Clinical applications

Microbiome

Microbiome Collect your permanent guests information

Better diagnostics begins with a better sample collection.







Transport



Processing



Artificial Intelligence

Workflow-Integrated System Environment

Background Balanced synergy

Living organisms such as animals and plants are complex systems in which factors other than the simple genetic information contribute to defining the phenotypic characteristics. One of these factors is the interaction between the host organism and its **symbiotic bacteria community – the microbiome – that resides on and inside its body:** this community composition, ratio, and status directly impact the host's health, for example determining its susceptibility to diseases. **Changes in the microbiota population caused by illness, environmental conditions, and other perturbations can be used as diagnostics or prognostics tools**, as health markers, or for many different applications.

What's the Copan solution for microbiome analysis?

• Collection devices

FLOQSwabs[®] hDNAfree, FLOQSwabs[®]

- *Media*
- Self-collection devices
 SMART-eNAT[®]

Microbiome research

An emerging interest

Over recent years, **the volume of research on microbiota has exploded as its connection to human health became evident**¹. However, although the capability to analyze it has expanded quickly, the research in this field remains a challenging task, given that human **microbiota involves numerous species interacting either cooperatively or competitively**. This complexity makes researchers need high yields and high quality nucleic acid specimens to reduce variability, obtain unbiased results and analyze the entire microbiome – microbiota's genetic information – characteristics regardless of the sample's origin. **Better microbiota and microbiome sampling, identification, and interpretation methods are thus required to provide statistical power** for studies that need to cover hundreds of thousands of individuals to reveal subtle effects.

Sample collection

Ubdo

Efficient and unbiased

Despite the latest rise of microbiota analysis by culture – a method called culturomics – microbiome research still relies mainly on high-throughput and high sensitivity sequencing techniques. On this basis, the lack of a scientific consensus on the standardization of the protocols – including sampling – raises the concern of extremely biased results and incomparable studies. At Copan, we brought our sample collection and transport expertise from clinical microbiology and molecular biology to microbiome research, standardizing the first step of the microbiota preanalytical processing.



FLOOSwabs® hDNAfree

Non-invasive, Safe, and Painless DNA collection devices for Genetic applications

FLOQSwabs®hDNAfree is our FLOQSwabs® line **free of amplifiable human DNA and detectable DNase and RNase**. FLOQSwabs®hDNAfree are well-accepted and cost-effective, and **the optional active drying system** dries the sample inside the tube, enabling 12 months of DNA stability at room temperature, and their **easiness to use** improves the adoption percentage for genetic screenings, such as HLA typing, food intolerances, and ancestry testing²³.

Certified free of amplifiable Human DNA and detectable DNase and RNase

Optional active drying system for 12 months of DNA stability at RT



SMART-eNAT®

Smart Delivery System for Nucleic Acid Preservation Medium

SMART-eNAT[®] combines eNAT[®] with a unique SMART push & turn activation and delivery system, providing a safe and efficient nucleic acid collection and transport for prolonged periods. The SMART post-collection high-performance yet intuitive cap avoids spillage or unwanted contact, facilitating self-sampling at home.

Virus and bacteria infectivity Inactivation within 30 minutes

Designed for patient and sample safety



eNAT®

Nucleic acid collection and preservation medium

eNAT[®] is our medium designed for nucleic acid collection and preservation. Containing guanidine-thiocyanate, eNAT[®] lyses cells and virus particles, **removing the sample's infectivity and bacterial proliferation, and preserving RNA and DNA integrity**^{4,5}. eNAT[®] allows long-term sample storage for up to four weeks at RT or six months at -20°C by denaturing proteins – including nucleases – in only 30 minutes, and **has been successfully used in vaginal, cervical, skin, oral, gut, and feces microbiota studies**⁶⁻¹⁰.

Virus and bacteria infectivity inactivation within 30 minutes

Preserves nucleic acids for four weeks at RT or six months at -20 °C

Culture media

Microbiome and culturomics

For anyone who needs to culture microbiome samples, we offer a complete portfolio of media for bacterial culture. Contact us, we'll select the one that suits best your needs!

The perfect match FLOQSwabs[®] Inside

Combining any transport media with our patented FLOQSwabs[®] expands testing possibilities by ensuring an unmatched specimen collection in many anatomical sites. Discover why we call them "the perfect collection device" on the dedicated brochure.





Conclusions

Unique microbiome, personalized medicine

A better understanding of the human microbiota and its interaction with the host in health and disease could help develop new diagnostic tools and therapeutic interventions, enabling the shift from traditional to personalized medicine. However, to achieve this goal and **truly translate microbiome research into clinical care**, exploiting the latest technological advancements is insufficient as standardized sampling, transportation and processing strategies must be implemented^{11,12}.

Scientific references

All the independent studies we cited in this product focus are listed here.

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