



Canopy Spatial Services™

For Spatial Biology & Single-Cell Omics



Your Access to Innovation

Cutting-Edge Services for Spatial Biology and Single-Cell Omics

Canopy Spatial Services™ is a comprehensive suite of spatial biology and single-cell analysis services through Canopy Biosciences®, a Bruker Company. By integrating a curated collection of technologies to complement our flagship technology ChipCytometry™, we provide a unique toolset for biopharmaceutical research, custom assay development, clinical sample testing, and quality data acquisition and reporting. With a CLIA-certified laboratory, our expert scientists will help you overcome complex problems and transform scientific discovery into new treatments, disease indications, and biomarker development with efficient assay optimization and problem-solving.

Canopy has multiple laboratories with key areas of expertise:

- Spatial proteomics, leveraging our ChipCytometry technology
- Spatial transcriptomics for oncology, immunology, and immuno-oncology applications
- Histology and spatial biology for biomarker discovery
- Genomics, transcriptomic, and single-cell transcriptomics

Partner with us to accelerate your research, knowing we have the flexibility and expertise to perform your experiment from start to finish.



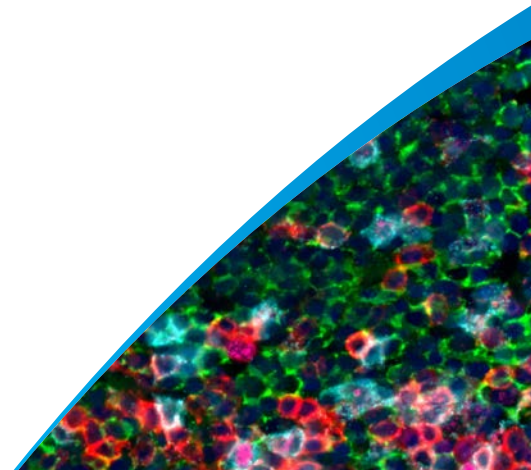
Conclude with Confidence

Orthogonal Validation

Support your hypotheses from other multi-omics methods using ChipCytometry. Generate ideas from spatial transcriptomics and other RNA expression experiments and then leverage our CellScape™ instrument to bring your concept to conclusion.

As the creators of ChipCytometry technology, we have extensive expertise in designing and executing spatial phenotyping assays on tissue and cell suspension samples. Utilize our experience to efficiently incorporate spatial biology into your next biomarker discovery project or clinical trial.

You design the experiments, let us do the work.



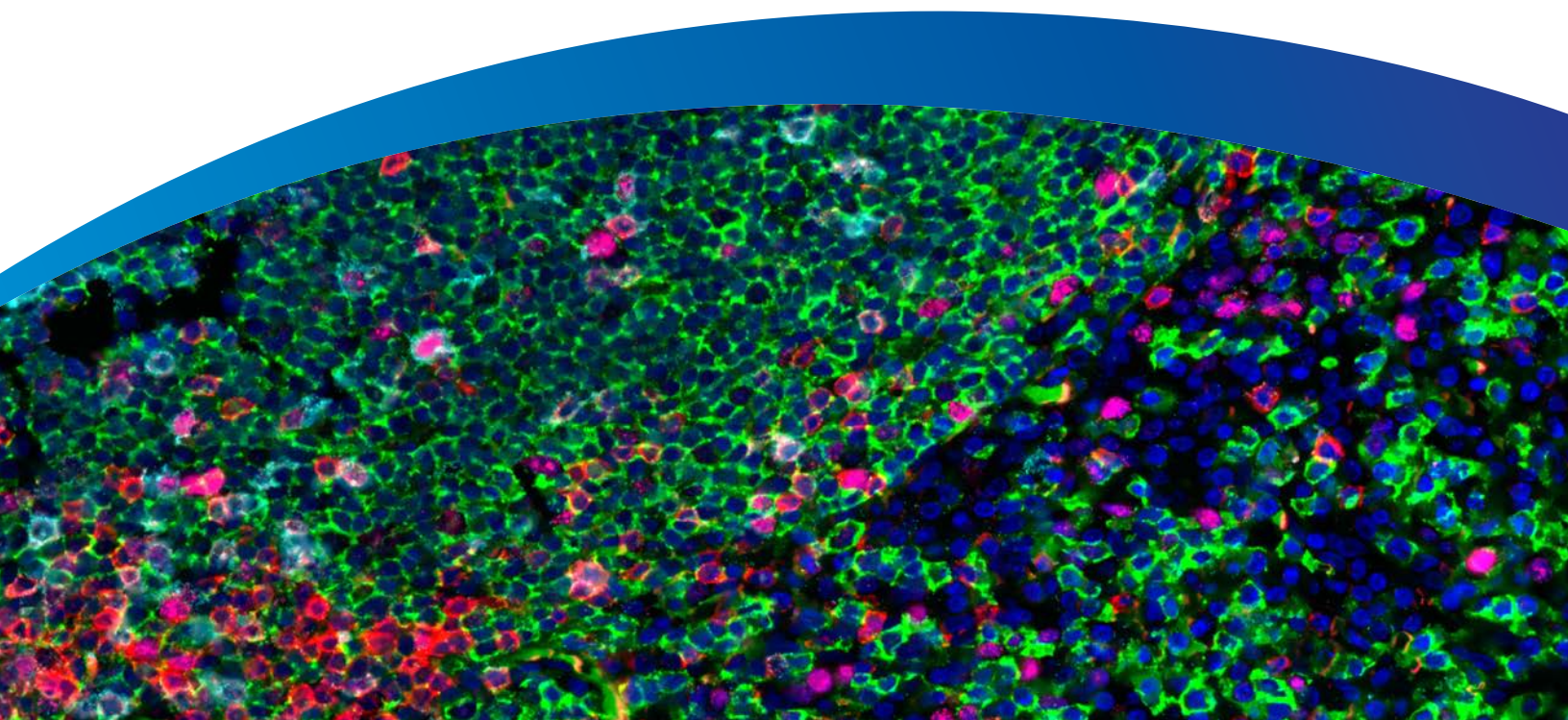


End-to-End Solutions

Find the right service to suit the needs of your experiment.

Canopy offers a broad portfolio of service offerings focused on spatial biology and single-cell omics. Our full suite of complementary technologies is used to detect and analyze proteins and nucleic acids, leading to a more wholistic understanding of cellular diversity and interaction.

Service	Analyte		Measurement		
	RNA	Protein	Spatial	Single-Cell	Bulk
ChipCytometry		✓	✓	✓	
NanoString® CosMx® SMI	✓		✓	✓	
NanoString GeoMx® DSP	✓		✓		✓
IHC		✓	✓		
FISH/ISH	✓		✓		
10x scRNA-Seq	✓			✓	
NanoString nCounter®	✓				✓
Illumina® RNA-Seq	✓				✓



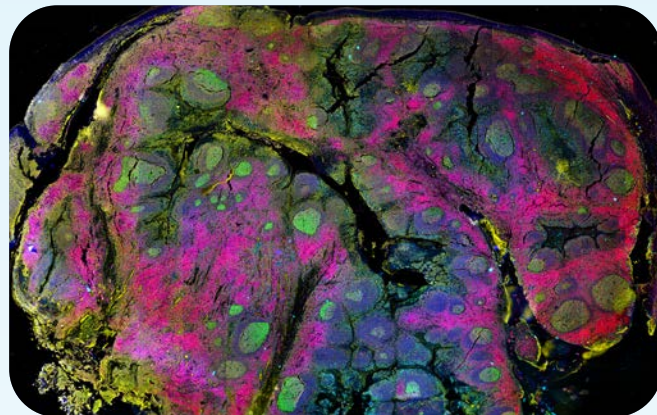
ChipCytometry Precise Spatial Multiplexing

As the inventors of ChipCytometry technology and the CellScope platform, we utilize years of experience in developing multiplexed spatial imaging technologies to bring the power of spatial biology to your research.

The ChipCytometry platform facilitates single-cell, high resolution, quantitative biomarker analysis of any tissue or cell suspension. This technology enables profiling of protein expression data within the context of tissue architecture, tissue microenvironments, and cell-cell interactions. With pre-validated antibody panels and assay kits available to capture a wide range of biomarkers as well as expertise with custom assay development, we have the capabilities for in-depth analysis of your tissue or cell samples.

For your unique experiments, we leverage the open-sourced nature of ChipCytometry to be as customizable and flexible as needed to develop and scale your assay. Canopy has helped researchers across academia and biopharma incorporate spatial

biology through ChipCytometry, from the early phases of discovery to supporting their clinical trials, and can help your lab bring your biomarker research into full context.



Whole tissue imaging of human FFPE tonsil using ChipCytometry. The tissue sample is stained with 15 markers using the VistaPlex™ Spatial Immune Profiling Kit for CellScope to profile the tissue microenvironment and immune infiltration. Biomarkers are detected and quantified at single-cell resolution while retaining spatial information.



The ChipCytometry workflow consists of sample prep followed by successive, automated rounds of immuno-staining, imaging, and photo-inactivation signal removal for high-plex biomarker profiling. All images are gathered using high dynamic range (HDR) imaging to allow for detection of high- and low-expressing cells and accurate biomarker quantification across more than 6 orders of magnitude. An image overlay of each marker in the assay is then created by aligning each channel to a reference channel.

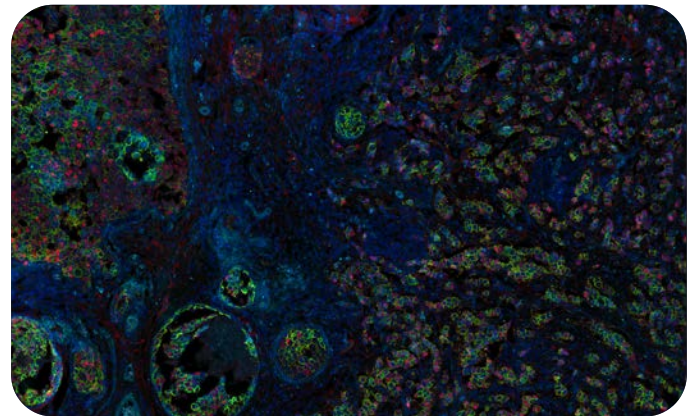
GeoMx Digital Spatial Profiler (DSP)

From NanoString

As a NanoString premier partner, Canopy was one of the earliest adopters of the GeoMx technology. With a portfolio of transcriptomic and protein panels, GeoMx DSP enables regional spatial analysis paired with molecular profiling for a better understanding of tumors and tumor microenvironments.

Morphologically guided ROI selection with markers to highlight the tumor and immune cells is followed by molecular profiling of RNA transcripts. We assist in ROI selection and provide training on the analysis suite for GeoMx so our clients can overlay spatial analysis with gene expression data for a holistic understanding of tumor biology.

The morphology markers from NanoString broadly identify tumor and immune compartments, and we have developed our own catalog of application-specific markers for use in the GeoMx assay as well as the validation workflow for additional customer-specific markers.



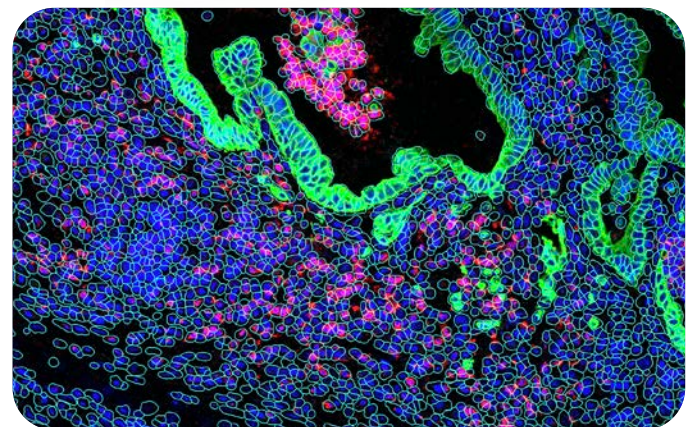
Triple positive breast cancer sample scanned on the GeoMx with markers for nucleic acid (blue), HER2 (green), progesterone receptor (red), and estrogen receptor (cyan).

CosMx Spatial Molecular Imager (SMI)

From NanoString

The CosMx SMI is the newest platform launched by NanoString for spatial biology analysis. Partner with Canopy and be among the first to leverage this technology, building an understanding of different cell types, how they behave with one another, and how to interpret the patterns of these interactions.

The CosMx technology allows you to comprehensively map single cells in their native environment and extract deeper biological insights using pre-designed high plex panels covering up to 1,000 RNA targets. The single cell resolution enables cell typing, pathway analysis for cell state analysis, cell function and interactions. Send your FF or FFPE tissue samples to us and we will provide your lab with an end-to-end solution for single-cell spatial profiling projects.



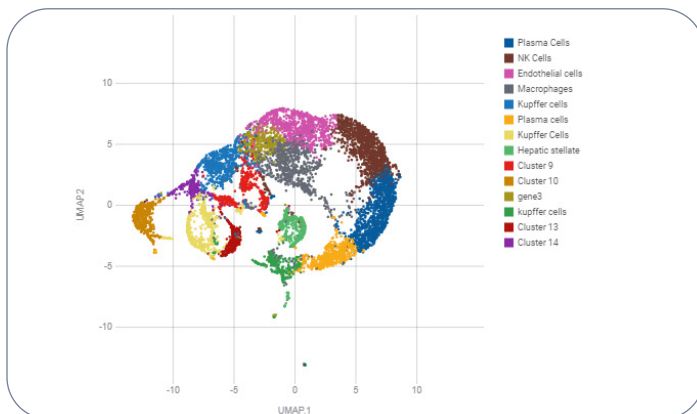
Cell segmentation using CosMx SMI.

Single-Cell RNA-Sequencing Using 10x Genomics® Chromium® X Series



The 10x Genomics Chromium X platform allows for single-cell transcriptome sequencing for up to tens of thousands of cells. Single-cell RNA-seq provides comprehensive gene expression profiling of heterogeneous cells, including tumor and immune cells. This level of throughput for transcriptional analysis enables researchers to understand the characteristics of individual cells within a heterogeneous population.

Our end-to-end single-cell RNA-seq service offers unbiased single-cell gene expression profiling and sequencing solutions. Through our partnership with Rosalind Bio, data analysis via the ROSALIND cloud-based platform enables deeper insights from the data collected, including gene set enrichment, gene clustering, pathway interpretation, and publication-quality figures.



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. UMAP plot provided by Rosalind Bio.

Targeted Gene Expression Profiling Using NanoString nCounter



The nCounter platform from NanoString is a powerful tool for differential gene expression analysis. With a full catalog of panels for immunology, oncology, neuroscience and other applications, researchers can quantify up to 800 genes per sample with this simple hybridization and digital counting technology. Ideal for FFPE due to the probe design and amplification-free workflow, it is highly reproducible and has been extensively used for pre-clinical and clinical research.

Providing nCounter services for nearly a decade, our extensive expertise in this technology has allowed us to optimize starting material quantity and quality so we can get quality results even from limited or degraded samples. We boast a 2 week turnaround time and offer access to ROSALIND for rapid data analysis.



ROSALIND is our preferred platform for differential gene expression analysis for nCounter and RNA-seq data. In each comparison, clients can access gene lists, gene details and pathway analysis. With dynamic visualization, clients can see gene-specific data across multiple outputs.

RNA Sequencing Using Illumina NovaSeq™ 6000



The workhorse of transcriptomic research, we offer next-generation sequencing (NGS) services for mRNA-seq, total RNA-seq, and FFPE RNA-seq. We bring a collaborative approach, offering consultative discussion on sample type, library prep methodology and sequencing depth.

RNA-seq is a powerful tool to study the transcriptomic profiles of cell populations, facilitating discovery of transcripts and differentially expressed genes that can be missed by microarray assays. Using ROSALIND for analysis, we can link changes in transcript abundance and biological impacts with pathway analysis. RNA-seq provides both transcript discovery and quantification using the high throughput NGS, allowing a better understanding of the mechanisms responsible for specific diseases or drug responses.



Each comparison has several key pieces of data and analysis available to assess differential gene expression all in a single view. Access pathway analysis from this screen to assess biological impacts of experimental changes.

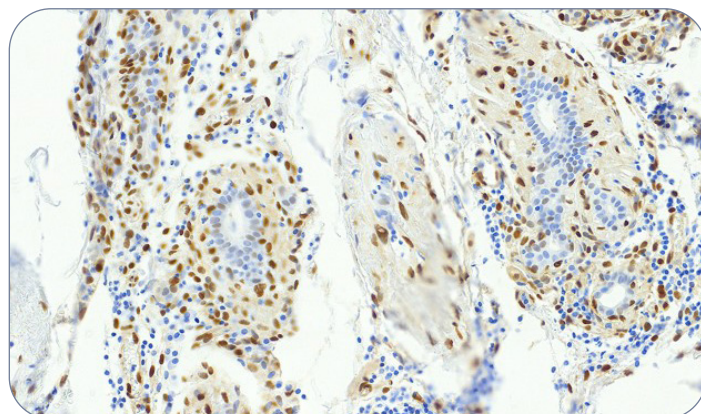
Histopathology, FISH, and Immunohistochemistry



We operate a CLIA-certified laboratory specializing in immunohistochemistry (IHC), histopathology, and molecular analysis including fluorescence *in situ* hybridization (FISH) for DNA and RNA.

General histopathology service capabilities include tissue processing, slide preparation, IHC staining, immunofluorescent (IF) staining, whole slide scanning, and slide review and tumor scoring by board-certified pathologists.

Our expert scientists process histology slides to evaluate antibodies of interest for specific and non-specific tissue reactivity. We can provide high quality results to support your research projects, to accelerate your team's development work, and to bridge the gap between pre-clinical and clinical applications.



Nuclear staining of a breast cancer sample for phospho-STAT3 (Tyr 705), as phosphorylated STAT3 is the activated form of this transcription factor, which may play a role in malignancy of breast cancer and other tumors.



To learn more, visit CanopyBiosciences.com
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