

Advancing Research with Biologically Relevant Results

Our products, services and testing solutions support researchers through their cell biology process, from early research through drug discovery and cell therapy. We offer biologically relevant tools to quickly and easily generate decision driving data.



Lonza is a global company serving the life-science industry. Over a century ago, we began as a small Swiss electricity company, making a few chemicals on the banks of the river Lonza in the Valais region of the Swiss Alps. More than 110 years later, we are a leading supplier to the pharmaceutical, healthcare, and life-science industries. We offer over 4000 products and services to more than 60000 customers worldwide. Since 1897, we have used our enterprising character to adapt our offerings and services to the needs of our customers and changing technologies. Throughout our history, we have maintained a strong culture of performance, results, and dependability.

Lonza has a reputation for expertise in many areas of cell biology, from the earliest research through biopharmaceutical production. Our presence in many pharmaceutical product and service markets helps us to understand the limitations of existing technologies and guides our efforts to find and develop better solutions for our customers.



Our Vision and Mission

We strive to be the leading supplier using science and technology to improve the quality of life. We work with passion, using advanced technologies, to transform life science into new possibilities for our customers.

Leading by Innovation

We continually expand our product offering with innovative products and technologies to advance and improve your research. Our integrated product portfolio ensures a reliable product performance throughout the entire experimental workflow and helps you to focus on biologically relevant results.

Maintenance of Product Quality

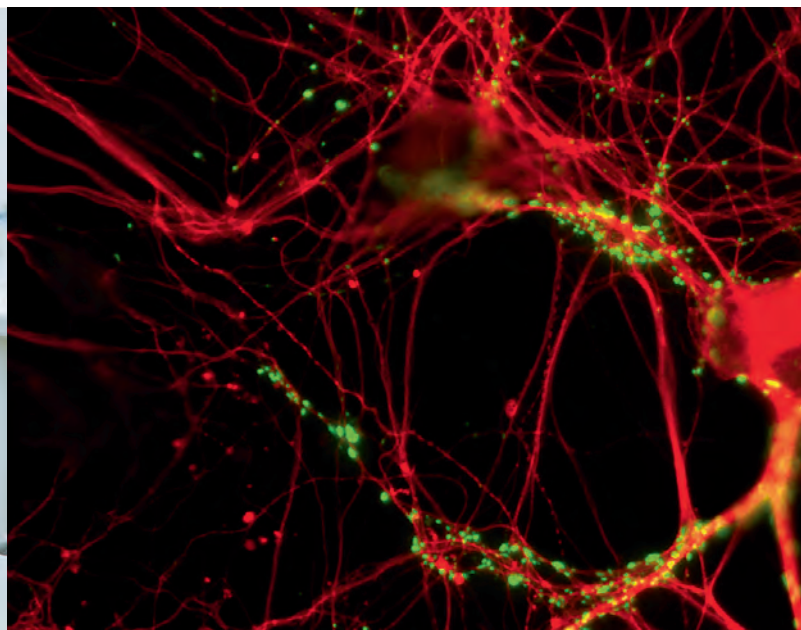
We know how important reliable product quality is for your day-to-day research. We therefore use the highest quality standards in the industry so you can rely on the performance of our products, now and in the future.

Connected via Scientific Expertise and Support

Our support team is there when you need us. With a large team of scientists, many with PhD level, we provide outstanding personal and online scientific support to assist you throughout your experiments for optimal results. Our support team is closely connected to our R&D department to ensure highly technical support and to feedback market needs for future technology innovations.

Commitment to our Customers

We want you to succeed in your research and are dedicated to providing a friendly, helpful environment to ensure you have the best experience possible working with Lonza. Customer focus and satisfaction are thus our main drivers in all Lonza departments.



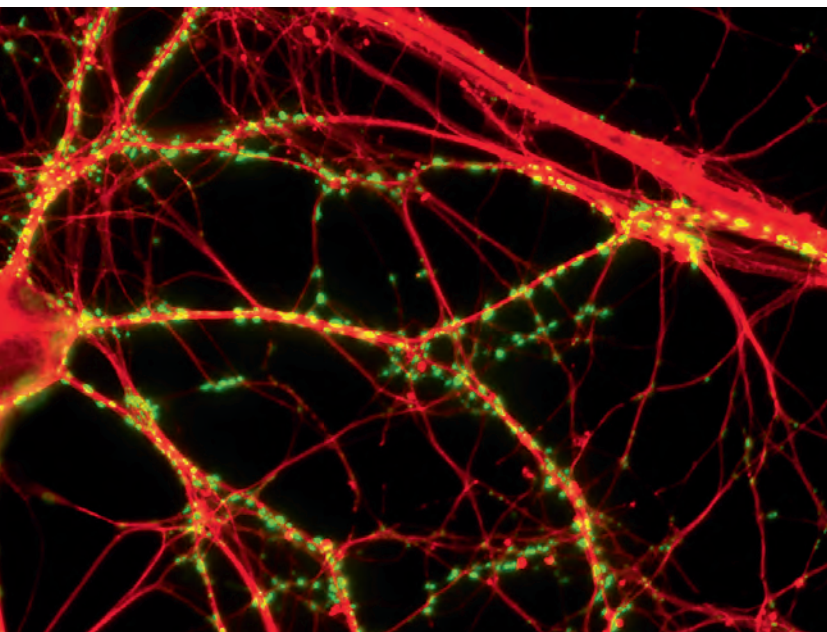
Advancing Research with Biologically Relevant Solutions

We know that when you perform *in vitro* research, you need to replicate the *in vivo* environment as closely as possible. Research has shown that primary cells, which are non-transformed, non-immortalized cells isolated directly from tissue, provide conditions that closely simulate a living model and yield more physiologically significant results. As the world's leading primary cell supplier for the past 20 years, we strive to ensure that all of our products improve the biological relevance of your research results.

Integrated Research Solutions

Lonza provides complete and functionally qualified solutions for your cell and molecular biology research applications to improve and accelerate experimental results. We are continuously expanding our existing research portfolio with a special focus on certain disease areas, such as neurobiological or respiratory diseases. With such an integrated product offering, you can focus on your research and not on the optimization of individual products. For example, you can successfully transfect our Clonetics™ Primary Cells with your gene of interest using our Nucleofector™ Technology and confirm viability results after transfection with our Vialight™ Bioassay.

With our well-known and trusted product brands, Lonza continues to set the standard for quality in the industry. Our integrated cell culture solutions span our product areas with proven performance.



Primary Cells and Media

- Over 150 authenticated primary cell types and optimized media including diseased cells and cells containing biosensors, ready to use today
- Primary adult stem and progenitor cells available with growth and differentiation media, and ESC-derived differentiated cells and media
- Guaranteed to perform cell and media reagents for easy handling and reliable cell culture performance

Cell Culture Reagents

- An extensive selection of classical and serum-free media, including protein-free, chemically defined and non-animal derived formulas, as well as cell culture reagents for a successful cell culture.
- Many of our serum-free media are also available as therapeutic grade, for an easy switch from research to clinical applications.

Mycoplasma Detection System

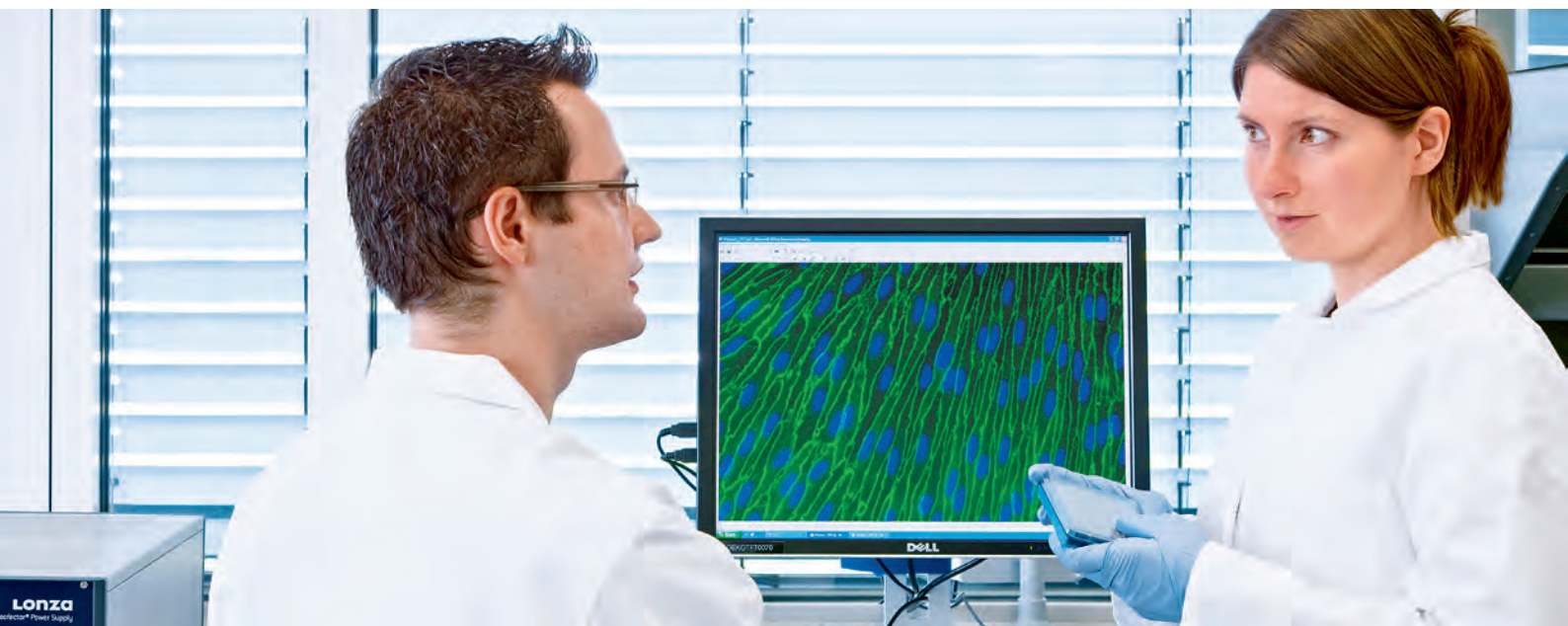
- Complete portfolio for easy and quick mycoplasma detection, elimination and prevention of your cell culture.

Transfection Technology

- Proven over the past 10 years as the optimal transfection technology for hard-to-transfect primary cells and cell lines.
- An extensive Nucleofector™ Instrument Platform is available to address different throughput and application needs.

Nucleic Acid and Protein Electrophoresis

- SeaKem®, NuSieve™ and MetaPhor™ Agarose, and FlashGel™ System for fast reliable separation and analysis of nucleic acids and proteins.



Products and Services to Accelerate Drug Discovery

Cell Supply Solutions

Our guiding principle for the last two decades has been developing a product portfolio of biologically relevant cell solutions for drug discovery and basic research, and to simply produce the best *in vitro* models that most closely replicate the *in vivo* environment.

Besides the Clonetics™ and Poietics™ Primary Cell Systems, we offer pluripotent stem cell derived cell types, diseased cells and conditionally immortalized cells. We produce and transfect Cells on Demand™ or make cells containing assays.

Save time and money by avoiding the aggravation of tissue acquisition, failed isolations and low yields. Lonza has decades of experience isolating dozens of cell types from human and animal tissues. We also provide donor matched cell sets and a wide array of QC, cell characterization, and cell expansion services.

Assay Solutions

Our range of biochemical assays, bioassays and cell-based assays provides a wealth of information relating to your cells; from their state of health to the finest detail of their intracellular signaling mechanisms. These assays can become key tools in your pre-clinical drug discovery processes, from monitoring the quality of the cells you are using to target identification and validation, compound hit and safety screening up to determining the specific mechanism of action of your compounds.

Rapid Testing Solutions

Endotoxin Detection: a Brief History

Ever since the pharmaceutical industry began manufacturing injectables, pyrogen detection tests have been an absolute necessity. Pyrogens are substances that cause fever, shock or even death if high levels are introduced in the body.

Endotoxins are natural compounds found in the outer cell membrane of Gram-negative bacteria and are released upon cell lysis. Endotoxins are a type of pyrogen. Today, endotoxin tests are performed on raw and in-process materials, and for the final release of products in the pharmaceutical and medical device industries.

The limulus amebocyte lysate (LAL) test was commercially introduced in the 1970's. LAL is derived from the blood cells, or amebocytes, of the horseshoe crab, *Limulus polyphemus*. LAL was developed into a test for endotoxin after Frederick Bang and Jack Levin observed that the amebocytes of the horseshoe crab contain a clotting agent that gels in the presence of Gram-negative bacteria. They recognized that this clotting agent could be used as a definitive way to test pharmaceutical drugs for the presence of Gram-negative bacteria.

Why Researchers Perform Endotoxin Testing

The presence of endotoxin in cell culture systems can be problematic for researchers. Endotoxin impacts over 30 biological activities (including macrophage activation, mitogenic activity, induction of interferon and colony stimulating factor). Endotoxin can lead to cell death by initiating complement activation. Therefore, it is important that endotoxin levels in cell culture media and supplements be measured and controlled. Lonza's liquid media products are pre-tested for endotoxin using the Kinetic-QCL™ Assay.

Cell culture systems are used for a variety of applications such as the development of a drug candidate. Injectable drugs and vaccines must be tested for endotoxin to assure they are safe for human and animal use.

The endotoxin detection product line offers researchers a wide variety of assays, instrumentation, software and accessories to meet their needs.

For those who prefer to outsource testing, our endotoxin testing service offers routine testing as well as validation steps required during a product validation program and requested by regulatory authorities and compendia such as USFDA, EMA, EP, and USP.



Endotoxin Detection Methods

Lonza offers several LAL-based assays for the detection of endotoxin that allow researchers to perform their own screening. For example, gel clot LAL provides a simple positive/negative result. The PYROGENT™ Ultra Gel Clot LAL Assay offers convenient, pre-mixed and ready-to-use endotoxin standards at concentrations necessary to create a standard curve. This eliminates the need for vortexing, saving researchers over 20 minutes of preparation time, a measurable benefit in a busy laboratory.

Endpoint chromogenic LAL offers a quantitative result and exhibits less product interference than LAL methods using the clotting protein. Quantitative results can be achieved in 16 minutes.

Lonza scientists have produced a recombinant form of Factor C, the first component in the horseshoe crab clotting cascade. The PyroGene™ rFC Assay does not use horseshoe crab blood as the raw material, offering a sustainable alternative for endotoxin testing. The rFC technology is endotoxin-specific, eliminating false-positive glucan reactions, delivers predictable, reliable assay performance lot-to-lot and is comparable to other quantitative LAL methods.

Our endotoxin detection products have been available since the 1970s. Using our extensive experience with endotoxin detection and its regulatory requirements, Lonza has been able to deliver innovative and time-saving tools for both the research and pharmaceutical markets.

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