Using the ROSALIND Platform to Accelerate Single-Cell Data Analysis

Single-Cell RNA-Sequencing CRO Service

Highlights

- Analyzes thousands of single cells in parallel utilizing massively scalable cloud-computing
- Graph-accelerated knowledge bases identify cell types and assist users in annotating cell clusters
- Compare cell clusters across samples, experiments and multi-omic datasets to reveal deeper biological understanding.
- Explore experiment results in high-quality, publication-ready, interactive diagrams and plots
- Easily share and collaborate across team members with secure, permissions-controlled spaces

Introduction

The study of gene expression on a cellular level provides valuable insights for complex cell populations, novel cell types, and the effects of treatments on cellular processes by quantifying the activity on RNA in individual cells within a sample. Scientists working in Oncology, Immunology, Regenerative Medicine, Drug Discovery, and other areas of research often conduct experiments between healthy and disease states to identify differentially expressed genes and biological pathways to discover therapeutic targets. Comparisons between these differential patterns reveal unique gene signatures valuable for drug and diagnostic development.

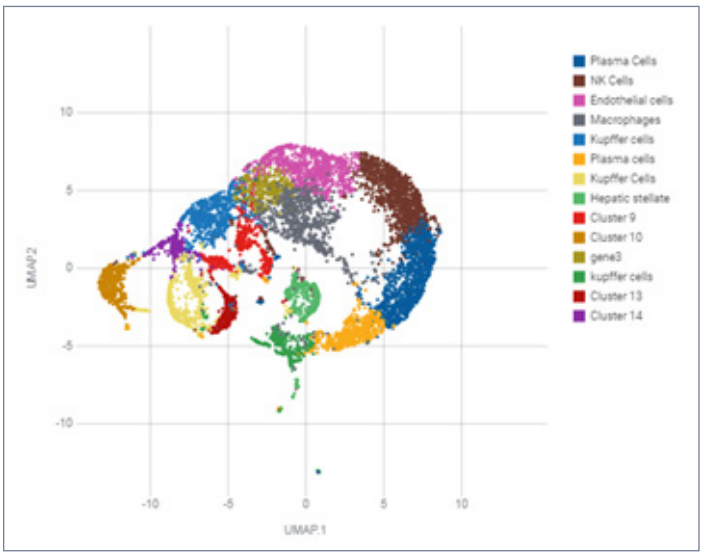
Your Partner for Single-Cell RNA-Sequencing

Add the 10X Genomics® Chromium Single-cell Gene Expression assay to your study and accelerate your research with single-cell data and get key insights into changes in gene expression. The advantage of using the Chromium X Series platform is that this method permits researchers to better understand cellular diversity in complex systems by interrogating gene expression at single-cell resolution. This level of throughput for transcriptional analysis enables researchers to understand the characteristics of individual cells within a heterogeneous population. Advances in molecular barcoding and microfluidics allow for easy and cost-effective gene expression profiling of up to tens of thousands of cells. Scientists can work with Canopy for single cell analysis using the 10x Genomics Chromium X Series and ROSALIND analysis platform for efficient, accurate and fast single-cell RNA Sequencing.

End-to-End Single Cell Interpretation

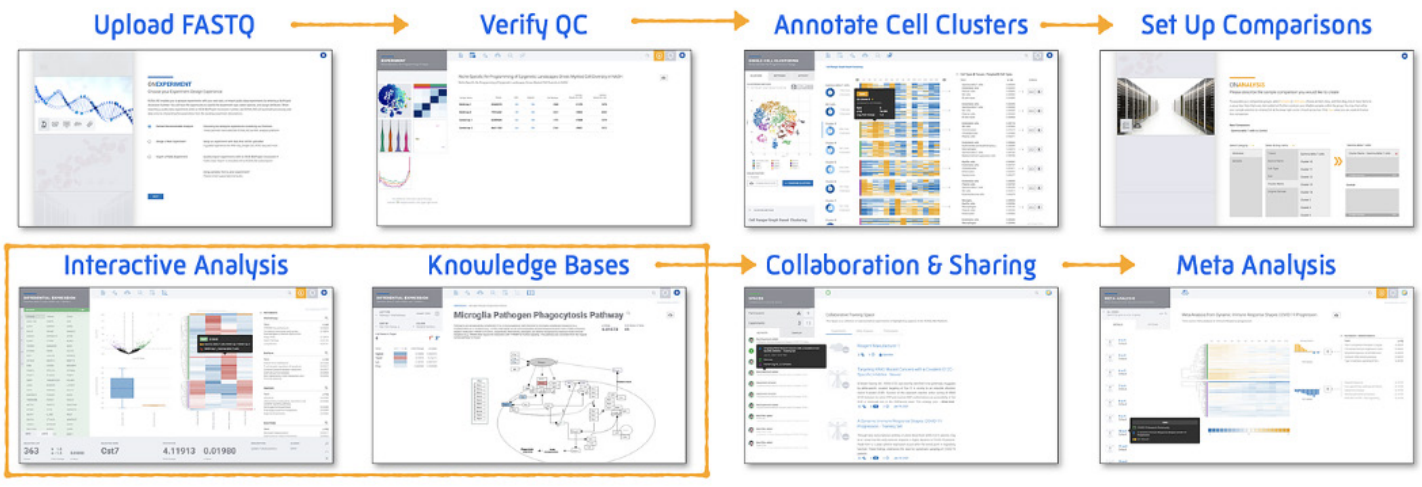
ROSALIND utilizes cloud-scale data processing and an intuitive graphical user interface to make processing of 10x Genomics Chromium X cell ranger datasets both faster and easier. Alignment, quantification, and download of default clustering results can be performed by bioinformaticians and scientists without the need for onsite computer processing power.

Scientists of every skill level benefit from ROSALIND since no programming expertise is required. By accepting raw FASTQ sequence data as well as processed counts data, ROSALIND enables powerful downstream analysis and truly insightful visualizations on gene expression datasets. With ROSALIND scientists can receive same-day results with every experiment in an interactive experience designed for ease of use and valuable time saving.



ROSALIND transforms the analysis of Single-Cell RNA-Seq with an end-to-end web-based experience for analysis, interpretation and collaboration. Interactive analyses of single cell clusters reveal biology of cells.

Single-cell Analysis with the ROSALIND Platform



Single-Cell Analysis Capabilities

- **Vivid web-based experience for complete data analysis**
- Analyze FASTQ files will fully automated processing
- **Intelligent quality control assessment with automated contamination detection**
- **Provides Cell Ranger, Seurat, and K-Means clustering methods**
- Assisted cell type identification based on top marker gene expression
- Perform covariate & batch corrections
- Download publication-ready figures
- **Interpretation with Gene Set Enrichment Analysis (GSEA) & Gene Set Variation Analysis (GSVA)**
- Multi-omic analyses across experiment and assay types
- **Optimized for 10X Genomics Chromium Single Cell Library Kits**
- Capture experiment design with guided wizard, or attribute file upload (CSV)
- Record metadata with NCBI BioSample attributes
- **Automated gene clustering in differential expression heatmaps**
- Setup cluster comparisons using biological attributes
- Create gene filters to adjust cut-offs
- **Securely store results & raw data files**
- Explore pathways, cell types, gene ontology, diseases and drugs with 50+ integrated knowledge bases
- Real-time collaboration and results sharing

Summary

Resolve the complex cellular diversity of your samples with Canopy's new single-cell gene expression service using 10X Genomics Chromium X Series. Our expert scientists will provide the expertise for your single-cell RNA-Seq projects.

The advantage of using ROSALIND is it simplifies data analysis by interconnecting every stage of data interpretation. The ROSALIND Single Cell Gene Expression discovery experience enables visual exploration and self-investigation of experiment results to give researchers the freedom to annotate clusters, visualize cell type arrangements, adjust cut-offs, add comparisons, apply covariate corrections, and even find patterns across multiple datasets, without the need for bioinformatic expertise.

About Canopy Biosciences

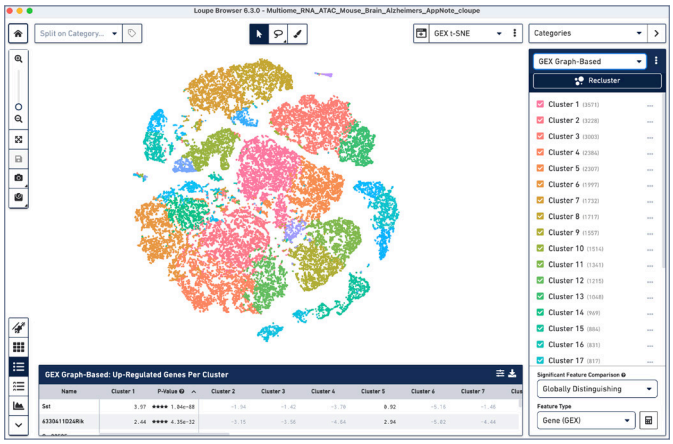
Canopy Biosciences, a Bruker company, empowers innovation by providing access to cutting-edge spatial biology and multi-omic tools so biomedical researchers can drive scientific discovery faster. We offer instruments and services for spatial proteomics and transcriptomics, gene expression profiling, and CLIA services for IHC, FISH and histopathology.

As a full-service CRO, we offer clinical research services to pharmaceutical, biotech, and academic communities by adopting cutting-edge multiomics platforms. While maintaining the core functionality of a standard histology laboratory, our full range of custom services support projects with any objective. Partner with us to accelerate your research, knowing we have the flexibility and expertise to perform your experiment.

Start Your Project Today

Send your samples to us and we can provide your lab with an end-to-end solution for single-cell RNA-sequencing projects.

- **Library Prep:** Chromium Single-Cell Gene Expression provides single-cell transcriptome 3' gene expression and multiomic capabilities to profile tens of thousands of cells
- **Sequencing:** High-throughput sequencing with NextSeq 1000/2000 reagent kits from Illumina with adjustable output based on project needs
- **Data Analysis:** Full report including raw data, raw and filtered matrices, Cell Ranger analysis summary, and Loupe Browser file for analysis and visualization



Example t-SNE visualization of cells clustered by similar gene expression profiles. Image provided by 10x Genomics.

To learn more, visit CanopyBiosciences.com/scrna-seq or email us hello.canopy@bruker.com

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