



Benta Biotechnology Unit

A Better Life Beyond Technology



Innovation For Patient Care

Benta has adopted cutting-edge technology to establish a state-of-the-art biotechnological facility, one of the few facilities of its kind in the region.

This unit can produce small and large sale therapeutic proteins delivered from bacteria and mammalian cell lines.



State – Of – The – Art Manufacturing

Separate areas (Class A, C and D) have been dedicated to ensure quality manufacturing of recombinant and biological products as per Good Manufacturing Practices and International Regulations:

- Research and Development
- Quality Control Area
 - Bioanalytical Lab
 - Molecular Biology Lab
- Upstream Process Area
- Downstream Process Area
- Separate Cold Storage Areas
- Formulation and Filling Processes



Upstream, Downstream and Bio -Analytical Equipment

- Digital Molecular Imager
- AKTA Fast Protein Liquid Chromatography Systems
- 18 High Performance Liquid Chromatography (HPLC) Systems
- 3 Capillary Electrophoresis Machines
- 1D and 2D Electrophoresis Systems
- Multi- Functional Microplate Readers
- 6 Bioreactors and Fermenters (up to 150 Litres)
- Laboratory and Large Scale TFF Systems
- Flow Cytometers
- Single – Use Mixing Systems
- Gradient Mastercyclers
- Ultra Centrifuges
- 8 Laminar Flow and Safety Cabinets
- Ultrasonic Sonifier
- Water for Injection System
- Gas Chromatography System
- Hemostasis Analyzer
- Differential Refractometer
- Perfusion Chamber
- Single Cell Isolator
- Automated Fluorescence Microscope



Our Biotech & Biological Products

- **Epotex** - Recombinant Human Erythropoietin
- **Neograstim** - Filgrastim (rHuG-CSF)
- **PEGrastim** – Pegfilgrastim
- **Becaplex** - Becaplermin (rHPDGF)
- **Prolog** - Insulin Lispro
- **Neuronox** - Botulinum Toxin Type A
- **Glartus** - Recombinant Insulin Glargine
- **Noxprin** - Enoxaparin sodium
- **Bevita** - Interferon beta 1-a
- **Rhesimune** - Anti - Rho D
- **Fertimon** - Recombinant FSH
- **Mabtin** - Trastuzumab
- **Rabimune** - Rabies Antiserum - Equine
- **Fostide** - Recombinant Human Parathyroid Hormone
- **Recofact VII** - Eptacog alfa- a recombinant blood coagulation factor VIIa
- **Recofact VIII** - Moroctocog alfa-recombinant blood coagulation factor VIII with remote B domain
- **Benta OncoTect 3Dx and Benta OncoTect iO**



Cell Therapy

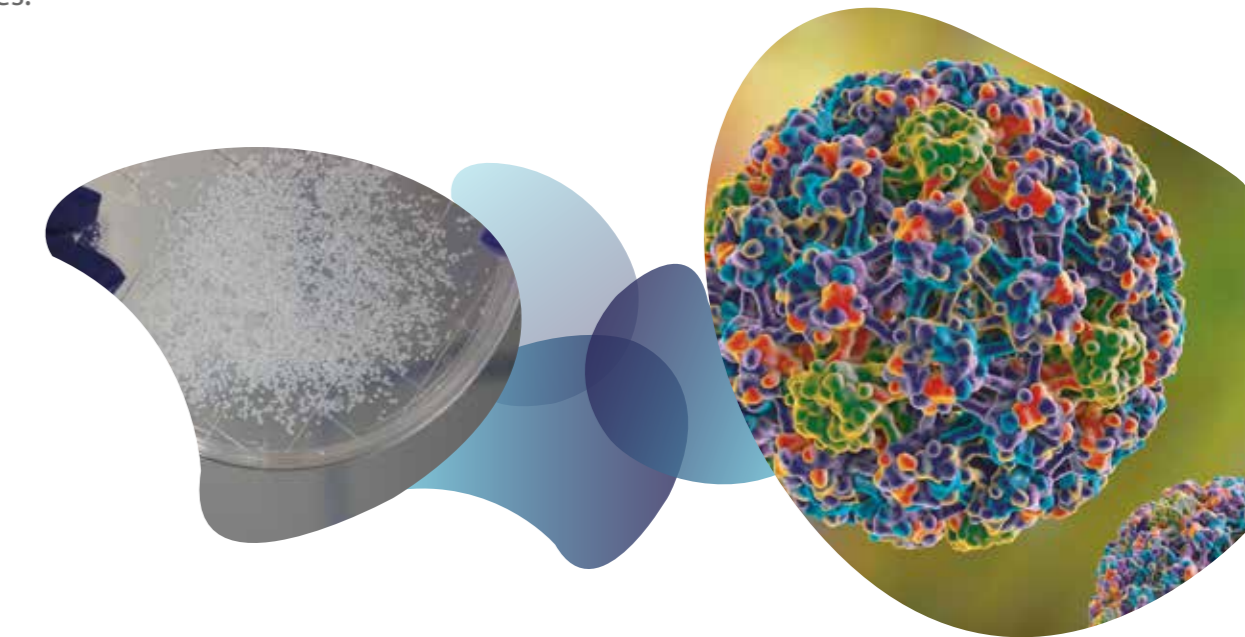
At BPI, medical breakthroughs and improving human wellbeing are at the heart of our values. Under the umbrella of Benta Encapsulife, we have developed biocompatible capsules for cell therapy through a biotechnology process.

The advanced living-cell encapsulation technology will allow the implementation of all types of cells into the human body without the usage of immunosuppressant drugs allowing the treatment of many human diseases.

Our first capsule will be dedicated to the treatment of diabetic patients using encapsulated *B*-islets. During the manufacturing process of capsules, quality control testing will be assessed.

This innovative technology was awarded a U.S patent for the world's first living-cell, bio-artificial organ to address multiple disorders.

Finally, BPI is the first Lebanese drug manufacturing company to conduct clinical trials on humans for innovation therapies.



Single Cell Diagnostic Innovation

Benta OncoTect iO/3Dx is the latest diagnostic technology for HPV; Bladder, Lung, Head and Neck and Breast Cancers. It is high precision diagnostic kit that uses liquid-based cytology and tissues specimens analyzed by flow cytometry technique to provide quantitative, simultaneous and multiplexed detection of proteins, mRNA, DNA/cell cycle and morphology of one cell at a time.

Unlike existing diagnostic tools, Benta OncoTect iO/3Dx assay is fast and results are obtained within few hours.

Protein, RNA & DNA Preservation

BPI also provide in-house full service diagnostic tests and analysis for a wide spectrum of applications:

- HLA Testing
- Molecular Diagnostics
- Nuclease Protection Assays
- RNA-seq
- Proteomics
- PCR
- Genotyping
- Gene Expression
- Immuno-Assays
- Pharmacogenomics
- Micro Arrays
- Personalized Medicine and Epidemiology



The Genesis System by Celsee®

Using the Celsee Genesis System provides us with a comprehensive analysis of cellular behavior, single-cell profiling, cytometry, proteogenomics and single-cell transcriptomics. In addition, it allows rare-cell enumeration and enrichment. The captured cells can be labeled via immunofluorescence and counted by our state-of-the art automated imaging facility to generate valuable data to monitor tumor progression and response to immunotherapy.



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