

The Gluten-Free Diet: Celiac Disease and Gluten Sensitivity: The Science and the Trends

**Center for
Celiac Research**



Making Tracks for Celiacs

www.celiaccenter.org



Pam Cureton, RD, LDN

Center for Celiac Research
University of Maryland School of Medicine

22 S. Penn Street
Baltimore, MD 21201

Phone: 410-706-4140

pcureton@peds.umaryland.edu

www.celiaccenter.org



Center For Celiac Research



Our mission is to promote the awareness of celiac disease and gluten related disorders to provide better care, better quality of life and more adequate support for people around the world. Our ultimate goal is to find alternative treatments or a cure for gluten related disorders.



The Gluten Free Diet: Not Only Celiac Disease!



GFD Consumers:
5-8 % of Americans

Medical Necessity:

No
Medical Necessity:

Wheat Allergy
(IgE-mediated)
0.2-0.4%

Celiac Disease
(Autoimmune-based)
1% of US population

Gluten Sensitivity
6% of Americans
(range <1-30%)



Reasons for the Occasional Consumer: Not Medical



- Weight loss (?)
- Better sports performance (?)
- Celebrity Endorsements
- Better nutrition & other health benefits (?)

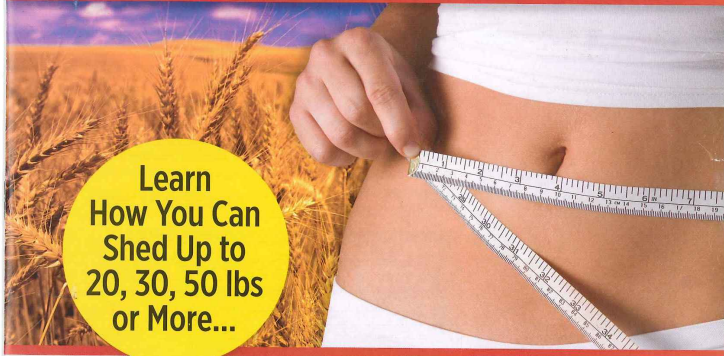


Weight loss (?)



MD'S WEIGHT LOSS BREAKTHROUGHS

Do You Have a Wheat Belly?



Learn How You Can Shed Up to 20, 30, 50 lbs or More...

Top Cardiologist Reveals Remarkable Link between Wheat and Weight Gain

See Inside ▶▶

BY WILLIAM DAVIS, MD, CARDIOLOGIST

Learn how you can shed up to 20, 30, 50 lbs or more...

How eating wheat shrinks your LDL cholesterol particle so they stick to artery walls and help trigger hearts and strokes

Acid reflux and irritable bowel symptoms **DISAPPEAR!**

You can turn back the aging clock by Eliminating wheat from your diet

No exercise. No counting calories. Eat the foods you love.

No evidence that a GFD will produce weight loss



- ***Wheat Belly*—An Analysis of Selected Statements and Basic Theses from the Book**

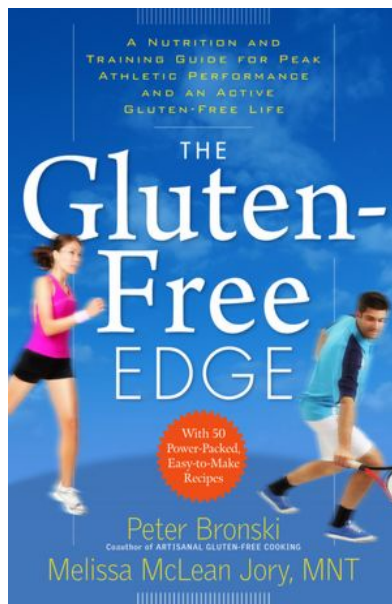
- CFW Report
- J. Jones. St. Catherine University, St. Paul, MN, U.S.A. *Cereal Foods World* 57(4):177-189. <http://dx.doi.org/10.1094/CFW-57-4-0177>
- In this review of the popular press book *Wheat Belly* by William Davis, a variety of the positions discussed in the book are analyzed using scientific literature by first stating Davis' point and then providing an analysis of the point.



Better sports performance (?)



- Tennis pro Novak Djokovic
- Golf Pro Michelle Wie
- Chicago Bulls player Kyle Korver
- Men's cycling team goes gluten free for Tour de France
- (Your name here) with book on gaining an edge in life and in sports by going gluten-free



No evidence that a GFD will increase sport performance



Celebrity Endorsements



- Ophra
- Victoria Beckham
- Lady Gaga
- Chelsea Clinton



Better nutrition ? Is Gluten bad for everyone?



No evidence that gluten is harmful in healthy individuals without a gluten related disorder

Gluten-free foods are often higher in fat compared to similar gluten-containing products

GFD can be low in:

- Vitamin B12
- Folate
- Zinc
- Iron

<http://www.adaevidencelibrary.com>



RESEARCH Commentary



Gluten-Free Diet: Imprudent Dietary Advice for the General Population?

Glenn A. Gaesser, PhD; Siddhartha S.
Angadi, PhD

September 2012 Volume 112 Number 9 **JOURNAL OF THE
ACADEMY OF NUTRITION AND DIETETICS 1333**



Who benefits from the use of the GFD?



- Use of the GFD
- Celiac disease
- Non-Celiac gluten sensitivity
- Wheat/gluten allergies



Celiac Disease

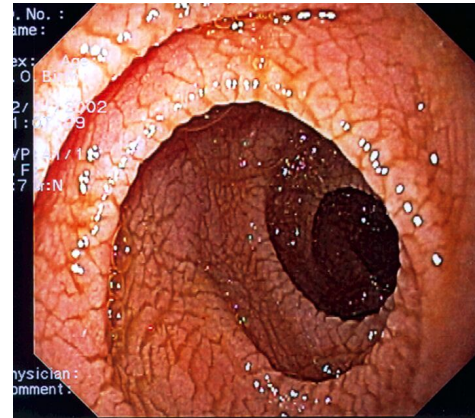
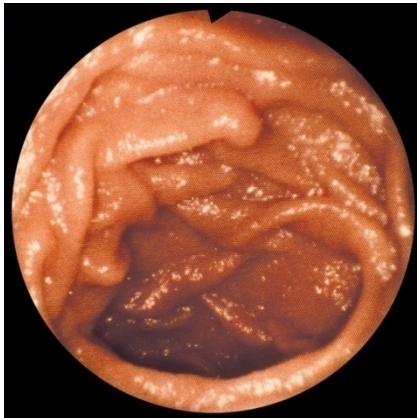


Celiac disease is an immune-mediated disease triggered by the ingestion of gluten-containing grains (wheat, rye, barley) in genetically susceptible individuals.



Normal small bowel

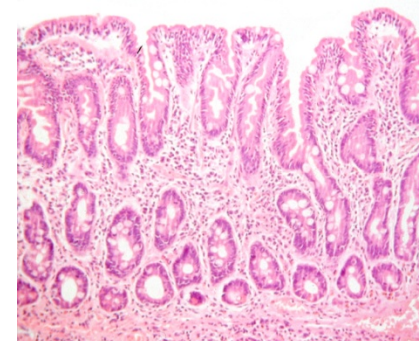
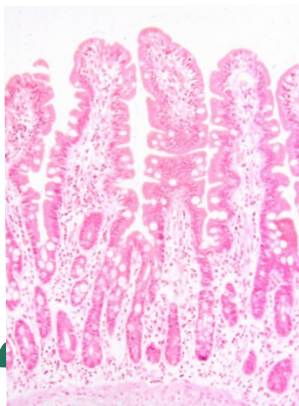
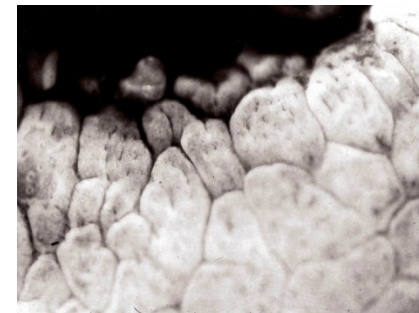
Celiac disease



Gluten



Gluten-free diet



Getting the right diagnosis



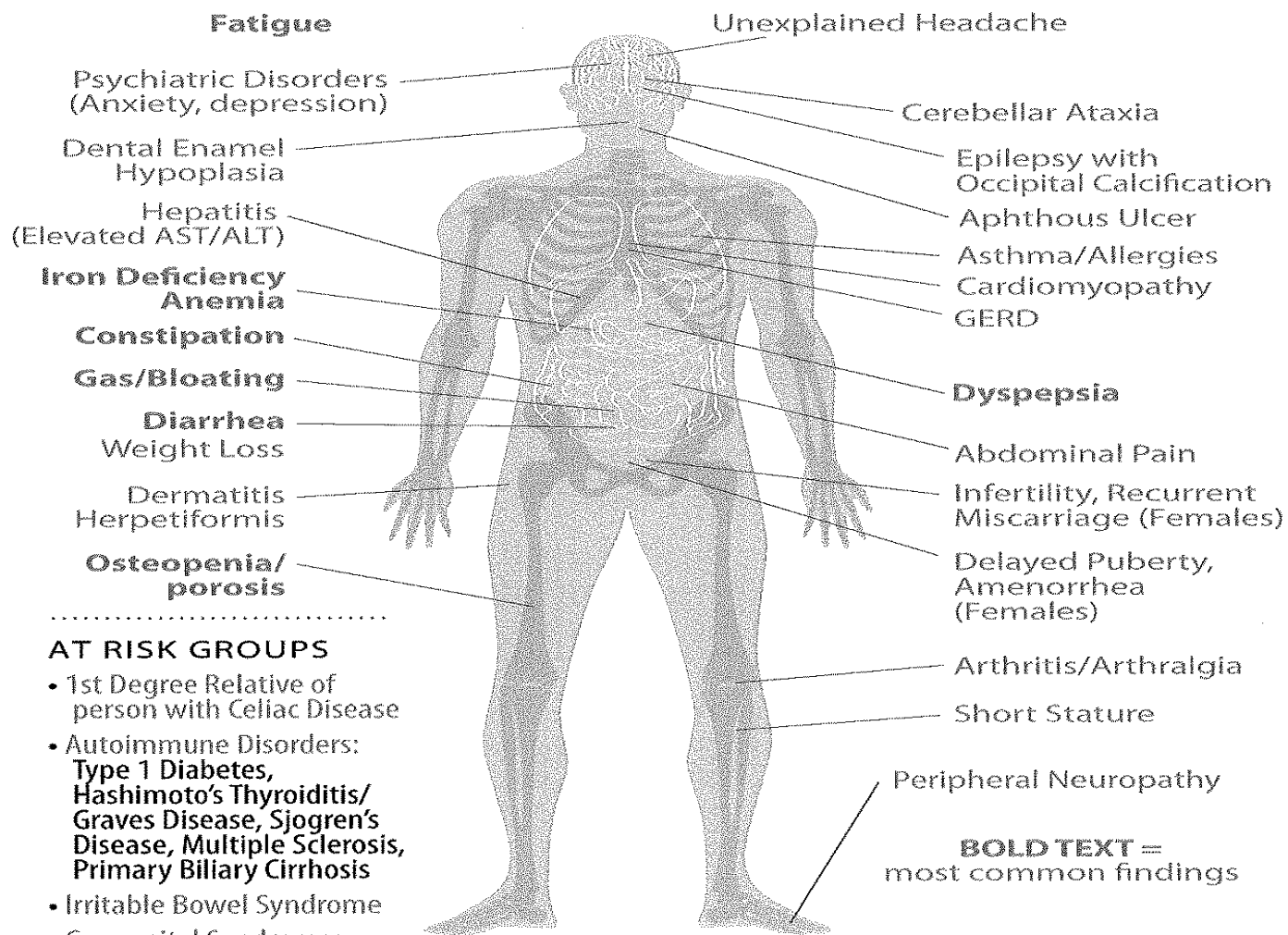
- Clinical symptoms
- Serological testing
 - While on a regular diet
- Intestinal biopsy “Gold Standard”
 - While on a regular diet
- Improvement of symptoms
 - While on a GFD



Consider screening for celiac disease when you evaluate a patient with:



celiacs

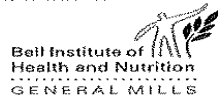


AT RISK GROUPS

- 1st Degree Relative of person with Celiac Disease
- Autoimmune Disorders: **Type 1 Diabetes, Hashimoto's Thyroiditis/ Graves Disease, Sjogren's Disease, Multiple Sclerosis, Primary Biliary Cirrhosis**
- Irritable Bowel Syndrome
- Congenital Syndromes: **Down, Turner, and Williams Syndromes**

BOLD TEXT =
most common findings

Reference:
The University of Chicago Celiac Disease Center
www.CeliacDisease.net
Available for download at glutenfreely.com



Serological Screening



Due to high sensitivity and specificity, the best available tests are:

- Tissue Transglutaminase (tTG)
- Total IgA
- HLA haplotypes DQ2 and DQ8

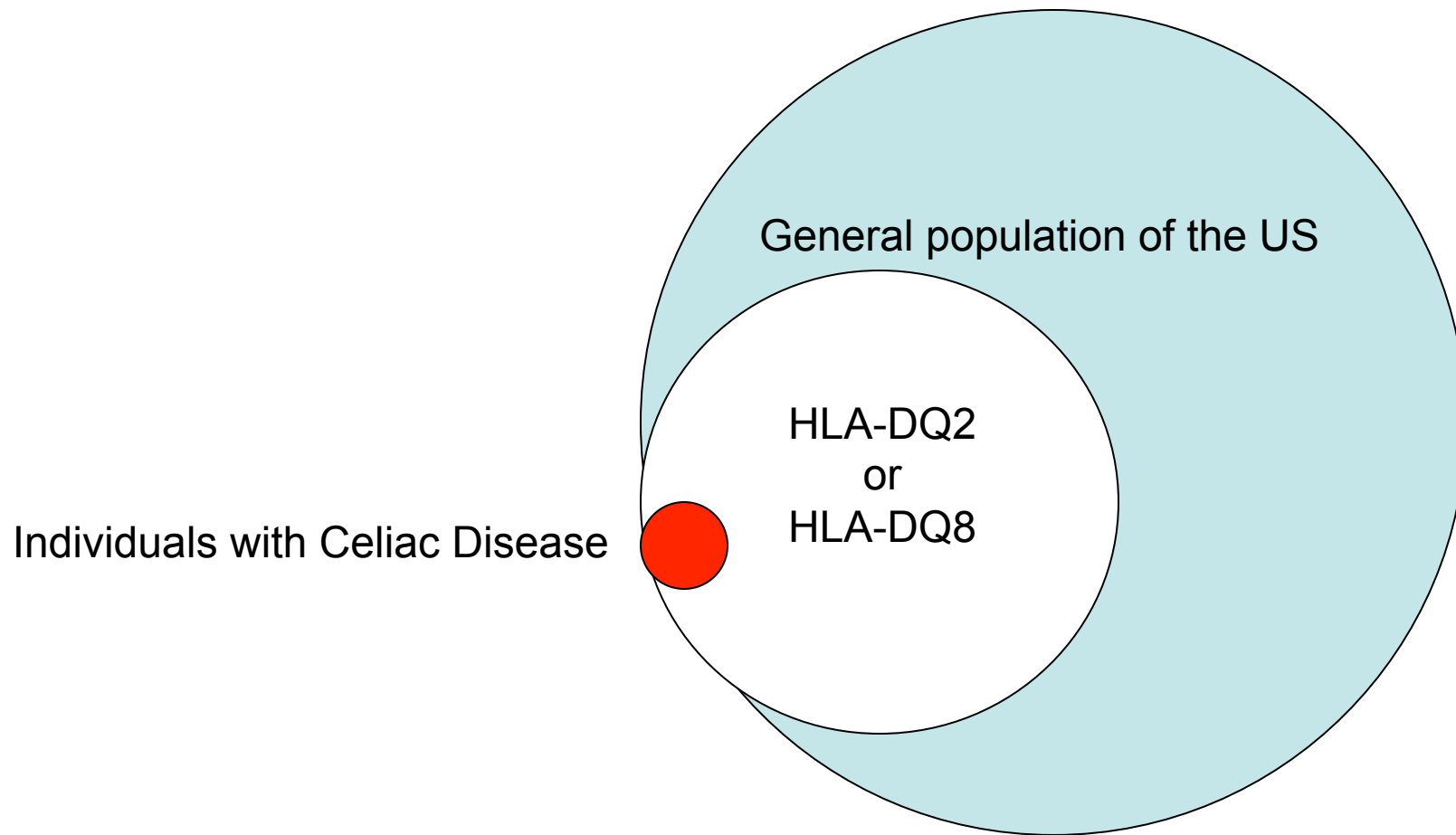


Genetic testing?

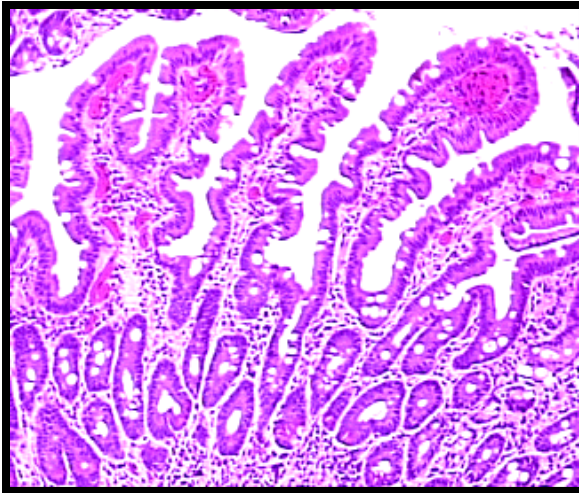


- Must have the genes to have the disease
- Testing can rule out CD, not diagnose as 30% of the population has HLA DQ2 and 8
- Cost of the test may not be covered by insurance

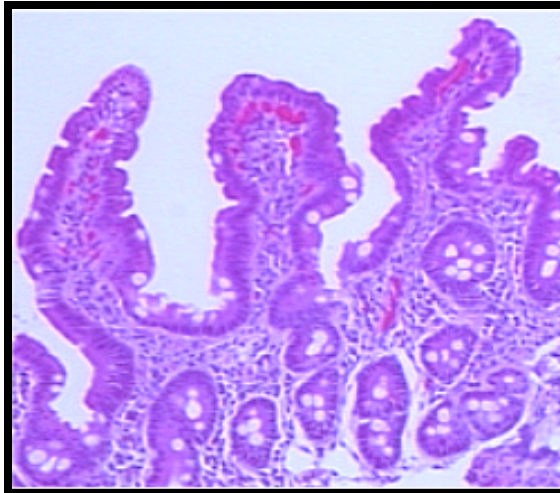




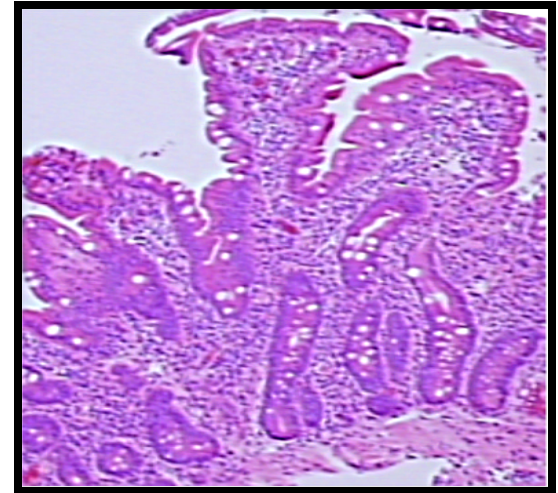
Gold Standard: EGD



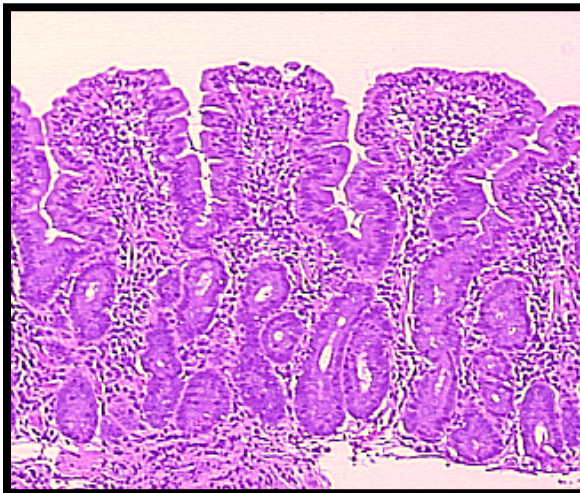
Normal



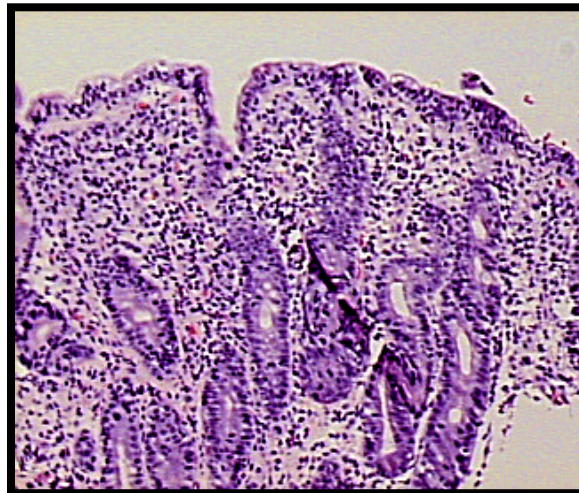
Partial atrophy I



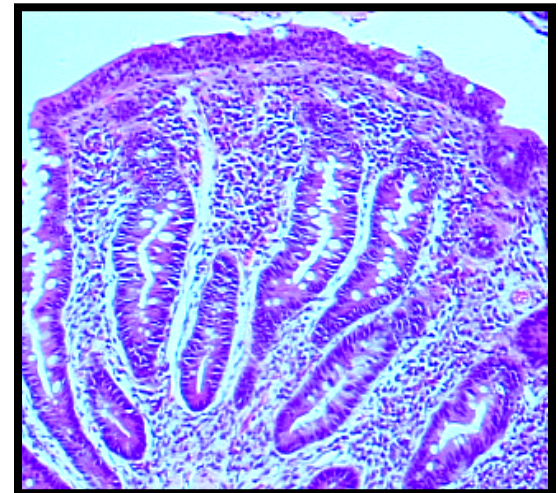
Partial atrophy II



Partial atrophy III



Subtotal atrophy



Total atrophy

Serology back to normal



Follow up lab testing

- 4-6 months after starting the GFD
- If positive repeat in 3 months after review of the GFD
- If negative repeat annually



Gluten Intolerance/sensitivity



- It is possible to be gluten intolerant and *not* have CD. Symptoms occur but no villous atrophy is seen on biopsy.
- Non-allergic, non-autoimmune reaction to gluten that can cause symptoms similar to those experienced by people with celiac disease.
- The diagnosis is based on exclusion criteria.



Gluten Sensitivity: Definition



Cases of gluten reaction in which both allergic and autoimmune mechanisms have been ruled out (diagnosis by exclusion criteria)

- Negative immuno-allergy tests to wheat
- Negative CD serology (EMA and/or tTG) and in which IgA deficiency has been ruled out
- Negative duodenal biopsy
- Presence of clinical symptoms that can overlap with CD or wheat allergy
- Resolution of the symptoms following implementation of a GFD (double blind)
- **To date, there is no test for gluten sensitivity!**



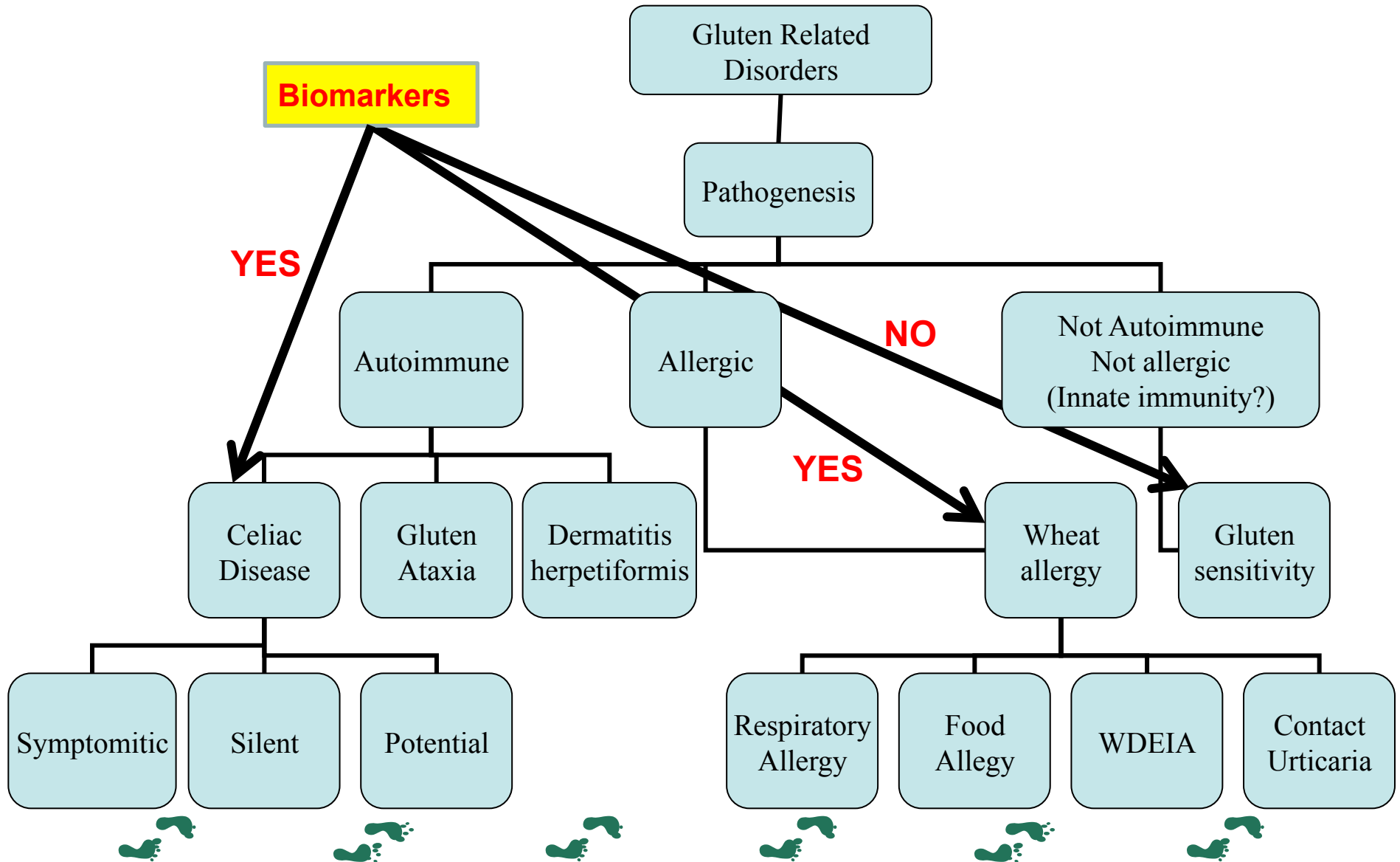
Allergy testing



- CD is an autoimmune disease, not an allergy
- Immunoglobulin E, IgE, is the main type of antibody involved in an allergic reaction.
- IgE circulating throughout the bloodstream causes an immediate immune response or “allergic reaction”



Proposed New Classification of Gluten Related Disorders

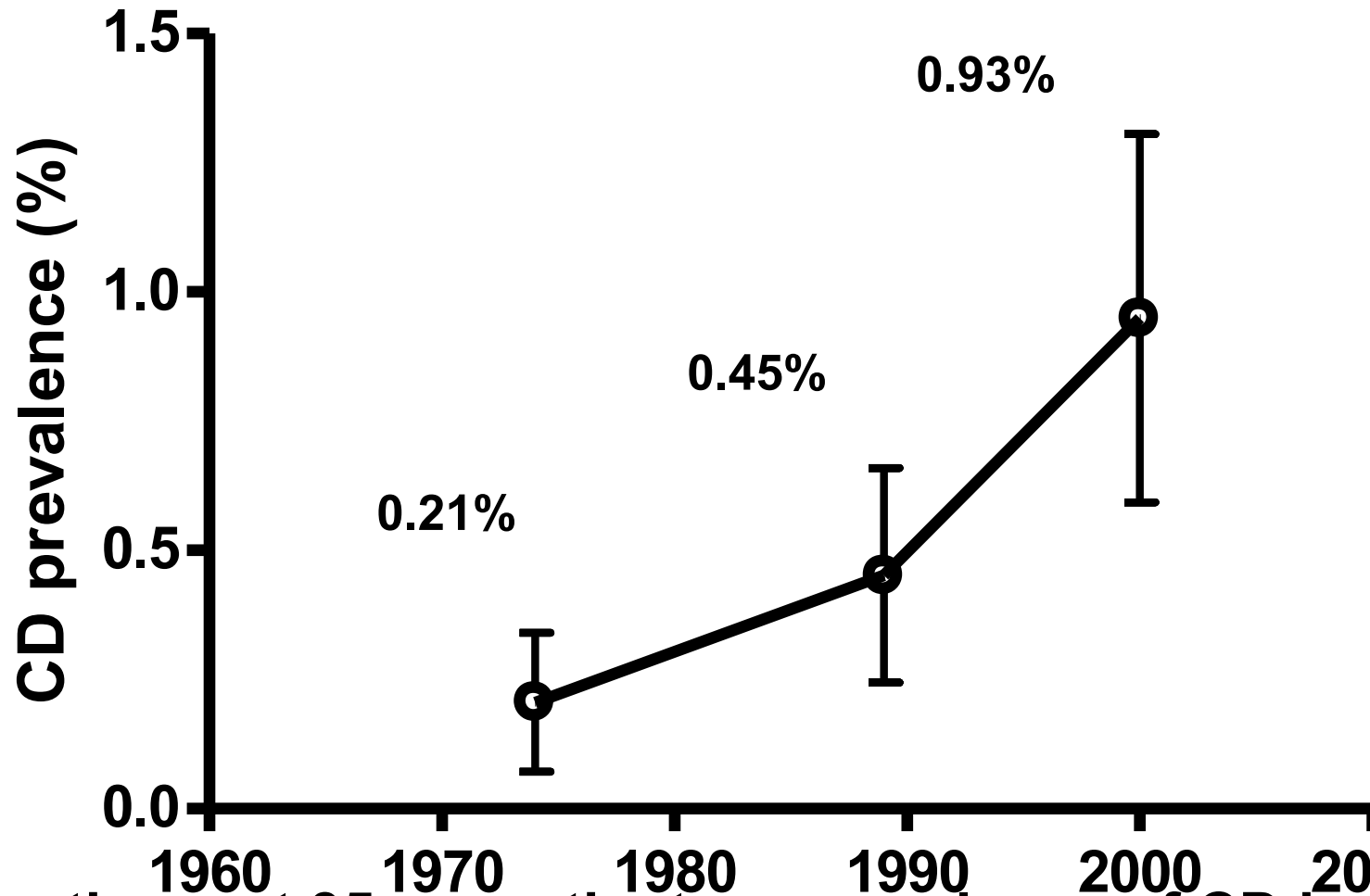


Differential Diagnosis Between CD, GS, and WA



	Celiac Disease	Gluten Sensitivity	Wheat Allergy
Time interval between gluten exposure and onset of symptoms	Weeks-Years	Hours-Days	Minutes-Hours
Pathogenesis	Autoimmunity (Innate+ Adaptive Immunity)	Immunity? (Innate Immunity?)	Allergic Immune Response
HLA	HLA DQ2/8 restricted (~97% positive cases)	Not-HLA DQ2/8 restricted (50% DQ2/8 positive cases)	Not-HLA DQ2/8 restricted (35-40% positive cases as in the general population)
Auto-antibodies	Almost always present	Always absent	Always absent
Enteropathy	Almost always present	Always absent (slight increase in IEL)	Always absent (eosinophils in the lamina propria)
Symptoms	Both intestinal and extra-intestinal (not distinguishable from GS and WA with GI symptoms)	Both intestinal and extra-intestinal (not distinguishable from CD and WA with GI symptoms)	Both intestinal and extra-intestinal (not distinguishable from CD and GS when presenting with GI symptoms)
Complications	Co-morbidities Long term complications	Absence of co-morbidities and long term complications (long follow up studies needed to confirm it)	Absence of co-morbidities. Short-term complications (including anaphylaxis)

Increased Prevalence Over Time in US (in Line with Other Autoimmune Diseases)



During the past 35 years the true prevalence of CD in USA doubled every 15 years.

The Rise Of Celiac Disease: from Breast Feeding to Bread Making



- Hygiene Hypothesis
- Caesarian deliveries
- Breast feeding (esp. when gluten introduced)
- Timing of gluten introduction (too early, too late)
- Amount of gluten in modern diet
- Changes in wheat varieties and gluten quality
- Changes in bread making (sourdough and lacto-bacilli)
- Use of antibiotics and change of microbiome



Knowledge on celiac disease and gluten-related disorders is constantly evolving



- Prevalence of CD is increasing
- Diagnosis rates are changing
- Therapy is changing
 - Gluten free diet evolving: taste, texture, availability have improved
 - Cost and nutritional value remain problematic
 - Alternative therapies
- New prevention strategies appear
- Non-CD Gluten Sensitivity is emerging

You need to stay updated!



Please stay tuned...



Center for Celiac Research

WWW.CELIACCENTER.ORG



[Buy your Celiac Awareness Bracelets today!](#)

