

CCFA North Texas Chapter  
IBD education symposium  
December 2, 2017, Dallas, TX

# **Is there an anti-inflammatory diet in IBD?**

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# What we will cover today

- Is diet a cause of IBD?
- If diet is a cause of IBD, can diet manipulations be used to treat IBD?
- Practical advice

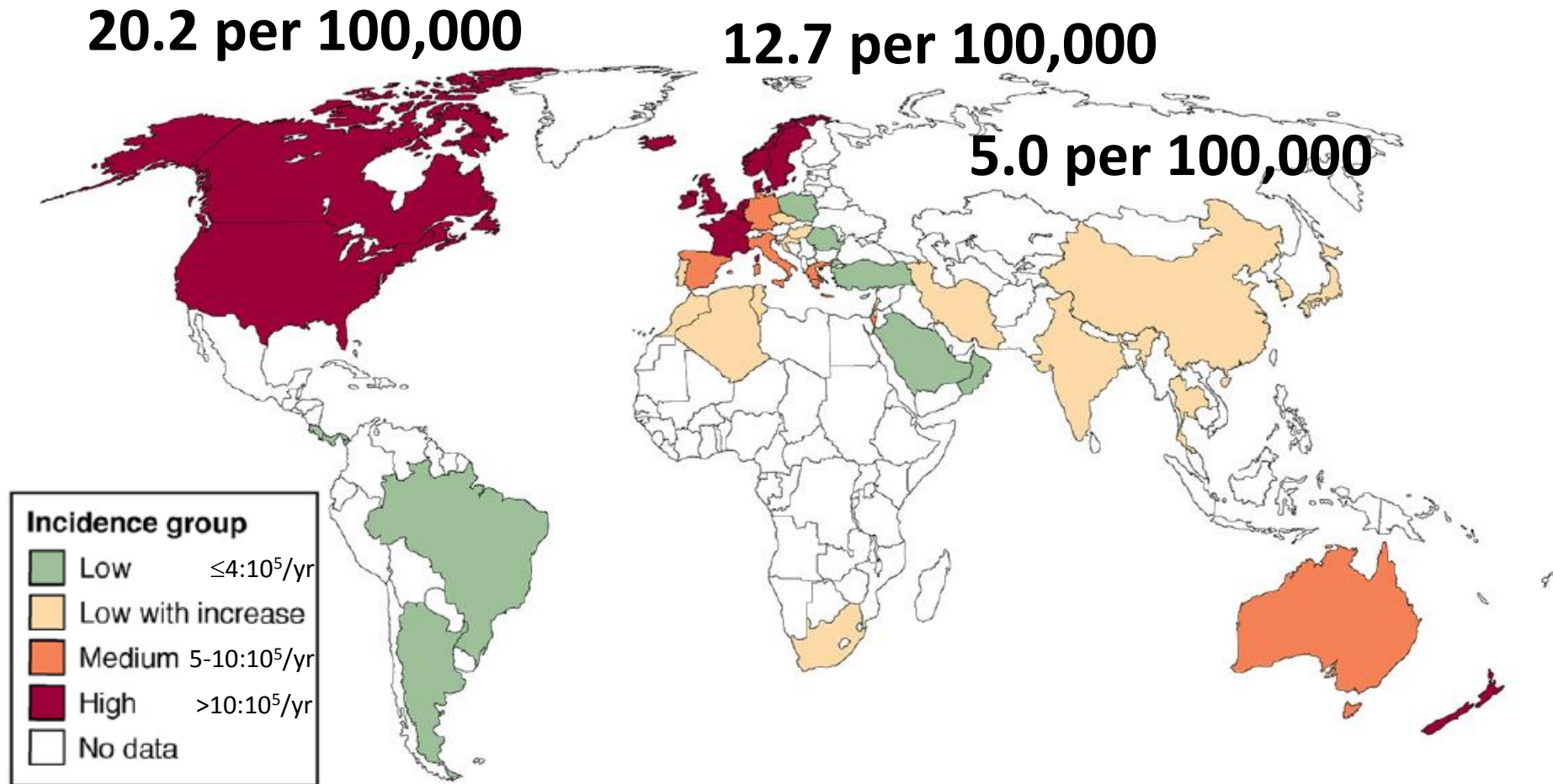
# Inflammatory Bowel Diseases (IBD) – The Basics

- Chronic inflammatory disorders of the gut
- Abnormal inflammatory response to *normal gut flora* in *genetically susceptible* hosts
- Both *abnormal genes* and *environmental factors* are important in causing the disease

# Epidemiology of IBD

- Disease of the modern Western world
- Highest incidence at ages 20–30 years
- Pediatric IBD accounts for 10%

# The global map of Crohn's Disease



# Abnormal Genes

- Over 200 described
- Gene functions
  - Clearing of bacteria and other organisms
  - Epithelial barrier
  - Immune Thermostat
    - Balance of pro-inflammatory and anti-inflammatory pathways

# Environmental factors

- Abnormal gut microbes (intestinal microbiome)
  - Differences in the types of resident microbes
  - Decreased diversity of microbes
  - Differences in microbial functions

# Abnormal intestinal microbiome in IBD

What came first?

The inflammation?

or

The altered bacteria?





# Environmental factors

- Abnormal gut microbes (intestinal microbiome)
  - Differences in the types of resident microbes
  - Decrease diversity of microbes
  - Differences in microbial functions
- Aspirin and non-steroidal drugs
- Cigarette smoking
- Diet

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# Diet is a cause of IBD

- Evidence from animal models of IBD
- Changing global epidemiology
- Epidemiologic studies
- Elemental, semi-elemental and polymeric diets induce clinical remission and mucosal healing

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# The changing global epidemiology of IBD

- Increasing incidence in the US and other developed countries
- Increasing in previous low-incidence countries
- Immigrants from low-risk to high-risk countries attain the high risk within two generations

**Summary: Environmental factors play a major role**  
*?Westernization of diet*

# Diet is a cause of IBD

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# Fiber intake and Crohn's disease



**40% Reduction in risk of Crohn's disease**



**0.73 (0.47 – 1.14)**



**0.88 (0.56 – 1.37)**



**0.63 (0.42 – 0.95)**



**0.93 (0.60 – 1.46)**

# Summary of epidemiologic studies

<b>Direction</b>	<b>Crohn' s disease</b>	<b>Ulcerative colitis</b>
<b>Reduced Risk</b>	<b>Fiber</b>	<b>Long-chain n-3 PUFA</b>
	<b>Fruits and Vegetables</b>	
	<b>N-3 PUFA (pediatric)</b>	
	<b>Zinc</b>	
	<b>Vitamin D</b>	
<b>Increased risk</b>	<b>Sugar</b>	<b>Animal protein</b>
		<b>N-6 PUFA</b>
		<b>Total carbohydrates</b>



# Diet is a cause of IBD

- Evidence from animal models of IBD
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- **Elemental, semi-elemental and polymeric diets induce clinical remission and mucosal healing**

# How may diet influence gut inflammation?

- Changes in intestinal microbiome
- Substrates for the generation of inflammatory mediators
- Antigenic stimulation

# Impact of diet in shaping gut microbiome

- Fecal microbiota in European children and children from a rural African village of Burkina Faso
- Burkina Faso diet: high in fiber, similar to that of early human settlements at the time of the birth of agriculture



# Impact of diet in shaping gut microbiome

The Burkina Faso children had:

- Significant enrichment in Bacteroidetes
- Significant depletion in Firmicutes
- ***Unique*** abundance of Prevotella and Xylanibacter (contain genes for cellulose and xylan hydrolysis)
- ***Significantly more short-chain fatty acids***
- Depletion of enterobacteriaceae (Shigella and Escherichia)

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# IBD Diets

- Elemental diet
  - Specific carbohydrate diet
  - Paleo diet
  - Low FODMAP diet
  - Other touted diets
- 
- **Only the elemental diet has undergone rigorous testing and has shown benefits in decreasing intestinal inflammation**

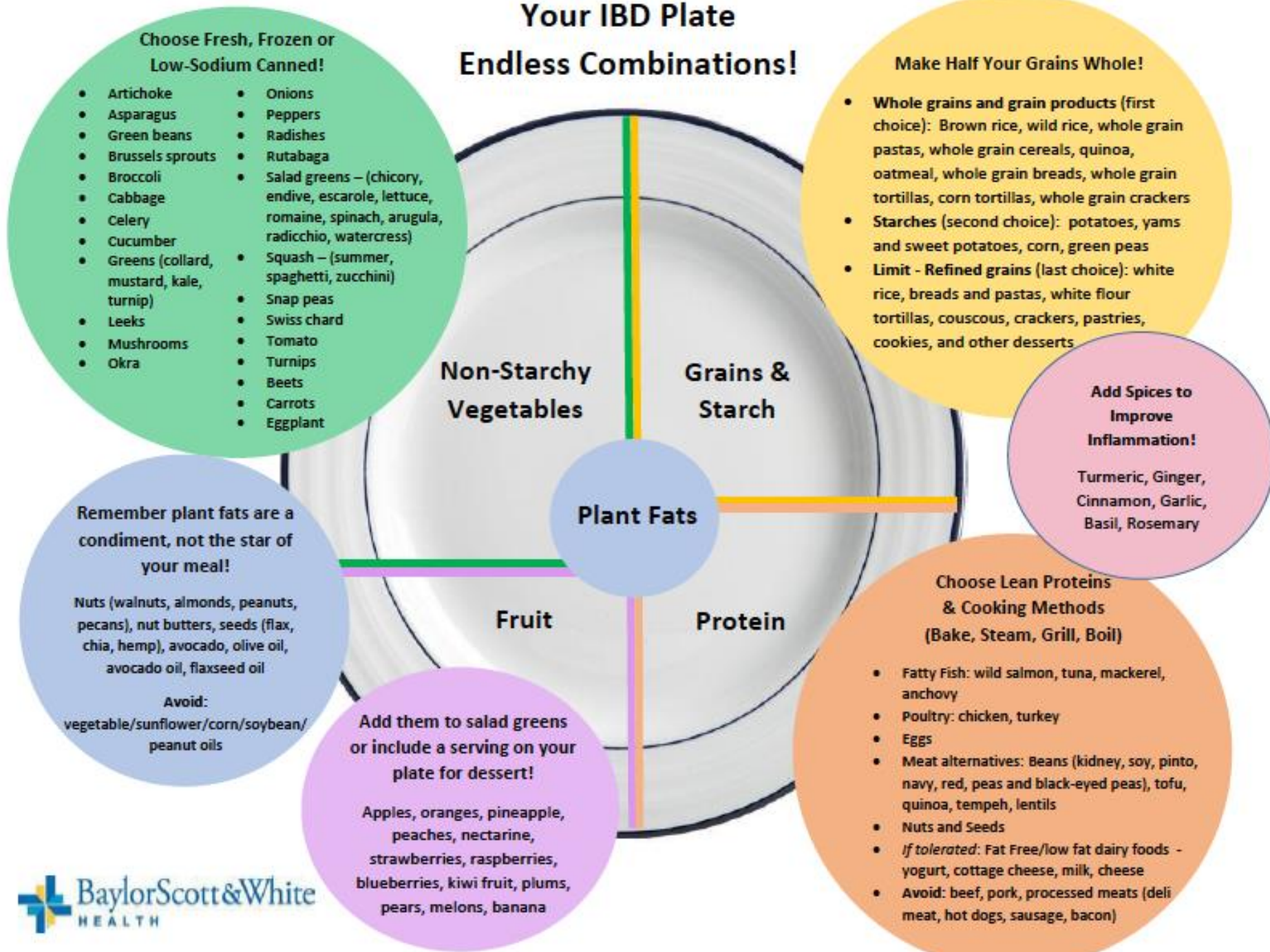
# The Baylor synthesis of the data on the “anti-inflammatory diet” in IBD

- Lower intake of n-6 polyunsaturated fatty acids
  - Arachidonic acid and Linoleic acid (red meat, margarines, oils derived from soya, sunflower, rapeseed, poppyseed, and corn)
- Higher intake of n-3 polyunsaturated fatty acids
  - Perilla oil, fish oil, sardines, salmon
- Higher intake of dietary fiber
- Lower intake of sugars



# Your IBD Plate

## Endless Combinations!





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# What do we tell patients about diet?

## I do not over- or understate the role of diet

- IBD is a disease of developed societies
  - *Westernization of the diet* likely explains the rise of IBD in many parts of the world
- Diet is one of *several* causes of IBD
- No particular food or diet *cures* IBD
- Some patients report improved symptoms with specific diets
- Diets can be restrictive and difficult to follow

# Our dietary advice depends on the clinical setting

## Treating inflammation

- Mild disease      The “healthy” diet has no proven benefit in mild IBD, but makes sense
- Severe disease      No role in *treating* the inflammation  
Bland diet (avoid fat, caffeine, alcohol and fiber) to *reduce symptoms*

## Preventing inflammation

The “healthy” diet has no proven benefit in mild IBD, but makes sense

## Obstruction

Low residue diet (avoid insoluble fiber: seeds, nuts, beans, green leafy vegetables, wheat bran)

# Our dietary advice depends on the clinical setting

## *Treating non-inflammatory symptoms*

- Lactose or fructose intolerance
- Celiac disease
- Non-celiac gluten sensitivity
- Irritable bowel syndrome – FODMAP diet
- Food allergies

# What do we tell patients about diet?

The importance of a healthy diet

At risk individuals:           Prevention of disease

Society:                           Public health importance