11-0816-0000-00: ChipGenie® edition P starter kit 3 – DNA extraction from whole blood

Intended use

This procedure describes the generation of genomic DNA out of blood samples.

Tools & ingredients

ChipGenie edition P instrument

Rhombic Chamber Chips (Fluidic 172: 120 µl chamber volume) either with or without pre-stored, dried magnetic beads (10x)

Male Mini Luer plugs, green (40x)

Male Mini Luer connectors, green (20x)

Mini Luer to pipette adapters (20x)

Silicone tube (1 m)

ChipGenie® edition P starter kit 6 – buffer set for whole blood

The kits offer a convenient all-inclusive system to generate PCR-competent genomic DNA at a high quality within less than 25 minutes.

How ?

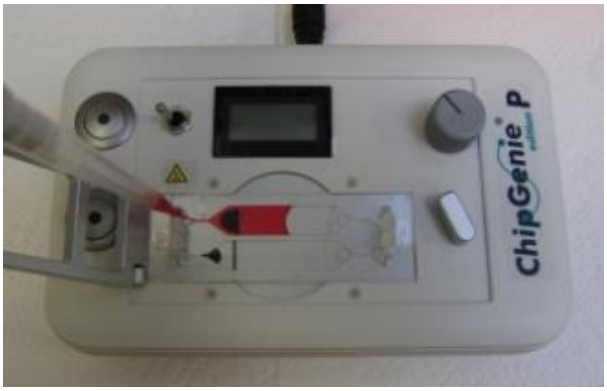
Magnetic beads inside a microfluidic chip bind the DNA from cells lysed inside the chip. After performing washing steps, pure DNA is extracted from the magnetic beads and then pulled out of the chip.

Application procedure:

Preparative steps:

1) One inlet and one outlet port of the chamber is closed with a ***mini Luer plug***.
2) Chip with or without pre-stored, dried magnetic beads is placed into the ChipGenie P instrument.
3) The frame is closed.
4) ***Mini Luer connectors*** are inserted into the open outlet ports of the chip.

Lysis:



1) 10 µl whole blood is incubated with 6 µl water and 90 µl ***mcs-lysis- and binding buffer*** for 5 min.
2) In case of a chip without pre-stored, dried magnetic beads, add 4 µl ***mcs-magnetic beads to the lysis reaction.***
3) The complete amount of reaction mixture is filled into one of the two rhombic chambers of the chip.
4) The beads are mixed for 5 min at room temperature with the help of the instrument-based magnet.

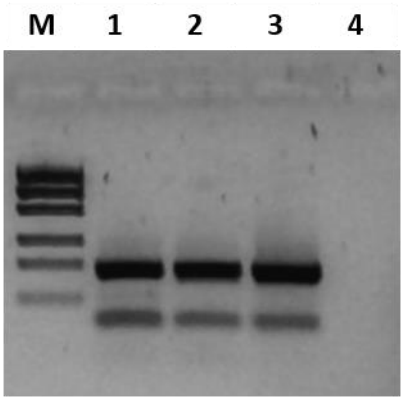
Washing steps:

1) The chamber is emptied with air by using a pipette.
2) The chamber is filled with 125 µl ***mcs-washing buffer 1*** and the magnet is actuated for 30 sec.
3) Repeat steps 1 + 2 two more times.
4) The chamber is emptied with air by using a pipette.
5) Fill the chamber with 125 µl ***mcs-washing buffer 2*** and the magnet is actuated for 30 sec.
6) Steps 4 + 5 are repeated two more times.
7) The chamber is emptied with air by using a pipette.
8) The chamber is filled with 125 µl ***mcs-washing buffer 3/ mcs-elution buffer*** and the magnet is actuated for 10 sec.

DNA elution:

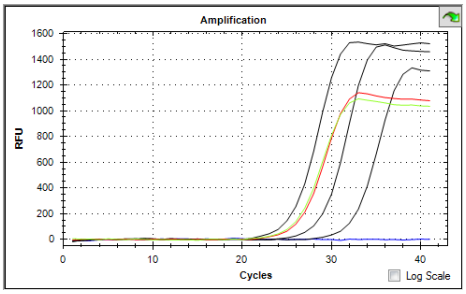
1) The chamber is filled with 125 µl ***mcs-washing buffer 3/ mcs-elution buffer***.
2) The temperature is set to 50 °C.
3) The magnet is activated for 5 min.
4) The mini-Luer-connector is disconnected from the outlet port.
5) The eluate is aspirated with the help of a pipette.

Results after application:



Agarose gel electrophoretic separation of single copy gene amplification products (PCR) of genomic DNA, which was isolated from whole blood samples.
Lanes from left to right: Size marker (M), products obtained from DNA after applification of a conventional purification method (lane 1; positive control), samples isolated with ChipGenie edtition P (lane 2 & 3), and non-template-control amplification (lane 4; NTC - PCR without DNA)

Real Time PCR of sequences of a single copy gene derived from human whole blood.
Description fo the graph: Dilution series of conventionally puried human DNA (black), product obtained from a conventionally purified DNA (red), samples isolated with ChipGenie edtition P (green), and non-template-control amplification (blue).



Kits and Applications:

Different kits are available for DNA isolation from whole blood specimens as well as from bacteria containing samples. The kits contain magnetic beads, discrete or combined lysis buffer, binding buffer, wash buffer, and elution buffer. It is, of course, possible to use your own buffer system with our chips and instrument.