

GUT CHECK:

Nutrition for
Digestive Health
and Beyond



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- **Questions for the speaker?** Please drop in the Q&A window. We will address as many questions as possible at the end of the webinar.

This webinar was approved by CDR for 1 CEU. Application for CME credit has been filed with the American Academy of Family Physicians. Determination of credit is pending.

- Continuing education certificates will be emailed within 24 hours

GUT CHECK:

Nutrition for Digestive
Health and Beyond



Today's Speakers



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Disclosures

Speakers

1. Hannah D. Holscher, PhD, RD

- Speaking Honoraria: Dairy Management, Inc., Abbott Nutrition, Beneo, Global Prebiotic Association, DSM
- Grant funding: Almond Board of California, Bio-Cat, Danone Research, General Mills, Hass Avocado Board, Tate & Lyle, National Honey Board, USDA
- Consulting: Bobbie

2. Amanda Saucedo, MS, RD

- Speaking Honoraria: Dairy Management, Inc.
- Nature Nate's, McGraw Hill Education, NOW, Brainiac, Indiana Dairy Council

National Dairy Council Planning Team

- Megan Maisano, MS, RDN: Director, Nutrition & Regulatory Affairs
- Sally Cummins, MS, RD: VP, Nutrition Affairs
- Kerry Hackworth, MS, RD: Director, Nutrition Affairs
- Erin Coffield, RDN, LDN, VP, Communications – Health & Wellness

This webinar has been sponsored and approved for continuing education through CDR by National Dairy Council

Credentialed professionals can submit feedback about the quality of this activity directly to the Commission on Dietetic Registration: QualityCPE@eatright.org

Learning Objectives

At the end of this webinar, attendees will be able to:

1. Describe the interactive relationship between diet, the microbiome and health outcomes.
2. Identify the role of nutrition, particularly fermented dairy foods, in modulating gut microbiota, digestive health and other physiological functions.
3. Communicate evidence-based, practical and equitable nutrition guidance to support digestive health.

Suggested CDR Performance Indicators: 4.1.2, 6.2.3, 11.2.11

Background



Americans are interested in gut health

~ 1 in 3

Americans seek digestive/gut health benefits from food¹

60-70M

Americans are affected by digestive disease²

40%

Americans have stopped a routine activity due to GI symptoms³



1. [IFIC](#), 2023
2. [NIH](#), 2014
3. [American Gastroenterological Association](#), 2022

... but many feel uninformed

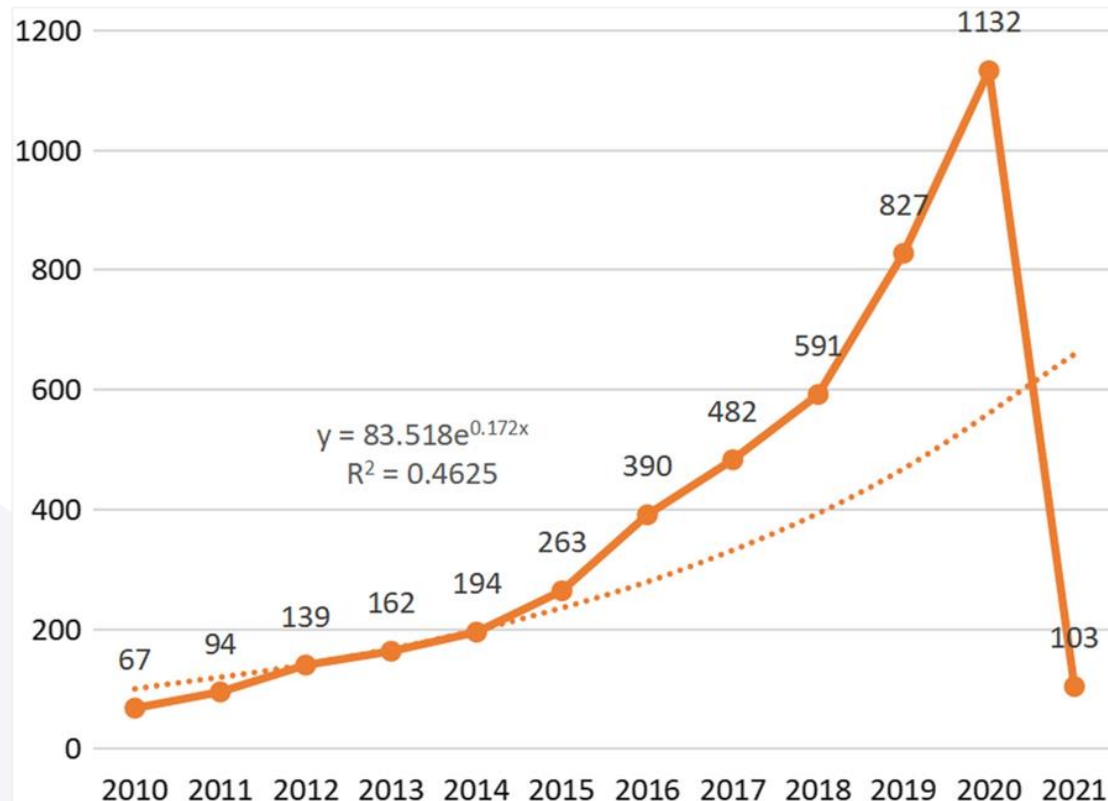


2023 Ipsos Poll Findings

- 85% failed their 'Gut IQ' quiz
- 47% unsure of gut health is real or a fad topic
- 40% rely on the internet for research and advice

Research on GI health and the microbiome has exploded

Annual studies grew exponentially from 2010-2021



Time-trend distribution of articles in the field of human gastrointestinal microbiome

- NIH Human Microbiome Project (HMP) launched in 2007
- Research scope is increasing
- Research content is becoming deeper and moving towards precision medicine



How can we as health professionals support our patients and clients with evidence-based advice?

The Washington Post

Probiotics, prebiotics and postbiotics: The
microbe garden in your gut



Here are the best foods to eat for gut health

Nourish your gut microbiome with these affordable, delicious foods.

The New York Times

Why Is Gut Health Taking Over TikTok?

Despite what social media might have you believe, there
is no overnight shortcut to better digestive health.



Diet, Health & The Microbiome: An Evolving Research Landscape



Diet-microbiota connections to health: a focus on biotics & fermented foods

Hannah D. Holscher, PhD, RD

*Associate Professor of Nutrition
Department of Food Science and Human Nutrition
Division of Nutritional Sciences
Institute of Genomic Biology
National Center for Supercomputing Applications
Personalized Nutrition Initiative
University of Illinois, Urbana, IL*



**Nutrition & Human
Microbiome Laboratory**





Outline

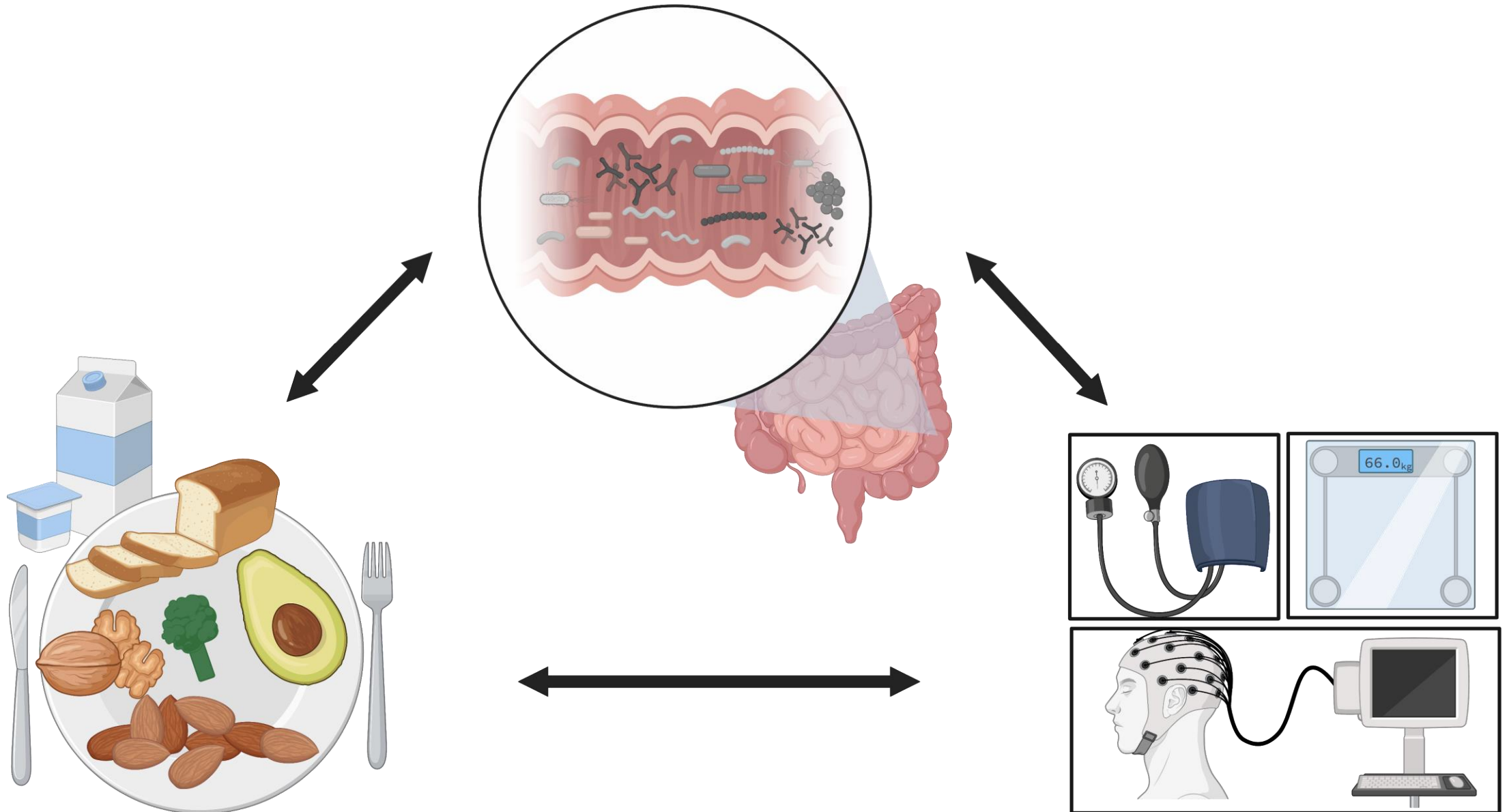
1 Prebiotics & Probiotics

2 Synbiotics & Postbiotics

3 Fermented Foods



Diet, Gut Microbiome, & Physiology





Prebiotics



Prebiotics: Definition

Prebiotic – a substrate that is **selectively** utilized by host microorganisms **conferring a health benefit**.

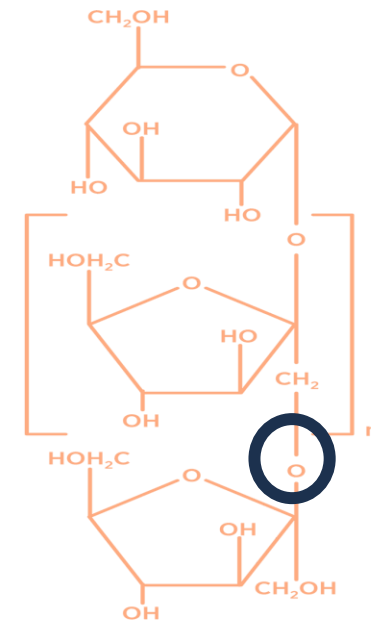
- Galactooligosaccharides (GOS)
- Fructooligosaccharides (FOS)
- Inulin

- Doses generally need to be > 3.0 g/d

Prebiotics Structures

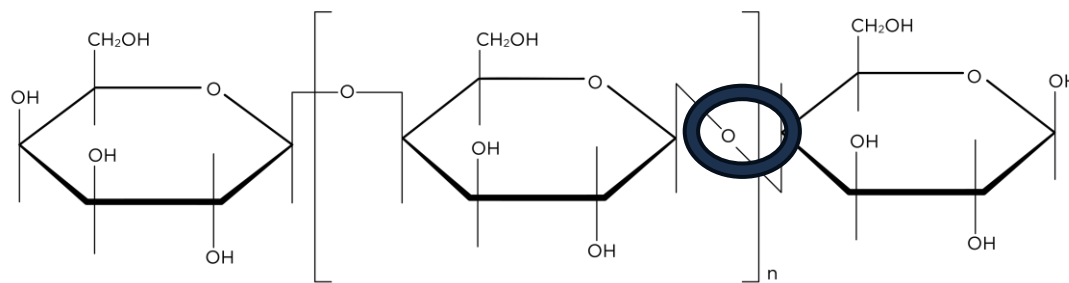
Inulin-Type Fructans

- β -2,1 linked fructose polymer
 - ▣ Inulin: extracted from plants (3-60 DP)
 - ▣ Oligofructose (OF): extracted from plants (DP <10)
 - ▣ Short-chain fructooligosaccharides (scFOS): synthesized (2-4 DP)



Galactooligosaccharides

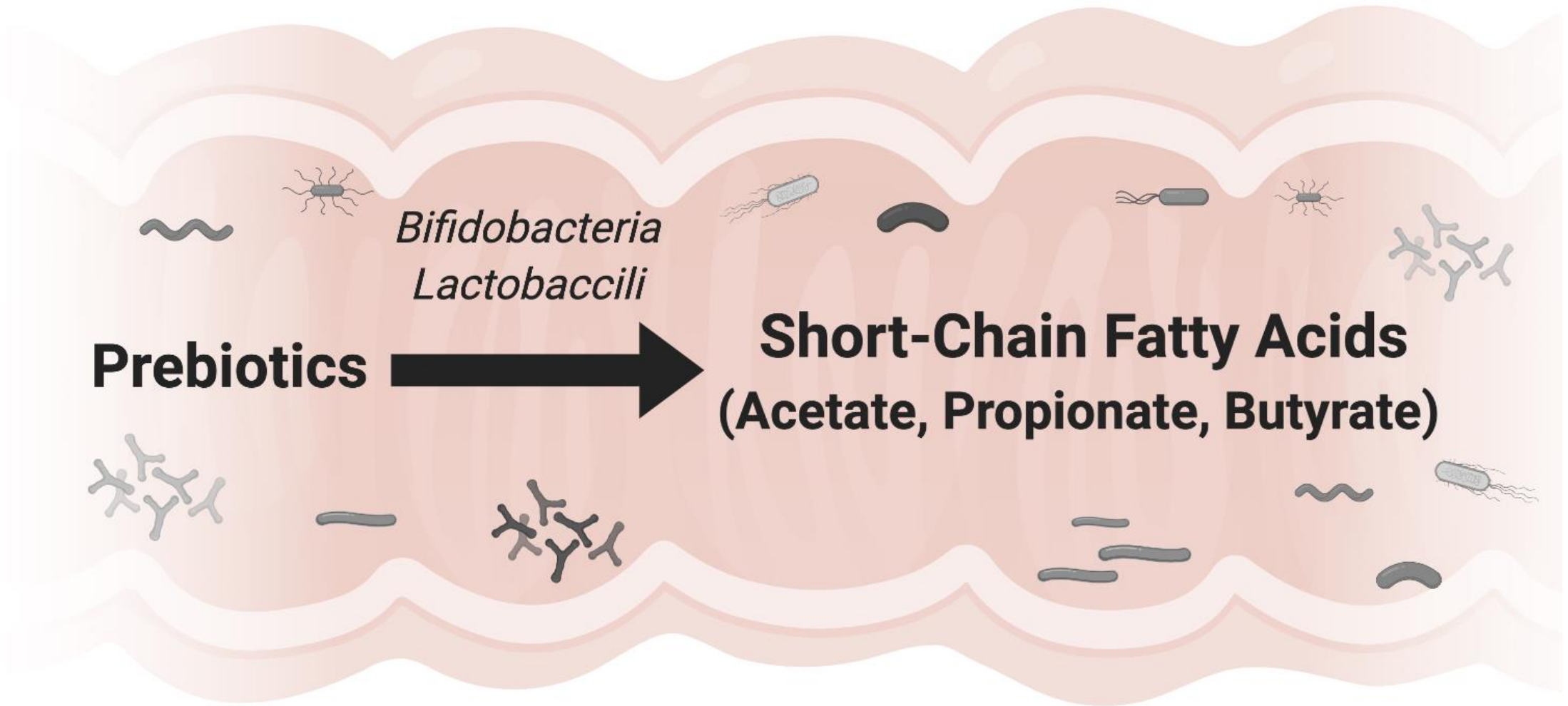
- β -(1,4) linked galactose oligomer
- Typically, between 2 and 8 units long





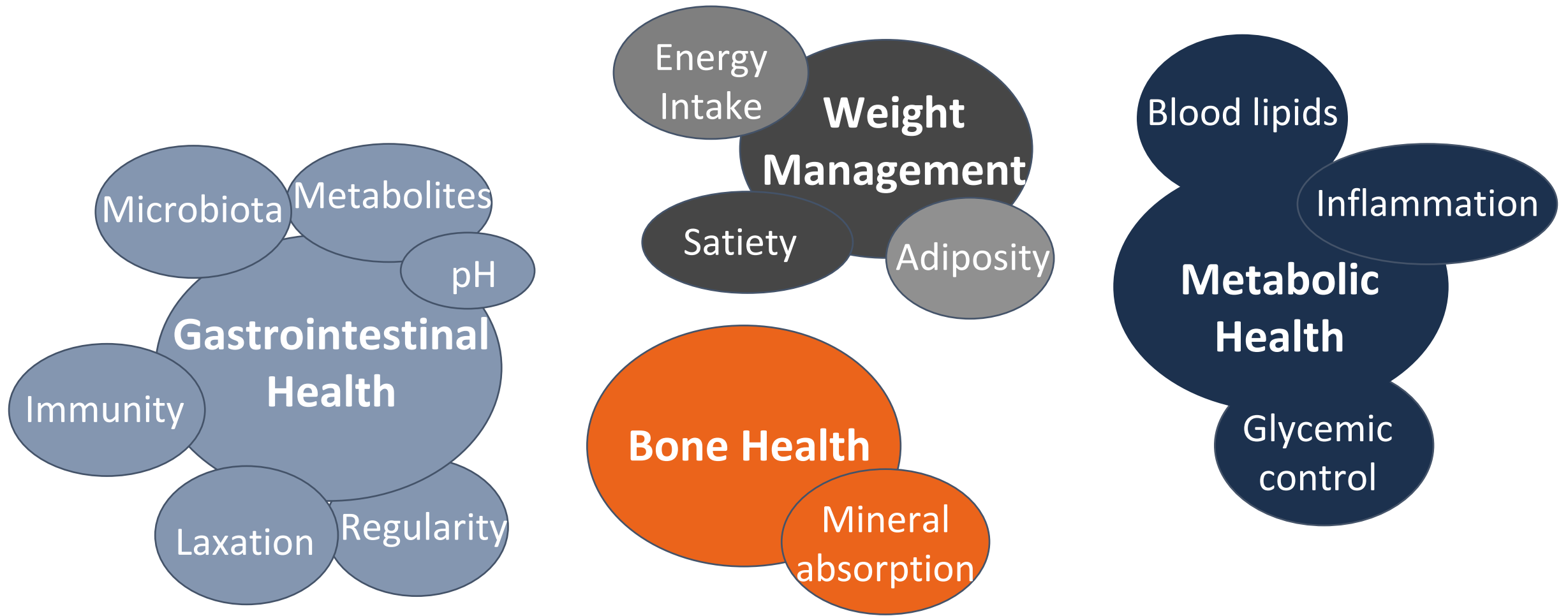
Prebiotics & Gut Microbiota

*Microbes Ferment **Prebiotics***





Prebiotics: Health Benefits





Prebiotics: Tolerance

Inulin

- ▣ Therapeutic dose: 15 – 50 g/d
- ▣ Tolerable intake:
 - No or mild symptoms: **5 g/d**
 - Moderate symptoms: **7.5 – 20 g/d**

FOS & Oligofructose

- ▣ Therapeutic dose: 10 – 15 g/d
- ▣ Tolerable intake:
 - No symptoms: **7.8 g/d**
 - Mild symptoms: **10 – 20 g/d**

Galactooligosaccharides (GOS)

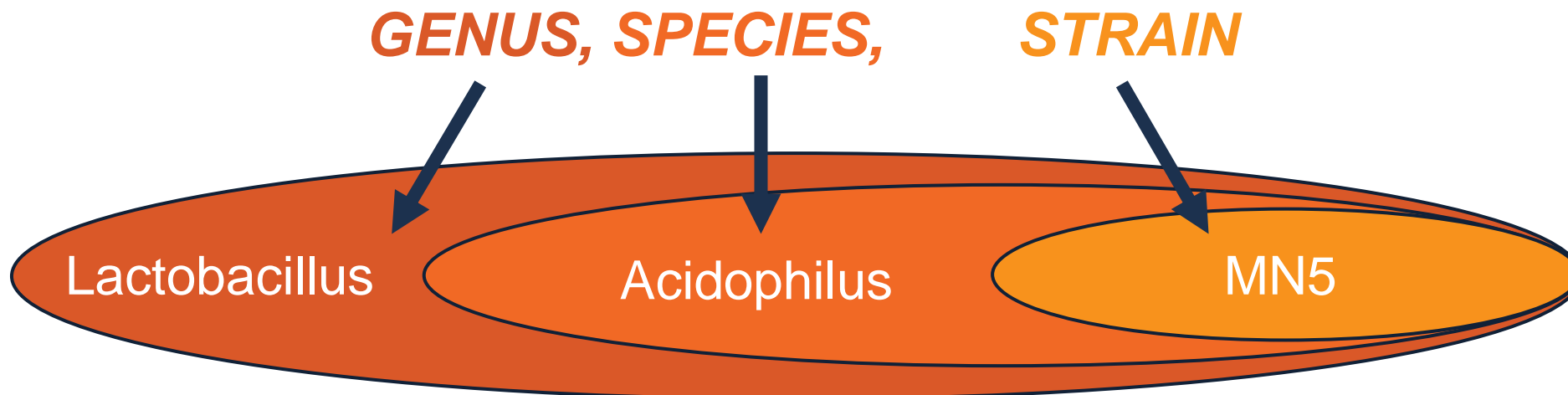
- ▣ Therapeutic dose: 20 g/d
- ▣ Tolerable intake:
 - No or mild symptoms: **20 g/d**



Probiotics

Probiotics: Definition

Probiotics are **live microorganisms** that, when administered in adequate amounts, **confer a benefit to the host**.



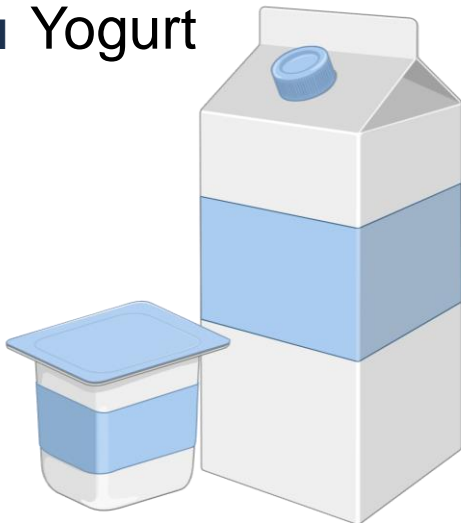


Probiotics

- Strains and dosages impact health outcomes
 - ▣ Strains: taxonomically defined; genome sequence available
 - ▣ Doses must be adequate; range from 100 million to 450 billion colony forming units (CFUs)

- Food

- ▣ Fermented milk drinks
- ▣ Yogurt



- Supplements

- ▣ Capsules
- ▣ Sachets





Probiotics: Strain-Specific Effects

Bifidobacterium animalis subsp. lactis

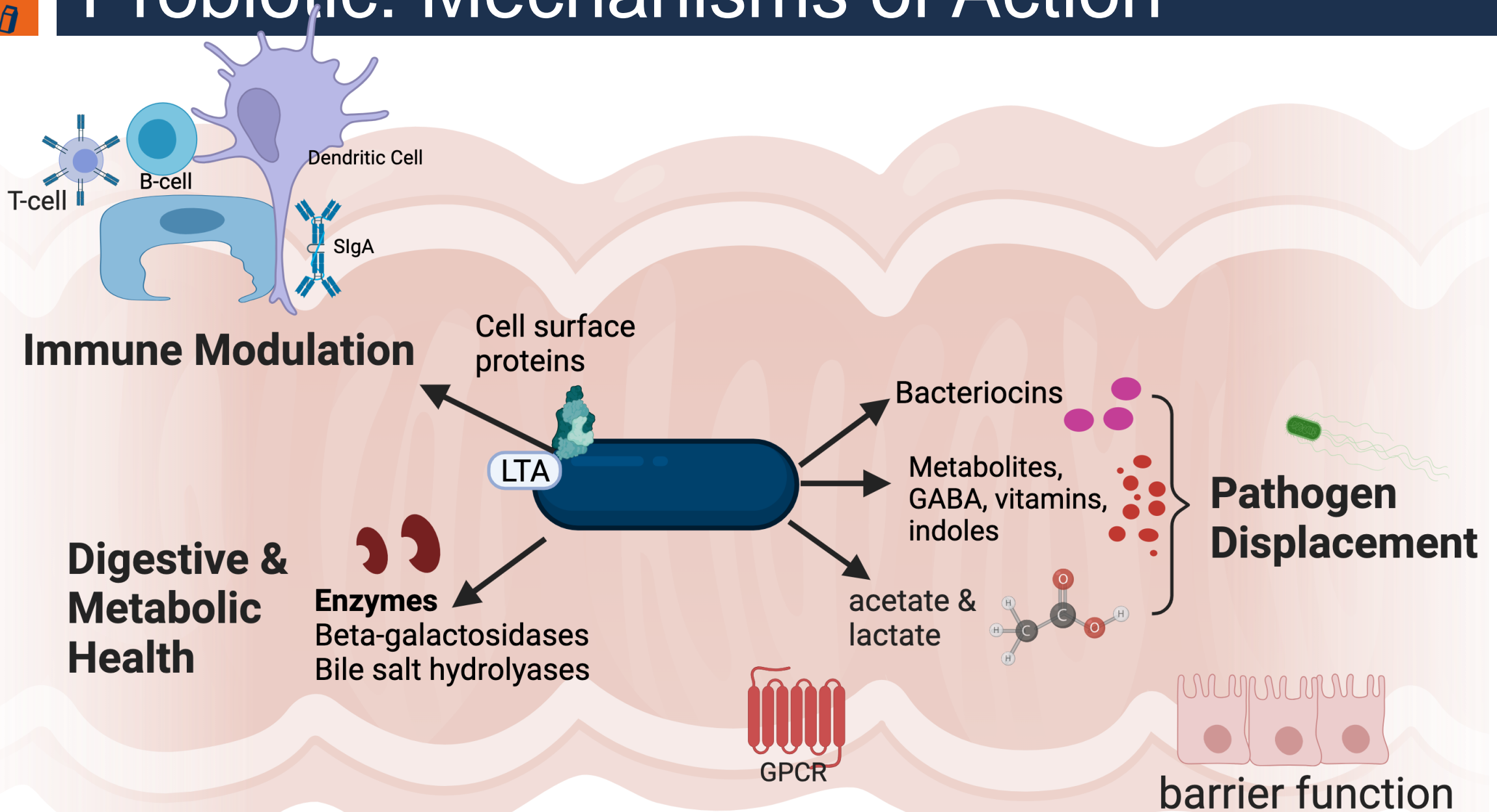
- DSM 15954
- ATCC SD5220, ATCC SD5219
- Bb12
- DN-173 010
- HN019

□ Health Benefits:

- ▣ Necrotizing Enterocolitis prevention in preterm infants (DSM 15954)¹
- ▣ Enhanced immunity in infants (Bb12)²
- ▣ Reduced colonic transit time in women (DN-173 010)³
- ▣ Enhance immunity in adults and elderly (NH019)^{4,5}

1. Su et al. (2020). AGA Clinical Practice Guidelines on the Role of Probiotics in the Management of Gastrointestinal Disorders. Gastroenterol.
2. Holscher et al. (2012). Bifidobacterium lactis Bb12 Enhances Intestinal Antibody Response in Formula-Fed Infants: A Randomized, Double-Blind, Controlled Trial. J Parenteral and Enteral Nutr.
3. Marteau et al. (2002). Bifidobacterium animalis strain DN-173 010 shortens the colonic transit time in healthy women: a double-blind, randomized, controlled study. Aliment Pharmacol Ther
4. Sanders (2006). Summary of Probiotic Activities of Bifidobacterium lactis HN019. J Clin Gastroenterol
5. Miller et al (2017). The Effect of Bifidobacterium animalis ssp. Lactis HN019 on Cellular Immune Function in Healthy Elderly Subjects: Systematic Review and Meta-Analysis. Nutrients

Probiotic: Mechanisms of Action





Probiotics: Health Benefits & Resources

AEProbio Clinical Guide to Probiotic Products Available in USA
Applications, Dosage Forms and Clinical Evidence to Date - 2023 Edition

Introduction Adult Health Vaginal Health Pediatric Health Functional Foods **References** About

Find the appropriate probiotic:

Adult Health Womens Health

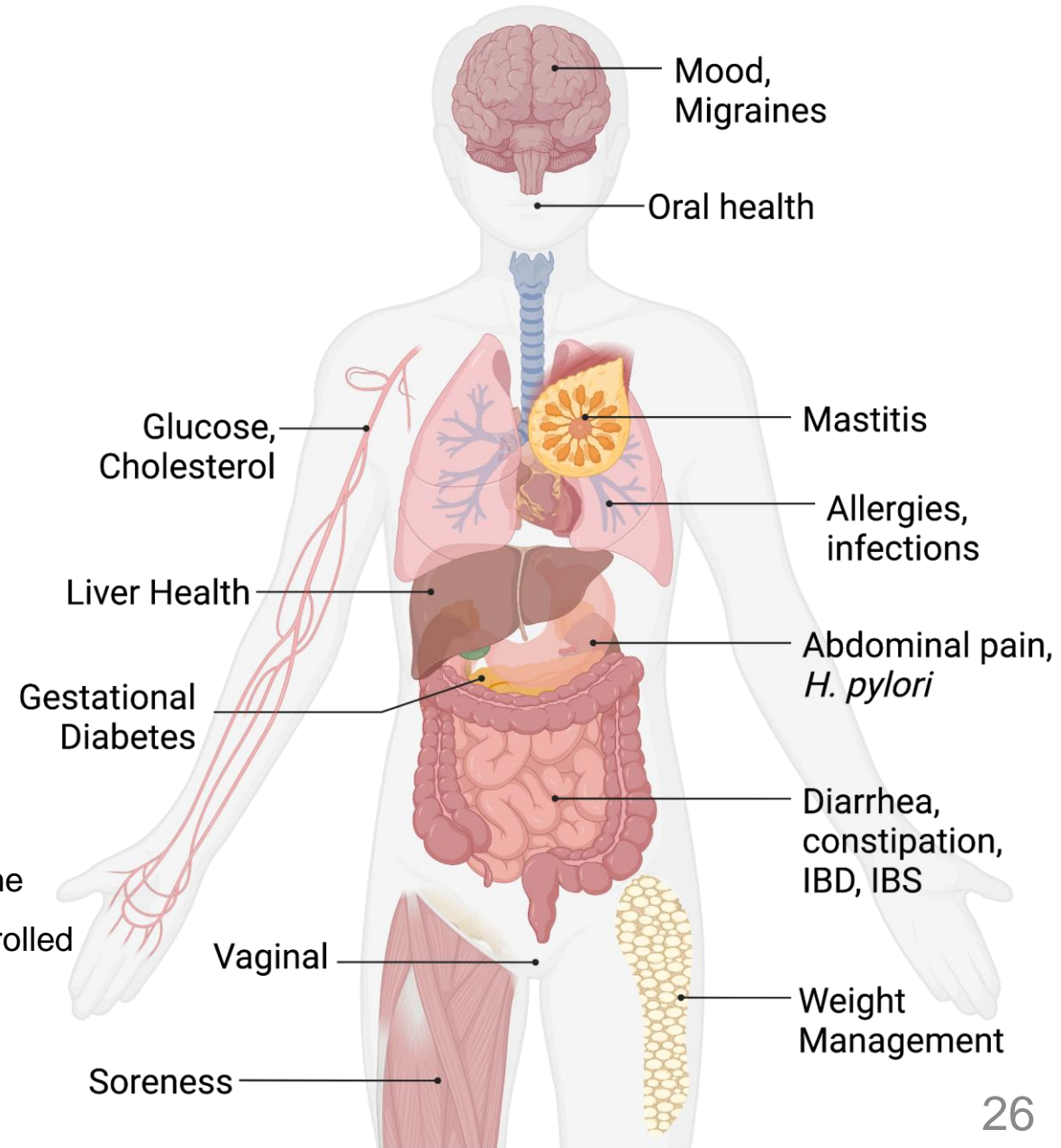
Pediatric Health Functional Foods

238 reviewed publications

Helping you select right probiotic supported by evidence

Evidence Evaluation

- Level I:** At least 1 appropriately designed trial with power calculation for outcome
- Level II:** Well designed controlled trials w/o randomization, cohort or case-controlled
- Level III:** Expert opinions

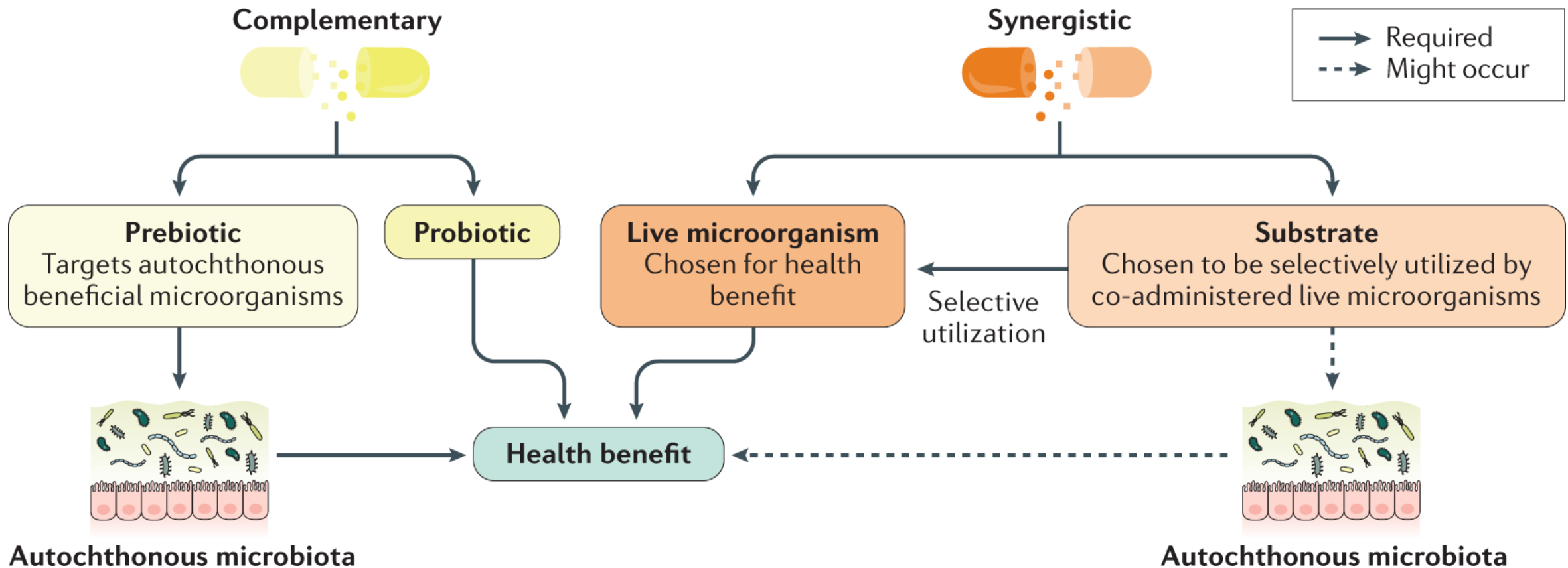




Synbiotics & Postbiotics

Synbiotics: Definition

Synbiotic – a **mixture** comprising **live microorganisms** and **substrate(s)** selectively utilized by host microorganisms that confers a **health benefit** on the host.





Synbiotics: Health Benefits

There is limited, high-quality research

- ***Reduced respiratory tract infections*** (16 studies)¹
- ***Reduced systolic blood pressure*** in adults (11 studies)²
 - ▣ No effect on diastolic blood pressure
- ***Decreased body weight and waist circumference*** in adults with *overweight and obesity* (23 studies)³
 - ▣ No effect on body mass index (BMI) or body fat

1. Chan CKY, et al. (2020) *Advances in Nutrition*
2. Hadi A, et al. (2022) *Crit Rev Food Sci and Nutrition*
3. Hadi A, et al. (2020) *Crit Rev Food Sci and Nutrition*

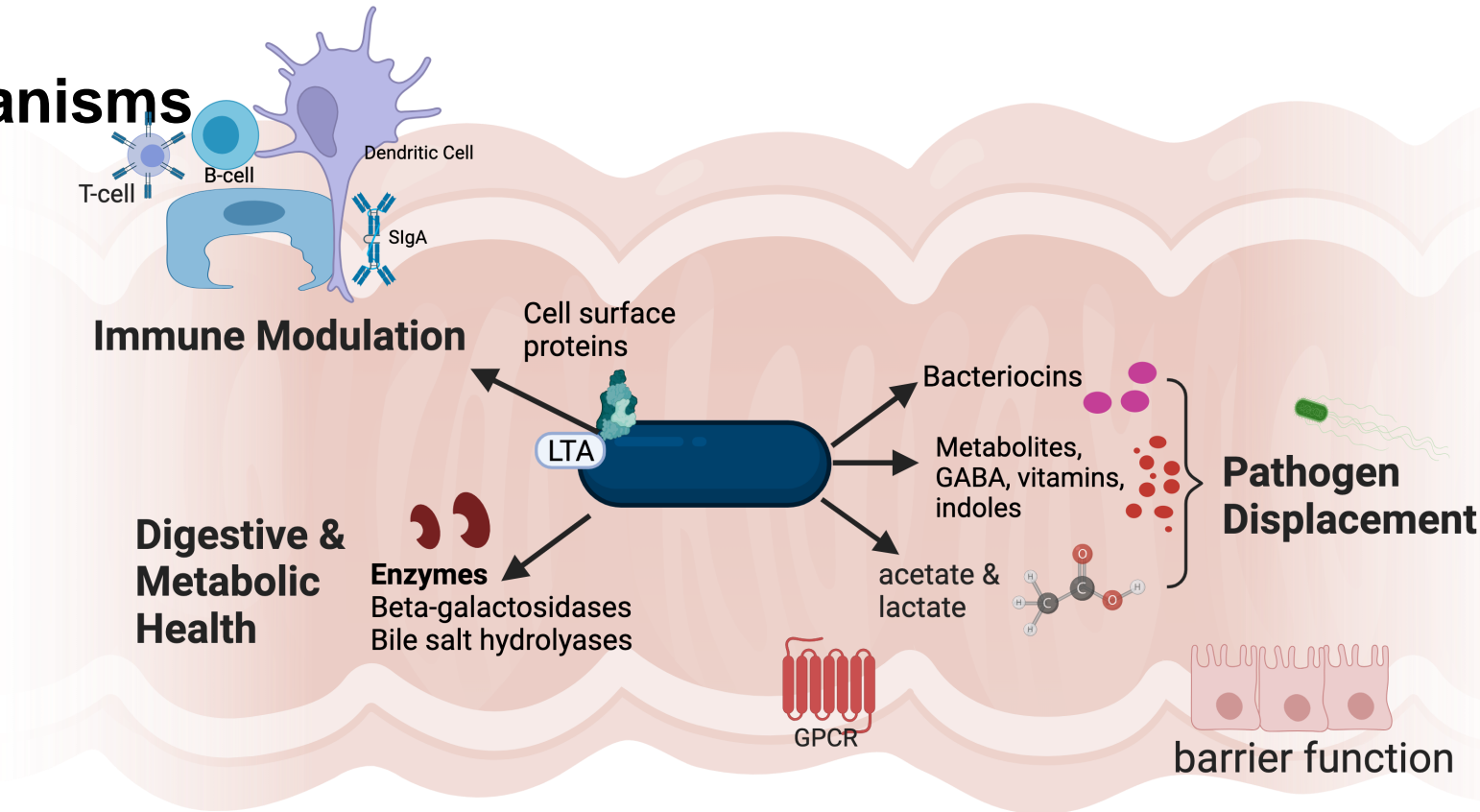


Postbiotics: Definition

Postbiotics: preparation of **inanimate microorganisms** and/or their components that confers a **health benefit on the host**

Proposed Health Benefit Mechanisms

- Immune modulation
- Barrier function
- Systematic metabolic responses





Postbiotics: Health Benefits

There is limited, high-quality research

Inactivated Bacteria

- ***Improved H. pylori eradication*** rates inactivated *L. acidophilus*
- ***Improved pain scores*** in patients with IBS with Lacterol and *B. bifidum* MIMBb75
- ***Improved stool frequency*** in patients with chronic diarrhea with heat-killed *L. acidophilus* LB



Fermented Foods



Fermented Foods

Fermented Foods: *foods made through **desired microbial growth** and enzymatic conversions of food components.*¹

Most common food and beverages require lactic acid bacteria, acetic acid bacteria, bacilli or other bacteria, yeasts, or filamentous fungi.



Common Microbes

Streptococcus
Lactobacillaceae
Lactococcus
Saccharomyces



Fermented vs. Not Fermented

Fermented		Not Fermented
<i>Live microorganisms present</i>	<i>Live microorganisms absent</i>	
<ul style="list-style-type: none">• Yogurt• Sour cream• Kefir• Most cheeses• Miso• Natto• Tempeh• Fermented vegetables• Salami, pepperoni, fermented sausages• Fermented cereals, boza, bushera• Most kombuchas• Some beer	<p><i>Heated (Baked, Pasteurized)</i></p> <ul style="list-style-type: none">• Bread• Shelf-stable vegetables• Sausage• Soy sauce• Vinegar <p><i>Filtered</i></p> <ul style="list-style-type: none">• Wine• Most beers• Distilled spirits <p><i>Roasted</i></p> <ul style="list-style-type: none">• Coffee• Chocolate beans	<ul style="list-style-type: none">• Chemically-leavened bread• Fresh sausage• Vegetables pickled in brine or vinegar• Chemically-produced soy sauce• Non-fermented, cured meats and fish



Fermented Foods: Benefits

Inhibit pathogens and food spoilage microbes

May be a source of live microbes

Increase vitamins and bioactives in foods

Improve aroma, taste and texture of foods

Improve digestibility

Health benefits

Remove/reduce toxic substances or anti-nutrients in foods



Fermented Dairy



Fermented Dairy

□ Yogurt

- *Streptococcus thermophilus*
- *Lactobacillus delbrueckii subsp. bulgaricus*

□ Bioactives

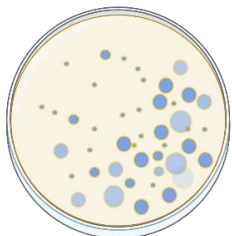
- Peptides
- Exopolysaccharides
- β -galactosidase

□ Health Effects

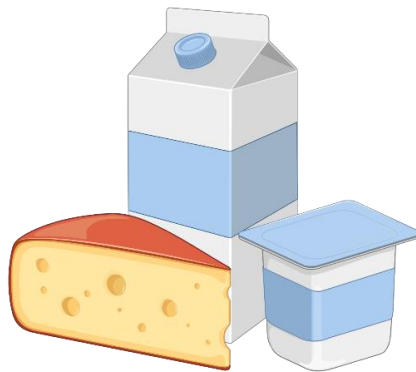
- Anti-hypertensive
- Immunity
- Lactose digestion



Milk



Lactic Acid
Bacteria



Yogurt, Kefir, Cheese

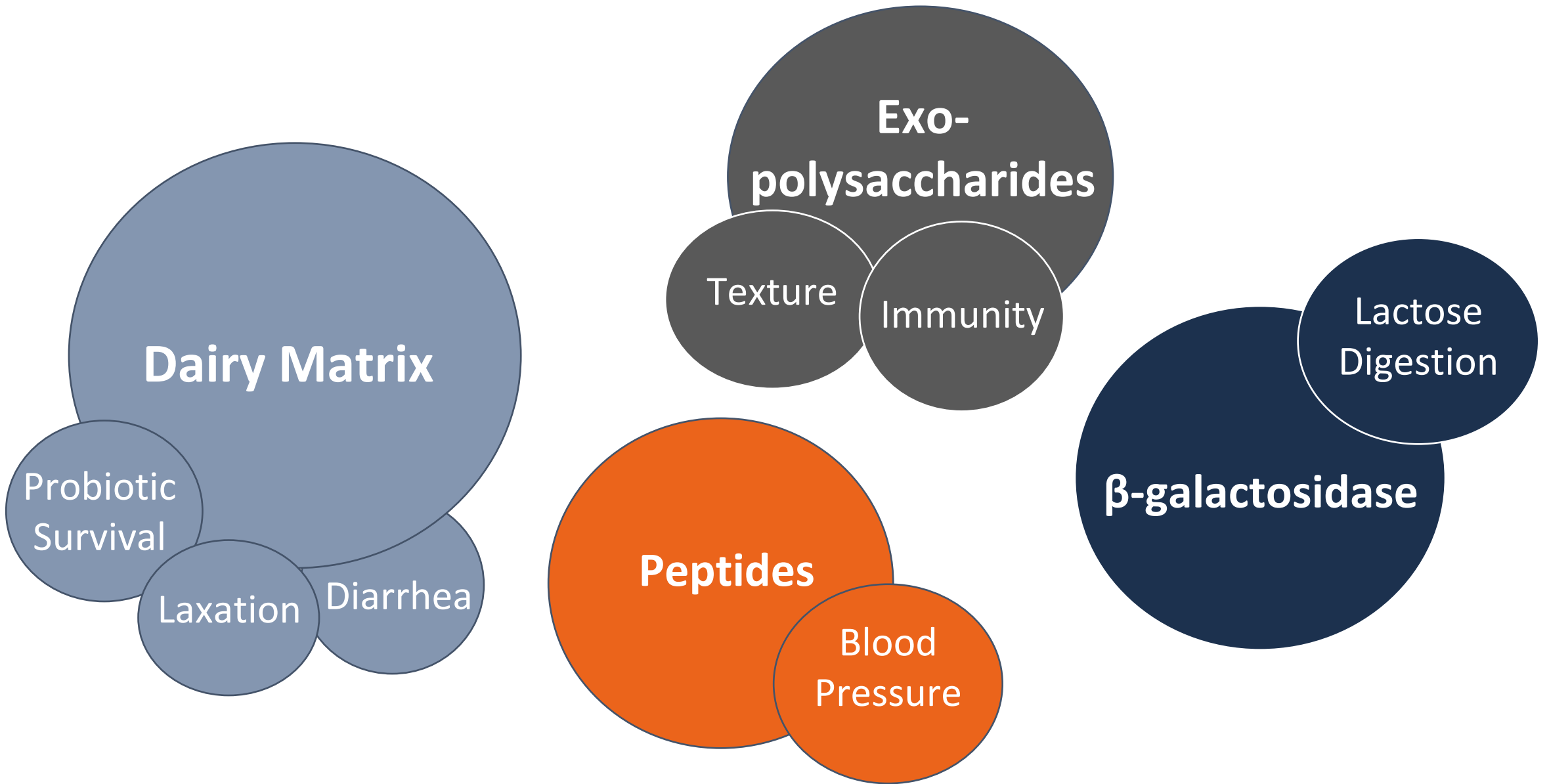


Fermented Dairy & Probiotics

- Fermented dairy may contain probiotics
 - Diarrhea
 - Constipation
- Probiotic survival
 - Buffer stomach acidity
 - Exopolysacchrides and milk fat globule membranes may protect probiotics in gastrointestinal tract
 - Lactose serves as energy substrate



Fermented Dairy: Summary





Definitions: Summary & Comparisons

	<u>Pre</u> biotic	<u>Pro</u> biotic	<u>Syn</u> biotic	<u>Post</u> biotic	Fermented Foods	
Safe for intended use	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Required <input type="checkbox"/> May or may not (sometimes) <input type="checkbox"/> Not required
Health benefit	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Microbes alive when consumed	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> (inactivated)	<input type="radio"/>	
Microbes taxonomically defined to strain level	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="radio"/> (rarely available)	
Microbes genome sequences available	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="radio"/> (rarely available)	
Substrate utilized by microbes	<input checked="" type="checkbox"/> (host)	<input type="checkbox"/>	<input checked="" type="checkbox"/> (host or preparation)	<input type="checkbox"/>	<input type="radio"/> (some grains, vegetables)	
Adequate amount to provide benefit	<input checked="" type="checkbox"/> (substrate)	<input checked="" type="checkbox"/> (microbes)	<input checked="" type="checkbox"/> (substrate & microbes)	<input checked="" type="checkbox"/> (inactivated microbes)	<input type="checkbox"/>	



Key Takeaways

1

Biotics and fermented foods are unique terms.

2

Fermented foods may (or may not) contain live microbes or other biotics.

3

Biotics and fermented foods affect the gut microbiota and health.

Gut Health & Nutrition Education: Practitioner Perspective

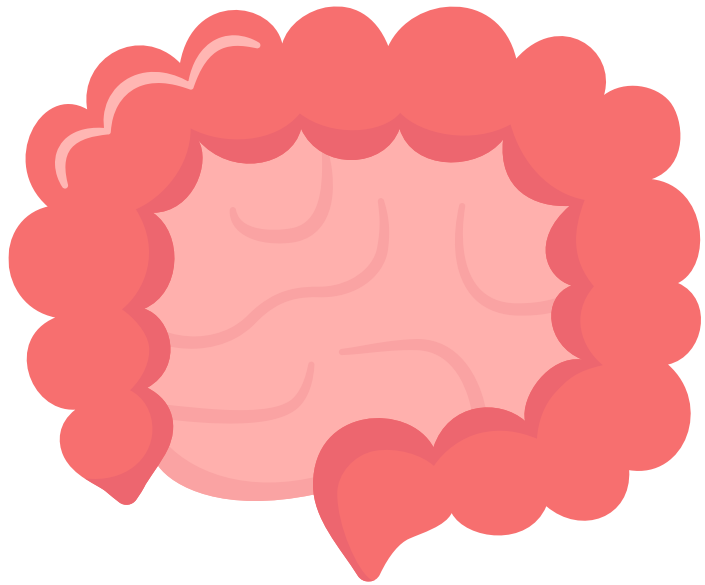


AGENDA

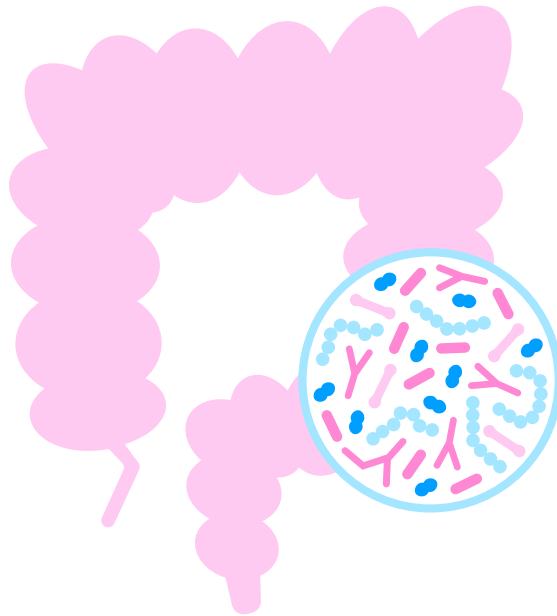
- 1 Digestive discomfort is common
- 2 Nutrition for gut health concerns
- 3 Beyond nutrition - other factors
- 4 Some gut guidance



WHAT IS GUT HEALTH?



digestion



microbiome



gut feelings

IN GENERAL

WE ALL CAN RELATE TO (IN)DIGESTION

burping

bloating

feeling hangry



upset stomach

a little heartburn

one bite too much

PREVALANCE

OF DIGESTIVE DISORDERS

IBS

1 in 20 people

Celiac

1 in 133 people

Food Allergies

1 in 10 adults

IBD

1 in 100 people

GERD

1 in 5 people

Lactose Intolerance

1 in 10 adults

1. NDC. [What is Lactose?](#) 2017.
2. NIH. [Gastroesophageal Reflux Disease.](#) 2023.
3. FARE. [Facts and Statistics.](#) 2020.
4. ACG. [About Irritable Bowel Syndrome.](#) 2021.
5. Medscape. [Nearly 1 in 100 People Diagnosed with IBD in the US.](#) 2023.
6. Beyond Celiac. [Celiac Disease: Fast Facts.](#)

CONCERNS

WITH DIGESTIVE HEALTH

- quality of life
- both emotional & physical toll
- un or misdiagnosis
- not feeling right but can't pinpoint problem



NEEDS TO IDENTIFY

TO GET TO ROOT CAUSES

- working with an RD
- connecting to resources
- cohesive healthcare team
- time, money, opportunity



AGENDA

- 1 Digestive discomfort is common
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EVERYONE HAS

A DIFFERENT VERSION OF GUT-FRIENDLY



A FEW NUTRITION

CONCERNS FOR GUT HEALTH



FODMAP



fiber



fat



food prep



acid



lactose

CO-CREATE

A PLAN WITH YOUR CLIENT

What do **we**
see as the
biggest
concern



What do **they**
see as the
biggest
concern

FIBER FOODS

START LOW & GO SLOW

- what fiber foods are they already eating
- find a fiber benefit to lean into
- check food labels for inulin/chicory root



LACTOSE SPECTRUM

INTOLERANCE DOESN'T HAVE TO MEAN "NO MORE DAIRY"

Amount of Lactose per Serving From Lowest to Highest



Lactose-free Dairy Milk

1 CUP (8 OZ) SERVING

Lactose-free dairy milk is real milk, just without lactose.



Cottage Cheese

1/2 CUP SERVING

Due to the steps in cheese making and curd separation, cottage cheese has a fraction of the lactose in milk. Lactose-free options are also available.



Greek Yogurt

3/4 CUP SERVING

There is less lactose in Greek yogurt because the straining process removes some of the lactose.



Dairy Milk

1 CUP (8 OZ) SERVING

Try small amounts of dairy milk in smoothies, on cereal or with meals. Having milk with solid foods helps slow digestion, which can mean it's better tolerated.



Natural Cheeses

1.5 OZ SERVING

Due to the steps in cheese making and natural aging, natural cheese contains minimal amounts of lactose. Natural cheeses like Cheddar and mozzarella have less than 1 gram of lactose.



Ice Cream

2/3 CUP SERVING

There are lactose-free dairy milk ice creams available.



Kefir

1 CUP (8 OZ) SERVING

The live cultures in fermented milk products help digest some of the lactose.

1. USDA, ARS. [FoodData Central](https://www.ars.usda.gov/fooddata-central/), 2019.
2. Bailey et al. [J Natl Med Assoc](https://doi.org/10.1002/ajim.227). 2013;105(2):112-27

Lactose content based on the Reference Amount Customarily Consumed (RACC) and data from FoodData Central (accessed October 2022).

AGENDA

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THE GUT & BRAIN

TALK ALL THE TIME



20% is efferent meaning...

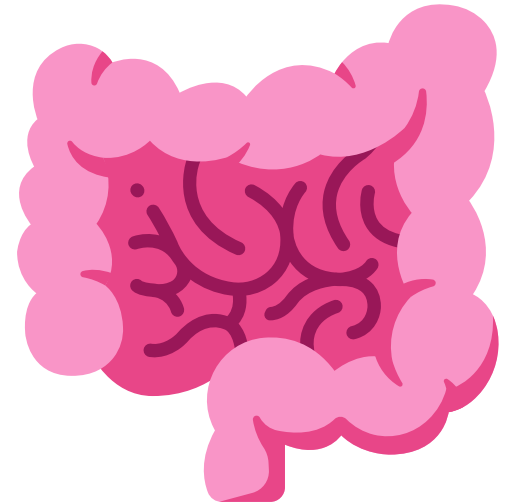
20% of messages are going from brain to body

vagus nerve



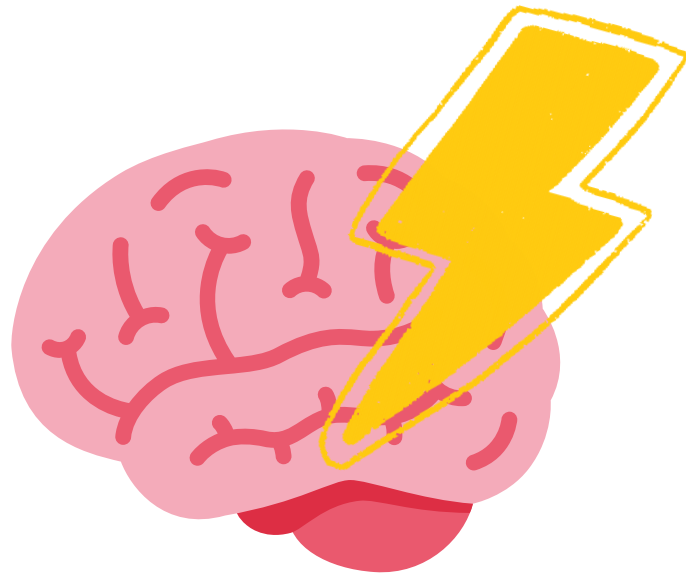
80% is afferent meaning...

80% of messages are going from body to brain



BUT THEY CAN BE

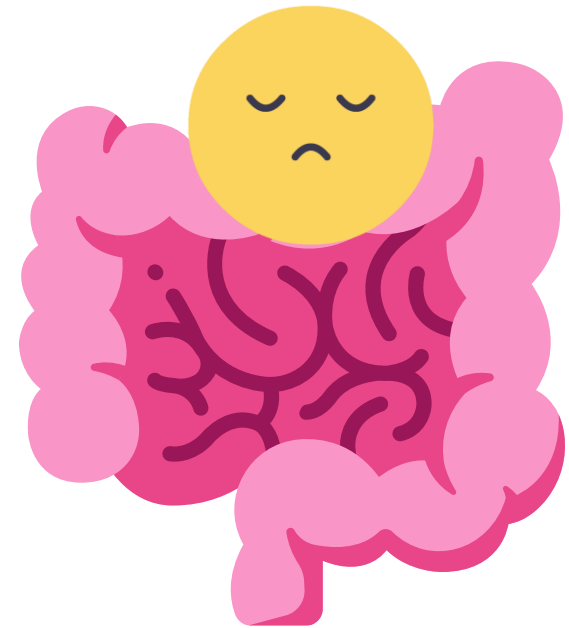
BESTIES & FRENEMIES



when we are mentally stressed out

blood is moved away from your
digestive system

there's actually a shift in our
nervous system



YOU HAVE TO REST

IN ORDER TO DIGEST

- sneaky stress
 - feels like digestive symptoms pop up
- breathing before eating to activate parasympathetic nervous system



SLEEPING

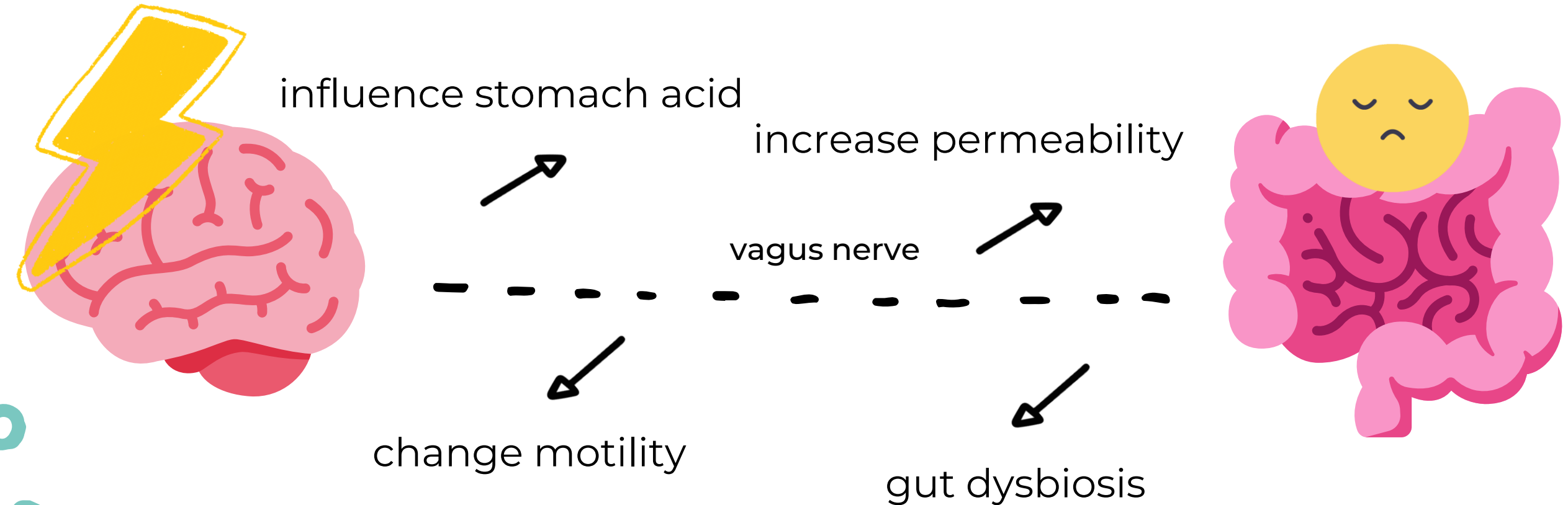
QUALITY & MICROBE DIVERSITY ARE LINKED

- short-chain fatty acids could influence the master clock
- microbiota regulate serotonin production
 - melatonin precursor
- gut bacteria follow a cyclic rhythm
- probiotics could play a role



STRESS CHANGES

THINGS W/ YOUR DIGESTION



HOW YOU EAT

INFLUENCES YOUR DIGESTION



before



during



after

HOW CAN YOU

EAT WITH INTENTION

before

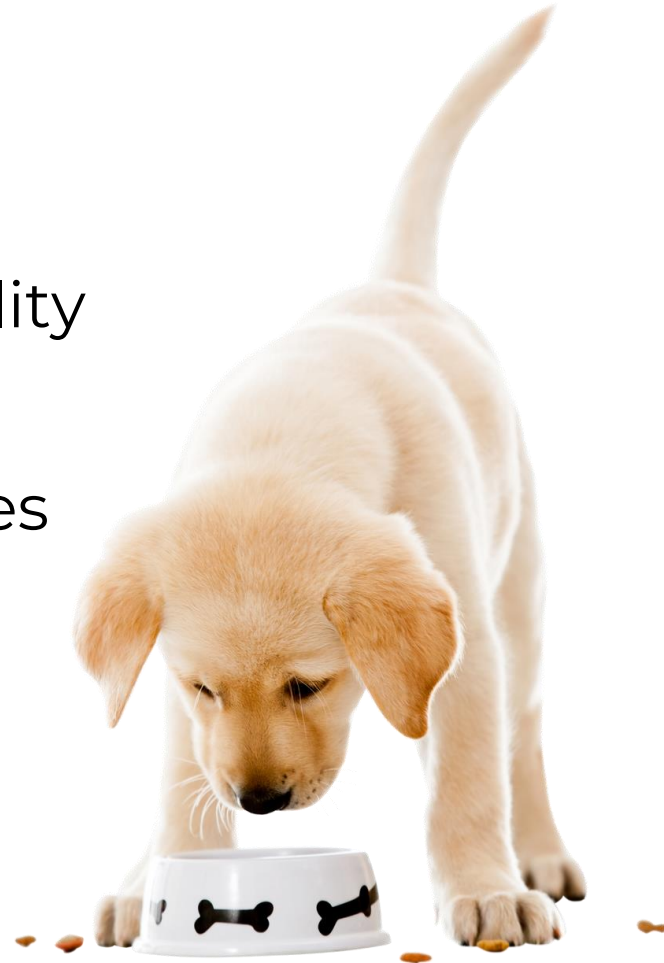
- breathing
- awareness
- hunger cues
- food prep
- food environment

during

- chewing
- scrolling
- grounding w/ senses
- checking eating pace

after

- food flexibility
- awareness
- fullness cues
- how does food settle
- track symptoms



MOVING YOUR BODY

ACTIVE LIFESTYLES CAN HELP

- \uparrow intensity could \uparrow the abundance of gut bacteria
- could \uparrow butyrate producing bacteria
- differences between athletes vs sedentary



THOSE GUT BUGS

COULD INFLUENCE OTHER THINGS



**blood
pressure**

SFCA & TMAO

Yang et al. [Clinic and Exp Hypertension](#). 2023.



**brain
health**

higher diversity

Gubert et al. [Neurobio of Dis](#). 2020.



**bone
health**

SFCA & gut integrity

Zhang et al. [J Transl Med](#). 2022.

INFLAMMATION & GUT HEALTH

IT'S A TWO-WAY CONVERSATION



Bander et al. [Int J Environ Res Public Health](#). 2020.

Butto & Heller. [Int J Med Biol](#). 2016.

Lobionda et al. [Microorganisms](#). 2019.

'ANTI-INFLAMMATORY' FOODS

IT'S SIMPLER THAN YOU THINK

Food	Inflammation Biomarker Score ¹
Tomatoes	- 0.78
Apples and Berries	- 0.65
Yellow/Red Fruit and Veggies	- 0.57
Poultry	- 0.45
Nuts	- 0.44
Coffee and Tea	- 0.25
Other Fruits and Veg	- 0.16
Leafy Greens and Cruciferous Veg	- 0.14
High-fat Dairy	- 0.14
Low-fat Dairy	- 0.12
Fish	- 0.08
Legumes	- 0.04
Red and Organ Meat	0.02
Added Sugars	0.56
Processed Meat	0.68

A balanced diet and healthy lifestyle can go a long way

... but many Americans don't meet national guidelines.

Percent *not* meeting recommendations²⁻⁴



98% whole grains

90% dairy foods

76% Physical Activity

90% vegetables

80% fruit

28% Sleep (≥7 hours)

AGENDA

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- 3 Beyond nutrition - other factors
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BEST FOOD FOR GUT

IS THE ONE YOU EAT (& ENJOY)



money



time



access



cultural



health



comfort

FERMENTED DAIRY

PROTEIN, LACTOSE & PROBIOTICS*

9 g protein

plain, lowfat yogurt

5.7 g of lactose for 6 oz



10 g protein

mozzarella, part-skim

0.3 g of lactose for 1.5 oz



18 g protein

plain, nonfat Greek yogurt

4.2 g of lactose for 6 oz



9 g protein

plain, lowfat kefir

8.5 g of lactose for 8 oz



THE BEST GUT GOAL

IS TO GET MORE VARIETY



tried & true foods
in **new ways**



new foods in
tried & true ways



new foods in
new ways

SOUP SEASON

CAN BE ANY TIME OF THE YEAR



adds veggies



softens fibers



honors culture

GET CURIOUS

WITH FERMENTED FOODS



try making
your own



explore cultural
foods



appreciate the
process

Thank you!



Helpful Resources

Fermented foods



What are fermented foods?

Scientists have defined fermented foods as those made through desired microbial growth and enzymatic conversions of food components. These foods are not new. Fermented foods have been around for thousands of years. To understand how fermented foods are made, let's look at yogurt.

Yogurt is a fermented food made from milk. During yogurt fermentation lactic acid-producing bacteria grow on the sugar and other nutrients in milk. As they multiply, the bacteria produce compounds that change the flavor, texture, and nutrients in the milk to give us what we know as yogurt.



The value of fermented foods

- May be a source of live, active microbes
- Improve taste, texture, and digestibility of food
- Increase concentrations of vitamins and bioactive compounds in foods
- Remove/reduce toxic substances or anti-nutrients in raw foods
- Inhibit pathogens and food spoilage microbes
- May benefit human health by reducing risk for some acute and chronic diseases

The fermentation process

Depending on the food, certain types of bacteria, yeasts and/or molds carry out the fermentation. Ingredients such as salt may be added and temperature and time will be manipulated to get the desired end-product. The fermentation microbes are still alive when we eat yogurt, kefir, cheeses, kimchi and some other fermented foods. But some foods that undergo fermentation are further processed (by pasteurization, baking, or filtering) so they are no longer sources of live microbes.



FERMENTED	NOT FERMENTED
<p>Fermented and retaining live fermentation microbes</p> <ul style="list-style-type: none"> Yogurt Kefir Most cheeses Miso Natto Tempeh Kimchi/fermented vegetables Dry fermented sausages Most kombuchas Some beers 	<p>No live microbes used in production</p> <ul style="list-style-type: none"> Bread, including sourdough (toasted) Shelf-stable pickles/fermented vegetables (heat-treated) Sausage (heat-treated) Soy sauce (heat-treated) Vinegar (heat-treated) Wine, most beers, distilled spirits (filtered) Coffee and chocolate beans (roasted) Fresh sausage Vegetables pickled in brine or vinegar Chemically-produced soy sauce Non-fermented cured meats and fish Acidified cottage cheese



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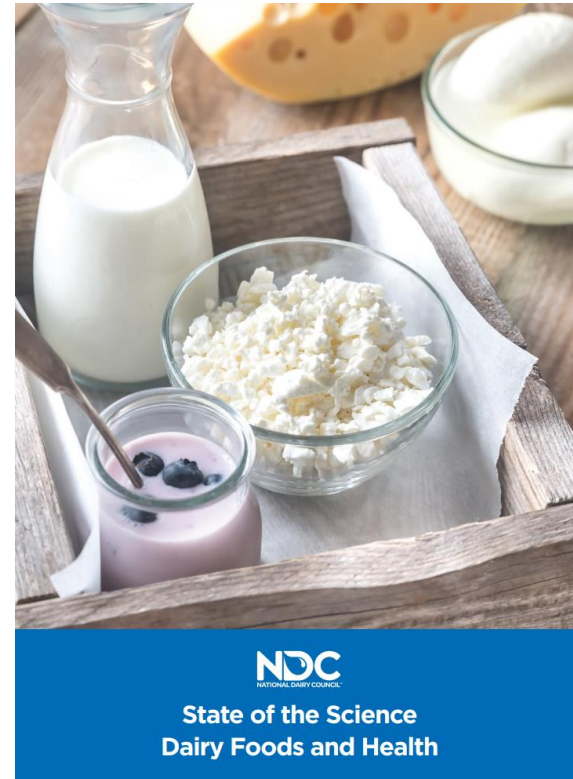
Evidence-Based Use of Probiotics, Prebiotics and Fermented Foods for Digestive Health

By Hannah D. Holscher, PhD, RD, Robert Hutkins, PhD, and Mary Ellen Sanders, PhD
Suggested CDR Performance Indicators: 8.1.4, 8.3.6, 8.4.1, 8.4.2
CPE Level 2

Probiotics, prebiotics, and fermented foods have surged in popularity in recent years. But clarity is needed about what these substances are and how they can be incorporated into healthy eating patterns or used in an evidence-based manner in clinical interventions. The interest in this group of substances is likely due, at least in part, to the convergence of several scientific and personal factors, including science on the importance of the microbiome to human health, consumer concerns about suboptimal gut health, and the rise of evidence pointing to health benefits of these substances. A critical review of the existing science is essential, however, so that these substances are used in a manner consistent with the evidence. Disparate messages about these substances can be gleaned from popular press reports, product promotions, regulatory actions, scientific journals, and conclusions from medical organizations. We hope this course will provide clarity and practical information about probiotics, prebiotics, and fermented foods for human use, including the science behind their definitions, their role in diet and health, and some useful resources to guide your use of them in your practice.

Probiotics
Probiotics are live microorganisms that, when administered in adequate amounts, confer a health benefit on the host.¹ Live microorganisms may be present in many foods and supplements, but only characterized strains with a scientifically demonstrated effect on health should be called probiotics. See [Box 1](#) for the characteristics of a probiotic. It is worth noting that some traits thought to be essential to a probiotic, such as acid resistance, bile tolerance, adherence to epithelial cells, being of human origin, or being able to survive through the gut, may be useful traits in certain circumstances, but none of these is a *required* trait for a probiotic. Probiotics may function very well, for example, in oral applications, without any of these traits.

Importance of strain and dose. Probiotics are known by their genus, species, and strain. For example, consider *Lactobacillus acidophilus* NCFM, a widely consumed probiotic. *Lactobacillus* refers to the genus, *acidophilus* is the species, and NCFM is the strain. In some cases, a subspecies is also part of the correct nomenclature of the probiotic, as is the case for *Bifidobacterium animalis* subsp. *lactis* and for *Bifidobacterium longum* subsp. *infantis*. Genus names are abbreviated with the first letter when it can be done so without ambiguity. Strain designations are important, as different strains of the same species may have different health effects. For example, *B. animalis* subsp. *lactis* strain CNCM I-2494 has studies showing it can help normalize intestinal transit time² while *B. animalis* subsp. *lactis* strain BB12 can help with immunity in infants,³ and *B. lactis* strain HN019 supports immunity in elderly adults.⁴ So be sure to look for the designation that identifies the specific strain showing the desired health benefits. Some strain designations refer to listings in international culture collections, such as CNCM (a



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Dairy Foods and Health

7 Dairy Nutrition Questions Answered

Article • 5 min read • October 17, 2023

Does lactose intolerance mean no more dairy?

Simply put, [lactose intolerance](#) is the inability to digest [lactose](#), a natural sugar found in dairy foods. Symptoms can vary but usually include abdominal pain, bloating, diarrhea or gas.

Lactose intolerance is [different than a milk allergy](#), where all [dairy foods](#) need to be avoided. So, with lactose intolerance, it's not all or nothing. Think of it as a spectrum, where many people can still confidently [enjoy dairy foods](#). And there are options in the dairy aisle that can help:

- Lactose-free dairy products:** These are dairy products that have lactose removed. For example, [lactose-free milk](#) is real milk without lactose. It has all the same nutrients as regular milk and can be used the same way in your favorite [food or drink recipes](#).
- Low-lactose foods:** Natural [cheeses](#), [cottage cheese](#), [Greek yogurt](#) and [ice cream](#) all have less than 5 grams of lactose per serving, making them easier for people to digest and incorporate in a variety of recipes.

If you have questions or concerns about your tolerance, we encourage you to reach out to your healthcare provider.

If you want to learn more, visit our article [Lactose Intolerant? Try These 12 Tips To Enjoy Dairy](#)



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Nutrition, health, farming, sustainability

* = Elective CME credits offered through AAFP

Q&A Session

Please enter your questions into the Q&A chat window.

Continuing education certificates will be sent via email within 24 hours of this webinar.

The full webinar recording will be available next week on USDairy.com.





How do we know if it's a food allergy, sensitivity or something else?



When it comes to gut health support, what makes dairy foods unique to plant-based alternatives?



**Regarding probiotic benefits,
what are options for people
who are sensitive/allergic to
dairy foods?**



Probiotic supplements. Helpful or waste of money?



Any major misconceptions or misinformation related to gut health you want to highlight?