

Supplementary Table 1 – Contact angles of 5 μ l droplets on polymer surface as measured by a goniometer. Outcome is considered successful if flow arrests at microfluidic constriction in a Phase-Gate device composed of that material. Outcome is considered a failure if liquid leaks past microfluidic constriction into adjacent chamber.

Liquid	Solid	Contact Angle (deg)	Outcome
PBS	PDMS	104	Success
PBS	Parylene	80	Success
PBS	PS	75	Success
TRIZol	PDMS	78	Success
TRIZol	Parylene	32	Failure
TRIZol	PS	10	Failure
Lysis Buffer	PDMS	63	Success
Lysis Buffer	Parylene	34	Failure
Lysis Buffer	PS	28	Failure

Supplementary Table 2 – Primer sequences and annealing temperatures for the genes amplified via RT-PCR.

Gene	Annealing Temp ($^{\circ}$ C)	Direction	Sequence
P0	60	Forward	GACAATGGCAGCATCTACAAC
		Reverse	GCAGACAGACACTGGCAAC
ER α	57	Forward	CCTGATGATTGGTCTCGTCTG
		Reverse	GGCACACAAACTCCTCTCC
GR	60	Forward	TGACAACTTGACTTCTCTG
		Reverse	AAGACTCCATAATGACATCC