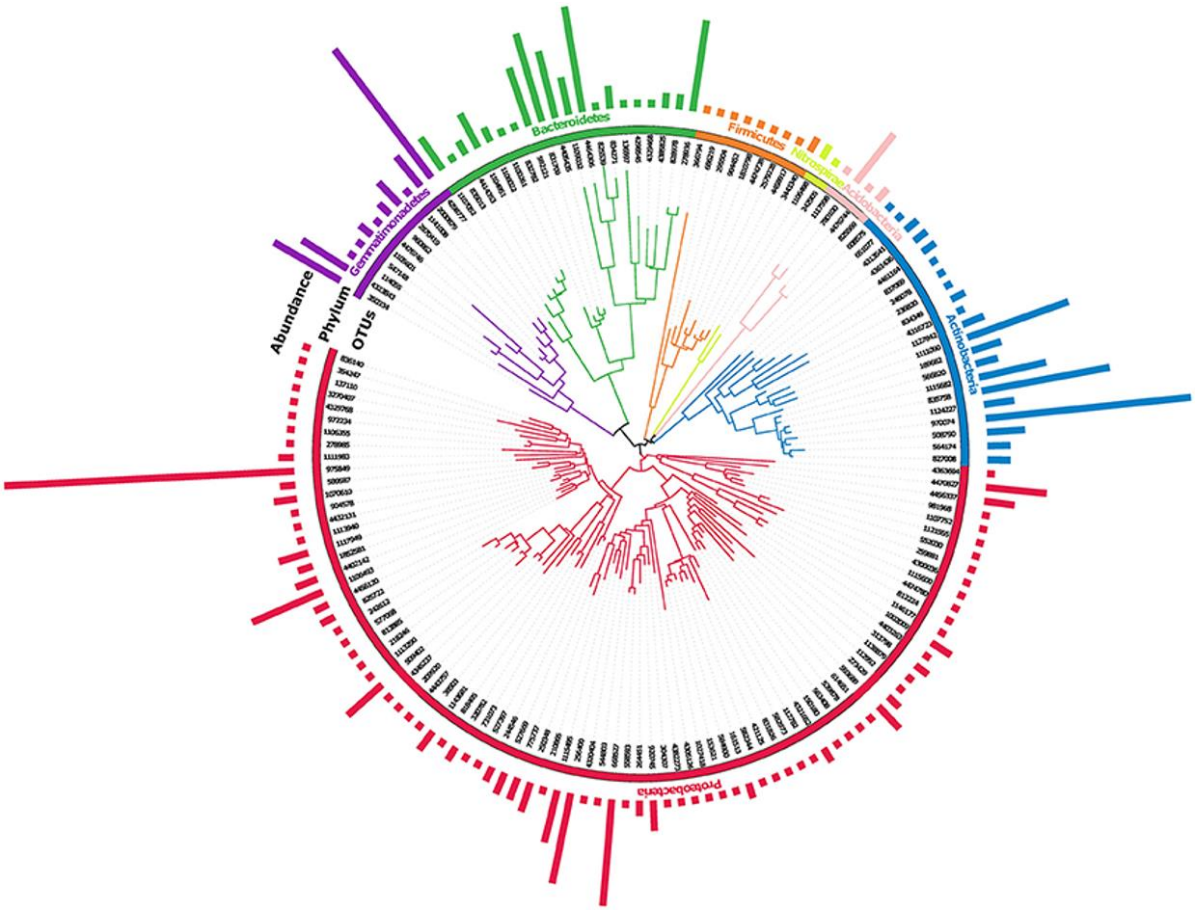
iMaven

REPORT



Name	anonymous
Sex	Male
Age	56

Sample code	O33Ij2i5
Date registration	20-12-2016
Sample date	11-01-2017
Sample received	20-12-2016

About this report

> Welcome to your own GutReport, a detailed overview of all bacteria currently living in your gut.

We used the latest 16S rRNA technology to analyse your sample.
The first section of the report shows a summary with most relevant bacteria we found in your sample. The second part provides dietary and lifestyle suggestions to further improve your gut bacterial profile. Your health professional will be able to guide you through this report and offer you a personalised lifestyle programme. Our on-line analysis provides more detail, you and/or health professional will be able to access this.

You can track changes and improvements over time with repeat tests, please discuss our membership options with your healthcare professional. Microbiome testing is an emerging scientific area and the iMaven team follows the scientific research and results closely.

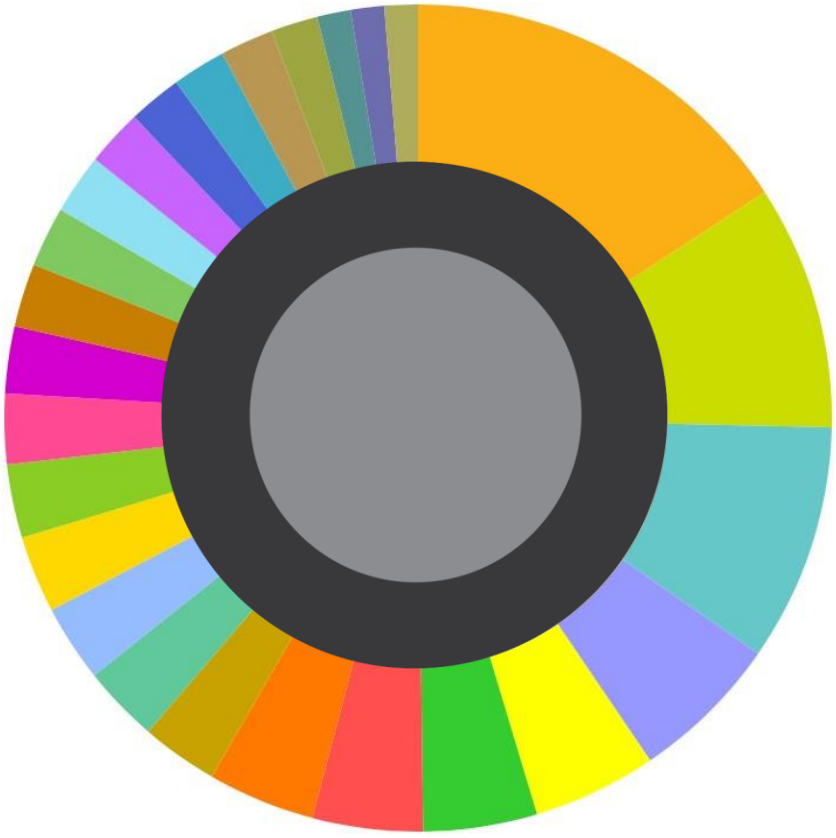
We aim to enhance this report periodically, based on new scientific insights.

Your MicroZoo

This 'donut' graph shows the composition of the different bacteria that were detected in your sample.

Bacteria are indicated in different groups on 7 different levels: Domain (or Kingdom), Phylum, Class, Order, Family, Genus and Species. One could compare this to the animal kingdom: a dachshund is a dog, mammal and animal.

Where possible iMaven™ analyses to the lowest levels, i.e. species level: species carry a double name such as Lactobacillus Reuteri. As bacteria can sometimes be very similar, it is not always possible to identify at species level and then results will be given a next level up. Therefore, the donut may show names twice, at different levels.



- Faecalibacterium prausnitzii (12.1%)
- Ruminococcus (7.3%)
- Blautia (7.1%)
- Roseburia (4.5%)
- Bacteroides vulgatus (3.7%)
- Lachnospiraceae (3.4%)
- Bacteroides (3.3%)
- Faecalibacterium (3.2%)
- Prevotella (2.3%)
- Fusicatenibacter saccharivorans (2.3%)

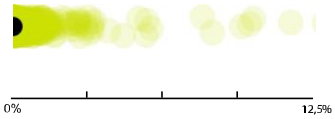
Comparision with iMaven Users

> Below you will find the abundance and a short description of the function of bacteria in your gut that are known for their **beneficial roles**.

Your results are displayed against the data represented in the iMaven database, so you can get a picture of how you compare.

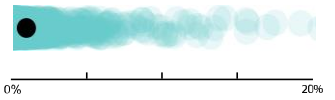
If you find that you are on the lower end or higher end of particular bacteria, you may be able to amend this with changes in your diet and lifestyle.
For tips on which food to include, please refer to page 8.

Akkermansia



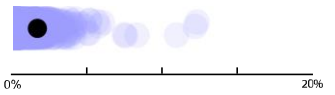
Degrade intestinal mucus and known to keep your gut in good shape.

Bifidobacterium



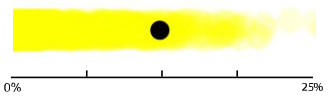
Predominantly present in the gut of babies and less so in adult individuals. Known for its production of lactate

Eubacterium



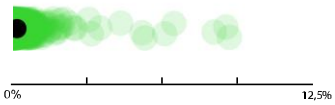
Producer of butyrate that helps your intestine stay healthy.

Faecalibacterium



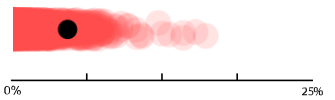
A common inhabitant of the human gut. This bacterium can represent 5 to 20% of the fecal microbiota of healthy people. Producer of butyrate that helps your intestine stay healthy.

Lactobacillus



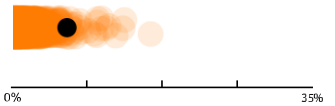
The genus Lactobacillus is made up of many species of bacteria known as probiotics having health promoting benefits.

Roseburia



Producer of butyrate that helps your intestine stay healthy.

Ruminococcus



It metabolizes sugars to lactacte and acetate. Lactate is an important nutrient source for other bacteria.

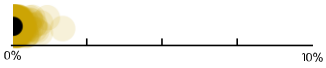
Comparision with iMaven users

Below you will find the abundance and a short description of bacteria with a **less favourable reputation**.

Your results are displayed against the data represented in the iMaven database, so you can get a picture of how you compare.

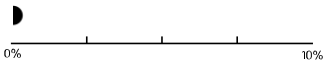
If you find that you have a relatively high abundance for particular bacteria, you may be able to amend this with changes in your diet and lifestyle. For tips on which food to include, please refer to page 10.

Bilophila wadsworthia



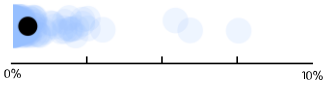
A sulfate reducing bacteria, which in high concentrations, can irritate the intestinal lining.

Clostridium difficile



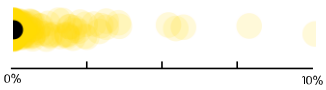
Can be present in a healthy gut, but can become dangerously abundant after antibiotictreatment.

Clostridium perfringens



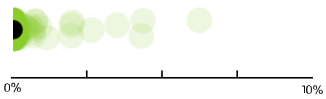
May be dangerously abundant after food poisoning.

E. coli



Present in many individuals, but has a bad reputation when present in large numbers.

Enterobacter



A member of the Proteobacteria, which in high concentrations may be associated with reduced insulin control and irritation of the gut lining.

Fusobacterium

Abundantly present in individuals with gut inflammation.

Part 2 –
Dietary & Lifestyle information

> Current research indicates that the gut microbiome responds to dietary and lifestyle changes.

Scientists are only now trying to figure out how your microbiome profile relates to health in the long term. We already know that the gut plays an important role in the immune system, in our moods as well as our metabolism to name a few.

In the next section, we provide you with some useful tips and recommendations to improve your gut profile.

Increasing your diversity index score

A higher diversity of bacteria in your gut is associated with good health. Therefore the goal is to aim for a score towards the medium-high end of the scale.

Tips to increase your diversity score

- Aim for a varied diet, try to consume 20-30 different foods each week
- Increase variety of plant foods and wholegrains in your diet
- Increase intake of a variety of aged, raw milk cheeses (Roquefort, blue cheese and camembert)
- Include fermented food products such as sauerkraut, kimchi, kombucha, natto, miso, kefir or tempeh, olives, and gherkins in your diet

Improving your bacteria profile

> By consuming foods as mentioned below, you may be able to improve your bacteria profile, research is constantly emerging and we will adjust our suggestions accordingly. We recommend you discuss dietary changes with your health professional.

BACTERIA	FOODS & LIFESTYLE	REFERENCES
Akkermansia Municiphila	• Variety of wholegrains such as wholegrain couscous, quinoa, brown rice, wholegrain pasta, barley, oats and buckwheat. • Intermittent fasting (eat within a 6-10 hr period or minimum of 12hr overnight fast). • Include oligofructose from onions, garlic and green bananas.	Dao, 2016, Akkermansia muciniphila and improved metabolic health during a dietary intervention in obesity: relationship with gut microbiome richness and ecology) (Everard, 2013, Cross-talk between Akkermansia muciniphila and intestinal epithelium controls diet-induced obesity)
Bifidobacteria & Lactobacillus	• Natural or greek yoghurt, kefir (milk or coconut) and buttermilk. • Polyphenols eg blueberries, cocoa, green tea, grapes and coffee. • Prebiotics- Fructans such as Inulin in Jerusalem artichokes, leeks, onion, chicory root, garlic, fennel, okra, cabbage, beetroot, asparagus, broccoli and rye, pistachio and almonds. • Probiotics from Fermented foods such as sauerkraut, kimchi, natto, tempeh, miso, kombucha, fermented vegetables.	(Brinkworth, 2009, Comparative effects of very low-carbohydrate`, high-fat and high-carbohydrate`, low-fat weight-loss diets on bowel habit and faecal short-chain fatty acids and bacterial populations) (Meyer, 2009, The bifidogenic effect of inulin and oligofructose and its consequences for gut health) (Ukhanova, 2014, Effects of almond and pistachio consumption on gut microbiota composition in a randomised cross-over human feeding study) (Liu, 2014, Prebiotic effects of almonds and almond skins on intestinal microbiota in healthy adult humans) (Jennings, 2014, Intakes of anthocyanins and flavones are associated with biomarkers of insulin resistance and inflammation in women) (Chen, 2006, Konjac acts as a natural laxative by increasing stool bulk and improving colonic ecology in healthy adults)

BACTERIA	FOODS & LIFESTYLE	REFERENCES
Faecalibacteria prausnitzii	• Include Probiotics from fermented foods • Include pre-biotics from Inulin in chicory root or Jerusalem artichokes and onions and raw garlic. • Pectin found in apples or apple cider vinegar. • GOS found in beans and pulses, and nuts.	(Scott, 2013, The influence of diet on the gut microbiota)
Roseburia, Eubacterium rectale	Increase intake of complex carbohydrate of the wholegrain variety such as oats, wheat bran, brown rice, wholegrain cereals and quinoa.	(Scott, 2011, Nutritional influences on the gut microbiota and the consequences for gastrointestinal health) (Russell, 2008, Anti-inflammatory implications of the microbial transformation of dietary phenolic compounds) (David, 2014, Diet rapidly and reproducibly alters the human gut microbiome)
Ruminococcus, Eubacterium rectale	• Resistant starch such as cooked and cooled down potato, rice or pasta. Under-ripe bananas, plantains, cooked cold rice/ pasta, lentils, peas, beans, and pulses. • Dark chocolate (>85%).	Martínez, 2010, Resistant starches types 2 and 4 have differential effects on the composition of the fecal microbiota in human subjects) https://www.csiro.au/en/Research/BF/Areas/Nutrition-and-health/Nutrition-and-gut-health/Resistant-starch?ref=/CSIRO/Website/Research/Health/Healthier-foods/Resistant-starch (Tzounis, 2011, Prebiotic evaluation of cocoa-derived flavanols in healthy humans by using a randomized`, controlled`, double-blind`, crossover intervention study)

Did you know that the recommended intake for prebiotics is 5g-20g per day

Decreasing not so favourable bacteria

BACTERIA	FOODS & LIFESTYLE	REFERENCES
Biophila wadsworthia	• Reduce animal protein intake • Switch to healthier fats (olive oil, nuts, seeds, avocado) • Consume fermented milk beverages (kefir, buttermilk)	(Veiga, 2014, Changes of the human gut microbiome induced by a fermented milk product)
Clostridium difficile	• Include Probiotics from supplements or fermented milk drinks • Drink Tea	(Lee, 2006, Effect of tea phenolics and their aromatic fecal bacterial metabolites on intestinal microbiota)
Clostridium perfringens	• Eat foods containing GOS (pulses and legumes such as chickpeas, lentils, soy beans, kidney beans, split peas, black eyed peas) • Drink tea	Scott, 2011, Nutritional influences on the gut microbiota and the consequences for gastro-intestinal health) (Woodmansey, 2007, Intestinal bacteria and ageing) (Choi, 2016, Genetic Variation in the TAS2R38 Bitter Taste Receptor and Gastric Cancer Risk in Koreans)
Enterobacter	• Reduce total fat intake • Limit processed food	Zhang, 2010, Interactions between gut microbiota`, host genetics and diet relevant to development of metabolic syndromes in mice)

Top tips for **improving your gut microbiota**

1. Increase diversity: Eat varied diet day to day, aim to consume 20 different foods and increase to 30.

2. Eat when calm and chew well, aim to chew between 20-30 times

3. Ideal fibre intake varies per person but is generally around 30 gr daily. Aim to increase your fibre from where you are now with 15% weekly. Increase your intake gradually, since you may experience some bloating or wind. Ease into it slowly by adding an extra portion of vegetables, fruit or legumes a day. If you have any medical conditions where minimizing fiber was recommended, please discuss with your physician first.

4. Drink!!! Aim for at least 6-10 glasses of water/herbal tea per day away from mealtimes.

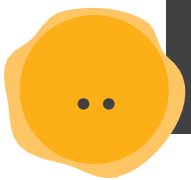
5. Include prebiotic foods, such as onions, leeks, garlic, and artichokes.

6. Include probiotic foods such as yoghurt, unpasteurized cheeses, kefir, miso, sauerkraut, kimchi, etc.

7. Include beans and pulses by adding in home made soups and stews, use hummus and other bean spreads.

8. Exercise, Sleep & Relax!

> Check out our website for more practical tips and to receive our monthly newsletter.



Did you know that your bacterial community can change rapidly to dietary and lifestyle changes within a few weeks