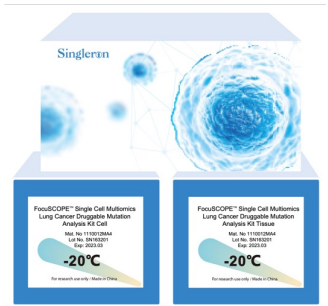


# FocuSCOPE® Single Cell Multi-omics Lung Cancer Druggable Mutation Analysis Kit

Lung cancer is one of the most frequently diagnosed cancers and the leading cause of death for malignancy. Targeted drug therapies upon testing the presence of driver mutations could dramatically change the outcome of the disease.

FocuSCOPE® Single Cell Multiomics Lung Cancer Druggable Mutation Analysis Kit is the one and only commercially available solution which detects simultaneously lung cancer cell specific mutations and the whole transcriptome at single cell level.



## Highlights

### Comprehensive information linking genetic variation to gene expression

- Simultaneous detection of lung cancer druggable mutation sites and whole transcriptome

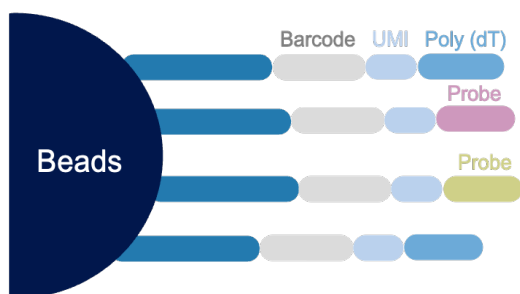
### High mutation coverage:

- Main druggable mutations in the lung cancer tumors are covered.

### Easy workflow:

- No instrument is necessary. Straightforward process to analyze thousands of cells in parallel

## Principle

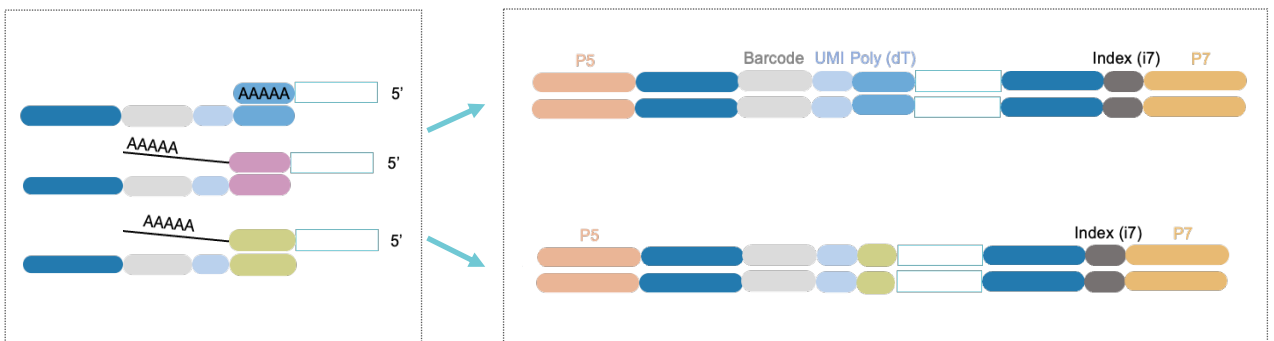


FocuSCOPE® Single Cell Multiomics Lung Cancer Druggable Mutation Analysis Kit uses specially designed Barcoding Beads that contain two types of oligonucleotides (Figure 1).

The first type of oligonucleotides contain Illumina sequencing primer sequence, a unique cell barcode for identifying the cell origin of the RNA, a unique molecular index (UMI) for cDNA quantification, poly (dT) sequence for capturing mRNA and the second type of oligonucleotides contain probes designed specifically to capture genes that harbor druggable mutations (Figure 1).

Following reverse transcription and enrichment of targeted regions, two separate libraries are obtained and combined for sequencing (Figure 2).

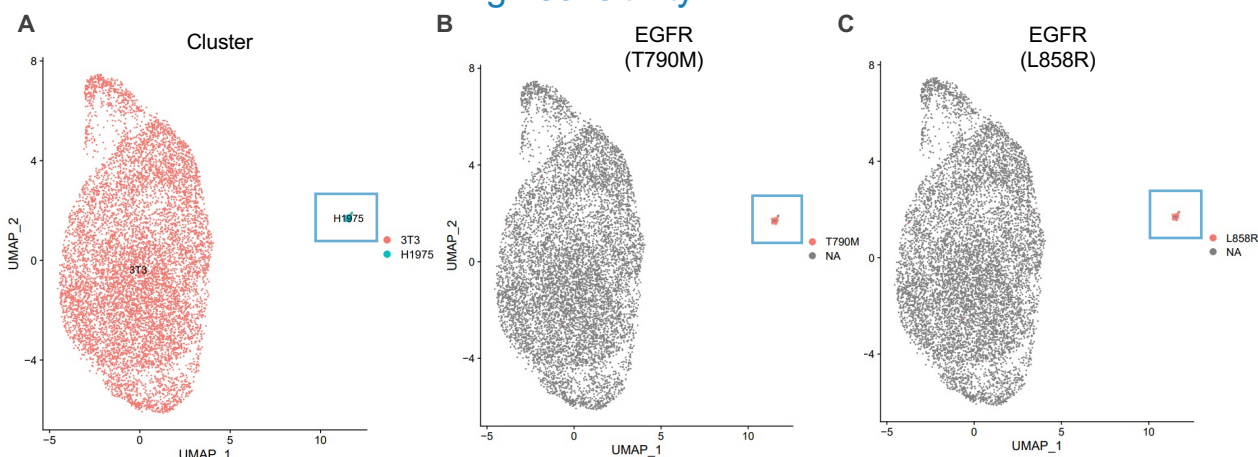
**Figure 1:** Specially designed Barcoding Beads allow capturing simultaneously both whole transcriptome and cancer cell specific mutations.



**Figure 2:** Barcoding Beads capture both whole mRNA and lung cancer druggable mutation sites. Following reverse transcription and target gene enrichment, two separate libraries are obtained that can be combined for sequencing.



## Multiple druggable mutations within the same cell can be detected with high sensitivity



**Figure 3.** Mouse 3T3 and human H1975 cell lines were mixed in 100:1 ratio. Mixed samples were loaded to SCOPE-chip® and processed by FocuSCOPE® Single Cell Multiomics Lung Cancer Druggable Mutation Analysis Kit. 9032 cells are captured in which 8958 are identified as 3T3 and 74 are identified as H1975 (A). H1975 cells contain T790M and L858R mutations and 3T3 cells do not contain aforementioned mutations. As shown in UMAP plots, mutations are detected in 71 out of 74 cells which resulted in 95% detection rate (B-C).

Gene	Exon	Drugs	Targeted Region
EGFR	18-21	Dacomitinib	Exon 19 deletion & Exon 21 L858R alteration
		Afatinib	Exon 19 deletion & Exon 21 L858R alteration
		Osimertinib	T790M
KRAS	2- 4	pan-KRAS inhibitor	G12,G13
		MRTX849	G12C
		TNO155	G12C
PIK3CA	10 and 21	Omipalisib	E542K, E545K, E546, M1004I
BRAF	15	Dabrafenib	V600E
		Trametinib	V600E
TP53	4-6	APR-246	R175H, R248Q

**Table:** Lung cancer panel genes and drugs with target mutations are shown.

### Application areas

#### Drug testing and development

- Analyze the change in cells that contain mutations ratios before and after drug treatment



#### Systematic insights into the disease mechanisms and tumor heterogeneity

- Obtain genetic information and gene expression data simultaneously



#### Evolutionary Biology

- Monitor the evolutionary path of different driver mutations



### Ordering information

Product	Cell	Tissue
		2 RXNs / 16 RXNs
FocuSCOPE® Single Cell Multiomics Lung Cancer Druggable Mutation Analysis Kit	4122111/ 4122112	5122111/5122112
FocuSCOPE® Single Cell Multiomics Lung Cancer Druggable Mutation Analysis Kit (Matrix)	4122121/4122122	5122121/5122122