Regenerative Medicine and Tissue Bioengineering

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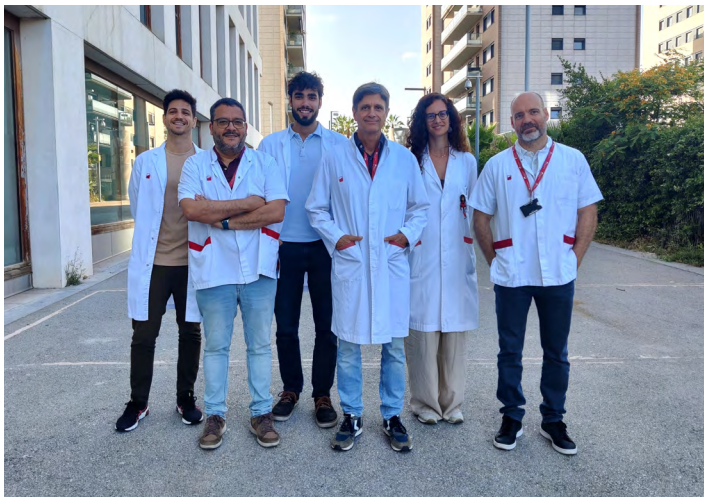

DESCRIPTION

BTB research lines can be divided into five blocks: amniotic membrane bank, cardiovascular bank, skin bank, ocular bank, and musculoskeletal bank. At the same time, these lines can be divided in three different sections: (1) new preservation techniques, (2) new processing technologies, and (3) therapeutic innovations.

During the last few years, part of the effort has been invested in the development of techniques to improve the methods and preservation times of the processed tissues, made available for clinical practice. Moreover, new processing methodologies such as decellularization have been addressed.

MAIN LINES OF RESEARCH

- Tissue obtaining, clinical application, ethics, and regulation.
- Preservation of living tissue.
- Tissue decellularization.
- Medical products of advanced therapies through the recellularization of decellularized tissues.
- SoHo bioinks for 3D printing.
- Processing and product improvement.
- Technical innovation for tissue processing.
- Extension of clinical indications of the grafts.
- Cellular therapy for eye diseases.

SCIENTIFIC CHALLENGES

- Improvement and optimizations of the process related to the donor and tissue processing in clean rooms.

- Advances in the development of criteria, regulation and ethics for donors and tissues.
- Technical excellence related to the processing of cells, tissues and advanced therapy medicinal products (ATMP).
- Development of new approaches and medical products of advanced therapies for regenerative medicine.

ACTIVE GRANTS

- Castells Sala, Cristina. New human decellularized and re-endothelialized tissue-engineered VASCular gRAFT for coronary artery bypass grafting. RETOS-colaboración público-privada. (CPP2021-008438). Agencia Estatal de Investigación. Duration: 2022-2025. 728.589,50 € (BST).
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- Ruiz Ponsell, Laia. Desarrollo de un protocolo de producción de nervio desceularizado de gran calibre para su uso clínico en regeneración de nerviós periféricos. Banc de Sang i Teixits (BT0000000035). Duration: 2022-2025. 51.000,00 € (BST).
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SCIENTIFIC PRODUCTION

- Castells C, Pérez ML, Agustí E, Aiti A, Tarragona E, Navarro A, Tabera J, Farinas O, Pomar JL, Vilarrodona A. Last twenty-years activity of cardiovascular tissue banking in Barcelona. CELL AND TISSUE BANKING. 2023; DOI:10.1007/s10561-022-10059-9. PMID:36849631. IF:1,500 (Q4/9D). Document type: Article.
- Castells C, Perez ML, López P, López L, Martinez J, Ruiz L, Aiti A, Madariaga SE, Sastre S, Farinas O, Vilarrodona A. Development of a full-thickness acellular dermal graft from human skin: Case report of first patient rotator cuff patch augmentation repair. TRANSPLANT IMMUNOLOGY. 2023; 78:101825. DOI:10.1016/j.trim.2023.101825. PMID:36934900. IF:1,500 (Q4/8D). Document type: Article.
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- López P, Perez ML, Castells C, Piteria RA, Farinas O, Tabera J, Vilarrodona A. Quality by Design: Development of Safe and Efficacious Full-Thickness Acellular Dermal Matrix Based on EuroGTPII Methodologies. Therapeutics and Clinical Risk Management. 2023; 19. DOI:10.2147/TCRM.S410574. PMID:37425344. IF:2,800 (Q3/6D). Document type: Article.
- Sabater N, Figueras M, Martinez EM, Vilarrodona A, Casaroli RP. Pterygium surgery with lyophilized versus cryopreserved amniotic membrane graft. JOURNAL FRANCAIS D. OPHTALMOLOGIE. 2023; 46(3). DOI:10.1016/j.jfo.2022.08.014. PMID:36792470. IF:1,200 (Q4/10D). Document type: Article.
- Schwab N, Jordana X, Soler J, Garrido X, Brillas P, Savio A, Lavín S, Ortega M, Galtés I. Can Synbone® cylinders and deer femurs reproduce ballistic fracture patterns observed in human long bones?. JOURNAL OF MATERIALS SCIENCE. 2023; 58(11). DOI:10.1007/s10853-023-08333-6. IF:4,500 (Q2/4D). Document type: Article.