

Ammonia producing species

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|------------------------------------|--|-----------------------------------|
| <i>Alistipes finegoldii</i> | <i>Eisenbergiella tayi</i> | <i>Roseburia intestinalis</i> |
| <i>Bilophila wadsworthia</i> | <i>Enterobacter himalayensis</i> | <i>Ruminococcus bicirculans</i> |
| <i>Blautia producta</i> | <i>Fusicatenibacter saccharivorans</i> | <i>Streptococcus salivarius</i> |
| <i>Blautia wexlerae</i> | <i>Gabonibacter massiliensis</i> | <i>Streptococcus thermophilus</i> |
| <i>Citrobacter freundii</i> | <i>Haemophilus parainfluenzae</i> | <i>Streptococcus vestibularis</i> |
| <i>Clostridium saudiense</i> | <i>Klebsiella pneumoniae</i> | <i>Victivallis vadensis</i> |
| <i>Comamonas kerstersii</i> | <i>Odoribacter laneus</i> | |
| <i>Desulfovibrio desulfuricans</i> | <i>Odoribacter splanchnicus</i> | |

H₂S producing species

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|----------------------------------|-------------------------------------|----------------------------------|---------------------------------------|-------------------------------|
| <i>Bilophila wadsworthia</i> | <i>Clostridium citroniae</i> | <i>Desulfovibrio piger</i> | <i>Enterococcus faecium</i> | <i>Eubacterium callanderi</i> |
| <i>Blautia producta</i> | <i>Clostridium symbiosum</i> | <i>Emergencia timonensis</i> | <i>Erysipelatoclostridium ramosum</i> | <i>Klebsiella pneumoniae</i> |
| <i>Blautia hydrogenotrophica</i> | <i>Desulfovibrio desulfuricans</i> | <i>Enterobacter himalayensis</i> | <i>Escherichia coli</i> | <i>Phocaea massiliensis</i> |
| <i>Citrobacter freundii</i> | <i>Desulfovibrio fairfieldensis</i> | <i>Enterococcus faecalis</i> | <i>Escherichia flexneri</i> | <i>Roseburia hominis</i> |
| <i>Clostridium asparagiforme</i> | | | | |

Histamine producing species

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|----------------------------------|---------------------------------------|-----------------------------------|
| <i>Bacteroides fragilis</i> | <i>Clostridium perfringens</i> | <i>Klebsiella aerogenes</i> |
| <i>Bacteroides nordii</i> | <i>Eggerthella lenta</i> | <i>Methanobrevibacter smithii</i> |
| <i>Bacteroides oleiciplenus</i> | <i>Eggerthella timonensis</i> | <i>Methanosphaera cuniculi</i> |
| <i>Bacteroides salyersiae</i> | <i>Fusobacterium ulcerans</i> | <i>Methanosphaera stadtmanae</i> |
| <i>Bacteroides stercorisoris</i> | <i>Gordonibacter massiliensis</i> | <i>Morganella morganii</i> |
| | <i>Gordonibacter pamelaeae</i> | <i>Raoultibacter massiliensis</i> |
| | <i>Gordonibacter urolithinfaciens</i> | <i>Raoultella ornithinolytica</i> |
| | <i>Haemophilus pittmaniae</i> | <i>Raoultibacter timonensis</i> |

GABA consuming species

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|------------------------------------|-------------------------------------|
| <i>Bacteroides dorei</i> | <i>Desulfovibrio fairfieldensis</i> |
| <i>Bacteroides vulgatus</i> | <i>Duodenibacillus massiliensis</i> |
| <i>Citrobacter freundii</i> | <i>Eisenbergiella tayi</i> |
| <i>Clostridium bolteae</i> | <i>Escherichia coli</i> |
| <i>Clostridium clostridioforme</i> | <i>Escherichia flexneri</i> |
| <i>Clostridium lavalense</i> | <i>Flavonifractor plautii</i> |
| <i>Clostridium symbiosum</i> | <i>Klebsiella pneumoniae</i> |
| <i>Corynebacterium amycolatum</i> | <i>Lactobacillus plantarum</i> |
| <i>Corynebacterium aurimucosum</i> | <i>Odoribacter splanchnicus</i> |
| <i>Corynebacterium simulans</i> | <i>Parabacteroides distasonis</i> |
| <i>Desulfovibrio desulfuricans</i> | <i>Parabacteroides merdae</i> |

BCAA producing species

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|-------------------------------------|-----------------------------------|
| <i>Akkermansia muciniphila</i> | <i>Escherichia coli</i> |
| <i>Alistipes finegoldii</i> | <i>Eubacterium ramulus</i> |
| <i>Alistipes onderdonkii</i> | <i>Faecalicatena lactaris</i> |
| <i>Bacteroides ovatus</i> | <i>Faecalicatena torques</i> |
| <i>Bacteroides thetaiotaomicron</i> | <i>Lachnospira eligens</i> |
| <i>Bacteroides xylanisolvens</i> | <i>Odoribacter splanchnicus</i> |
| <i>Bacteroides vulgatus</i> | <i>Parabacteroides distasonis</i> |
| <i>Barnesiella intestinihominis</i> | <i>Parabacteroides merdae</i> |
| <i>Bilophila wadsworthia</i> | <i>Prevotella copri</i> |
| <i>Blautia massiliensis</i> | <i>Roseburia intestinalis</i> |
| <i>Blautia obeum</i> | <i>Ruminococcus bicirculans</i> |
| <i>Eggerthella lenta</i> | |

Hexa-LPS producing species

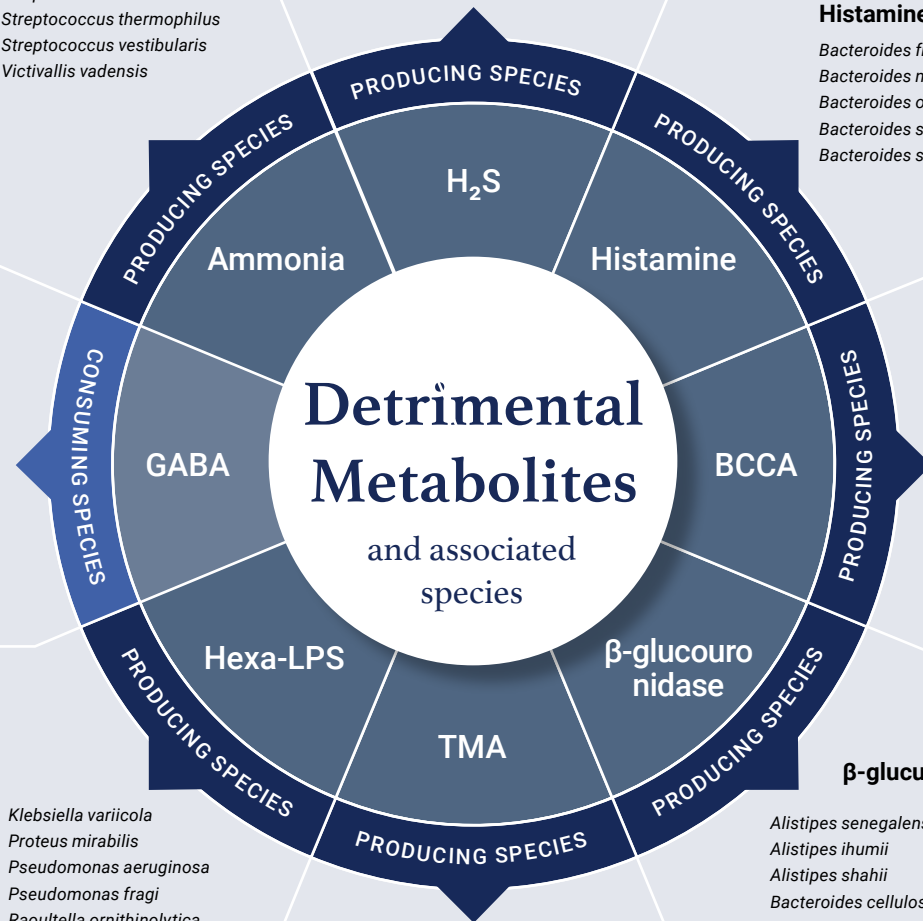
- | | | |
|-------------------------------------|---|-----------------------------------|
| <i>Citrobacter freundii</i> | <i>Escherichia coli</i> | |
| <i>Citrobacter werkmanii</i> | <i>Escherichia dysenteriae</i> | |
| <i>Cronobacter sakazakii</i> | <i>Escherichia flexneri</i> | |
| <i>Enterobacter cloacae</i> | <i>Haemophilus parainfluenzae</i> | <i>Klebsiella variicola</i> |
| <i>Enterobacter himalayensis</i> | <i>Haemophilus paraphrohaemolyticus</i> | <i>Proteus mirabilis</i> |
| <i>Enterobacter kobei</i> | <i>Haemophilus pittmaniae</i> | <i>Pseudomonas aeruginosa</i> |
| <i>Enterobacter ludwigii</i> | <i>Klebsiella pneumoniae</i> | <i>Pseudomonas fragi</i> |
| <i>Enterobacter nimipressuralis</i> | <i>Klebsiella michiganensis</i> | <i>Raoultella ornithinolytica</i> |

TMA producing species

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|----------------------------------|---------------------------------------|-------------------------------------|-----------------------------------|---|--------------------------------|
| <i>Bilophila wadsworthia</i> | <i>Clostridium citroniae</i> | <i>Coprococcus comes</i> | <i>Escherichia flexneri</i> | <i>Klebsiella pneumoniae</i> | <i>Phocaea massiliensis</i> |
| <i>Blautia producta</i> | <i>Clostridium clostridioforme</i> | <i>Desulfovibrio fairfieldensis</i> | <i>Finegoldia magna</i> | <i>Negativibacillus massiliensis</i> | <i>Sellimonas intestinalis</i> |
| <i>Clostridium asparagiforme</i> | <i>Clostridium symbiosum</i> | <i>Dorea longicatena</i> | <i>Hungatella hathewayi</i> | <i>Parasutterella excrementihominis</i> | |
| <i>Clostridium bolteae</i> | <i>Collinsella bouchesdurhonensis</i> | <i>Escherichia coli</i> | <i>Intestinibacter bartlettii</i> | <i>Peptostreptococcus anaerobius</i> | |

β-glucuronidase producing species

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|-------------------------------------|---|----------------------------------|
| <i>Alistipes senegalensis</i> | <i>Bacteroides uniformis</i> | <i>Gemmiger formicilis</i> |
| <i>Alistipes ihumii</i> | <i>Bacteroides xylanisolvens</i> | <i>Lachnospira rogosae</i> |
| <i>Alistipes shahii</i> | <i>Escherichia coli</i> | <i>Parabacteroides johnsonii</i> |
| <i>Bacteroides cellulosilyticus</i> | <i>Escherichia flexneri</i> | <i>Parabacteroides merdae</i> |
| <i>Bacteroides dorei</i> | <i>Faecalibacterium prausnitzii</i> | <i>Paraprevotella clara</i> |
| <i>Bacteroides intestinalis</i> | <i>Faecalicatena glycyrrhizinilyticum</i> | <i>Roseburia hominis</i> |
| <i>Bacteroides ovatus</i> | <i>Fusicatenibacter saccharivorans</i> | <i>Roseburia intestinalis</i> |



The listed species are those most commonly observed by Microba in microbiome profiles. These lists are not exhaustive and rare unlisted species may also perform these functions (including novel organisms).

Propionate producing species

- Akkermansia muciniphila*
- Bacteroides caccae*
- Bacteroides faecis*
- Bacteroides fragilis*
- Bacteroides ovatus*
- Bacteroides thetaiotaomicron*
- Bacteroides xylanisolvens*
- Blautia obeum*
- Clostridium symbiosum*
- Coprococcus catus*
- Escherichia coli*
- Escherichia flexneri*
- Faecalicatena glycyrrhizinilyticum*
- Faecalicatena gnavus*

- Flavinifractor plautii*
- Intestinimonas butyriciproducens*
- Klebsiella pneumoniae*
- Megamonas funiformis*
- Parabacteroides goldsteinii*
- Peptostreptococcus anaerobius*
- Veillonella dispar*

Butyrate producing species

- Agathobacter faecis*
- Agathobacter rectale*
- Agathobaculum butyriciproducens*
- Anaerostipes hadrus*
- Anaerotruncus colihominis*

- Butyricimonas synergistica*
- Butyricimonas virosa*
- Coprococcus eutactus*
- Coprococcus comes*
- Eisenbergiella massiliensis*
- Eubacterium hallii*
- Eubacterium ventriosum*
- Eubacterium ramulus*
- Faecalibacterium prausnitzii*
- Flavinifractor plautii*
- Intestinimonas butyriciproducens*
- Intestinimonas massiliensis*
- Odoribacter splanchnicus*
- Roseburia hominis*
- Roseburia intestinalis*
- Roseburia inulinivorans*

Oxalate degrading species

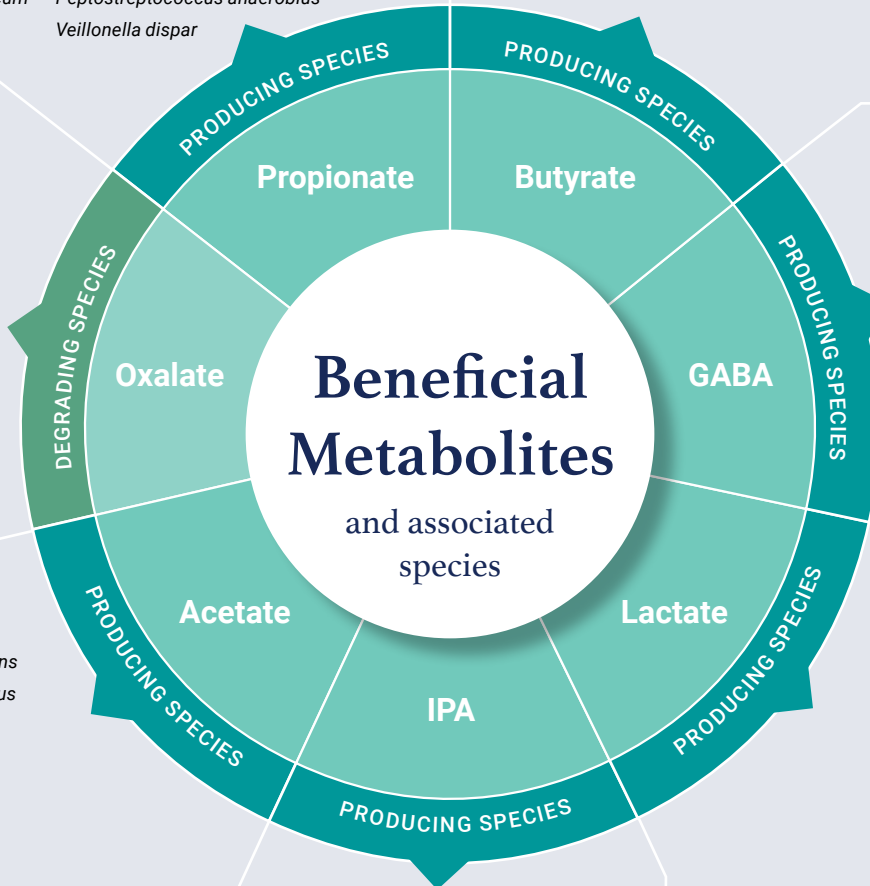
- Anaerostipes caccae*
- Anaerostipes hadrus*
- Bifidobacterium animalis*
- Bifidobacterium dentium*
- Bifidobacterium pseudocatenulatum*
- Cloacibacillus evryensis*
- Cloacibacillus porcorum*
- Clostridium asparagiforme*
- Clostridium citroniae*
- Clostridium symbiosum*
- Dorea hylemonae*
- Escherichia coli*
- Escherichia dysenteriae*
- Escherichia flexneri*
- Eubacterium_E sp002161065*
- Intestinimonas massiliensis*
- Lactobacillus acidophilus*
- Lactobacillus gasseri*
- Oxalobacter formigenes*
- Streptococcus mutans*

Acetate producing species

- Anaerostipes hadrus*
- Bacteroides thetaiotaomicron*
- Bacteroides uniformis*
- Bacteroides vulgatus*
- Barnesiella intestinihominis*
- Bifidobacterium longum*
- Blautia wexlerae*
- Blautia massiliensis*
- Blautia obeum*
- Dorea formicigenerans*
- Dorea longicatena*
- Faecalicatena faecis*
- Fusicatenibacter saccharivorans*
- Lawsonibacter asaccharolyticus*
- Odoribacter splanchnicus*
- Parabacteroides distasonis*
- Parabacteroides merdae*
- Roseburia hominis*
- Ruminococcus bicirculans*
- Ruminococcus bromii*
- Ruthenibacterium lactatiformans*

IPA producing species

- Acidaminococcus fermentans*
- CAG-83 sp*
- Clostridium_M MIC7663*
- Clostridium sporogenes*
- Mogibacterium sp900315625*
- Peptostreptococcus anaerobius*
- Peptostreptococcus sp000758885*
- Peptostreptococcus stomatis*
- UBA5446 sp*
- UBA9502 sp*



GABA producing species

- Akkermansia muciniphila*
- Alistipes ihumii*
- Alistipes finegoldii*
- Alistipes obesi*
- Alistipes onderdonkii*
- Alistipes putredinis*
- Alistipes shahii*
- Alistipes indistinctus*
- Bacteroides caccae*
- Bacteroides cellulosilyticus*
- Bacteroides ovatus*
- Bacteroides stercoris*
- Bacteroides thetaiotaomicron*
- Bacteroides uniformis*
- Bacteroides xylanisolvens*
- Barnesiella intestinihominis*
- Eggerthella lenta*
- Escherichia coli*
- Odoribacter splanchnicus*
- Parabacteroides distasonis*
- Parabacteroides merdae*

Lactate producing species

- Agathobacter rectale*
- Agathobaculum butyriciproducens*
- Alistipes obesi*
- Alistipes onderdonkii*
- Alistipes putredinis*
- Alistipes shahii*
- Anaerostipes hadrus*
- Bacteroides ovatus*
- Bacteroides thetaiotaomicron*
- Bacteroides uniformis*
- Bacteroides vulgatus*
- Bilophila wadsworthia*
- Blautia massiliensis*
- Blautia obeum*
- Blautia wexlerae*
- Coprococcus comes*
- Dorea formicigenerans*
- Eubacterium hallii*
- Fusicatenibacter saccharivorans*
- Odoribacter splanchnicus*
- Parabacteroides distasonis*

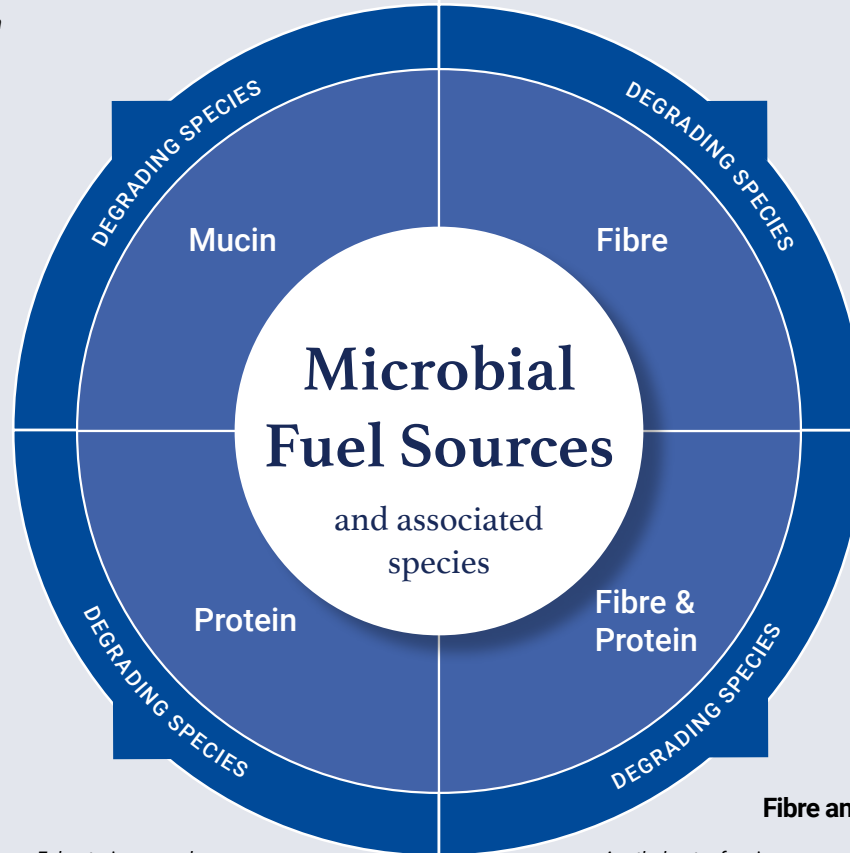
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Mucin-degrading species

- | | | |
|-------------------------------------|-------------------------------------|------------------------------------|
| <i>Akkermansia muciniphila</i> | <i>Bacteroides faecis</i> | <i>Barnesiella intestinhominis</i> |
| <i>Alistipes ihumii</i> | <i>Bacteroides finegoldii</i> | <i>Faecalicatena lactaris</i> |
| <i>Alistipes finegoldii</i> | <i>Bacteroides fragilis</i> | <i>Odoribacter splanchnicus</i> |
| <i>Alistipes senegalensis</i> | <i>Bacteroides ovatus</i> | <i>Parabacteroides distasonis</i> |
| <i>Alistipes shahii</i> | <i>Bacteroides salyersiae</i> | <i>Parabacteroides merdae</i> |
| <i>Bacteroides caccae</i> | <i>Bacteroides thetaiotaomicron</i> | |
| <i>Bacteroides cellulosilyticus</i> | <i>Bacteroides uniformis</i> | |
| <i>Bacteroides dorei</i> | <i>Bacteroides vulgatus</i> | |
| <i>Bacteroides eggerthii</i> | <i>Bacteroides xylanisolvens</i> | |

Fibre-degrading species

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|-------------------------------------|-------------------------------------|------------------------------------|
| <i>Agathobacter faecis</i> | <i>Bacteroides faecis</i> | <i>Bacteroides vulgatus</i> |
| <i>Bacteroides caccae</i> | <i>Bacteroides finegoldii</i> | <i>Bacteroides xylanisolvens</i> |
| <i>Bacteroides cellulosilyticus</i> | <i>Bacteroides intestinalis</i> | <i>Clostridium saudiense</i> |
| <i>Bacteroides dorei</i> | <i>Bacteroides nordii</i> | <i>Eisenbergiella massiliensis</i> |
| | <i>Bacteroides ovatus</i> | <i>Eisenbergiella tayi</i> |
| | <i>Bacteroides plebeius</i> | <i>Parabacteroides goldsteinii</i> |
| | <i>Bacteroides salyersiae</i> | <i>Parabacteroides johnsonii</i> |
| | <i>Bacteroides thetaiotaomicron</i> | <i>Prevotella copri</i> |
| | <i>Bacteroides uniformis</i> | <i>Roseburia intestinalis</i> |



Protein / Mucin break down



Protein



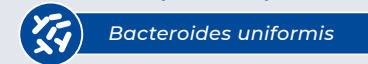
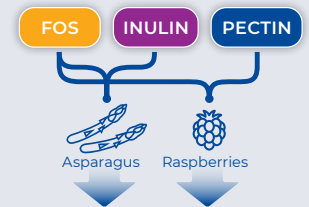
Bacteroides ovatus

Variety of metabolites:

BCAAs, Trimethylamine, Hydrogen sulphide, Ammonia, Histamine, GABA

Associated with poor health

Fibre break down



Bacteroides uniformis

Fermentation

Short Chain Fatty Acids

Associated with good health

Protein-degrading species

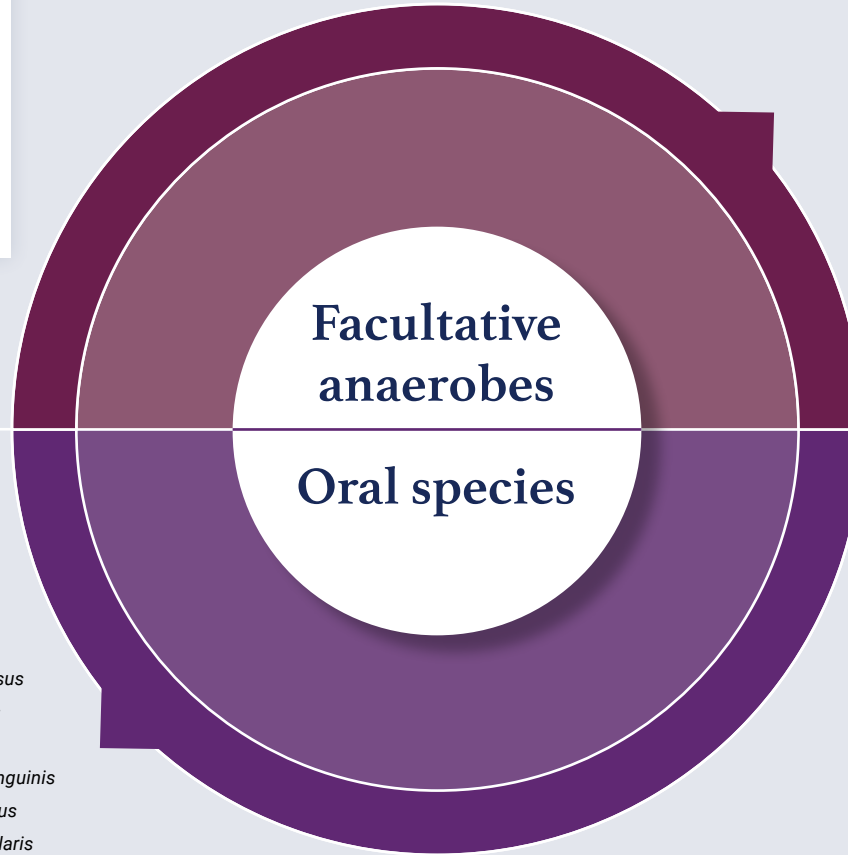
- | | | |
|-------------------------------------|-----------------------------------|--|
| <i>Abssiella innocuum</i> | <i>Bacteroides xylanisolvens</i> | <i>Eubacterium ramulus</i> |
| <i>Bacteroides caccae</i> | <i>Butyricimonas synergistica</i> | <i>Fusicatenibacter saccharivorans</i> |
| <i>Bacteroides cellulosilyticus</i> | <i>Butyricimonas virosa</i> | <i>Parabacteroides distasonis</i> |
| <i>Bacteroides eggerthii</i> | <i>Clostridium bolteae</i> | <i>Prevotella copri</i> |
| <i>Bacteroides fragilis</i> | <i>Coprococcus eutactus</i> | <i>Romboutsia timonensis</i> |
| <i>Bacteroides ovatus</i> | <i>Coprococcus comes</i> | <i>Roseburia intestinalis</i> |
| <i>Bacteroides salyersiae</i> | <i>Escherichia coli</i> | <i>Ruminococcus bromii</i> |
| <i>Bacteroides thetaiotaomicron</i> | <i>Eubacterium hallii</i> | |

Fibre and protein degrading species

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|-------------------------------------|-------------------------------------|------------------------------------|
| <i>Agathobacter faecis</i> | <i>Bacteroides ovatus</i> | <i>Eisenbergiella massiliensis</i> |
| <i>Bacteroides caccae</i> | <i>Bacteroides plebeius</i> | <i>Eisenbergiella tayi</i> |
| <i>Bacteroides cellulosilyticus</i> | <i>Bacteroides salyersiae</i> | <i>Parabacteroides goldsteinii</i> |
| <i>Bacteroides dorei</i> | <i>Bacteroides thetaiotaomicron</i> | <i>Parabacteroides johnsonii</i> |
| <i>Bacteroides faecis</i> | <i>Bacteroides uniformis</i> | <i>Prevotella copri</i> |
| <i>Bacteroides finegoldii</i> | <i>Bacteroides vulgatus</i> | <i>Roseburia intestinalis</i> |
| <i>Bacteroides intestinalis</i> | <i>Bacteroides xylanisolvens</i> | |
| <i>Bacteroides nordii</i> | <i>Clostridium saudiense</i> | |

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These are bacterial species that can grow well both with oxygen and without oxygen. Many of these species are from the phylum Proteobacteria and include pathogens. In healthy people, most bacteria in the stool only grow well in environments without oxygen (anaerobic). Increased levels of facultative anaerobes have been correlated with inflammation in the gut.



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|-----------------------------------|--|
| <i>Campylobacter hominis</i> | <i>Klebsiella pneumoniae</i> |
| <i>Citrobacter freundii</i> | <i>Klebsiella variicola</i> |
| <i>Enterobacter himalayensis</i> | <i>Pauljensenia bouchesdurhonensis</i> |
| <i>Enterococcus faecalis</i> | <i>Pauljensenia sp.</i> |
| <i>Enterococcus faecium</i> | <i>Pauljensenia turicensis</i> |
| <i>Escherichia coli</i> | <i>Streptococcus anginosus</i> |
| <i>Escherichia dysenteriae</i> | <i>Streptococcus parasanguinis</i> |
| <i>Escherichia flexneri</i> | <i>Streptococcus salivarius</i> |
| <i>Haemophilus parainfluenzae</i> | <i>Streptococcus sp.</i> |
| <i>Haemophilus pittmaniae</i> | <i>Streptococcus thermophilus</i> |
| <i>Haemophilus sp.</i> | <i>Streptococcus vestibularis</i> |

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|--------------------------------------|------------------------------------|
| <i>Cutibacterium acnes</i> | <i>Solobacterium moorei</i> |
| <i>Dialister invisus</i> | <i>Streptococcus anginosus</i> |
| <i>Haemophilus parainfluenzae</i> | <i>Streptococcus mutans</i> |
| <i>Haemophilus pittmaniae</i> | <i>Streptococcus oralis</i> |
| <i>Peptoniphilus lacrimalis</i> | <i>Streptococcus parasanguinis</i> |
| <i>Peptostreptococcus anaerobius</i> | <i>Streptococcus salivarius</i> |
| <i>Porphyromonas gingivalis</i> | <i>Streptococcus vestibularis</i> |
| <i>Porphyromonas somerae</i> | <i>Veillonella atypica</i> |
| <i>Prevotella bivia</i> | <i>Veillonella dispar</i> |
| <i>Prevotella buccalis</i> | <i>Veillonella parvula</i> |
| <i>Prevotella corporis</i> | |

These are bacterial species that are normally found in the mouth. Sometimes, these species make it to the gut and colonise. High levels of oral bacteria in the gut have been correlated with an impaired stomach-acid barrier, inflammation, and disease.

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