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# scRNA-Seq System

quick and reproducible encapsulation of single cells



10,000 barcoded single cell transcriptomes in 15 minutes

## High throughput single cell RNA-Seq

**The scRNA-Seq (single cell RNA sequencing) System from Dolomite Bio rapidly converts cell samples into thousands of barcoded single cell transcriptomes. It uses advanced microfluidic technology with the same reagents and beads described in the Drop-seq protocol to simplify adoption and increase reliability.**

### scRNA-Seq System Benefits:

- **Fast:** Generates ~10,000 single cell libraries in a 15 minute run
- **Reproducible:** Microfluidic droplet technology enables encapsulation of single cells
- **Flexible:** Second channel allows co-encapsulation of cells with oligonucleotide-barcoded beads and lysis buffer
- **Easy to use:** Off the shelf advanced microfluidic products
- **Automated:** Control system for automation and integrated droplet analysis
- **Premium service:** Installation and training included

The scRNA-Seq System processes a 500 µl cell suspension in 15 minutes. To achieve this it co-encapsulates single cells in 85µm (320 pl) droplets with an oligonucleotide-barcoded bead and lysis buffer.

After cell lysis, RNA is captured by the poly (dT) tail on each oligonucleotide on the bead.

After the sample is processed, the droplets are broken and after reverse transcription, the cDNA contains not only the transcript sequence but also the barcode (unique to that bead and thus cell) and UMI (unique molecular identifier, unique to each RNA molecule). The cDNA is then ready for amplification and sequencing via regular NGS.

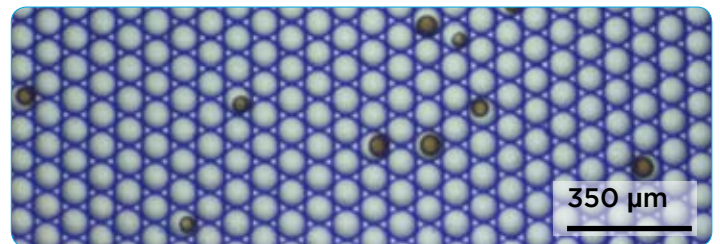
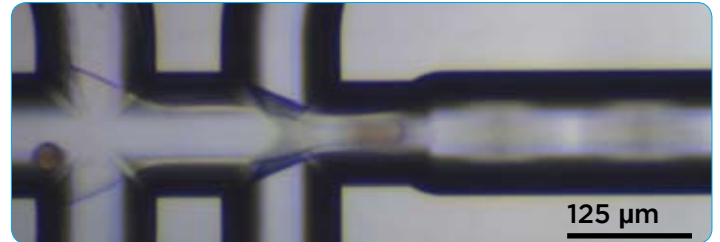
### scRNA-Seq system features:

The system includes scRNA-Seq chips (where the cells are encapsulated in droplets with beads and lysis buffer), plus the connectors and tubing required to use the chips with pressure pumps and flow sensors.

The Dolomite Bio glass scRNA-Seq chip offers unique benefits over standard PDMS chips, including higher throughput, long life, and ease-of-use.

Single-channel pressure pumps with integrated reservoirs allow a safe and flexible setup. The extremely smooth flow generates highly monodisperse droplets.

To encapsulate a sample, the user loads a cell suspension into an externally agitated microcentrifuge tube and loads a bead suspension into a sample loop via a syringe. The droplets are collected off-chip in an output reservoir at approximately 4,000 droplets per second. A high speed camera and microscope is included to allow droplet production to be visualized and quantified.

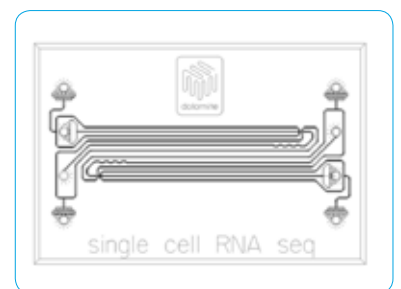
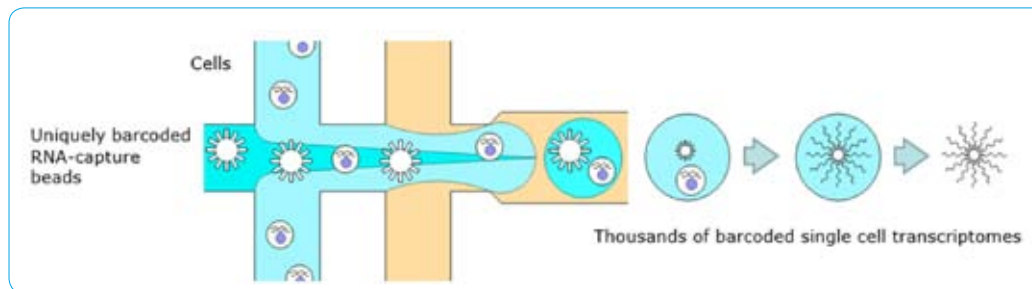


**Reference:** Macosko, Evan Z., et al. "Highly Parallel Genome-wide Expression Profiling of Individual Cells Using Nanoliter Droplets." Cell 161.5 (2015): 1202-1214.

### A scRNA-Seq system includes:

- **Hardware** (3 pressure pumps, 3 flow sensors, temperature controller, cell agitator, injection valve, microscope and camera)
- **System controller and software** (Flow Control Centre Advanced enables automation of hardware and droplet analysis)
- **Accessories & consumables** (microfluidic chips, connectors, valves and pipes)
- **Reagents** (biocompatible emulsion oil and surfactant)
- **Installation & training**

For more information and to watch a video on the scRNA-Seq System visit <http://www.dolomite-bio.com/product/rna-seq-system/>



**Above left:** Tens of thousands single cell libraries can be rapidly prepared using the Dolomite Microfluidic Droplet System  
**Above right:** Drawing of Single Cell RNA-seq Chip



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