



NHMRC
Centre of Research Excellence
Transforming Gut Health

Innovations in management of disorders of gut-brain interaction

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AuSPEN November 2025

Outline

We will discuss:

- **Defining and differentiating DGBIs**
- Innovations in DGBI **diagnostics**
- Innovative **assessment** tools and technologies
- **Intervention** innovations
- Innovations supporting **management and evaluation** of DGBI – dietary and more broadly



I have no disclosures in relation to this presentation

DGBIs – more than IBS

Oesophageal

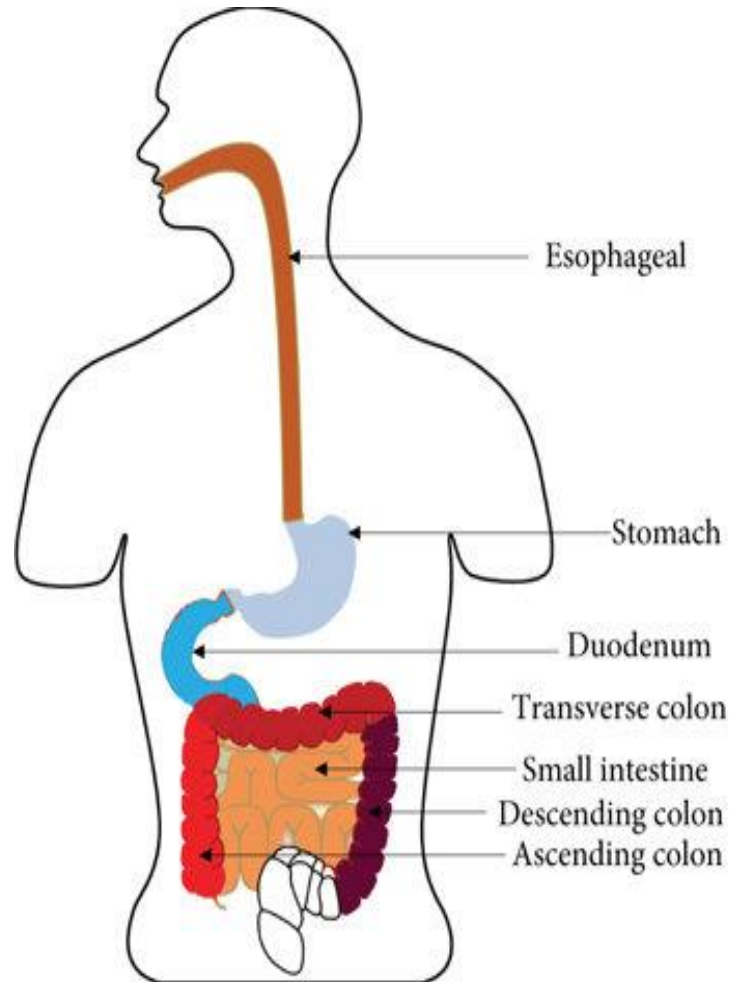
- Reflux hypersensitivity
- Functional heartburn, globus

Gastric, small intestinal

- Functional dyspepsia
- Belching & nausea disorders
- SIBO/SBD overlap

Large intestine

- Irritable bowel syndrome
- Functional constipation
- Functional diarrhoea



Overlaps with:

Oesophageal

- Achalasia, EoE, Reflux

Gastric, SI

- Reflux, IBD
- Gastroparesis
- Coeliac disease

Large intestine

- Diverticular disease
- IBD

Absence of.....
No evidence of.....

Rome Foundation
Rome IV criteria

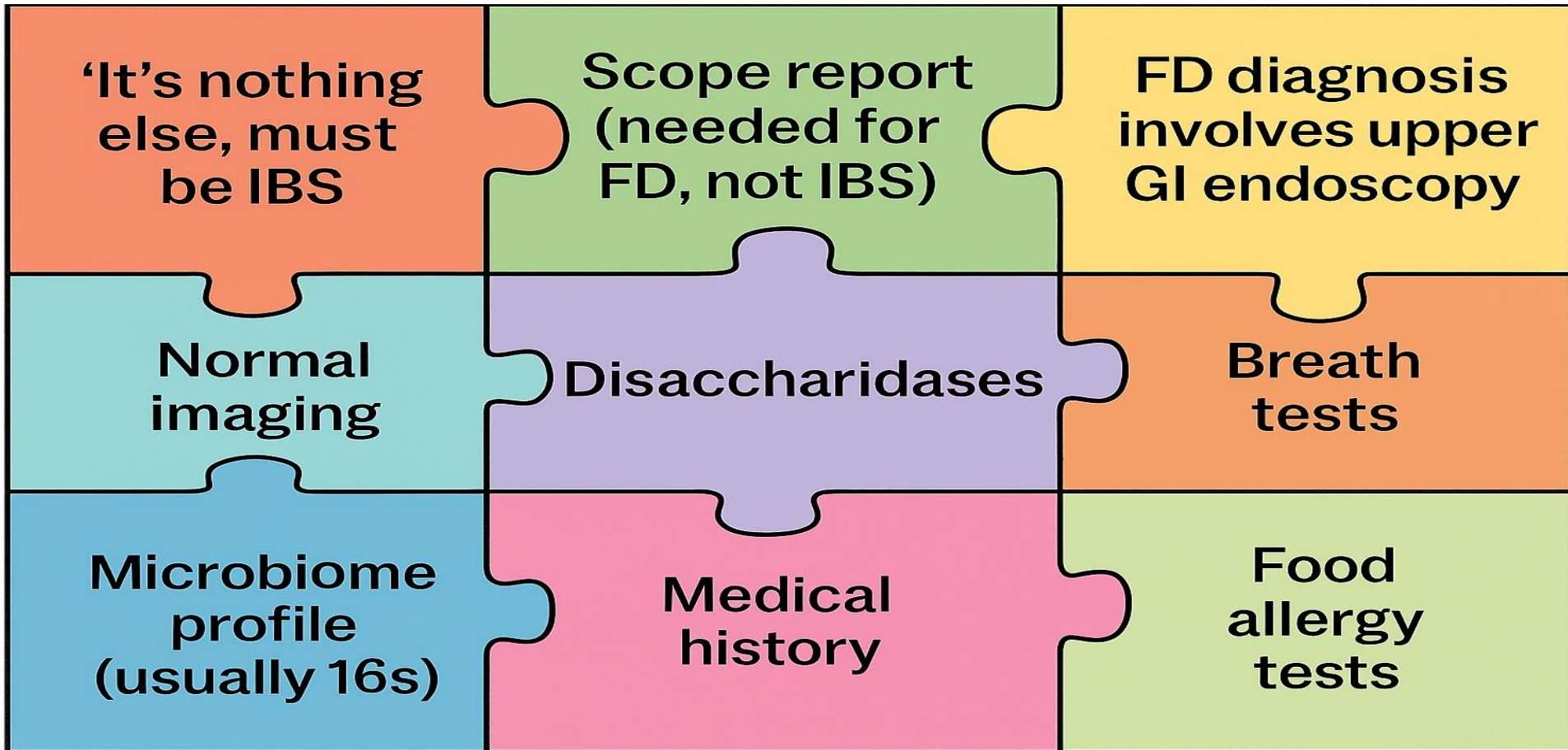
Rome V diagnostic criteria due 2026



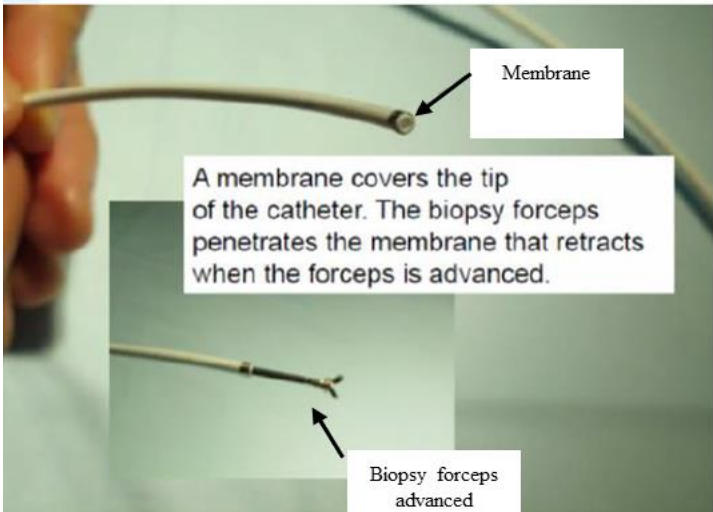
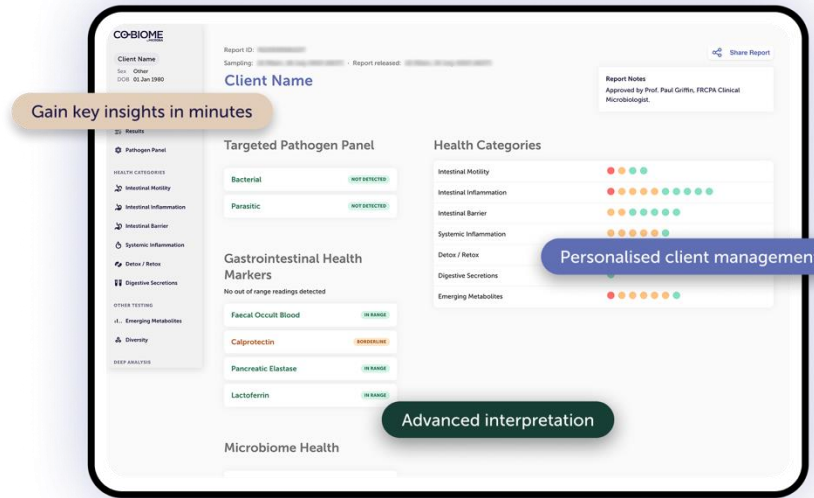
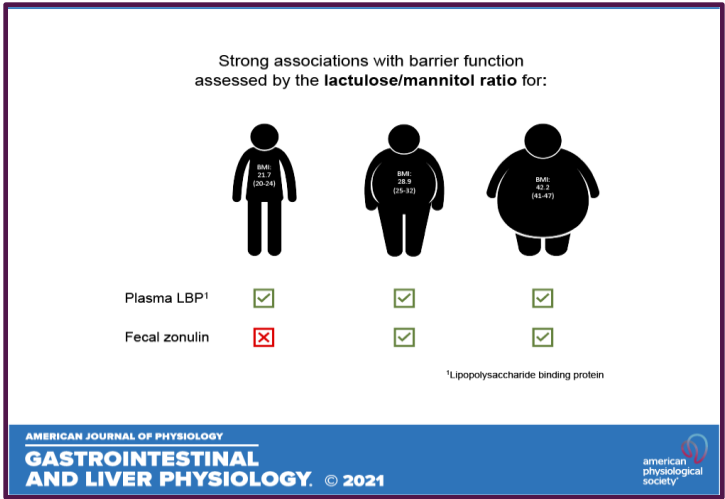
Issues to be addressed in Rome V

- Update knowledge (microbiome, food/diet, CNS mechanisms and treatments, sex differences)
- Address diagnostic overlap
- Account for cultural differences in diagnosis
- Role of biomarkers in diagnosis and treatment
- Development of clinical criteria
- Include Brain-Gut treatment and Integrated Care
- Increase focus on patient-provider relationship
- Improve consensus methods and consolidate syndromes based on more than clinical suspicion
- Reduce use of low quality evidence for criteria
- Avoid reliance on survey data subject to selection and recall bias

DGBI diagnostic decision making

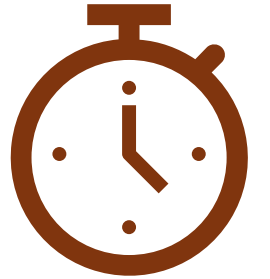


Tools available for advancing DGBI diagnostics



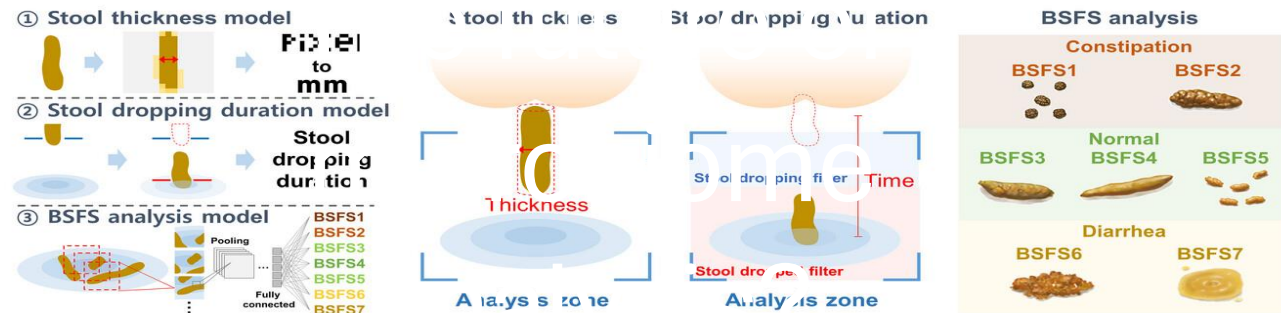
Innovations in GI diagnostics (and alternatives)

a



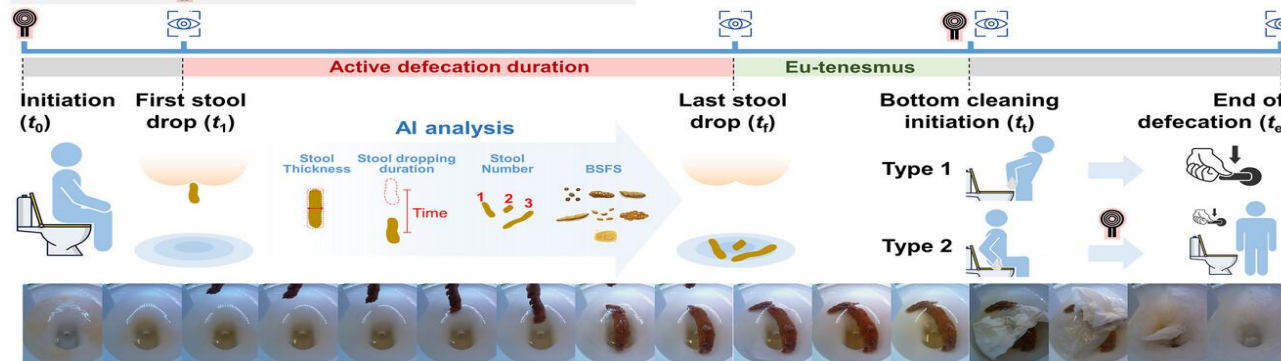
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Optical sensor (analysis)

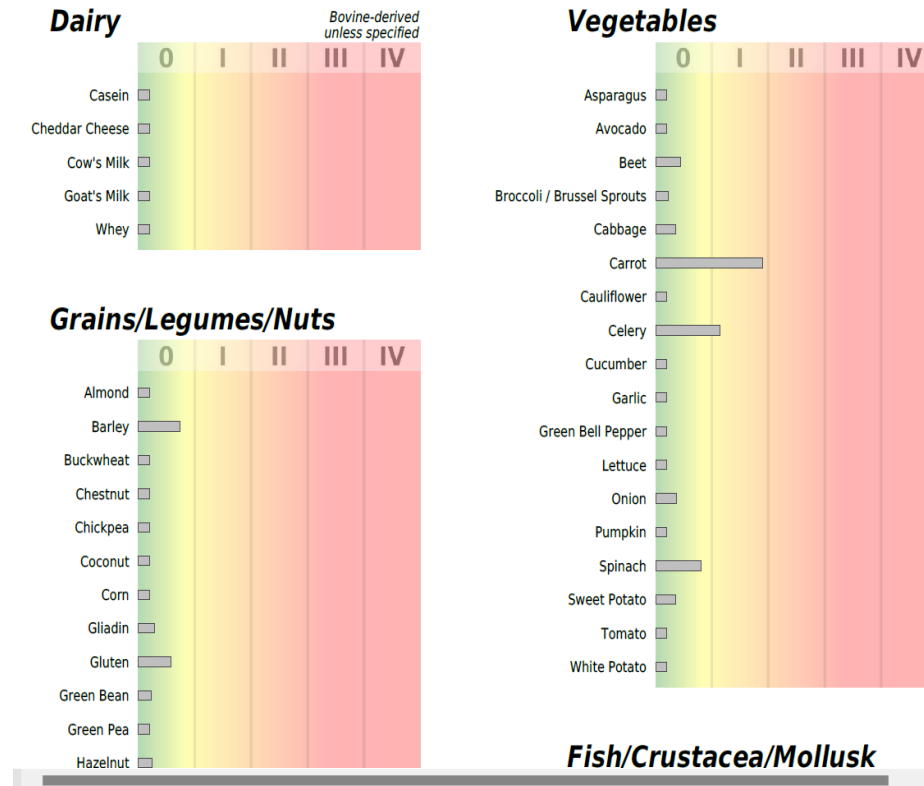
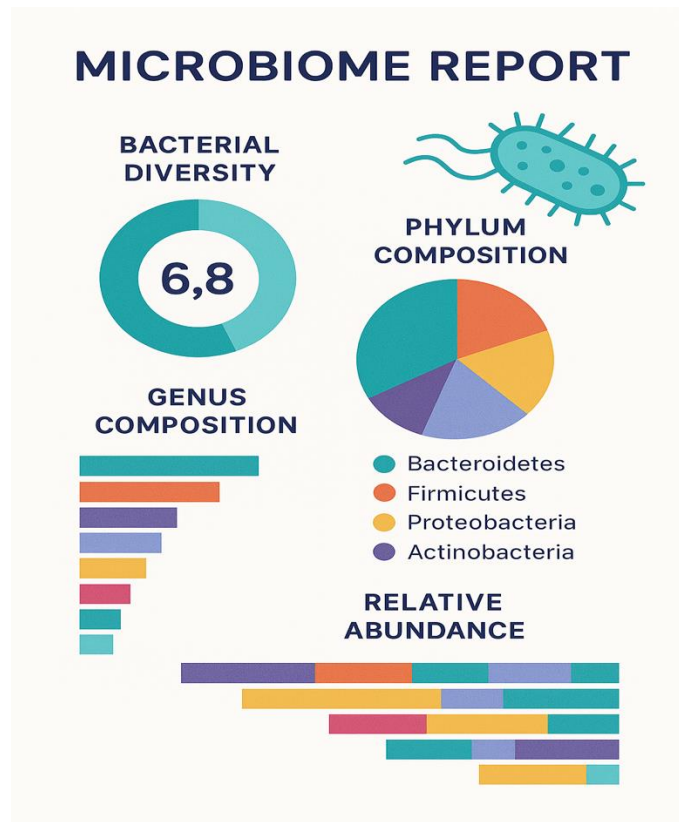


c

Optical & pressure sensor (record behaviors)

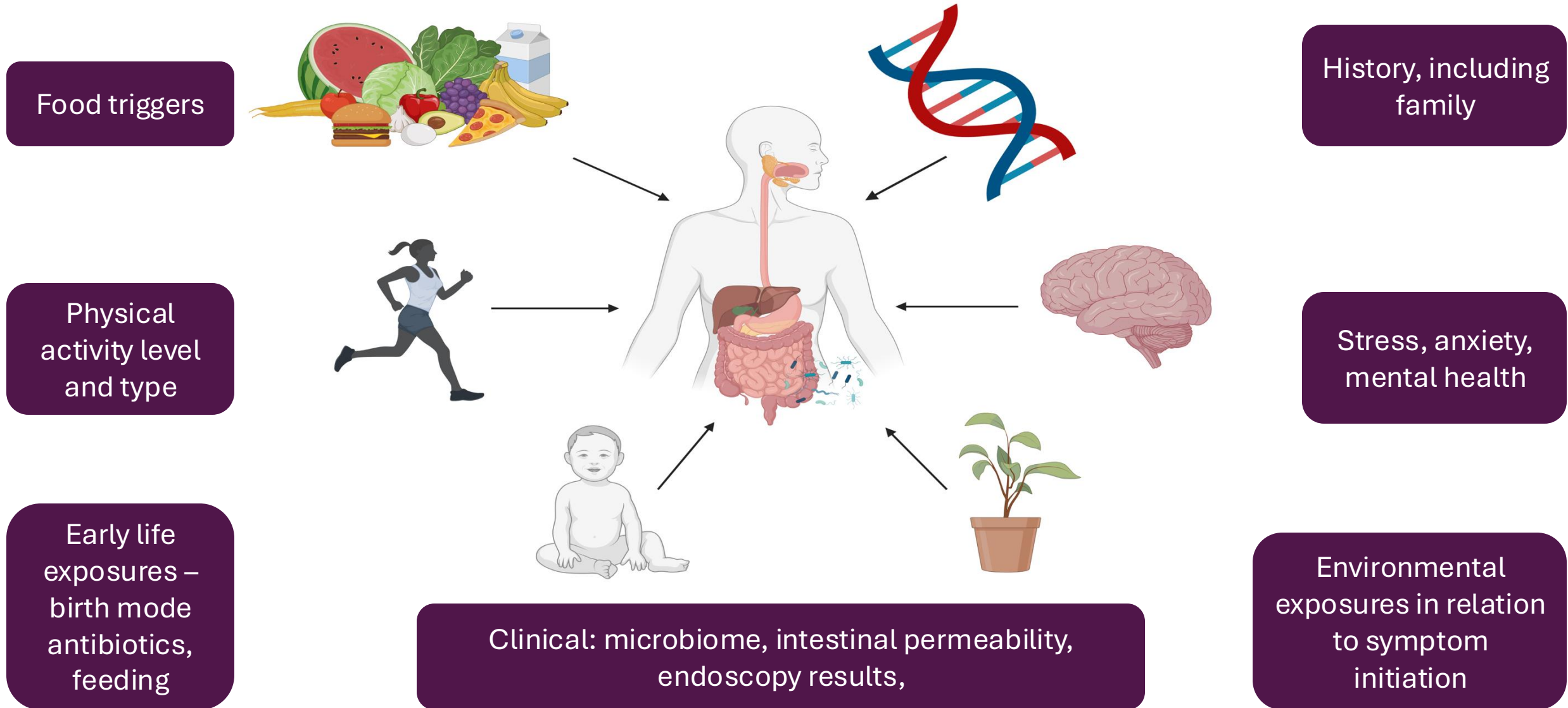


What to do? Where do I start?



Diet history: have cut out foods when upper or lower GI symptoms occur (or food reported as related to IBS), very restricted food range, multiple exclusion diets (low FODMAP diet trial but not challenges), rigid meal plan, rarely eats out, symptoms immediately after eating, low food-related and overall quality of life

Dietetic assessment in DGBIs

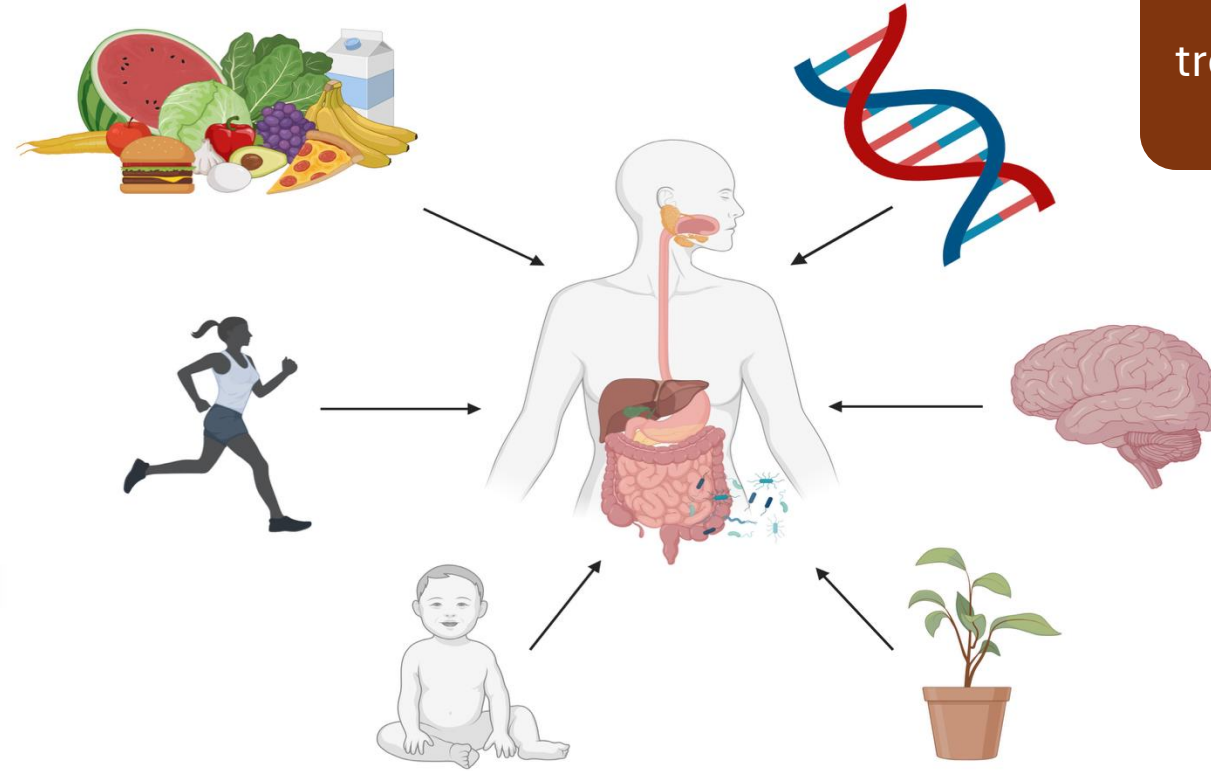


Innovative dietetic assessment tools in DGBIs

Image based dietary assessment - less triggering?



Real time symptom tracking – more accurate, less severe
SAGIS, BSFS



History helps determine treatment plan/prioritisation eg. atopy vs anxiety vs infection

Screening for ARFID eg. NIAS.
Whether and when to administer?

What to do about microbiome, intestinal permeability, supplements

DGBI-specific consulting skills

Should all clients be offered gut-directed psychotherapy?

Fibre, food antigens or amines

Food	FODMAP	Antigen	Amines (histamine)
Wheat, rye, barley	Fructans	Gluten, ATIs	Fermented grains
Dairy foods	Lactose	Cows milk protein	Yoghurt, cheese
Nuts	GOS, fructans	Tree nuts	Most, higher if roasted
Soybeans	Fructans	Soy protein	Soy sauce, tempeh
Egg	N/A	Egg	Higher if not fresh
Seafood	N/A	Shellfish/fish	Preserved, dried

Milk, soy and wheat are commonly reported food antigens in DGBI: all reduced on a low FODMAP diet (most studies not been designed to establish causation)

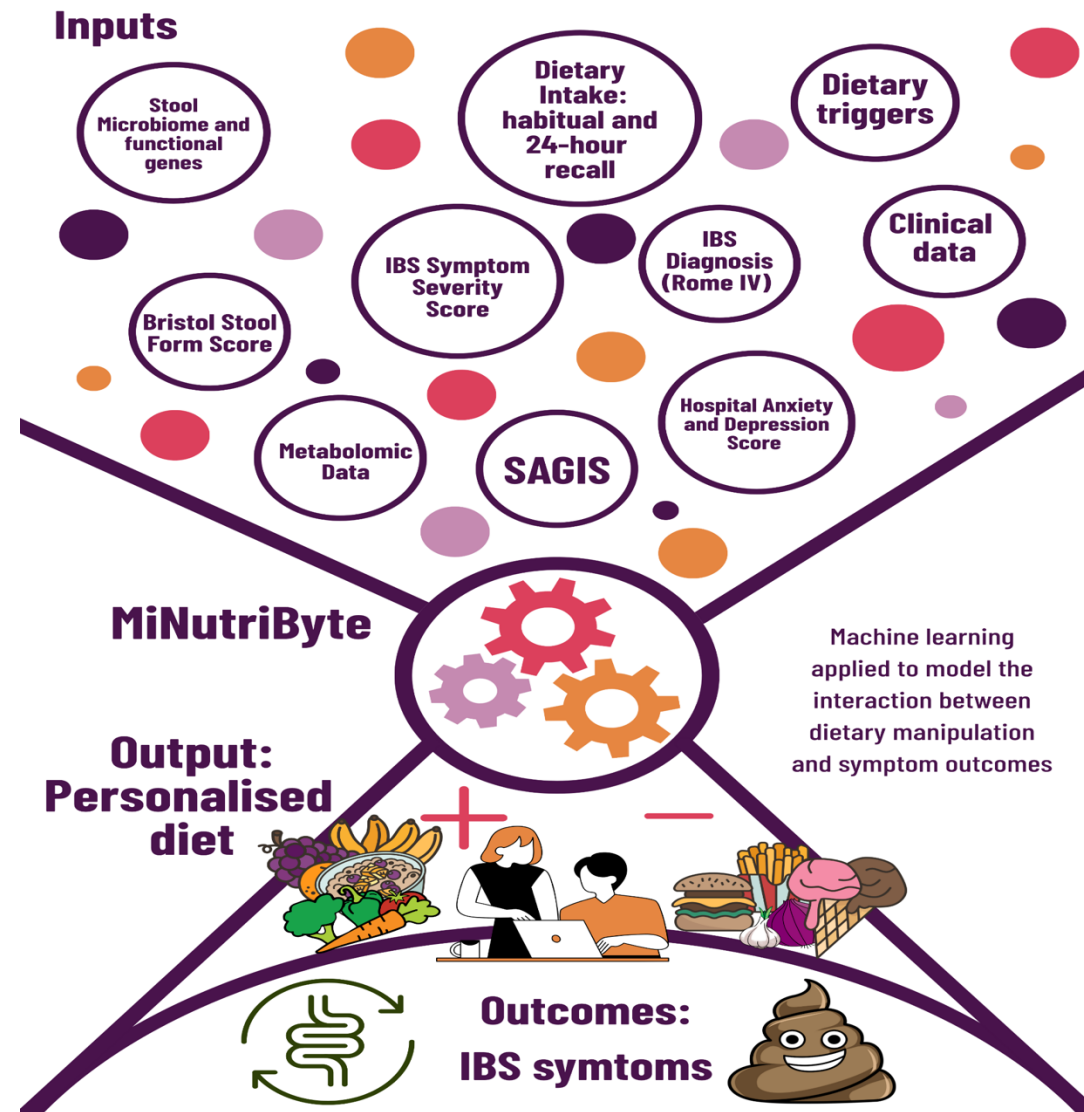
Could food antigen responses in upper GI tract explain symptoms?

Dietetic assessment innovations and considerations

Innovation	Clinical consideration
Microbiome testing	Was it 16s rRNA or MGS? Functional pathways and microbial metabolites Single timepoint – usually stool not mucosal associated microbiota Client may be very invested in results
Allergens	How tested? Alignment with symptoms? Atopy in childhood
Breath testing / SIBO	Do symptoms align with results? Has gastric transit time been assessed? Has client taken antibiotics or not? What dietary strategies would be useful for symptoms and gut dysbiosis?
Supplements	Prebiotics, probiotics, synbiotics, antimicrobials Gradual approach to replacing with food – best bets for investment Give clients homework – what studies are cited?
Chewing and pace of eating	Smart watches or simple chew counts and meal timers
Gastric emptying, transit	Capsule technology, ‘blue poo’ or ‘beet test’
Dietary assessment and analysis	Be aware of over-investment/micro-analysis, use apps and web programs wisely, role of AI and machine learning (with common sense and science)

Assessment of incretin weight loss medications (GLP-1RA, GIP)

Distilling dietary assessment to intervention

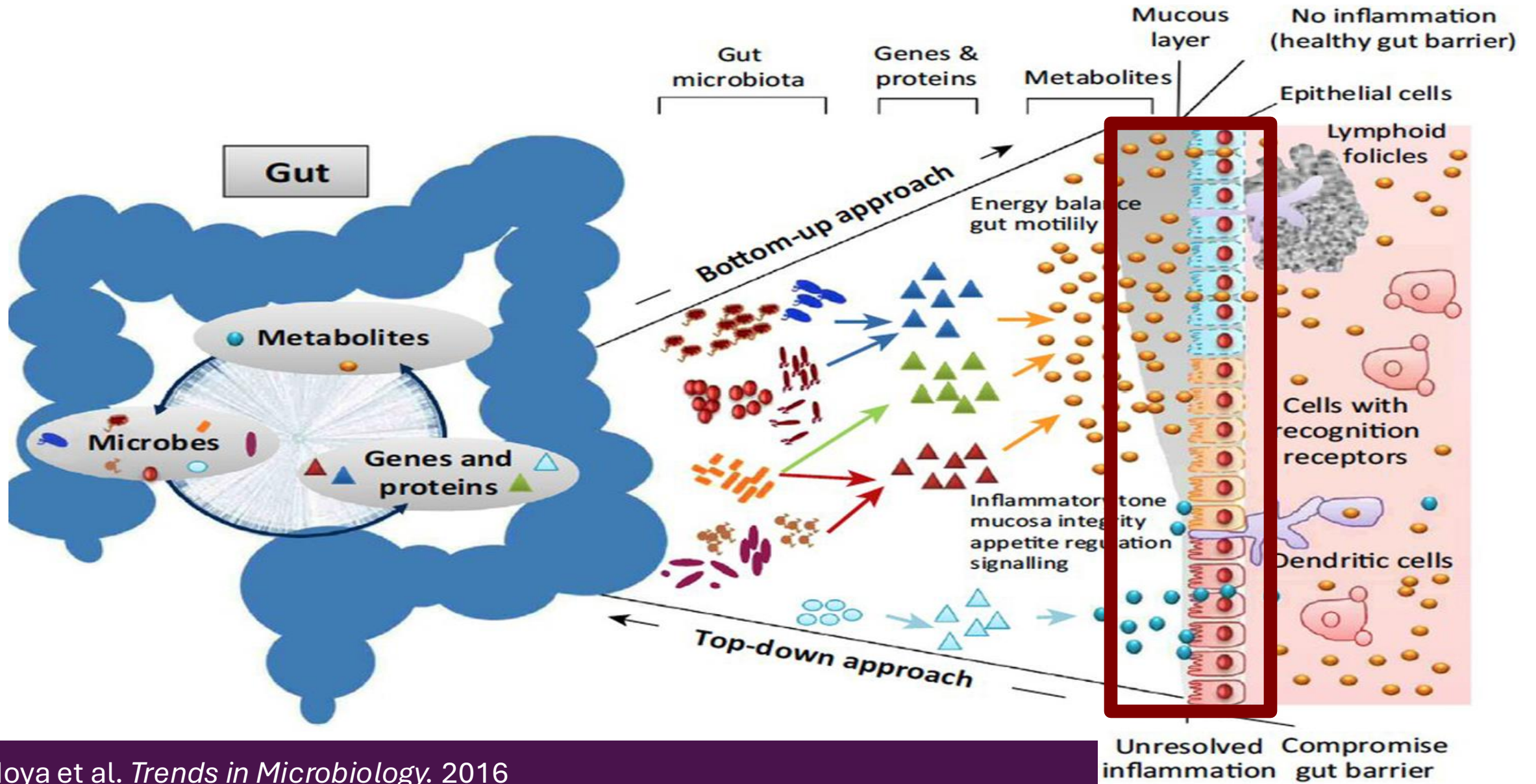


Applying dietary assessment to intervention

- Counselling and communication skills advancements and training (some using AI)
- Consider gut-brain axis and nocebo effect
- Fibre – progress and innovations
- Innovative applications of FODMAP concept
- FODMAP meets MedDiet – best of both?
- Supplements and medications
- Personalised diets for overlapping conditions
- Beyond diet – management and advocacy



Intervention: eyes on the prize



Innovative and expert dietetic practice in DGBI

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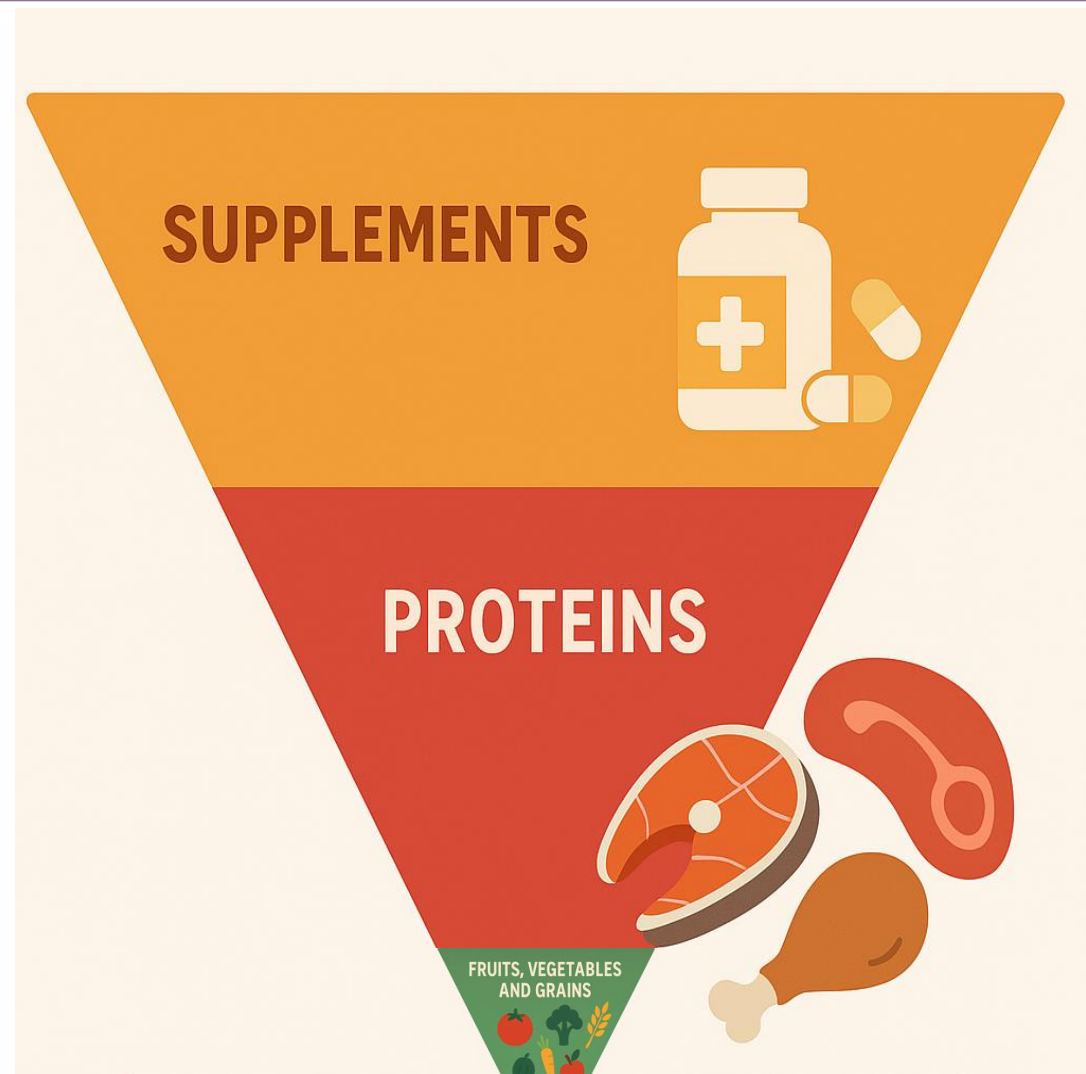
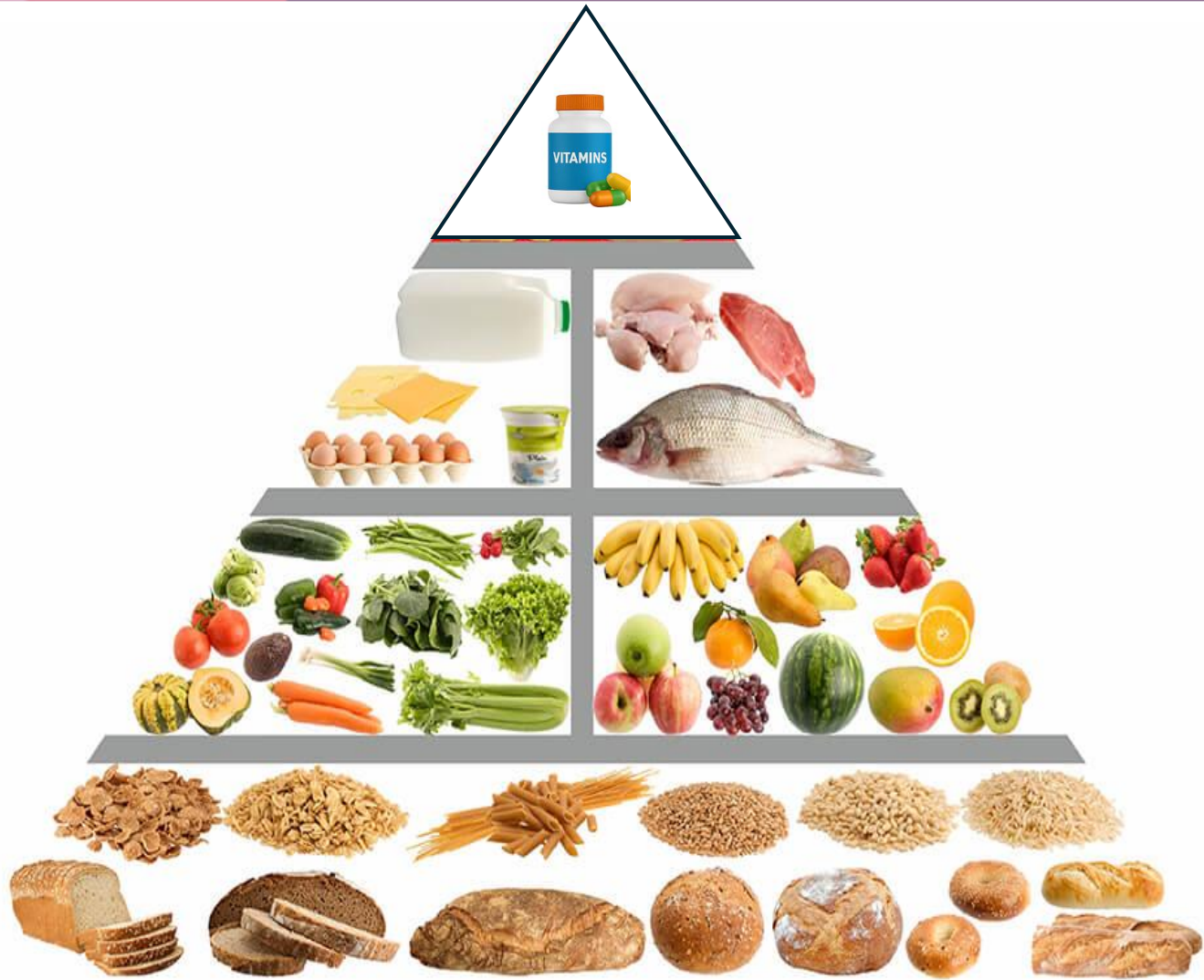


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Rome – DrossmanCare Communication Program

Building foundations to restore 'gut health'



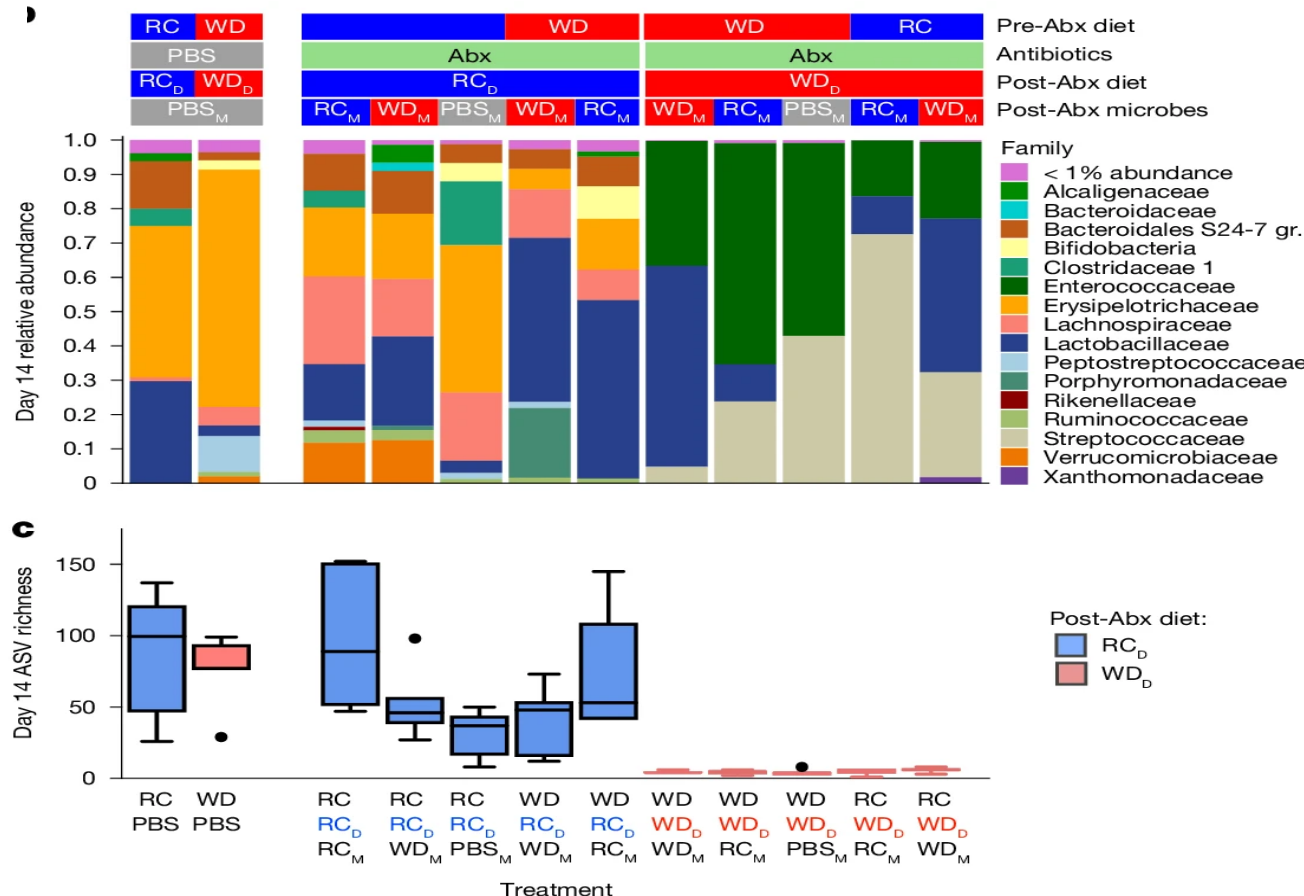
Article

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Innovative focus: fibre form and function

Table 2. Fiber characteristics in food stuffs or supplements used in included studies

Fiber/Food	Solubility	Viscosity	Fermentability
Agave fructans	H	M	H
Alginate	H	H	L
Arabinoxylan-oligosaccharides	H	L-M	H
Bran, oat	M-H	M	M-H
Bran, wheat	L	L	L
Carboxymethylcellulose	H	H	N/A
Cellulose	N/A	N/A	L
Cellulose, microcrystalline	L	L	L
Fructo-oligosaccharides	H	L	H
Galacto-oligosaccharides	H	L	H
Gums (arabic, guar, karaya, locust bean, pullulan)	M-H	M-H	H
High-amylose whole meal wheat	L	L	H
Human milk oligosaccharides	H	L-M	H
Inulin	H	L	H
Levan	H	L	M-H
Lignin	N/A	N/A	L
Lupin kernel fiber	M	M	M
Maltose alternan oligosaccharides	H	L	H
Partially hydrolyzed guar gum	M-H	M	M-H
Pea hull fiber	L	L-M	L-M
Pectin	H	H	H
Polydextrose	H	L	L-M
Psyllium	H	H	L
Refined high-amylose wheat	L	L	H
Resistant dextrin/maltodextrin	H	L	H
Resistant starch types 2 or 3	L	L	H
Soluble corn/maize fiber	H	L	H
Soy polysaccharide	H	L	M-H
Xylo-oligosaccharide	H	L	H
Yeast Mannan	H	L-H	H
β-glucan (cereal)	L-M	L-M	H

Abbreviations: H = high, L = low, M = medium, NA = not available.

Fibres: form or function

- Form: Soluble vs insoluble
- Microbiome relevant function
- Function
 - **fermentability (food)**
 - bulking (transit time)
 - viscosity ('soaking up' fluid and gases?)
- **Does it matter whether the fibre dissolves?**
- **Do bulking and gelling qualities influence fermentability?**

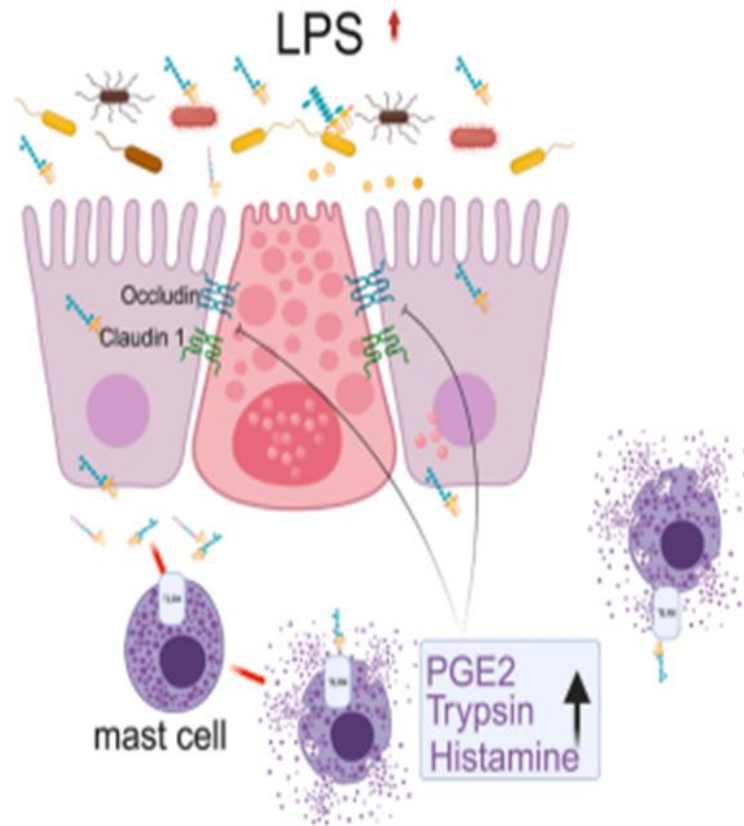
Fibre supplements used in DGBI

Fibre type	Evidence
Prebiotics	Inulin type fructans increase ↑ bifidobacteria (SR) Wilson et al. <i>AJCN</i> . 2019 2'FL/LNnT HMO (10g/d, 4wk) ↑ bifidobacteria and faecal microbiota composition, without aggravating IBS symptoms Iribarren et al. <i>NG&M</i> . 2020
PHGG	↓ GI symptoms (5-6g for 4-12 wks) IBS and FC Edelman. <i>Appl. Microbiol</i> . 2024 ↑ <i>Verrucomicrobia</i> , <i>Akkermansia</i> , ↓ <i>Faecalibacterium</i> (3 -6g/d for 4-12wk) ↓ <i>Reliance laxative reliance older adults</i> (5g/d, 4 wk) Chan et al. <i>J.NutHealth Aging</i> . 2022 Combined with 4 probiotic strains polyphenol: ↓ BSS scores in IBS-D, ↑ BSS in IBS-C, higher SCFAs vs placebo Wierzbicka. <i>Frontiers in Nutrition</i> . 2025
Psyllium	Slowly fermented AXOS, ↑ SCFAs, ↑ stool water, ↑ <i>Lachnospira</i> , <i>Faecalibacterium</i> , <i>Veillonella</i> , <i>Phascolarctobacterium</i> , <i>Sutterella</i> , ↓ <i>Coriobacteria</i> , <i>Christensenella</i> Jalanka. <i>Int J Mol Sci</i> . 2019 ↑ colonic volumes without increasing colonic gas or breath H ₂ , ↓ effect of inulin on colonic gas and breath H ₂ in IBS without impairing fermentation Gunn et al. <i>BMJ Gut</i> . 2021
Resistant starches	increasing evidence by type and total Dobranowski et al. <i>Gut Microbes</i> . 2021 Clinically relevant when clients feel they can't tolerate fibre, willing to try
Wheat bran	Relevant in relation to stool bulk, water content and transit time even if not fermentable?



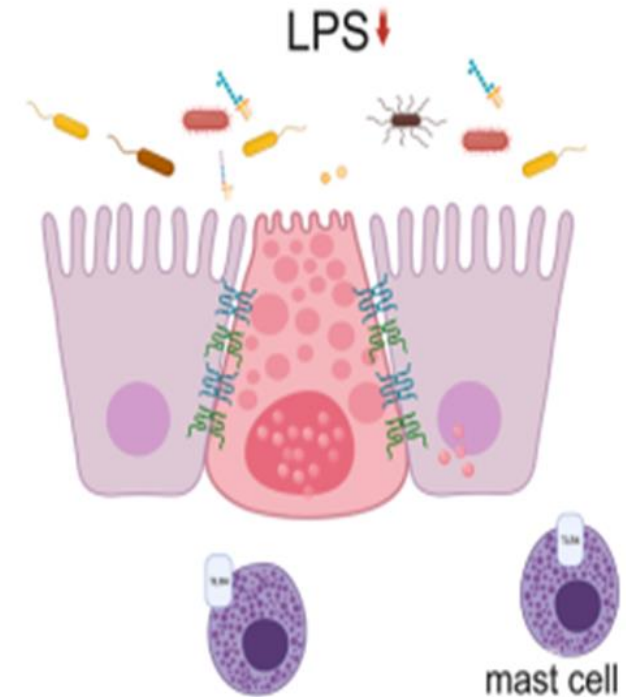
Evolution and innovation with FODMAP approach

High FODMAP diet → Gram-negative dysbiosis



↑ mast cell recruitment ↑ activation ↑ paracellular permeability

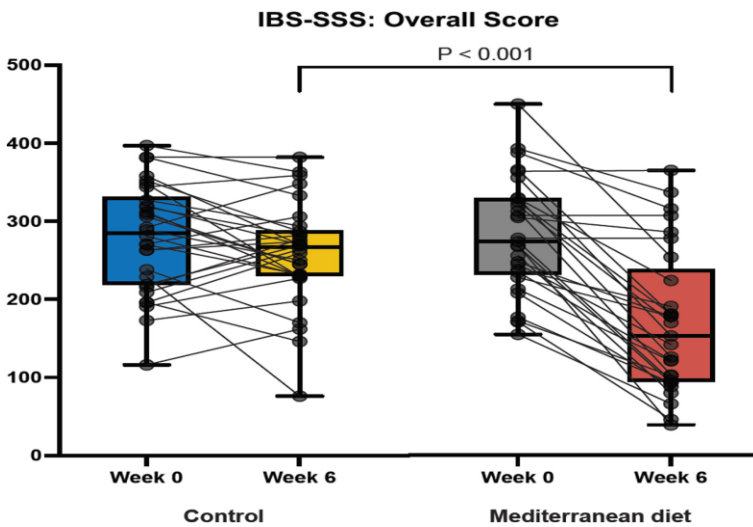
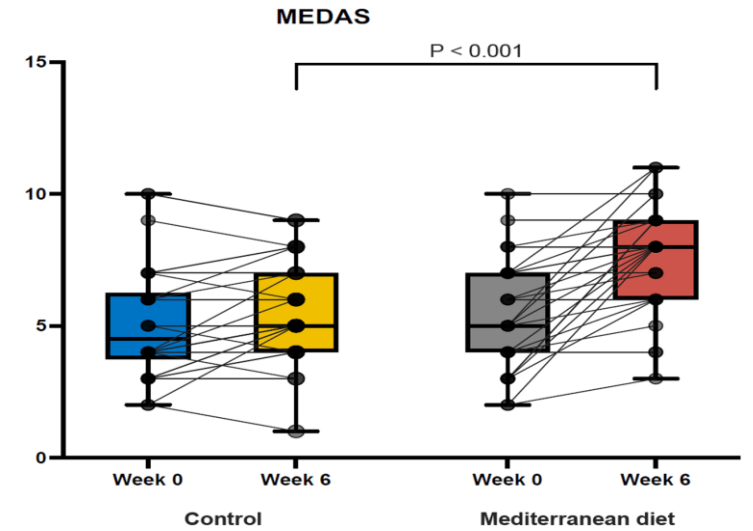
Low FODMAP diet



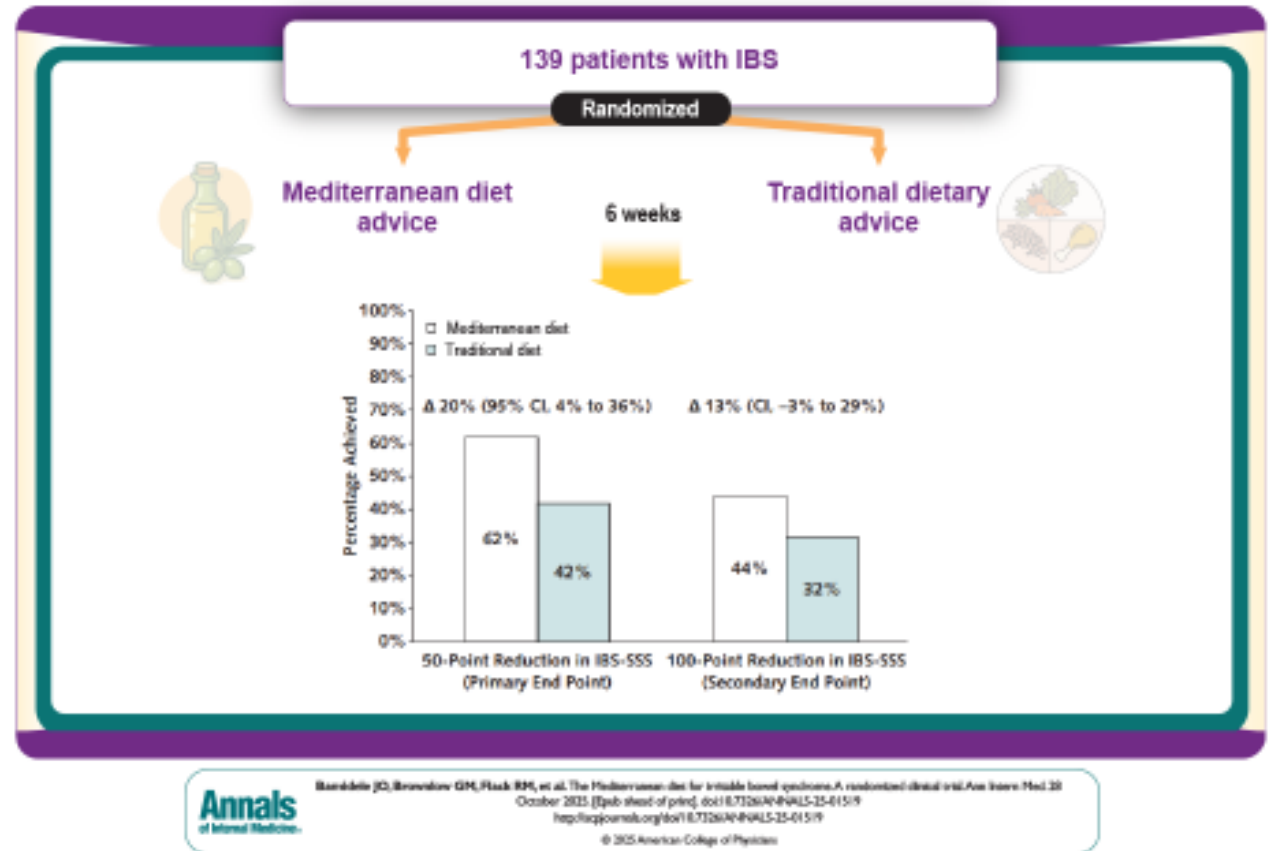
↓ mast cell recruitment ↓ activation

-ve correlation Δ Firmicutes

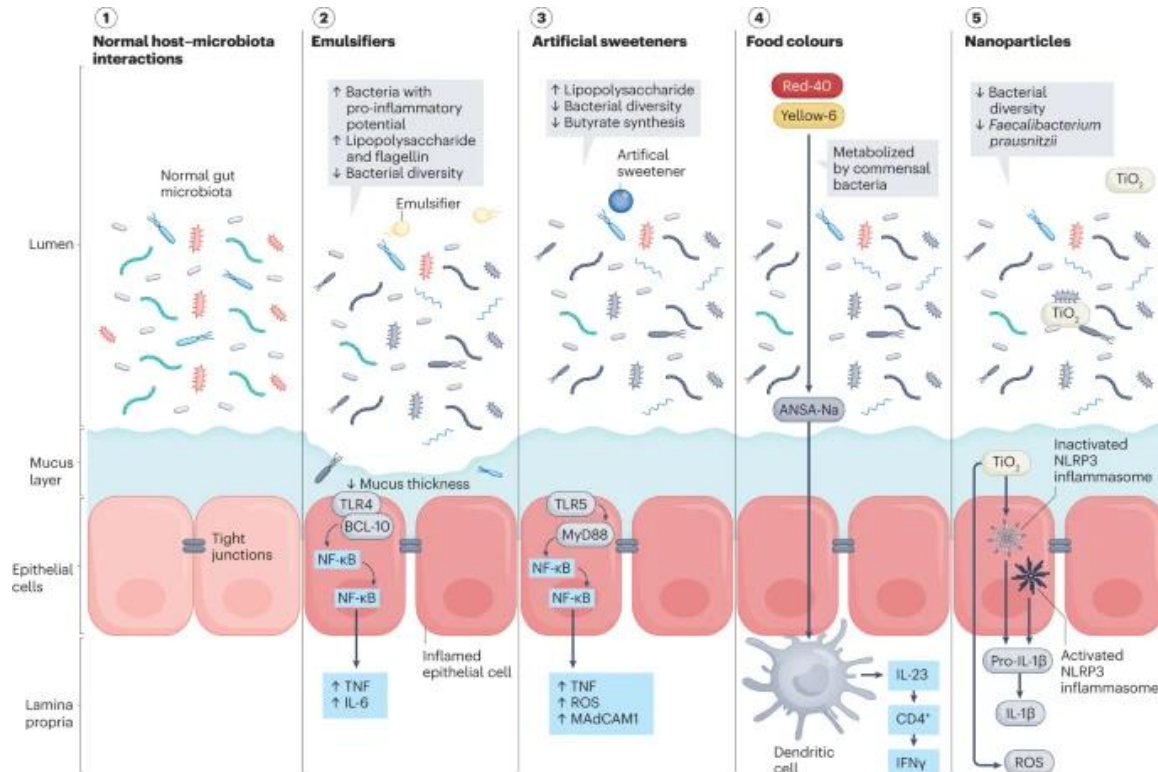
Mediterranean Diet in DGBI



For managing irritable bowel syndrome (IBS) symptoms, how do the Mediterranean diet and traditional dietary advice compare?



Permeability, gas and osmotic factors



CAZyme

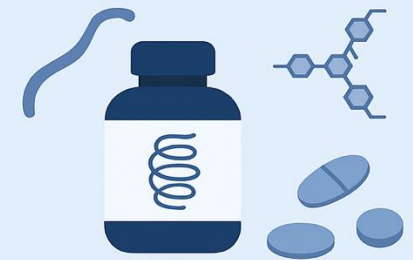
Carbohydrate-Active Enzyme



- ✓ Microbial
- ✓ Targets dietary fiber
- ✓ Broad specificity

CAZyme vs Digestive Enzymes for Carbohydrates

vs Digestive Enzymes



- ✓ Supplemental
- ✓ Targets carbohydrates
- ✓ Specific enzymes

Gas production eg. methane or sulphur degrading bacteria or gas-absorbing (eg. PHGG)



Limited food range

Low fibre

Low phytochemicals

Low food-related quality of
life

Limited food socialisation

Innovative dietetic practice in DGBI – take aways

- “Line up the ducks” - do symptoms match the biomarkers and triggers?
- “First – calm the farm” - gut-directed therapy for symptoms while diversifying diet
- “From little things, big things grow” - micro-dosing and food chaining/progressions
- “Trust your gut (health professionals)” until you trust your own gut
- “Mix and match” – (evidence-based) personalisation matters for gut bug building
- DGBI dietetics is different – consider nocebo effect and fear of adverse consequences
- Advocacy and awareness role – what is available to clients

Chey, W.D. et al . 2022. AGA clinical practice update on the role of diet in irritable bowel syndrome: expert review. *Gastroenterology*, 162(6), pp.1737-1745.

Dietary interventions in DGBIs – innovative approaches

Innovation	Intervention consideration
Communication Gut-brain axis Nocebo effect	Introduce gut-directed psychotherapy early (Nerva IBS app , GDH) Build therapeutic alliance – trust in gut health team until you trust your gut (Chey et al, 2022) Dietetic practice approaches specific to DGBI clients (highly motivated, highly
Fibre	Fibre characteristics – functional rather than physico-chemical properties Diet and (gentle) fibre supplements (with gut-directed psychotherapy to start)
Adaptation of low FODMAP diet	Step-wise approach – FODMAP gentle where possible (O'Brien et al. JGH Open. 2024) Diet diversity = bacterial diversity. Diet + fibre supplements + GDH to start Aim for balance – maximum FODMAPs for minimum symptoms Adapted to functional dyspepsia (Staudacher 2021 , Goyal 2021 , Van den Houte 2025) May lower LPS (Gao 2025 , Goyal 2021 , Van den Houte 2025)
Mediterranean diet	‘Gut health’ and wellbeing approach (Staudacher et al. 2023)
Supplements	Prebiotics, probiotics, synbiotics, antimicrobials Transition from supplements to food sources
Overlap with other conditions	Not “just” IBS. Eg. IBS overlap with IBD, Coeliac diseases, POTS, Ehlers Danlos syndrome DGBI and ARFID overlap – screen for eating disorders (eg. NIAS , PARDI-AR-Q , SAS)

Beyond diet – management and advocacy



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