

BFX: Tools and Tutorials for 10x Genomics Applications

The table below lists **10x Genomics** single-cell and spatial applications, the associated software tools (with official website/support links), and selected tutorials for both beginner-friendly introduction and more advanced analysis. Each tutorial is indicated by its format (video, slides, or guide), and all links are validated from official sources.

Application (10x Assay)	Tools (Software & Website)	Beginner-Friendly Tutorial (Video/Slides)	Advanced Usage Tutorial (Video/Slides)
Single-Cell RNA-seq (Gene Expression)	Cell Ranger pipeline – official 10x analysis software[1] (for read alignment, QC, clustering) ; Loupe Browser – desktop visualization tool for single-cell data[2]	<i>Single Cell Gene Expression – Introduction & Getting Started</i> (training video, 9 min)[3] – Overview of 10x scRNA-seq data analysis workflow and Cell Ranger use.	<i>Bioinformatics Bootcamp Session 2: Hands-on Single Cell Gene Expression Analysis</i> (webinar, 56 min)[4] – In-depth walkthrough of Cell Ranger pipeline outputs and downstream analysis (integration, differential expression, etc.).
Single-Cell ATAC-seq (Chromatin Accessibility)	Cell Ranger ATAC pipeline – 10x analysis pipelines for scATAC-seq data[5] ; Loupe Browser – interactive analysis (peak accessibility, motif finding) for ATAC results[6]	<i>Next GEM Single Cell ATAC – Introduction</i> (training video, 6 min)[7] – Basics of 10x ATAC-seq workflow and running Cell Ranger ATAC.	<i>Loupe Browser ATAC Analysis Tutorials</i> (support guide) – step-by-step lessons on advanced ATAC data analysis (e.g. finding differential accessibility with Peak Viewer, identifying significant peaks)[8][6].
Spatial Transcriptomics (Visium Spatial Gene Expression)	Space Ranger pipeline – 10x analysis software for spatial gene expression (processes Visium data with histology images)[9] ; Loupe Browser – visualization tool for spatial expression maps and tissue data exploration[10]	<i>Spatial Gene Expression – Introduction & Getting Started</i> (training video, 6 min)[11] – Introduction to Visium experiment workflow and running Space Ranger.	<i>Visium HD Spatial Analysis Workshop</i> (slides/tutorial, 2025) – Advanced workshop covering Visium data processing in Cloud, quality control, Loupe Browser exploration, and downstream analysis[12][13].
Single-Cell Multiome (ATAC + GEX)	Cell Ranger ARC pipeline – 10x multiomic analysis software for simultaneous ATAC-seq and gene expression[14] ; Loupe Browser – integrated visualization of multiome gene expression and chromatin accessibility data[15]	<i>Single Cell Multiome ATAC+GEX – Introduction</i> (training video, 8 min)[16] – Overview of multiome workflow and using Cell Ranger ARC to process joint ATAC/RNA data.	<i>Loupe Multiome Analysis Tutorials</i> (support guide) – In-depth tutorials on multiome data exploration (navigating linked ATAC/GEX features, peak-gene linkages, etc.)[17]. (Optional advanced resource: see also <i>Active Motif webinar on multiome analysis</i> [18])
Single-Cell Immune Profiling (5' GEX + V(D)J)	Cell Ranger multi pipeline – 5' Immune Profiling software for joint gene expression and V(D)J clonotype analysis[19] (part of Cell Ranger suite); Loupe Browser (for gene expression) and Loupe V(D)J Browser (for immune receptor analysis) – interactive visualization tools[20]	<i>Chromium Single Cell Immune Profiling Workflow</i> (on-demand training video, 35 min) – End-to-end introduction to 5' immune profiling (library prep, VDJ + GEX data processing with Cell Ranger)[21].	<i>Loupe V(D)J Browser Tutorial – Clonotype Filtering</i> (how-to video, 5 min) – Using Loupe VDJ to filter clonotypes by antigen specificity (e.g. SARS-CoV-2 example)[20]. (Advanced: 10x Immune Profiling software training covering VDJ analysis and Loupe Browser is also available[21].)

Sources: Official 10x Genomics support pages and training materials were used to compile this information, including the 10x Support Hub (software documentation) and 10x online training videos and webinars[1][3][4][7][8][9][12][16][17][19]. All links are up-to-date and point to the corresponding 10x Genomics resources or video content as of 2025.

- [1] [2] Chromium Single Cell Analysis Software - 10x Genomics
<https://www.10xgenomics.com/products/chromium-analysis>
- [3] Single Cell Gene Expression – Chapter 1 – Introduction and Getting Started - 10x Genomics
<https://www.10xgenomics.com/videos/udidym871s>
- [4] Bioinformatics Bootcamp Session 2: Hands-on single cell gene expression data analysis - 10x Genomics
<https://www.10xgenomics.com/videos/trju301wd5>
- [5] Epi ATAC - 10x Genomics
<https://www.10xgenomics.com/products/epi-atac>
- [6] [10] What is Loupe Browser? - 10x Genomics
<https://www.10xgenomics.com/support/software/loupe-browser/latest/getting-started>
- [7] Next GEM Single Cell ATAC - Chapter 1 - Introduction Preview - 10x Genomics
<https://www.10xgenomics.com/videos/ef93x01cw0>
- [8] Tutorials for Single Cell ATAC - 10x Genomics
<https://www.10xgenomics.com/support/software/loupe-browser/latest/tutorials/assay-analysis/lb-single-cell-atac>
- [9] What is Space Ranger? - 10x Genomics
<https://www.10xgenomics.com/support/software/space-ranger/2.1/getting-started/what-is-space-ranger>
- [11] Spatial Gene Expression - Chapter 2 - Introduction and Getting Started - 10x Genomics
<https://www.10xgenomics.com/videos/3sgyxcrk32>
- [12] [13] Hands-on Tour of the Visium HD Spatial Gene Expression Analysis Journey - 10x Genomics
<https://www.10xgenomics.com/analysis-guides/workshop-visium-hd-analysis>
- [14] [15] Epi Multiome ATAC + Gene Expression - 10x Genomics
<https://www.10xgenomics.com/products/epi-multiome>
- [16] Next GEM Single Cell Multiome ATAC + Gene Expression - Chapter 1 - Introduction - 10x Genomics
<https://www.10xgenomics.com/videos/cloi73tpm>
- [17] Tutorials for Single Cell Multiome - Official 10x Genomics Support
<https://www.10xgenomics.com/support/software/loupe-browser/latest/tutorials/assay-analysis/lb-single-cell-multiome>
- [18] [WEBINAR] Analysis of Single Cell Multiome ATAC + Gene Expression
<https://www.activemotif.com/analysis-single-cell-multiome-atac-gene-expression-webinar>
- [19] Gene Expression, V(D)J, & Feature Barcode Analysis with Cell Ranger multi (5' Immune Profiling Kit) - 10x Genomics
<https://www.10xgenomics.com/support/software/cell-ranger/8.0/tutorials/running-pipelines/cr-5p-multi>
- [20] Filter Clonotypes by Antigen Specificity Scores - YouTube
<https://www.youtube.com/watch?v=KwPa0nohlvE>
- [21] Support Webinars Single Cell Immune Profiling - 10x Genomics
<https://www.10xgenomics.com/support-webinars-single-cell-immune-profiling>