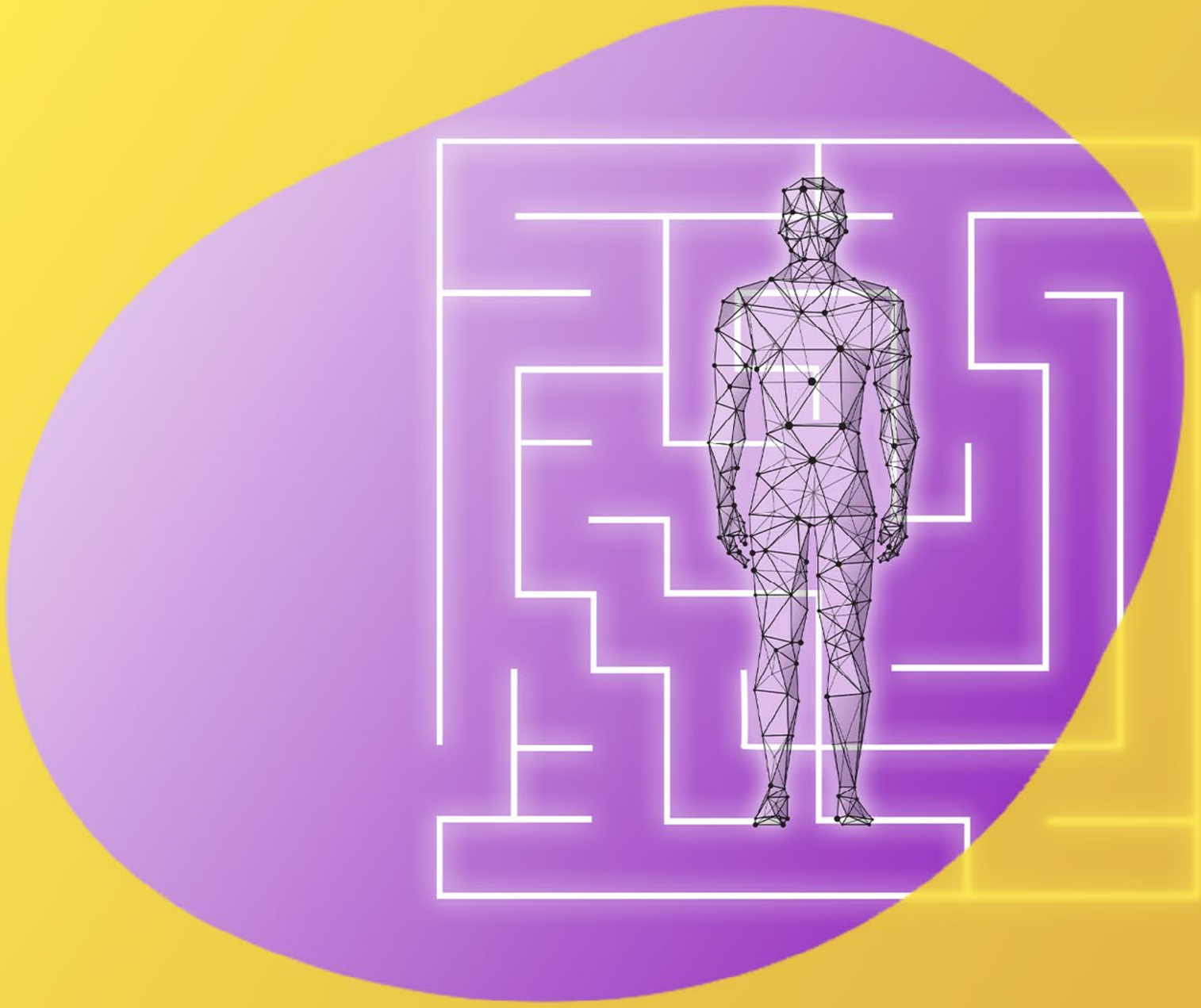
Discover the path to precision.



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Solutions for precision medicine research

For research use only. Not for use in diagnostic procedures.

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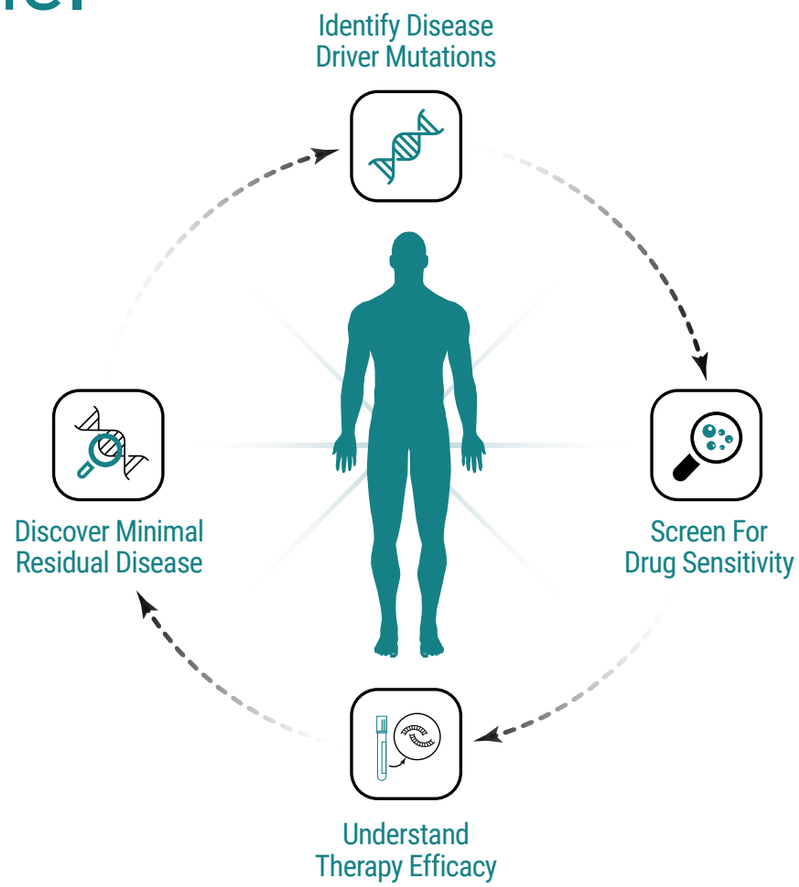
Realize the power of precision medicine.

Countless diseases, especially cancer, affect individuals differently. A one-drug-fits-all approach isn't practical for treating or fighting these diseases effectively.

That's where you come in. Building an understanding of both the molecular and functional paradigms within an individual is the only real way to enhance treatment efficacy. Our wide range of technologies can help you gain the knowledge you need to identify genomic vulnerabilities, screen functional responses, and evaluate how well a treatment is working.

The need for better profiling is clear, and technological advances are making it possible to optimize clinical trials and ultimately develop precise therapies.

Get the clarity you need in your research to identify the right target – for the right individual, at the right dose, and at the right time.



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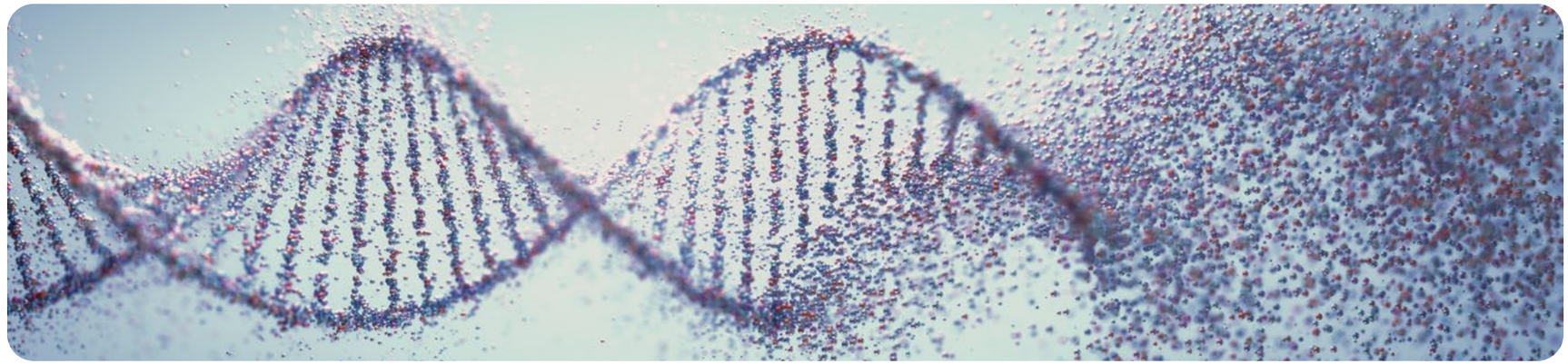


Revealing genomic profiles.

Next-generation sequencing (NGS) technology allows for the rapid, accurate sequencing of numerous genes in parallel. Advances in genomic sequencing and bioinformatics have revealed the enormous potential of cancer genomics.

For example, we can now identify genetic mutations that affect the performance of certain drugs. In addition, developments in drug discovery can now target tumor-driving mutations identified by NGS. These breakthrough advances have shown strong benefits.

Learn more about:

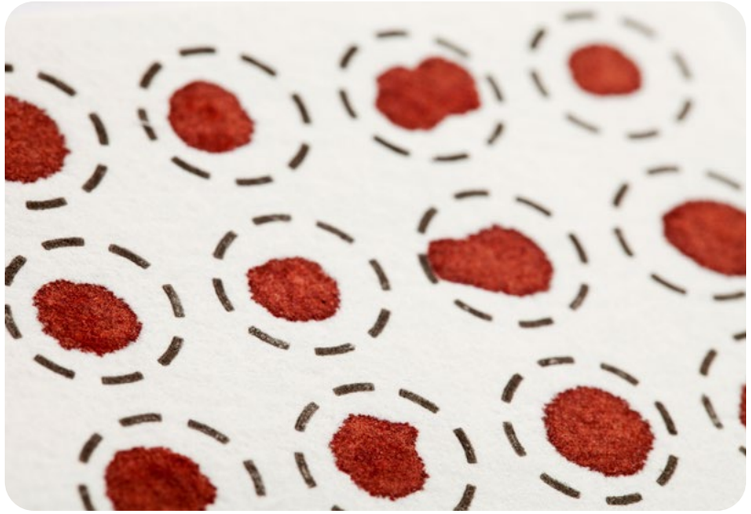
- Sample collection & preparation
- Quality assurance & control
- Library preparation
- Services

Case study

Learn how the Jensen lab at the translational genomics institute (TGen) use cell-free biomarkers to improve their understanding of neurodegenerative diseases.

Learn more

Sample collection & preparation



Improperly prepared or mishandled samples can skew laboratory results, rendering them useless. Combine that with the variability of recovery rates, the presence of impurities, and molecular degradation, the ability to generate high-quality data for genetic research becomes compromised. It's no wonder researchers are turning to automation for traceability as well as error reduction.

Explore our helpful resources that address common challenges in the lab.

Maximize sample prep efficiency

Protect integrity, from collection to storage, with minimal invasiveness.

Learn more

Increase nucleic acid yields

Achieve uniform homogenization of biological samples.

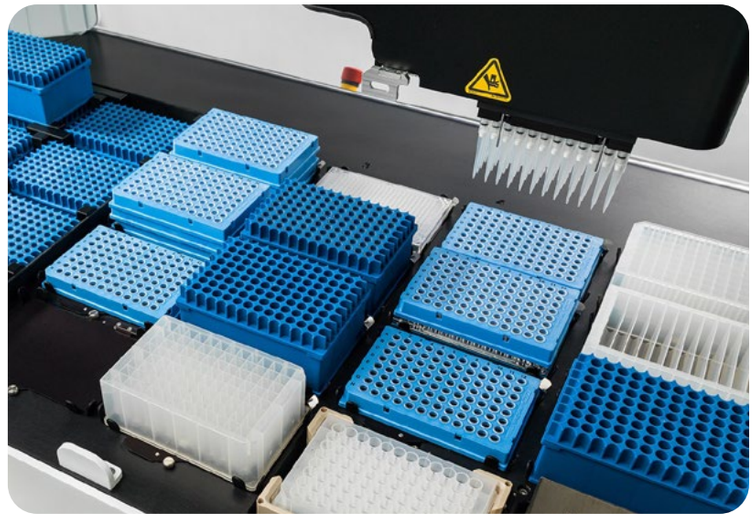
Learn more

Automation-enabled tissue homogenization

Leverage sample-to-sample repeatability and upgrade your workflow.

Learn more

Library preparation



Library preparation is crucial to the success of your NGS workflow. It involves converting a genomic DNA sample into a library of fragments that can be sequenced.

Unfortunately, the process requires a lot of repetitive, error-prone pipetting and many time-consuming steps. To combat this, labs are turning to automation more and more to help increase efficiency, reduce errors, and save hands-on time.

Explore our helpful resources that address common challenges in the lab.

Decoding library complexity

Detect low frequency variants in solid tumors and liquid biopsies with our full length UDI-UMI barcodes.

Learn more

Gain deeper view of expression profiles

Learn how to remove abundant and uninformative fragments prior to sequencing.

Learn more

Accelerating NGS workflows

See how vendor-qualified automated library protocols are shrinking the time to start sequencing from months to days.

Learn more

Simplify NGS from blood

Learn how to automate the low-throughput construction of NGS libraries from whole blood.

Learn more

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Quality assurance & control

Quality control has always been a major component in high-throughput genomic data processing because it's the only way to ensure accurate results every time.

Establishing metrics to enhance validation and monitor quality can be a daunting task, but it doesn't have to be. We offer dependable products, innovated from years of experience, that can help optimize your process.

Explore our helpful resources that address common challenges in the lab.

Improve the efficiency of DNA and RNA analysis

Watch this video to learn how to perform DNA and RNA QC analysis in as little as 30 seconds.

Learn more

Rapid DNA quantification

See reliable results using VICTOR™ Nivo™ multimode plate reader and micro-volume plates.

Learn more

Take control of your assay workflow

Patient-like molecular reference standards for oncology diagnostics to support end-to-end workflow validation and routine monitoring.

Learn more

Clinical genomic services

Developing a comprehensive infrastructure that matches the speed and capacity you require for precision can be a challenging task. To ensure accessibility, it's critical to create a streamlined process that can help you accelerate time to results and adhere to budget.

In addition, a highly trained team must ensure assay design and test coverage meets or exceeds industry standards, giving you the confidence in highly reproducible results.

Our team of experts provides comprehensive testing programs for detecting clinically significant genomic changes by leveraging a variety of technologies and customized solutions tailored to your needs.

Explore our helpful resources that address common challenges in the lab.

Hereditary cancer discoveries

Learn how to accelerate the delivery of results-panel testing.

Learn more

Explore our ultrarapid whole genome sequencing

Our comprehensive Whole Genome Sequencing (WGS) offers a range of features. With a turnaround time of 5-8 days and flexible sample types, our service is a convenient and efficient option for your needs.

Learn more

- Introduction
- Genomic profiling
- Functional drug testing
- Biomarkers
- Tissue profiling
- Our solutions
- Contact us

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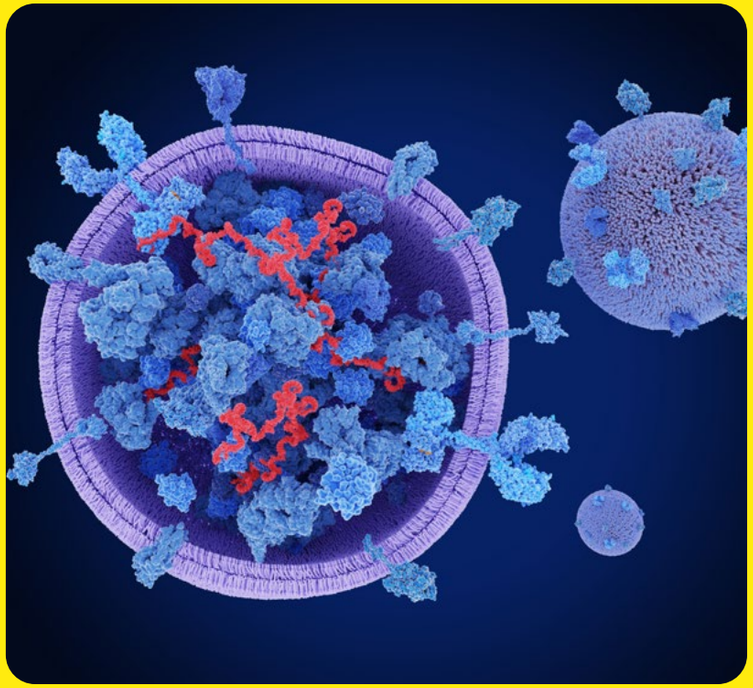
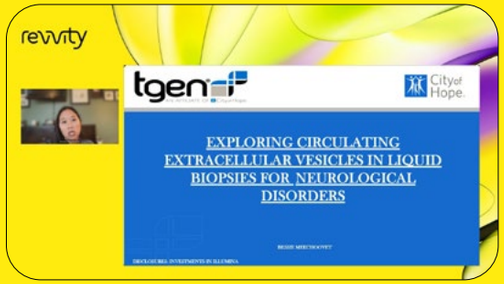
CASE STUDY

Gain a deeper understanding of disease using extracellular vesicles.



Based in the Translational Genomics Research Institute (TGen), the Jensen lab utilizes long-read single-cell and RNA transcriptomics data to identify minimally invasive biomarkers in biofluids. This improves our understanding of neurodegenerative diseases such as Parkinson's disease, Alzheimer's disease, and ALS.

More specifically they are working on a method to isolate brain-specific extracellular vesicles to weed out the noise from brain-specific transcriptome expression and provide more accurate results.



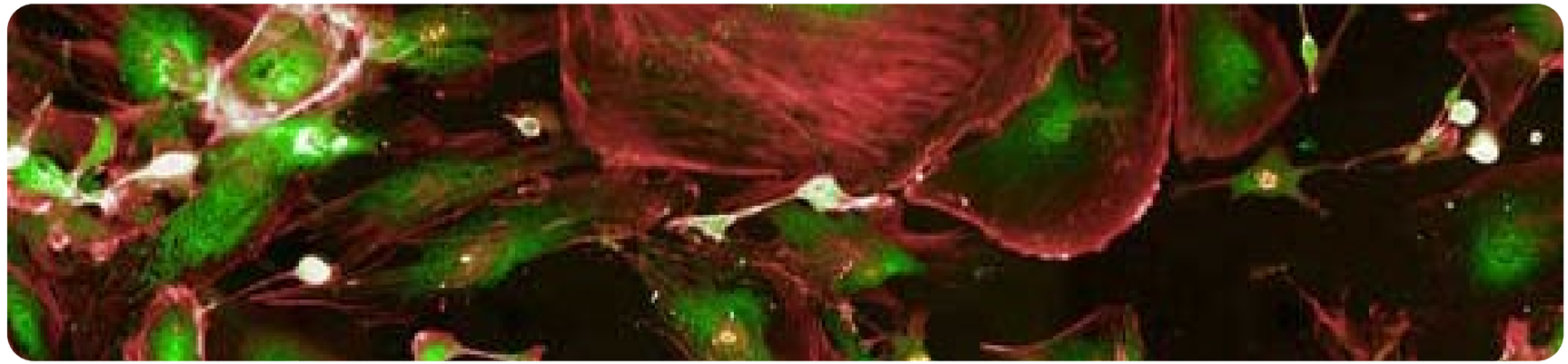
Watch on-demand webinar

Sample collection & preparation

Quality assurance & control

Library preparation

Services



Courtesy of FIMM High Content Imaging and Analysis-HCA Unit, University of Helsinki

See more with functional drug testing

Characterizing the *ex vivo* cellular function in response to drug treatment exposes drug sensitivity, therapeutic resistance, and any toxicological effects.

In combination with genetic profiling, functional characterization is providing the clarity needed for rational selection of active combination regimens – to ultimately deliver the best possible outcome for every individual.

Learn more about:

- Sample preparation
- Cell health & pathway analysis
- Phenotypic profiling
- PDX monitoring

Case study

Researchers at the Institute for Molecular Medicine Finland (FIMM), HiLIFE, University of Helsinki, are demonstrating how functional screening of 3D patient-derived cancer cells enables effective drug sensitivity testing and the potential to tailor medicines to individual patients.

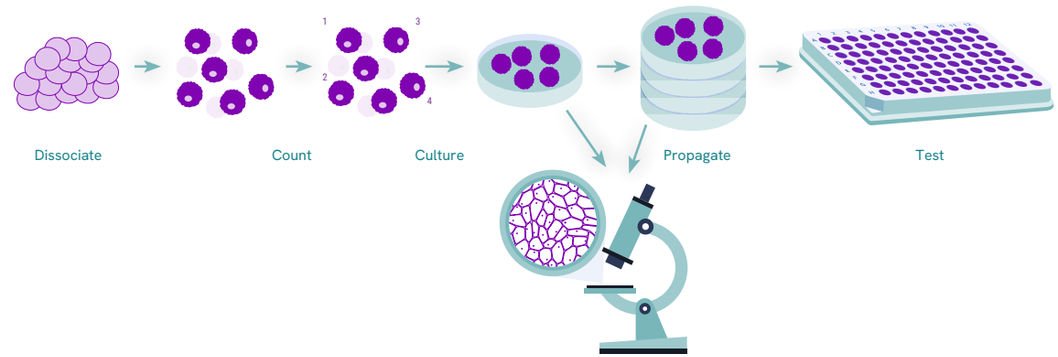
Learn more

Sample preparation

Patient-derived organoids (PDOs) created from patient biopsies can mirror clinical responses to highlight the therapy or combination of therapies that have the greatest efficacy.

It's critical that PDOs maintain tissue heterogeneity through rounds of propagation because expansion is often required to generate enough material for extensive functional drug tests.

Patient Derived Organoid Workflow



Explore our helpful resources that address common challenges in the lab.

Automate organoid image analysis

Enable 3D segmentation and analysis for your 3D high-content assays.

Learn more

Improve cell counting accuracy

Discover how the Cellaca™ MX can help accelerate your cell counting without losing accuracy.

Learn more

Upscaling organoids

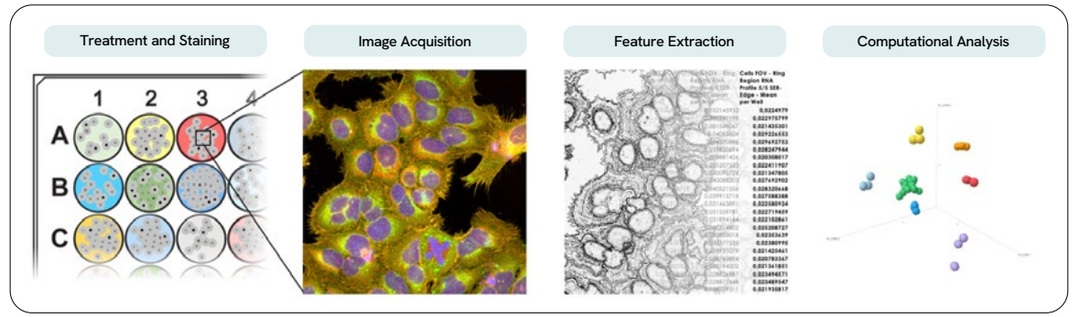
Learn how automation can help you achieve greater biological insights.

Learn more

Phenotypic profiling

High-content imaging systems combined with machine learning can tease apart subtle yet crucial phenotypic differences within *ex vivo* cultures, allowing you to explore the heterogeneity within a patient sample and identify the most potent drug combinations.

Automated pipelines not only increase throughput, but they also limit data manipulation for more consistent sample evaluation.



Workflow of the Cell Painting assay. Cells are plated into microtiter plates and treated with compounds. After a treatment of several hours or days, cells are stained with a set of fluorescent dyes using the PhenoVue cell painting kit. Images are acquired on the Opera Phenix Plus high-content screening system. Phenotypic features are extracted from images using a cell painting specific building block available for the Harmony imaging and analysis software. Cell features are then analyzed using computational models, e.g. principal component analysis in Revvity Signals Screening analysis platform, to differentiate clusters of cellular phenotypes.

Explore our helpful resources that address common challenges in the lab.

Streamline functional profiling

Use cell painting to observe cell behavior under the influence of different drug combinations.

Learn more

Enhance phenotypic discovery

Learn how artificial learning techniques are addressing challenges with image based screening.

Learn more

Upscale organoid research

Create modular workstations to increase reproducibility and depth of insights.

Learn more

Cell health & pathway analysis

Functional assays allow researchers to monitor key cellular processes such as apoptosis, proliferation, and immune status – critical for evaluating therapeutic efficacy. These assays can be used to calculate cytotoxicity by measuring changes in viability, mitochondrial function, or cell-cycle progression.

Notably, because functional assays replicate a particular biological system *in vitro*, they have the ability to predict many drug combinations. Determining cell health through functional drug testing can be assessed in multiple models.

Quick guide for each technique

Flow Cytometry
Immune & pathway profiling of cells

Image Cytometry
Single-cell health assessment as end point or kinetic assays

ATP Consumption
Rapid whole-well assessment of cell proliferation and toxicity

Reporter Gene
Targeted monitoring of gene expression and cell signalling

Explore our helpful resources that address common challenges in the lab.

Scale cell proliferation & death analysis
Monitor the proliferation and cell death analyses of 3D cultures using ATPlite 3D products.
Learn more

Streamline spheroid analysis
See how image cytometry reduces time and effort when quantifying key aspects of 3D cultures.
Learn more

Capture hard-to-target exome regions
Discover reagents that profile functional immune and signalling pathways with flow cytometry.
Learn more

Select the right label
Learn more about choosing the appropriate antibody or probe for your cell health and proliferation studies.
Learn more

PDX monitoring

In *in vivo* modeling, PDX models are used to anticipate cancer aggressiveness and to recapitulate tumor-stroma architecture.

Engrafted to the host, the model system maintains primary tumor features over numerous passages, avoiding the bias of culture-driven genetic drift.

Explore our helpful resources that address common challenges in the lab.

Automate ultrasound imaging

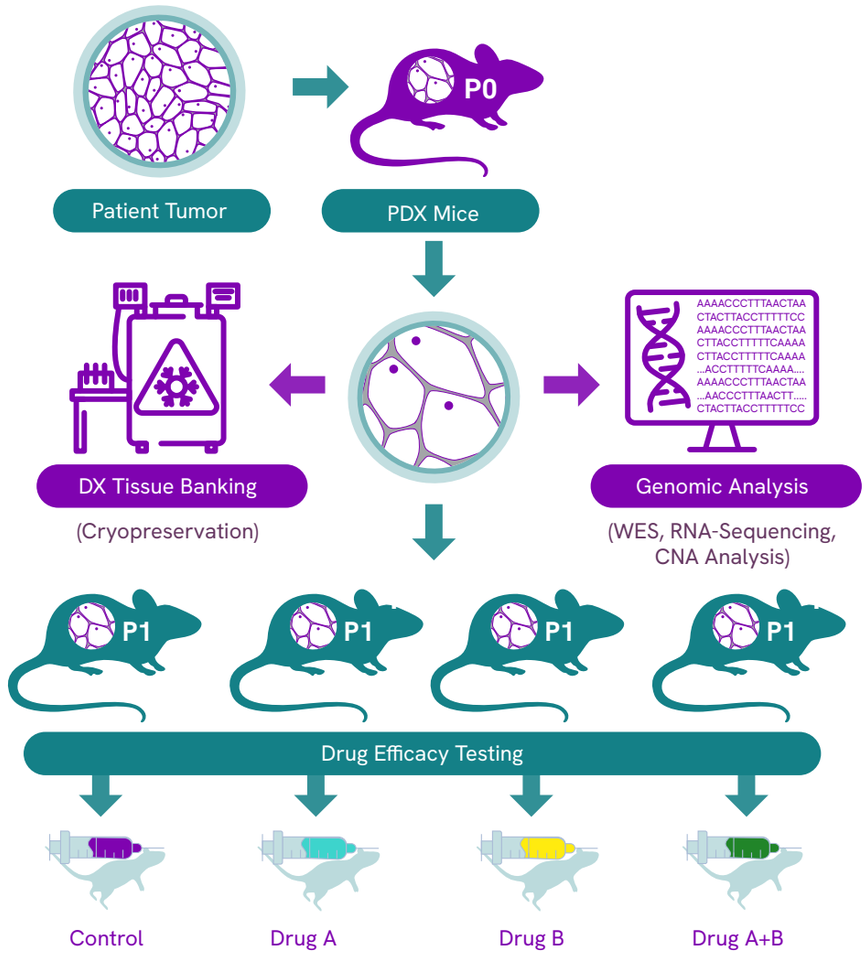
Learn how ultrasound imaging provides non-invasive 3D views into vascular changes.

Learn more

Combine imaging modalities

Obtain functional and anatomical data from a single subject by co-registering optical and mCT images.

Learn more



- Introduction
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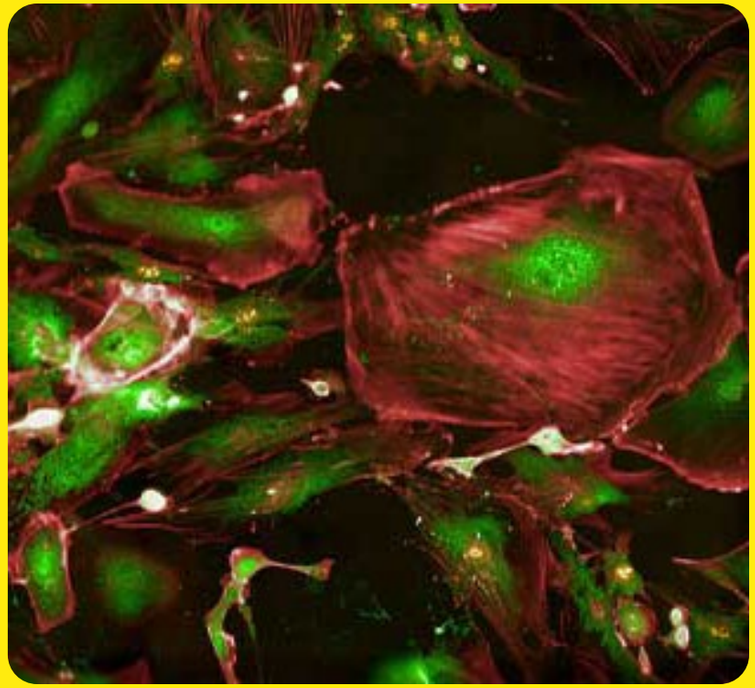
- Functional drug testing
- Biomarkers
- Tissue profiling
- Our solutions
- Contact us

CASE STUDY

Enabling drug sensitivity testing of 3D *ex vivo* cultures

Researchers at FIMM, HiLIFE, University of Helsinki, are demonstrating how the functional screening of 3D patient-derived cancer cells enables effective drug-sensitivity testing and tailored treatment options.

Senior scientist Vilja Pietiäinen and principal investigator Lassi Paavolainen, both from FIMM, discuss their functional drug screening approach using imaging, AI, and machine-learning models to uncover complex information from cancer cells and tissue samples.



Courtesy of FIMM High Content Imaging and Analysis-HCA Unit, University of Helsinki

Read full case study

Sample preparation

Cell health & pathway analysis

Phenotypic profiling

PDX monitoring

The vital role of biomarkers.

Biomarkers provide insights into human biological processes and are critical for informing precision medicine-based decision making.

Identifying and validating biomarkers with enough sensitivity and specificity to correctly predict clinical outcomes requires a huge amount of research. This research is imperative for the successful development of effective treatments and avoidance of drug induced toxicity.

Learn more about:

Pharmacogenomics

Protein verification

Case study

Dr. Brigid Ryan, a neuroscientist at the Centre for Brain Research at the University of Auckland, investigates neurodegenerative disease by taking a multidisciplinary approach in defining early biomarkers of dementia.

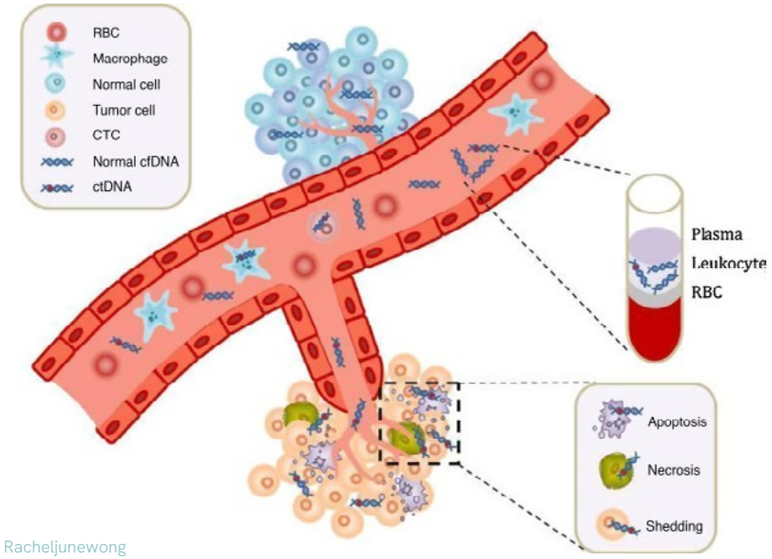
Learn more

Pharmacogenomics | Protein verification | Case study | Solutions

Pharmacogenomics

Pharmacogenomics looks at how DNA affects the way patients respond to medications, accelerating the process of finding the right prescription drugs for the right patients.

Detecting alterations from different genomic fragments within liquid biopsies builds a holistic understanding of treatment efficacy. For example, cell-free DNA (cfDNA) can provide insights on the molecular evolution of a disease while exosomes deliver intercellular messages.



Credit: Racheljunewong

Explore our helpful resources that address common challenges in the lab.

Streamline miRNA mapping & discovery

Simplify low-input small RNA-seq library preparation from challenging samples.

Learn more

Automate mRNA purification

Learn how to efficiently isolate high quality miRNA from plasma.

Learn more

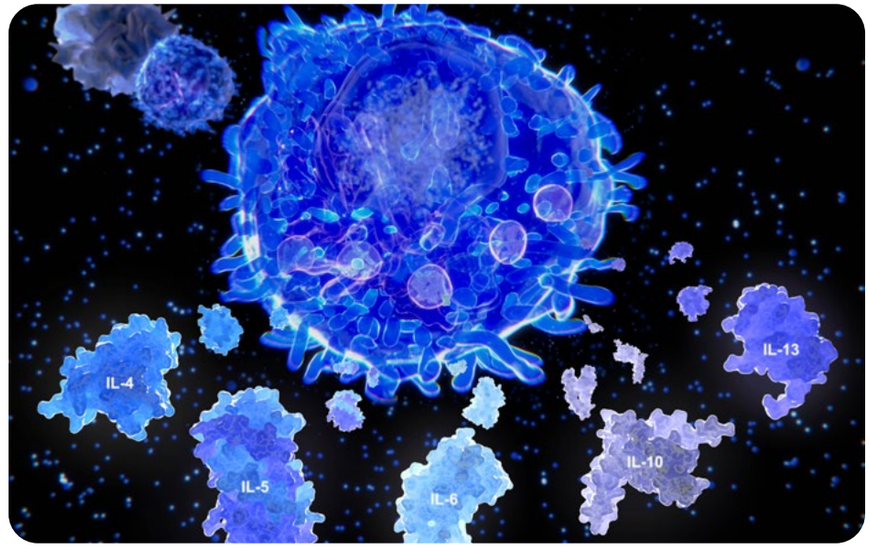
Eliminate PCR bias from NGS

Now you can eliminate bias introduced during PCR with a complete workflow that enzymatically fragments, prepares, and normalizes libraries.

Learn more

Pharmacogenomics | Protein verification | Case study | Solutions

Protein verification



Quantitation of soluble and surface biomarkers in serum provides valuable information about which pathways and functions are enriched. It's also used to detect disease-specific alterations within target proteins.

The ability to detect analytes of interest at scale enables comparison with previous studies, as well as real-time monitoring of therapy response.

Additionally, characterization of cell-associated proteins can provide valuable information to address disease prognosis and aid in designing personalized therapy.

Explore our helpful resources that address common challenges in the lab.

Multiplex analyte detection

Quantify multiple soluble analytes simultaneously in biological samples using bead-based immunoassays for flow cytometry.

Learn more

Enhance immunoassay performance

Use high-sensitivity and dynamic-range assays for endogenous plasma protein detection.

Learn more

Improve cluster resolution

Discover new biomarkers and characterize new ones with single-cell multiomic profiling.

Learn more

ELISA kits & sets

Find all the reagents for your ELISA workflow with our economical kits, antibodies, and ancillary reagents.

Learn more

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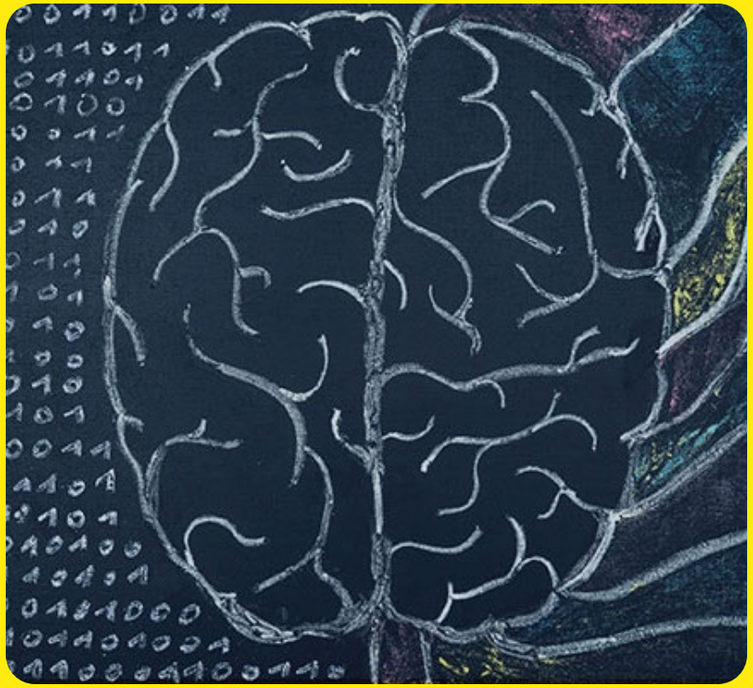
CASE STUDY

The role of biomarkers in drug discovery for neurodegenerative disease



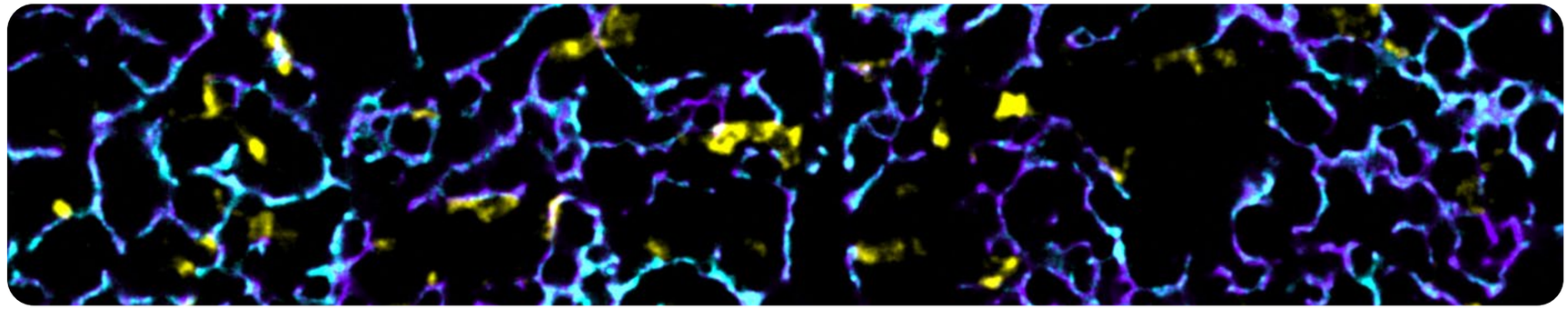
Dr. Brigid Ryan, a neuroscientist at the Centre for Brain Research at the University of Auckland, investigates neurodegenerative disease by taking a multidisciplinary approach in defining early biomarkers of dementia.

For years, Dr. Ryan has explored the role microRNAs (miRNA) play in memory. Her focus is on using dysregulated plasma miRNA profiles as biomarkers in neurodegenerative disorders like Alzheimer's Disease, with a concentration on inherited frontotemporal dementia. Read more about her ongoing research and its influence in neurodegenerative drug pipelines, as well as her perspectives on this exciting field of biomarker discovery.

Read full case study

Pharmacogenomics

Protein verification



Credit: Confocal image of mouse thymus tissue using IBEX and staining for Cytokeratin (purple), DEC205 (cyan), and CD206 (yellow). Image generously provided by Dr. Andrea Radtke and Dr. Hiroshi Ichise in the laboratory of Dr. Ronald Germain, Lymphocyte Biology Section, NIAID, NIH.

The use of information and images from Dr. Radtke and Germain lab colleagues on these pages does not imply any endorsement of PKI or its products by the US Government.

Unpack the microenvironment with tissue profiling.

Tissue microenvironment plays an essential role in disease progression. It's important to understand this highly heterogenous environment so you can better predict a patient's prognosis.

The interaction between a tumor and its immune and stromal microenvironments shapes clinical outcomes. Analyzing the tumor's composition, organization, and functionality, enables you to find ways to therapeutically manipulate it.

Learn more about:

Single-cell multiomics

Spatial profiling

Case study

Dr. Andrea Radtke and colleagues in the laboratory of Dr. Ronald Germain at the US National Institutes of Health have recently developed an open microscopy method for the high-content multiplex imaging of diverse tissues. Watch the webinar for more details.

Learn more

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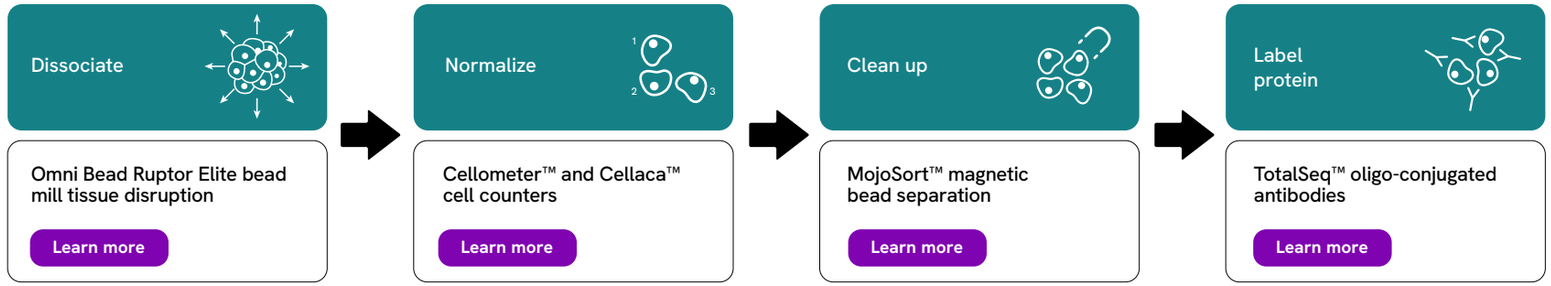
Single-cell multiomics | Spatial profiling | Case study | Solutions

Single-cell multiomics

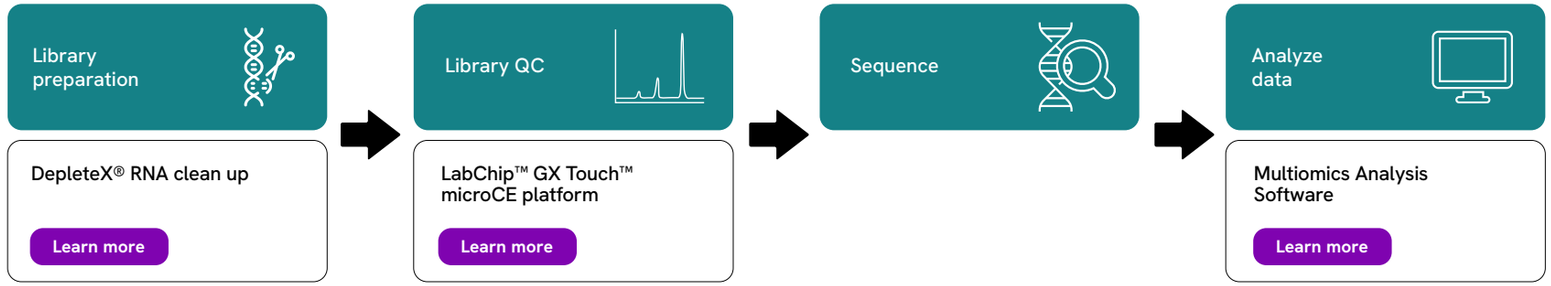
Single-cell multiomics analysis allows you to investigate the heterogeneity of gene and protein expression in the same cell. This form of analysis helps you understand how a patient's cells are reacting to treatment or showing effectiveness by profiling their RNA, DNA, or protein.

Upstream sample preparation



Partition and barcode

Downstream fragment analysis



Single-cell multiomics | Spatial profiling | Case study | Solutions

Spatial profiling

Unravelling cellular organization and interaction throughout the tissue environment is essential to understanding disease and therapy response.

This requires a high degree of multiplexity – beyond the 2-7 parameters commonly used with traditional imaging techniques – to identify the vast number of cellular phenotypes present in this dynamic landscape.

Advanced multiparameter microscopy, emerging imaging platforms, and new reagents capable of measuring dozens of parameters are helping researchers and clinicians design better, personalized treatments.

Explore our helpful resources that address common challenges in the lab.

Increase tissue transparency

Optimize clearing for 3D imaging, allowing for a better understanding of spatial composition.

Learn more

More parameters, greater insights

Learn how to multiplex more than 60 parameters without any special equipment.

Learn more

A new era of spatial biology

Learn more about our portfolio of reagents for highly multiplexed tissue imaging and multiomic technologies.

Learn more

Intelligent image acquisition

Increase your throughput by automating the acquisition and analysis of tissue sections.

Learn more

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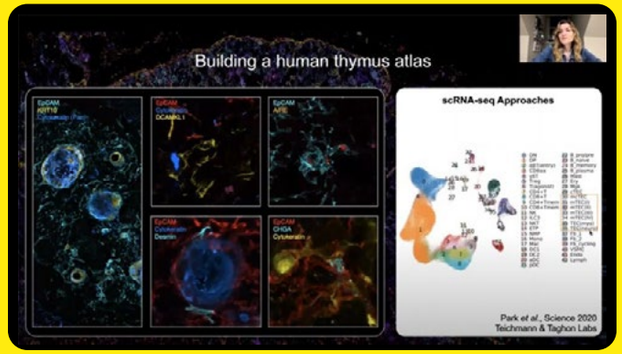
CASE STUDY

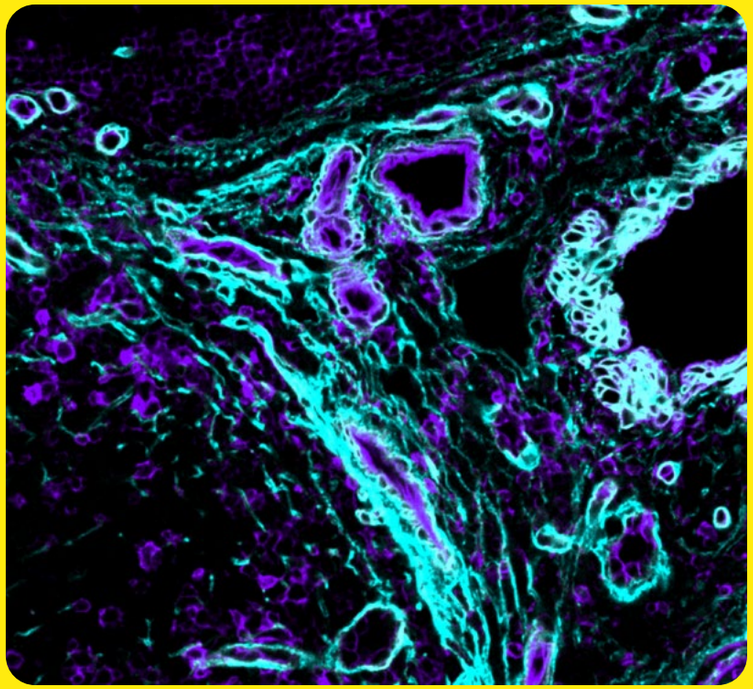
Discovering the IBEX imaging method

Dr. Andrea Radtke and colleagues of the Lymphocyte Biology Section in the National Institute of Allergy and Infectious Diseases have recently developed an open microscopy method for the high-content multiplex imaging of diverse tissues.

Watch the webinar to learn more about the method – IBEX (Iterative Bleaching Extended multi-pleXity) – and its applications in building cell atlases and phenotyping tissue. Using commercially available antibodies, IBEX allows for repeated cycles of staining, imaging, and bleaching, making it possible to analyze more than 65 parameters in a single sample.



Watch webinar



Credit: Confocal image of human lymph node tissue using IBEX and staining for CD39 (purple) and CD49a (cyan). Image generously provided by Dr. Andrea Radtke and Dr. Hiroshi Ichise in the laboratory of Dr. Ronald Germain, Lymphocyte Biology Section, NIAID, NIH.

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Single-cell multiomics

Spatial profiling

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Our solutions

Whether your research involves profiling tissue and genes or verifying biomarkers and drug sensitivity, we have full solutions – instruments, software, reagents, service, and support – to propel your science forward.

Explore our solutions

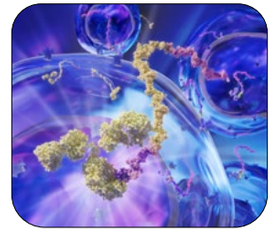
	Profiling Genes	Verifying Biomarkers	Functional Drug Testing	Profiling Tissue
Sample homogenization	●	●	●	●
Nucleic Acid Purification	●	●		
Library Preparation Kits	●	●	●	●
Genomic Testing Services	●	●		
scRNA and Protein Detection	●	●		●
Reference Standards for QC	●	●		
Nucleic Acid Analysis for QC	●	●		
Protein Biomarkers & ELISA assays		●		
TRF Immunoassays		●		
Reporter Gene Assays			●	
Microplate Readers	●	●	●	
Recombinant Proteins for QC		●		
High Content Screening Instruments			●	●
Cellular Imaging Software			●	
Cellular Imaging Reagents			●	●
Cell Counting & Image Cytometry			●	●
Spatial Imaging Reagents				●
Flow Cytometry Reagents			●	
Cytotoxicity and Proliferation Assays			●	
In Vivo Imaging Systems			●	
In Vivo Imaging Software			●	
In Vivo Imaging Reagents			●	
Functional Antibodies			●	
NGS Library Preparation Automation	●	●		
Automation & Liquid Handling		●	●	
Automated Plate Feeding Solutions	●	●	●	

Analyses Color Key: Profiling Genes · Verifying Biomarkers · Functional Drug Testing · Profiling Tissue

DNA and RNA Purification

Rapid and efficient, from a wide range of sample types

Learn more



BioLegend® TotalSeq™

Provides unparalleled simultaneous protein and genetic analysis

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NGS Library Preparation

Kits and barcodes designed to increase flexibility and speed

Learn more

Cell Line Derived Reference Standards

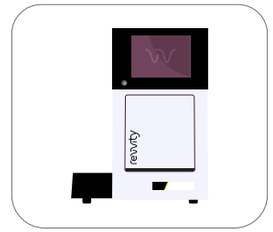
Improves assay development and routine monitoring

Learn more

Sequencing Services

For targeted genes, the whole exome or whole genome, and copy number variations

Learn more

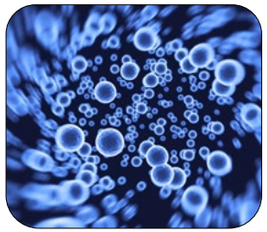


LabChip™ GX Touch™

Simplifies traditional gel separations for faster results

Learn more

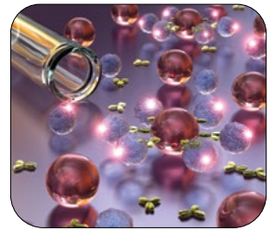
Analyses Color Key: Profiling Genes · Verifying Biomarkers · Functional Drug Testing · Profiling Tissue



Tissue homogenization

Streamline how you generate single-cell suspension or homogenize samples

Learn more



BioLegend® Immunoassays

Enables you to focus on a single target or measure up to 14 at once

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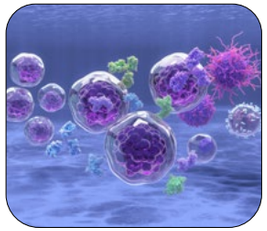

Recombinant Proteins

Stable and bioactive human, mouse, and rat proteins, including cytokines, growth factors, and chemokines from BioLegend®

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Cytotoxicity and Cell Proliferation Assays

Assesses a compound's ability to cause or block a biologic activity without having toxic effects on cells

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Accelerating science, from benchtop workstations to customized integrated platforms

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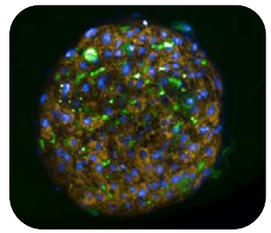

High-Content Imaging

Extracts quantitative multiparametric data at the single-cell level

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Analyses Color Key: Profiling Genes · Verifying Biomarkers · Functional Drug Testing · Profiling Tissue

Reporter Gene Assays

For high-sensitivity measurement of gene expression and cell signaling

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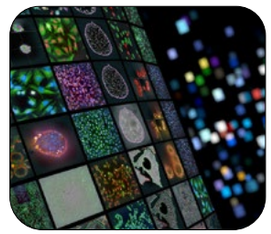

Signals Image Artist™

Reduces time to results with high-performance image analysis and management platform

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Multilabel Plate Readers

For the detection of biological, chemical, biochemical, or physical events from samples in a microplate

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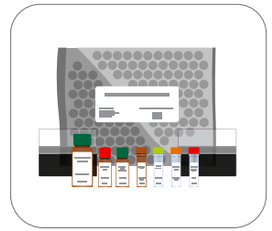

Cellular Imaging Reagents

Includes cell painting kits, stains, cell function reagents, and hydrogels

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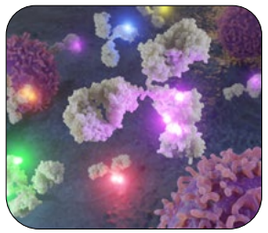

Flow Cytometry Reagents

Comprises directly conjugated antibodies, isotope controls, and compensation beads

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Plate::handler™ FLEX

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Rapid and whole-well for adherent and suspension cells

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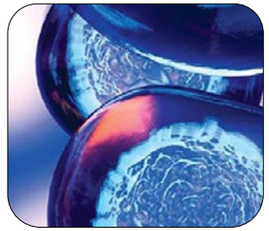

Cell Counting

Efficient determination of cell number, health, and immune phenotype

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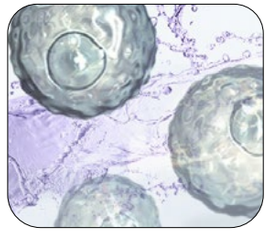

Functional Antibodies

Elucidate or affect the cellular functions of interest

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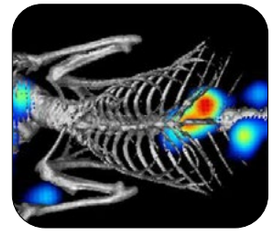

Preclinical Imaging Systems

Designed to help understand biology pathways, monitor disease progression, and evaluate drug candidates

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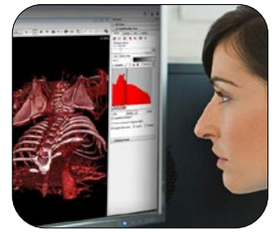

In Vivo Software Tools

Streamlines acquisition through analysis, simplifying even the most advanced imaging protocol

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Imaging Reagents

Probes, labels, and dyes optimized and validated in a broad range of imaging applications

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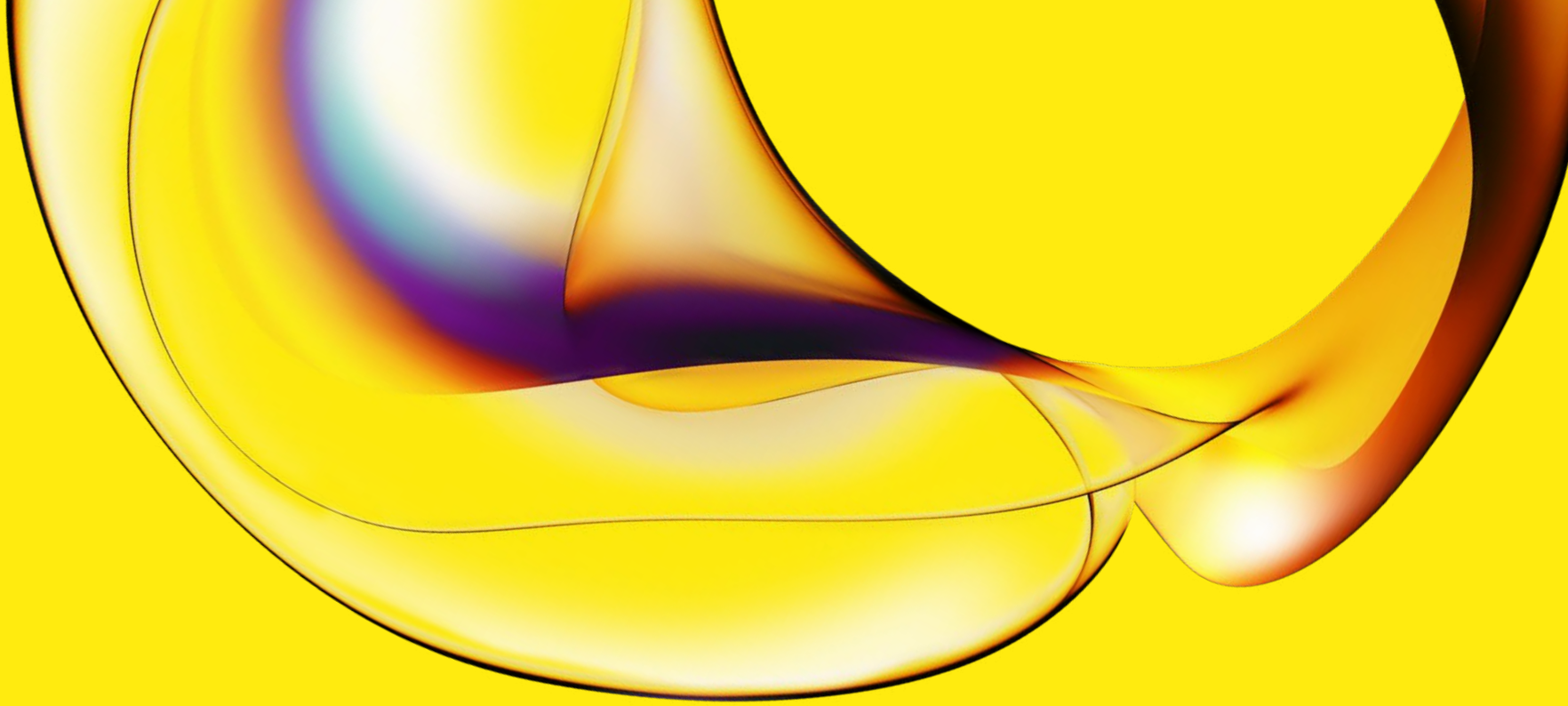

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