the membranes with required permeability appropriate for specific bioreactor applications.

P181 (E01041)
PLATELET LYSATES AS A SCAFFOLD COMPLEMENT PROMOTING HASCs PROLIFERATION AND OSTEOGENIC DIFFERENTIATION
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Objectives: This work aims to establish platelet lysates (PL) as optimal source of growth factors and other molecules that are vital for promoting cell proliferation and differentiation pathways, eventually allowing the substitution FBS and/or osteogenic supplements in culture media in bone tissue engineering strategies. Furthermore we intend to design new approaches to incorporate PLs in a scaffold material, as a hydrogel encapsulating the cells or as a coating for 3D porous structures, thus developing a tissue engineered construct with enhanced/multiple functionalities.

Methods: Starch-polyacrylamide (SPCL) meshes were obtained by a fiber bonding method as previously described. PL gels were obtained by activation of platelet's coagulation cascade using thrombin dissolved in a calcium chloride solution. Human adipose stem cells (hASCs) were obtained by enzymatic digestion of liposarcomas samples. hASCs were either seeded directly into the SPCL scaffold (control group) or onto the scaffolds previously coated with PL gel or suspended in the PL and then seeded in the scaffold and gelled. hASCs proliferation and differentiation was assessed at different culturing time points of the constructs, by DNA and ALP quantification and by RT-PCR and immunohistochemical analysis.

Results: The preliminary results obtained sustain the hypothesis that growth factors and other signaling molecules present in PL groups are actively and vital to initiate proliferation and osteogenic differentiation of hASCs.

Conclusions: PL represents a substrate and a delivery system of important growth factors and other signaling molecules, and therefore making these molecules available for cells within a tissue engineering construct provides an important enhancement of autologous bone tissue engineering strategies.

P182 (E01070)
BUILDING THE BASIS FOR HUMAN MENISCUS REGENERATION
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Objectives: Total or partial meniscectomy has been the gold standard for the treatment of degenerated/damaged meniscus. Despite meniscal regeneration represents a recent trend in tissue engineering, fundamental studies related to human meniscus biochemistry and biomechanics are still scarce. This work aims to contribute in the knowledge of this tissue aiming at future clinical applications, namely the aspects dealing with the cellular phenotypes and density, biomechanics and extracellular matrix composition.

Methods: Human tissue was obtained from local hospitals by means of surgery or biopsy, in accordance with local ethical committee guidelines. The HMCs were isolated from different donor (sex and age) explants or using an enzymatic standard protocol. Micro-computed tomography (Micro-CT) of freeze-dried meniscus was carried out. Histological (haematoxylin and eosin - H&E, trichrome stain and toluidine blue stainings) analysis was performed for segmental characterization of ECM and cells density. Dynamic mechanical analysis was carried out for medial, anterior and posterior segments of meniscus in PBS at pH 7.4.

Results and Discussion: Micro-CT analysis revealed that meniscus (freeze-dried) possessed a mean porosity of 50%, a mean pore size and trabeculic thickness of 85µm and 80µm, respectively. The cells isolated from meniscus are

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a mixed population of cells, i.e. fibrochondrocyte-like and MSCs. The histological examination has shown that meniscus ECM is composed of collagen-type I. This tissue is fibrocartilaginous in nature and presented a higher cell density in the periphery as compared to meniscus core. Cellular density among the different segments (anterior, medial, posterior) of meniscus was quantified using the H&E 2.0 histological images.

Conclusions: This study has contributed to improve the knowledge on meniscus biology and mechanical properties. It is believed that these important issues should be considered to develop adequate cellular and cellular strategies for tissue engineering meniscus.

P183 (E0070) COMBINING OPTICS AND ULTRASOUND TO IMAGE 3D TISSUE CONSTRUCTS
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Objectives: Tissue scaffolds are an integral part of the tissue engineering process, assisting in the culturing of cells in three dimensions. It is important to understand both the properties of the scaffold and the growth of cells within the scaffold. This paper describes a system to characterise scaffolds using acoustic and optical techniques alone and the development of an ultrasound-modulated optical tomography system to study the growth of cells within the scaffold. The ultrasound-modulated optical tomography system allows the effects of light scattering in relatively thick tissue constructs (several mm) to be reduced.

Methods: Acoustic techniques alone have been applied to characterise foamed scaffolds manufactured from synthetic polyurethane, polyethylene oxide (PEO), and polyethylene glycol (PEG) via a supercritical fluid process. An ultrasound-modulated optical tomography system has been used to image absorbing and fluorescent proteins in gel scaffolds.

Results: Although foamed scaffolds are porous and therefore highly scattering to sound waves, results demonstrate that acoustic signals are detectable through a 5mm thick foamed scaffold. Images of optically-absorbing materials through a 5mm thick gel scaffold with phantom samples will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedded in gel-based tissue phantoms will be presented demonstrating that a embedd