EuroSciCon

13th Edition of International Conference on Advances in Tissue Engineering and Biomaterials Science

JUNE 17-18, 2019 LONDON, UK

AGENDA

Abstract

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TITLE: 3D PRINTING AND ELECTROSPINNING: APPLICATIONS IN DRUG DELIVERY AND TISSUE ENGINEERING

Dimitrios Lamprou
Queen's University Belfast, UK

3D printing and electrospinning are example of technologies that have been widely used in other industries, however are new to Pharmaceutical Industries and for Tissue Engineering Applications. Therefore, the use of these techniques in drug delivery and tissue engineering, including the use of state-of-the-art characterisation methods (e.g. Bio-AFM, ToF-SIMS, nanoCT) will discussed in this talk

TITLE: VIRTUAL BIOPSIES OF TISSUES AND CARCINOMAS USING VIBRATIONAL OPTICAL COHERENCE TOMOGRAPHY

Frederick H. Silver Robert Wood Johnson Medical School, USA

Vibrational optical coherence tomography (VOCT) is a new technique that combines the imaging power of optical coherence tomography with the use of sound to characterize the physical properties of tissues. This technique has been developed to perform “virtual” biopsies and biomechanical measurements on normal and malignant tissues non-invasively and non-destructively. It has been previously reported that cutaneous wound healing and the development of malignant skin lesions are associated with changes in tissue stiffness. VOCT produces images of groups of cells as well as biomechanical information in three dimensions that can distinguish normal from pathological tissue

TITLE: POLYMER BASED NANOSTRUCTURED MEMBRANES OBTAINED VIA ELECTROSPINNING

Gianluca Turco
University of Trieste, Italy

In this work electrospinning (ELS) was used for the production of polymer based nanostructured membranes for biomedical applications [1]. Present work reports the the characterization of polycaprolactone (PCL) based membranes, implemented with a bioactive chitosan derivative (CTL) [2] and antibacterial silver nanoparticles (nAg)

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TITLE: STEM CELL THERAPY FOR THE TREATMENT OF SEVERE TISSUE DAMAGE AFTER RADIATION EXPOSURE

Alain chapel Institute of Radiological Protection and Nuclear Safety, France

The late adverse effects of pelvic radiotherapy concern 5 to 10% of them, which could be life threatening. However, a clear medical consensus concerning the clinical management of such healthy tissue sequelae does not exist. Our group has demonstrated in preclinical animal models that systemic MSC injection is a promise approach for the medical management of gastrointestinal disorder after irradiation. We have shown that MSC migrate to damaged tissues and restore gut functions after irradiation

TITLE: LTP MODIFIED VASCULAR GRAFT MATERIALS FOR ENDOTHELIAL CELLS GROWTH

Komal Vig
Alabama State University, USA

Cardiovascular disease (CVD) is the no. 1 killer in the world, and is responsible for >17.3 million deaths every year1. Bypass surgery, using the autologous vein has been one of the most effective treatments for CVD. However, more recently vascular grafts have shown great potential in bypass surgery. Vascular grafts currently employ a number of scaffold materials such as Dacron and ePTFE and treatments that mimic the native vessel wall.

TITLE: CHARACTERIZATION OF THREE-DIMENSIONAL BONE CONSTRUCTS DERIVED FROM UNLOADED HUMAN FETAL OSTEOBLASTS EXPOSED TO THE RANDOM POSITIONING MACHINE AND USE OF PREBIOTICS FOR BONE HEALTH

Alamelu Sundaresan Texas Southern University, USA

Human cells exposed to microgravity form large 3D tissue constructs mirroring the *in vivo* architecture (e.g. cartilage, intima constructs, cancer spheroids and others). In this study, we exposed human fetal osteoblasts (hFOB 1.19) cells to the Random Positioning Machine (RPM) for 7 and 14 days with the purpose to engineer 3D bone constructs.
RPM-exposure of hFOB 1.19 cells induces alterations in the cytoskeleton, cell adhesion, ECM and 3D multicellular spheroid (MCS) formation

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TITLE: AG-DOPED PCL NANOFIBERS FOR TISSUE ENGINEERING

Permyakova Elizaveta National University of Science and Technology MISiS, Russian Federation

Poly-ε-caprolactone (PCL) is a biocompatible and biodegradable polymer that is attracting great interest as the promising materials for various applications is in medicine and, in particular, in tissue engineering. Here, we produced PCL nanofibers by electrospinning technique that allows one to obtain the nanofiber structure similar to that of extracellular matrix

TITLE: STIMULI RESPONSIVE LIPID COATED MESOPOROUS SILICA NANOPARTICLES FOR DRUG DELIVERY

Muhammad Umair Amin
Philipps-Universität Marburg, Germany

Immediate release of the drug from the drug delivery carrier after cellular uptake is a big challenge. Premature leakage of the chemotherapeutics during circulation, causing side effects to healthy tissue, is even more relevant. Stimuli responsive drug delivery systems have addressed these issues and have become more attractive in last few years

TITLE: METHOD DEVELOPMENT FOR DETECTION OF COLLAGEN AND LOW ABUNDANCE PROTEINS IN DECELLULARIZED PORCINE SMALL INTESTINAL SUBMUCOSA MATRIX

Guifeng Zhang
Chinese Academy of Sciences, China

Acellular matrix (ACM) has great application potential in tissue engineering and regenerative medicine. The mechanical properties and physiological function of ACM are associated with the original composition and architecture of extracellular matrix (ECM). The molecular composition and 3D-structure of ACM may provide an ideal microenvironment for cell proliferation. Immune properties of protein is the main concern for when ACM was used in clinical practice.

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TITLE: COMPARATIVE ADHESIVE AND MIGRATORY PROPERTIES OF MESENCHYMAL STEM CELLS FROM DIFFERENT TISSUES

Asma Alanazi
King Saud bin Abdulaziz University for Health Sciences, Saudi Arabia

Mesenchymal stem cells (MSC) are used in therapy, often by injection into the blood. We aimed to compare the adhesive and migratory properties of MSC from umbilical cords (UCMSC), bone marrow (BMMSC) or trabecular bone (TBMSC), which might influence delivery to injured tissue.MSC were perfused through glass capillaries coated with matrix proteins, collagen or fibronectin, or albumin. Adherent cells were counted microscopically and their spreading analysed over time

TITLE: CHEMOTACTIC PROPERTIES OF HUMAN AMNIOTIC FLUID-DERIVED STEM CELLS (HAFSCS) IN BONE HEALING

M. Basile
G. d'Annunzio University of Chieti-Pescara, Italy

Current treatment of large bone defects is based on autologous or allogenic bone grafts that still have several limitations. In the past few years, human amniotic fluid stem cells (hAFSCs) were evaluated for their osteogenic potential in the repair of bone defects due to the absence of ethic controversy and risk of teratocarcinoma formation

TITLE: AMNIOTIC MEMBRANE MAPPING DISCLOSES NOVEL PROMISING FEATURES OF AMNIOTIC MEMBRANE EPITHELIAL CELLS FOR REGENERATIVE MEDICINE PURPOSES

Roberta Di Pietro
G. d'Annunzio University of Chieti-Pescara, Italy

The amniotic membrane (AM) is the innermost part of the placenta, in direct contact with the amniotic fluid. In recent years the interest toward placenta stem cells has been increasingly growing, due in part to the absence of any ethical issues concerning their isolation. At present, two main stem cells populations have been identified in AM: amniotic epithelial cells (AECs) and amniotic mesenchymal stromal cells (AMSCs). Although AM is an excellent source of cells for regenerative medicine, also due to its immune-modulatory properties and low immunogenicity, only a few papers have studied its sub-regions

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TITLE: REGENERATION OF TISSUE-ENGINEERED CARTILAGE: POTENTIAL BIOMATERIAL AND ROLE OF CULTURE CONDITION

Krishna Pramanik
Government Polytechnic College, Jaipur, India

Cartilage tissue damages and/or diseases are the most common clinical situation arising due to aging, accidental injury and developmental abnormalities which cause severe pain, stiffness and reduced mobility. The currently used clinical treatments such as microfracture, tissue grafting and autologous chondrocyte transplantation used for cartilage repair offer several limitations including poor tissue integration, donor site morbidity, and involvement of invasive procedure, limited mobility and longevity of implants

TITLE: INFLUENCE OF THE COVALENT GRAFTING OF BIOACTIVE POLYMERS ONTO PCL FIBER SCAFFOLDS: SURFACE CHARACTERIZATION, INTRINSIC PROPRIETIES INVESTIGATION AND IN VITRO BIOLOGICAL RESPONSE

G Amokrane
Université Paris, France

Electrospinning, an electrostatic fiber fabrication technique has evinced more interest in recent years due to its versatility and potential for divers applications especially in tissue engineering.1 Polycaprolactone (PCL) has been approved for biomedical application and offers excellent mechanical properties and slow biodegradation, making it appropriate for use as a scaffold.2 Previous studies carried out in our laboratory have shown that the covalent “grafting from” of polymers or copolymers bearing anionic groups such as sulfonate, carboxylate and phosphonate can favor cell adhesion and differentiation.

TITLE: PHOTOSENSITIVE TETRAETHER LIPID-BASED LIPOSOMES FOR TEMOPORFIN MEDIATED PHOTODYNAMIC THERAPY TO CANCER CELLS

Sajid Ali
University of Marburg, Germany

Photodynamic therapy (PDT) is a minimally-invasive therapeutic approach that is being widely used for the treatment of large number of medical conditions. The principal of PDT is based on the combination of a light sensitive molecule (a photosensitizing agent) and light. After being administered, the photosensitizer compound can be illuminated by specific wavelength of light to activate the drug molecule (photosensitization).

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TITLE: INDUCTION OF HEPATIC REGENERATION IN AN EXPERIMENTAL MODEL USING HEPATOCYTE DIFFERENTIATED MSCS

Taghrid Gaafar
Cairo University, Egypt

Scaffolds are three-dimensional (3D) matrices that provide support for cells to attach, proliferate, and differentiate, facilitating extracellular matrix formation. The study aimed to examine the differentiation potential of Mesenchymal stem cells (MSCs) into hepatocytes in 2D and 3D culture systems to improve their in vitro differentiation, and test their functionality in vivo.

TITLE: EVALUATION OF SERUM CALCIUM LEVELS IN PRE-ECLAMPSIA

Heera Lal Roy
Khulna City Medical College, Bangladesh

Pre-eclampsia is the most common medical complication of pregnancy associated with increased maternal and infant mortality and morbidity. Reduced serum calcium level are found associated with elevated blood pressure in preeclampsia.

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