Lonza

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Bioscience – an Excellent Match for Lonza

Although it is only one and a half years ago that the Bioscience business (acquired from Cambrex) joined the Lonza family, it is hard to believe that there was a time without Lonza Bioscience.

The smooth integration was due in part to its excellent fit with the company – culturally as well as business-wise. Not only does Lonza Bioscience (LBS) serve the life-science markets as most other Lonza businesses do, but it provides the company with in-house sourcing capabilities. Many of the Lonza Quality Control laboratories throughout the world use LBS test kits for safety testing of their drug products. LBS cell culture media are being used in Visp, Portsmouth and other Lonza sites. And lastly, LBS' basic research customer base provides Lonza with access to researchers early in the drug discovery and development process.

The LBS division has four business units Media, Rapid Testing, Cell Therapy and Cell Discovery & Molecular Biology. Each of these business units focuses on a specific type of customer within the life-science market. LBS customers span a variety of functions within pharmaceutical and biotech companies - including R&D, production and quality control. These customers depend on the high quality and consistency of the LBS products they utilize in their work.

Cell Therapy – a New Area of Healthcare

A key focus area for the Lonza Bioscience business is in the area of cell biology, and more specifically, in providing the actual cells themselves. Cells are the basic building block of life. Lonza provides the research community with both human and animal cells which can be used to understand the effects of drugs before testing them in humans. Cells outside the body can behave much like they do in the body, and are more readily available for experimentation.

Life Science Ingredients	Exclusive Synthesis & Biopharmaceuticals		Bioscience
Nutrition Ingredients	Small Molecules	Mammalian Operations	Media
Microbial Control	Peptides	Biopharma Services	Rapid Testing
Performance Intermediates	Biochemicals	Microbial Operations	Cell Therapy
			Cell Discovery & Molecular Biology

Stemming from the use of cells in research, a new area of healthcare, cell therapy, is emerging. Cell therapy is part of the new field of regenerative medicine, which is "the process of creating living, functional tissues to repair or replace tissue or organ function lost due to age, disease, damage or congenital defects". Regenerative medicine includes both cell therapy and tissue engineering, as well as the associated use of small molecules to modulate therapies. While cell therapy involves the use of cells to repair or replace diseased or damaged tissue, tissue engineering goes one step further and is concerned with the development of 3-dimensional tissue structures for replacement of damaged organs such as skin, cartilage and bone.

Cell Therapy has Roots in Switzerland

Although cell therapy is considered to be an emerging area of medical pursuit, the idea was established in the 16th century when Swiss-born Paracelsus, a medical doctor in Basel and lecturer at the University of Basel, wrote in his "Die grosse Wundarznei" ("Great Surgery Book") that "the heart heals the heart, lungs heal the lung, spleen heals the spleen; like cures like" [1] or that it would be possible to treat medical conditions through the injection of cells or tissues from various sources.

The term "Cell Therapy" was derived much later. In 1931, another Swiss, Dr. Paul Niehans, injected a mixture of saline and finely-diced parathyroid gland from a steer into a patient that had accidentally had her parathyroid removed during surgery. Her health purportedly improved and she lived for many years – a case from which Dr. Niehans coined the term "cell therapy". Unfortunately, there remain a number of medical practitioners who promise false hope with unregulated cellular therapies to patients. These treatments, a distraction from legitimate medicine, should not be confused with the carefully monitored stem cell therapies making their way through clinical trials under the purview of regulatory agencies world-wide.

In 1956, the first bone marrow transplantation performed by Dr. E. Donnall Thomas in Cooperstown, NY (USA) set the stage for legitimate modern cellular therapies using clinically derived materials. Today, thousands of these procedures are performed annually to help leukaemia patients.

[1] Die grosse Wundarznei. Ulm, 1536 (Hans Varnier); Augsburg (Haynrich Stayner), 1536; Frankfurt/M. (Georg Raben / Weygand hanen), 1536 (translated into English by David Gelsinger 2003).

Applications of Cell Therapy:

- Leukemia and lymphoma
- Burn repair
- Bone and cartilage repair
- Diabetes
- Deafness
- Wound repair and trauma
- Cosmetics
- Heart disease
- Macular degeneration (blindness)
- Neurodegenerative disorders (Parkinson's, Alzheimer's)
- Baldness

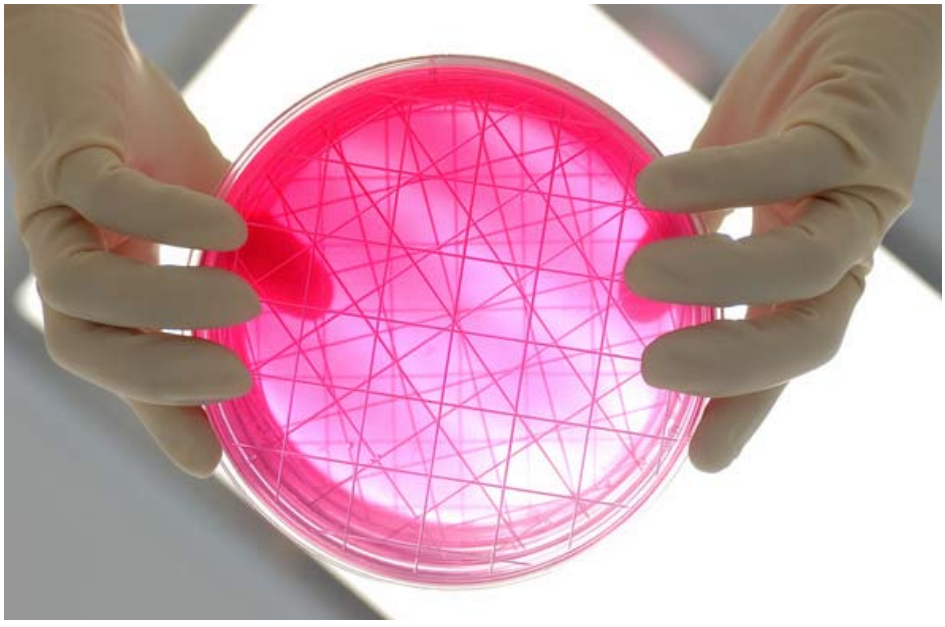
Stem Cells can be found in tissues, such as:

- Bone marrow
- Blastocyst
- Umbilical cord
- Foreskin
- Placenta
- Fat
- Skin
- Teeth
- Muscle
- Intestine
- Eyes

One area of cell therapy is based on stem cells. It is believed that these cells have great promise in providing significant benefits to patients suffering from various illnesses. Although embryonic stem cells get the most attention, therapeutic stem cells are now routinely isolated and cultured from a variety of tissues.

With eight existing cGMP-certified cell therapy manufacturing suites, Lonza is uniquely positioned to support this type of therapy. Significant efforts are being made to identify and adopt new technologies to further strengthen Lonza's leadership in this market.

Yet, cell therapy is just one way in which the Bioscience business contributes significantly to the life sciences. Lonza Bioscience is a leader in several high-value segments of the life-science industry, providing products and services to support the discovery and commercialization of human therapeutics.



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