

Singleron

From single cell multi-omics
to precision medicine



Unique Single Cell Multi-omics
Solutions.

From Sample to Sequencing-ready Library.
Manual and Automated.

Comprehensive Data Analysis and Interpretation Tools.

Challenge your limits in Single Cell Experiments



Company

- Experts in single cell sequencing
- Young, dynamic, and fast-growing company
- Subsidiaries in Germany, China, the United States and Singapore
- ~1000 customer organizations worldwide
- ~300 million single cells sequenced



Mission

- Overcoming limitations in Single Cell Analysis
- Detecting disorders at very early stages
- Paving the path for novel diagnostic approaches
- Speeding up drug development
- Translating biological insights to better medical practice



Solution

- One-Stop-Shop for multi-omics single cell analysis and clinically relevant insights
- Instruments, kits, software, and database to address a large array of different applications
- Comprehensive sequencing service with expert support



Technology

- Proprietary microfluidics technology
- Platform technology including hardware, software, kits, assays, and data sciences
- Covered by 100+ patents and patent applications
- Validated with 450+ different sample types



Cologne, Germany:

- Service + Demo Lab
- Product Development
- EMEA Market



Connecticut, US:

- New Technology Development



Suzhou, China:

- Instrument Development and GMP Manufacturing
- Software and Database Development



Singapore:

- Service + Demo Lab
- APAC Market
- Data science



Nanjing, China:

- Reagent Development and GMP Manufacturing
- Accredited Clinical Laboratory



Figure 1. Singleron has more than 600 employees on three continents working on product development, manufacturing, clinical translation, and commercialization.

Single Cell Multi-Omics - A new Dimension of Knowledge

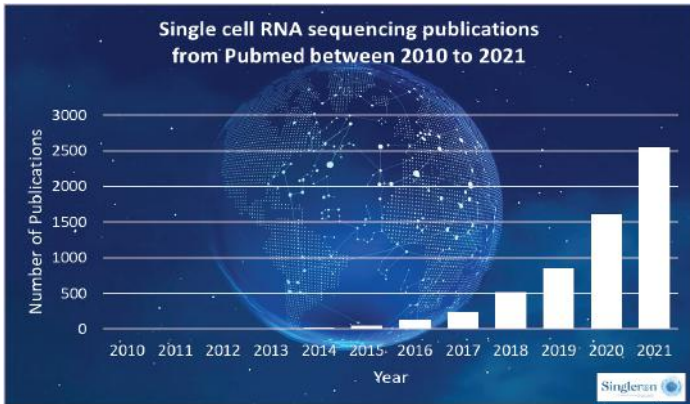


Figure 2: The rising importance of single cell RNA sequencing in research has been exponentially increasing in the past decade.

- Single cell RNA sequencing is a fast-developing and powerful technology which enables high throughput transcriptome profiling of individual cells.
- Single cell resolution provides insight into the heterogeneity of a cell population and its microenvironment.
- By combining single cell whole transcriptomic profiling with target-specific RNA-seq, proteomics or epigenomics dimensions, Singleron offers multi-omics solutions to a wide range of applications.

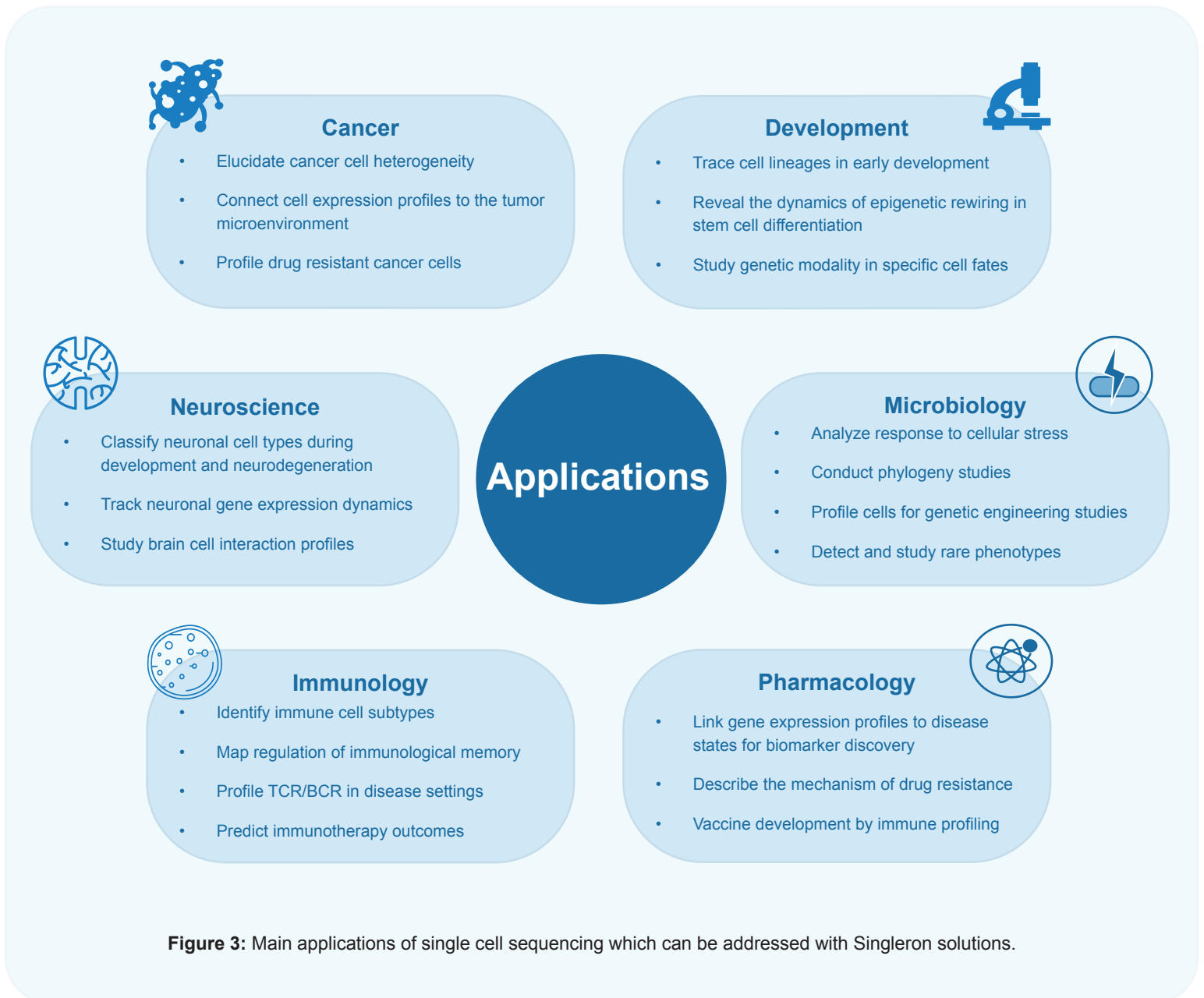


Figure 3: Main applications of single cell sequencing which can be addressed with Singleron solutions.

Singleron offers a unique **One-Stop-Shop solution** for preservation and dissociation of tissue samples such as biopsies; and subsequent single cell partition, barcoding, and library construction of up to 120,000 cells using one microfluidic chip. Dedicated single cell data analysis software and database for result interpretation are also provided.

Consumables



SCOPE

- Single cell transcriptome and multi-omics solutions
- Profiling up to 30,000 single cells per sample
- Unique tissue processing solutions

Instruments

Matrix



PythoN



Matrix

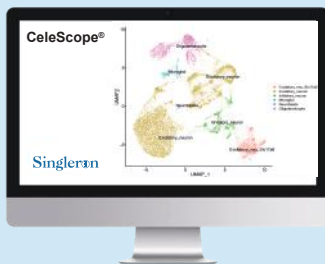
- Automated single cell processing platform

PythoN

- Automated tissue dissociation

Product Portfolio

Software



CeleScope® software

- Single cell sequencing data processing software
- QC report and feature-barcode matrices
- Expression matrix generation

Clinical Database



SynEcoSys® database

- Accurate cell type annotation
- Data mining for clinically focused interpretation
- Intuitive, easy-to-use interface

Single Cell Sequencing Service



Tissue



Data Analysis

Sequencing Service

- Covers all steps from tissue to bioinformatic analysis
- Free initial consultation
- Experience with 400+ different tissue types including challenging tissues such as needle biopsies

SCOPE Technology – Complete Workflow from Sample to Analysis



Highly efficient tissue processing solutions, easy-to-use microfluidic chip and the comprehensive data analysis tools are major innovations of Singleron's proprietary technologies and contribute to high success rate of the single cell sequencing workflow.

- Protected by more than **100 patents** and patent applications
- Comprise unique products for stabilization and dissociation of tissues
- Partitioning **up to 120,000 cells on a chip** and subsequent lysis and RNA capture
- Sequencing library construction and data analysis of genetic materials at single cell level

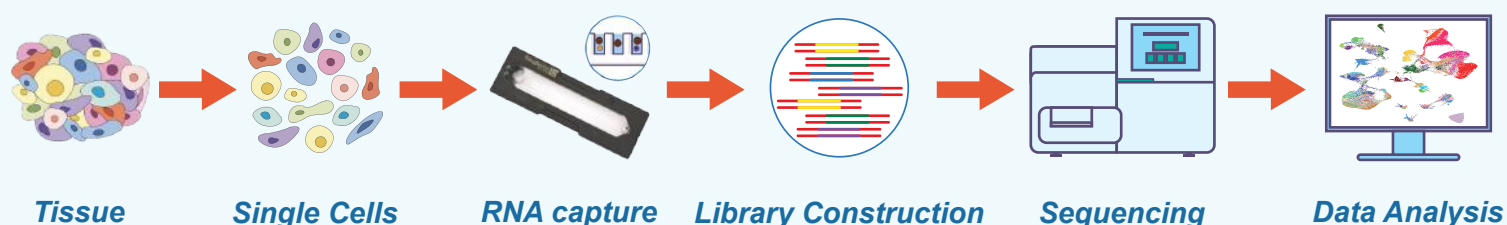


Figure 4: Singleron's single cell sequencing solutions cover each step of the workflow, from tissue collection, dissociation, single cell partition, library construction, to data analysis and data mining.

sCellLiVE® Tissue Preservation and Dissociation Solutions



Unique advantages to ensure high success rate:

- Preservation of fresh tissues for up to 72 hours
- Effective dissociation of diverse tissue types while keeping cells alive
- Validation with 400+ sample types of different origins and sizes



Singleron PythoN® - Automated tissue dissociation

Reproducible and time-saving automation

- Cutting, grinding, heating and enzymatic dissociation of a broad range of tissues
- Processing of up to 8 samples in parallel
- High efficiency with as little as 10 mg of tissue

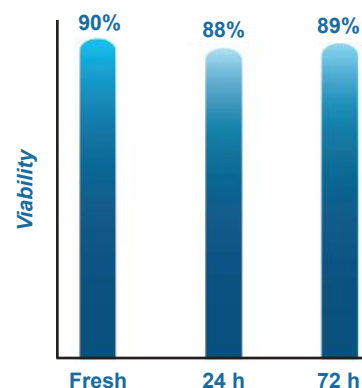


Figure 5: Cells from mouse brain tissues maintain about 90% viability after 24 hours and 72 hours storage in sCellLiVE Tissue Preservation Buffer at 4°C

Microfluidic SCOPE-chip® with flexible configurations



The SCOPE-chip® captures single cells by partitioning them into hundreds of thousands of microwells with a flexible choice of chip types to accommodate different applications (no instrument necessary).



- Standard chip captures 500-10,000 single cells
- High-density chip captures up to 30,000 cells per sample
- Large-well chip ensure analysis of cell sizes up to 100 µm

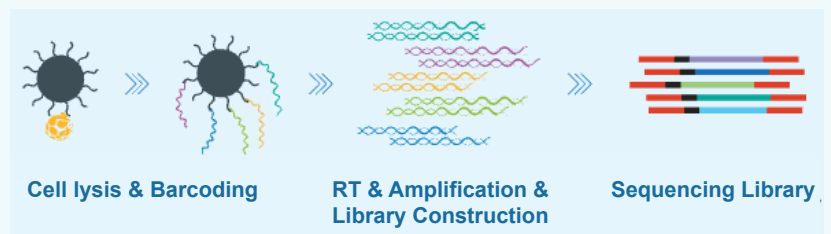
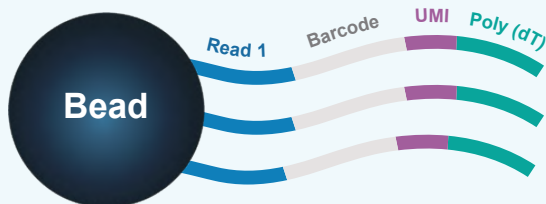
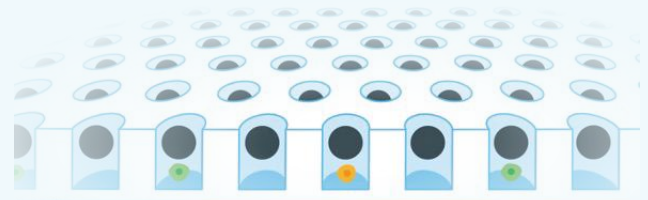
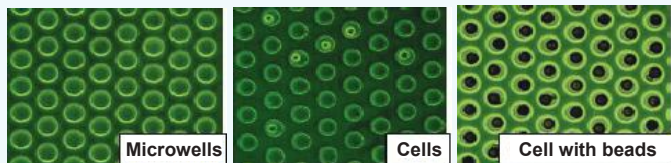
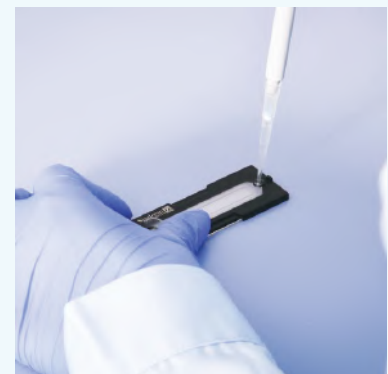


Figure 6: Single cells and barcoding beads are partitioned into the microwells (the chip can be visualized under the microscope). After cell lysis, the beads capture the RNA transcripts and render them with a unique cell barcode, as well as a unique molecular identifier (UMI). Following subsequent amplification and library construction steps, a single cell sequencing library that represents targeted analytes (mRNA, genetic variant, and more) can be sequenced to obtain complex genetic information from tens of thousands of cells, at single cell resolution.



Advantages of using our SCOPE-chip®

- Easy to use
- Can be operated manually with a P200 pipette
- No specialized instrument is required



Singleron Matrix® - Automated single cell processing platform



Reproducible and time-saving automation

- **Automatic** cell separation, cell lysis, and mRNA capture steps on SCOPE-chip within 40 minutes
- Processing of up to 2 SCOPE-chips simultaneously
- Easy-to-use interface
- High reproducibility



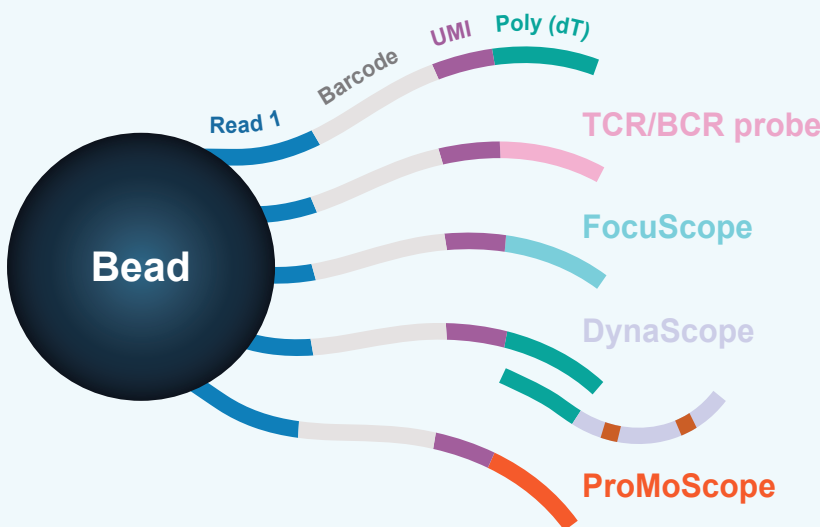
Singleron Matrix® ensures walk away level of automation

SCOPE kits – “All-In-One” single cell sequencing from Sample to Library Preparation



- Customizable barcoding beads can be specifically tailored to your research needs
- Applications go beyond the standard transcriptome profiling

A diverse set of single cell multi-omics kits



GEXSCOPE®

- Transcriptome profiling (cells, nuclei)
- Transcriptome profiling of yeast
- Transcriptome + V(D)J sequences

FocuSCOPE®

- Transcriptome + target sequences (mutations, gene fusions, viral sequences, etc.)

DynaSCOPE®

- Transcriptome with temporal resolution

ProMoSCOPE®

- Transcriptome + cell surface glycosylation quantification

Figure 8: Singleron’s unique technology offers diverse solutions for single cell sequencing and multi-omics.

SCOPE kits – “All-In-One” single cell sequencing from Sample to Library Preparation

Everything you need for the full workflow



- Tissue preservation and dissociation solutions
- SCOPE-chips and barcoding beads for RNA capture
- Reagents for cell lysis, RT, amplification and library construction

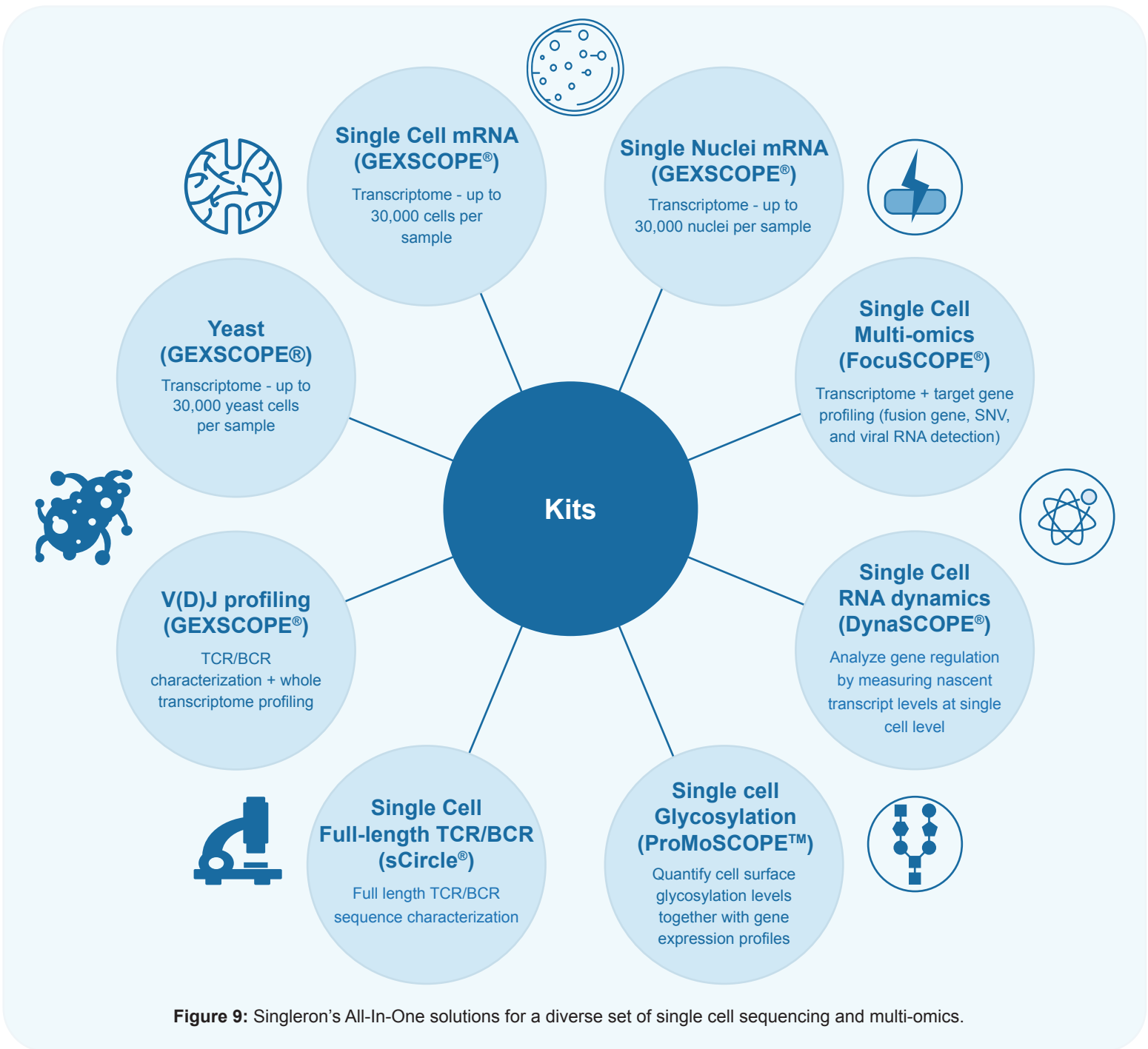
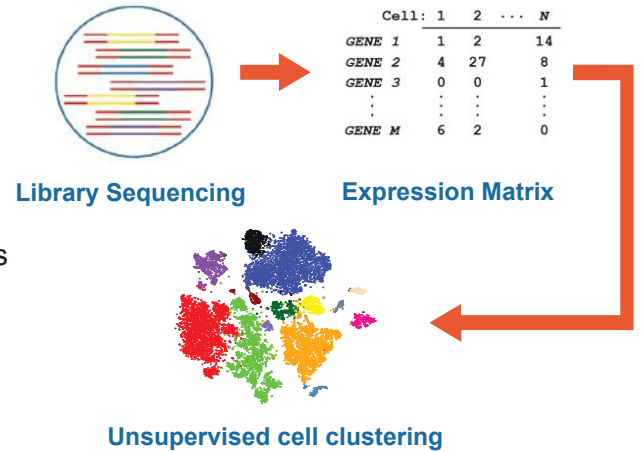


Figure 9: Singleron’s All-In-One solutions for a diverse set of single cell sequencing and multi-omics.



CeleScope® - Bioinformatic software for data analysis

- Processes the data generated by SCOPE-chip
- QC and calibrating raw sequencing data with cell barcodes
- Reference genome alignment and gene quantification
- Expression matrix generation
- Unsupervised cell clustering



SynEcoSys® - curated clinical annotation database

- Accurate cell type annotation
- Data mining for clinically focused interpretation
- Filter the database by chosen parameters (age, gender, etc.)
- Real-time updates in the field of single-cell research
- Publication-ready data visualization

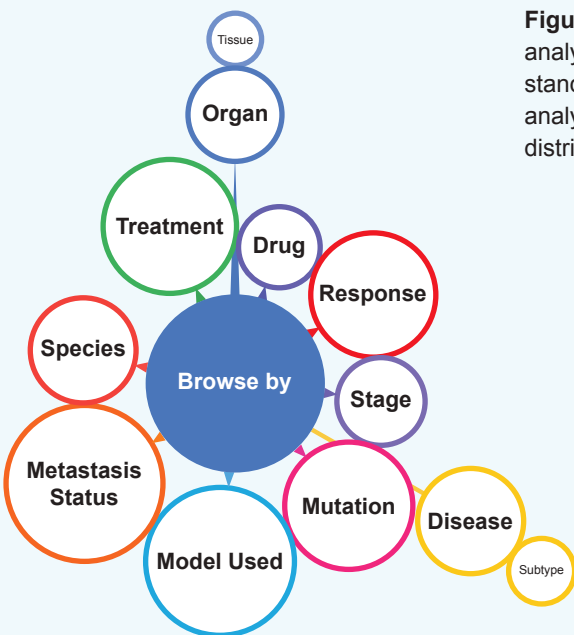
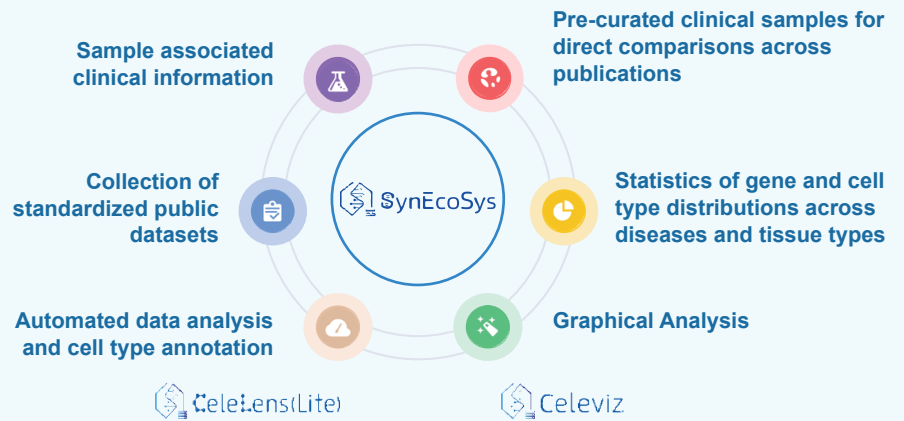


Figure 10: SynEcoSys clinical database. CeleLens(Lite) automatically performs data analysis and cell type annotation against pre-curated, published clinical samples and standardized public datasets across diseases and tissue types. The Celeviz graphical analysis enables comprehensive statistical visualization of gene expression and cell distribution on whole database level.

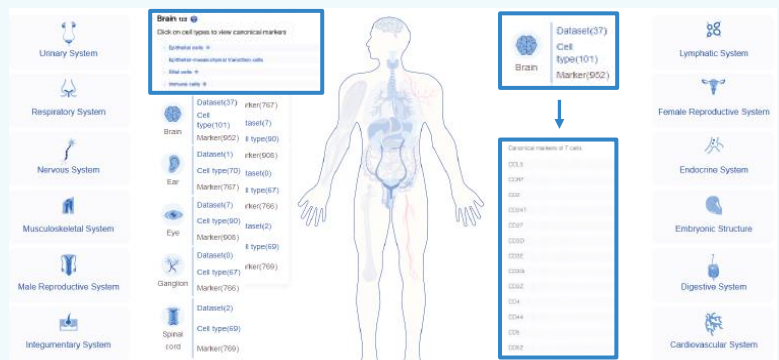


Figure 11: SynEcoSys features. (Left) Filter the dataset by parameters like age, gender, ethnicity, disease stage, treatment type, etc. (Right) SynEcoSys database currently comprises 480+ single cell RNAseq datasets from 7300+ samples; 480+ cell types; 7000+ sets of marker genes, 110+ tissue types, and more than 27 million cells sequenced, and is regularly updated with new public data.



End-to-end sequencing service for clinical research

- Focus on generating clinically relevant insights, from project consultation, sample processing, to sequencing and data interpretation
- Powered by **SynEcoSys** - curated database from tens of millions of single cells with information on clinics and drug discovery for clinical-relevant data interpretation
- Each project can be compared to and analyzed together with publicly available datasets or mined for potential biomarkers or novel drug targets
- Experience based on thousands of successfully processed samples and hundreds of sample types
- Project support by single cell experts with customer focus and fast response



Tissue



Data Analysis



RNA is very sensitive to degradation, and cells can go into apoptosis during processing, making them no longer representative for the samples. The ability to preserve tumor samples for up to three days can address these quality issues and allow sample collection and analysis away from the processing lab. It would also provide a chance to justify using single-cell analysis for diagnosis. With these three extra days, we can at least do some histological analysis.

**Prof. Dr. Margarete Odenthal, Professor,
University Hospital Cologne**

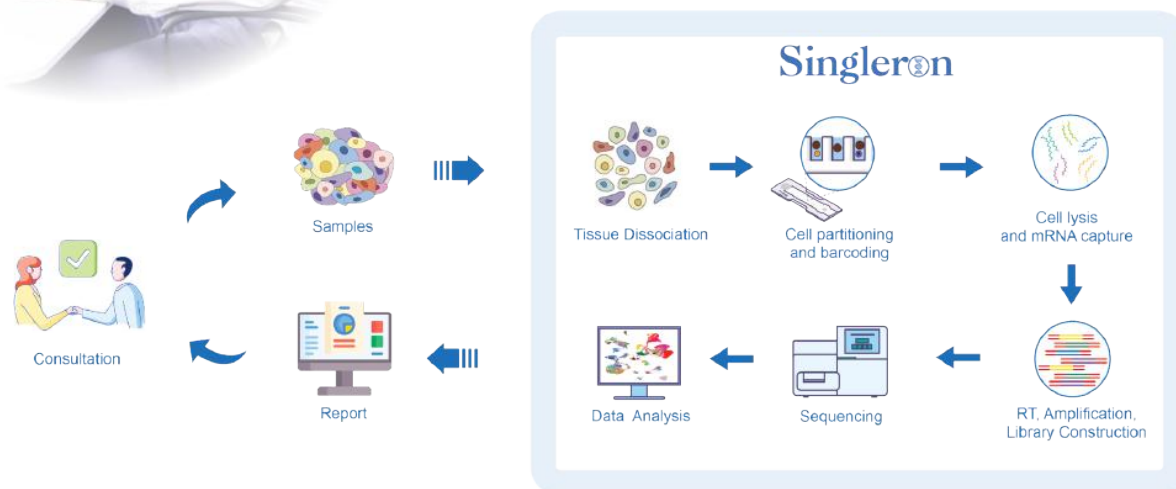


Figure 12: End-to-end single cell sequencing service workflow: Investigators only need to collect their samples in sCellLiVE Tissue Preservation Buffer and send it to Singleron. Following stringent SOP, the Singleron Service Laboratory in Cologne, Germany, will process samples, construct sequencing libraries, have them sequenced, and deliver FASTQ files and bioinformatic analysis report.

For more information about our products, please contact us directly or visit www.singleron.bio

Product	Description	Size	Procedure	Category
GEXSCOPE® Single Cell RNA Library Kit	Single cell mRNA library construction from fresh tissue or cell samples	2/16 RXNs	Automated/Manual	Consumable
GEXSCOPE® Single Nucleus RNA Library Kit	Single nucleus extraction and mRNA library construction from frozen tissue or special sample types (e.g., large cells with irregular morphology)	2/16 RXNs	Automated/Manual	Consumable
GEXSCOPE® Single Cell V(D)J Library Kits	Simultaneous analysis of TCR/BCR sequences and the whole transcriptome expression profiles in single cells	2/16 RXNs	Automated/Manual	Consumable
GEXSCOPE® Microbial Single Cell RNA Library Kit HD (Yeast)	Single cell mRNA library construction, specifically designed for yeast analysis	2/16 RXNs	Automated/Manual	Consumable
DynaSCOPE® Single Cell Dynamics RNA Library Kit	Analysis of nascent RNA synthesis at single cell level	2/16 RXNs	Automated/Manual	Consumable
FocuSCOPE® Single Cell Target Seq Library Kit	Simultaneous analysis of mRNA expression and genetic variants (mutation or gene fusion) or intracellular viral sequences in single cells	2/16 RXNs	Automated/Manual	Consumable
ProMoSCOPE® Single Cell Glycosylation Detection Kit	Simultaneous analysis of mRNA expression and quantification of cell surface glycosylation levels in single cells	2/16 RXNs	Automated/Manual	Consumable
sCircle® Single Cell Full-Length TCR Sequencing Library Kit	Full-length V(D)J region sequencing at single cell level with short-read sequencing	2/16 RXNs	Automated/Manual	Consumable
Clindex® Sample Multiplexing Kit	Click-chemistry for pooling of up to 16 sample in the same single cell sequencing library	1/4 RXNs	Automated/Manual	Consumable
sCelliVE® Tissue to Living Single Cell Suspension Kit	Tissue Preservation and Dissociation Master Mix for obtaining single cell suspensions	16 RXNs	Automated/Manual	Consumable
Singleron Matrix®	Instrument for automated single cell processing	1	Automated	Instrument
Singleron Python®	Instrument for automated tissue dissociation	1	Automated	Instrument
CeleScope®	Processes the data generated by SCOPE-chip®	N/A	N/A	Software
SynEcoSys®	Database for clinically relevant data interpretation	N/A	N/A	Software

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 www.singleron.bio  info@singleronbio.com

 **Germany: +49 221 16824777**

 **Singapore: +65 6950 8203**

 **USA: +1 203 2980604**

 **Germany Office:**
Gottfried-Hagen-Strasse 60
51105 Cologne
Germany

 **Singapore Office:**
61 Science Park Rd,
West Wing, The Galen #02-05
Singapore 117525

 **USA Office:**
1 Bradley Road, Suite 401
Woodbridge,
CT 06525, USA



A background image showing a microscopic view of several cells, likely fibroblasts or epithelial cells, with visible nuclei and cytoplasm. The image is rendered in a light blue, semi-transparent style, overlaid on a dark blue background that features a large, curved white shape in the upper right quadrant.

Singleron

From single cell multi-omics to precision medicine

