Non-contact single cell printing for single cell real-time PCR

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Summary
We present the application of the Single Cell Manipulator (SCM, [1]) for a proof-of-concept study about real-time single cell PCR in a commercial off-the-shelf thermocycler. The experiment features:

- Optical cell detection in dispenser
- Printing of single cells into PCR tubes
- Real-time PCR of single cells

Single cell analysis, including single cell PCR, is an emerging method of life sciences [2, 3]. Applications of the SCM technology include generation of clonal cell lines, heterogeneity studies, cancer and stem cell research.

Single Cell Printing
Manual B cell dispensing into a micro well plate revealed that 20 out of 23 droplets contained a single cell, one droplet contained two cells and two droplets were empty.

Conclusion
Non-contact printing of single cells is a versatile method to position cells individually on any uncovered substrate. Single cell PCR was shown as exemplary application.

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References