



ExoLife

CORD BLOOD DERIVED

EXOSOME

RENEWING LIFE AT THE CELLULAR LEVEL

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 **onkim**
kök hücre teknolojileri
Geleceğe Güvenle Bağlanın



Established in 2005, **ONKİM** is a hybrid cell and tissue center with the capability to process both human-derived cells and human-derived tissues within the same facility.

It is located within the Istanbul University Cerrahpaşa Avcılar Campus.

Located within a total indoor area of 1,180 m², including a 400 m² **cGMP / cGTP** Laboratory...

Grade A Production Areas
Cleanroom areas with laminar airflow where high-risk production processes are carried out.

Grade B Preparation Areas
Areas used for aseptic preparation and filling. These areas form the background of the Grade A areas.

Grade D Quality Control and Storage Areas Clean areas designed for performing less critical stages in the production of sterile products.

Operations are carried out in compliance with the activity permits issued by the Health Directorate, ensuring the highest levels of safety and reliability required by legislation and international standards.

TİTCK Manufacturing Facility Good Manufacturing Practices Certificate
TR/GMP/2020/130

TİTCK Manufacturing Site Authorization Certificate
TR/İTTÜT/2020/1-1, TR/İTTÜT/2020/1-2

SHGM Cord Blood Bank Operation Approval
02.KKB.04 / 05.08.2020/2041

SHGM Tissue and Cell Center Operation License
TR/DHM/2021/03

EXOSOMES

Exosomes play a role in intercellular communication.

They transport molecules that are key regulators of intracellular information between nearby and distant cells.

They are surrounded by a double-layer phospholipid membrane and are secreted by all cells.

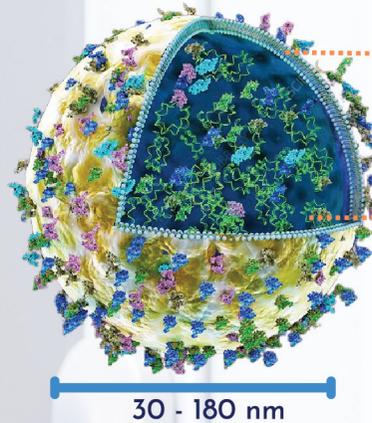
They are very small vesicles with a diameter of 30–180 nanometers, carrying genetic information, growth factors, and proteins.

They are approximately 1/1,000 the size of a cell.

They have high potential in cell renewal and repair within the field of Regenerative Medicine.

Cord Blood–Derived Exosomes have the ability to enhance stem cell activation.

Thanks to their active biological components (growth factors, proteins, cytokines, genetic materials, etc.), they contribute to the regulation of molecular-level processes.



- 1) Double-Layer Lipid
- 2) Proteins (enhance targeting to specific cell types)
- 3) mRNA, miRNA, lncRNA, proteins, lipids (signaling and structural materials carried by exosomes)

30 – 180 nm

They exhibit antifibrotic, antiapoptotic, anti-inflammatory, antioxidant, angiogenic, neuroprotective,

and neuroregenerative effects, and can be used safely and effectively in the treatment of many diseases.

- They carry many biomolecules such as lipids, proteins, mRNAs (messenger RNA), miRNAs (micro RNA), and lncRNAs (long non-coding RNA).
- They have the potential to serve as biomarkers in the diagnosis and treatment of many diseases, including cancer.
- The cargo they carry is considered to provide a significant advantage in disease diagnosis and treatment.
- They characteristically reflect the membrane and cytoplasmic properties of the cells from which they are secreted.

The contents of exosomes can be summarized as follows:

- They carry various **proteins** on their surface and within their internal matrix. (Surface Proteins and Functional Proteins)
- **Lipids** form the membrane structure and influence the biological functions of exosomes. (Phospholipids, Sphingolipids, Lipid Rafts)
- They contain **genetic materials**. (mRNA, miRNA, lncRNA)
- They possess metabolites that affect **metabolic** processes. (Amino acids, Enzymes, Metabolic Intermediates)

Cell Proliferation, Differentiation, Angiogenesis, Fibrosis, Remodeling, Tissue Regeneration, and Other Regenerative Processes

- VEGF (Vascular Endothelial Growth Factor)
- FGF2 (Fibroblast Growth Factor 2)
- EGF (Epidermal Growth Factor)
- BMP2 (Bone Morphogenetic Protein 2)
- COL1A1 (Collagen Type I Alpha 1 Chain)
- MMP2 (Matrix Metalloproteinase 2)
- miR-21
- miR-126
- miR-29a
- miR-199a-3p
- H19
- MEG3 (Maternally Expressed Gene 3)
- LINC00467
- PVT1 (Plasmacytoma Variant Translocation 1)

Antioxidation, Cellular Protection, Cell Survival, and Anti-Apoptosis

- SOD2 (Superoxide Dismutase 2)
- GPX1 (Glutathione Peroxidase 1)
- AKT1 (Protein Kinase B)
- HSP70 (Heat Shock Protein 70)
- miR-17-5p
- miR-210
- miR-214
- miR-23a
- miR-92a
- miR-27b

Hematopoietic Processes

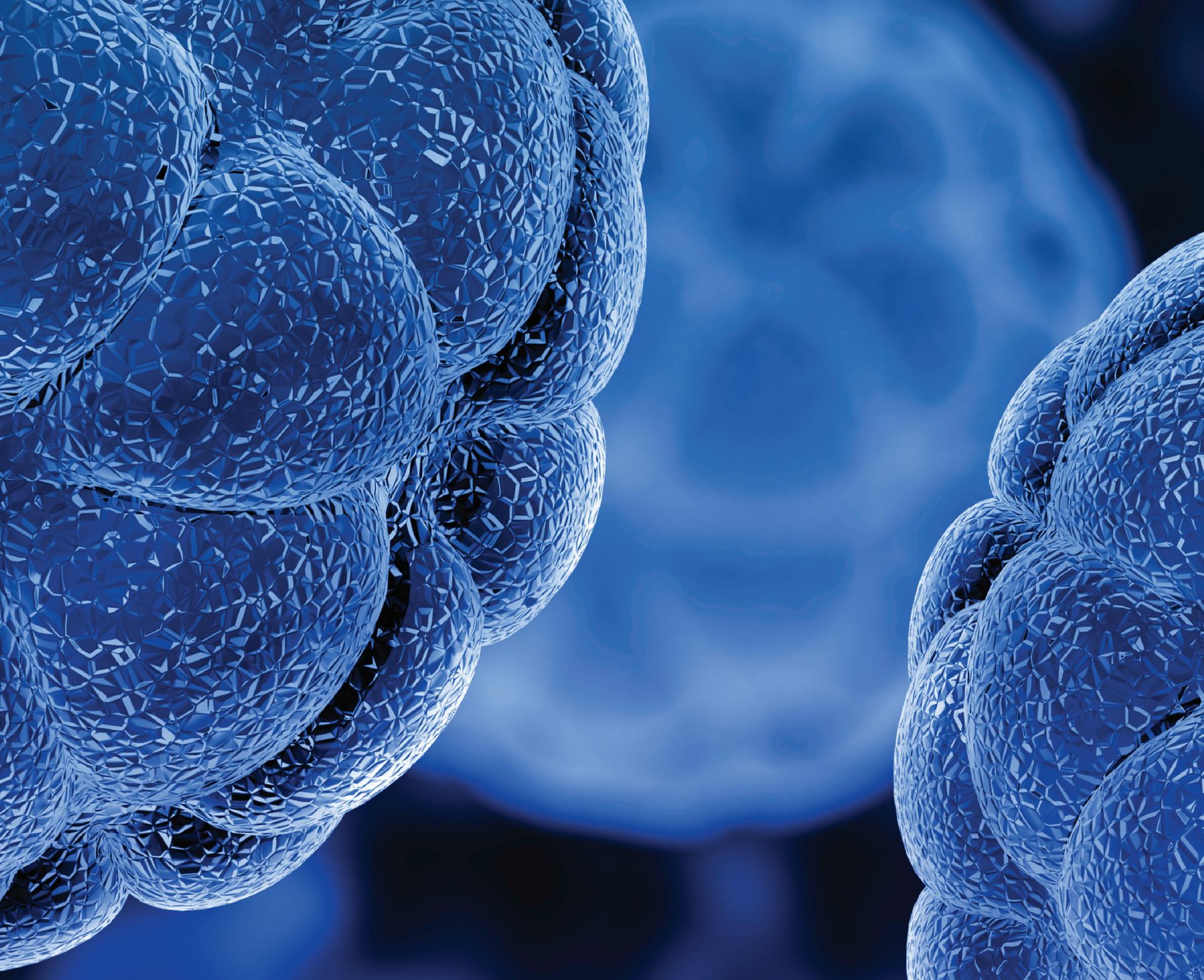
- RUNX1 (Runt-Related Transcription Factor-1)
- GATA2 (GATA Binding Protein 2)
- EPO (Erythropoietin)

Cellular Metabolism and Energy Regulation

- GAPDH (Glyceraldehyde-3-Phosphate Dehydrogenase)
- PGK1 (Phosphoglycerate Kinase 1)
- PDK1 (Pyruvate Dehydrogenase Kinase 1)
- PGC-1 α (Peroxisome Proliferator-Activated Receptor Gamma Coactivator 1-Alpha)
- G6PD (Glucose-6-Phosphate Dehydrogenase)
- HOTAIR (HOX Transcript Antisense RNA)
- UCA1 (Urothelial Cancer Associated 1)
- GAS5 (Growth Arrest Specific 5)
- LINC01133
- SNHG16 (Small Nucleolar RNA Host Gene 16)

Immune Regulation and Inflammation

- IL10 (Interleukin 10)
- TGF- β (Transforming Growth Factor Beta)
- CSF1 (Colony-Stimulating Factor 1)
- CXCL12 (C-X-C Motif Chemokine Ligand 12)
- NEAT1 (Nuclear Enriched Abundant Transcript 1)
- TUG1 (Taurine Upregulated Gene 1)
- GAS5 (Growth Arrest Specific 5)





ExoLife Flex

Cord blood-derived ExoLife Flex contains **IGF-1** and **BMP-4** biomolecules, which play important roles in metabolism of chondrogenesis and osteogenesis, as well as **VEGF** and **HGF**, which stimulate vasculogenesis and angiogenesis.

EGF, TGF- β 1, PDGF-BB, prolactin and miR-126 contribute to tissue and wound repair, including cartilage regeneration. **IL-10** and other biomolecules play key roles in suppressing inflammation.

Orthopaedic indications for ExoLife Flex applications;

- * Atrophic Non-Union Fractures
- * Osteoarthritis
- * Avascular Necrosis
- * Meniscus Degeneration
- * Osteochondral Injuries
- * Muscle, Tendon and Ligament Injuries
- * Intervertebral Disc Degeneration



ExoLife Andro

Cord blood-derived ExoLife Andro contains **IGF-1** and **NF- κ B**, supporting nitric oxide release and cellular proliferation through **EGF** and **miR-126**.

VEGF and **HGF** contribute to vasculogenesis and angiogenesis. Transferrin plays a role in suppressing fibrosis. **IL-10** and other biomolecules support inflammation control.

Urological/Andrological indications for ExoLife Andro applications ;

- * Erektıl Disfonksiyon
- * Peyronie
- * Azospermi
- * Üretra Darlığı
- * Mesane Disfonksiyonu
- * Stres İnkontinans
- * Kronik Prostatit



ExoLife Glow

Cord blood-derived ExoLife Glow supports fibroblast proliferation via **BFGF** and enhances collagen synthesis through **TGF- β 1** and **PDGF-BB**.

HGF inhibits melanogenesis. **EGF**, somatotropin and prolactin support epithelial regeneration. **SCF** plays an important role in maintaining cellular vitality. **VEGF** stimulates angiogenesis. **IL-10** and transferrin are important in suppressing inflammation.

Cosmetological indications for ExoLife Glow applications;

- * Anti-Wrinkle
- * Acne Scars
- * Wound Regeneration
- * Connective Tissue Damage
- * Macropores
- * Wound Healing
- * Vitiligo

Exosomes are extracellular vesicles secreted by cells to enable intercellular communication and carry numerous biomolecules within their structure.

Cord blood-derived exosomes differ from exosomes of other origins in that they contain significantly higher concentrations of **IGF-1, TGF- β 1, VEGF, EGF and PDGF-BB**.



ExoLife Bloom

Cord blood-derived ExoLife Bloom contains **hCG**, supporting embryo implantation and placental development.

Together with **TGF- β 1** and **IGF-1**, it stimulates oocyte and follicular development. **VEGF** promotes follicular angiogenesis.

miR-410 and **NF- κ B** provide anti-apoptotic signaling and support oocyte maturation and stromal proliferation. **Transferrin** contributes to fibrosis suppression. **IL-10** and other biomolecules play key roles in inflammation control. **HGF** actively participates in immune modulation.

Gynecological indications for ExoLife Bloom applications;

- * Diminished Ovarian Reserve
- * Menopause Symptom Management
- * Endometrial Damage
- * Asherman Syndrome
- * Genital Depigmentation



ExoLife Vision

Cord blood-derived ExoLife Vision provides neuroprotection through **IGF-1**, supports axonal regeneration via **HGF** and plays an active role in epithelial regeneration through **TGF- β 1**.

VEGF contributes to photoreceptor protection. **miR-126** supports vascular stabilization. **IL-10** and other biomolecules play key roles in suppressing inflammation.

Ophthalmological indications for ExoLife Vision applications;

- * Retinitis Pigmentosa
- * Optic Atrophy
- * Age-Related Macular Degeneration
- * Stargardt Disease
- * Iridocyclitis
- * Hereditary Retinal Dystrophy
- * Dry Eye Disease



ExoLife Clarity

Cord blood-derived ExoLife Clarity contains **IGF-1** and **HGF**, providing neuroprotection, supporting axonal regeneration and playing an active role in blood-brain barrier stabilization. **TGF- β 1** participates in microglial regulation.

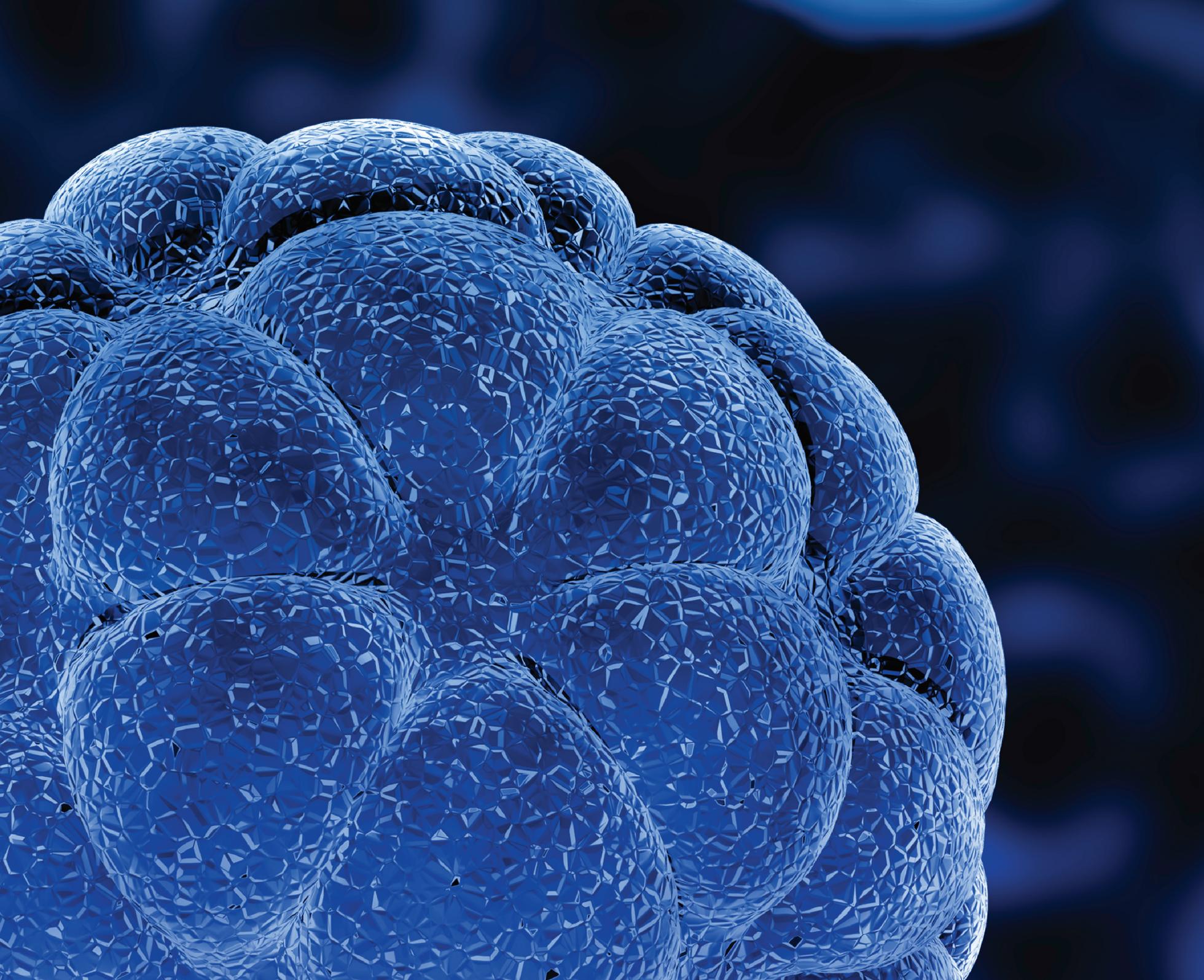
miR-410 exhibits anti-apoptotic effects. **NF- κ B** supports neuroplasticity and memory function. **IL-10** and **transferrin** play key roles in suppressing neuroinflammation.

Neurological indications for ExoLife Clarity applications;

- * Multiple Sclerosis
- * Alzheimer's Disease
- * Parkinson's Disease
- * Amyotrophic Lateral Sclerosis
- * Stroke
- * Temporal Lobe Epilepsy
- * Epilepsy
- * Spinal Cord Injury

In addition, cord blood-derived exosomes contain biomolecules not typically present in other exosomes, including **miR-126**, **miR-410**, **prolactin**, **transferrin**, **somatotropin** and **hCG**.

Due to this high concentration and unique bioactive composition, they possess strong potential for proliferation, angiogenesis, vasculogenesis, tissue regeneration and anti-inflammatory modulation.



FINAL PRODUCT SAFETY AND QUALITY CONTROL PARAMETERS

SEROLOGY

Anti-HBc, Total* HBsAg, HIV-1 and 2 antibodies + p24 antigen, Anti-HCV, Anti-CMV IgM, Syphilis (RPR and TpHA or TpIgG), HBV DNA, HIV RNA, HCV DNA, HTLV I & II **NEGATIVE**

IMMUNOPHENOTYPING

CD9⁺ / CD81⁺ ≥ 90%

PARTICLE SIZE

30–180 nm

PARTICLE COUNT

1×10^9 / ml

CULTURES

All culture samples collected during the production process are **NEGATIVE**

STERILITY

NO GROWTH detected in analysis



HEPATOBIILIARY SYSTEM DISEASES

- Acute/Chronic Liver Failure
- Liver Decompensation
- Autoimmune Hepatitis
- Biliary Atresia
- Types of Cirrhosis
- Wilson's Disease



LUNG AND RESPIRATORY TRACT DISEASES

- Acute Lung Injury
- Acute Respiratory Distress Syndrome (ARDS)
- Asthma
- Bronchopulmonary Dysplasia
- Post-COVID-19 Sequelae
- Idiopathic Pulmonary Fibrosis
- Cystic Fibrosis
- Chronic Obstructive Pulmonary Disease (COPD)



NEPHROLOGICAL DISEASES

- Chronic Kidney Failure
- Acute Kidney Injury
- IgA Nephropathy
- Lupus Nephritis
- Polycystic Kidney Disease (PKD)
- Diabetic Nephropathy
- Post-Kidney Transplantation Graft-versus-Host Disease (GvHD)

DERMATOLOGICAL DISEASES AND AESTHETIC APPLICATIONS

- Alopecia Areata
- Skin Rejuvenation
- Treatment of Skin Deformities
- Hereditary Bullous Diseases
- Treatment of Non-Healing Wounds
- Localized Scleroderma
- Systemic Scleroderma
- Autoimmune Bullous Diseases
- Vitiligo
- Treatment of Scar and Burn Marks





OPHTHALMOLOGICAL DISEASES

- Retinitis Pigmentosa
- Stargardt Disease
- Optic Atrophy
- Dry-Type Age-Related Macular Degeneration (Dry AMD)



AUTOIMMUNE DISEASES

- Autoimmune Encephalomyelitis
- Osteogenesis Imperfecta
- Rheumatoid Arthritis
- Crohn's Disease & Ulcerative Colitis
- Systemic Lupus Erythematosus
- Type II Diabetes



HEMATO(ONCO)LOGICAL DISEASES

- Graft-versus-Host Disease (GvHD)
Developing After Hematopoietic
Stem Cell Transplantation

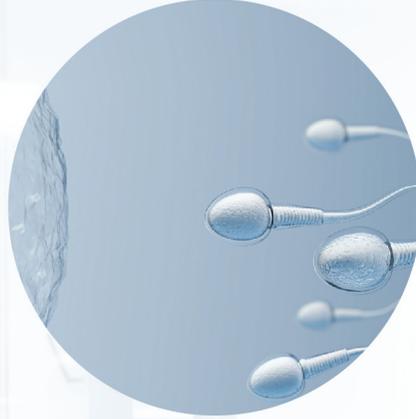


NEUROLOGICAL & NEURODEGENERATIVE DISEASES

- Amyotrophic Lateral Sclerosis (ALS)
- Parkinson's Disease
- Alzheimer's Disease
- Frontotemporal Dementia
- Huntington's Disease
- Multiple Sclerosis
- Stroke
- Autism Spectrum Disorder
- Cerebral Palsy
- Spinal Cord Injuries

GYNECOLOGY, ANDROLOGY & IVF

- Asherman's Syndrome
- Endometrial Insufficiency
- Ovarian Insufficiency
- PCOS-Related Infertility
- Cosmetic and Aesthetic Applications
- Azoospermia
- Erectile Dysfunction
- Oligospermia
- Peyronie's Disease



MUSCULOSKELETAL SYSTEM DISEASES

- Non-union Fractures
- Physical Injuries
- Systemic Metabolic Bone Diseases
- Osteoporosis
- Avascular Necrosis
- Meniscal Injuries
- Other Cartilage Injuries
- Joint Injuries
- Muscle and Tendon Injuries
- Intervertebral Disc Degeneration
- Avascular Necrosis



CARDIOVASCULAR DISEASES

- Peripheral Artery Disease
- Ischemic Heart Disease (Chronic Myocardial Ischemia)
- Heart Failure (Due to ischemic or dilated cardiomyopathy)
- Myocardial Infarction (Post-acute phase, subacute period)
- Pulmonary Arterial Hypertension (PAH)



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