

# Celiac Disease

Dr. John Bergman

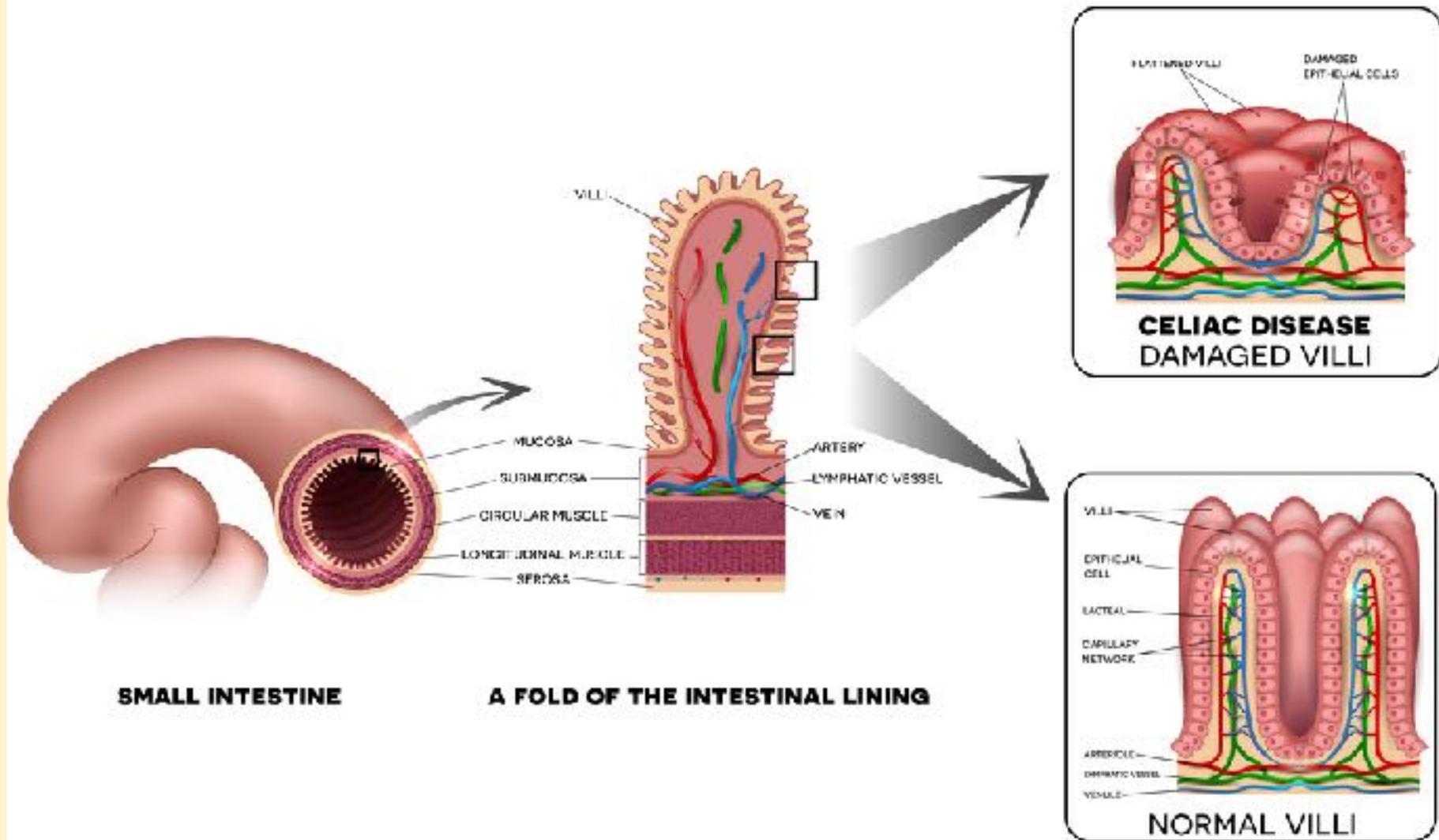
# What is Celiac Disease?

“Celiac disease is an autoimmune disorder that can occur in genetically predisposed people where the ingestion of gluten leads to damage in the small intestine.”

“When people with celiac disease eat gluten (a protein found in wheat, rye and barley), their body mounts an immune response that attacks the small intestine. These attacks lead to damage on the villi, small fingerlike projections that line the small intestine, that promote nutrient absorption. When the villi get damaged, nutrients cannot be absorbed properly into the body.”

# CELIAC DISEASE

DAMAGED SMALL INTESTINE LINING



# Most common symptoms found in children:

- abdominal bloating and pain
- chronic diarrhea
- vomiting
- constipation
- pale, foul-smelling, fatty stool
- weight loss
- irritability & behavioral issues
- Fatigue
- dental enamel defects of the permanent teeth
- delayed growth and puberty
- short stature
- failure to thrive (ADHD)

# Most common symptoms in Adults:

- unexplained iron-deficiency anemia
- fatigue
- bone or joint pain
- arthritis
- bone loss or osteoporosis
- depression or anxiety
- an itchy skin rash called dermatitis herpetiformis
- tingling numbness in the hands and feet
- seizures or migraines
- missed menstrual periods
- infertility or recurrent miscarriage
- canker sores inside the mouth

# Celiac Disease Statistics

- It is estimated to affect **1 in 100** people worldwide
- **2.5 million Americans** are undiagnosed and are at risk for long-term health complications.



Celiac Disease Foundation <sup>1</sup>

# Long Term Health Effects of Celiac Disease

“Celiac disease can develop at any age after people start eating foods or medicines that contain gluten. Left untreated, celiac disease **can lead to additional serious health problems.**”

Celiac Disease Foundation <sup>1</sup>



# Long Term Health Effects of Celiac Disease

- Iron deficiency anemia
- Early onset osteoporosis or osteopenia
- Infertility and miscarriage
- Lactose intolerance
- Vitamin and mineral deficiencies
- Central and peripheral nervous system disorders
- Pancreatic insufficiency
- Intestinal lymphomas and other GI cancers (malignancies)
- Gall bladder malfunction
- Neurological manifestations, including ataxia, epileptic seizures, dementia, migraine, neuropathy, myopathy and multifocal leucoencephalopathy

# Treatment Options

“Currently, the only treatment for celiac disease is lifelong adherence to a **strict gluten-free diet**. People living gluten-free must avoid foods with wheat, rye and barley, such as bread and beer. Ingesting small amounts of gluten, like crumbs from a cutting board or toaster, can trigger small intestine damage.”



Celiac Disease Foundation <sup>1</sup>

# The Pathophysiology of Celiac Disease

1. Gluten contains proteins (gliadins and glutenins)
2. These peptides resist complete digestion and pass across the intestinal epithelial barrier
3. It isn't completely understood how these peptides pass through the intestinal wall however, it is thought to be from increased intestinal permeability via holes in the wall (**Leaky Gut**)
4. The peptides then stimulate intestinal **CD4+ T cells**
5. The body recognizes the peptides as antigens and initiates the immune response including production of antibodies and production of cytokines.

# What about Genetics?

“While HLA-DQ2 and HLA-DQ8 are found in virtually all patients with CD, it is important to note that 30%–35% of Caucasians carry these markers, of whom **only 2%-5% will develop CD**. This disparity and the less than 100% concordance in monozygous twins suggest both other genetic and environmental factors are required for the development of CD.”

“Even when combining all known non-HLA loci, they attribute for less than **10% of genetic risk**.”

# Environmental factors

“Environmental factors that contribute to the development of CD in genetically susceptible individuals include early and substantial exposure of infants to dietary gluten, early infection with enteropathogenic viruses, and changes in bacterial flora of the gut.”



ental Gastroenterology <sup>11</sup>

## Gluten Exposure

“The contribution of infant feeding has been debated since the 1980s and this subsequently led to the recommendation that small amounts of gluten should be gradually introduced between 4 and 7 months of age during concomitant **breastfeeding**.

Children exposed to gluten in the first 3 months of life have a **5× increased risk of CD** compared with children exposed to gluten at between 4 and 6 months of age.”

# Breastfeeding

“The mechanism by which breast milk exerts its protective effect against the development of CD is unknown, but it is theorized that breast milk may have immune-modulating properties that suppress T cells, dilute the amount of ingested gluten, prevent gastrointestinal (GI) infections that would increase intestinal permeability and gluten exposure, or decrease gliadin uptake because IgA antibodies in breast milk agglutinate with gliadin.”

# Infections

“Infectious etiologies have been proposed to have a causal relationship with the development of CD in genetically susceptible individuals. These include adenovirus type 12, HCV, Campylobacter jejuni, Giardia lamblia, enterovirus, and rotavirus.”



Clinical Gastroenterology and Hepatology 11

# The History of Wheat and Gluten

- Cultivation of wheat began around **8000 BCE** <sup>12-13</sup>
- Harvest used to involve **reaping and threshing**
- To reap means to cut the wheat at its base with a large blade and manually bundle it
- Threshing required either cattle or farmers to beat the kernels out of the grain head
- Today producers use the “combine” to cut and separate the grain and store it in a bin on the machine

# Old School Wheat Farming



# Modern Wheat Farming



# Problems with Wheat Cultivation and Harvesting

- Even with modern technology and machinery it can be **very costly** to cultivate and harvest
- Wheat is grown in 4 stages and through each stage the grower must watch for **weather changes, fungi, and insects**
- **Weeds and insects** can be extremely costly and negatively affect your yields

“Harvest is the most stressful, dangerous period of the entire year for a farmer. Harvest means long hours, weather that is often uncooperative and an increased risk of accidents. There is no pay day for the grain farmer as long as the crop is in the field.”

# What is Glyphosate?

- Glyphosate is one of the most widely used **broad spectrum herbicides and crop desiccants**
- Is the primary active ingredient in **Roundup** branded herbicides
- Introduced to the agricultural industry in the **1974**

According to Monsanto <sup>14</sup>



# Benefits of Glyphosate

- **It increases yield** by killing weeds that compete for moisture, nutrients and light
- **More even ripening and earlier harvest through crop desiccation**
- **Kills insects and pests** that interfere with harvesting
- **Lowers production costs**
- **Decreases soil erosion human labor, fuel consumption and machinery wear**
- **When wheat is exposed to glyphosate it releases more seeds and as it dies it releases the seed**

According to Monsanto <sup>14</sup>

# How does Glyphosate work?

- Glyphosate inhibits the activity of an enzyme, called **EPSP synthase**, which prevents the plant from manufacturing certain essential amino acids needed for plant growth and life
- EPSP synthase is an important enzyme in the **shikimate pathway**

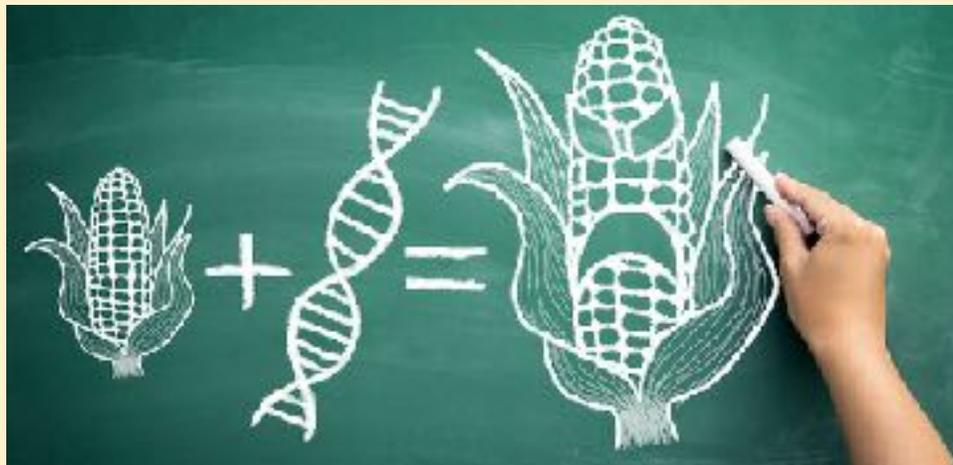


According to Monsanto <sup>14</sup>

# How does Glyphosate work?

- Glyphosate is not harmful to humans because the shikimate pathway is not present in humans, but **only in plants and microbes.**
- Glyphosate is so powerful that it is **best used on Genetically Modified plants** that are capable of surviving the application of Glyphosate.

According to Monsanto <sup>14</sup>



# The Shikimate Pathway

- This pathway is absent in all animals which is why Monsanto claims it's harmless to animals and humans
- However, the Shikimate pathway is present in bacteria
- Bacteria outnumber your cells 10 to 1:
- For every cell in your body you have 10 microbes which will respond to glyphosate
- Glyphosate causes extreme disruption of the microbe's function and lifecycle
- It preferentially affects beneficial bacteria, allowing pathogens to overgrow and take over

# Dr. Stephanie Seneff

- Senior research scientist at the Massachusetts Institute of Technology (MIT)
- Has extensively researched and investigated the relationship between glyphosate and the development of a wide array of modern disease, including autism.
- She has published much of her work in several peer-reviewed journals

## Dr. Seneff's Findings

“Celiac disease is associated with imbalances in gut bacteria that can be fully explained by the known effects of glyphosate on gut bacteria.

Characteristics of celiac disease point to impairment in many cytochrome P450 enzymes, which are involved with **detoxifying environmental toxins, activating vitamin D3, catabolizing vitamin A, and maintaining bile acid production and sulfate supplies to the gut.**”

# Dr. Seneff's Findings

“We have systematically shown how all of these features of celiac disease can be explained by glyphosate's known properties. These include:

- (1) disrupting the shikimate pathway**
- (2) altering the balance between pathogens and beneficial biota in the gut**
- (3) chelating transition metals, as well as sulfur and selenium and**
- (4) inhibiting cytochrome P450 enzymes.**

“Glyphosate is possibly the most important factor in the development of multiple chronic diseases and conditions that have become prevalent in Westernized societies.”

"Glyphosate residues enhance the damaging effects of other food-borne chemical residues and toxins in the environment to disrupt normal body functions and induce

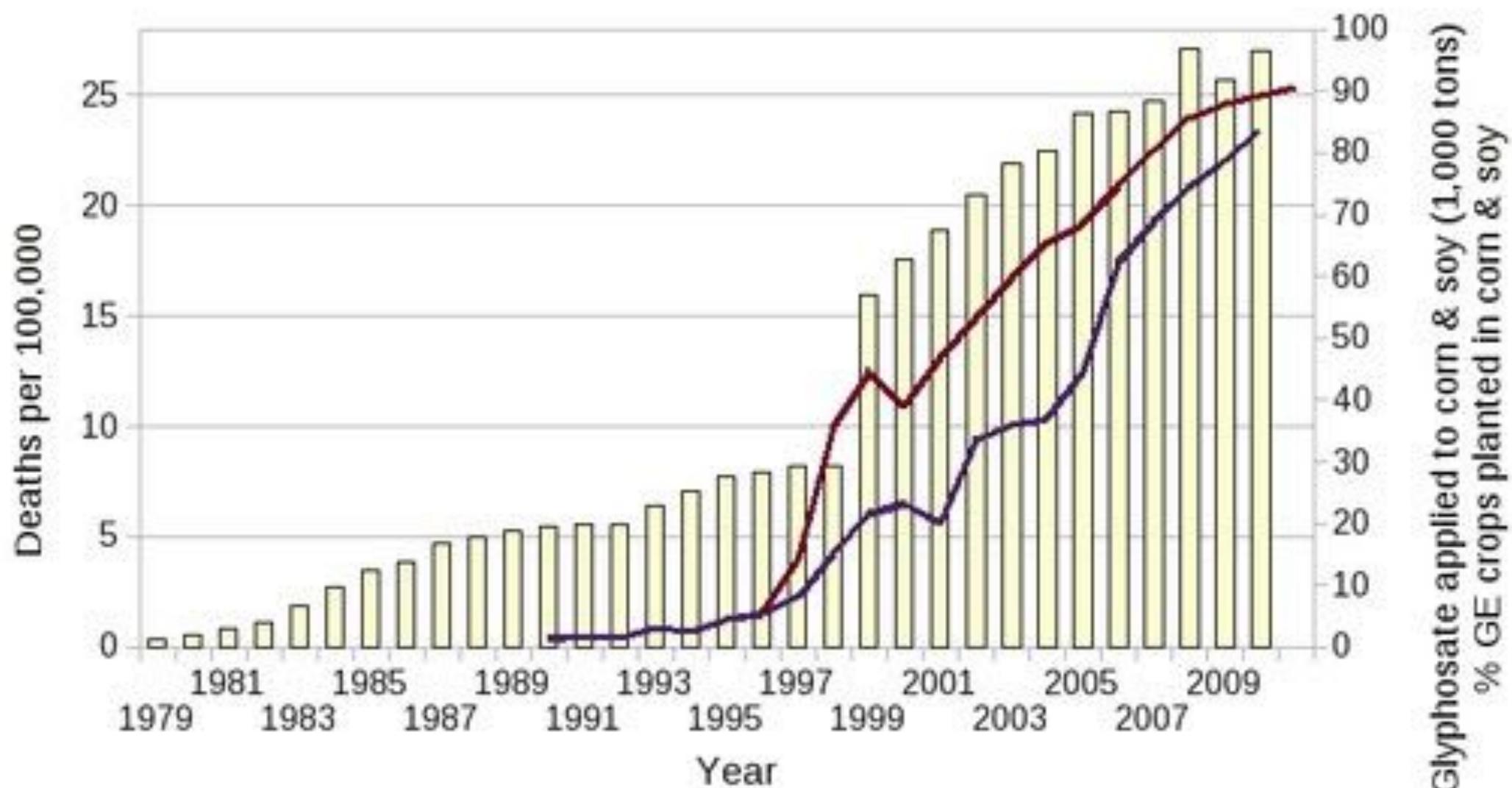


Dr. Stephanie Seneff  
Entropy Journal <sup>20</sup>

- Death rate (per 100,000)
- glyphosate applied to corn & soy
- % GE soy & corn crops

## Deaths from Alzheimer's

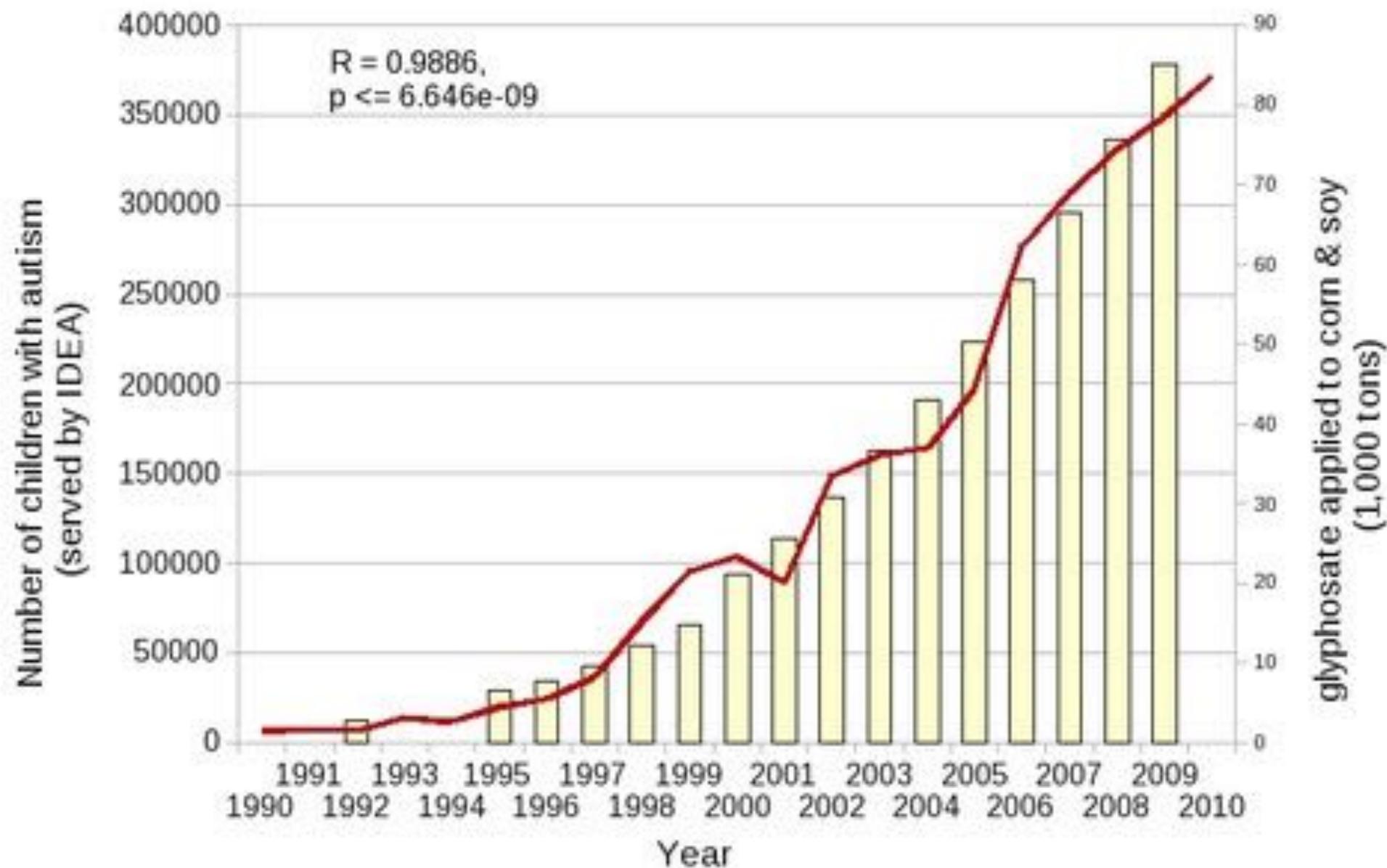
Plotted against glyphosate use and %GE corn & soy



# Number of children (6-21yrs) with autism served by IDEA

plotted against glyphosate use on corn & soy

■ # w/ autism  
— Glyphosate applied to Corn & Soy



# Sulfate and Glyphosate

- **Glyphosate impairs your body's ability to transport sulfate**

"There are two classes of molecules that transport sulfate. One is the sterols: cholesterol, vitamin D, and all sex hormones - estrogen, testosterone, and DHEA. On the other side, you have all the neurotransmitters. This is the dopamine, melatonin, serotonin, and the adrenaline. All of those transport sulfate. They're all derived from this pathway that glyphosate disrupts,"

Dr. Stephanie Seneff <sup>39</sup>

**Dr. Seneff recommends Soaking in  
magnesium sulfate (Epsom salt) baths**

# Glyphosate is a Mineral Chelator

- **Glyphosate chelates the minerals in your gut which are used by your bacteria**
- **Bacteria use these minerals to prevent themselves from oxidative damage**
- **Some of the minerals that glyphosate chelates:**
  - Manganese
  - Iron
  - Cobalt (cobalamin)
  - Molybdenum
  - Copper
- **Solution: (Himalayan salt/sea salt) and organic plant based diet**

## Warning:

From the US Department of Agriculture and the EPA (13)

### **Processed, slow-release pesticide-laden gluten causes:**

- Intestinal permeability
- Imbalanced gut bacteria
- Immune activation and allergic response
- Impaired digestion
- Damage to the intestinal wall



## The First Step: Eliminate All...

- GMO and Glyphosate Contaminated food
- Packaged or Processed food
- Non-Organic Meat (typical fed GMO food)
- Avoid food labeled “Natural” or “All Natural”



# Avoid Disruptions to Your Microflora and Immune System

- Vaccinations
- Antibiotics
- Medications
- Processed Foods



# Effects of Vaccines

## Th1 immunity

- Is responsible for normal reactions to anything in your environment, from pollen to animal dandruff, dust mites, chemicals, food.
- **Th1 is kept robust and healthy by your gut flora.**
- **TH1- cell mediated response from mucus membranes**
- **If your gut flora is abnormal, your Th1 become increasingly disabled**

## Th2 immunity

- **TH2-vaccines (puncture wound so the body needs an immediate response this is why there is no lifetime immunity from vaccinations, because the proper immune system cells are not built)**
- **inflammatory reaction = inflammatory cytokines**
- **allergies and intolerances**

# Effects of Antibiotics

- Kill both beneficial and pathologic bacteria
- Upset the delicate balance of your intestinal terrain

- Yeasts are opportunistic organisms and will take over = **Dysbiosis**
- Yeast use their hyphae (tendrils) to literally poke holes through the lining of your intestinal wall = **Leaky Gut**

# Antibiotics

## Confined animal feeding operations (CAFO's)

- American factory farms used **29 million pounds** of antibiotics in 2009 alone
- Estimated non-therapeutic use of antibiotics in livestock accounted for **70 percent** of the total antibiotic use (FDA)



# The Second Step: Optimize Your Gut Flora

- Organic plant based diet (Locally grown, seasonal foods)
- Healthy fats such as coconut oil and olive oil
- Fermented Vegetables
- Probiotic Supplements
- Juice Vegetables
- Blend Fruits
- Raw Dairy
- Reduce Omega 6 and Increase Animal based Omega 3



# Fermented Foods

- Help promote growth of beneficial bacteria, supports healthy immune function
- Help increase vitamin b, omega 3, digestive enzyme, and lactase/lactic acid

- Kefir (fermented milk)
- Kombucha
- Sauerkraut
- Pickles
- Miso
- Kimchi



# Functions of your Gut Flora

- Digestion and absorption of carbohydrates
- Production of vitamins
- Absorption of minerals
- Elimination of toxins
- Distinguish between pathogens and non-harmful antigens
- Keep harmful bacteria under control
- Aid in production of antibodies to pathogens
- Provide support to the Immune System

# Probiotics and Digestive Disorders

“Impairment of the intestinal barrier is a key event in various gastrointestinal diseases, including inflammatory bowel diseases, **celiac disease**, gastrointestinal infections, diarrhea, and critical illness.”

**“Recent studies demonstrated that probiotic bacteria have beneficial effects in these diseases by effectively improving intestinal barrier function.”**

Annals of the New York Academy of Sciences <sup>44</sup>

# Chronic Stress and the Gut

- **4 times less blood flow to your digestive system**
- Decreased metabolism
- Decreased enzymatic output in your gut
- Decreased nutrient absorption
- Decreased oxygenation to your gut
- Elevated cholesterol
- Elevated triglycerides
- Decreased gut flora populations
- Increased food sensitivity



# Antioxidant Rich Foods

- Help protect your body against free radicals
- Goji Berries
- Wild Blueberries
- Dark Chocolate
- Pecans
- Artichoke
- Elderberries
- Blackberries
- Kidney Beans



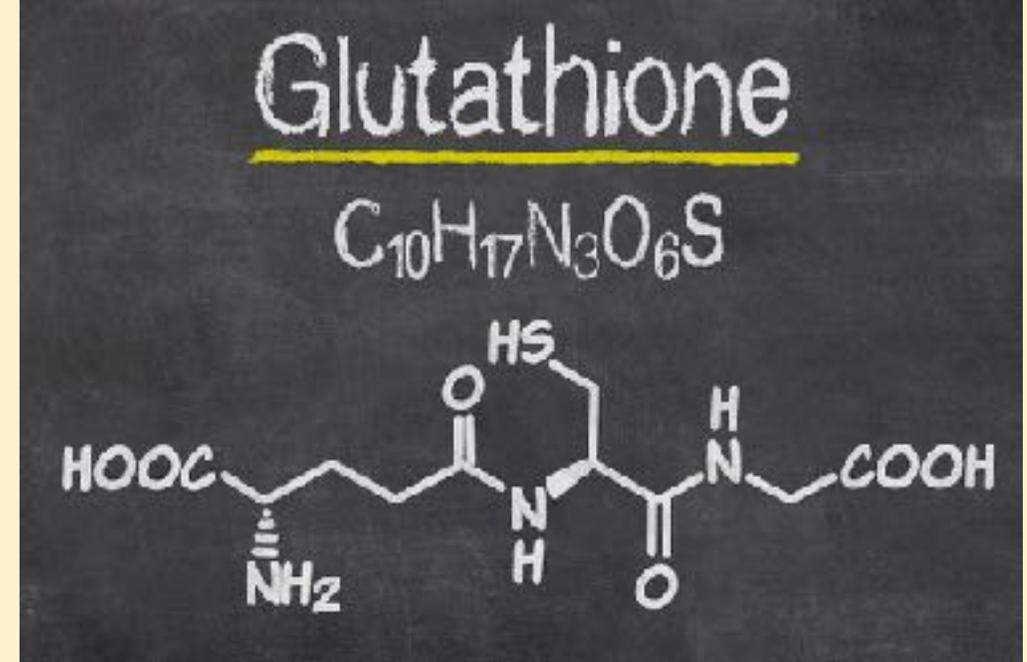
# Oxidative Stress and Celiac Disease

“Oxidative stress is an important factor in the pathogenesis of celiac disease. The antioxidant capacity of celiac patients is significantly reduced, mostly by a **depletion of glutathione.**”

“Natural antioxidants and appropriate dietary supplements could be important complements to the classic therapy of celiac disease.”

# Glutathione

- Master antioxidant
- Main detoxification system

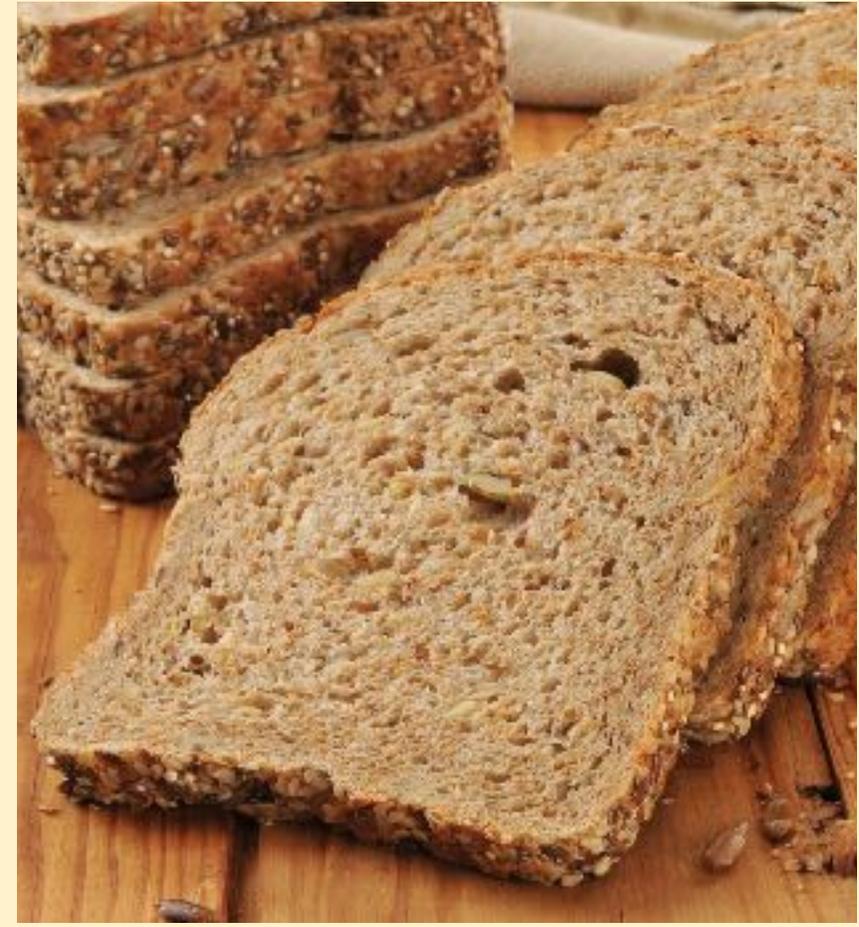


## Food Sources:

- Whey Protein: Raw dairy
- Sulfur rich compounds (cruciferous family)
  - garlic, onions and the cruciferous vegetables (broccoli, kale, collards, cabbage, cauliflower, watercress, etc.)

# Healthy Organic Grains

- Sprouted Grains
- Sourdough
- Rice
- Buckwheat
- Oats
- Quinoa
- Amaranth



Sprouting grain helps improve nutrient bioavailability, reduces the presence of gluten and makes them more digestible

# The 5 Keys to Health and Healing



Proper nerve supply



Regular Exercise



Proper Nutrition



Sufficient Rest



Prayer and Meditation

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