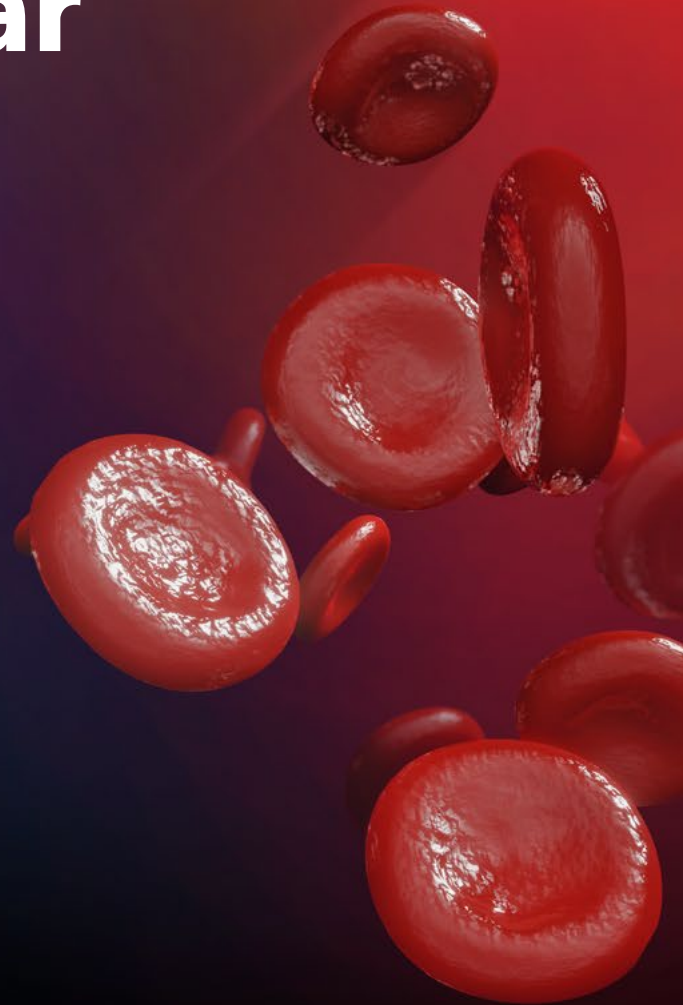


Cardiovascular Biology



Reagents for Cardiovascular Biology Research



biotechne[®]

With Bio-Techne, you get the combined strength of R&D Systems, Novus Biologicals, Tocris, and ProteinSimple. We provide a complete range of cardiovascular biology research tools including the highest quality recombinant proteins, antibodies, immunoassays, small molecules, and instrumentation. We work hard to support your research by putting our heart into the quality of our products!

Proteins

R&D Systems is the most reputable manufacturer of over 4,800 biologically active recombinant and natural proteins spanning 22 species.

Guaranteed Performance

- We back up our performance specifications with relevant bioassay data and test every lot prior to release to ensure consistent performance.

Animal-Free & GMP-Grade Proteins Are Available

- We offer proteins manufactured under animal-free conditions or using GMP guidelines for cell therapy.

Custom Protein Development Services

- We can make proteins to meet your exact specifications. If our test sample meets your requirements, we will scale up production to meet your research needs.

Manufactured by Scientists, for Scientists

- Our team of over 100 protein scientists brings the most experience and know-how in the industry to the development and production of our proteins.

Learn more | rndsystems.com/proteins

Antibodies

R&D Systems and Novus Biologicals together offer over 155,000 antibodies.

Largest Selection

- Our offering of over 155,000 antibodies is the largest on the market.

Confidence in Your Purchase

- Our antibodies are 100% guaranteed to work in the application and species listed on our website and datasheets.

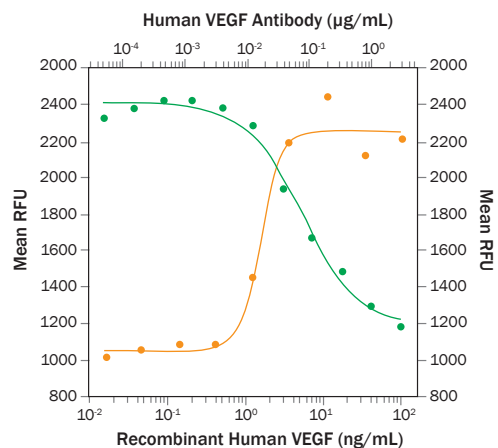
Unique Clones and Exclusive Antibodies

- Many of our unique clones have been used by HLDA to establish CD nomenclature. We offer over 15,000 antibodies that are exclusively available from us.

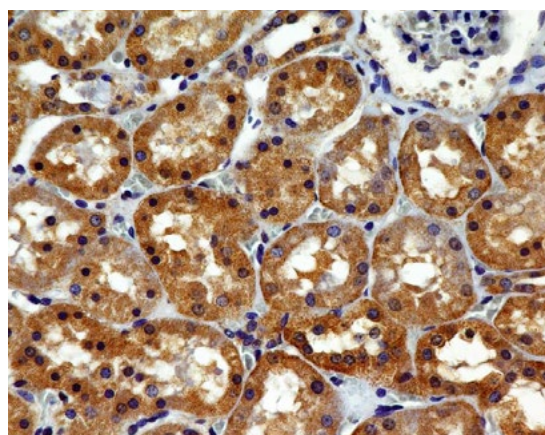
Wide Selection of Conjugated Antibodies

- We offer over 50,000 antibodies conjugated to at least 14 complementary colors.

Learn more | rndsystems.com/antibodies or novusbio.com



Neutralization of VEGF bioactivity with blocking antibody. Recombinant Human VEGF₁₆₅ (Catalog # 293-VE) stimulates proliferation in HUVEC human umbilical vein endothelial cells in a dose-dependent manner (orange line), as measured by Resazurin (Catalog # AR002). Proliferation elicited by Recombinant Human VEGF₁₆₅ (10 ng/mL) is neutralized (green line) by increasing concentrations of Recombinant Mouse Anti-Human/Primate VEGF Monoclonal Antibody (Catalog # MAB293R). The ND₅₀ is typically 0.04–0.08 µg/mL.



Immunohistochemistry analysis of VEGF R2 in human kidney. A formalin-fixed, paraffin-embedded tissue section of normal human kidney was stained with Mouse Anti-Human VEGF R2/KDR/Flk-1 Monoclonal Antibody (clone 1B6; Catalog # NBP2-36428) at 5 µg/mL. The cuboidal tubule epithelial cells show a specific cytoplasmic staining.

ELISA Kits

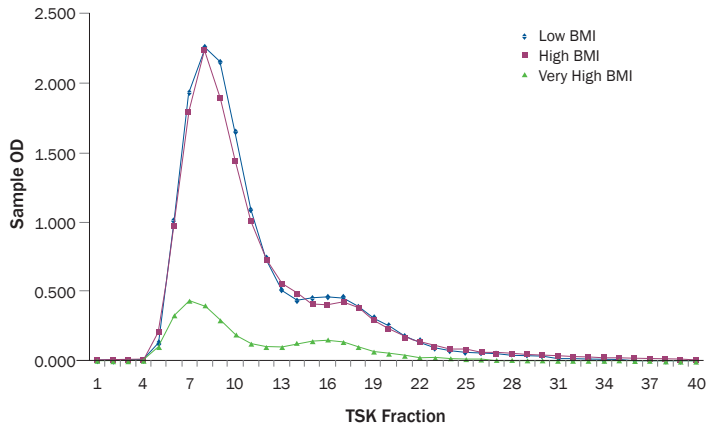
R&D Systems offers the most trusted immunoassays on the market with a menu of 700 target analytes spanning 12 species.

Legendary Reproducibility

- Our master calibrated Quantikine™ ELISA assays ensure that our kits perform consistently over time. Results obtained today are comparable to results obtained last month or even last year.

Confidence with Controls

- Our assays have controls with assigned ranges, guaranteeing performance.

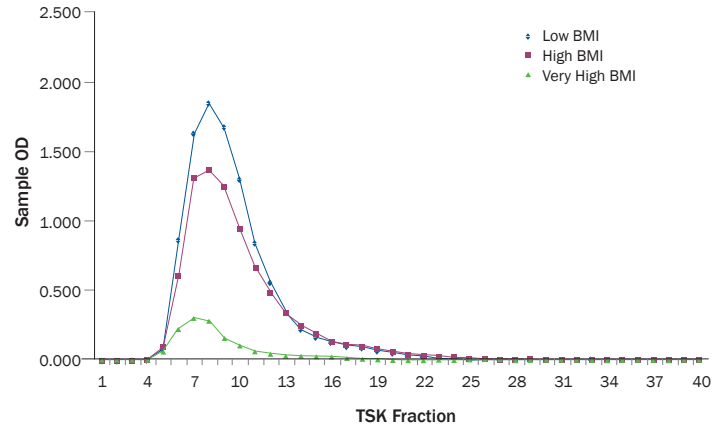


Detection of Adiponectin isoforms using the Quantikine Human Total Adiponectin/Acrp30 and Quantikine Human HMW Adiponectin/Acrp30 ELISA Kits. Serum from donors was separated by TSK size exclusion gel chromatography, and individual fractions were analyzed using the Quantikine Human Total Adiponectin/Acrp30 ELISA Kit (Catalog # DRP300; left panel) and the Quantikine Human HMW Adiponectin/Acrp30 ELISA Kit (Catalog # DHWADO; right panel). These immunoassays detect either all three molecular weight Adiponectin isoforms (Catalog # DRP300) or only HMW Adiponectin (Catalog # DHWADO), respectively. The Human HMW Adiponectin/Acrp30 ELISA Kit shows a clear reduction in the levels of HMW Adiponectin in serum from higher BMI donors.

Economical Alternatives

- Our DuoSet™ and DuoSet Intracellular (IC) ELISA Development Systems provide the best signal-to-noise ratio for value conscious customers.

Learn more | rndsystems.com/elisas



ELISpot & FluoroSpot Kits

R&D Systems ELISpot and FluoroSpot Kits are highly sensitive, microplate-based assays for the detection of cytokine-secreting cells.

More Sensitive than Competitor's Kits

- Our kits offer up to 20% greater sensitivity than the competition, allowing researchers to measure responses with frequencies below 1 in 100,000 cells.

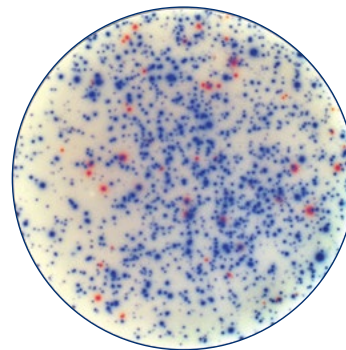
Clear Results

- Our kits provide brighter, crisper spots with less background noise.

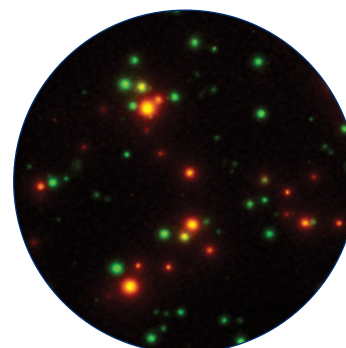
Wide Selection

- We offer a wide selection of single analyte and dual-color complete ELISpot Kits and dual-color FluoroSpot Kits. As an alternative to our complete kits, we also offer ELISpot Development Modules, which provide a flexible, do-it-yourself format for ELISpot development.

Learn more | rndsystems.com/elispot



Detection of IFN- γ and IL-17 secretion by mouse splenocytes using the Dual-Color ELISpot Kit. IFN- γ (blue spots) and IL-17 (red spots) were secreted from mouse splenocytes stimulated with PMA/Ca²⁺ ionomycin. Spots of cytokine secretion were visualized using the Mouse IFN- γ /IL-17 Dual-Color ELISpot Kit (Catalog # ELD5007).



Detection of IFN- γ and IL-2 secretion by human peripheral blood mononuclear cells using the Dual-Color FluoroSpot Kit. Human peripheral blood mononuclear cells were stimulated overnight with PMA/Ca²⁺ ionomycin and assessed for IFN- γ and IL-2 secretion using the Human IFN- γ /IL-2 Dual-Color FluoroSpot Kit (Catalog # ELD4506NL). Cells secreting IFN- γ were visualized as green spots, cells secreting IL-2 secretion were visualized as red spots, and cells secreting both cytokines were visualized as yellow spots.

Multiplex Assays

Luminex® Assays

R&D Systems, the world leader in the development of single analyte immunoassay kits, also offers multiplex assays including our standard Luminex Assays and High Performance Luminex Assays.

Uniquely Flexible Assay Options

- Choose from magnetic or polystyrene beads, specify your own panel, order a pre-selected assortment, have us mix the beads, or do it yourself.

More Results in Less Time

- Simultaneously profile up to 100 analytes using polystyrene microparticles or 50 analytes using magnetic particles.

Results You Can Trust

- As immunoassay experts, we excel at developing assay conditions and diluents that protect against false positives.

Simplified Ordering

- Our online ordering tool allows you to easily select analytes and build panels that meet your experimental goals.

Custom Luminex Services

- Unique analyte development, optimized panel configurations, sample type validation, evaluation of externally sourced antibodies, panel assembly to minimize required sample volume.

Learn more | rndsystems.com/luminex

Cell Differentiation Kits

Our StemXVivo™ Cardiomyocyte Differentiation Kit includes optimized components and protocol for the differentiation of human pluripotent stem cells into cardiomyocytes.

- Guaranteed to produce consistent, reliable results
- Convenient and cost-effective

Learn more | rndsystems.com/diffkits

Proteome Profiler™ Antibody Arrays

As a second multiplex assay option, R&D Systems offers membrane-based Proteome Profiler™ Antibody Arrays, the most trusted, easy-to-use arrays on the market.

Cost-Effective Screening

- Each array provides a quick and inexpensive tool for analyzing multiple analytes simultaneously, in less time than it takes to perform a Western blot.

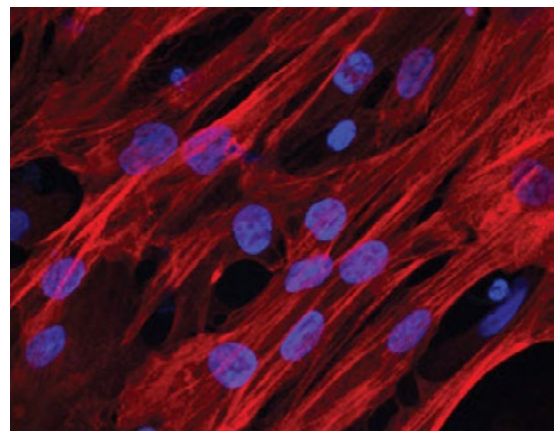
User-Friendly Design

- Each array is stamped with an identification number for easy record keeping and contains reference spots in three corners for orientation purposes.

No Special Equipment is Necessary

- If your lab is set up for Western blotting then you already have all of the equipment necessary to use our antibody arrays.

Learn more | rndsystems.com/ProteomeProfiler



Differentiation of pluripotent stem cells into cardiomyocytes. BG01V human embryonic stem cells were differentiated into cardiomyocytes using the media supplements included in the StemXVivo Cardiomyocyte Differentiation Kit. Aside from visually observing contracting cells, commitment to the cardiomyocyte cell fate was evaluated by labeling with the Anti-Human Cardiac Troponin T antibody included in the kit. For immunocytochemistry, the cells were stained using the NorthernLights™ 557-conjugated Donkey anti-Mouse secondary antibody (Catalog # NLO07; red), and the nuclei were counterstained with DAPI (blue).

Cell Culture Products

R&D Systems offers high quality and affordable cell culture products that will ensure your *in vitro* and *ex vivo* experiments perform optimally.

Specialized Media and Supplements

- Formulated to provide optimal growth conditions for specific cell populations.

Learn more | rndsystems.com/cellculture

Cell Culture Essentials

- From common cell culture reagents such as poly-L-lysine, resazurin, and cell culture plates to more specialized reagents such as basement membrane extracts and extracellular matrix molecules, we offer all of the essential cell culture reagents that you need.

Stem Cell Products

R&D Systems stem cell workflow solutions make experimental planning easier.

Reagents for an Efficient, Reliable Workflow

- From isolation and differentiation to verification and investigation, we have products to make your workflow efficient and reliable.

Minimize Experimental Variability

- Our kits quickly verify stem cell populations, increasing consistency across experiments. This saves time and allows for more confident data analysis.

Learn more | rndsystems.com/stemcells

All-In-One Kits for Stem Cell Differentiation

- We offer all-in-one kits for the differentiation of HSCs, MSCs, NSCs, and ES/iPS cells.

Cell Selection Kits

R&D Systems offers a choice of products for cell selection including our cell enrichment columns that use affinity negative selection and our MagCelect™ Cell Selection Kits that utilize ferrofluids for magnetic separation.

T Cell Enrichment Columns

High Purity

- Purifies the desired T cell population to 85–95%.

Wide Selection of Kits for Different T Cell Types

- Kits are available for the purification of CD4⁺, CD8⁺, memory, and naïve T cells.

Learn more | rndsystems.com/cellselection

MagCelect™ Cell Selection Kits

MagCelect™ Ferrofluids Have a High Binding Capacity

- High binding capacity of the beads allows cells to be separated to a very high purity within minutes.

MagCelect™ Ferrofluids Are Small

- The small size of the beads decreases the likelihood of cell damage and allows the particles to easily remain in solution, allowing for efficient diffusion kinetics in the binding reaction.

Ferrofluids Have No Magnetic Memory

- Protects purified cell populations against magnetic forces which may affect cell viability and interfere with downstream applications.

Wide Selection

- Kits are available for isolating B cells, T cells, regulatory T cells, and natural killer (NK) cells.

High Purity of Desired Cell Populations

- Purity of the isolated cells is 90–98%.

Small Molecules & Peptides

Tocris is the leading supplier of small molecules and peptides for cardiovascular research. The Tocris range of over 4000 products includes GPCR ligands, enzyme inhibitors, ion channel modulators, and fluorescent probes.

A Unique Collection of Innovative Products

- Everything from the latest exclusively licensed research tools to established biochemical standards.

Unrivalled Product Quality

- We offer certified high purity products, typically greater than 99% as measured by HPLC.

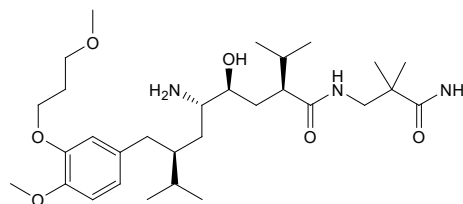
Competitive Pricing

- We offer competitive discounts on products purchased in bulk quantities as either individual or multiple items.

Custom Ordering Available

- If the product that you are interested in is not currently listed on the Tocris website, we are happy to look for a supplier on your behalf.

Learn more | tocris.com



Potent Renin inhibitor (IC_{50} = 0.6 and 80 nM for human and rat, respectively). Aliskiren hemifumarate (Catalog # 5491) exhibits selectivity over a range of other aspartic proteinases (>5000 nM). This compound lowers blood pressure in a hypertensive rodent model and is orally active.

Custom Products & Contract Services

Expedite your research by partnering with R&D Systems industry-renowned product development and biomarker testing scientists to deliver unique reagents and reliable data.

Custom Protein & Antibody Generation

- Our recombinant technologies provide up to gram quantities of consistent proteins and antibodies required for diagnostic and therapeutic reagent development.

Assay Development

- R&D Systems has over 25 years of experience developing, optimizing, and validating immunoassay kits and Luminex® assays to ensure the highest level of performance in analyte quantification.

Biomarker & Bioactivity Testing Services

- Entrusting our experts with your clinical study samples ensures accurate results that are returned in a timely, efficient, and confidential manner.

Learn more | rndsystems.com/custom



Instrumentation

Luminex®

MAGPIX® is the simplest, most affordable, and most compact of the xMAP® instruments available from Luminex. This compact multiplexing unit performs up to 50 different tests in a single reaction volume and reads a 96-well plate in just 60 minutes.

Luminex® 200™ sets the standard for multiplexing. The ability to perform up to 100 different tests in a single reaction volume and use either magnetic beads or plain polystyrene beads makes this instrument a popular choice for laboratories needing greater flexibility. Luminex 200 offers higher sample throughput with a 96-well plate read time of only 45 minutes.

FLEXMAP 3D® is Luminex's most advanced and versatile multiplexing platform. Fast read time, compatibility with 96- and 384-well plates, and ease of integration with front-end automation systems make the FLEXMAP 3D® the platform of choice for high-throughput applications.

Learn more | rndsystems.com/luminex

Luminex® MAGPIX™



Luminex® 200™



Luminex® FLEXMAP™



ProteinSimple

ProteinSimple provides rapid and automated alternatives to traditional Western blots and multiplex ELISAs with the Wes™ and Ella instruments. You can also analyze protein expression in thousands of single cells in parallel with Milo™.

Wes™ Simple Western

- Protein quantity, identity, expression or isoform data from 5 uL sample in as little as 3 hours.

Ella Simple Plex

- High performance, hands-free results for a single or multi-analyte ELISA in an hour.

Milo™ Single-Cell Western

- Western-based protein expression in thousands of single cells in parallel.

Learn more | proteinsimple.com

Wes™



Ella



Milo™



Where Science Intersects Innovation™

Bio-Techne® | R&D Systems™ Novus Biologicals™ Tocris Bioscience™ ProteinSimple™ ACD™ ExosomeDx™ Asuragen®
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