

APR 07, 2023

OPEN ACCESS

dx.doi.org/10.17504/protocol s.io.6qpvr4ke3gmk/v1

Protocol Citation: QIAGEN 2023. QIAGEN DNeasy PowerMax Soil Kit. protocols.io

https://dx.doi.org/10.17504/p rotocols.io.6qpvr4ke3gmk/v1

License: This is an open access protocol distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited

Protocol status: Working Protocol used successfully by Sales et al., 2021 to detect fish sedDNA

Created: Dec 21, 2022

Last Modified: Apr 07, 2023

PROTOCOL integer ID:

74334

Keywords: QIAGEN, DNeasy, PowerMax, SedDNA,

Sedimentary DNA

QIAGEN DNeasy PowerMax Soil Kit

QIAGEN¹

¹QIAGEN



Yuanyu Cheng McGill University

ABSTRACT

For the isolation of microbial DNA from large quantities of soil - great for samples with low microbial load

The DNeasy PowerMax Soil Kit comprises a novel and proprietary method for isolating genomic DNA from environmental samples using Inhibitor Removal Technology® (IRT). With this kit, it is possible to process samples that have proven difficult in the past due to high levels of humic-like substances. The isolated DNA has a high level of purity, which allows for successful PCR amplification from samples. Total DNA isolated from various soil types has been successfully amplified using PCR with primers specific for bacteria (Bacillus subtilis, Bacillus anthracis), fungi (yeast, mold), and actinomycetes (Streptomyces).

Using the DNeasy PowerMax Soil Kit, environmental samples are added to a beadbeating tube with a kit-supplied proprietary buffer for rapid and thorough homogenization. Cell lysis and DNA exposure occur by mechanical and chemical methods. Extracted genomic DNA is captured on a silica membrane in a spin column format. The DNA is washed and eluted from the membrane and is ready for PCR and other downstream applications.

Protocol successfully used by Sales et al., 2021 to characterize fish species diversity and richness in water and sediment samples

MATERIALS

DNeasy PowerMax Soil Kit (10 preparations) already includes:

MB Maxi Spin Columns * 10

PowerMax Bead Pro Tubes * 10

PowerBead Solution A 20 mL

Solution C3.

Solution C4

△ 44 mL△ 330 mL

Solution C6

Д 66 mL

Collection Tubes (50ml) 5 * 8

Quick Start Protocol * 1

Additional equipments and reagents to be supplied by user:

Centrifuge capable of spinning 50 ml tubes at 2500 x g using swing-out rotor Pipettes (1ml and 10 ml)

Vortex-Genie 2 Vortex

Vortex Adapter for 2 (50 ml) tubes (cat. no. 13000-V1-50)

SAFETY WARNINGS

Solution C5 contains ethanol and is flammable.
DO NOT add bleach or acidic solutions directly to the sample preparation waste.

Sample preparation & cell lysis

1h 27m 30s

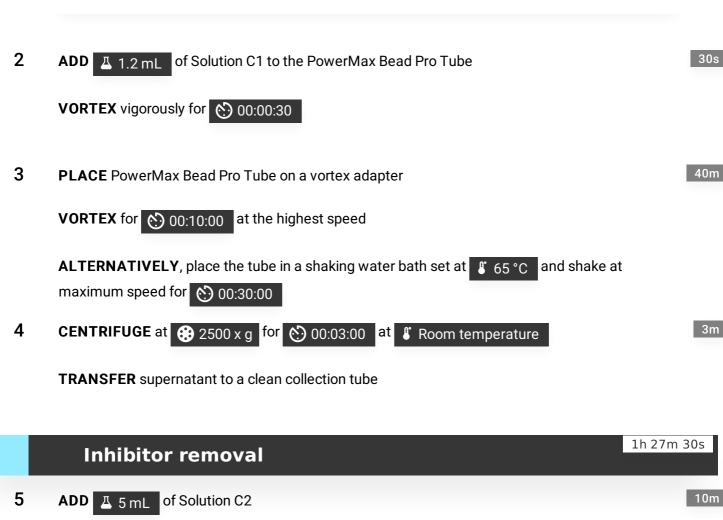
1 ADD A 15 mL of PowerBead Solution to a PowerMax Bead Pro Tube

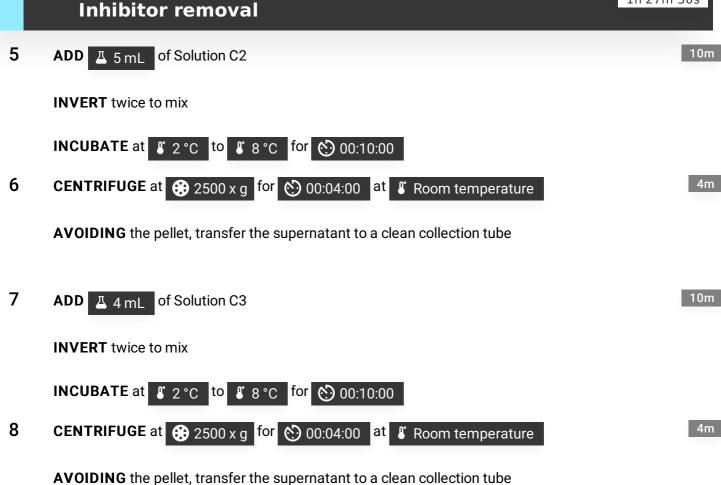
1m

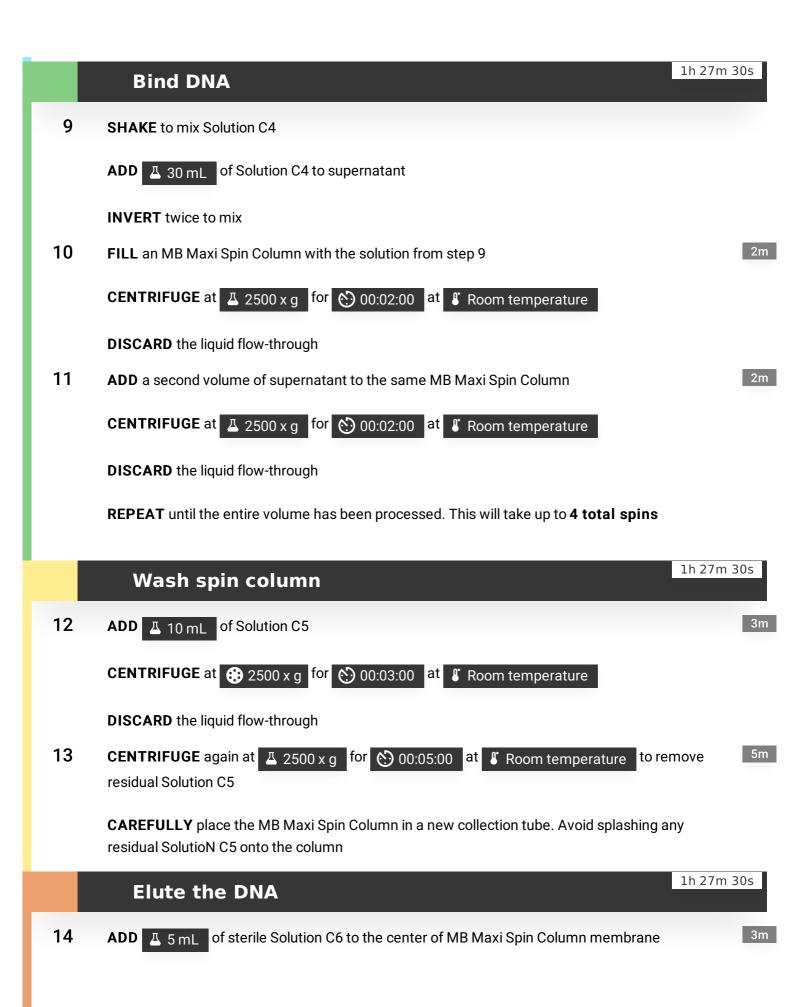
VORTEX vigorously for 00:01:00

Note

Refer to manufacturer's Troubleshooting Guide before deciding on the amount of soil to process. However, higher volumes of sediment (10 g) have shown better detection rates for fish sedDNA.







CENTRIFUGE at ② 2500 x g for ③ 00:03:00 at ⑤ Room temperature

DISCARD the MB Maxi Spin Column

DNA is now ready for downstream applications