

# Innovative DNA Purification Solutions for Pathogen Detection



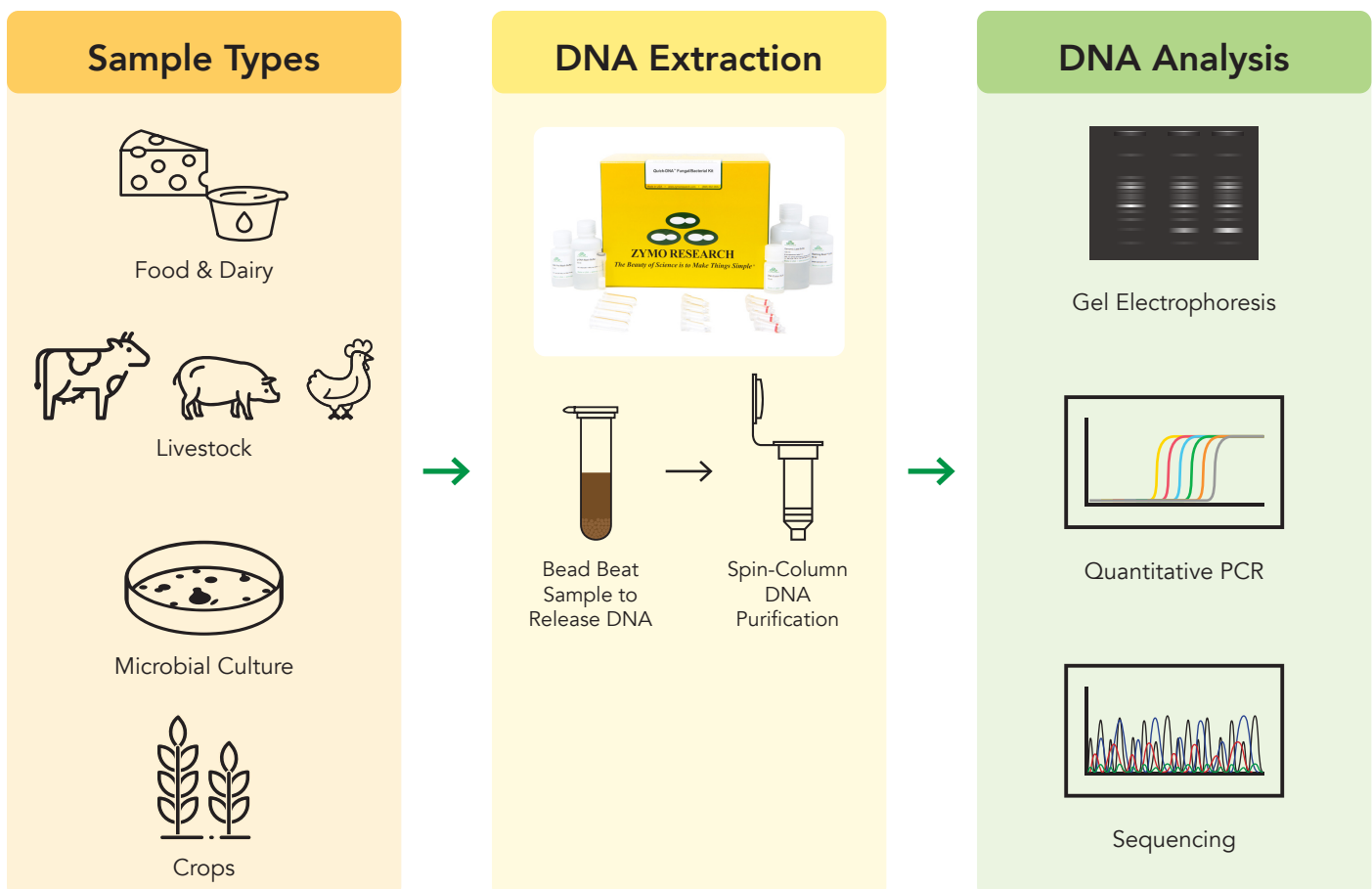
# Molecular Pathogen Detection

The adoption of molecular based methods for detecting pathogens has grown rapidly in many sectors of public health because it holds significant advantages over traditional microbiology techniques. These benefits include a faster turnaround, greater limit of detection, genetic variant identification and less reliance on sample retains. However, the accuracy of the pathogen detection assay is highly dependent on the quality of the DNA sample.

Most molecular based pathogen detection assays utilize PCR or sequencing, which rely on the polymerization of DNA using thermostable DNA polymerases. Therefore, the DNA sample must be free of contaminants that can inhibit DNA polymerase function to ensure the pathogen detection assay is functioning correctly. Furthermore, it is critical that the DNA extraction workflow can effectively release the DNA from the target pathogen otherwise it might be missed.

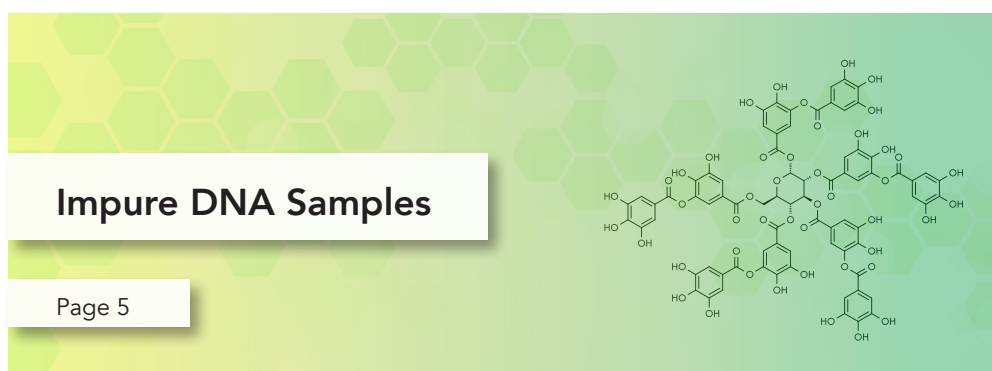
Zymo Research has developed a series of innovative purification products that can rapidly extract ultra-pure microbial DNA from food, culture, agricultural and environmental samples that is ideal for accurate molecular pathogen detection. These DNA purification kits utilize our optimized ultra-high density BashingBead™ mechanical lysis system to ensure lysis of the toughest organisms and an exclusive spin-column purification chemistry that results in DNA that is free of salts, proteins and other contaminants.

In addition, several of our kits are equipped with Zymo Research's proprietary *OneStep™* PCR Inhibitor Removal technology enabling PCR from samples rich in humic and fulvic acids, tannins, melanin, and other polyphenolic compounds. Coupling state-of-the-art lysis technology with Zymo-Spin™ Column technology results in superior yields of ultra-pure DNA ideal for all downstream applications including PCR, arrays, and next generation sequencing.





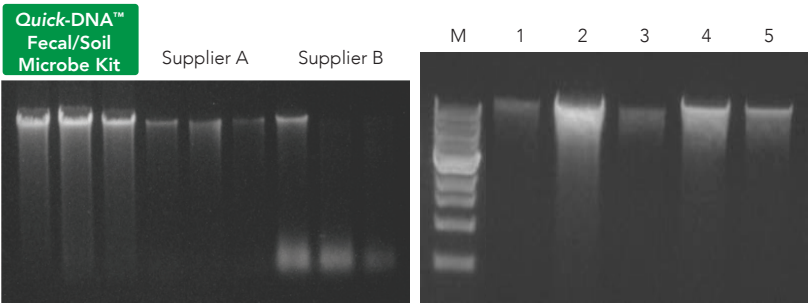
# Efficiently Purify DNA from a Variety of Sample Types



# Quick-DNA™ Fecal/Soil Microbe Kits

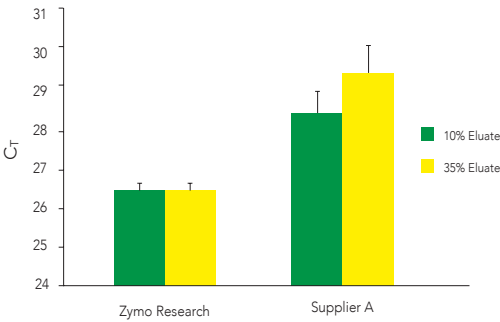
- **Boost Detection:** Included *BashingBeads™* ensure complete lysis of tough-to-lyse samples.
- **Inhibitor-Free:** Ready for qPCR, Next-Gen Sequencing, arrays, etc.
- **Simple Workflow:** Lyse, purify on column, and filter to remove PCR inhibitors.
- **Uses:** Total DNA isolation from: Feces; Gram (+) bacteria; Gram (-) bacteria; yeast; filamentous fungi; unicellular algae; filamentous algae; protist; soil, sludge, clay

## Higher Yields



High-quality total DNA was isolated from different environmental sample sources using the *Quick-DNA™ Fecal/Soil Microbe Kit* and compared against other suppliers. (A) Equivalent amounts of feces were processed using each kit, then equal volumes of eluted DNA were analyzed on a 0.8% (w/v) agarose gel stained with EtBr. (B) Metagenomic DNA isolated from 5 soil samples. M: 1 kb marker (NEB); 1-5: soil samples (sand, sandy clay loam, hydrophobic sandy loam coarse, sandy loam, fine gravel).

## Ultra-Pure & Inhibitor-Free DNA



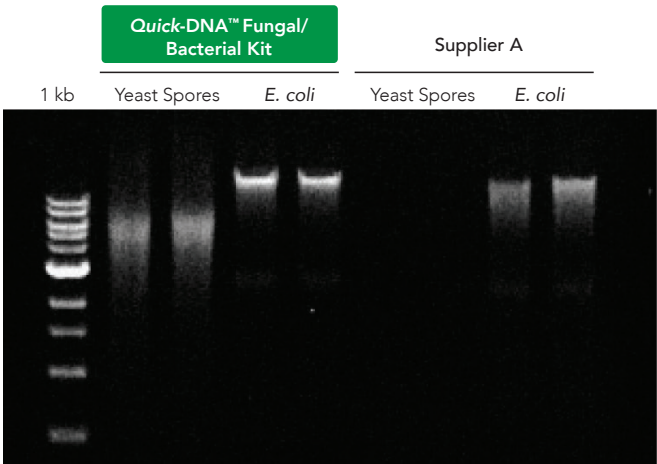
Real-time PCR was used to evaluate 10% or 35% of eluates recovered using the *Quick-DNA™ Fecal/Soil Microbe Kit* or *Supplier A Kit* to detect PCR inhibitors. Delayed amplification indicates PCR inhibition from inefficient inhibitor removal (n=8).

Product	Cat. No.	Size	Specifications
Quick-DNA™ Fecal/Soil Microbe Microprep Kit	D6012	50 preps	Format: Spin-Column Binding Capacity: 5 µg Elution Volume: ≥ 20 µl Processing Time: 20 minutes
Quick-DNA™ Fecal/Soil Microbe Miniprep Kit	D6010	50 preps	Format: Spin-Column Binding Capacity: 25 µg Elution Volume: ≥ 50 µl Processing Time: 20 minutes
Quick-DNA™ Fecal/Soil Microbe Midiprep Kit	D6110	25 preps	Format: Spin-Column Binding Capacity: 125 µg Elution Volume: ≥ 150 µl Processing Time: 25 minutes
Quick-DNA™ Fecal/Soil Microbe 96 Kit	D6011	2 x 96 preps	Format: 96-Well Binding Capacity: 5 µg Elution Volume: ≥ 50 µl Processing Time: 50 minutes
Quick-DNA™ Fecal/Soil Microbe 96 Magbead Kit (includes ZR BashingBead™ Lysis Rack)	D6010-FM	2 x 96 preps	Format: Magnetic Bead Binding Capacity: 25 µg Elution Volume: 37.5 µl Processing Time: 2 hours
Quick-DNA™ Fecal/Soil Microbe 96 Magbead Kit (Lysis Matrix Not Included)	D6011-FM	2 x 96 preps	
Quick-DNA™ Fecal/Soil Microbe 96 Magbead Kit (includes ZR BashingBead™ Lysis Tubes)	D6012-FM	2 x 96 preps	

# Quick-DNA™ Fungal/Bacterial Kits

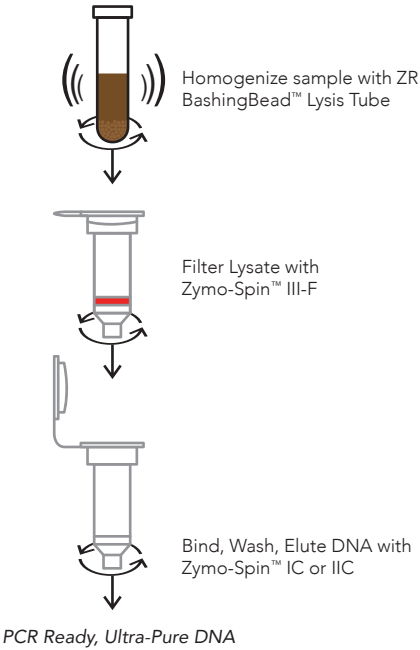
- **Boost Detection:** Included *BashingBeads™* ensure complete lysis of tough-to-lyse samples.
- **Ultra-Pure:** Ready for qPCR, Next-Gen Sequencing, arrays, etc.
- **Simple Workflow:** Fastest workflow (< 20 minutes).
- **Uses:** Total DNA isolation from: Gram (+) bacteria; Gram (-) bacteria; Yeast; Filamentous fungi; Unicellular algae; Filamentous algae; Protist; Either fungi or bacteria grown in media

## Highest Yields



DNA isolated from *Saccharomyces cerevisiae* (spores) and *E. coli* using the Quick-DNA™ Fungal/Bacteria Kit was high-quality and structurally intact. Equivalent amounts of yeast and bacteria were processed using the Quick-DNA™ Fungal/Bacterial Kit or the Supplier A kit. Equal volumes of eluted DNA were analyzed on a 0.8% (w/v) agarose gel stained with EtBr.

## Simple Workflow

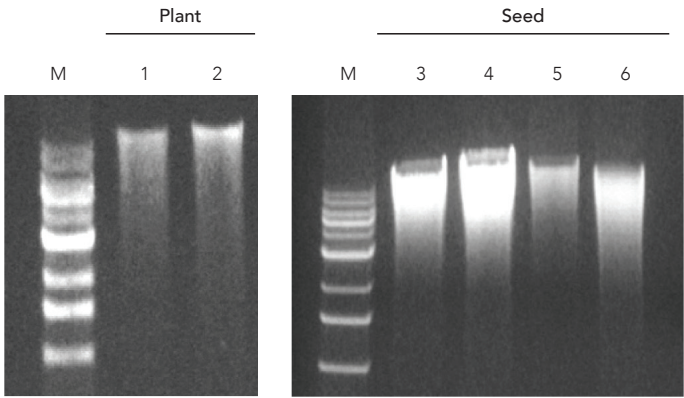


Product	Cat. No.	Size	Specifications
Quick-DNA™ Fungal/Bacterial Microprep Kit	D6007	50 preps	Format: Spin-Column Binding Capacity: 5 µg Elution Volume: ≥ 10 µl Processing Time: 15 minutes
Quick-DNA™ Fungal/Bacterial Miniprep Kit	D6005	50 preps	Format: Spin-Column Binding Capacity: 25 µg Elution Volume: ≥ 35 µl Processing Time: 15 minutes
Quick-DNA™ Fungal/Bacterial Midiprep Kit	D6105	25 preps	Format: Spin-Column Binding Capacity: 125 µg Elution Volume: ≥ 150 µl Processing Time: 20 minutes
Quick-DNA™ Fungal/Bacterial 96 Kit	D6006	2 x 96 preps	Format: 96-Well Binding Capacity: 5 µg Elution Volume: ≥ 25 µl Processing Time: 40 minutes

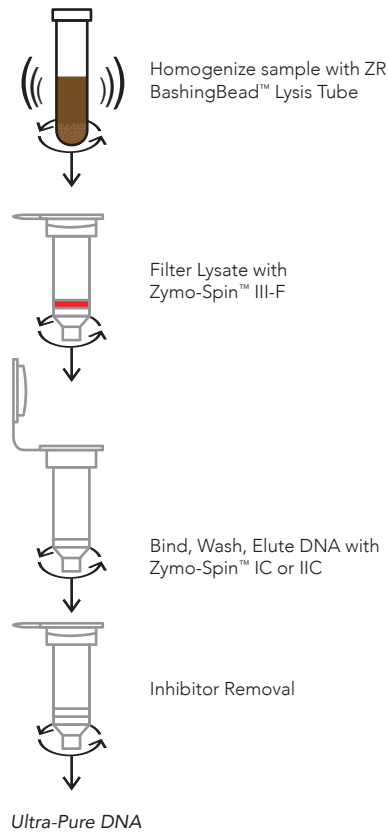
# Quick-DNA™ Plant/Seed Kits

- **Boost Detection:** Included *BashingBeads™* ensure complete lysis of tough-to-lyse samples.
- **Inhibitor-Free:** Ready for qPCR, Next-Gen Sequencing, arrays, etc.
- **Simple Workflow:** Lyse, purify on column, and filter to remove PCR inhibitors.
- **Uses:** DNA isolation from: leaves; other plant material; seeds; fruit.

## High Recovery



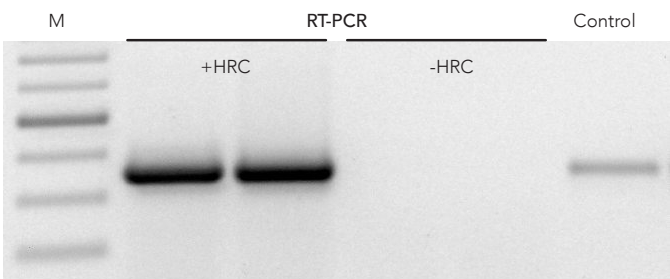
## Simple Workflow



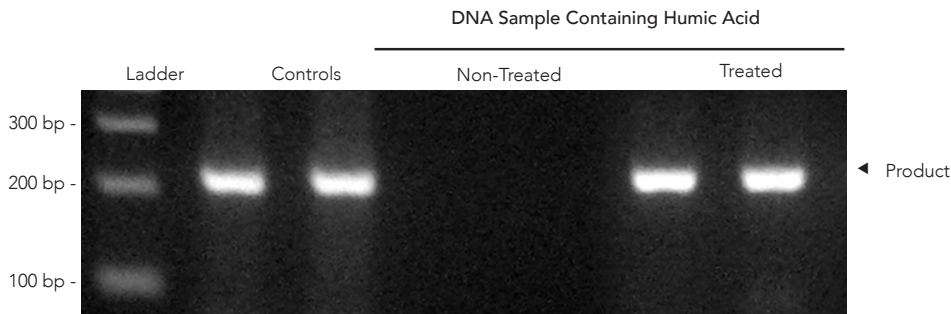
Product	Cat. No.	Size	Specifications
Quick-DNA™ Plant/Seed Miniprep Kit	D6020	50 preps	Format: Spin-Column Binding Capacity: 25 µg Elution Volume: ≥ 50 µl Processing Time: 20 minutes
Quick-DNA™ Plant/Seed 96 Kit	D6021	2 x 96 preps	Format: 96-Well Binding Capacity: 5 µg Elution Volume: ≥ 50 µl Processing Time: 50 minutes

# OneStep™ PCR Inhibitor Removal Kits

- **Inhibitor-Free:** Removes PCR inhibitors such as polyphenolics, humic/fulvic acids, tannins, melanin, etc from nucleic acid samples to yield high-quality DNA or RNA
- **Simple Workflow:** Fast, one step procedure for cleaning impure samples prior to PCR, sequencing, reverse transcription (RT), etc.
- **Uses:** Removal of PCR inhibitors from extracted DNA & RNA samples.



**PCR amplification of an eukaryotic transcript (post-RT):** Total RNA isolated from sludge with or without inclusion of the Zymo-Spin™ IV-HRC Spin Filter. M is a 1 kb DNA Marker (Zymo Research).



**DNA is efficiently amplified by PCR following humic acid removal with the OneStep™ PCR Inhibitor Removal Kit.** The figure shows amplification of a 200 bp product from DNA containing humic acid that was treated with the kit. The ladder is a 100 bp DNA marker (Zymo Research).

Product	Cat. No.	Size	Specifications
OneStep™ PCR Inhibitor Removal Kit	D6030	50 preps	Format: Spin Column Elution Volume: 50 - 200 µl Processing Time: 4 minutes DNA (RNA) Recovery: 80 - 100%
OneStep™-96 PCR Inhibitor Removal Kit	D6035	2 x 96 preps	Format: 96-Well Elution Volume: 50 - 100 µl Processing Time: 13 minutes DNA (RNA) Recovery: 50 - 90%



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