FROM BIOLOGY TO TARGET ENGAGEMENT
Workflows That Keep Your Research on Target

The next big breakthrough therapy gets its start right here: with researchers able to optimize and simplify their drug discovery workflows so that promising compounds can be identified and progressed quickly.

And that’s where our comprehensive drug discovery solutions come into play.

From target selection to product development, our extensive experience and expanding solutions portfolio enable faster discoveries and reliable, physiologically relevant models – so you can move your discovery campaign forward with confidence.

- Accelerate preclinical drug development with our comprehensive portfolio of drug discovery solutions
- Optimize your workflow with our complementary tools and technologies spanning the entire development pipeline
- Benefit from the multidisciplinary experience of our in-house experts across multiple therapeutic areas
Smarter Solutions for Faster Discoveries

The discovery and development of small-molecule drugs is a long, complex, and expensive endeavor. All stages of the workflow – from early discovery to scale up and commercialization – require the tools, technologies, and support to enable deeper biological disease understanding and address the inherent challenges of development pipelines.

Our proven product portfolio of tools for complete solutions serves every stage of the discovery workflow, with technologies ranging from instruments, reagents, consumables, data analysis, and bioinformatics tools to expert customer service and support. Solutions that support your research and accelerate the drug discovery and development process toward commercialization, clinical success – and new cures.
From Biology to Drug Development: Selection and Validation

From target selection to drug development is a multilayered process to determine whether the identified target is relevant to the disease being studied and suitable for pharmaceutical development. Following validation, researchers will search for a molecule or compound that acts on this target and then optimize it for efficacy and safety.

Explore our complete solutions serving all parts of the discovery and development workflow.
Taking Aim at Relevant Targets

Our imaging and detection technologies enable research scientists to unravel disease pathways and mechanisms of actions from physiologically relevant cells or tissues. Together, they can provide relevant, reliable results, so you can move your discovery campaign forward with confidence.

Liquid Handlers
Automate your science to minimize errors, reduce hands-on time, and increase throughput and reproducibility.

Functional Genomic Screening
Enable modulation of thousands of genes in a single experiment to identify genetic pathways, cellular processes, and novel therapeutic targets, and to genetically profile existing or potential therapeutics.

Assays and Readers
Efficiently transition from target to hit with our screening reagents supported by multimode microplate readers.

High-Content Screening
Optimize target-based and phenotypic profiling of physiologically relevant 2D and 3D cell models with our dedicated reagents, imaging systems, and image- and data-analysis packages.

In Vivo Preclinical Imaging Solutions
Advance your molecular and physiological understanding across a broad range of disease models with our in vivo preclinical imaging solutions.
Identify Leads with Speed and Confidence

To maximize probability of hit discovery and lead identification, you need multiple screening techniques to engage and confirm findings orthogonally. You can select lead compounds from a collection of hits by refining the screening criteria, enabling the most promising compounds to be developed further.

Our drug discovery screening solutions can help identify and confirm your drug compounds quickly, so you can advance them to the next stage of the development workflow with confidence.

Two Paths to Discovery

**Target-based drug discovery** screens compounds against a validated molecular target that’s considered to have an important role in disease.

**Phenotypic screening** tests multiple compounds against a relevant biological disease model to find those that revert the disease phenotype to a healthy one. Phenotypic screening doesn’t require prior knowledge of a specific target or mechanism of action.
Maximize Selectivity and Potency of Your Compounds

During lead optimization, analogs of leads are prepared and synthesized to improve biological properties for clinical development. This improves target selectivity and biological activity and reduces your compound’s potential toxicity.

Our validated screening assays, imaging solutions, and analysis software can help progress your hits into high-quality lead series during every step of the lead optimization process.
Once a lead compound is selected, you need to perform studies to evaluate its biological effects and gain valuable information on its efficacy, biodistribution, toxicity, and safety.

Our innovative instrumentation, reagents, consumables, and software enable you to determine efficacy and safety of those drug candidates, accelerating the drug development process and ensuring that compliance requirements are met.
Understanding Biology

The journey to discovering better targets requires a comprehensive understanding of human biology and diseases at the molecular level. Unravelling the underlying pathways and disease mechanisms smooths the way for discovery of novel therapeutic targets and helps decipher how we can best interfere with disease processes in the human body.

To then obtain the most relevant and robust data from cells and model systems, you need to choose the right assays, instrumentation, and informatics-based solutions to address the biological question being explored, which enable you to identify new cures. And our solutions support every step of that discovery workflow, from basic research to data analysis.
Interrogate Biology

Discovering better targets requires a comprehensive understanding of human biology and disease at the molecular level – demonstrated by biological assays.
Nucleic Acid Purification

Isolation of high-quality nucleic acids from patient samples or model systems is a key component of today's genomic analysis methods. Our high-performance workflows provide an innovative and efficient answer for this challenge.

Our chemagic™ kits are designed for use with chemagic automation, liquid handling instruments, and magnetic stands and enable purification of high yields of DNA and RNA from a huge variety of sample materials, including whole blood, serum and plasma, and saliva. All chemagic kits for DNA and RNA isolation include our proprietary M-PVA Magnetic Beads.

Dig Deeper - Here you'll find more information about nucleic acid purification and all our relevant products and services.
Radiometric detection is one of the most trusted, proven techniques for molecular quantitation. Our radiometric detection solutions range from radiochemicals, liquid scintillation cocktails, and detectors to custom labeling services. These offerings help streamline your workflows and empower your assay detection limits, enabling you to answer biological questions and retain your competitive edge.

Dig Deeper - Here you'll find more information about radiometric detection and all our relevant products and services.
Gene editing techniques are among the most powerful tools to unravel molecular pathways. They involve inactivating a gene’s function (knockout), adding a reporter tag to an endogenous gene (knock-in), or introducing or correcting an SNP mutation. These changes are permanent and heritable, resulting in a newly engineered cell line. With our Dharmacon™ Edit-R™ CRISPR-Cas9 reagents, you can make targeted, specific edits to any gene in practically any cell type. Plus, we provide a wide selection of premade, edited cell lines and expert genome engineering services.

One of the key success factors in gene modulation experiments (RNAi, overexpression, gene editing, or CRISPR modulation) is to introduce RNA and/or DNA components into your cell line or in vivo system. Dharmacon lipid-based transfection reagents are designed for small RNA transfection, co-transfection of plasmid and small RNA, and plasmid transfection.

Dig Deeper - Here you'll find more information about precision gene editing and reliable transfection of small RNA and plasmids into any cell type.
Our Horizon products and services combine innovative technology with deep practical expertise to provide unrivaled cell line engineering solutions. Our dedicated team delivers quality and timely results, with editing experience in hundreds of cell lines – including many challenging-to-edit lines such as iPSCs and primary cells. And we have an extensive catalog of more than 7,500 ready-to-go cell lines to further your research right away.
Cell Counting and Health

Our Nexcelom family of fluorescent reagents and kits for cell counting and cell-based assays are optimized to work with Cellometer™ and Celigo™ imaging systems, as well as other fluorescence-based instruments. These dependable, high-performance products give scientists better tools for interrogating biology.

What’s more, our BioLegend Apotracker™ environmentally sensitive fluorogenic probe binds to apoptotic cells in a Ca²⁺ independent manner, so no special buffers are required.

And our luciferase assays are significant tools in the study of transcriptional gene expression, virus lifecycles, and cell viability.

Dig Deeper - Here you’ll find more information about cell counting and health and all our relevant products and services.
Magnetic Cell Separation

Specific antibodies that are conjugated to magnetic particles bind to cells expressing the target antigen. Applying a magnetic field attracts these cells toward the magnet, separating them from the rest of the cells. On the other hand, a two-step separation process can be conducted – for example, biotin-antibody conjugates followed by streptavidin-conjugated beads, or a similar approach.

Dig Deeper - Learn more about the BioLegend MojoSort™ magnetic cell separation system for isolation and purification of cells from heterogeneous populations.

Magnetic Cell Separation
Antibodies form the backbone of immune-based cell characterization with imaging or flow cytometry. Primary antibodies conjugated to fluorophores are used predominantly in flow cytometry, as they allow for easy multiplexing. Unlabeled primary antibodies are frequently used in imaging, where they're targeted by labeled secondary antibodies. This allows for use of a single primary antibody across multiple applications, which is beneficial if there's no directly conjugated primary antibody available. Secondary antibodies can also boost detection of low-expression antigens, since polyclonal secondary antibodies can attach to a primary antibody at more than one site and amplify its signal.

Dig Deeper - Read more about our BioLegend clone library. One of the largest in the industry.
No-Wash and Wash Immunoassays and Western Blot

Today's researchers study a wide variety of targets, from large endogenous protein complexes to very small molecules. Samples can range from serum and plasma to crude cell lysates and purified reagents. We offer immunoassay platforms to easily assess your biologically relevant samples, including reliable and easy-to-use immunoassays such as Alpha technologies, HTRF®, LANCE® Ultra™, and DELFIA®.
Multiplex Immunoassays

AlphaPlex™ homogeneous, all-in-one-well multiplexing reagent technology provides highly sensitive detection of two or three analytes (duplex or triplex) in a simple no-wash assay format based on our proven Alpha technology. It enables easy, accurate multiplex quantification of a wide range of analytes, including large and small proteins and scarce biological samples such as primary cells and stem cells. It can be applied to a wide range of applications to increase predictivity and give you confidence in your results.

The BioLegend LEGENDplex™ bead-based immunoassay uses the basic principles of sandwich immunoassays, in which a soluble analyte is captured between two antibodies. Up to 14 soluble analytes can be quantified simultaneously in biological samples using a flow cytometer. LEGENDplex assays are available as predefined or customized panels.

Dig Deeper - Learn more about all our multiplexing technologies here.
High-Content Imaging

Cellular imaging enables detailed phenotypic profiling using molecular, morphological, and kinetic readouts and can accelerate molecular and physiological understanding across a broad range of normal and disease-related cellular models.

Our PhenoVue™ suite of cellular imaging reagents and dedicated microplates – cell painting kits, organelle and cell compartment stains, and fluorescent labeled secondary antibodies – complements our proven high-content screening instruments and image analysis software. They’re suitable for use in high-content screening and other cellular imaging applications.

Dig Deeper - Get more information about our comprehensive offerings for high-content imaging.
In vivo imaging gives you tools to better understand early disease-related biological changes, visualize and track disease progression, guide the drug discovery process, and evaluate efficacy and safety of drug candidates in model organisms.

Our comprehensive portfolio of IVISbrite™ bioluminescent reagents and IVISense™ fluorescent reagents has been optimized and validated in a broad range of imaging applications using our IVIS® imaging platform. In addition to optical imaging reagents, we offer VesselVue® microbubble contrast agents to help with the study of tissue perfusion and blood flow characteristics for ultrasound imaging with the Vega ultrasound system.

Dig Deeper - Read more about how our in vivo products can further your oncology research.
Detect and Measure

Obtaining the most relevant and robust data from cells and model systems necessitates the right combination of assays and instrumentation for the biological question at hand.
DNA and RNA quantitation and sizing can be done in seconds using automated capillary electrophoresis separation. Our LabChip® GX Touch™ microfluidics technology offers high sensitivity nucleic acid analysis, including gDNA and RNA integrity assessment, library-preparation quality assurance, and PCR fragment sizing and quantitation.

The LabChip GX Touch system quantifies DNA at concentrations as low as 2 pg/μL and is used in many applications, including cell-free DNA research, CRISPR modeling, and PCR-free library preparation.

The LabChip GXII Touch protein characterization system offers rapid peak quantification and quality control throughout the protein purification workflow.

Dig Deeper - Learn how our LabChip microfluidic technology generates high-resolution data.
Cell Counting

Our Nexcelom image cytometers give you increased control of your samples and the data generated from their cell-based assays. The Cellometer Spectrum image cytometer system requires 20 µL of sample in suspension and is a simple, quick solution for assays such as cell cycle, apoptosis, GFP transfection, and surface marker analysis.

The Celigo image cytometer offers a plate-based high-throughput solution for adherent and suspension cells, eliminating the need to trypsinize cells. It is ideal for a broad range of applications, including 3D multicellular tumor spheroids, proliferation, cell line development, colony counting, wound healing, and more.

The Cellaca PLX system with Matrix analysis software and dedicated reagents and consumables provides a benchtop solution for accurate measurements of small sample volumes to easily perform rapid subpopulation analysis for downstream process.

Dig Deeper - Read more about our clone library, one of the largest in the industry.
Plate Readers

Our multimode microplate readers deliver all major detection modalities – absorbance, Alpha, luminescence, fluorescence intensity, fluorescence polarization, time-resolved fluorescence, and more – all in one instrument. These plate readers are configurable, so you can add technologies when you need to futureproof your lab. And they’re ideal for applications such as cell viability/proliferation/toxicity, drug screening, pathway analysis, receptor panning, biomarkers, protein:protein interaction, gene expression, and epigenetics.

All our plate readers offer the Enhanced Security software option. It’s your technological tool to help you reach compliance for 21 CFR Part 11 for integration into regulated environments.

Dig Deeper - Here you'll find more information about our complete line of plate readers.
Radiometric Detectors

The MicroBeta² system provides advanced radiometric and luminescent detection abilities for GPCRs, kinases, reporter gene assays, and traditional liquid scintillation counting. It delivers superior sensitivity and performance, along with flexibility you can depend on.

The Wizard2® automatic gamma counter has outstanding sensitivity together with the highest levels of security, connectivity, and ease of use, giving you greater command over your gamma-counting process.

With a wide variety of flexible options, the Tri-Carb® liquid scintillation counter is optimal for everything from basic to advanced research and nonclinical ADME studies.

Dig Deeper - Learn more about radiometric detection and relevant solutions and services.

MicroBeta System  Wizard2 System  Tri-Carb
High-Content Imaging

Our MuviCyte™ live-cell imaging system operates inside your cell-culture incubator, enabling you to maintain your cells under optimal conditions and perform a wide range of assays in a variety of culture vessels.

The Operetta® CLS™ high-content analysis system for HCA acquires, analyzes, and manages fluorescence, brightfield, and digital-phase contrast images. And the Opera Phenix® Plus is ideal for high-throughput, high-content assays; target-based and phenotypic screening; assays using complex disease models such as live cells, primary cells, and microtissues; and fast-response assays, such as Ca²⁺ flux.

Dig Deeper - Learn more about all our high-content systems and where they fit in your research.
In Vivo Imaging

Tracking, monitoring, and visualizing biological processes and disease progression in anatomical context is key to helping you better understand those processes and evaluate the effectiveness of drug candidates earlier in development.

Our industry-leading IVIS® optical in vivo imaging systems deliver high-throughput capability and sensitivities to image down to a single cell. And our Quantum™ GX2 standalone microCT system can be used for an array of research applications, such as lung and cardiac imaging, made possible through fast image-based gating techniques, in vivo and ex vivo bone imaging, and other soft-tissue applications.

The newest addition to our in vivo imaging instrument portfolio is our Vega ultrasound system, providing hands-free, automated high-throughput ultrasound imaging for the first time (currently available in the US and Canada only).

Dig Deeper - See the clear advantages in vivo and other imaging technologies can bring to your research.
Automate and Analyze

Obtaining the most relevant and robust data from cells and model systems necessitates the right combination of assays and instrumentation for the biological question at hand.

TARGET DISCOVERY
How do I find and confirm my target?

LEAD ID AND OPTIMIZATION
How do I find leads and improve them for my target?

DRUG DEVELOPMENT
How do I evaluate and validate my candidate?

Liquid Handling: Janus G3, Sciclone G3, Zephyr G3
Noncontact Dispenser: FlexDrop IQ
Robotics: plate handler Flex, explorer G3
Informatics (Data Handling and Analysis): Signals Notebook, Signals VitroVivo, Signals Invenra
Liquid Handlers and Noncontact Dispensers

We offer a comprehensive lineup of robotic liquid handlers to automate all your laboratory workflows. From benchtop application-specific workstations to complex customized integrated solutions, our liquid handling portfolio, supported by our industry experts, can help accelerate your science.

Whatever your liquid handling and automation needs, we can provide a solution tailored to fit your individual requirements. Our dedicated in-house and field-applications support teams ensure your solutions solve your research challenges.

Dig Deeper - See how liquid handling solutions can make your lab more efficient and productive.
Automate and Analyze

Robotics for High Throughput

From cellular screening and imaging applications to high-throughput screening and genomics-based applications, custom explorer™ G3 integrated workstations provide innovative, application-focused laboratory automation solutions that simplify microplate handling, liquid handling, and detection.

Dig Deeper - Read the whole story on robotics for high-throughput applications here.
Informatics

Secure and scalable, our Signals™ Research Suite features a modern, intuitive interface that offers you complete control in configuring workflows for every technique, modality, and data type. You can easily transform raw data into actionable results and seamlessly analyze and publish results from disparate data sources. Now you can manage the vast amounts of experimental, instrument, and outsourced data to identify therapeutic candidates or targets quicker and facilitate modern biology workflows.

**Automate and Analyze**

**Signals Notebook™**  
Make informed decisions and improve productivity and data transparency with our futureproof electronic notebook solution.

**Signals VitroVivo™**  
Benefit from assay development, low- and ultrahigh-throughput production assays, HCS, and in vivo studies on a single platform.

**Signals Inventa™**  
Efficiently access and analyze all scientific results collected throughout the research and development lifecycle.
Pharma Services

Broad Array of Service Solutions

We enable you to detect and validate biomarkers early and offer predictive or prognostic value further downstream in preclinical and clinical development.
For more information visit www.perkinelmer.com/category/drug-discovery