Your Partner in Cell Research



Cell Culture Cell Counting Imaging Flow Cytometry Cell Analysis



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Your Partner in Cell Research Cell Culture Cell Counting Imaging Flow Cytometry Cell Analysis

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Smart Solutions in Cell Research

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Life Science School

OLS Life Science School Increase your expertise

- Specialized workflow training
- Individual training
- Customized troubleshooting
- Supporting assay development
- Research consultation

The knowledge database of OLS's Life Science School offers continuing teaching and research material on latest trends of cell culture applications and solutions to address analytical challenges.

The contents are designed to support diverse audiences ranging from novice to experienced groups – become a member of this dynamic community and explore cutting-edge technologies. We work closely with several professional partners (Agilent Technologies, CELL Microsystems, Namocell, HiMedia, Proteintech, Slingshot Biosciences, Idea Bio-Medical, Innome) that form an integral part of our learning center.

Training programs cover particular topics such as immuno-oncology, stem cell research, drug discovery and many more. The courses will be dealt with in the following formats: open/on-site (site in Bremen) and at your desired location with a workflow option. This will include active participation of your employees and colleagues in the development of processes and standards; this increases compliance.

Webinars

Our team is excited to showcase a variety of life science applications of your choice to enhance your skillset on the latest technologies and learn from industry professionals. Subscribe to stay informed about our upcoming webinars. Alternatively, explore our virtual on-demand events at your convenience.

Featured On-Demand Webinars:

- Novel methods for the development of stem cellderived 2D & 3D models
- Investigate immune cell killing in real-time
- A new era in Flow Cytometry artificial cell controls
- Simplify your 3D cell culture
- Microvesicle detection and multicolour cytometry on the 32 parameter NovoCyte[®] Penteon[™] benchtop flow cytometer
- High content imaging and its benefits in the preclinical stages
- Time-Lapse microscopy of spheroids with zenCELL owl microscope
- Integrated biobanking solutions
- Cell counting made easy and reproducible advantages of CASY Cell Counter and Analyzer



Lab Course Highlights Expand Your Knowledge in 3D Cell Culture

An in-depth introduction organoids and spheroids: Study the influence of the three-dimensional arrangement on cell functions, cell-cell interactions, interactions with the extracellular matrix (ECM) - this course is an efficient and quick start for a successful and reproducible 3D cell culture.

Theoretical and Hands-on Topics :

- Introduction to 3D cell culture: cells in the tissue, extracellular matrix, co-culture systems
- Types of 3D cell culture: spheroids, organoids, scaffolds
- Applications in drug discovery & development
- Recent advances in stem cell expansion: microcarriers, bioreactor-based approaches, encapsulation
- Trouble-shooting skills & case studies

Hands-on Experience in Flow Cytometry Essentials

Overview to the workflow of flow cytometry: Covers the principles of flow cytometry, operation of flow instrumentation, sample preparation, acquisition and analysis of data to analyze the biological and physical characteristics of a population of cells or particles suspended in a fluid stream.

Theoretical and Hands-on Topics

- The basic principles of flow cytometry methods
- Instrumentation: fluidics, optics, electronics Small particle analysis: microvesicle analysis &
- microbiological research Hands-on practice with sample preparation and
- multicolor staining, phenotyping
 Design of analysis templates and gating strategies
- Data acquisition and analysis: cytometer settings,
- compensation



Cell Counting Wide range of cells Precision Quality control

Our Brand





Cell Counting

CASY Cell Counter and Analyzer Cell number, -volume and -aggregation in seconds

- Accurate and reproducible
- Simple and fast
- Cell number and volume
- Aggregates to small bacteria

Accurate determination of cell concentration, cell volume and viability for so many cell types, including cell lines, primary cells, PBMC, yeast and other more. No sample preparation needed.

Even challenging samples like iPSC, with a high level of aggregation, do not require a special treatment prior measurement. The unique combination of Pulse Field Analysis and Electronic Current Exclusion (ECE) determines the volume of all aggregates and provides the total cell number without the need for prior singulation.

Counting with CASY Cell Counter & Analyzer supports the quality control of your cells with every measurement.

Contact us to understand how.

"The CASY counter has been a key piece of equipment for the Oxford COVID-19 vaccine trial. We needed a reliable way to count cells from hundreds of blood samples on a daily basis. The CASY counter is a fast and accurate way of counting PBMCs. It is easy to use as it requires no sample preparation or staining, just add your sample to the CASYton buffer solution and it is ready to go! It is the gold standard of cell counting and we felt confident using it in our clinical trial due to its high reproducibility and accuracy."

Helen Sanders

Lead Research Assistant - COVID-19 Vaccine Trials, Jenner Institute



Improved quality by counting with the CASY Cell Counter and Analyzer



CASY Cell Counter & Analyzer – always the best choice, whatever you want to analyze. From large stem cell aggregates to small yeast or even bacteria. It provides unmatched precision and reproducibility. It can be equipped with up to 3 different capillaries, each optimized for a certain group of applications.



CASY Cell Counter and Analyzer for better knowledge of your PBMCs

- Know your PMBCs
- Track T-cell activation
- iPSC flexible handling, full control
- Primary Cells not a challenge
- Insect cell / Baculovirus stop before they burst
- Erythrocytes and Platelets
- Saccharomyces cerevisiae
- Algae watch them bud
- Culturing bacteria and desperate?
- Fungi spores ever wondered if you have haploid and diploid spores?
- How to improve counting pollen?
- Trypanosoma or Leishmania



Cell Culture

Incubator and bioreactor Media, sera, supplements Cytokine and growth factors











Cell Culture

CERO 3D Incubator and Bioreactor Simplify your 3D cell culture

- Intuitive
- Standardized
- **Flexible**
- Modular

The CERO 3D Incubator & Bioreactor is a new, revolutionary instrument creating an optimal cell culture environment. It offers a special 3D cell culture technology that monitors and controls temperature, pH and carbon dioxide levels. Indeed, this is an ever-evolving a state-of-the-art dynamic culture system that accelerates your processes, reduces costs and hands-on time and allows multiplexing. It provides optimal nutrition, gas diffusion thus increasing size and lifespan of your cultures.

"Cultivating hepatocyte spheroids in CERO improves expansion, differentiation, maturation, and heptic virus infection considerably compared to monolayer culture. Our research takes advantage of healthy cells even from long-term cultures in CERO. Moreover, we are now able to perform 3D long-term culture of human tissue specimen in CERO – a paradigm shift."

Prof. Dr. Heikenwälder

Chronic Inflammation and Cancer, German Cancer Research Center (DKFZ), Heidelberg, Germany.



iPSC differntiation into all three germ layers

"A reproducible and versatile system for the dynamic expansion of human pluripotent stem cells in suspension; Biotechnol. J. 2015, 10, 1589–1599"



CERO 3D Incubator and Bioreactor ensures up to 100.000 organoids in one CEROtube in optimal cell culture conditions



Stem cells and organoids: The CERO 3D Incubator & Bioreactor offers a comprehensive solution for stem cell expansion projects in biobanks, drug discovery, toxicity testing and regenerative medicine. By leveraging scaleup and automation platforms, it simplifies the process while reducing costs significantly. This makes it an ideal choice for those looking to make their research more efficient without sacrificing quality or results.

- Organoids
- Spheroids
- Suspension Cells
- Punch Biopsies





Automated iPS Spheroid culture workflow. Bright field as uniform spheroids

OCT4 positive iPSC derived EB's (green).

Hepatitis Virus Research Model - Spheroids: The advent of long-term three dimensional cell culture holds a great promise in disease modeling and drug discovery. The cells kept in a 3D environment have the ability to mimic tissue-like structures more efficiently thanin traditional 2D monolayer cultures. However, many scientist are struggling with many technical

limitations when working with spheroids in long-term cultures.



Spheroids from HepG2 cells cultivated in CERO 3D for >80 days. Cells are negative for apoptosis marker Casp.cl.3



Spheroids from HepG2 cells cultivated in CERO 3D for >80 days. Cells are still proliferating (Ki.67-brown nuclei)

Streamline the cancer research: Cancer spheroids are complex three-dimensional cell aggregates that can improve preclinical cancer drug development. However, generating them requires standardized and reproducible cell culture conditions. The CERO 3D incubator and bioreactor provides a solution for long-term monitoring of spheroid growth and behavior, enabling the generation of accurate and reliable preclinical cancer models.

- Maximized viability
- Long-term culture > 80 days
- Improved maturation
- Long-term proliferation
- High homogeneity
- Reliable and consistent results

CEROplate Simple process for 3D aggregates

- Uniform spheroid
- High-throughput applications
- Organoid formation

The CEROplate, ultra-low attachment simplifies the process for growing 3D aggregates. It features clear wells with U-bottom to make sample monitoring simple. The unique well geometry of the microplate aids in the formation of an unattached, round-shaped,

single spheroid or organoid in the center of each well. This allows you to assay and analyze your 3D aggregates in the same plate without transfer. The CEROplates are compatible with existing readers, imaging systems, liquid handling and automated workstations.



ound-shaped, liquid handling and automated w

Cell Culture

Media, Sera, Supplements, Consumables We are there to assist you at every step

- Broad range of media and reagents
- Customized stocking
- Easy and constant delivery

Our portfolio offers a broad range of classical media, balanced salt solutions, reagents, sera, plasticware, biochemicals and many more – anything required for cell culture. We meet the evolving needs of biologists by consistently upgrading and increasing our product profile.



Broad range of classical media, sera and supplement

Classical Media Broad range of ready-to-use media

- Classical media
- HiGlutaXL Medium
- LoSera Medium
- Insect media
- CryoXL Cell Freezing Med

The entire portfolio of classical media is best fitting for cell biology, molecular biology, microbiology and plant tissue culture. All media are also available in powder form to meet environmental needs.



Supply your cells with optimized cell culture media.



Sera Choose the right sera - different origin and grade

- Range of origins
- Consistency in cell growth
- Customized reservations

Research Grade Fetal Bovine Sera: An economical alternative for your research. This sera helps to meet your research needs and budget requirements, offering the best value for basic cell culture, specialty research, and specific assays.

Fetal Bovine Sera: Certified serum for commercial applications. Suitable for many cell culture applications, this serum is comprehensively tested for performance and quality assurance. This premium FBS grade features sterility test, comprehensive biological testing and includes an extensive array of biochemical profile.

All lots of sera undergo comprehensive quality control testing. Minibot[™] - Individually packed 50ml bottles. Cut the time of thawing, aliquoting, labelling and reduce the risk of contamination.



Sera of any feasible grade and origin to meet all your requirements.

Reagents A comprehensive overview of essential needs in a laboratory

- Cell dissociation reagents as Trypsin, Accutase or animal-free EnVzyme
- Mycoplasma detection and elimination kits
- Antibiotics
- Buffers



Cell Culture

Cell Culture Plasticware

A complete portfolio of everything required in your workflow

- Serological pipettes
- Centrifuge tubes
- Cryovials
- Multiwell-plates
- Culture flasks and dishes
- HiFactory chambers
- Roller bottles

Most culture vessels are available with surfacetreatment for adherent cells and non-treated for suspension cells.



Serum-free Media for Bioproduction and Virus Production Streamline production with serum-free, all-in-one media

- CHOin
- HEKin1 for HEK293 cells
- BHKin1 foot-and-mouth disease vaccine production
- CELLin1 for MDCK, MDBK, PK-15, Vero & MRC-5
- STEMin1 mesenchymal stem cells

These media are serum-free and animal componentfree and optimized for the growth and expansion of the respective cells under serum-free conditions. They are developed for support of high-density cultures.





CHOin1 Bioproduction Platform Serum-free media for specific cell types and applications

- CHOin1 serum-free medium
- CHOin1 feed supplement
- Serum-free supplements

Comprehensive range of clone-specific serumfree, protein-free media, feed supplements and bioproduction service. This bioproduction platform entails the development of clone-specific media & feed, the analysis of medium usage and the optimization of medium. We also assist in the process development from clone to protein.



Optimize the growth of your CHO cells to maximize bioproduction efficiency

HEKin1 Serum-free Media Save time with simplified purification

- High reproducibility
- Scalable for flasks and bioreactors
- High cell density

HEKin1 is a serum-free and animal component-free media optimized for the growth and expansion of HEK293 cells under serum-free conditions.

A complete media that will support growth of HEK293 cells without further supplementation. It has been tested for its ability to support high-density cultures of HEK293 cells. It is easily scalable for use in shake flasks & bioreactors. All media are manufactured in GMP and ISO9001 certified facility.



Improved cell density boosts the HEK-based vaccine production for Coronavirus and other viruses



Cell Culture

STEMin1 System for Human Mesenchymal Stem Cells A complete, defined, serum-free, xeno-free system

- STEMin1 medium
- STEMin1 attachment solution
- STEMin1 recombinant dissociation solution
- STEMin1 neutralizer
- FREEZin1 cryopreservation

Maintain trilineage differentiation potential through long-term passaging. This system enhances the reproducibility of your stem cell cultivation and enables the stem cells to retain any markers. Superior cell expansion capacity allows for faster growth while assuring great purity. Manufactured in GMP, ISO 13485and ISO 9001-certified facility.



All-encompassing workflow for the cultivation, expansion and cryopreservation of MSCs

CELLin1 Virus Production Medium Chemically defined, animal component-free, serum-free

- Regulatory concerns minimized
- Scalability in 2D and 3D
- Customization

This advanced all-in-one medium enables the up-scaled cultivation of MDCK, MDBK, PK-15, Vero and MRC-5 cells for the increased production of viral vaccines.



CryoXL Cell Freezing Media

Best for cell lines, primary, stem cells and serum-free cells

- Ready to use
- Improved recovery
- High viability

CryoXL cryopreservation media are ready-to-use freezing media optimized for effective cryopreservation of your cells

- Improved cell recovery for regular and sensitive cell lines
- Animal origin free and serum-free formulation
- Developed to reduce regulatory hassles
- Optimized to maintain differentiation potential
- Developed for sensitive hybridoma cells preservation without affecting biochemical functions
- Optimized for MSCs cultured in STEMin1™
- Maintains trilineage differentiation potential



Reliable viability demands an effective preservation and a gentle recovery of your cells during thawing

Cell Dissociation Reagents Cell & tissue dissociation products

- Animal origin and animal origin-free
- High viability
- Retained surface markers

Cell dissociation and detachment products are required to perform passage of a confluent monolayer cell culture or to isolate the cells from a tissue sample. Dissociation enzymes break up the extracellular matrix and bring out single cells with highest viability.

- EnVzyme vegetable origin
- Milder than trypsin and gentle on cells
- RecombIN alternative for bovine or porcine trypsin
- TSE-BSE risk eliminated



Cell Culture

Human CD3/CD28 T Cell Activation Beads Kit Gentle and effective T-cell activation in vitro

- Highest activity compared to other methods
- Magnetic beads are easy to remove after activation
- Simple protocol no lengthy preparation involved

This kit contains biotinylated anti-human CD3 and CD28 antibodies, as well as cell culture grade Streptavidin magnetic beads. After Streptavidin magnetic beads are loaded with biotinylated CD3/CD28, they mimic antigen presenting cells and can activate resting T lymphocytes from human PBMCs or purified T lymphocytes. After 2-3 days of activation, magnetic beads can easily be removed by magnet. Further T lymphocytes expansion will require human cytokines for in vitro culture.







HumanKine Research Grade Cytokines and Growth Factors Pure, potent and stable cells

- Animal component free, endotoxin free, xenoFree
- High batch to batch consistency
- Authentic human proteins
- cGMP grade available

HumanKine[®] cytokines and growth factors are authentic human proteins, expressed in HEK293 cells, owning native human conformation & posttranslational modifications to optimize biological activity. HumanKine[®] recombinant proteins offer high bioactivity, stability and lot-to-lot consistency and are used for cell culture, cell media, wound healing, and cell therapy research. They are endotoxin-free, Xenofree, Tag-free and Carrier-free. HumanKine[®] cGMP (current Good Manufacturing Practice) recombinant proteins are manufactured and validated in accordance with ISO 13485 quality management system and are compliant with cGMP.



GMP Recombinant human IL-6 (HZ-1019-GMP) stimulates dosedependent proliferation of the 3G12B10 hybridoma cell line. Cell number was quantitatively assessed by PrestoBlue® Cell Viability Reagent. 3G12B10 cells were treated with increasing concentrations of GMP recombinant IL-6 for 96 hours. The EC50 was determined using a 4-parameter non-linear regression model. Activity determination was conducted in triplicate on a validated bioassay. The EC50 range is 0.03-0.24 ng/mL.





Imaging

Live cell imaging **High-content screening** Real-time microscopy

Our Brands













Cell Imaging

WiScan Hermes High-Content Imaging System Ideal solution for high-content and high-throughput screening

- High-throughput
- High quality images
- High speed
- Flexible and versatile

Dedicated to high-content imaging and analysis for image-based assays in cell biology studies and drug discovery processes, the High-Content Imaging System brings publication quality images at high-throughput speeds to the research lab. Its built-in applications are extremely easy to use, and are operated at the pushof-a-button. Hermes is a sophisticated and flexible



WiScan Hermes System -easily generate publication-quality images

system, offering fluorescence colors, bright field option, laser based photo bleaching and a large range of air objectives and oil objectives. The system is ideal for a large variety of applications, including phenotypic screening, zebrafish models, spheroids and 3D models, rare-event detection, cytometry, cell count (cytotoxicity, proliferation), protein expression, cell morphology, cell cycle, protein translocation, intracellular vesicles quantification, Golgi intracellular distribution, Mitochondria characterization, cytoskeleton structure, nuclear and sub-nuclear structures characterization, bacteriology and limmunology.

- Zebrafish automatically quantifies area, fluorescence intensity, and count of whole fish and internal organelle properties, including eye, yolk, spine, tail, brain, internal granules and more.
- Unbeatable throughput: image & analyze 96 larvae within minutes
- Image & analyze: label-free or fluorescently tagged fish and internal organelles
- Keep images in focus from head to tail with images acquired in single plane, Z stack and projections
- Multiple levels of magnification available from 2X up to 60X with high NA



Fish organs & regions automatic segmentation





Spheroids and 3D imaging

- Capture properly focused images of spheroids in an ideal growth environment in U-shape bottom plates
- Easily spot spheroids using unique methodology of rapid scanning for spheroid localization
- Simple and labour reducing automated analysis of spheroid relevant features
- Monitor spheroid growth over over the entire plate using plate view
- Classify spheroids of specific, desired features using sub-population tool
- Apply live/dead spheroid assay to monitor viability of 3D tumour spheroids
- Visualize spheroid morphology over a range of depths using flexible multi-plane definitions

Detection of Rare Events in Live Cells

- Sophisticated detection and readouts techniques for real-time analysis
- Scanning time is kept to a minimum
- No additional data mining or image analysis is required to identify cells of interest in high resolution images
- No wasted data storage of unimportant cells
- Allows researchers to obtain meaningful data regarding the kinetics of their biological system without investing any extra resources or cost
- Real-time monitoring so that the relevant signal is never overlooked
- Better statistical precision than cross-well comparisons of standard end-point imaging studies by applying quantitative, real-time analysis in each of the wells

Fast, automated imaging with oil immersion objectives, shorter exposure, brighter image, higher resolution

- Super-resolution radial fluctuations (SRRF) live-cell imaging
- Fluorescence in-situ hybridization (FISH)
- Microbiology, virology & yeast studies
- Spot / foci / granule visualization
- Mitochondria, Endoplasmic Reticulum, Cytoskeleton and focal adhesion imaging
- Unique hardware automatically adds immersion oil to objectives
- No user intervention; No oil spilling
- Autonomous, rapid image acquisition for: Full-plate scanning Time-lapse imaging of live cells
- Optimized autofocus, X, Y, Z motion and longduration oil capsules for easy maintenance



Brightfield and fluoresence overlay - Oil Objective (60x, 1.4NA) - Exposure (ms): Green 50, Red 200 - Air Objectiv (60x, 0.9NA) Exposure (ms): Green 120, Red 500 - Green/Red same contrast levels; acquisition: Same illumination & camera gain

Cell Imaging

zenCELL owl Microscope for incubators

- Compact
- 24 channels
- Remote monitoring
- 🕨 24/7 data

The zenCELL owl is your 24 channels microscope for the incubator with automated remote monitoring of cell cultures. The compact and lightweight device ensures space-saving and uncomplicated use in the incubator. Data capturing, display and analysis is performed 24/7 in real time. Cell cultures can be comfortably monitored from your PC. The zenCELL owl is perfectly suited for routine and basic applications to save working time and create a greater amount of information about your cell cultures.

Simultaneous analysis of 24 cell cultures enables users to examine different test conditions at the same time and to compare them directly. This allows for a statistical evaluation of research data.

Applications:

- Cell culture monitoring
- Scratch assays
- Cytotoxicity assay
- Spheroids





Cell coverage of cultures with different cell count. Black: high cell count, blue: low cell count. Thick lines represent mean value of each condition.



CoraLite Plus Fluorescent Dye Conjugated Antibodies The perfect tools for multiplex co-labeling of proteins

- Simplified co-labeling
- Exceptionally bright and photostable
- Faster protocol than using unconjugated primary antibodies

Popular monoclonal and polyclonal antibodies are now available directly conjugated with fluorescent dyes: CoraLite488, CoraLite555, CoraLite594, CoraLite647 and more. Thus an even enlarged spectrum of dyes is offered for perfect immunofluorescence.



2.5x10^6 human PBMCs in 0.5mL cell culture media are activated by Human CD3/CD28 T Cell Activation Beads Kit for 3 days at a 1:1 bead to cell ratio. Unstimulated cells (left panel) and stimulated cells (right panel) are stained with fluorescence flow antibodies APC-CD69 and FITC-CD25. Total viable lymphocytes are gated. The activation effect of the Human CD3/CD28 T Cell Activation Beads Kit was tested on human PBMCs from three different donors.



Immunofluorescent analysis of (4% PFA) fixed rat brain tissue using CoraLite[®]488 MAP2 antibody (CL488-17490) at dilution of 1:200, CoraLite[®]594 GFAP antibody (CL594-16825, red). DAPI (blue).



Adult mouse small intestine stained for Cytokeratin 19 (green, CL488-10712) and BMI1 (red, 10832-1-AP). BMI1 stains intestinal stem cells located at the base of the villi. As these stem cells differentiate into intestinal epithelial cells, they acquire Cytokeratin 19 expression. Cytokeratin 19 was conjugated to Coralite 488. Samples were fixed in 4% PFA, embedded in paraffin, and imaged on a confocal microscope. Image credit: @Immunofluorescence on Instagram.



Flow Cytometry Flow cytometer Synthetic controls Antibodies

Our Brands











Flow Cytometry

NovoCyte Flow Cytometer Meeting your demand of modern multicolor flow cytometry

- Expanded flexibility
- High sensitivity and resolution
- Automation-ready
- Intuitive software

NovoCyte flow cytometers provide expanded flexibility with up to 30 fluorescence channel options using 5 lasers for a more detailed analysis of cell populations, leading to a better understanding of cellular behavior and function. NovoExpress software offers an exceptional user experience in data acquisition, analysis, and reporting. The wide 7-log dynamic range eliminates routine detector adjustments. The unique NovoCyte fluidic system provides precise cell counts without the use of counting beads and a precise adaption of the flow rate to the particles of interest. The NovoSampler Q integrates into different lab automation platforms and efficiently processes FACS tubes (using a 40-tube rack) and various plate formats (24-, 48-, 96-, and 384well plates).

Covering a broad range of applictions from microvesicle analysis to complex multicolour immunophenotyping experiments the NovoCyte flow cytometers are crucial and valuable tools for immunological and



NovoCyte Penteon system with 5 Laser and 30 fluorescence parameter

biopharmaceutical research. Due to their ease of use, low maintenance requirements, compliance with high regulatory standards, and automatability, these systems are an important component in the drug development process.



Identification of immune cells in peripheral human blood with a 24-color immunophenotyping panel on the Agilent NovoCyte Penteon flow cytometer. After acquisition cells were analyzed with Agilent NovoExpress software. Hierarchical gating was used to identify all major cell subsets in human blood.

Silicon photomultipliers (SiPM) are solid-state, semiconductor devices. Consisting of a compact array of avalanche photodiodes operating in unison, SiPM is are detectors with photon counting capability. An



innovative optical design in the NovoCyte Penteon, NovoCyte Quanteon, and NovoCyte Advanteon incorporates up to 30 independent SiPM for collecting and processing signals for each of its fluorescence channels. This highly sensitive detector provides more confidence so you can detect even the dimmest signals in your sample.

The NovoCyte Penteon scatter detection optics and signal processing electronics have been optimized to resolve particles down to 0.1μ m in size. With such excellent resolution, platelets, bacteria, and various submicron partiticles can be readily identitified and analyzed.

The NovoCyte fluidic system is designed to deliver high performance. When compared to other flow cytometers, the fluidic consistency and stability of the NovoCyte Penteon and NovoCyte Quanteon is unmatched. Other instruments utilizing peristaltic pumps are often subject to fluidic pulsation, causing inconsistency and inaccuracy in absolute cell counts. NovoCyte flow cytometers fit every need and budget. Choose from our basic NovoCyte instruments for standard 3 laser applications, the NovoCyte Advanteon with highest sensitivity and speed and our multicolour four or five laser multicolour, high-throughput machines.



Excellent scatter resolution to detect small particles: The NovoCyte Penteon scatter detection optics and signal processing electronics have been optimized to resolve particles down to $0.1 \mu m$ in size. With such excellent resolution, platelets, bacteria, and various submicron particles can be readily identified and analyzed.





Flow cytometers to advance your research

- NOVOCYTE CLASSIC: Your basic benchtop flow cytometer with up to 3 laser and 17 colours
- NOVOCYTE ADVANTEON: Advanced flexibility with 1, 2 or 3 laser options and up to 21 fluorescence channel
- NOVOCYTE QUANTEON: A 4 laser flow cytometer that can be configured with up to 25 independent photomultipliers for meeting the most demanding sample panels
- NOVOCYTE PENTEON: Flexibility to choose from up to 30 fluorescence channels utilizing up to 5 lasers with up to 30 independent detectors

Flow Cytometry

Curiox Laminar Wash Ultimate solution for cell washing needs

- Gentle process
- High cell viability
- Reproducible results
- Pre-programmed workflow

Introducing the CURIOX Cell Washer – the ultimate solution for all cell washing needs. Designed with advanced features and innovative technology, the CURIOX Cell Washer is the perfect addition to any lab or research facility. The CURIOX Cell Washer is a versatile and reliable instrument that is capable of washing and processing a wide range of cell types, including mammalian cells, bacteria, and fungi. The laminar washing process offers several advantages over other cell washing techniques, making it a standardized choice for many researchers.

Firstly, the laminar washing process is gentle and non-destructive. Unlike other washing methods that use centrifugation or vacuum pressure, the laminar washing process uses a gentle flow of buffer solution to wash cells. Reducing the risk of cell damage or loss, leading to higher cell viability and better experimental outcomes. The power of Curiox's laminar cell washing technology lies in the unique design of the sample plate. Each plate contains an array of hydrophilic spots that suspension cells can rest on via gravity. The material surrounding each spot is highly hydrophobic, acting as an impenetrable wall that separates your samples. Upon entry into the instrument, two nozzles descend onto each side of every spot, one to dispense wash buffer and the other to aspirate the buffer and debris away. Each spot can wash as many as 10 million cells down to a single cell without the mechanical stress and cell losses associated with centrifugation.

Secondly, the laminar washing process is highly efficient.

The buffer solution flows over the cells in a laminar flow, creating a uniform and consistent wash. This ensures that all cells are washed thoroughly and equally, leading to more accurate and reproducible results. The use of a microprocessor-controlled operation also allows for precise control over the washing parameters, further enhancing the efficiency of the process.

Thirdly, the laminar washing process is ideal for highthroughput experiments. The Laminar Wash AUTO 1000 is a completely hands-off automated platform to dispense, fix/permeabilize, stain, wash, and transfer samples for flow and mass cytometry. The system comes ready to use with a pre-programmed sample preparation workflow. Automation novices and experts alike can easily program a custom workflow using the intuitive user interface.





Synthetic Cell Controls Ideal and customizable cell controls for flow cytometry

- Synthetic cells
- Ideal cellular mimics
- Standardization
- Biomarker quantification

The breakthrough technology creates synthetic cells matching the optical, fluorescence and biochemical features of any cell type, even rare disease types. The technology and manufacturing meets high ISO9001 quality standards.

FlowCytes synthetic cells: The FlowCytes synthetic cells mimic the optical properties of human blood populations for Lymphocytes, Monocytes, and Granulocytes. FlowCytes — the backbone of our products—are a series of synthetic cells assembled in a spherical 3D matrix, physically resembling a cell. FlowCytes are nearly indistinguishable from live cells when analyzed in a flow cytometer. This makes FlowCytes the ideal cell controls to calibrate, standardize and ensure performance for instruments and assays.

In addition to FlowCytes further synthetic cell systems are available:

SpectraComp Compensation Beads: These synthetic fluorescence compensation controls are designed for the modern spectral flow cytometry. SpectraComp[®] compensation controls are state-of-the-art synthetic cells that mimic the scatter profile of lymphocytes, captures multiple species of antibodies, and matches the spectral fluorescence of stained cells. This product is intended for spectral compensation to match the single staining of real cells.

Viacomp Viability Compensation: First of its kind cell viability controls to reliably measure cell health, containing pre-mixed, live and dead cell mimics.

ViaComp[®] viability controls are advanced 2-in-1 beads that bind to DNA intercalating dyes (7AAD, DAPI, PI) and amine-reactive viability dyes to simulate the staining of cells.

TruCytes Synthetic Cell with Biomarkers: Experience a new level of accuracy with synthetic cells with biomarkers. TruCytes synthetic cells are lyophilized cell mimics that feature TBMNK biomarkers Various products for e.g. TBNK Control, Fixed Synthetic WPC, TBMNK Control, NK-Cell CD16/53 Mimics and many others.

Customization of your cells and biomarkers: Our scientists can easily partner with you to customize the products to your needs of expressed biomarkers. Our technology is built on proprietary predictive modeling, uniquely designed microsystems, and a manufacturing platform that precisely creates stable and cost-effective cell-like reagents in just hours. We can quickly scale to bioprint custom FlowCytes with extreme precision.



High precision calibration in flow cytometry using synthetic cells.



Flow Cytometry

FlexAble Antibody Labeling Kits FlexAble - a novel antibody labeling kit for IgGs

- Compatible with antibodies from any supplier
- Works with any antibody concentration and buffer formulation
- No buffer exchange needed
- Choose from four fluorescent dyes for Mouse IgG1 and Rabbit IgG

FlexAble is a novel antibody labeling kit that uses an affinity linker to conjugate fluorochromes, enzymes, and molecules in any buffer condition. FlexAble Kits can label your unconjugated primary antibodies with a fast and easy 2-step protocol. Antibodies are ready to use in 10 minutes and no additional equipment is required. Label as little as 0.5ug of antibody or scale up the labeling reaction to meet your desired antibody amount.



Immunofluorescence of rat brain tissue: FFPE rat brain tissue sections were stained with anti-NeuN (66836-1-Ig) labeled with FlexAble CoraLite Plus 650 Kit (KFA023, magenta), anti-TUBB3 (66375-1-Ig) labeled with FlexAble CoraLite Plus 550 Kit (KFA022, orange) and CoraLite®488-conjugated GFAP antibody (CL488-60190, green). Immunofluorescence of human kidney: FFPE human kidney sections were stained with anti-Calbindin (14479-1-AP) labeled with FlexAble CoraLite Plus 550 Kit (KFA002, yellow), anti-ACE2 (66699-1-lg) labeled with FlexAble CoraLite Plus 650 Kit (KFA023, magenta), CoraLite®488-conjugated Podocalyxin antibody (CL488-18150, green) and DAPI (blue).





Using FlexAble kits, label four antibodies from the same species individually

Mix labeled

antibodies together



Labeled antibodies are now ready to use



Antibodies for Flow Cytometry Top-cited, clones-conjugated and validated

- Conjugated to a variety of fluorescent dyes
- Validated for use in flow cytometry
- Easily build multiplex panels

Proteintech antibodies are conjugated to a variety of dyes so you have flexibility in building your panel. Some antibodies are offered unconjugated as well so you can pick whatever dye works best for you. Over 3000 thoroughly validated antibodies and top cited clones are offered. The flow cytometry-validated antibodies are conjugated to a variety of fluorophores including, FITC, PE, APC, and our very own CoraLite dyes. The CoraLitePlus 488, CoraLite 594, and CoraLite 647 dyes have equivalent brightness to Alexa dyes and provide long-lasting fluorescence. The CoraLite dyes can easily be multiplexed with other popular dyes due to minimally overlapping fluorescence spectra.

Isotype Controls for Flow Cytometry For rigorous flow cytometry results

Off-target or non-specific binding by antibodies lead to false positive results, making it difficult to distinguish background staining from antigen-specific staining. Therefore, it is important to always include experimental controls to ensure reliable results.

An isotype control is an antibody that is used as a negative control in antibody staining applications.

Isotype control antibodies that match your primary antibody's characteristics:

- Same host species
- Same IgG class and Ig subclass
- Same label as primary antibody



Isotype controls for flow cytometry matching the characteristics of primary antibody.



Flow Cytometry

Supporting Reagents and Kits for Flow Cytometry Reagents to ensure the quality of your data

- Viability dyes and apoptosis assays
- Buffers for easy intracellular staining
- Secondary antibodies



stained with CoraLite647-conjugated mouse IgG1 isotype control or 5 ul CoraLite647-conjugated Anti-Mouse Foxp3 (CL647-65089, Clone: 3G3).





Schematic of the mechanism of DNA binding dyes and Phantom Dyes (fixable viability dyes), demonstrating how they differentiate live and dead cells.



Q1

21.0

105

10

Green: Staining with CL488-Annexin V for apooptotic cells or early apoptotic cells. Red: Staining with PI for dead cells; Yellow: double staining with CL488-Annexin V and PI for necrotic cell or late apoptotic cells.



Products for Intracellular Flow Cytometry The targets you need validated for flow cytometry

- Intracellular staining
- Ready-to-use buffers
- Validated protocols

Products for labeling intracellular proteins including fix & perm buffers and antibodies that are conjugated to a range of fluorophores. Unlike traditional flow cytometry for cell surface markers staining, intracellular flow cytometry brings us a powerful tool to stain intracellular target proteins, such as phosphorylated signal transducers, transcription factors and cytokines. Through fixation and permeabilization, antibodies are able to penetrate the cell and nuclear membranes to stain target proteins within the cell. Proteintech offers a range of antibodies for intracellular flow cytometry single cell analysis with optimized fixation and permeabilization reagents for reproducible results.





1X10^6 mouse splenocytes were surface stained with CoraLite[®]647conjugated Anti-Mouse CD4 (GK1.5) (CL647-65104, Clone: GK1.5) and then fixed and permeabilized with Transcription Factor Staining Buffer Kit (PF00011). Cells were then stained with 0.13 ug PE-mouse IgG1 isotype control or 0.13 ug PE Anti-Mouse Foxp3 (PE-65089, Clone: 3G3).

1X10^6 HepG2 cells were intracellularly stained with 0.4 ug CoraLite[®]488 Anti-Human STAT3 (CL488-60199, Clone:3G2D12) (red), or 0.4 ug Mouse IgG2a Isotype Control (CL488-66360-2, Clone: K11A1B2A2) (blue). Cells were fixed with 4% PFA and permeabilized with Flow Cytometry Perm Buffer (PF00011-C).



Cell Analysis Live cell analysis Tissue dissociation Immunoassays

Our Brands









Cell Analysis

xCELLigence Real-Time Cell Analyzer (RTCA) Gain insights into cellular function in real time

- Highly sensitive
- No cell labelling
- Real-time measurement
- Easy to operate
- Non-invasive

xCELLigence Real-Time Cell Analysis (RTCA) systems use label-free cellular impedance to continuously monitor cell health, behavior, and function with high accuracy, sensitivity, and reproducibility. Obtain continous data at high temporal resolution (from seconds to days) under physiological conditions and gain insights into various cellular properties, like adhesion, proliferation, cytotoxicity, barrier function, morphology as well as migration and invasion. Select for your throughput needs and choose from 16 well-plates up to 384 well-plates. The intuitive RTCA Software Pro allows automatic calculation of parameters, like doubling time, % cytolysis, IC50 or KT50.



Cell behaviour - like cell adhesion, morphological changes, proliferation, cell death - has an impact on cellular impedance, which is reported in real time as dimensionless parameter, called Cell Index.

> xCELLigence Real-Time Cell Analysis (RTCA) DP (dual purpose) instrument continuously measures cell invasion and migration (CIM) and monitors cell health, behavior, and function using label-free cellular impedance.

"We are investigating the activity of natural killer (NK) cells. When using adherent target cells, the xCELLigence system provides label-free and real time data about the NK cell killing activity. Especially when combining NK cells and cytotxic substances we can determine the individual contribution of each factor, but also synergistic effects on target cell killing. Additionally, we are using the xcELLigence system to determine NK cell adhesion and activation in a time-resolved fashion."

> **Prof. Dr. Carsten Watzl** Scientific Director, Leibnitz-Institut für Arbeitsforschung, TU Dortmund





xCELLigence RTCA Family

Choose for your specific throughput needs and applications

Assays	RTCA S16	RTCA DP Dual Purpose	RTCA SP Single Plate	RTCA MP Multiple Plates	RTCA HT Multiple Plates	RTCA Cardio	RTCA Cardio ECR	RTCA eSight
Cell Characterization/QC	•	•	•	•	•	٠	•	٠
Immunotherapy/Cell Killing	•	•	•	•	•	•	•	٠
Adhesion	•	•	•	•	•	•	•	•
Receptor Signalling	•	•	•	•	٠	•	٠	٠
Invasion / Migration		•						
Cardiotoxocity						٠	•	
Extracellular Recording							•	
Live Cell Imaging								•



xCELLigence Real-Time Cell Analyzer family offers the right system for many different purposes. Different formats are available as 16, 48, 96, 3/5/6x96, or 384 wells.



Cell Analysis

xCELLigence eSight Real-Time Cell Analyzer (RTCA) Get twice the results from one powerful system

- Live cell analysis
- Imaging & impedance
- Exceptional versatility
- Easy workflow
- Very fast

The xCELLigence RTCA eSight system combines highly sensitive, impedance-based cell analysis with the power of live cell imaging in 3 colors (red, green, and blue) - simultanously, in real time. This combination enables comprehensive live cell analysis and increased insight into cell health, cell behavior, cell function and cell biology processes. eSight RTCA provides a contious readout of cell number, proliferation rate, cell size, cell shape, immune cell killing status, phagocytosis, substrate attachment quality and spheroid growth. Live cell imaging and real-time biosensor measurements can be performed on the same cell populations, providing an internal control and less variability than working with multiple replicate plates. Run parallel assays on the same plate, in the same instrument, and on the same cells, so that you can eliminate any suspicions of result inconsistency created through changing plates, materials and instruments. The streamlined workflow, high reproducibility, and quantitative kinetics of the eSight system makes it ideal for a wide range of cellbased assays.



Red: Annexin V; Green: Activated Caspase 3; Blue: Nuclear-localized BFB

Combining Live-Cell Imaging with Cellular Impedance to monitor apoptotic cell death in real time.

xCELLigence RTCA eSight: Run up to five 96 well plates independently or simultanously and obtain quantitative data in real time.



CellRaft AIR System One platform for automatically image, identify and isolate

- Improved cell viability
- High vitality of single cells
- Powerful analysis software

Generate phenotypically verified single cell-derived colonies in as little as 72 hours, with just 15 minutes of hands-on time, and 10 to 50x the number of clones compared to traditional methods. Cells share and enrich a common culture media while remaining separated. This contiguous media approach is much more favorable and dramatically increases cell viability.

Eliminate the need for trypsin, fluidics, or limiting dilution while getting more clonal colonies.

The CellRaft AIR System is an integrated platform that uses proprietary CellRaft technology and CellRaft Arrays to maintain cells in an unperturbed state, leading to improved viability of cells, highly proliferative colonies, and superior clonal outgrowth that provides a dramatic increase in the number of clones available for downstream applications.

- Obtain 10 50X more viable monoclonal colonies or organoids.
- Grow single cells in a flask-like environment, without physically separating them, eliminating perturbation to cell physiology and ensuring viability and vitality of single cells as they develop into clones.
- Identify cells of interest using powerful, label-free brightfield analysis software with user-defined parameters.
- Automatically and gently isolate CellRafts containing cells or colonies of interest for downstream endpoint analysis or clonal expansion.

The desired microwell with cells is dislodged from the array



The wand picks up the microwell using a magnet



The wand places the microwell with the cells in the 96-well plate



Applications:

- Organoids
- Cell line development
- Stem cells
- iPSC
- CRISPR
- Genomics

Rapid Imaging, software-guided identification and automated isolation by the CellRaft AIR system - an integrated platform



Cell Analysis

TIGR Tissue Grinder & Dissociator Tissue dissociation in less than 5 min

- Enzyme free
- High-throughput with 4 slots
- Integrated cell stainer
- Single pack tubes

The TIGR Tissue Grinder & Dissociator provides a unique and effective concept to generate single cells. Enzyme-free and purely mechanical, it avoids cleavage of membrane proteins. The dissociation needs less than 5 min regardless. 4 slots, which can be operated in parallel, allow high-throughput tissue dissociation. The specially designed tubes, are available in sterile single packs reducing the risk of contaminations.

Up to 400mg tissue per tube are dissociated by a combination of cutting and grinding steps. The single cells are finally obtained by centrifugation through an integrated cell strainers with 40, 70 or 100 μ m.



TIGR Tissue Grinder & Dissociator offers a fast and simple workflow from tissue to single cells



TIGR Tissue Grinder & Dissociator principle:

The grinding unit interlocks with rows of teeth that can be moved against each other. Free rotation of the grinding teeth draws the tissue sample into the free space applying adequate amounts of shearing and milling force to gently isolate single cell from the tissue. The space between the grinding teeth and their fin-shaped geometry allows efficient extraction of viable single cells.



TIGR Tissue Grinder and Dissociator to be used in a variety of applications.

Applications:

- 3D Cell Culture
- Tissue Models Spheroids, Organoids, Tumoroids
- Single Cell Counting
- Isolation of Primary Cells
- Cancer Cell Line Development
- Flow Cytometry



Magnetic Cell Separation Systems Easy and fast cell separation without column

- Developed using authentic human proteins
- Detects quantitative protein level in human serum, plasma
- High sensitivity and broad assay range
- Consistent results with high reproducibility

Magnetic bead kits and reagents for the positive or negative selection of cell types from a heterogeneous cell population.





Following depletion of CD8+ cells, supernatant cell suspension was stained with PB450-CD3(clone: HIT3a) and CL647-CD8(clone: OKT8) antibodies. CD45 positive cells are gated in the analysis. Left panel: CD3+CD8+ cells before selection. Right panel: CD3+CD8+ cells after depletion. Human CD8 magnetic beads are tested using PBMC from three different donors.



Cell Analysis

AuthentiKine ELISA Kits ELISA kits 10-1000x more sensitive than competitors

- Developed using authentic human proteins
- Quantitative protein level in human serum, plasma, or cell culture
- High sensitivity and broad assay range
- Consistent results with high reproducibility

AuthentiKine[™] ELISA kits are Proteintech's premium line of ELISA kits for measuring minute quantities of human serum factors. The antibody manufacturing and conditions for optimizing are built around using human proteins as they are in nature, resulting in unparalleled sensitivity and accuracy. When compared against leading competitors, our Authentikine ELISA kits are 10-1000x more sensitive, meaning these ELISAs can be used in situations where previous kits failed.





Standard curve of KE00139 AuthentiKine™ Human IL-6 ELISA Kit.



Standard curve of KE00146 AuthentiKine Human IFN-gamma ELISA Kit.



ELISA Kits Pre-coated ELISA Kits validated in native samples

- High sensitivity
- High reproducibility
- Detection of protein level
- Consistent results

Expertly validated, pre-coated ELISA kits for the detection of proteins, cytokines, growth factors, chemokines, and SARS-CoV-2 related proteins and antibodies. The kits conveniently include protein standards and strip-well plates, and are highly cited thus demonstrating performance. All ELISA kits are made in house and are validated to detect protein levels in native samples.





Standard curve of KE00096 Human/Rat BDNF ELISA Kit. Human IL-6 ELISA Kit



Standard curve of KE10002 Mouse TNF-alpha ELISA Kit.ELISA Kit. Human IL-6 ELISA Kit





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