

Functional Marker	Bacteria	Profile criteria for imbalance	Description
Butyrate producing bacteria	<i>Eubacterium hallii</i>	At least two of the butyrate producers below healthy range	Insufficient levels of butyrate are associated with an impaired gastrointestinal health. Butyrate is a short-chain fatty acid produced by microbial fermentation in the large intestine of humans. It is important for regulating multiple functions of gut cells, may be important for regulating inflammatory and immunological responses and plays a role in the maintenance of intestinal barrier function. Beneficial bacteria belonging to the phylum Firmicutes are major butyrate producers.
	<i>Eubacterium rectale</i>		
	<i>Faecalibacterium prausnitzii</i>		
Gut mucosa protective bacteria	<i>Faecalibacterium prausnitzii</i>	Both mucosa protective below healthy range	Mucus and mucosa-associated bacteria form a specific protective environment in the gut. A disruption of the mucosa layer may promote specific bacterial colonization and immunological responses and enhance the development of gastrointestinal diseases. Imbalance of gut mucosa protective bacteria has been associated with various gastrointestinal disorders.
	<i>Akkermansia muciniphila</i>		
Gut intestinal health marker	<i>Faecalibacterium prausnitzii</i>	<i>F. prausnitzii</i> below healthy range with at least two (-2)	<i>Faecalibacterium prausnitzii</i> is one of the most prevalent bacteria within the human gastrointestinal tract. It is recognized as a major butyrate producer and can promote anti-inflammatory processes and testinal barrier function. Lower levels of <i>Faecalibacterium prausnitzii</i> in the intestines have been associated with gastrointestinal and metabolomic disorders.
Gut barrier protective vs.opportunistic bacteria	<i>Faecalibacterium prausnitzii</i>	<i>F. prausnitzii</i> below healthy range and at least one of the opportunists above healthy range.	The intestinal epithelial barrier is not a static physical barrier but one that can interact with the gut microbiome and cells of the immune system. An imbalance between the gut barrier protective bacteria and potentially harmful bacteria may lead to gut barrier disruption and is associated with an increased susceptibility to certain diseases.
	<i>Ruminococcus gnavus</i>		
	Proteobacteria		
	<i>Shigella spp. & Escherichia spp.</i>		
Pro-inflammatory bacteria	Proteobacteria	Both pro-inflammatory above healthy range, and of which at least one +2 above	Elevated Proteobacteria species are associated with inflammation in various - mainly gastrointestinal - disorders. In a healthy gut microbiota, their increase may promote intestinal inflammation due to molecules present on their surface which are potent triggers of inflammatory responses. Inflammation in itself may also promote the growth of Proteobacteria species. Pro- inflammatory bacteria levels may thus give indications of the susceptibility of the patient to intestinal inflammation and to the possible development of gastrointestinal disorders.
	<i>Shigella spp. & Escherichia spp.</i>		