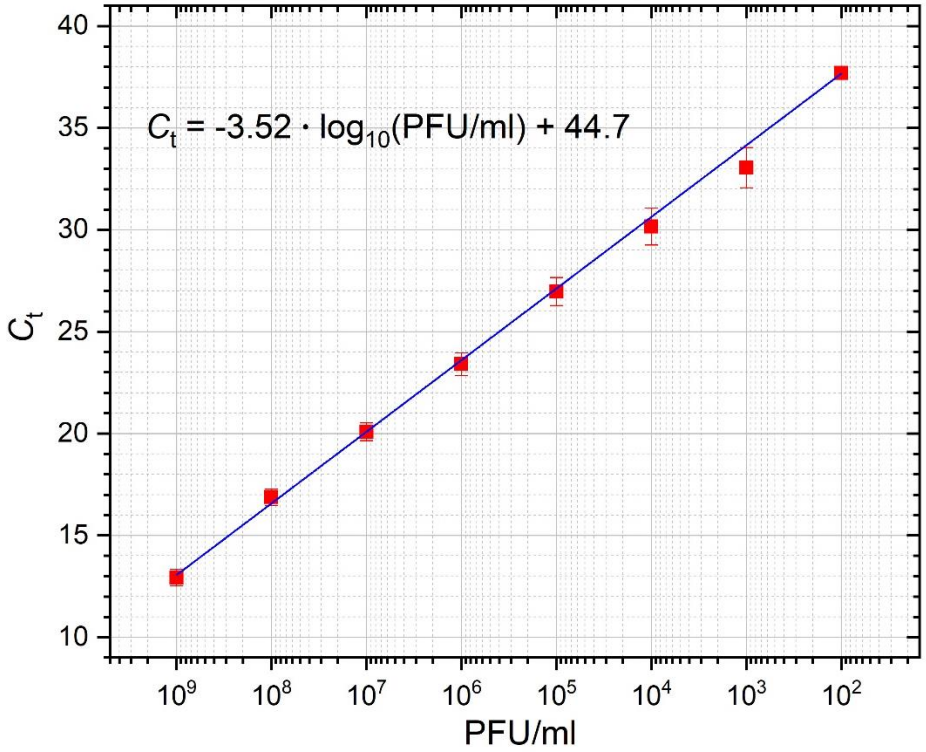

Fig. 1 Calibration of the PCR by serial dilution of the phage sample. There was no amplification in the negative control (PCR water). Error bars denote standard deviation. n=4

Table 1 Ct-values of the serial dilution of the phage sample. There was no amplification in the negative control (PCR water). Error bars denote standard deviation. n=4

PFU/ml	C_t-value
10^9	12.92 ± 0.41
10^8	16.88 ± 0.40
10^7	20.09 ± 0.43
10^6	23.41 ± 0.56
10^5	26.97 ± 0.68
10^4	30.16 ± 0.90
10^3	33.05 ± 0.98
10^2	37.71 ± 0.15
10^1	---
10^0	---

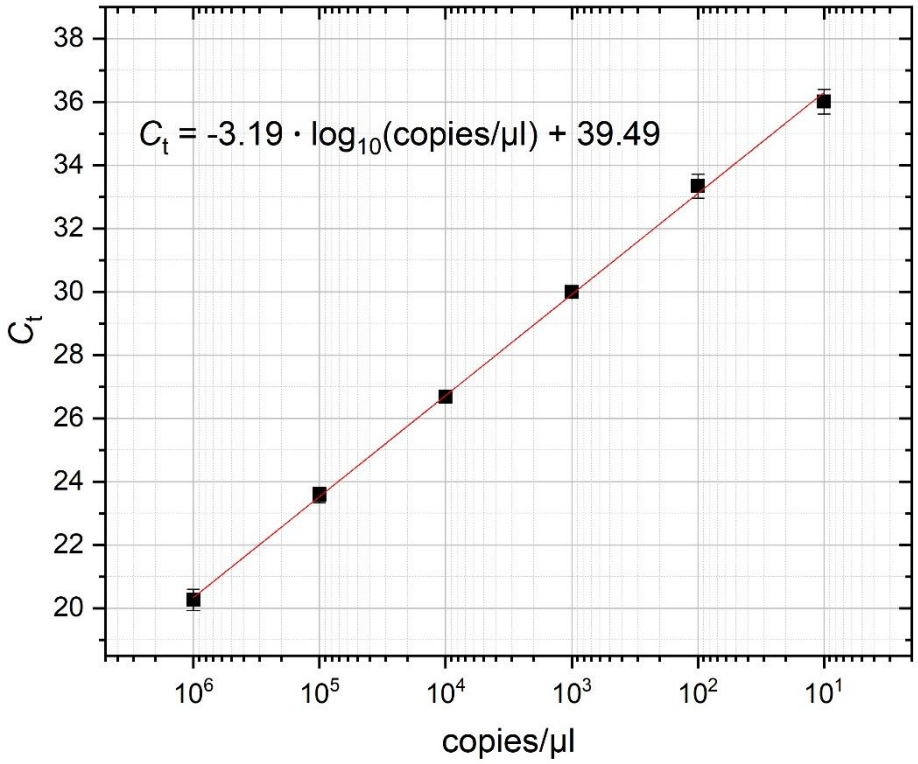

Fig. 2 Calibration of the PCR by serial dilution of the phage DNA sample. There was no amplification in the negative control (PCR water). Error bars denote standard deviation. n=3

Table 2 Ct-values of the serial dilution of the phage DNA sample. There was no amplification in the negative control (PCR water). Error bars denote standard deviation. n=3

Copies/µl	C_t-value
10^6	20.27±0.34
10^5	23.59±0.24
10^4	26.69±0.13
10^3	29.99±0.20
10^2	33.34±0.38
10^1	36.01±0.39

Optimization of the experimental conditions

In order to optimize the experimental conditions the following points should be considered:

Flow rate

As we didn´t determine the maximum flow rate of the experiment, a higher flow-rate could be possible within the given parameters. In order to further increase the flow rate, the following points should be considered:

- Increasing the voltage during FFE increases the drift velocity of the virus. However, this also increases the effect of Joule heating, which is why active cooling (e.g. using a Peltier element) should be used.
- The electrical conductivity of the sample medium also plays a major role in the heating of the chip. This should be as low as possible to prevent heating. It also reduces the electrophoretic effect and the relaxation effect.
- To take maximum advantage of the effect of FFFSE, the electrical conductivity of the sample medium should be as low as possible compared to the surrounding buffers resulting in a maximum electrical potential in the sample chamber.
- The pH value of the sample medium should ideally be as different as possible from the isoelectric point of the virus.

Purification by gel electrophoresis

In order to avoid any denaturing conditions and to achieve a uniform migration of molecules through the gel, the temperature should be constant. In addition, heat increases diffusion, which can result in fuzzy bands. Therefore an active temperature control (e.g. by means of a Peltier element) is recommended.