2020.124556



Vit D acts through B. fragilis and a bacterial ecosymstem to stimulate immunity

DOI: 10.1126/science.adh7954



Vitamin D and Autoimmunity
https://doi.org/10.3390/nu14204286

Putting it all together...

Glyphosate as a microbiome disruptor:

- Glyphosate acts as an antibiotic, altering gut microbiome composition and reducing beneficial bacteria like *Bacteroides fragilis*.
- *B. fragilis* is crucial for maintaining gut integrity, regulating immune tolerance, and reducing inflammation.
- *B. fragilis* may be useful in rx of ASD (Underwood. *Science*; 2013)

Figure 6

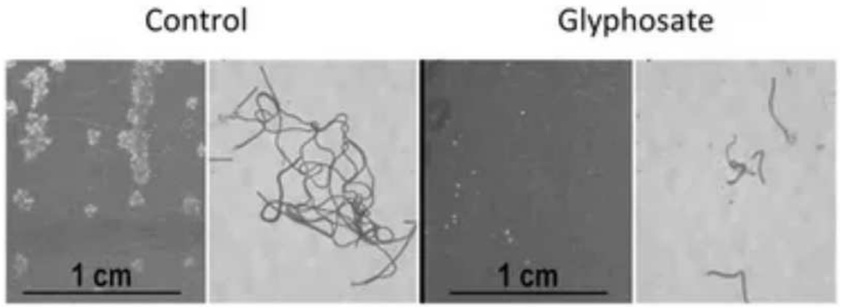
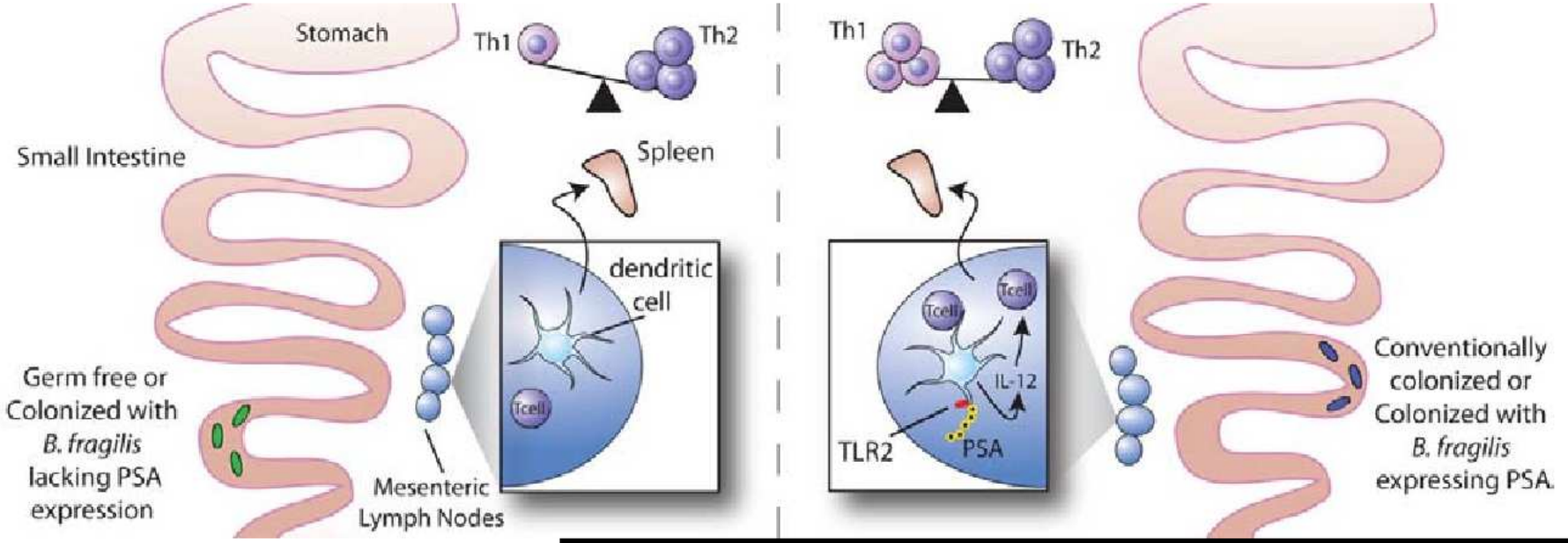


FIGURE 6. Effect of 1,000 mg/kg of glyphosate on macroscopic and microscopic growth of *Lactobacillus delbrueckii* subsp. *bulgaricus* in a solid growth medium for 48 h, modified from Clair E. et al. (2012).

Putting it all together...

Impact on *Bacteroides fragilis* and Immune Function:

- *B. fragilis* produces polysaccharide A (PSA), which modulates T-regulatory (Treg) cells, essential for preventing autoimmunity.
- Glyphosate-induced depletion of *B. fragilis* impairs immune regulation, leading to hyperactive immune responses and inflammation.



- DOI:10.2741/3603

Putting it all together...

Vitamin D Metabolism and Absorption:

- Gut dysbiosis caused by glyphosate can impair nutrient absorption, including Vitamin D.
- *B. fragilis* supports gut health, indirectly promoting proper absorption of Vitamin D, a critical modulator of immune function
- Vitamin D supports immune function in pediatric PANS/PANDAS, JIA, type 1 DM, SLE, MS, dermatomyositis, and alopecia areata.

https://www.ncbi.nlm.nih.gov/pubmed/29769136
https://www.ncbi.nlm.nih.gov/pubmed/29061729
https://www.ncbi.nlm.nih.gov/pubmed/28447433
https://www.ncbi.nlm.nih.gov/pubmed/27147283
https://www.ncbi.nlm.nih.gov/pubmed/21924736
https://www.ncbi.nlm.nih.gov/pubmed/28356466

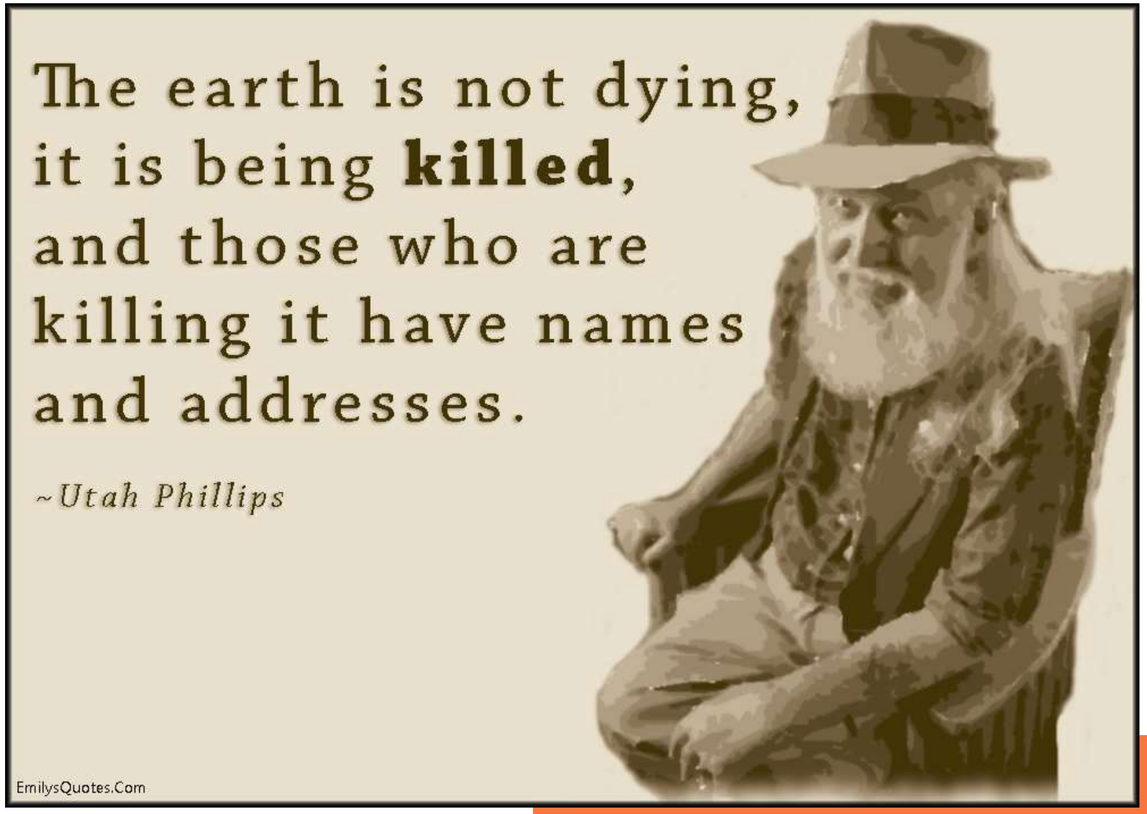
Peds Dosing Vit D

- Up to 6 months: 1000 IU per day
- 6–12 months: 1500 IU per day
- 1–3 years: 2500 IU per day
- 4–8 years: 3000 IU per day
- From 9 years: 4000 IU per day

Putting it all together…

Vitamin D Deficiency and Autoimmunity:

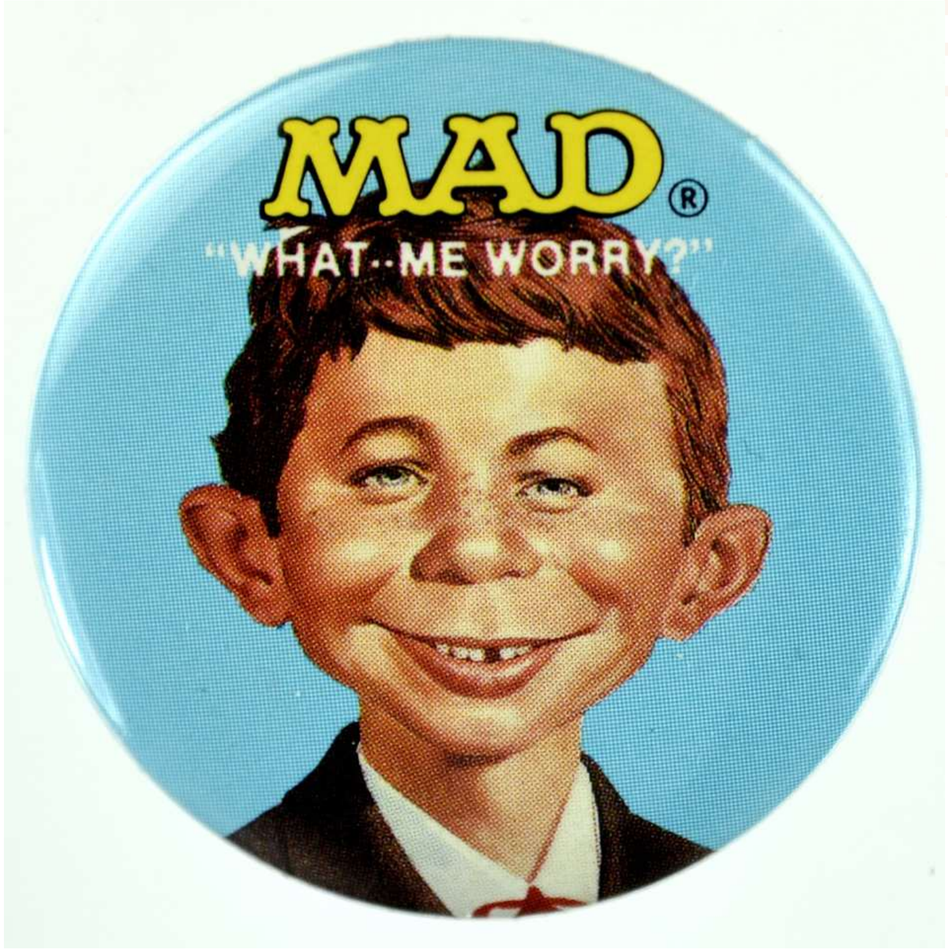
- Vitamin D deficiency is strongly linked to autoimmune diseases like multiple sclerosis, rheumatoid arthritis, and type 1 diabetes.
- Glyphosate’s disruption of gut bacteria and Vitamin D metabolism exacerbate Vitamin D deficiency, further increasing autoimmune risk.



Putting it all together…

Inflammation and Leaky Gut Syndrome:

- Glyphosate damages intestinal tight junctions, contributing to leaky gut syndrome, which allows toxicants, LPSs, and undigested proteins to enter the bloodstream.
- This triggers systemic inflammation and autoimmune activation, often associated with gut dysbiosis and reduced *B. fragilis*.

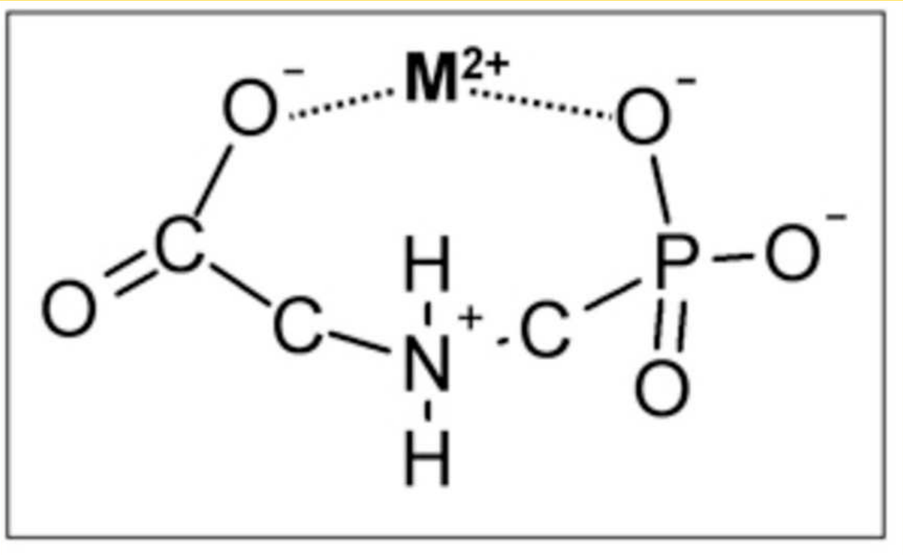


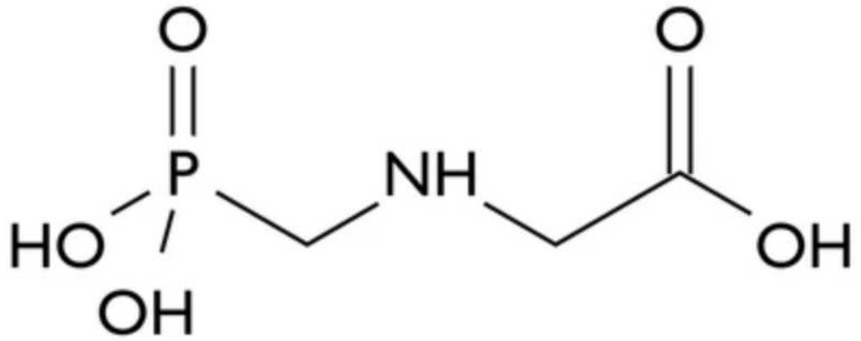
Key Mineral Cofactors for Vitamin D Activation:

1. **Magnesium**
   - Essential for converting Vitamin D into its active form (calcitriol).
   - Acts as a cofactor for enzymes involved in the hydroxylation of Vitamin D in the liver and kidneys.
   - Deficiency can directly impair Vitamin D activation and function.
2. **Zinc**
   - Supports the activity of Vitamin D receptors (VDR) in cells.
   - Plays a role in immune modulation and bone health, complementing Vitamin D functions.
3. **Boron**
   - Enhances the biological half-life of Vitamin D.
   - Assists in calcium and magnesium metabolism, improving bone strength.
4. **Calcium**
   - Works alongside activated Vitamin D to support bone mineralization.
   - Requires adequate Vitamin D for optimal absorption in the intestines.
5. **Iron**
   - Involved in enzyme systems that help metabolize Vitamin D.
   - Deficiency may reduce the effectiveness of Vitamin D in immune regulation.
6. **Copper**
   - Contributes to collagen synthesis and bone health, complementing Vitamin D's role in maintaining skeletal integrity.
7. **Selenium**
   - Supports antioxidant defense and immune function, helping Vitamin D reduce inflammation and oxidative stress.

Glyphosate is a metal chelator

It binds minerals (iron, manganese, zinc, boron, calcium, magnesium, etc.





Key Takeaway:

Glyphosate exposure disrupts gut microbiota, reduces *B. fragilis*, and interferes with Vitamin D metabolism, binding key minerals collectively promoting inflammation, immune dysregulation, and increases the risk of autoimmune diseases.

PATENT PARADE

Concerns about lab-grown meat mirror past trends with ultra-processed foods. Efforts to replace traditional animal husbandry with lab-cultured meat impede food security and health.

This shift centralizes control of the food supply in the hands of private corporations, compromising nutritional quality, long-term safety, and agricultural sustainability. It is imperative that medical practitioners are aware of the implications for public health, including the impact on metabolic health, gut microbiome balance, and immune function.

SOLUTIONS

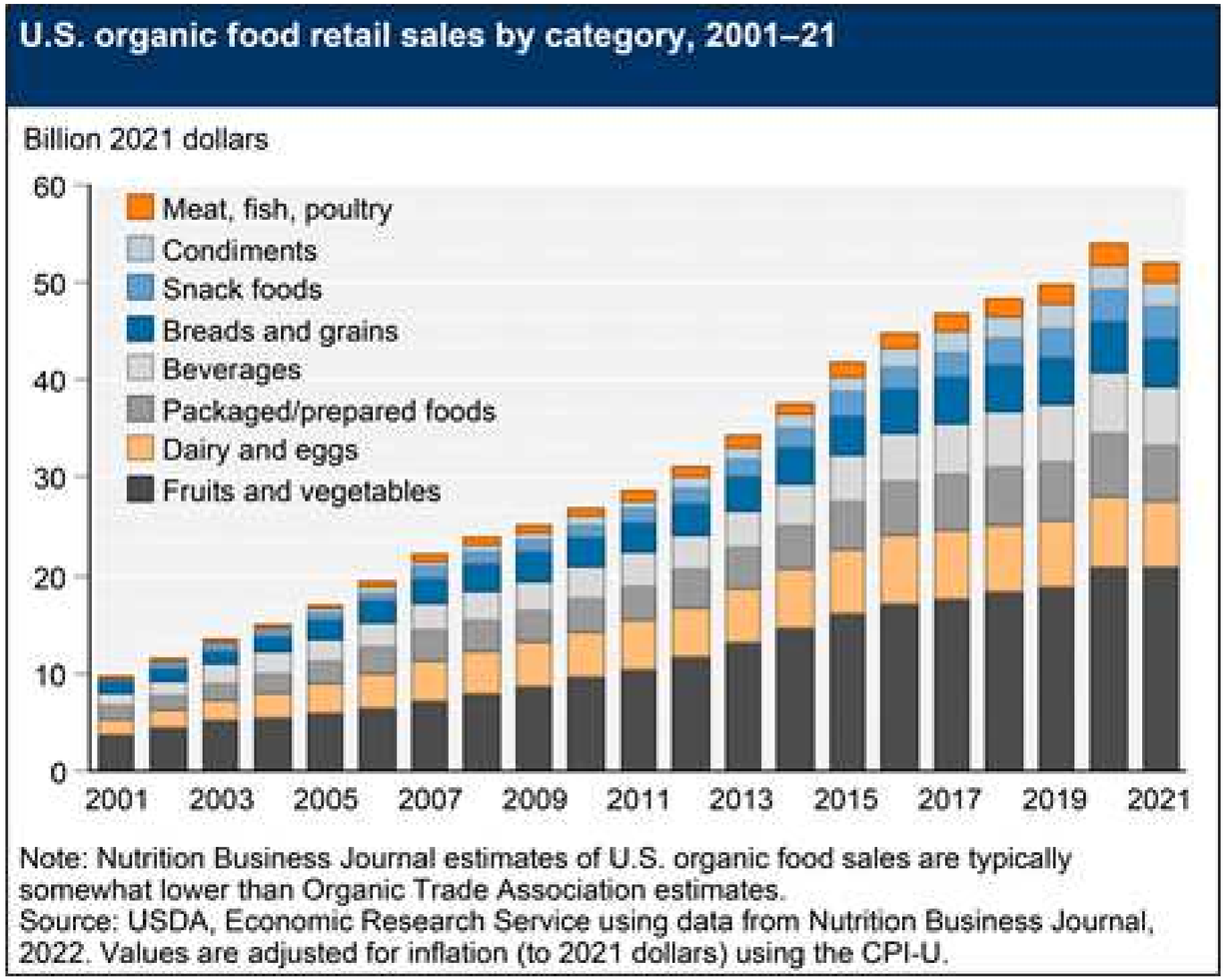
My 8 step program

1. Promote Organic Regenerative Diets:

- Encourage consumption of certified organic foods, which prohibit the use of GMOs and glyphosate.
- Emphasize whole, unprocessed foods to reduce exposure to hidden GMO ingredients.

2. Support Organic Regenerative Agriculture:

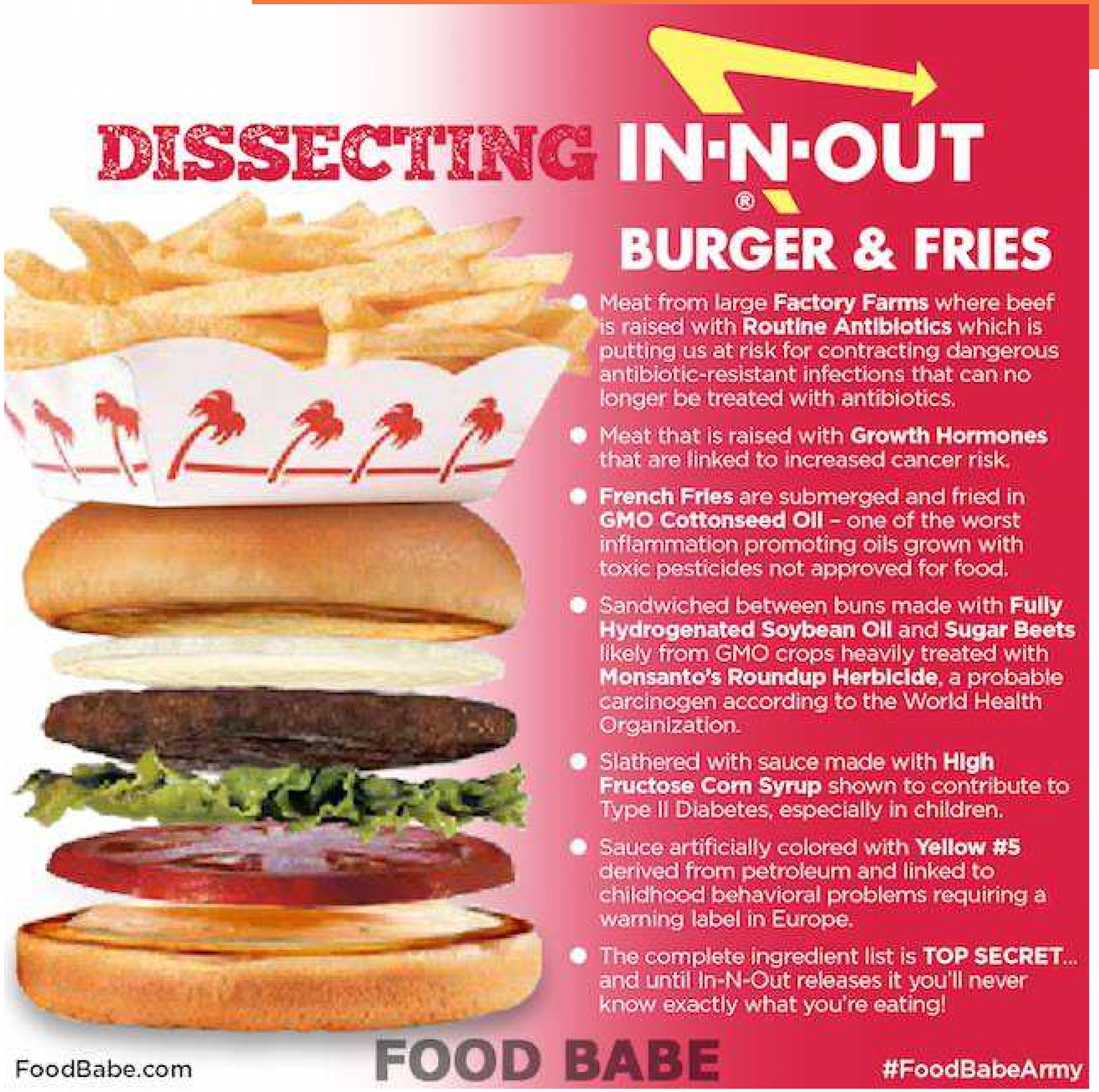
- Advocate for sustainable farming practices; prioritize soil health and biodiversity, reducing the need for synthetic herbicides.
- Educate patients about local farmers and Community Supported Agriculture (CSA) programs using regenerative methods.



www.ers.usda/gov/topics/natural-resources

3. Educate Food Label Awareness

- Teach patients how to read labels.
- Learn about high-risk GMO crops and ingredients: Soy, corn, canola, sugar beets, and cotton seed oil.

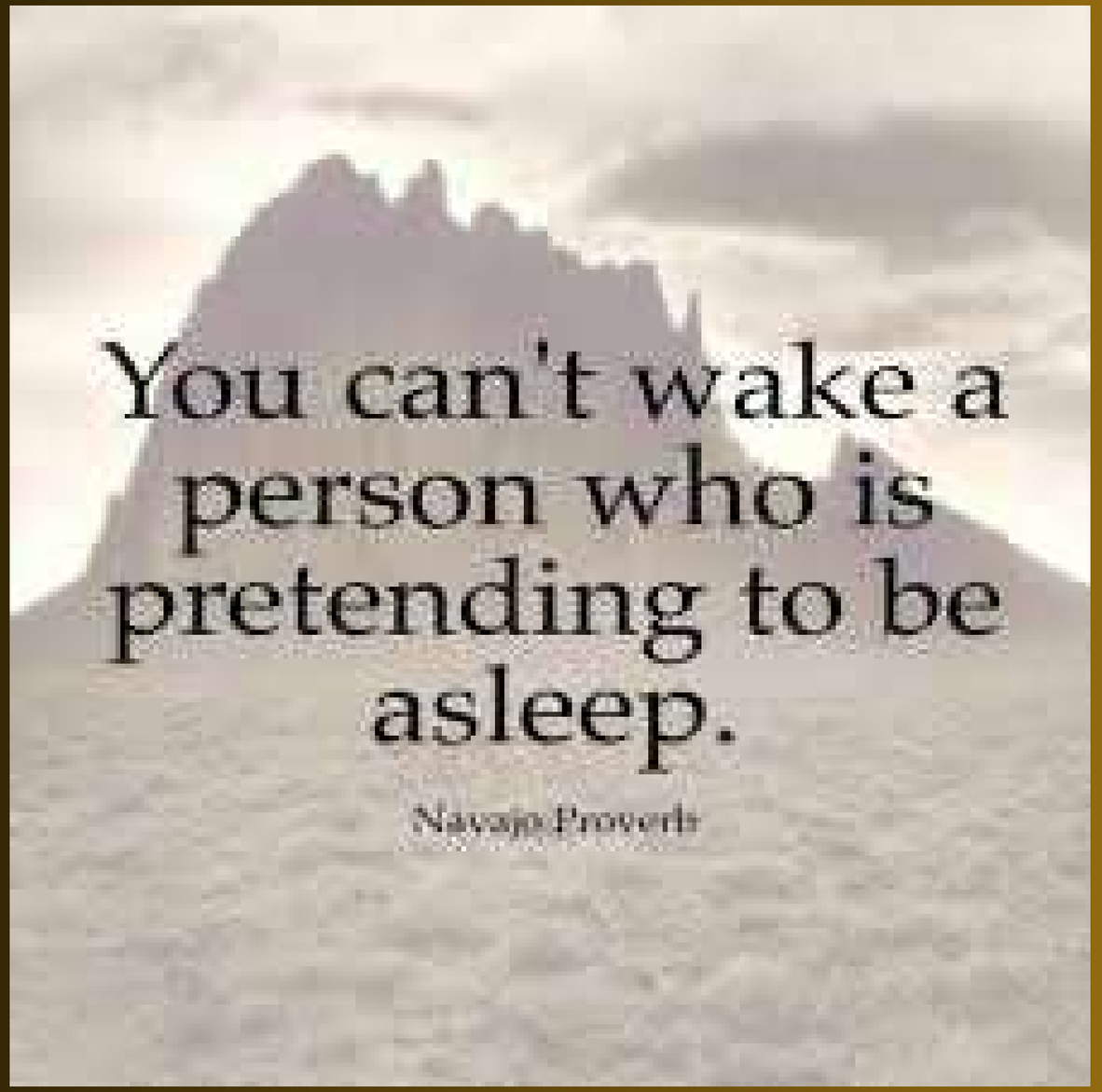


4. Detoxification Support

- Recommend nutrient-rich diets to support liver detoxification pathways (e.g., foods high in sulfur, antioxidants, and fiber).
- Prescribe supplements like magnesium, zinc, selenium, and glutathione/NAC to aid detoxification.

Detox Baths for Kids

- Bath water filter
- Epsom salt
- Baking soda
- Bentonite clay
- Real salt
- Occasional borax
- Essential oils/teas
- Warm water best
- 15-20 minutes
- Rinse
- Hydrate


You can't wake a person who is pretending to be asleep.
Navaja Proverb

5. Gut Health Restoration:

- Pre/pro/postbiotics to rebuild gut microbiota disrupted by glyphosate exposure.
- Recommend bone broth, fermented foods, and polyphenol-rich plants to repair gut integrity.
- Babies need *Bifido*.

Recommendations

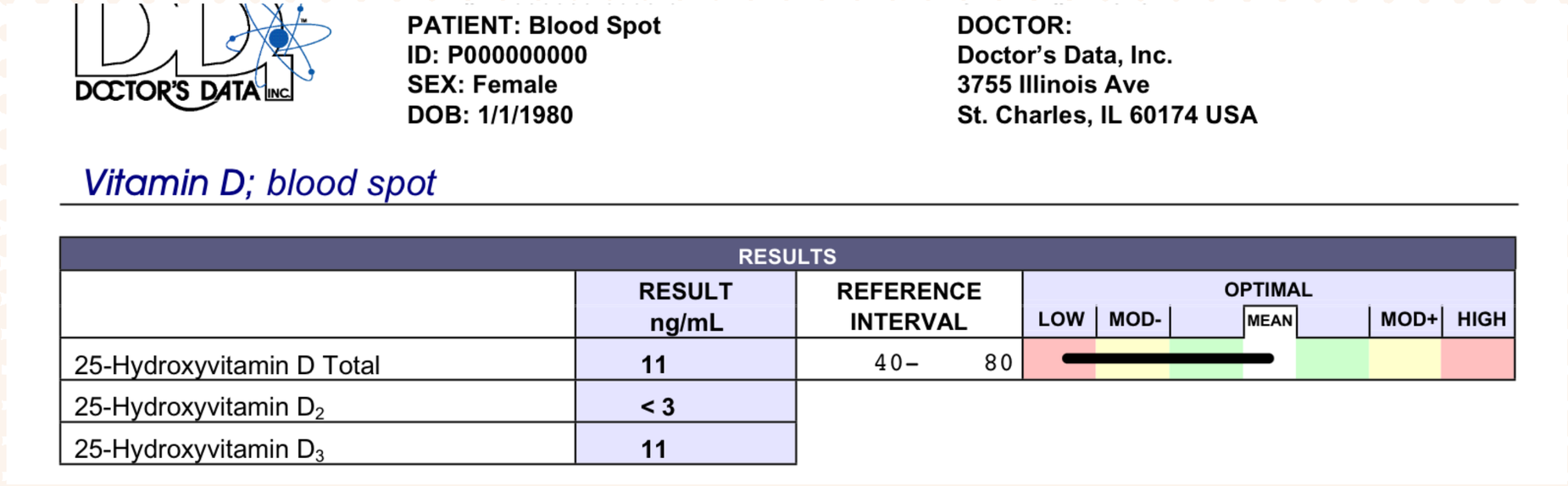
6. Water Filtration Systems:

- Advise patients to install high-quality water filtration systems to remove glyphosate residues from drinking water.
- Purchase the best system within their budget.

- Pure Effects
- ZeroWater Filters
- Epic Water Filters
- Clearly Filtered systems
- Berkey Water Filters
- qualitywaterlab.com

7. Testing and Monitoring

- Offer glyphosate/AMPA urine testing for patients with chronic inflammation or autoimmune disease. (HRIlabs.org)
- Monitor Vitamin D, gut microbiome health, and mineral status to assess impact and recovery.
- Directlabs.com - $139.00



DOCTOR'S DATA INC

PATIENT: Blood Spot
ID: P000000000
SEX: Female
DOB: 1/1/1980

DOCTOR:
Doctor's Data, Inc.
3755 Illinois Ave
St. Charles, IL 60174 USA

Vitamin D; blood spot

RESULTS			
	RESULT ng/mL	REFERENCE INTERVAL	OPTIMAL (LOW | MOD- | MEAN | MOD+ | HIGH)
25-Hydroxyvitamin D Total	11	40– 80	
25-Hydroxyvitamin D_2	< 3		
25-Hydroxyvitamin D_3	11		

CALL TO ACTION

8. Advocate for Policy Change:

- Healthcare providers and patients take action supporting policy reforms for stricter GMO labeling laws with the goal of ending GMOs and ZERO pesticide use goal.
- Promote awareness campaigns about the health impacts of GMOs and glyphosate.
- Become a scientist/citizen scientist.
- https://gmoscience.org/2024/05/20/why-study-toxic-metals-in-infant-formula-an-overview-of-the-results/
- https://gmoscience.org/2024/12/27/danger-in-the-dough/ (Toxic contaminants in Girl Scout Cookies)

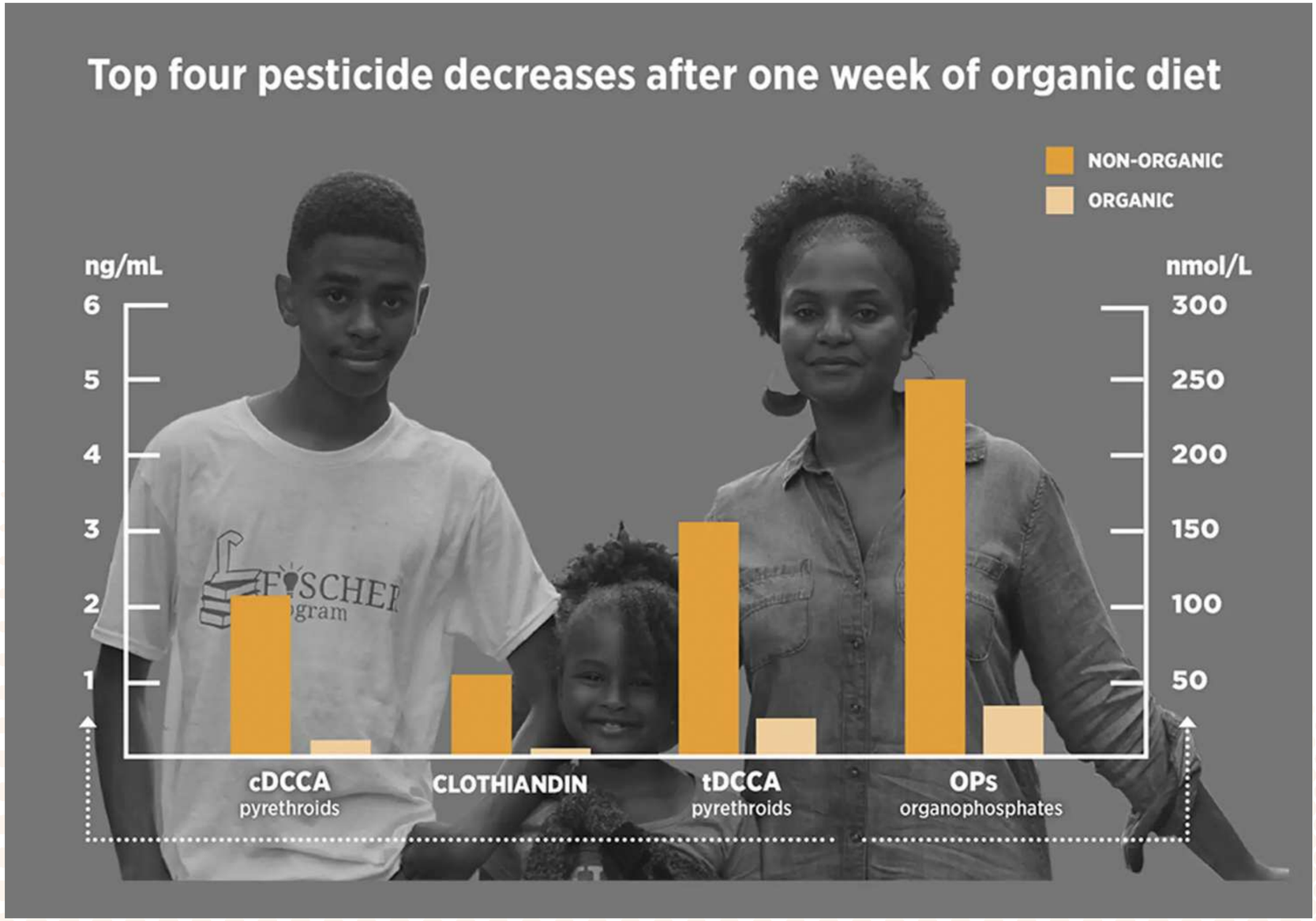
CRUISE

These Cruise Lines Are Turning Leisure Travelers into Citizen Scientists

As expedition cruising grows, so does its contribution to scientific research.

BY STEFANIE WALDEK

October 2, 2024



www.organicvalley.coop/blog/kendra-klein-reducing-exposure-to-pesticides/


What's Making Our Children SICK?
How Industrial Food Is Causing an Epidemic of Chronic Illness, and What Parents (and Doctors) Can Do About It
EXPLORING THE LINKS BETWEEN GM FOODS, GLYPHOSATE, AND GUT HEALTH
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A Parent's Guidebook: Empowering Healthy Families with Homeopathy and Nutrition
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Unless someone like you cares a whole awful lot, nothing is going to get better. It's not.

Thank you!

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