**Gut Microbiota for Health Expert Panel Charter**

A cross disciplinary education & interest group under the auspices of the British Society of Gastroenterology (BSG Research Committee)

# Mission Statement

* To help increase awareness and understanding among clinicians of the gut microbiota and its impact on health
* To be a ‘go-to’ address for UK clinicians (GPs, gastroenterologists, nurses, and allied health

professionals) for defining what is currently reliably known in this field

* To drive scientific and clinical interest in the gut microbiota in gastrointestinal and liver disease

# Objectives

* To facilitate the sharing of knowledge on the gut microbiota between academics, clinicians and researchers
* To map the science and reach consensus on what is known and what is not yet known
* To draft consensus statements on areas of interest for UK GPs
* To identify gaps in knowledge and research foci
* To identify R&D areas in this field that would advance understanding and lead to patient benefit
* To develop guidelines to ensure the safe and effective manipulation of the gut microbiota for therapeutic purposes (e.g. faecal microbiota transplantation (FMT) and responsible antibiotic use)

# Funding

The panel members meet twice a year. The BSG covers costs for secretariat support. Funding for specific projects is subject to separate agreement.

# Current Focus

* To continue to advise on the governance of FMT in the UK, to adapt current protocols for SARS-CoV-2 detection, and to set up a UK registry of groups conducting FMT
* To distribute the gut microbiome (poo) leaflet to primary healthcare professionals
* To publish an academic review explaining the methods used in commercial microbiome tests and the level of supporting evidence for any associated health advice
* To publish an academic review on how the gut microbiota influences drug efficacy
* To collaborate on producing educational material on the gut microbiota for clinicians
* To organise expert workshops, for clinicians and researchers
* To explore new themes:
	+ Optimum pre-surgery regimes relating to the gut microbiota (e.g. dietary advice, probiotics etc)
	+ The involvement of the gut microbiota in antimicrobial resistance
	+ The diagnostic potential of the gut microbiota biomarkers
	+ The involvement of the gut microbiota and long Covid
	+ The paediatric gut microbiota

# Focus Areas: selected recent papers of interest

**Cancer and the gut microbiome (Lead: Julian Marchesi)**

* [Alexander et al (2023) Pathobionts in the tumour microbiota predict survival following](https://microbiomejournal.biomedcentral.com/articles/10.1186/s40168-023-01518-w) [resection for colorectal cancer. *Microbiome* 11: 100](https://microbiomejournal.biomedcentral.com/articles/10.1186/s40168-023-01518-w).
* [Routy B et al (2023) Fecal microbiota transplantation plus anti-PD-1 immunotherapy in](https://pubmed.ncbi.nlm.nih.gov/37414899/) [advanced melanoma: a phase I trial. *Nat Med.* 29(8):2121-2132](https://pubmed.ncbi.nlm.nih.gov/37414899/)
* [Marine Fidelle et al. (2023) A microbiota-modulated checkpoint directs immunosuppressive](https://www.science.org/doi/10.1126/science.abo2296) [intestinal T cells into cancers. *Science* **380**,eabo2296(2023).](https://www.science.org/doi/10.1126/science.abo2296)
* [El Tekle & Garrett (2023). Bacteria in cancer initiation, promotion and progression. Nat Rev Cancer 23: 600–618.](https://www.nature.com/articles/s41568-023-00594-2)

# Diet and nutritional interventions (Lead: Ian Rowland)

* Jadhav et al (2023) [Role of Diet–Microbiome Interaction in Gastrointestinal Disorders and](https://www.annualreviews.org/doi/abs/10.1146/annurev-nutr-061121-094908) [Strategies to Modulate Them with Microbiome-Targeted Therapies](https://www.annualreviews.org/doi/abs/10.1146/annurev-nutr-061121-094908). *Annual Review of Nutrition*43:1
* [Petrariu OA et al (2024) Role of probiotics in managing various human diseases, from oral pathology to cancer and gastrointestinal diseases. *Front Microbiol* 4:1296447.](https://pubmed.ncbi.nlm.nih.gov/38249451/)
* [Moriki D et al (2024) How Different Are the Influences of Mediterranean and Japanese Diets on the Gut Microbiome? *Endocr Metab Immune Disord Drug Targets* 2024 PMID: 38243975.](https://pubmed.ncbi.nlm.nih.gov/38243975/)
* [Heiskanen MA et al (2024) Association of long-term habitual dietary fiber intake since infancy with gut microbiota composition in young adulthood. *J Nutr* S0022-3166(24)00027-0.](https://pubmed.ncbi.nlm.nih.gov/38219864/)
* [Shen X et al (2024) Plant-Based Diets and the Gut Microbiome: Findings from the Baltimore Longitudinal Study of Aging. *Am J Clin Nutr* 0002-9165(24)00007-8.](https://pubmed.ncbi.nlm.nih.gov/38218318/)

# Faecal Microbiota Transplantation (FMT) (Lead: Tariq Iqbal)

* [2024 update of the HIS and BSG guidelines for recurrent or refractory C. diff](https://pubmed.ncbi.nlm.nih.gov/38609165/)
* [Video of the updated guidelines](https://www.bsg.org.uk/news/bsg-his-guidelines-faecal-microbiota-video)
* [Overview of the updated guidelines](https://www.journalofhospitalinfection.com/article/S0195-6701%2824%2900079-3/abstract)
* [Zaman S et al (2024) Faecal Microbiota Transplantation [FMT] in the Treatment of Chronic Refractory Pouchitis: A Systematic Review and Meta-analysis.](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10821709/) *[J Crohns Colitis](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10821709/)*[. 18(1):144-161.](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10821709/)

# Gut-brain axis (Lead: Debbie Shawcross)

* [Ritz, NL *et al.* (2024) The gut virome is associated with stress-induced changes in behaviour and immune responses in mice. *Nat Microbiol* https://doi.org/10.1038/s41564-023-01564-y](https://www.nature.com/articles/s41564-023-01564-y)
* [Taglialegna, A (2024) Feeling the blues with *Parabacteroides*. *Nat Rev Microbiol* https://doi.org/10.1038/s41579-024-01016-2](https://www.nature.com/articles/s41579-024-01016-2)
* [Gao, M *et al.* (2023) Gut microbiota composition in depressive disorder: a systematic review, meta-analysis, and meta-regression. *Transl Psychiatry* **13**, 379.](https://www.nature.com/articles/s41398-023-02670-5)
* [Bastiaanssen, TFS et al (2023). Bugs as features (part 1): concepts and foundations for the compositional data analysis of the microbiome–gut–brain axis. *Nat. Mental Health* **1**, 930–938.](https://www.nature.com/articles/s44220-023-00148-3)

# Gut microbiome (general) (Lead: Julian Marchesi)

* [WHO/BS/2022.2416: A WHO collaborative study to evaluate the candidate 1st WHO International Reference Reagents for Gut Microbiome analysis by Next-Generation Sequencing](https://www.who.int/publications/m/item/who-bs-2022.2416#:~:text=WHO%2FBS%2F2022.2416%3A%20A%20WHO%20collaborative%20study%20to%20evaluate%20the,Reagents%20for%20Gut%20Microbiome%20analysis%20by%20Next-Generation%20Sequencing)
* [WHO/BS/2023.2455 WHO 1st Reference Reagent for DNA extraction of gut microbiome](https://www.who.int/publications/m/item/who-bs-2023.2455)
* [Asnicar et al (2023) Machine learning for microbiologists. *Nat Rev Microbiol*](https://doi.org/10.1038/s41579-023-00984-1)
* [Zhernakova et al (2024) Host genetic regulation of human gut microbial structural variation. *Nature* 625: 813-821.](https://www.nature.com/articles/s41586-023-06893-w)
* [Kang WK et al (2024) Vitamin B12 produced by gut bacteria modulates cholinergic signalling. *Nat Cell Biol* **26**, 72–85.](https://www.nature.com/articles/s41556-023-01299-2)

# Gut virome

* [Tun et al (2024) Gut virome in inflammatory bowel disease and beyond. *Gut* 73 (2): 350-360.](https://gut.bmj.com/content/gutjnl/early/2023/11/10/gutjnl-2023-330001.full.pdf)
* [Leal Rodríguez, C (2024) *et al.* The infant gut virome is associated with preschool asthma risk independently of bacteria. *Nat Med* **30**, 138–148.](https://www.nature.com/articles/s41591-023-02685-x)
* [Chen F et al (2023) Meta-analysis of fecal viromes demonstrates high diagnostic potential of the gut viral signatures for colorectal cancer and adenoma risk assessment. *Journal of Advanced Research* 49: 103-114.](https://www.sciencedirect.com/science/article/pii/S2090123222002144)
* [Jansen et al (2023) Community Types of the Human Gut Virome are Associated with Endoscopic Outcome in Ulcerative Colitis. *J Crohn's and Colitis* 17 (9): 1504–1513.](https://academic.oup.com/ecco-jcc/article/17/9/1504/7117369?login=false)

# Infectious disease (including antimicrobial resistance) (Lead: Vishal Patel)

* [Merrick B et al (2023) Modulation of the Gut Microbiota to Control Antimicrobial Resistance](https://pubmed.ncbi.nlm.nih.gov/37218816/) [(AMR)-A Narrative Review with a Focus on Faecal Microbiota Transplantation (FMT). *Infect*](https://pubmed.ncbi.nlm.nih.gov/37218816/)[*Dis Rep.* 15(3):238-254.](https://pubmed.ncbi.nlm.nih.gov/37218816/)
* [Cunningham & Harris (2023). Gut microbial analysis and faecal transplantation to improve](https://academic.oup.com/bjs/article-abstract/110/7/757/7145828?redirectedFrom=fulltext&login=false) [surgical outcomes. *Br J Surgery* 110: 757-764.](https://academic.oup.com/bjs/article-abstract/110/7/757/7145828?redirectedFrom=fulltext&login=false)
* [Yip et al (2023) Antibiotics promote intestinal growth of carbapenem-resistant Enterobacteriaceae by enriching nutrients and depleting microbial metabolites. *Nat Commun.* 14(1):5094.](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10444851/)
* [The House of Commons SITC report on the antimicrobial potential of bacteriophages (Jan 2024)](https://committees.parliament.uk/work/7045/the-antimicrobial-potential-of-bacteriophages/publications/)
* [Zampaloni, C *et al.* (2024) A novel antibiotic class targeting the lipopolysaccharide transporter. *Nature* **625**, 566–571.](https://www.nature.com/articles/s41586-023-06873-0)
* [Spragge F et al (2023). Microbiome diversity protects against pathogens by nutrient blocking.](https://pubmed.ncbi.nlm.nih.gov/38096285/) *[Science](https://pubmed.ncbi.nlm.nih.gov/38096285/)*[. 382(6676):eadj3502.](https://pubmed.ncbi.nlm.nih.gov/38096285/)

# Inflammatory bowel disease (Leads: Georgina Hold & Ailsa Hart)

* Katsoudas N et al (2024) [Dietary Emulsifier Exposure in People With Inflammatory Bowel Disease Compared With Healthy Controls: Is There a Cause for Concern?](https://pubmed.ncbi.nlm.nih.gov/38244236/) *Inflamm Bowel Dis* doi:10.1093/ibd/izad318.
* Rieder F et al (2024) [Fibrosis in **IBD**: from pathogenesis to therapeutic targets.](https://pubmed.ncbi.nlm.nih.gov/38233198/) *Gut* doi: 10.1136/gutjnl-2023-329963.
* Zhang et al (2023) [Early-life exposures and the **microbiome**: implications for **IBD** prevention.](https://pubmed.ncbi.nlm.nih.gov/38123972/) *Gut* doi: 10.1136/gutjnl-2023-330002.
* [Danne et al (2023) Neutrophils: from IBD to the gut microbiota. *Nat Rev Gastroenterol Hepatol* doi: 10.1038/s41575-023-00871-3.](https://pubmed.ncbi.nlm.nih.gov/38110547/)
* [Rimmer & Iqbal (2023) Prognostic modelling in IBD. *Best Pract Res Clin Gastroenterol* 67: 101877.](https://pubmed.ncbi.nlm.nih.gov/38103929/)

# Irritable bowel syndrome (Lead: Julie Thompson)

* [Rokkas T and Hold GL (2023) A systematic review, pairwise meta-analysis and network meta-](https://pubmed.ncbi.nlm.nih.gov/36719820/) [analysis of randomized controlled trials exploring the role of fecal microbiota transplantation](https://pubmed.ncbi.nlm.nih.gov/36719820/) [in irritable bowel syndrome. *Eur J Gastroenterol Hepatol.* doi: 10.1097](https://pubmed.ncbi.nlm.nih.gov/36719820/)
* [Zhai L *et al.* (2023) Gut microbiota-derived tryptamine and phenethylamine impair insulin sensitivity in metabolic syndrome and irritable bowel syndrome. *Nat Commun* **14**: 4986.](https://www.nature.com/articles/s41467-023-40552-y)
* [Wilson B et al (2023) Faecal and urine metabolites, but not gut microbiota, may predict](https://pubmed.ncbi.nlm.nih.gov/37313992/) [response to low FODMAP diet in irritable bowel syndrome. *Aliment Pharmacol*](https://pubmed.ncbi.nlm.nih.gov/37313992/)

[*Ther* 58(4):404-416.](https://pubmed.ncbi.nlm.nih.gov/37313992/)

# Liver (Lead: Debbie Shawcross)

* [Ali RO et al (2023) Longitudinal multi-omics analyses of the gut-liver axis reveals metabolic](https://pubmed.ncbi.nlm.nih.gov/36522461/) [dysregulation in hepatitis C infection and cirrhosis. *Nat Microbiol*. 8(1):12-27.](https://pubmed.ncbi.nlm.nih.gov/36522461/)
* [Hsu CL & Schnabl B (2023) The gut–liver axis and gut microbiota in health and liver](https://www.nature.com/articles/s41579-023-00904-3) [disease. *Nat Rev Microbiol*https://doi.org/10.1038/s41579-023-00904-3](https://www.nature.com/articles/s41579-023-00904-3)
* [Szóstak N et al (2023) The emerging role of the gut mycobiome in liver diseases. *Gut*](https://pubmed.ncbi.nlm.nih.gov/37184158/)[*Microbes* 15:1](https://pubmed.ncbi.nlm.nih.gov/37184158/)
* [Lee S (in press) Pathogenic entero- and salivatypes harbour changes in microbiome virulence and antimicrobial resistance genes with increasing chronic liver disease severity. *bioRxiv*](https://www.biorxiv.org/content/10.1101/2023.08.06.552152v2.full)

# Metabonomics (Lead: Jonathan Swann)

* [Gentry EC et al (2023) Reverse metabolomics for the discovery of chemical structures from humans. *Nature* PMID: 38052229.](https://pubmed.ncbi.nlm.nih.gov/38052229/)
* [Little AS et al (2024) Dietary- and host-derived metabolites are used by diverse gut bacteria for anaerobic respiration. *Nat Microbiol* 9(1):55-69.](https://pubmed.ncbi.nlm.nih.gov/38177297/)
* [Kang WK et al (2024) Vitamin B12produced by gut bacteria modulates cholinergic signalling. *Nat Cell Biol*. 26(1):72-85.](https://pubmed.ncbi.nlm.nih.gov/38168768/)

# Paediatrics (Lead: Richard Hansen)

* [Conover KR et al (2023) Fecal microbiota transplantation for *Clostridioides difficile* infection](https://pubmed.ncbi.nlm.nih.gov/36720105/) [in immunocompromised pediatric patients. *J Pediatr Gastroenterol Nutr.* doi:](https://pubmed.ncbi.nlm.nih.gov/36720105/) [10.1097/MPG.0000000000003714. Epub ahead of print](https://pubmed.ncbi.nlm.nih.gov/36720105/)
* [Lugli GA*et al.*(2023) Comprehensive insights from composition to functional microbe-based](https://doi.org/10.1038/s41522-023-00392-6) [biodiversity of the infant human gut microbiota. *npj Biofilms Microbiomes* **9**, 25 (2023).](https://doi.org/10.1038/s41522-023-00392-6)
* [Bélteky M et al (2023) Infant gut microbiome composition correlated with type 1 diabetes](https://pubmed.ncbi.nlm.nih.gov/36964264/) [acquisition in the general population: the ABIS study*. Diabetologia* 66(6):1116-1128.](https://pubmed.ncbi.nlm.nih.gov/36964264/)
* [Luchen CC et al (2023) Impact of antibiotics on gut microbiome composition and resistome](https://pubmed.ncbi.nlm.nih.gov/37368871/) [in the first years of life in low- to middle-income countries: A systematic review. *PLoS*](https://pubmed.ncbi.nlm.nih.gov/37368871/)[*Med.* 20(6):e1004235.](https://pubmed.ncbi.nlm.nih.gov/37368871/)
* [DeVeaux A. et al (2023) Microbiome-targeting therapies in the neonatal intensive care unit:](https://pubmed.ncbi.nlm.nih.gov/37358104/) [safety and efficacy. *Gut Microbes* 15(1):2221758.](https://pubmed.ncbi.nlm.nih.gov/37358104/)
* [Margolis EB et al (2023) Microbiota Predict Infections and Acute Graft-Versus-Host Disease](https://pubmed.ncbi.nlm.nih.gov/37249910/) [after Pediatric Allogeneic Hematopoietic Stem Cell Transplantation. *J Infect Dis.* doi:](https://pubmed.ncbi.nlm.nih.gov/37249910/) [10.1093/infdis/jiad190.](https://pubmed.ncbi.nlm.nih.gov/37249910/)

# Primary Care (Lead: Jamie Dalrymple)

* [Koutoukidis et al (2022) The association of weight loss with changes in the gut microbiota](https://pubmed.ncbi.nlm.nih.gov/35040746/) [diversity, composition, and intestinal permeability: a systematic review and meta-](https://pubmed.ncbi.nlm.nih.gov/35040746/) [analysis. *Gut Microbes.* 14(1):2020068](https://pubmed.ncbi.nlm.nih.gov/35040746/).
* [Mullish BH et al (2020) The gut microbiome: what every gastroenterologist needs to](https://pubmed.ncbi.nlm.nih.gov/33613943/) [know. *Frontline Gastroenterol.* 12(2):118-127.](https://pubmed.ncbi.nlm.nih.gov/33613943/)