AccuraSCOPE® Single Cell Genome and Transcriptome Library Kit - Sequencing DNA and RNA from same single cells

Simultaneous sequencing of genome and transcriptome at single cell level can not only unveil genetic heterogeneity, but also reveal the effect of genetic variants on gene expression. The AccuraSCOPE® Single Cell Genome and Transcriptome Library Kit enables scalable sequencing library construction of both genome DNA and mRNA from same single cells.

Using a plate-based approach and Singleron's AccuraCell® single cell barcoding technology, the genomic DNA and mRNA from each single cell can be tagged with a unique cell barcode and pooled for further library construction and sequencing, saving time, efforts, and costs. The single cell multi-omics DNAseq and RNAseq libraries from tens to hundreds cells can be prepared within one workday and at a fraction of the normal cost.

Highlights

- **Scalability:** hundreds of single cell libraries for genome and transcriptome constructed in one run
- **Ease of use:** convenient plate-format for manual or automated processing
- **Cost-effectiveness:** high quality single cell DNAseq and RNAseq libraries at a fraction of normal cost

Workflow

A key component of the product is a 96-well or 384-well plate that contains AccuraCell single cell barcoding beads in each well. Single cells are dispensed into the wells and lysed; and mRNA is captured by the oligo-dT on the barcoding beads. Afterwards, the supernatant, which contains gDNA, is transferred to another plate with a multi-channel pipet or automated liquid handler. The plate containing gDNA will be subject to whole genome amplification. In the subsequent DNA library construction step, a unique index will be added to each well to barcode gDNA libraries from different cells. In parallel, the plate containing mRNA will be subject to reverse transcription. The cDNA from each single cell will obtain a unique cell barcode and can be pooled together for subsequent cDNA amplification and sequencing library construction steps. The pooled single cell DNAseq and RNAseq libraries can be sequenced together and distinguished by the unique cell barcodes. The workflow is illustrated in **Figure 1.**

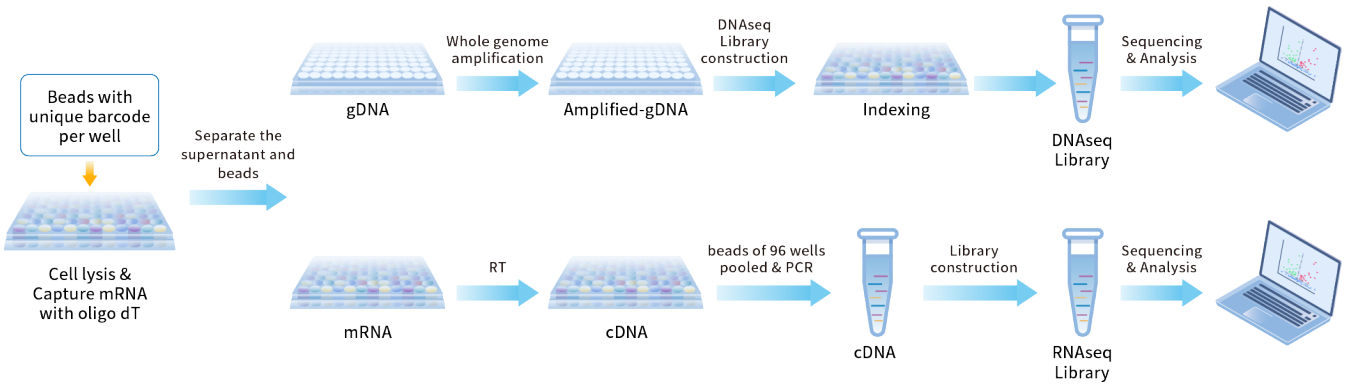

Figure 1. Overview of the AccuraSCOPE Single Cell Genome and Transcriptome Library Construction Workflow.

High Reproducibility

High technical reproducibility is critical in single cell sequencing so that real cellular heterogeneity can be detected. Single cells from 3T3 cell line were dispensed onto wells on AccuraSCOPE 96-well plate to generate DNAseq and RNAseq libraries. The libraries were then sequenced to about 1Gb /cell (PE150, Illumina NovaSeq), and data were analyzed with CeleSCOPE. The DNAseq results from three randomly selected cells show high consistency in the copy number gain and loss detected **(Figure 2A).** Similarly, the RNAseq results from 6 randomly selected cells also demonstrate high correlation in their gene expression profiles **(Figure 2B).**

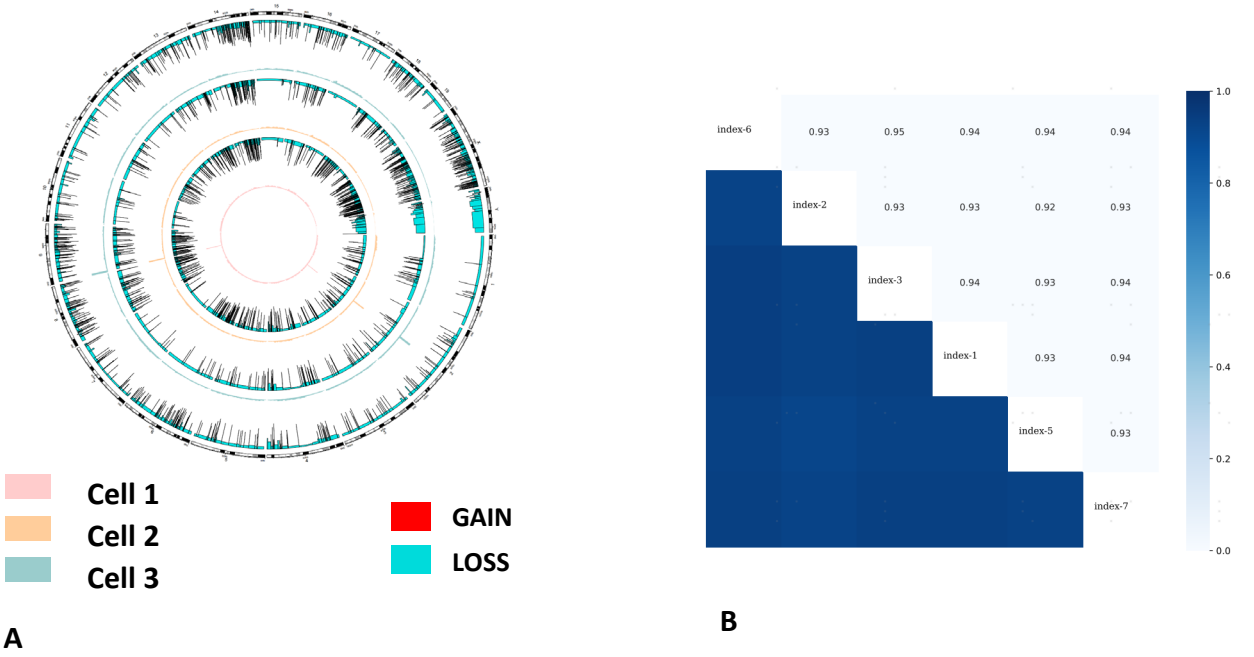

Figure 2. The single cell DNAseq and RNAseq results from the same 3T3 cell line cells show high consistency.

Ordering information:

Product	96-well	384-well
	96-well plate, 1 plate	384-well plate, 1 plate
AccuraSCOPE Single Cell Genome and Transcriptome Library Kit	1403364	1403366

Singleron Biotechnologies GmbH
Phone: +49 (0) 221 16824777
Address: Gottfried-Hagen-Strasse 60, 51105 Cologne, Germany

Email: info@singleron.bio Website: www.singleron.bio