**Table1 :** Summary of single-cell multi-omics technologies in recent years

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| Method | Technology | Data types provided | Resolution | References |
| Co-detection and sequencing of genes and transcripts | Microchannel-based microfluidics | DNA, mRNA sequence | Single cell | [24] |
| G&T-seq | Plate-based sequencing | DNA, mRNA | Single cell | [25] |
| smart-seq2 | Plate-based sequencing | DNA, mRNA | Single cell | [16] |
| DR-seq | Mouth-pipetting sequencing | DNA, mRNA | Single cell | [26] |
| SIDR-seq | Microplate-based sequencing | DNA, mRNA | Single cell | [27] |
| TARGET-seq | Plate-based sequencing | Genomic and coding DNA, mRNA | Single cell | [28] |
| Perturb-seq | Droplet-based microfluidics sequencing | sgRNA, mRNA | Single cell | [72] |
| scM&T-seq | Bead-based sequencing | DNA methylation, mRNA | Single cell | [31] |
| scMT-seq | Micro-pipetting sequencing | DNA methylation, mRNA | Single cell | [32] |
| scTrio-seq | Pipette cell-picking sequencing | DNA, RNA, DNA methylation | Single cell | [33] |
| scNOME-seq | Plate-based sequencing | DNA methylation,chromatin accessibility | Single cell | [35] |
| scNMT-seq | Plate-based sequencing | Chromatin accessibility; DNA methylation; transcriptome | Single cell | [36] |
| scNOMeRe-seq | Plate-based sequencing | Chromatin accessibility; DNA methylation; transcriptome | Single cell | [37] |
| ScCOOL-seq  | Plate-based sequencing | Chromatin status, nucleosome, positioning, DNA , methylation, copy number variation (CNV) and ploidy | Single cell | [38] |
| scCUT&Tag pro | Droplet-based microfluidics sequencing | Histone modifications, proteins | Single cell | [43] |
| PLAYR | Mass cytometry | mRNA, protein | Single cell | [44] |
| CITE-seq | Droplet-based microfluidics sequencing | mRNA, protein | Single cell | [45] |
| REAP-seq | Droplet-based microfluidics sequencing | mRNA, protein | Single cell | [46] |
| DBiT-seq | Microchannel-based microfluidics | mRNA, protein | Spatial, 10–50 μm | [49] |
| Slide-Seq | Microarray-based sequencing | mRNA | Spatial, 10 μm | [50] |
| Slide-seqV2 | Microarray-based sequencing | mRNA | Spatial, 10 μm | [51] |