The Power of the Oral Microbiome

The secret to full body health

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THE HEALTH SOCIETY

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BACKGROUND

- Functional Dentist based in London - focus on treating patients holistically and preventatively. Biomarker and oral microbiome testing to allow for holistic treatment
- Bachelor in Dental Surgery from Barts and the London School of Medicine and Dentistry
- Forbes 30 under 30 Shorlisted in Europe for Science and Healthcare 2021, 2022, 2023
- Topical team member for NASA and ESA for guidelines for astronauts going to space
- On clinical and scientific advisory boards for dental diagnostics companies worldwide
- Co founder of The Health Society

WHERE IT ALL BEGAN…

- June 2020
- 78 news outlets
- Most cited article in the British Dental Journal
- Research with UCL Eastman and Whittington Hospital
- Access to ICU patients? Saliva
- Patients with gum disease were 9 times more likely to suffer from COVID-19 complications


Could there be a link between oral hygiene and the severity of SARS-CoV-2 infections?

GENERAL

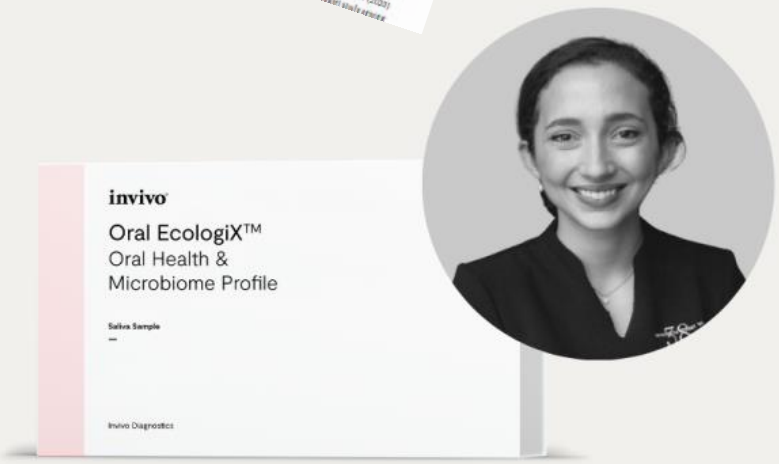
Victoria Sampson,* Nawar Kamona† and Ariane Sampson‡

Key points

Abstract

Introduction

Symptoms



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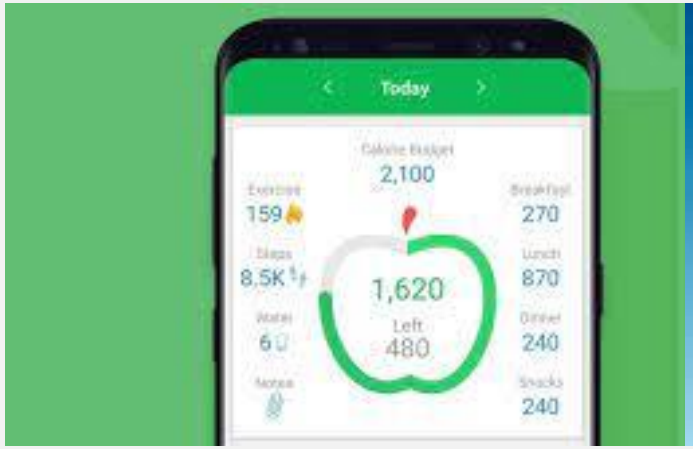
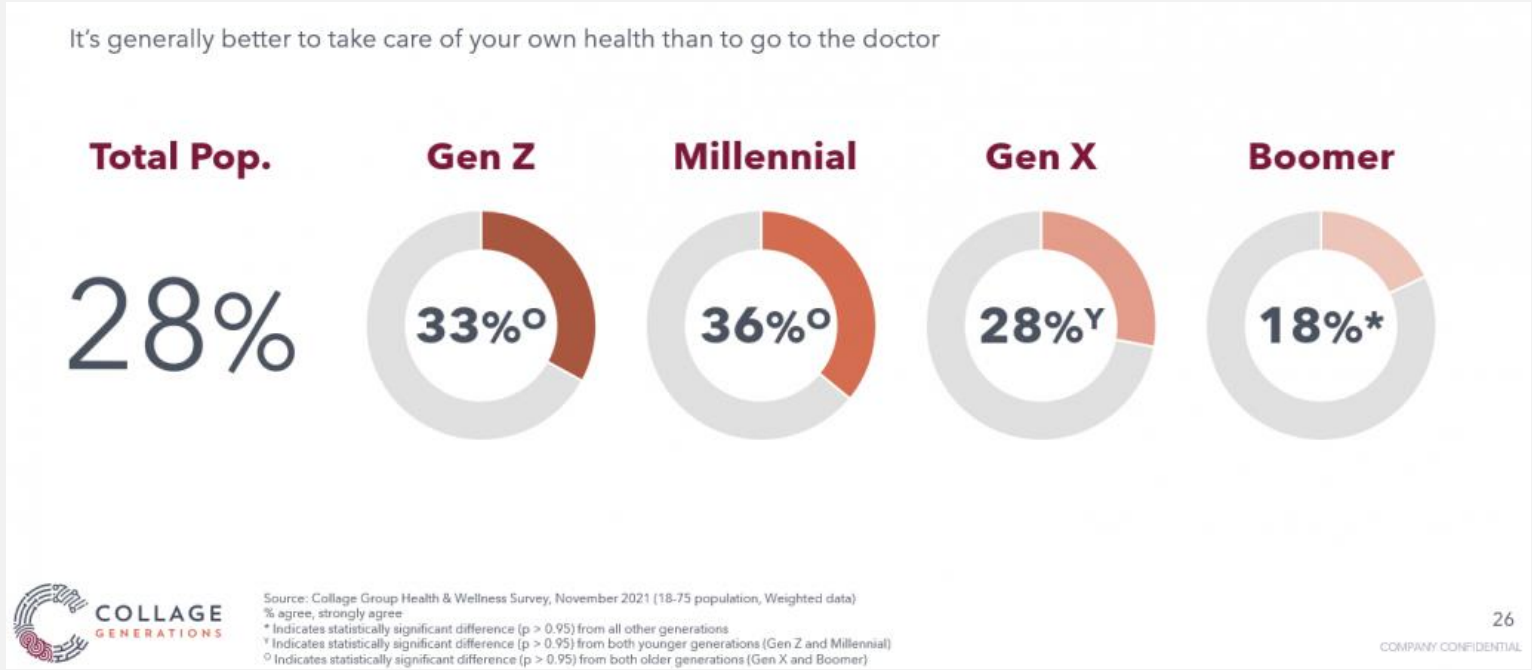
WHAT IS THE FUTURE OF HEALTHCARE?

Quantitative, personalized medicine

MEET THE SELF OPTIMIZING GENERATION





More patients think it is better to take care of their own health than go to a doctor

More patients would prefer to avoid problems by leading a healthier lifestyle

(College Group Health and Wellness Survey, 2021)

WHAT IS THE FUTURE OF DENTISTRY?

Quantitative, personalized dentistry

Blood testing

Oral microbiome testing

Diet analysis

Personalised oral hygiene ‘prescription’

Supplement/ lifestyle recommendations

PERSONALIZED DENTISTRY

Auxiliary services recommendations

3D Scanning to assess bone quality and risk of infection

Collaboration with other healthcare professionals

THE HEALTH SOCIETY

- First oral diagnostic centre in Europe
- Make dentistry understandable!
- First center to be providing oral and gut microbiome testing to create personalized treatment plans
- Infrared Sauna
- Blood testing and infusions
- Partnering with Universities to improve clinical research on oral systemic link

Oral Health MOT / Full MOT

The most indepth oral health analysis on the market.

1 hr	£500	The Health Society

Service Description

The most in depth oral health analysis on the market. This includes:
- Oral microbiome test
- Collagen breakdown test (ammp8)
- Vitamin D test
- HbA1C test
- Oral Cancer Screening
- Full examination including radiographs)

Testing of your saliva for bacteria, inflammatory markers and enzymes may i
mouth and also elsewhere in your body. Following this, a personalised oral hy
treatment plan based on your results will be sent to you.

Contact Details

10 Lees Place, London, UK
hello@thehealthsociety.co.uk

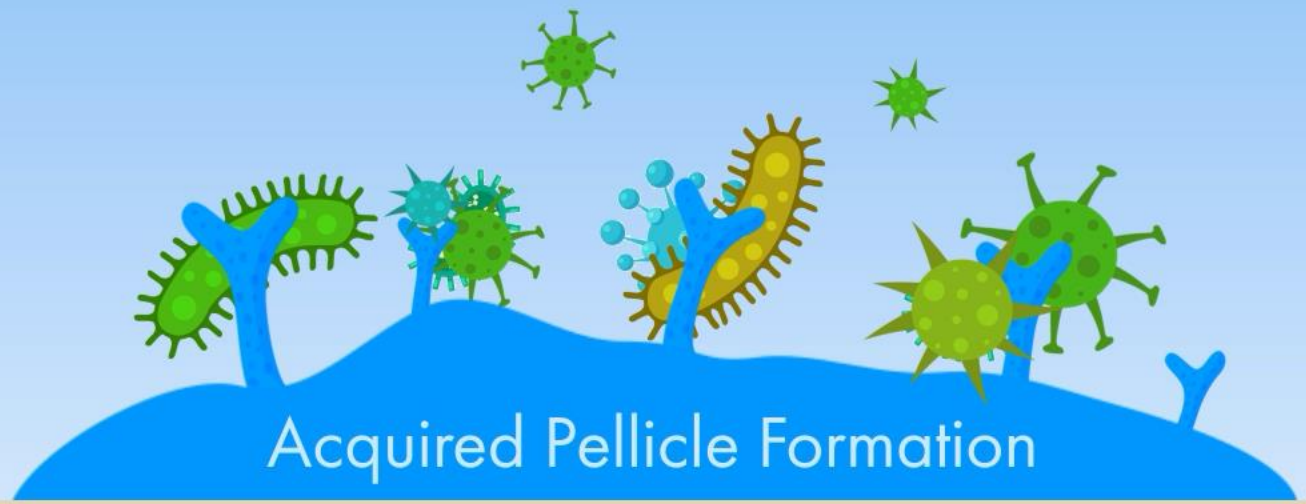
THE HEALTH SOCIETY

- Prevention focused
- Multidisciplinary
  - Nutritionists
  - Doctors
  - Acupuncture
  - Kinesiology
  - Physiotherapy
  - Ear, neck and throat surgeon
  - Maxillofacial surgeon

WHY SHOULD WE CARE ABOUT DENTISTRY?

Tooth Surface

Tooth Surface



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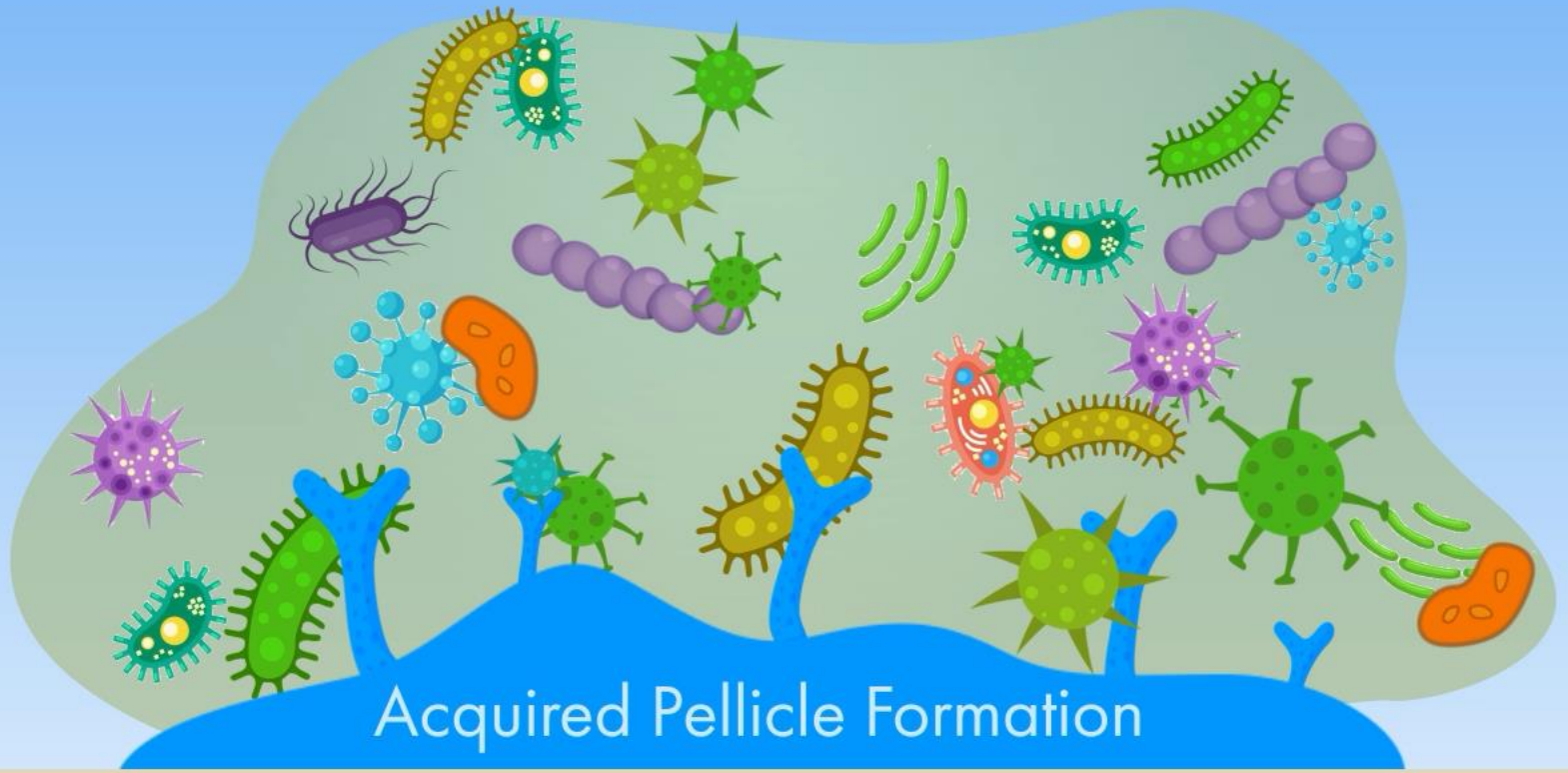

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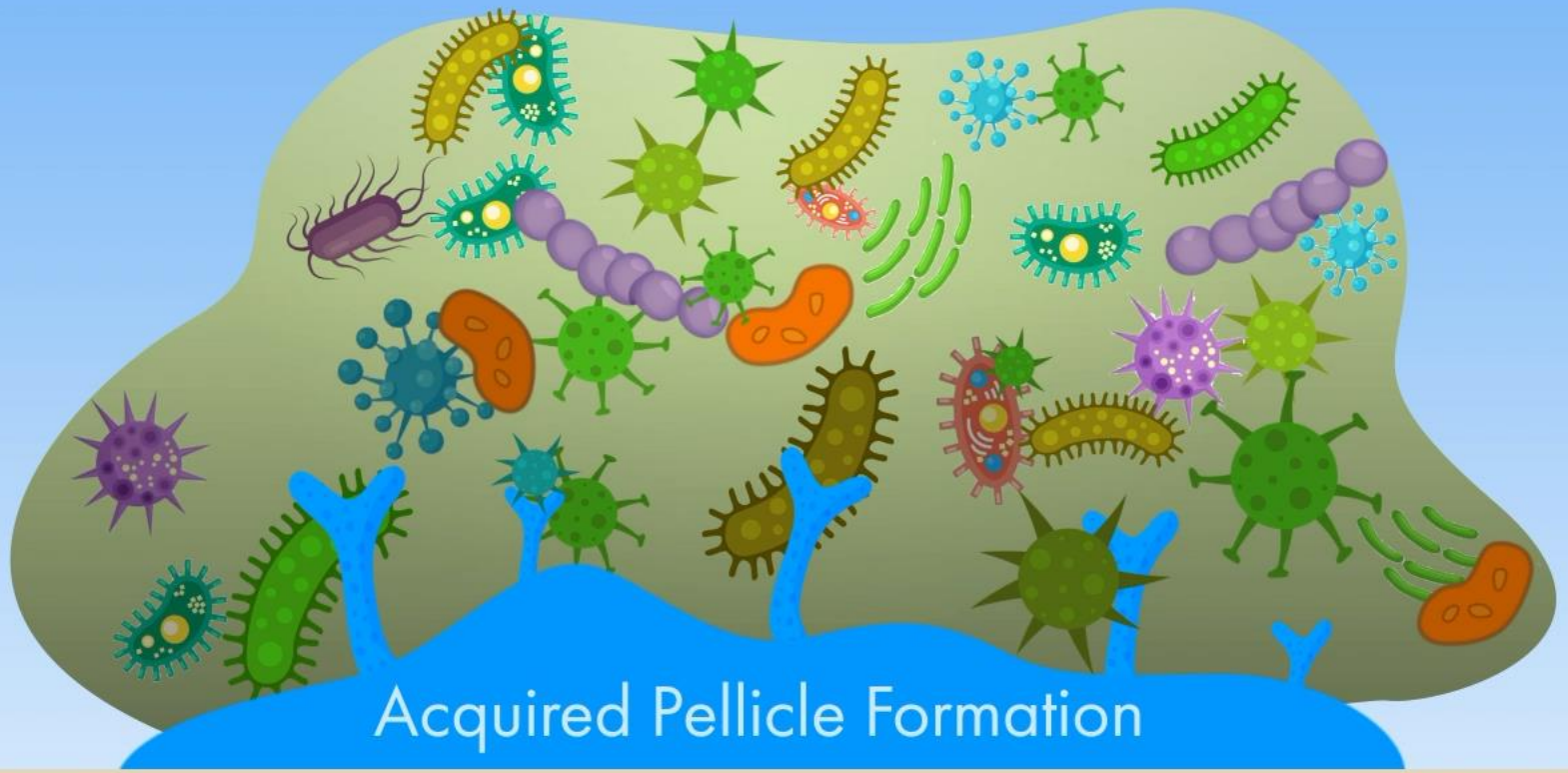


Tooth Surface

WHY IS THE ORAL MICROBIOME SO IMPORTANT?

Local impacts of an altered oral microbiome:

Increased risk of **decay**

- *(Streptococcus mutans, Lactobacillus casei* and *Streptococcus faecalis*)

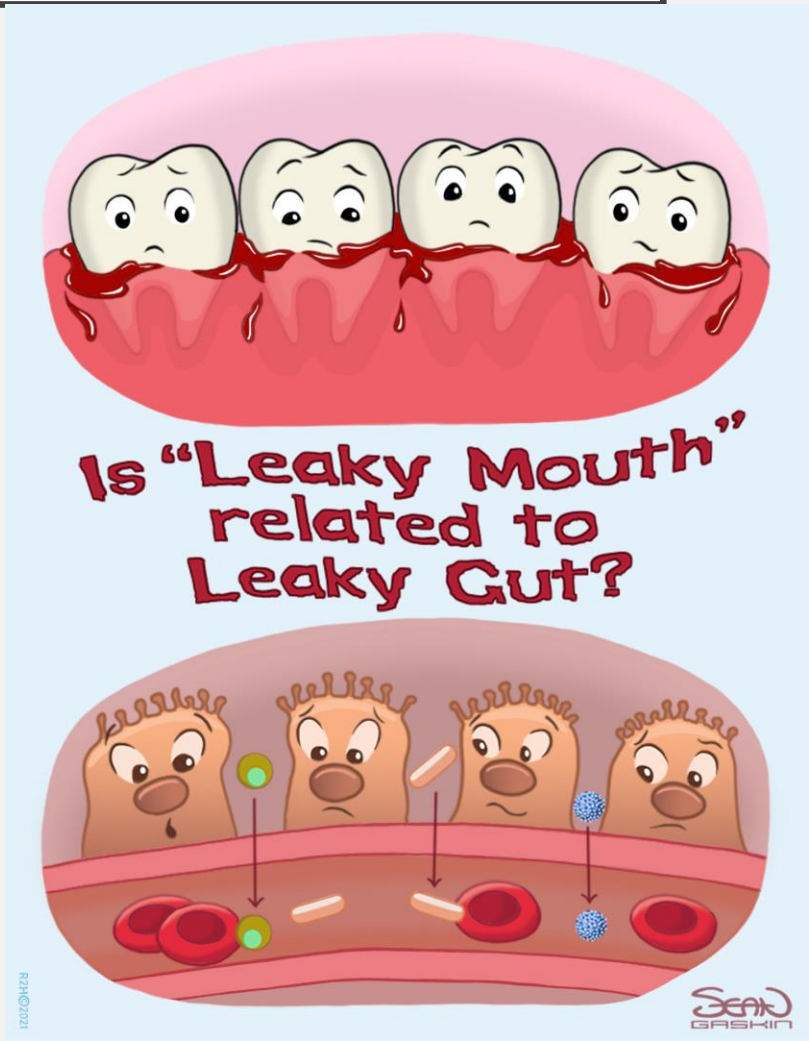
Increased risk of **periodontal disease**

- *(A. actinomycetemcomitans, P. gingivalis, P. intermedia, B. forsythus, P. micros, S. intermedius and Treponema spp)*

WHY IS THE ORAL MICROBIOME SO IMPORTANT?

Local impacts of an altered oral microbiome:

- Low grade chronic **inflammation**
- **Leaky gums**



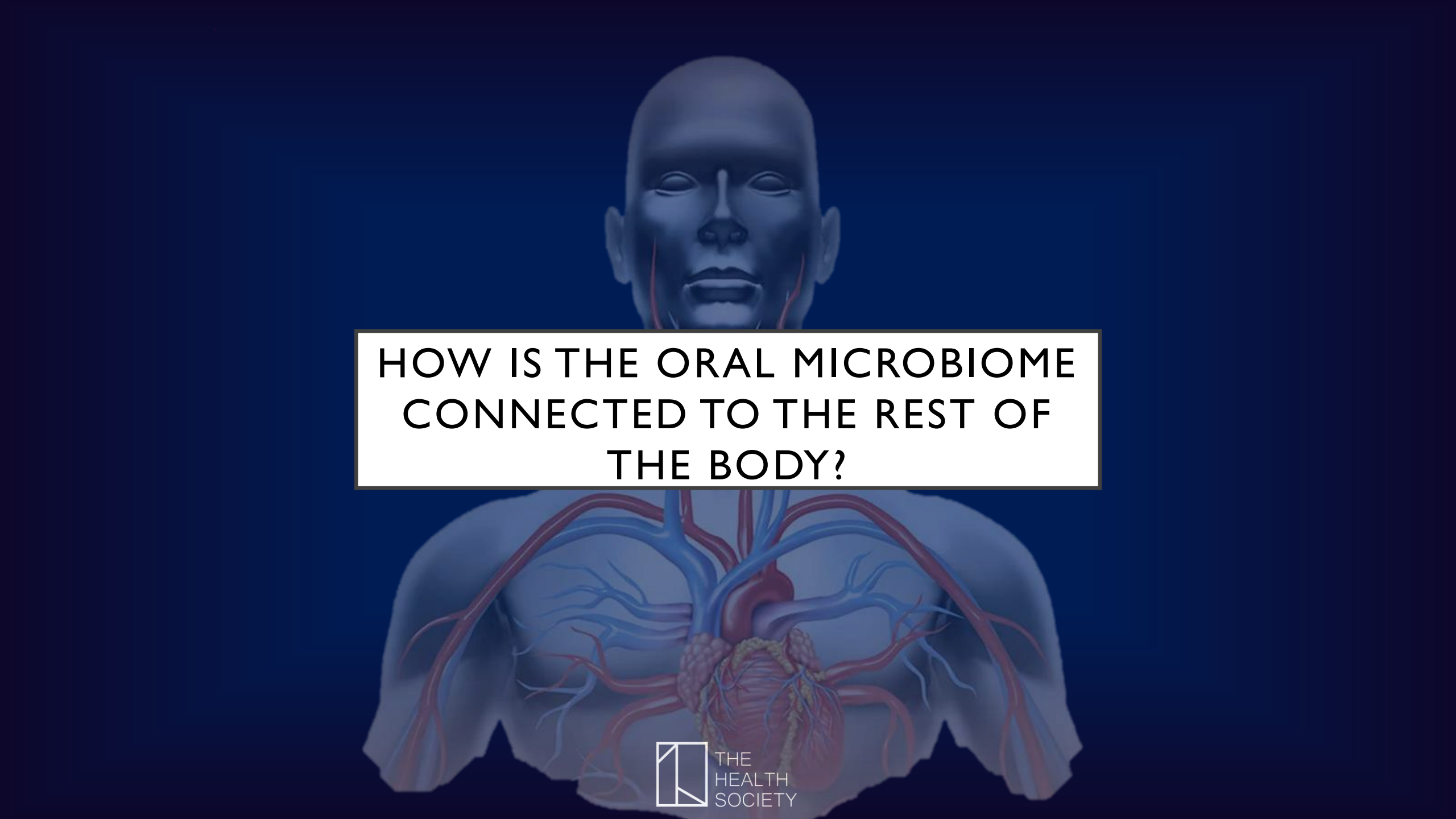
WHY IS THE ORAL MICROBIOME SO IMPORTANT?

- Low grade chronic **inflammation**

- *"A systemic status of chronic sub-clinical production of inflammatory factors. This condition represents a risk factor for many chronic diseases "*

- Patients with Periodontal Disease have increased:
- IL-1β, IL-2, IL-6, IL-8, IL-10
- TNF-α
- PGE2
- CRP (2 to 10mg/L)
- LPS

(Cecoro et al, 2020



HOW IS THE ORAL MICROBIOME CONNECTED TO THE REST OF THE BODY?

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THE ORAL GUT BRAIN AXIS

Alzheimer's Disease

- Retrospective cohort study on 18,672 citizens
- Found that having gum disease for > 10 years increa
  the risk of developing Alzheimer's by 70%

(Chang-Kai et al, 2017)

THE ORAL GUT BRAIN AXIS

Alzheimer's Disease (Beydoun et al, 2020)

26 year follow up of 6000 participants

- Strong correlation between P. gingivalis and Alzheimer's occurrence

(Beydoun et al, 2020)

THE ORAL GUT BRAIN AXIS

Alzheimer's Disease

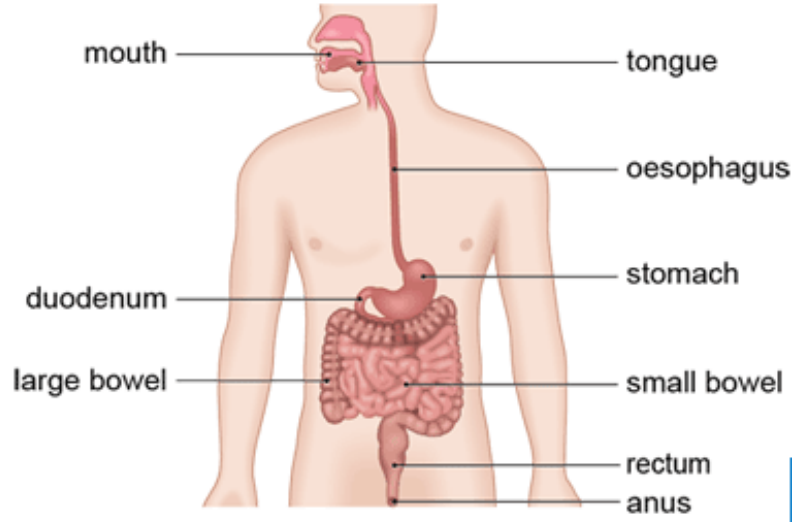
- Increased *P. gingivalis* in brain tissue / spinal fluid / saliva of Alzheimer's patients
- Increased gingipains (toxic enzyme produced by *P. gingivalis*) in brain tissue (96%)
- *P. gingivalis* → increased production of amyloid beta → amyloid plaque → Alzheimer's

(Dominy et al, 2019) (Beydoun et al, 2020)

ORAL – GUT AXIS

I) **Appearance of gastrointestinal diseases in the mouth first**

- Ulcerative Colitis
- Crohn's disease
- Coeliac's disease
- Nutritional deficiencies
- Colon cancer



The digestive system

ORAL – GUT AXIS

2) Colon cancer and gum disease

- Unexplained rise in colon cancer in younger people
- New research shows that fusobacterium nucleatum linked to colon cancer growth and progression
- F nucleatum found in more than 50% of colorectal cancer tumors

(Zepeda- Rivera et al, 2024)

ORAL – GUT AXIS

3) Gut dysbiosis = oral dysbiosis

- Patients with gum disease have more imbalanced gut microbiomes than healthy
- Professional hygiene treatment resulted in significant improvement in gut microbiome
- Higher levels of Baceroides, Fusobacterium, Faecalibacterium, Lachnospiraceae in the gut of patients with periodontal disease

Perio and gut microbial dysbiosis

Baima G, Ferrocino I, Del Lupo V *et al.* Effect of Periodontitis and Periodontal Therapy on Oral and Gut Microbiota. *J Dent Res* 2024; DOI: 10.1177/00220345231222800.

Periodontal treatment both mitigated oral dysbiosis and altered gut microbial composition.

This study aimed to explore the oral-gut microbial signatures associated with periodontitis. Stool and saliva samples from generalised stage III/IV periodontitis patients ($n = 47$) were collected and analysed by 16S ribosomal RNA gene amplicon sequencing before and three months after steps I to II of periodontal therapy. Periodontally healthy matched subjects ($n = 47$) were used as controls. Principal component analysis was carried out to identify oral-gut microbial profiles between periodontitis patients at baseline and healthy subjects; periodontitis samples were longitudinally compared before and after treatment. β-Diversity of gut microbial profiles of periodontitis patients before treatment significantly differed from healthy controls. Periodontal therapy was associated with a significant change in gut microbiota, with post-treatment microbial profiles similar to healthy volunteers. A higher abundance of *Bacteroides*, *Faecalibacterium*, *Fusobacterium*, and *Lachnospiraceae* was noted in faecal samples of periodontitis patients at baseline compared to healthy controls. Periodontal therapy led to a parallel reduction in the salivary carriage of periodontal pathobionts, as well as gut *Bacteroides*, *Lachnoclostridium*, *Lachnospiraceae*, *Oscillospiraceae*, and *Ruminococcaceae*, to levels similar to healthy controls.

https://doi.org/10.1038/s41415-024-7257-3

(Baima et al, 2024)

TOP TIPS FOR YOUR ORAL MICROBIOME

1) Avoid dental products with SLS, alcohol or essential oils

TOP TIPS FOR YOUR ORAL MICROBIOME

2) Replace your regular hygiene with Guided Biofilm Therapy

Disrupts biofilm

Antibacterial properties

Anti adherence

Helps alter oral microbiome recolonization

TOP TIPS FOR YOUR ORAL MICROBIOME

3) Oral Microbiome Testing

- Shotgun metagenomic testing
- Species level differentiation
- Check for oral microbiome dysbiosis
- Check for inflammation
- Check for genetic mutations

TOP TIPS FOR YOUR ORAL MICROBIOME

3) Oral Microbiome Testing

Check for oral microbiome dysbiosis

Shotgun metagenomic testing

Diversity and abundance of bacteria

Species level differentiation

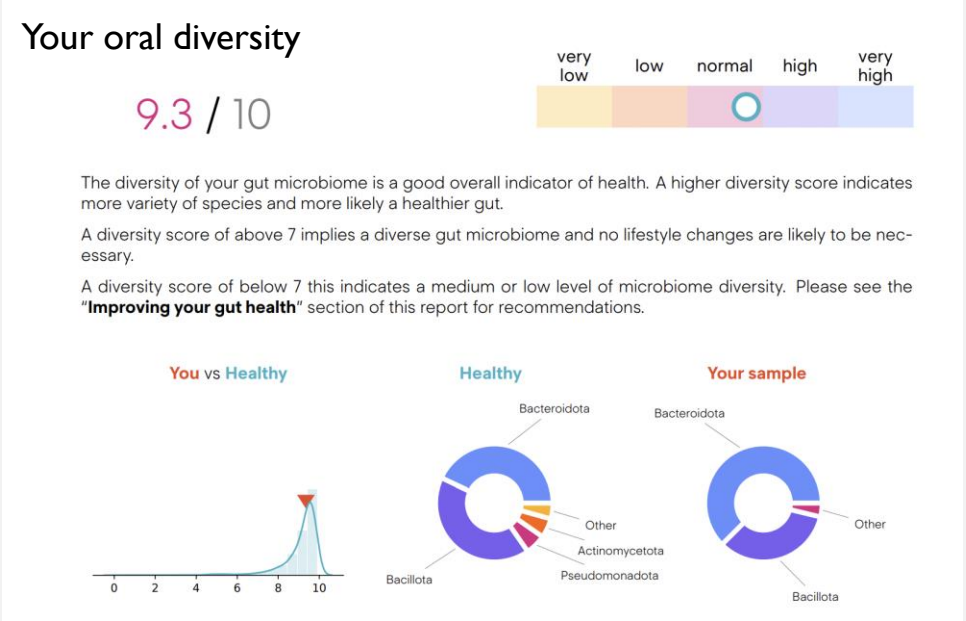
- Functional Analysis scores

TOP TIPS FOR YOUR ORAL MICROBIOME

3) Oral Microbiome Testing

Genetic analysis

- Assessment of top 10 base pair mutations that indicate:
  - High risk of gum disease
  - High risk of decay
  - High risk of 'sweet tooth'
  - High risk of a pro inflammatory response



TOP TIPS FOR YOUR ORAL MICROBIOME

4) Add probiotics into oral care regime

- Ensure alcohol free
- Ensure multi strain **live** bacteria to support a healthy microbiome
- Ensure protected against stomach acid/bile for maximum efficacy

TOP TIPS FOR YOUR ORAL MICROBIOME

5) Refer patients to see their dentist when trying to achieve full body health

- Ask if their gums bleed in questionnaire
- When was the last time they saw a dentist?
- Refer to dentist to screen low grade chronic inflammation contributing to systemic disease

CONCLUSION

- Oral microbiome dysbiosis contributes to oral disease
- Oral microbiome dysbiosis contributes to systemic diseases and low grade chronic inflammation
- The oral microbiome can be measured through microbiome testing and biomarker testing
- The oral microbiome can be altered by professional intervention and homecare
- The future of dentistry is personalized holistic dentistry
- The future of medicine is a integrative full body approach

QUESTIONS?

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