11-0818-0000-00: ChipGenie® edition P starter kit 5 – DNA extraction from bacterial suspension

Intended use

This procedure describes the isolation of genomic DNA out of a variety of different samples including pathogen containing liquids.

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 7 – buffer set for bacterial suspension

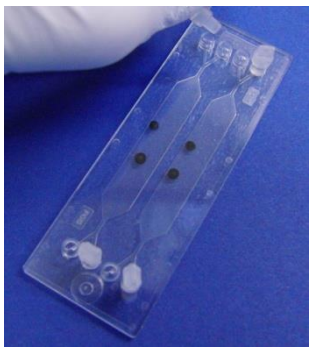
The kits offer a convenient all-inclusive system to generate PCR-competent genomic DNA at high quality within less than 30 minutes.

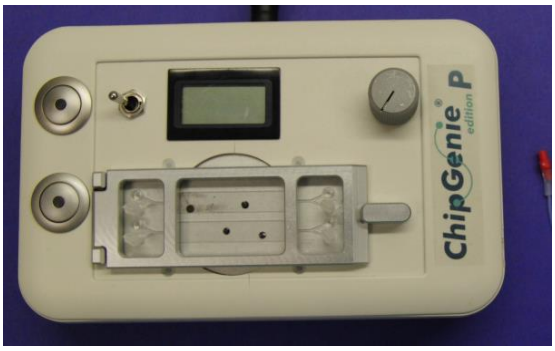
How ?

Magnetic beads inside a microfluidic chip bind to DNA from bacteria cells, which are 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:

Preparing steps:



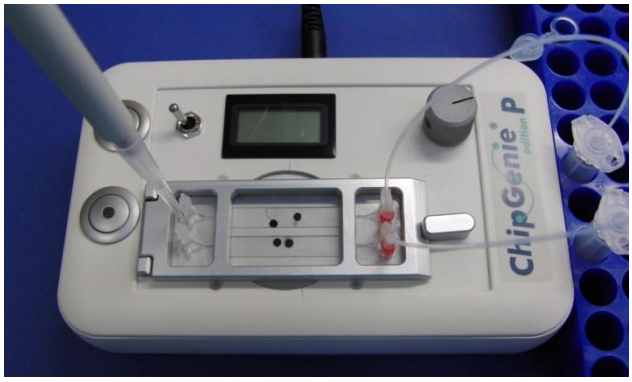


1) One inlet and one outlet port of the chip chamber is closed with a ***mini Luer plug***.
2) Chip with or without pre-stored, dried magnetic beads is placed into the ChipGenie P instrument.
3) The frame is closed.
4) ***Mini Luer connectors*** are inserted into the open outlet ports of the chip.

5) In case of a chip without pre-stored, dried beads, the ***mcs-magnetic beads*** are filled into the chip.

Lysis:

1) 30 µl bacteria suspension / sample are mixed with 100 µl ***mcs-lysis- and binding buffer***.
2) Add 4 µl ***mcs-magnetic beads.***
3) The complete amount of the reaction mixture is filled into one of the two rhombic chambers of the chip.
4) The beads are mixed for 15 min at 56°C by the instrument-based magnet.

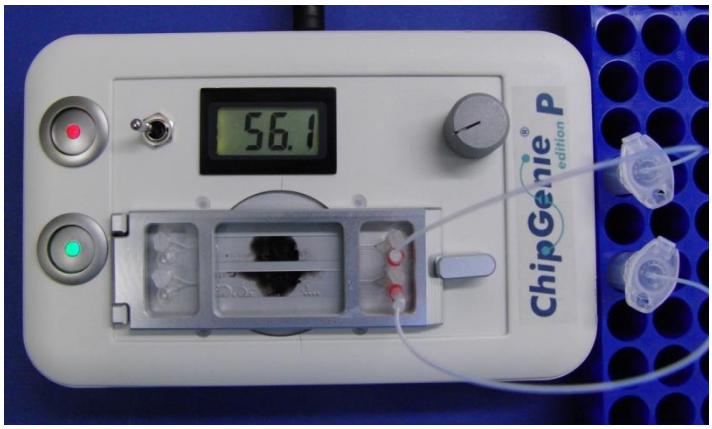


Washing steps:

1) The chamber is emptied with air by using a pipette.
2) The chamber is filled with 130 µl ***mcs-washing buffer 1*** and the magnet is actuated for 30 sec.
3) Steps 1 and 2 are repeated two more times.
4) The chamber is filled with 130 µl ***mcs-washing buffer 2*** and the magnet is actuated for 30 sec.
5) The chamber is emptied with air by using a pipette.
6) Steps 4 and 5 are repeated two more times.
7) The chamber is filled with 130 µl ***mcs-wash buffer 3/ mcs-elution buffer*** and the magnet is actuated for 10 sec.
8) The chamber is emptied with air by using a pipette.

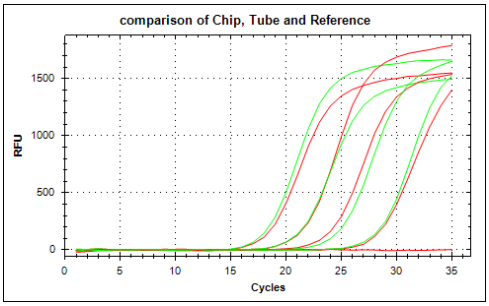
DNA elution:

1) The chamber is filled with 130 µl ***mcs-washing buffer 3/ mcs-elution buffer***.
2) The temperatur is set to 55 °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:

Real time PCR results of single copy gene amplification of DNA isolated from *Escherichia coli*: On-chip DNA purification with ChipGenie edtition P (green) *vs.* tube (red) with magnetic silica beads. The concentration of bacteria is given in table on the right side.



Concentration of bacteria	Method of isolation	Cq-value	STABW
2 Mio	Tube	16,8	0,09
	Chip	17	0,21
200.000	Tube	19,89	0,13
	Chip	20,36	0,25
20.000	Tube	23,63	0,18
	Chip	22,75	0,38
2.000	Tube	27,32	0,2
	Chip	26,91	0,2
NTC	-	-	-

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.