Electronic Supplementary Material (ESI) for Lab on a Chip. This journal is © The Royal Society of Chemistry 2015

## **Supplementary Information:**

1. Design and assembly of chip-compatible thermal cycler



## 2. Transient-state thermal simulation of microfluidic setup

Boundary Conditions:

- i. Bulk ambient temperature =  $25^{\circ}$ C
- ii. Initial temperature of metal block =  $30^{\circ}$ C
- iii. Total time of simulation = 1000sec
- iv. Free convection of air from all exposed surfaces =  $20W/(m^2.K)$
- v. Thermal resistance at block-chip interface =  $2.5e^{-4}$  K.m<sup>2</sup>/W

## vi. Materials:

- a. Aluminium metal heat block [Thermal Conductivity = 230 W/(m.K)]
- b. PMMA chip [Thermal Conductivity = 0.21 W/(m.K)]
- c. Water in reaction chambers [Thermal Conductivity = 40 W/(m.K)]



Figure S2 Transient time thermal simulation for temperature comparison between actual measurement aluminium block temperature and simulated chamber temperature

Table S1 Different PCR temperature phases and their required temperature offset on OpenPCR<sup>©</sup> software

PCR Phase	Required Chamber Temperature/°C	Estimated Chamber Temperature/°C	Temperature Offset for OpenPCR <sup>©</sup> Software/°C
Denaturation	94	89.7 ± 0.2	+4.3
Annealing	61	$59.1 \pm 0.1$	+1.9
Extension	72	$70.4 \pm 0.2$	+1.6



Figure S3 Comparison of heating/cooling rates of chamber temperature between actual measurements and simulated data