

ThermoFisher
SCIENTIFIC

Detection of Bacteria with Platinum Direct PCR Universal Master Mix

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The world leader in serving science

What Is Invitrogen™ Platinum™ Direct PCR Universal Master Mix?

A PCR master mix that offers:

- Direct amplification from a variety of samples
 - DNA purification not required prior to PCR
- Universal annealing temperature for different primer sets
- Co-cycling of targets of different lengths
- High yield, specificity, and sensitivity
- Efficient amplification of GC-rich sequences
- Multiplex PCR of up to 5 targets

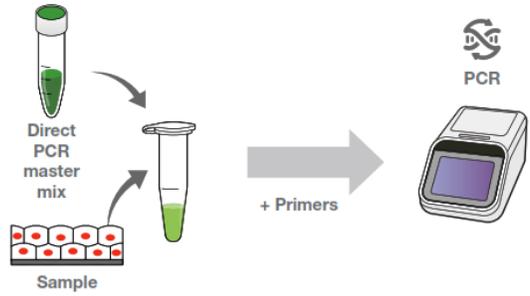


thermofisher.com/platinum-direct-pcr



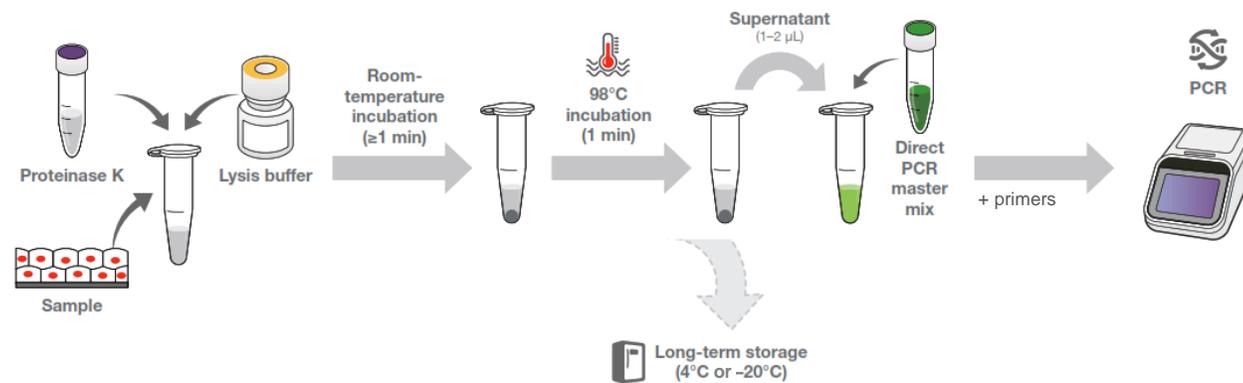
Master Mix Offers Two Protocols for Convenience

Direct protocol



- Quick
- Minimal steps
- Sample size critical

Lysis protocol



- Flexible
- Amenable to sample size variations
- Sample storage options at 4°C or -20°C

Bacteria Around Us and Their Detection by Direct PCR



Fruits/vegetables

Any bacterium, *Escherichia coli*



Hand swabs

Any bacterium, *E. coli*



Saliva

Any bacterium, *E. coli*



Buccal swabs

Any bacterium, *Bifidobacterium*, *Streptococcus salivarius*



Lake water

Any bacterium

PCR with primers for bacterial 16S rRNA gene and species-specific gene sequences

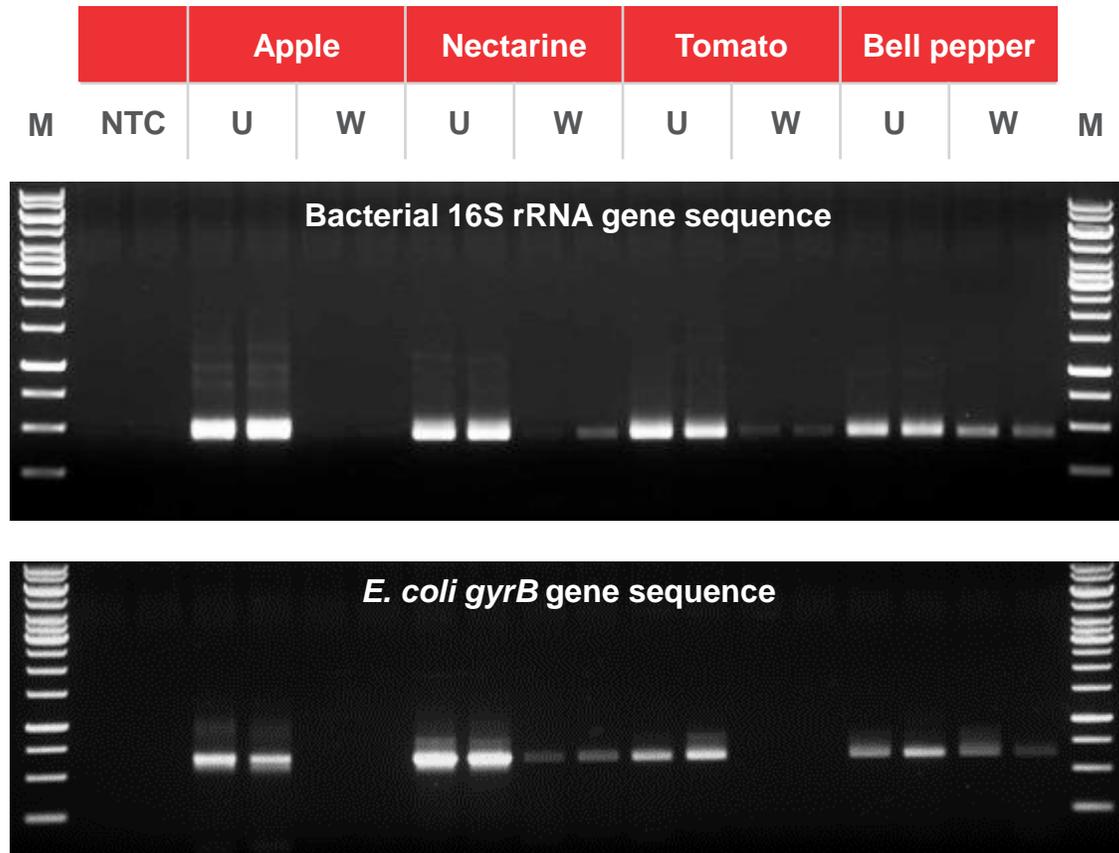
Liquid samples (saliva, lake water) followed the direct approach

- 1–5 μL added directly to the 50 μL PCR master mix

Swabs (from produce, hands, and mouth) followed the lysis approach

- Sample swiped with swab that had been soaked in the lysis buffer (included in the kit)
- Swab dipped again in the lysis buffer and drained; 5 μL of the buffer is then added to 50 μL master mix

Bacteria on Fruits/Vegetables

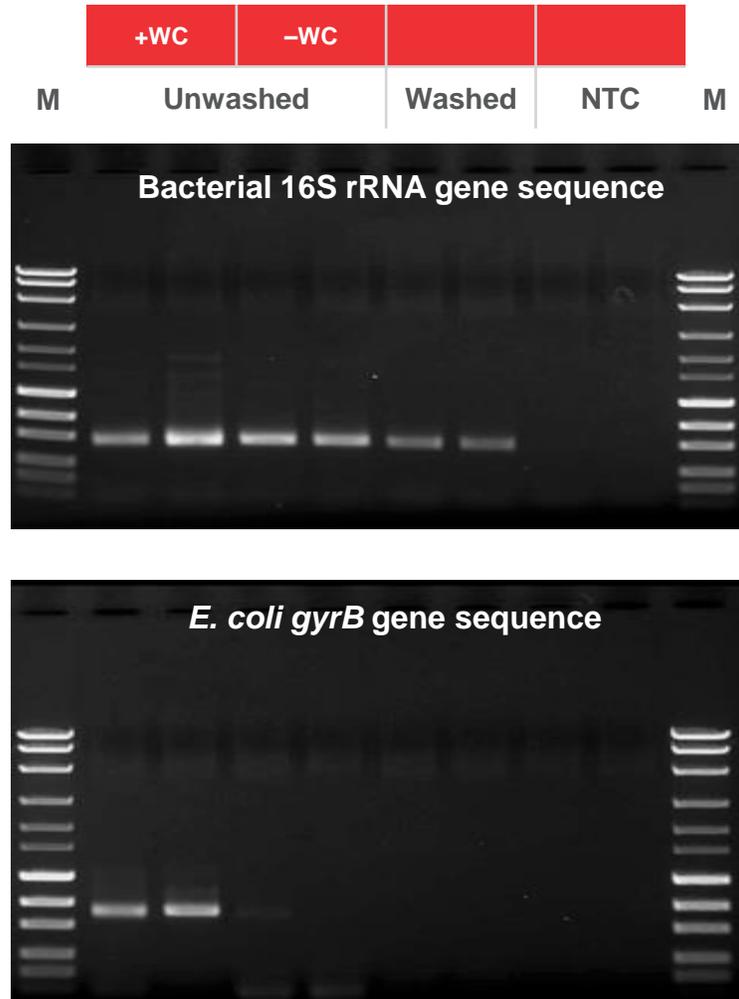


Detection of bacteria on fruits and vegetables by direct DNA amplification

- 0.45 kb bacterial 16S rRNA sequence
- 0.62 kb *E. coli gyrB* sequence
- Direct PCR with the lysis protocol of Platinum Direct PCR Universal Master Mix
- Swabs from unwashed (U) and washed (W) samples
- M = Thermo Scientific™ GeneRuler™ 1 kb DNA Ladder, NTC = no-template control (swab without sample)

Lower bacterial loads were detected by direct PCR after samples were washed.

Bacteria on Hands After Touching Surfaces

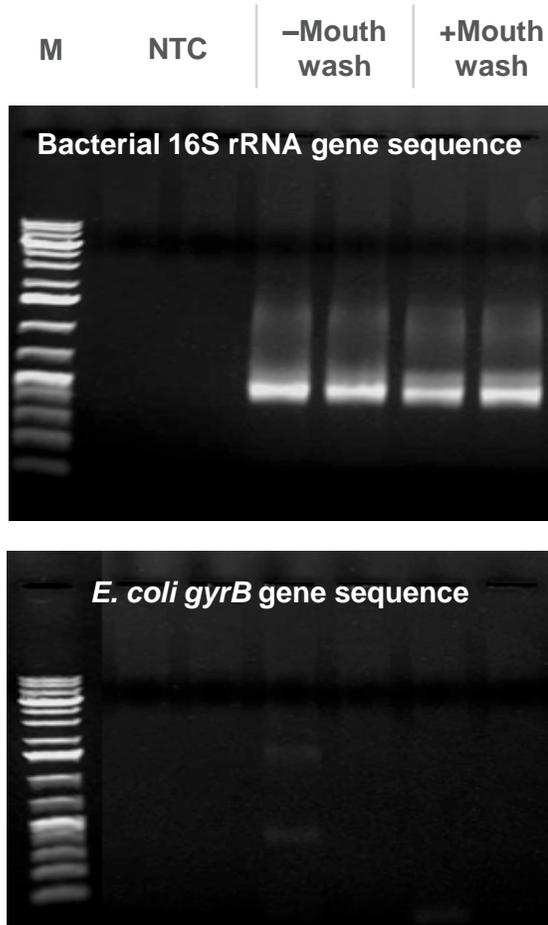


Detection of bacteria on hands by direct DNA amplification

- 0.45 kb bacterial 16S rRNA sequence
- 0.62 kb *E. coli gyrB* sequence
- Direct PCR with the lysis protocol of Platinum Direct PCR Universal Master Mix
- Swabs from hands that had touched bathroom surfaces (+WC) or not (-WC)
- M = GeneRuler 1 kb DNA Ladder, NTC = no-template control (swab without sample)

Less *E. coli* was detected by direct PCR on hands that had been washed after touching bathroom surfaces.

Resident Bacteria in Saliva

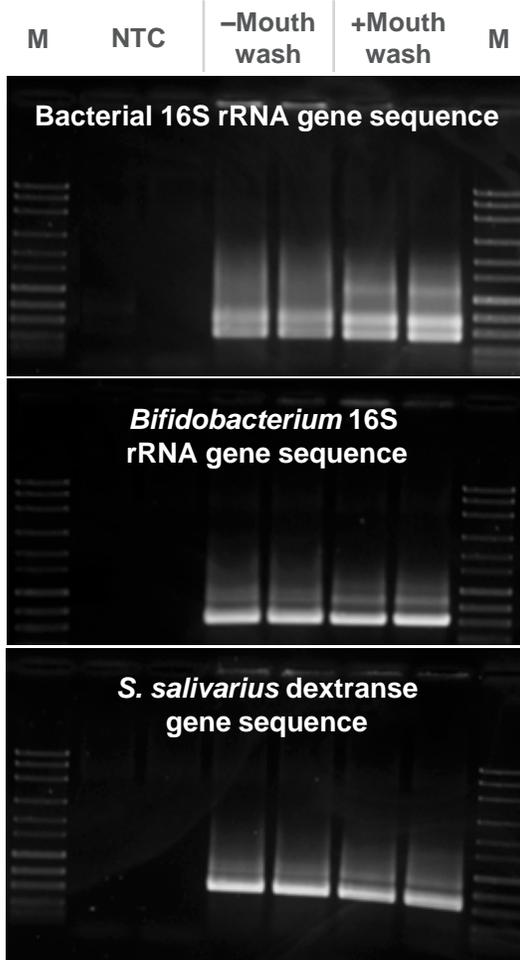


Detection of bacteria in human saliva by direct DNA amplification

- 0.45 kb bacterial 16S rRNA sequence
- 0.62 kb *E. coli gyrB* sequence
- Direct PCR with the direct protocol of Platinum Direct PCR Universal Master Mix
- Saliva from individuals who had used mouthwash or not
- M = GeneRuler 1 kb DNA Ladder, NTC = no-template control (nuclease-free water)

Bacteria (may have been dead or alive) but no *E. coli* (negative control) in saliva were detected by direct PCR.

Indigenous Bacteria in Mouth

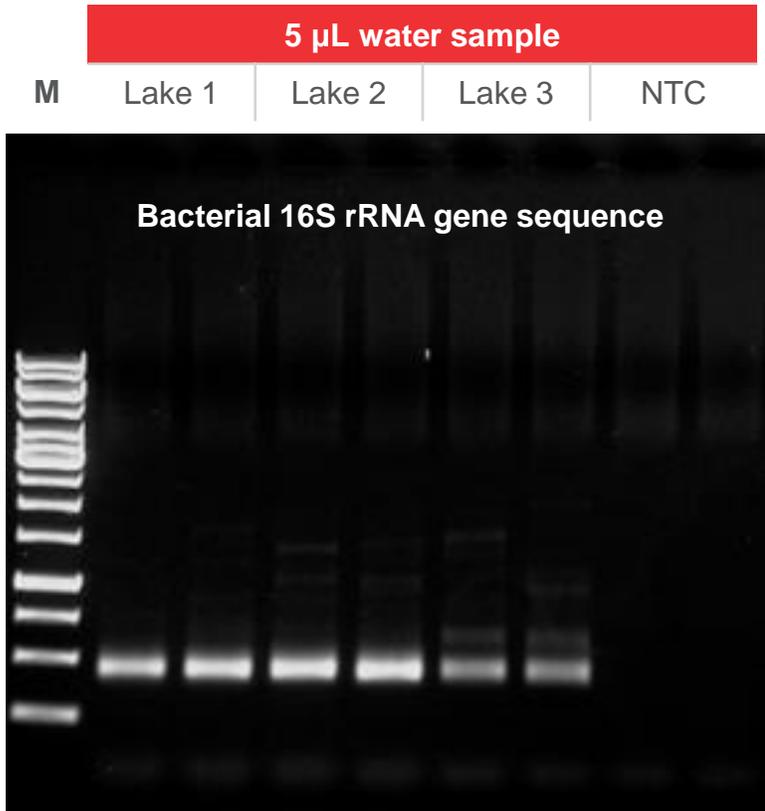


Detection of bacteria from buccal swabs by direct DNA amplification

- 0.45 kb bacterial 16S rRNA sequence
- 0.55–0.56 kb *Bifidobacterium* 16S rRNA sequence
- 0.5 kb *S. salivarius dex* sequence
- Direct PCR with the lysis protocol of Platinum Direct PCR Universal Master Mix
- Buccal swabs from individuals who had used mouthwash or not
- M = GeneRuler 1 kb DNA Ladder, NTC = no-template control (swab without sample)

Indigenous bacterial species (may have been dead or alive) of the mouth were detected by direct PCR.

Resident Bacteria in Lake Water



Detection of bacteria in lake water by direct DNA amplification

- 0.45 kb bacterial 16S rRNA sequence
- Direct PCR with the direct protocol of Platinum Direct PCR Universal Master Mix
- Water from three freshwater lakes
- M = GeneRuler 1 kb DNA Ladder, NTC = no-template control (nuclease-free water)

Bacteria in lake water were detected by direct PCR.



Species-specific PCR is a useful method to detect bacteria.



Direct PCR offers convenience and speed by circumventing the need for DNA purification from samples.



Platinum Direct PCR Universal Master Mix can be used for species-specific PCR with a variety of samples.

Ordering Information

| Description | Size | Cat. No. |
|---------------------------------------------|----------------------|-----------|
| Platinum Direct PCR Universal Master Mix | 100 reactions | A44647100 |
| | 500 reactions | A44647500 |
| | 4 x 500 reactions | A44647200 |



Request a sample* at thermofisher.com/platinum-direct-pcr

* Terms and conditions apply.



Thank you

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