



# Depletion of Host DNA

**MolYsis™**

Enrichment of Bacterial & Fungal DNA  
Manual and Automated Solutions





## Product Features

- ✓ Depletion of human and animal DNA
- ✓ Selective enrichment of bacterial and fungal DNA
- ✓ Broad-range lysis of bacteria and fungi
- ✓ Higher PCR sensitivity
- ✓ DNA-free reagents and plastics
- ✓ Basic and Complete kits for utmost flexibility
- ✓ Manual and automated kits available
- ✓ Protocols for body fluids, swabs and tissue samples
- ✓ For PCR/Real-Time PCR and NGS applications

## MolYsis™ - Depletion of Host DNA

**MolYsis™** is a tool for the depletion of human/animal DNA and enrichment of bacteria and fungi from body fluids, swabs and tissue samples. Technically, in a short series of steps, MolYsis™ includes the selective lysis of host cells and the quantitative degradation (up to 99%) of released host DNA. After the enrichment step, microorganisms are lysed with a reagent degrading cell walls of Gram-positive and Gram-negative bacteria and fungi. The broad-range lysis potential has been shown in clinical evaluations, including over 200 genera of bacteria (86 Gram-positives, 120 Gram-negatives) and 65 genera of fungi. The **MolYsis™** protocol is validated for the following samples:

- |                       |                          |
|-----------------------|--------------------------|
| • Whole blood         | • Bronchoalveolar lavage |
| • Synovial fluid      | • Nasal-wash fluid       |
| • Pleural fluid       | • Urine                  |
| • Cerebrospinal fluid | • Blood cultures         |
| • Ascites fluid       | • Tissue samples         |
| • Pus                 | • Swabs                  |

## Host DNA Limits the PCR Detection of Bacteria and Fungi

In many samples from humans and animals host DNA greatly outnumbers microbial DNA. The choice of DNA preparation takes strong influence on the analysis. Among the factors negatively influencing the analysis, unspecific binding of e.g. bacteria-specific primers to human sequences is recognized to constitute an important cause of false-negative and false-positive results. **MolYsis™** solves this problem by the depletion of human/animal DNA thus enabling the analysis of bacteria and fungi in specimens at utmost sensitivity and accuracy (Fig. 1).

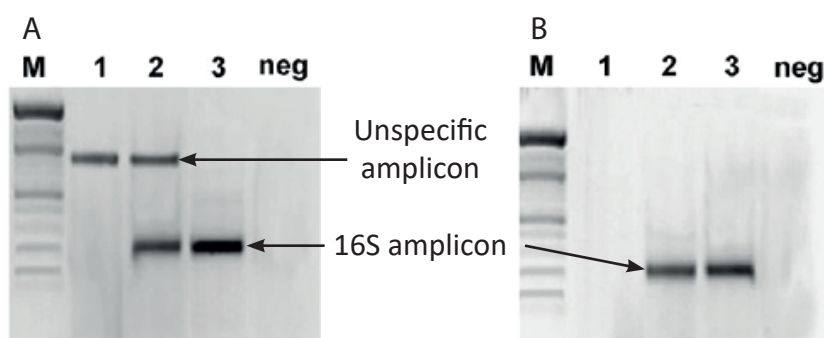


**Fig. 1.** 16S PCR amplification products from [A] total DNA (Qiagen) and [B] enriched bacterial DNA (MolYsis™). M: marker; 1: whole blood; 2: whole blood spiked with *E. coli*; 3: *E. coli* in saline (Comp Immun Microbiol Infect Dis 32:207-219, 2009; modified)

## MolYsis™ Basic5

The pre-treatment kit **MolYsis™ Basic5** includes reagents for host DNA depletion and can be combined with any DNA isolation kit or in-house method, including manual and automated systems. **MolYsis™ Basic5** is the flexible solution for sample pre-treatment, encompassing body fluids with sample volumes of  $\leq 1\text{ml}$  and  $5\text{ml}$ .

## MolYsis™ Complete5

**MolYsis™ Complete5** includes reagents and materials for the whole process of host DNA depletion, bacteria and fungi enrichment and microbial DNA isolation. **MolYsis™ Complete5** enables small and medium size preparations of body fluids from  $\leq 1\text{ml}$  and  $5\text{ml}$  volumes.

## Ultra-Deep Microbiome Prep Kits

The MolYsis™ technology is also applicable for tissue and swab samples. With the **Ultra-Deep Microbiome Prep** kit  $\leq 1\text{ml}$  liquid and tissue specimens can be used. Highest flexibility is given with the **Ultra-Deep Microbiome Prep10** kit for volumes from  $1 - 10\text{ml}$  and tissues.

## Automation - MolYsis-SelectNA™ plus

The bench-top **SelectNA™ plus** robot is the first system for automated host DNA depletion and microbial DNA isolation from body fluids, swabs and tissue samples.

**MolYsis-SelectNA™ plus** is the solution of choice for the fully automated host DNA depletion and extraction of microbial DNA from clinical and other material on the **SelectNA™ plus** robotic system. One to 12 samples of up to  $1\text{ml}$  can be processed by the instrument at a time.

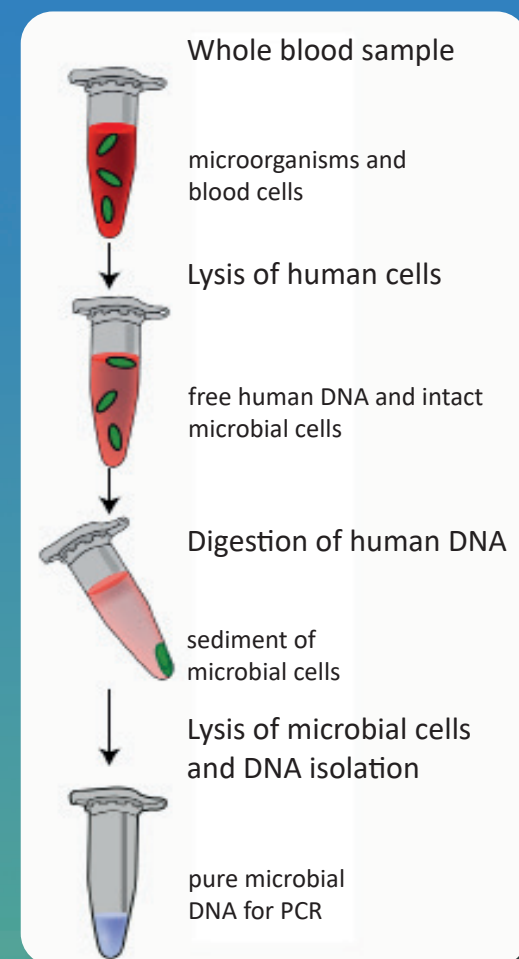
## Applications

All **MolYsis™**-based kits are specially useful for the sensitive detection of bacteria and fungi by PCR/Real-Time PCR and for the deep microbiome and metagenome analysis by Next Generation Sequencing. The efficient host DNA depletion as well as reduced background of contaminations allows the sensitive analysis of microbial target DNA even at very low loads. Molzym's unique depletion technology can be combined with leading NGS platforms.

Molzym also offers highly active, DNA-free **MolTaq 16S/18S** polymerases and **16S/18S Mastermixes** and **Assays**.

## MolYsis™ Technology

Example displayed for human whole blood:



## Automation

**SelectNA™ plus**

Robot for fully automated DNA extraction:

- 1-12 samples in parallel
- Various specimens: body fluids, tissues and swabs



## Order Information:

| Product                                                                                                                                             | Volume       | Content               | Order No. |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------------|-----------|
| Manual kits                                                                                                                                         |              |                       |           |
| Basic kit for host DNA depletion and enrichment of bacteria and fungi from body fluids.<br>Compatible with any DNA isolation system                 |              |                       |           |
| MolYsis™ Basic5<br><i>Body fluids</i>                                                                                                               | ≤1ml and 5ml | 50 reactions          | D-301-050 |
|                                                                                                                                                     |              | 100 reactions         | D-301-100 |
| Complete kit for host DNA depletion and isolation of enriched bacterial and fungal DNA from body fluids                                             |              |                       |           |
| MolYsis™ Complete5<br><i>Body fluids</i>                                                                                                            | ≤1ml and 5ml | 50 reactions          | D-321-050 |
|                                                                                                                                                     |              | 100 reactions         | D-321-100 |
| Complete kit for host DNA depletion and isolation of enriched bacterial and fungal DNA from body fluids, swabs and tissue specimens                 |              |                       |           |
| Ultra-Deep Microbiome Prep<br><i>Body fluids, swabs &amp; tissues</i>                                                                               | ≤1ml         | 25 reactions          | G-020-025 |
|                                                                                                                                                     |              | 50 reactions          | G-020-050 |
| Ultra-Deep Microbiome Prep10<br><i>Body fluids &amp; tissues</i>                                                                                    | 1 - 10ml     | 25 reactions          | G-030-025 |
|                                                                                                                                                     |              | 50 reactions          | G-030-050 |
| Automation                                                                                                                                          |              |                       |           |
| Complete kit for fully automated host DNA depletion and isolation of enriched bacterial and fungal DNA from body fluids, swabs and tissue specimens |              |                       |           |
| SelectNA™ <i>plus</i> robot                                                                                                                         |              | Bench -top instrument | D-400-001 |
| MolYsis-SelectNA™ <i>plus</i><br><i>Body fluids, swabs &amp; tissues</i>                                                                            | ≤1ml         | 48 reactions          | D-450-048 |

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