

# MICROBIOME

## Sample management



Collect, stabilize & extract DNA from  
**gut, oral** and **environmental** samples

## Gut microbiome

The gut microbiome refers to the complex ecosystem of microorganisms, including bacteria, viruses, fungi, and protozoa, that reside in the gastrointestinal tract. A major challenge for microbiome studies is maintaining an even and accurate DNA extraction in the presence of samples with a wide range of bacterial content. Our modular products for reliable and validated microbiome sample management, from collection and stabilization to DNA extraction, ensure that your samples remain intact and accurately reflect the microbiome diversity at the timepoint of collection.

## Sample management

**Invitek Diagnostics** offers complete solutions for reliable and validated microbiome sample management, from sample collection and stabilization to manual and automated DNA extraction. With the Stool Collection Tubes, we offer a versatile tool for gut microbiome analysis, microbiome associated disease research and metabolite analysis in nutrigenomics. Our collection and extraction systems guarantee excellent performance in downstream NGS applications.

## Sample Collection Tubes with DNA Stabilizer



### Collection devices

Invitek Diagnostics' **Stool Collection Tubes with DNA Stabilizer** are designed for ease of use and optimal maintenance of sample integrity. The Collection Tube is prefilled with 8 ml of Stool DNA Stabilizer which allows for transport and storage of the sample at room temperature. Thus, there are no costs associated with temperature-controlled shipping.



- Easy sampling with a spoon integrated in the collection tube
- Sample stabilization and preservation of the bacterial titre at the timepoint of collection
- Transport and storage of stabilized DNA at room temperature for 3 months – no cold chain required
- No costs associated with temperature-controlled shipping
- $\alpha$  - diversity equivalent to direct freezing of samples

## Extraction kits



**InviSorb®**



**InviMag®**

For manual extraction Invitek Diagnostics offers the **PSP® Spin Stool DNA Basic Kit** with the flexible options for sample lysis using the Stool DNA Stabilizer. For comprehensive sample management – sampling, transport, storage and stabilization – the extraction kit can be combined with the Stool Collection Tubes with DNA Stabilizer. For direct lysis and extraction from fresh or frozen stool samples the **PSP® Spin Stool DNA Basic Kit** can be combined with the DNA Stabilizer available in a bottle format.

For automated extraction, the **InviMag® Stool DNA Kit/ KF96** enables high-throughput isolation of total DNA from up to 200 mg stool samples in 96-well format using magnetic beads on the KingFisher™ Flex (Thermo Scientific).



- Removal of all PCR inhibitors from DNA samples
- Isolation of DNA from microorganisms or from the host organism
- High quality DNA suitable for 16S rRNA microbiome profiling, shotgun metagenomic sequencing, qPCR and arrays
- Compatible with the Invitek Stool Collection Tubes with DNA Stabilizer

## Fast and convenient handling

Stool is a rich sample type that contains a variety of potential inhibitors. To remove inhibitors, Invitek extraction kits use the unique InviAdsorb matrix. Substances such as humic acid, phytochemicals and other digestive products bind to the matrix and are effectively removed. Zirconia beads and Proteinase K are used for sample lysis, so even difficult-to-lyse gram-positive bacteria are effectively disrupted. Stool samples contain host DNA from colon epithelial cells, parasite DNA, bacterial DNA, DNA from food or DNA from gastrointestinal pathogens. Different sample lysis protocols allow the isolation of target nucleic acids of bacterial and host origin.

# DNA extraction of fresh, frozen and stabilized stool samples

Specifications	PSP® Spin Stool DNA Basic Kit	InviMag® Stool DNA Kit/ KF96
Downstream application	16S rRNA Microbiome profiling, Shotgun Metagenomic Sequencing, qPCR and arrays	
Target nucleic acid	Bacterial DNA, genomic host DNA	
Starting material	Fresh or frozen stool samples: max. 200 mg Stabilized stool samples: 1.4 ml	
Yield	Up to 50 µg, depending on sample (storage and source)	
Quality	$A_{260} : A_{280}$ 1.6 – 2.1	$A_{260} : A_{280}$ 1.6 – 1.8
Preparation time	approx. 45 min (incl. lysis)	about 20 -25 min after lysis
Elution Volume	100 - 200 µl	150 µl (minimal volume 75 µl)
Technology	Spin column	Magnetic beads
Certification	CE-IVD (in compliance with REGULATION (EU) 2017/746 on in vitro diagnostic medical devices)	RUO

## Sample collection/ sample lysis

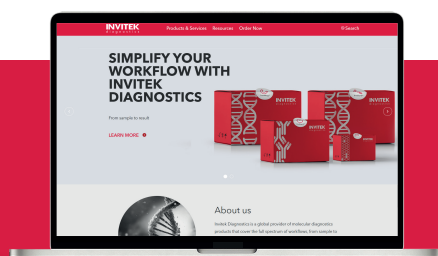
Fresh or frozen stool samples: max. 200 mg	Stool Collection Tubes with DNA Stabilizer	1038111200 1038111300	50 tubes 250 tubes
	Stool DNA Stabilizer: stool transport and recovery buffer for stabilization of nucleic acids in stool specimens	1038111100	180 ml

Stabilized stool samples (Stool Collection Tubes with DNA Stabilizer): 1.4 ml

## Extraction kit

Stabilized stool samples (Stool Collection Tubes with DNA Stabilizer): 1.4 ml	PSP® Spin Stool DNA Basic Kit (CE-IVD) (without lysis buffer) For sample lysis, the kit needs to be combined with Stool Collection Tubes with Stool DNA Stabilizer (50 or 250 tubes) or Stool DNA Stabilizer (180 ml for 50 preps, 2 x 180 ml for 250 preps).	1038120200 1038120300	50 preps 250 preps
	InviMag® Stool DNA Kit/KF96 (for use on KingFisher™ 96 and KingFisher™ Flex, Thermo Fisher Scientific)	7438300200	5 x 96 purifications

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## Oral microbiome

Saliva is a commonly used sample for oral microbiome studies due to its accessibility and non-invasiveness. Saliva contains a diverse range of microorganisms, including bacteria, viruses, and fungi, that are representative of the overall oral microbiome. Our range of modular products is designed to ensure reliable and validated microbiome sample management, from collection and stabilization to reliable DNA isolation. Our products are formulated to preserve the integrity of samples, ensuring they remain intact and accurately represent the microbial diversity.

## Saliva Sample Collection Devices



### Collection devices



The **SalivaGene Collector** is a valuable tool for oral microbiome studies, offering a simplified and efficient method of collecting and stabilizing saliva samples. It utilizes a freeze-dried stabilization buffer that can preserve DNA for up to 12 months at room temperature, eliminating the need for immediate refrigeration or freezing.

The SalivaGene Collector is designed to be user-friendly and convenient, making saliva collection and stabilization a seamless process.



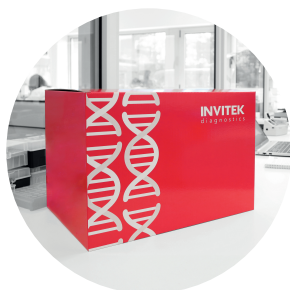
The **SalivaGene Swab Comfort** is designed to collect and stabilize DNA from human oral samples. The DNA of swab samples is stable for 6 months at room temperature in the stabilization buffer. This reduces electricity costs associated with refrigeration, freezing, and temperature-controlled shipping. After sample collection the swab tip is broken at the red breaking point into the tube. During sealing the swab tip is screwed into the lid and can be easily removed once the tube is reopened.

# Extraction kits



## InviSorb®

The **PSP® SalivaGene DNA Kit** is perfect for oral microbiome analysis or the extraction of host DNA for genetic testing applications. The extraction kit is optimized for nucleic acid isolation of samples collected with the SalivaGene Collector or the SalivaGene Swab Comfort for comprehensive sample management – sampling, stabilization, transport, and storage.



- Flexible sample management: Kit can be combined with stabilized samples from saliva or swabs
- Isolation of bacterial DNA and host DNA
- High purity of DNA: removal of all PCR inhibitors
- CE-IVD certified, recommended for in vitro diagnostic use

### Specifications

Downstream application	PCR techniques, NGS, hybridization methods and HLA typing
Target nucleic acid	Bacterial DNA, genomic host DNA
Starting material	SalivaGene Collector, SalivaGene Swab Comfort: 500 µl stabilized sample
Yield	Saliva: up to 10 µg Swabs: up to 1 µg (depending on sample material and donor)
Quality	$A_{260} : A_{280}$ 1.6 – 2.1
Preparation time	approx. 30 min (incl. lysis)
Elution Volume	50 - 100 µl
Technology	Spin column
Certification	CE-IVD (in compliance with REGULATION (EU) 2017/746 on in vitro diagnostic medical devices)

### Sample collection

Saliva Samples	SalivaGene Collector (CE-IVD)	1035211200	50 tubes
	SalivaGene Swab Comfort (CE-IVD)	1035231100	50 tubes

### Extraction kit

PSP® SalivaGene DNA Kit (CE-IVD)	1035200200	50 preps
	1035200300	250 preps

## Environmental microbiome

The soil microbiome plays a crucial role in nutrient cycling in an environmental ecosystem. The plant microbiome plays a role in plant health and productivity. Thanks to NGS, we can learn more about the enormous diversity of microorganisms in many of Earth's ecosystems. Learn more about reliable nucleic acid extraction for the analysis of the environmental microbiota using the InviSorb® DNA extraction kits

## Soil microbiome

As a vital and dynamic natural resource, soil comprises billions of bacteria and other microbes that establish a symbiotic ecosystem. The diversity of soil samples and the presence of organic material, such as humic acid and degraded plant matter, can introduce inhibitors that require special extraction methods to ensure accurate downstream assays. The **InviSorb® Spin Soil DNA Kit** offers a fast and easy way to isolate high quality microbial DNA from various soil samples.



## Plant microbiome

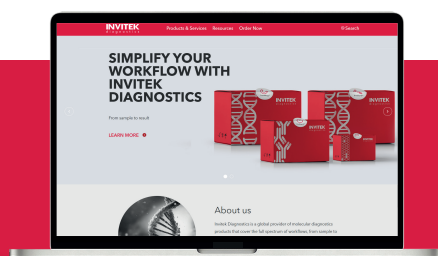
The plant microbiome, also known as the phytomicrobiome, plays a role in plant health and productivity. The microbes of the plant microbiota live both inside (endosphere) and outside (episphere) the plant tissue and play an important role in the ecology and physiology of plants.

The **InviSorb® Plant DNA Mini Kit** provides a rapid and convenient method for extracting high-quality microbial, fungal, and host DNA from various plant species and tissue types.

The **InviMag® Plant DNA Mini Kit/KF96** allows high-throughput sample purification in a 96-well format.



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## RNA extraction

Our plant RNA kit is designed for the isolation of high-quality RNA from various plant tissues. It uses a unique column-based purification technology that provides high yields of pure RNA, suitable for use in gene expression analysis and other downstream applications. The genomic DNA is removed without an enzymatic digestion step.



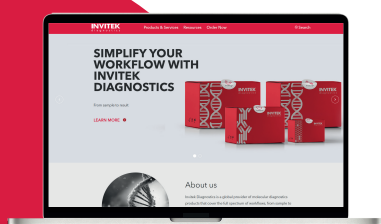
**InviSorb®**



**InviMag®**

Starting material	Extraction kit		
Soil Samples	InviSorb® Spin Soil DNA Kit	1039100200 1039100300	50 preps 250 preps
	InviSorb® Spin Plant Mini Kit	1037100200 1037100300	50 preps 250 preps
Plant Samples	InviMag® Plant DNA Mini Kit/ KF96	7437300200	5 x 96 purifications
	InviMag® Plant DNA Mini Kit/ KF96 w/o plastic	7437300250	5 x 96 purifications
	InviTrap® Spin Plant RNA Mini Kit	1064100300 1064100400	50 preps 250 preps

## SIMPLIFY YOUR WORKFLOW WITH INVITEK DIAGNOSTICS



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*In compliance with REGULATION (EU) 2017/746 on in vitro diagnostic medical devices. Not for in vitro diagnostic use in countries where the REGULATION (EU) 2017/746 on in vitro diagnostic medical devices is not recognized.*

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Contact us

[info@invitek.com](mailto:info@invitek.com)

**INVITEK DIAGNOSTICS PORTUGAL**

Zona Industrial de Tondela, ZIM II, Lote 6  
3460-070 Tondela, Portugal

**INVITEK DIAGNOSTICS GERMANY**

Haynauer Str. 60  
12249 Berlin, Germany