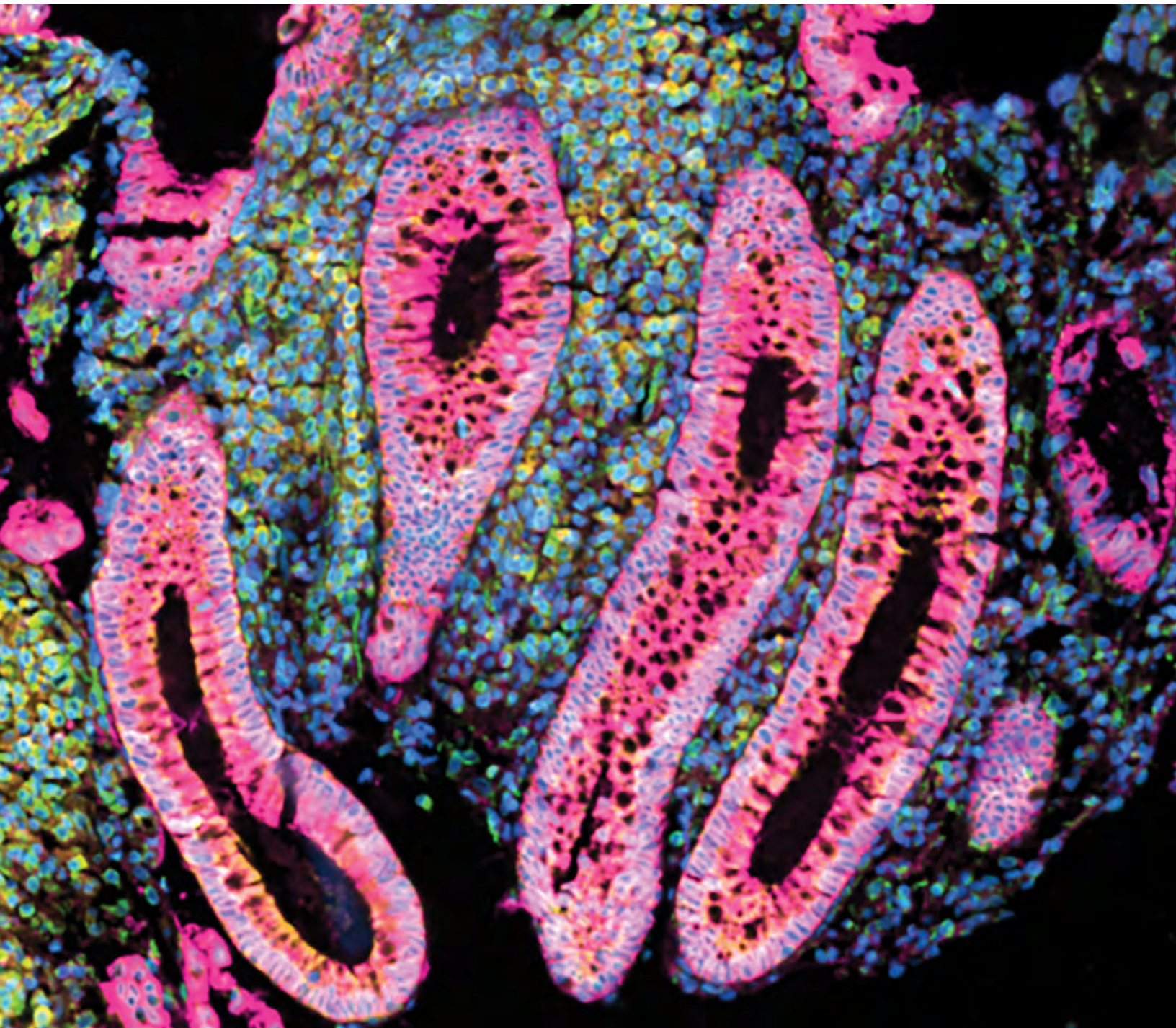
DISCOVERY
LIFE SCIENCES

Cell Biology Services



Introduction

Discovery Life Sciences (Discovery) combines deep cell biology expertise with advanced technologies to deliver high-resolution biospecimen characterization and functional analysis that accelerates research in immunology, oncology, regenerative medicine, and drug development. Our cell biology service laboratories offer flow cytometry, single-cell genomics, spatial biology, live-cell imaging, cytokine profiling, colony forming cell assays, and more—providing the actionable insights needed to advance your scientific goals with precision and confidence.

Table of Contents

Custom Biospecimen Processing and Characterization Services

With decades of experience, we specialize in custom biospecimen procurement, processing, and characterization—fueling one of the world's largest commercial biorepositories. By building cohorts tailored to your study needs, we deliver critical cellular insights that accelerate research, enable smarter development decisions, and advance precision medicine.

Get Biospecimens in the Format You Need

Discovery's integrated biospecimen processing and cell biology laboratories operate seamlessly under one roof, enabling optimized specimen processing and custom sample preparation for a wide range of biospecimen types, including whole blood (PBMCs), bone marrow (BMMCs), and fresh tissues (DTCs).

- Isolating viable cells and subtypes for physiologically relevant primary cell cultures
- Developing and optimizing assays with well-characterized cell populations
- Conducting drug efficacy testing to drive smarter development decisions
- Performing safety assessments using cells ideal for toxicity assays

Unlock the Full Potential of Your Biospecimens

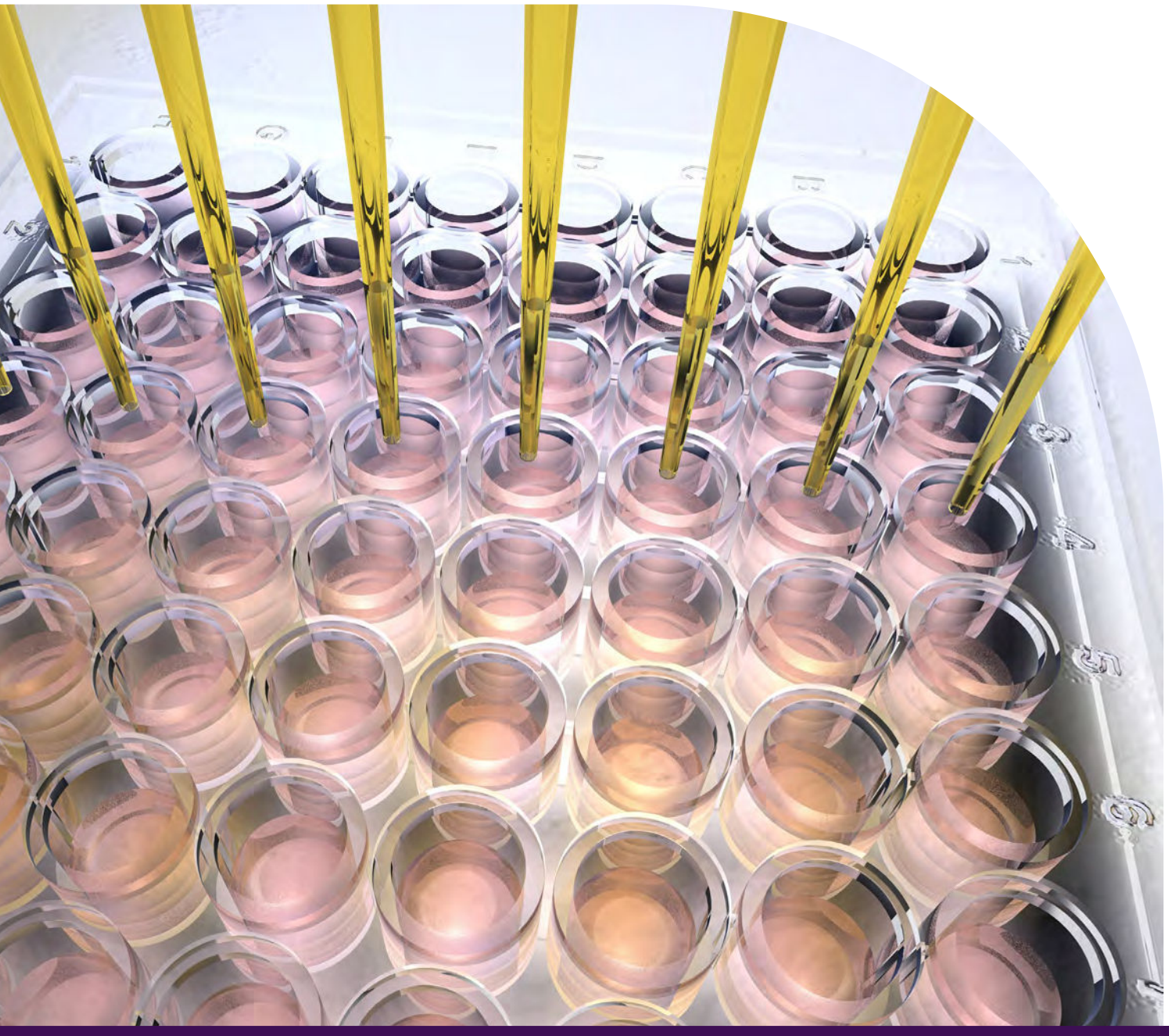
Our state-of-the-art cell biology laboratory supports custom biospecimen characterization, enabling drug efficacy testing for data-driven development decisions, safety assessments with cells optimized for toxicity assays, and the advancement of new therapeutics through with comprehensive insights.

- Sanger sequencing
- MSI analysis
- qPCR
- HPV testing
- Infectious diseases testing
- Flow cytometry
- Single cell analysis
- Spatial analysis

Seamlessly integrated with Discovery's genomics, proteomics, and molecular pathology labs, we offer expanded characterization capabilities under one roof—facilitating simultaneous biomarker testing to accelerate turnaround times and enrich analytical insights.

Primary Human Cell Culture Services

We offer robust primary human cell culture services built on standardized protocols and optimized methods—ranging from simple primary cultures to complex tumoroids. Our cell culture services foster a deeper understanding of growth characteristics, phenotypic changes, cytotoxicity, immune cell proliferation, expansion, differentiation, and drug response to accelerate therapy development.



PBMCs and Isolated Immune Cell Subset Cultures

- T cell proliferation and expansion
- Macrophage differentiation
- Dendritic cell differentiation

Dissociated Tissue Cells and 3D Tumor Cell Culture

Our state-of-the-art cell biology laboratory supports custom biospecimen characterization, enabling drug efficacy testing for data-driven development decisions, safety assessments with cells optimized for toxicity assays, and the advancement of new therapeutics through with comprehensive insights.

- Tumoroid development and drug testing
- Short-term spheroids
- Cultures supporting small molecules, biologics, and advanced therapies

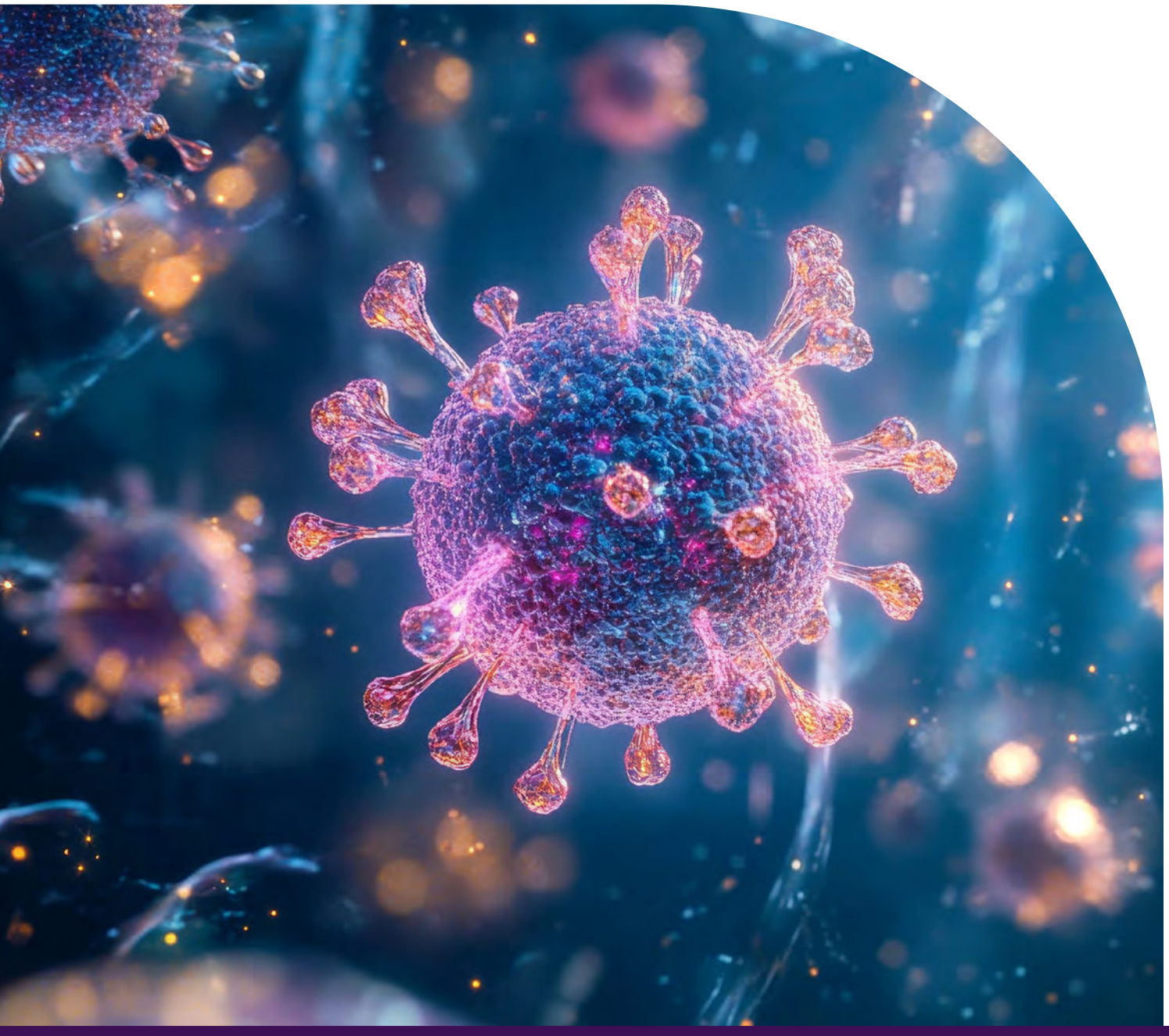
Mast Cell Culture and Assays

- Biologically relevant and fully characterized
- Functionally tested by degranulation assay
- Ideal for allergic reaction testing and drug screening

Discover deeper insights—partner with us for comprehensive *in vitro* and *ex vivo* cell culture services, from primary cell models to advanced tumoroids.

Cytokine Analysis Services

Our comprehensive cytokine analysis services quantify immune responses and characterize cellular activity across a wide range of sample types. Using optimized, high-sensitivity platforms and multiplex technologies, our experts deliver accurate, reproducible data to support immunology research, biomarker discovery, drug development, and patient stratification.



Multiplex Cytokine Analysis

Multiplex cytokine analysis offers high sensitivity and specificity, enabling the simultaneous detection of multiple cytokines in a single sample. Our cell biologists deliver precise, quantitative measurements across a broad range of cytokines, accelerating data collection for various diseases and conditions.

- Luminex™ xMAP™ INTELLIFLEX Cytokine Analysis
- IsoSpark IsoPlex Cytokine Analysis

Precision ELISA-Based Cytokine Analysis

ELISA-based cytokine and antibody analysis offers high sensitivity and specificity, enabling the accurate detection of low-abundance cytokines and antibodies with minimal cross-reactivity. This single-plex assay provides precise, quantitative measurements, making it ideal for clinical diagnostics.

- Analyzed on the Bio-Rad's PR 4100 Absorbance Microplate Reader
- Up to 40 samples of single analyte per run
- Rapid turnaround time

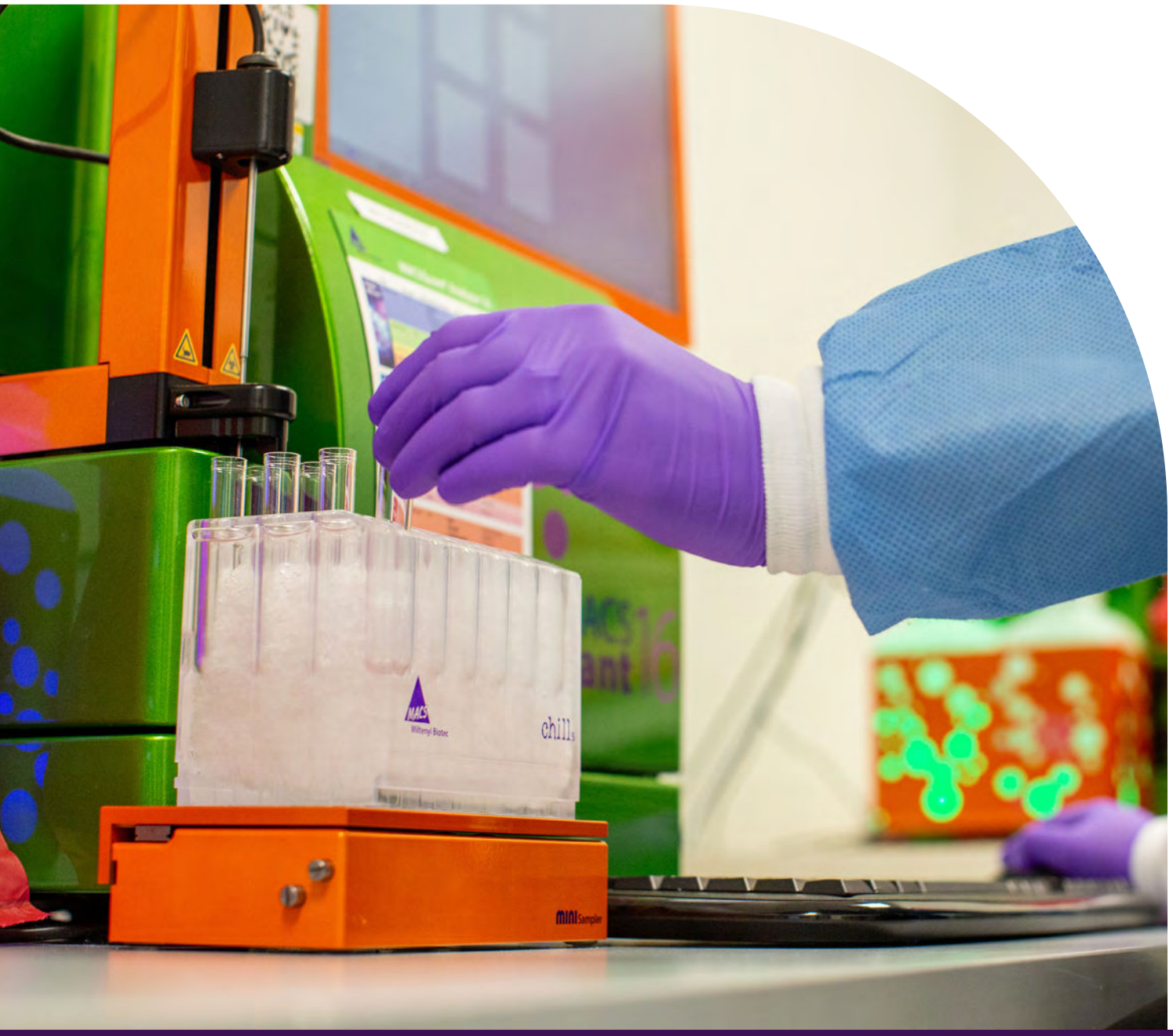
T Cell Activation and Cytokine Release Assay

Our cell biologists can perform T cell activation and cytokine release assays to predict a therapeutic's risk of causing cytokine release syndrome (CRS) before clinical trials.

More information on page 20.

Flow Cytometry and Cell Sorting Services

Advanced flow cytometry and cell sorting with customizable panels enable detailed immunophenotyping of DTCs, PBMCs, BMMCs, and other viable specimen types, as well as functional profiling through assays for proliferation, apoptosis, cell cycle analysis, cytotoxicity, and intracellular cytokine staining.



Our cell biology laboratory leverages advanced flow cytometry for high-resolution immunophenotypic and functional profiling of innate and adaptive immune cells of complex cell populations. Our expertise in custom panel design enables precise identification of cellular subsets, phenotypic markers of cell function, and specific receptor/ligand expression, complemented by comprehensive biomarker screening.

Custom Immune Profiling with Precision

Our immunophenotypic profiling services leverage advanced flow cytometry to identify key cell subsets within the innate and adaptive immune system. We develop fully customizable panels that enable precise characterization

- T cell lineage and activation markers for T cell subset analysis
- T cell exhaustion for identifying dysfunctional T cells
- Co-inhibitory and co-stimulatory molecules for immune regulation profiling
- Biomarker screening for efficient target population identification
- Custom panel design

Functional Profiling for In-Depth Cellular Insights

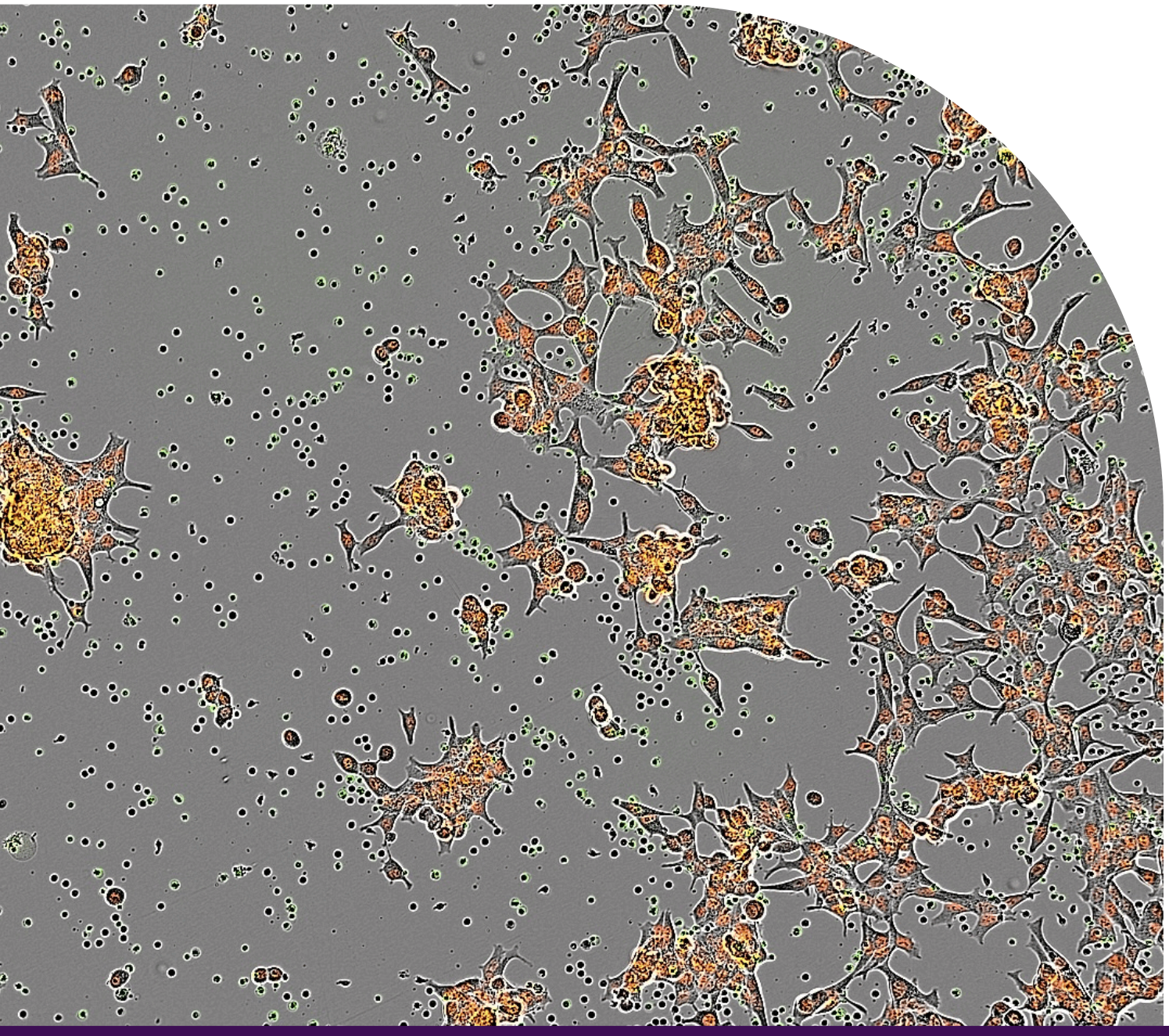
Our cell biology laboratory provides functional profiling services to deliver in-depth analysis of cellular responses, enabling precise characterization of immune function and therapeutic impact.

- Proliferation monitoring to evaluate cell growth and division
- Apoptosis detection to measure programmed cell death
- Cell cycle analysis for understanding cell division phases
- Cytotoxicity assessment to evaluate immune-mediated killing
- Cytokine secretion analysis to measure intracellular signaling
- Cytokine profiling through flow cytometry and ELISA for detailed insights

Transform your research with high-resolution functional profiling powered by our advanced flow cytometry and custom assay design.

Live-Cell Imaging and Analysis Services

Observe cellular behavior in real time and understand not just what your cells are doing, but when and how they do it. Our advanced live-cell imaging and analysis services provide long-term, time-lapsed data, revealing intricate kinetic behaviors and functional dynamics that single endpoint measurements simply cannot capture.

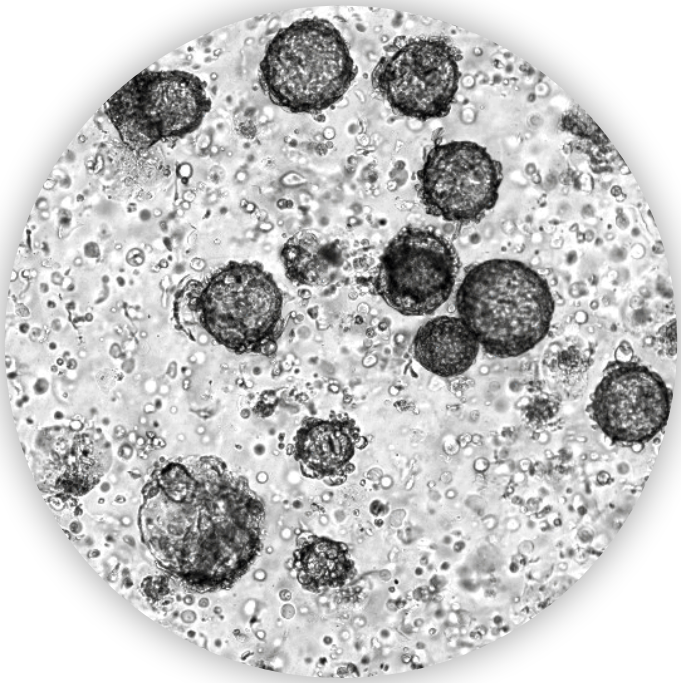


Deeper Biological Insights Across a Wide Range of Applications

Discovery's cell biologists leverage Sartorius Incucyte® live-cell imaging technology to continuously monitor live cells for biologically relevant kinetic behavior.

- Capture real-time cellular kinetic behavior and function
- Maintain optimal incubator humidity, temperature, and CO_2 level
- Use non-toxic labels for long-term imaging without disrupting cell health
- Support a wide variety of cell types, including DTCs, tumoroids, PBMCs, and BMMCs
- Monitor drug response, cell growth, health, death, invasion, migration, morphological changes, and fluorescence with precision

Capture high-resolution fluorescence and brightfield images over extended periods, enabling precise analysis of cell proliferation, migration, and immune interactions—without disrupting cultures.



Single Cell Genomics Services

With stringent quality control standards, our cell biology lab offers top-tier single-cell gene expression analysis, and immune repertoire profiling on flash-frozen tissues, viable cells, and FFPE using the 10x Chromium platform.

Discovery Life Sciences is an official 10x Genomics service provider. From sample preparation to library generation to data processing, Discovery follows the best practices across sample prep, library generation, and data processing, and is trained and qualified to deliver optimal results on the Chromium platform.

High-Quality Libraries. Unmatched Single Cell Insights.

Optimized Sample Quality Assessment

- Fluorometry-based evaluation to ensure high-quality starting materials
- Flow cytometry to guide antibody-directed barcoding for CITE-Seq

Comprehensive Sample Preparation

- Supports diverse sample types, including whole blood, bone marrow, fresh, frozen tissue, and FFPE
- Streamlined processing under one roof to minimize transfer times

Efficient Cell Isolation and Cleanup

- Dead cell removal and cell population isolation before library prep
- Advanced magnetic bead isolation methods

In-Process Quality Control

- Real-time quality assessments during key processing steps
- Ensures optimal sample integrity before sequencing

High-Quality Library Construction

- Size selection and cleanup to remove unbound or nonspecific probes
- Meticulous quality and quantity checks to meet sequencing specs

Expert Bioinformatics Analysis

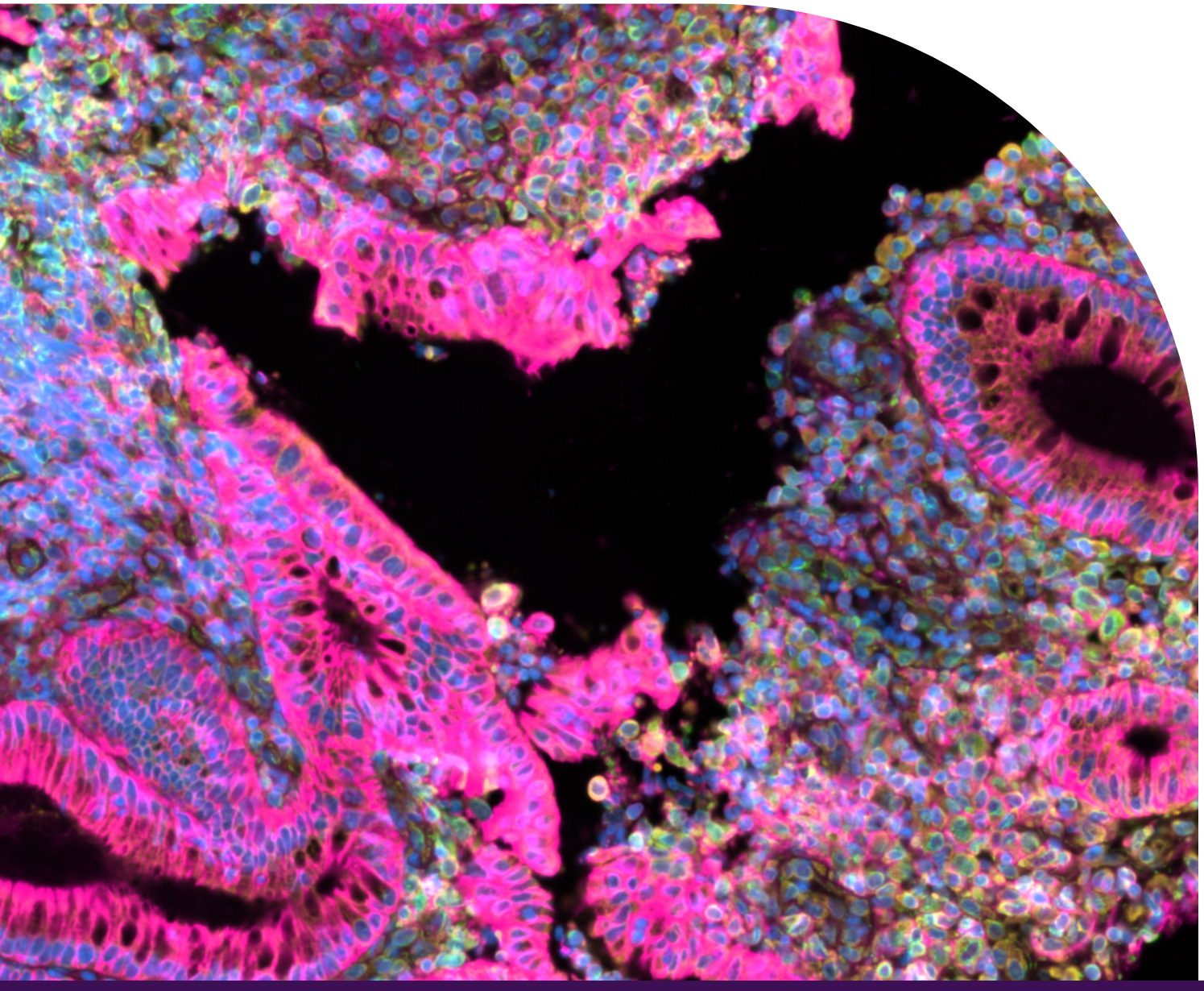
- Comprehensive analysis evaluating library prep and tissue quality
- Clear, actionable, and data-driven presentations delivered to clients

Our expert cell biologists use optimized workflows and rigorous quality control to deliver high quality libraries for your single cell analysis.

Spacial Biology Services

We deliver transcriptomics at single cell and subcellular resolutions within the morphological context of FFPE tissues. Our histopathology experts optimize tissue preparation to preserve spatial integrity, enabling discovery of novel biomarkers, deeper understanding of disease complexity, spatial organization of cell atlases, and spatiotemporal gene expression patterns.

Discovery Life Sciences is an official 10x Genomics service provider. From sample preparation to library generation to data processing, Discovery follows the best practices across sample prep, library generation, and data processing, and is trained and qualified to deliver optimal results on the Visium and Xenium platforms.



Maps the Whole Transcriptome with Morphological Context in FFPE Tissues

Partner with Discovery's cell biologists to unlock high-resolution tissue classification with Visium single-cell transcriptomics, revealing biomarkers in their spatial context.

- Discover novel biomarkers with more insights
- Get a complete view of disease complexity
- Explore the spatial organization within cell atlases
- Identify spatiotemporal gene expression patterns

High-Plex *In Situ* Analysis with Subcellular Resolution

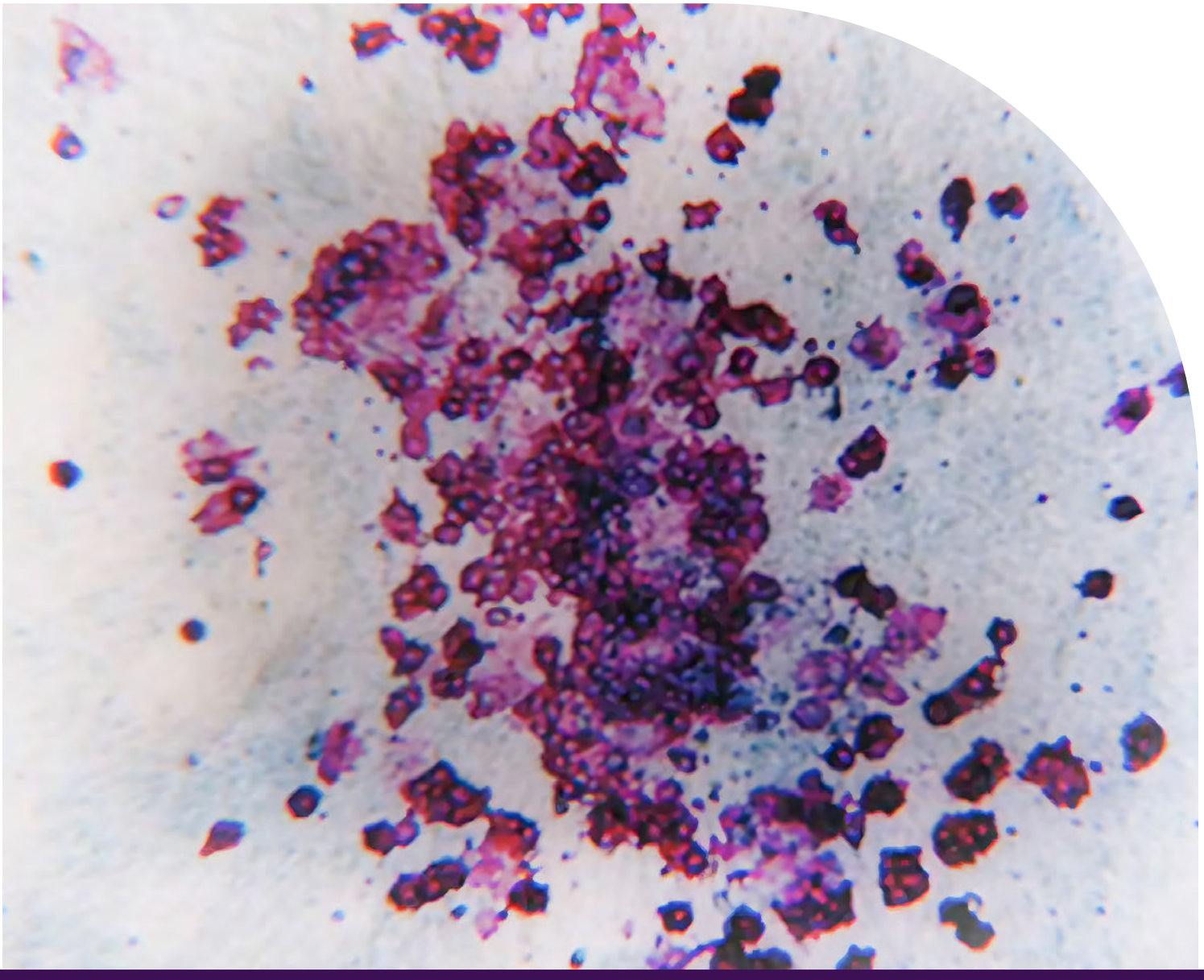
Our Xenium services enable high-resolution spatial transcriptomics, including subcellular RNA detection, high-plex RNA profiling, and spatial tissue mapping, up to 5,000 genes with subcellular spatial context.

- Profile spatial gene expression in tissues
- Detect localized disease or therapy biomarkers
- Map cell types and gene activity by location
- Analyze the tumor microenvironment
- Track spatial gene changes over time or treatment
- Study variable expression and localization of targets
- Assess MOA, efficacy, and safety in context
- Stratify patients via tissue- and cell-specific biomarkers
- Reveal hidden biology and actionable targets

When combined with Chromium and Visium data, our cell biologists deliver a multi-resolution approach to studying cellular and tissue biology—capturing insights at the cellular, tissue, and subcellular levels.

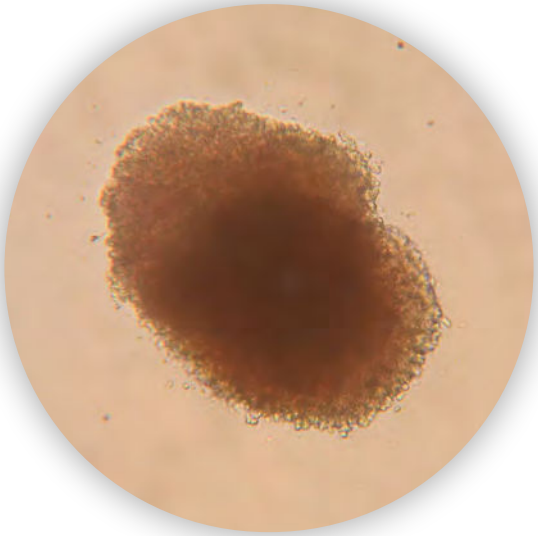
Hematopoietic Colony Forming Cells Assay Services

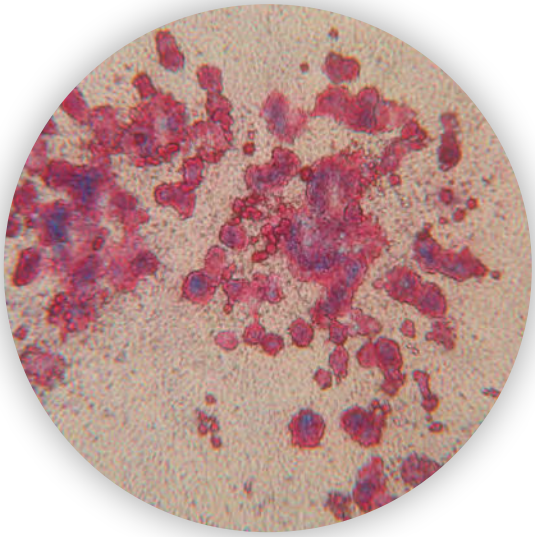
With decades of experience, our cell biologists deliver an array of fit-for-purpose hematopoietic colony forming cell (CFC) assay services to predict off-target toxicity to hematopoietic progenitor cells—supporting risk assessment for neutropenia, anemia, and thrombocytopenia in drug development. Using primary cells and lineage-specific growth factors, our experts more accurately replicate in vivo hematopoiesis than traditional cell line-based models, and they can evaluate small molecules, antibodies, antibody-drug conjugates (ADCs), bispecific antibodies, new drug entities, oligonucleotides, cytokine mimetics, CAR-T cells, etc.



Myeloid and Erythroid CFC Assays

Test primary bone marrow cells with the drug candidate and count the resulting hematopoietic progenitor-derived colonies, predicting neutropenia or severe anemia ahead of clinical trials.





Megakaryocytic CFC Assays

Test primary bone marrow cells with the drug candidate, predicting thrombocytopenia caused by drug toxicity at the megakaryocyte progenitor cell stage.

Blood Cancer CFC Assays

Evaluate and rank the effectiveness of your drug candidates at inhibiting blood cancer stem and progenitor cell expansion.

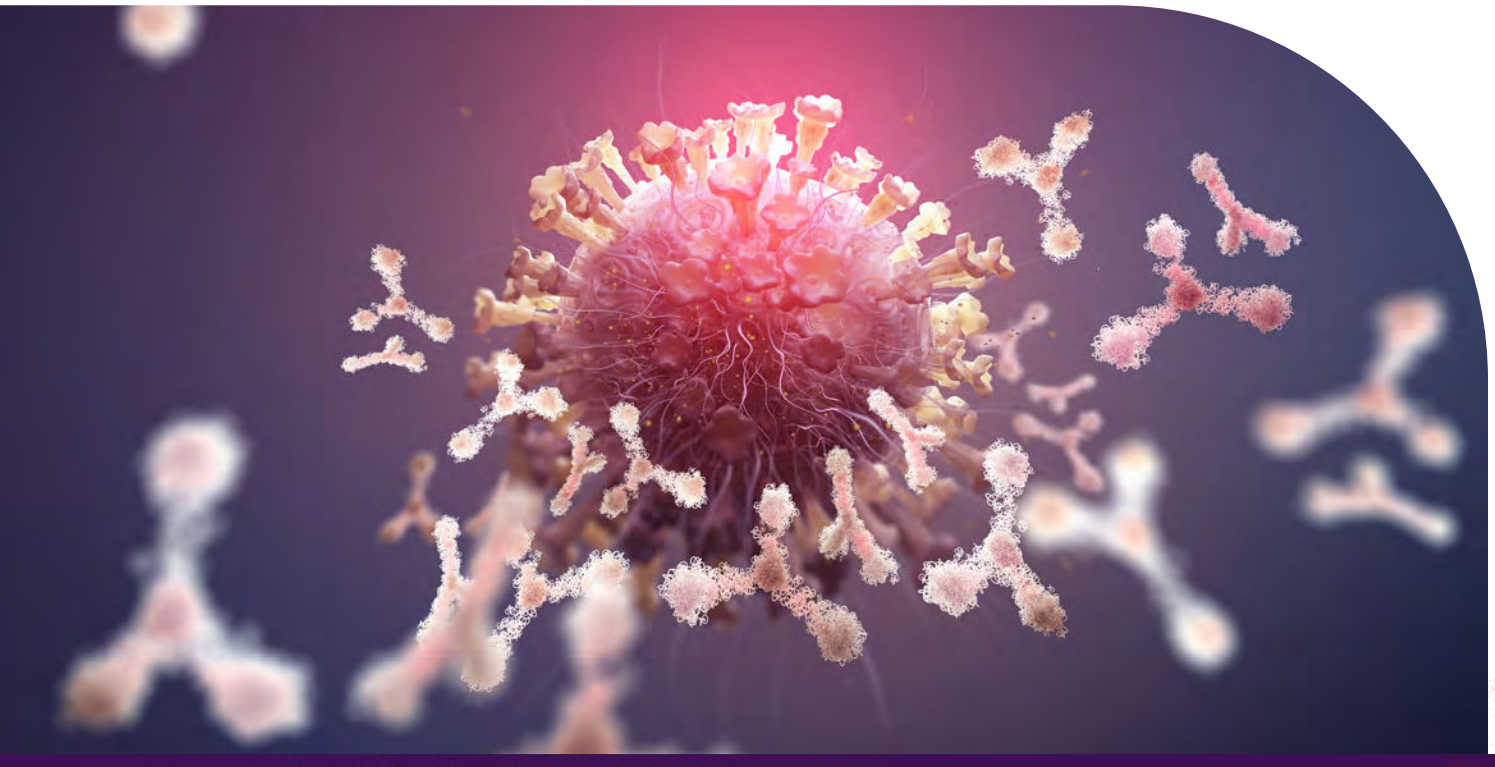
Discovery's cell biologists have decades of experience performing these assays, so you can trust our cell culture proficiency and lineage-specific colony scoring accuracy.

Additional Blood Cell-Based Assay Services

Leverage our expertise in primary blood cell biology to evaluate drug efficacy and assess potential adverse impacts. Discovery's comprehensive, customizable blood cell-based assays span a wide range of therapeutic classes, including small molecules, monoclonal antibodies, bispecific antibodies, ADCs, oligonucleotide-based therapies, CAR-T cells, and more.

T Cell Activation and Cytokine Release Assays

- Assess T cell activation and cytokine release potential
- Enable IND submissions with soluble, wet bound, and air-dried presentations to fulfill FDA requirements
- Evaluate the restriction of cytokine release by allergy and anti-inflammatory drugs
- Facilitate drug candidate comparison with commercially available drugs with known stimulatory or inhibitory properties



Hemoglobin (HbF) Induction Assay

- Screens drugs for their ability to increase levels of fetal hemoglobin for sickle cell disease and other hemoglobinopathies, including β-thalassemia
- Confirm potential synergistic effects when tested in combination with hydroxyurea
- Use primary human CD34+ cells that are expanded and induced to differentiate along the erythroid lineage
- Measure HbF directly by flow cytometry and ELISA, as opposed to indirect assays evaluating RNA transcript numbers

ADC Off-Target Toxicity Assay

- Assess neutropenia or thrombocytopenia potentials without animal studies
- Use primary bone marrow cells and a semi-solid matrix with specific growth factors
- Enable IND submissions when hematotoxicity is a concern
- Reflect real-world situations with drug combination studies
- Allow comparisons with commercially available therapeutics

ADC Linker Stability Assay

- Assesses ADC linker stability using *in vitro*-derived neutrophils
- Provide biologically relevant data for linker stability by incubating ADCs with neutrophils derived *in vitro* from primary bone marrow progenitor cells
- Measure the demise of linker-cleaving neutrophils with flow cytometric analysis of CD66b+ bright cells, thereby assessing linker stability

Antibody-Dependent Cell-Mediated Cytotoxicity (ADCC) Assay

- Rank antibody candidates' tumor/cancer cell killing effectiveness
- Evaluate bi-specific antibodies and other immune cell modulators
- Use PBMCs, specific enriched cell populations, or pre-screened natural killer V158+ cells for biologically relevant data
- Provide flow cytometry readouts

Complement-Dependent Cytotoxicity (CDC) Assay

- Screen antibody-based therapeutics for complement events
- Facilitate safety profiling
- Ensure better responses by using fresh blood (<4 hours old)
- Provide flow cytometry readouts

Mast Cell Activation Assay

- Predicts drug candidate efficacy using primary CD34+ cells cultured with specific growth factors to generate mature mast cells
- Fresh and ready-to-use mast cells are also available for purchase

Megakaryocyte Maturation and Platelet Development Assays

- Predict drug candidate toxicity to developing megakaryocytes and platelets
- Use primary CD34+ cells cultured with specific growth factors to induce megakaryocytic lineage differentiation
- Liquid culture allows for drug administration and/or washing out at multiple timepoints, simulating clinical treatment options
- Track megakaryocytic development and drug interference using flow cytometry
- Deepen toxicity understanding with biologically relevant data

Myeloid and Erythroid Cell Maturation Assays

- Predict drug candidate toxicity to developing neutrophils and red blood cells
- Use primary CD34+ cells cultured with specific growth factors to induce myeloid or erythroid lineage differentiation
- Liquid culture allows for drug administration and/or washing out at multiple timepoints, simulating clinical treatment options
- Track neutrophil and red blood cell development and drug interference using flow cytometry
- Deepen toxicity understanding with biologically relevant data

Need something not listed? Discovery's team of highly skilled and collaborative cell biologists can customize or replicate protocols to meet your specific research needs and support the functional evaluation of your compounds.

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