

**TECH OFFER**

## Gut Microbiome Assessment for Enhancing Healthspan



### KEY INFORMATION

TECHNOLOGY CATEGORY:

Healthcare - Diagnostics

Healthcare - Pharmaceuticals & Therapeutics

Life Sciences - Biotech Research Reagents & Tools

TECHNOLOGY READINESS LEVEL (TRL): **TRL9**

COUNTRY: **THAILAND**

ID NUMBER: **TO175013**

### OVERVIEW

Within one's body, approximately 100 trillion microorganisms, mainly bacteria, coexist. Surprisingly, these microorganisms outnumber the number of cells in the body by a staggering 300-fold. These tiny inhabitants play a crucial role, producing both beneficial and harmful metabolites that your body cannot generate. Essentially, they function as a concealed vital organ within you. Research indicates that the majority of these microorganisms, about 95%, reside in your gut, where they exert a significant influence on approximately 70% of your immune system and are closely linked to the development of 90% of non-communicable diseases. Consequently, the gut microbiome stands as one of the most remarkable scientific discoveries of the past decade.

Unlocking the secrets of one's unique gut microbiome composition holds a key to health monitoring, predicting medication effectiveness, and tailoring treatments. Notably, the gut microbiome closely correlates with dietary and lifestyle choices and can be modulated to prevent health issues rather than merely correcting them. However, the lack of comprehensive knowledge and databases in Southeast Asia represents a significant gap in this field. Bridging this gap promises to yield invaluable insights and

drive future healthcare breakthroughs.

## TECHNOLOGY FEATURES & SPECIFICATIONS

Utilising 16S rRNA sequencing technology, precise identification and quantification of an individual's gut microbial composition from stool sample has become possible. Using advanced algorithms to analyse raw gut microbiome data, honed through a curated list of microbial biomarkers and a specialised ASEAN gut microbiota database, the technology is able to provide a comprehensive and individualised health report that assesses the gut microbiome's current state correlating that to an individual's health and potential disease risks.

Moreover, this analysis enables the creation of personalised dietary recommendations, with the goal of enhancing an individual's healthspan. The continuously expanding gut microbiome database serves a dual purpose: facilitating the discovery of microbial biomarkers and deepening the understanding of disease pathways, uniquely tailored to ASEAN populations. This cutting-edge approach leverages advanced sequencing technology, data analysis, and regional insights to provide valuable insights into gut health and promote overall well-being.

## POTENTIAL APPLICATIONS

This technology spans a wide spectrum of healthcare and well-being applications:

- **Overall Health Prediction:** Empowering proactive health prevention strategies.
- **Early Disease Detection:** Utilising distinct microbiome profiles to identify various stages of disease progression, enabling effective screening for non-communicable diseases like metabolic disorders, gastrointestinal issues, cardiovascular conditions, and neurological diseases. It also facilitates the design of personalised nutrition programs aimed at disease reversal.
- **Personalised Nutrition Plans:** Customised to individual requirements, including weight management and athletic performance optimisation.
- **Precision treatment:** Discovering microbial biomarkers and insight of disease pathway to help the development of precision drug/treatment development.
- **2nd Generation Probiotics:** Pioneering the development of innovative probiotic solutions with more specific health benefits, distinct from traditional probiotics commonly found in the Western world.

## MARKET TRENDS & OPPORTUNITIES

The global human microbiome market size for 2023 is projected to reach USD 770 million, exhibiting a remarkable compound annual growth rate (CAGR) of 16.37%.

This growth is underpinned by four major trends shaping the microbiome therapeutics market:

1. **Pushing Gut Microbiome to the Mainstream:** Microbiome therapeutics are expanding beyond the digestive system, finding applications in immunity enhancement, weight management, stress/anxiety relief, vaginal health, and skincare.
2. **Increasing Consumer Awareness:** A significant portion of the population in the USA and Europe, as per online surveys, is now actively using microbiome products, reflecting a heightened awareness of their potential benefits.
3. **Growing Interest from Big Pharma:** Major pharmaceutical companies are showing a growing interest in microbiome-related research and therapies, recognising their potential in improving health outcomes. However, data from Southeast

Asia remains underrepresented in this domain.

4. **Intensified Research and Clinical Development:** The field is witnessing a substantial increase in both basic research and clinical studies. The number of publications on microbiome-related topics has surged from 1,177 in 2010 to 6,964 in 2015. Likewise, the number of studies has risen from 31 in 2010 to 632 in 2020, highlighting the rapid evolution of this area of science and medicine.

## UNIQUE VALUE PROPOSITION

This technology has enabled advanced personalised health prevention solutions that have been meticulously crafted for ASEAN individuals, featuring:

- **Precision Analysis from ASEAN Populations:** Leveraging an extensive ASEAN gut microbiome database, ensuring the utmost accuracy in assessments.
- **Comprehensive Gut Microbiome Profiling:** Providing a thorough and detailed understanding of an individual's total gut microbiome for a better understanding of their interactions.
- **Tailored Dietary Recommendations:** Offering practical dietary solutions specifically designed for local preferences and needs.
- **User-Friendly Health Monitoring:** Serving as an intuitive and invaluable tool for health monitoring and tracking, making it easily accessible and helpful for individuals.