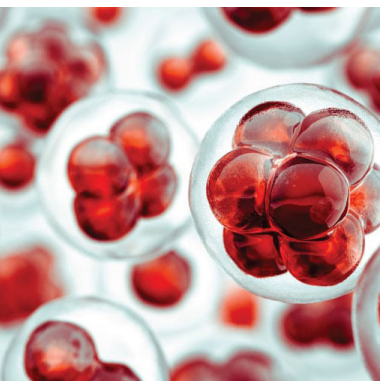


Workshop
March 14, 2019

Tissue Engineering 2019
Stem Cell Congress 2019
Gene Therapy 2019



Joint Event
World Congress on
Tissue Engineering, Stem Cells and Regenerative Medicine
&
International Conference on
Cell and Gene Therapy
March 14-15, 2019 | London, UK

Tissue Engineering, Stem Cells and Regenerative Medicine

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Alok Kumar Dash

V B S Purvanchal University, India

Challenges of nanotechnology; Nanomedicine: Nanorobots


Nanotechnology is an engrossing science for many scientists now days as it offers them many challenges. One of such challenge is nanorobots, which once thought to be an illusion has come into reality now. The use of nanorobots has a wide range from common cold to dangerous disease like cancer. Some active examples are microbivores, chromalloyte, respirocyte and many more. Nanomedicine is a part of nanorobots. Nanomedicine offers the anticipation of powerful new equipment for the treatment of human diseases and the improvement of human organic systems. The present generation of nanotechnology has reached to a stage where scientists are able to develop programmable and externally controllable complex equipment that are built at molecular level which can work inside the patient's body. By the help of nanotechnology scientist prepare nanorobot which operate the human body, transport important molecules, manipulate micro objects and communicate with doctors by way of miniature sensors, motors, manipulators, power generators and molecular-scale

computers. Nanorobots have exceptional function in health care and environmental monitoring. By using nanotechnology, doctors accept different challenges to cure deadly disease like cancer, diabetes, tumor or respiration related diseases. So, nanotechnology in form of nanorobot is a bless to human beings.

Speaker Biography

Alok Kumar Dash has completed B. Pharm from IGIP, M. Pharma from KMIPS and Ph.D. degree from Suresh Gyan Vihar University (SGVU) in Rajasthan, India. He is working as an assistant professor in Institute of Pharmacy, Veer Bahadur Singh Purvanchal University in Uttar Pradesh, India. His field of research focuses on natural products chemistry, pharmacognosy, pharmacological screening and standardization method development for herbals. He has more than 40 national and international publications and 2 patents in his credit. His biography is published Asian Admirable Achievers in 2016. He received the globally reputed 'Rashtriya Gaurav Award'-2017. His profile is selected for Bharat Vikas Award Recipient of "Certificate of Excellence in Reviewing-2017" by European journal of medicinal plant, Science Domain International and has been serving as an editorial board member of International Journal of Modern botany Scientific & Academic Publishing, Asian Journal of Chemical Sciences and many more.

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Heidi Abrahamse

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Potential use of photobiomodulation in stem cell therapy


Regenerative medicine and tissue engineering (TE), combines key elements such as biomaterials, stem cells and bioactive agents (e.g. growth factors), in parallel with recent biotechnological advances. A constant and reliable source of autologous stem cells with pluripotent potential and readily available will be required for these future cell-based. Bone marrow stem cells (BMSCs) have been extensively studied but clinical application of these cells has presented problems including low cell number upon harvest, pain and morbidity to the donor. Adipose tissue is derived from the mesenchyme and contains an easily isolated supportive stroma containing stem cells, microvascular endothelial cells and smooth muscle cells. Adipose derived stem cells (ADSCs) isolated from adipose tissue are isolated with ease and in large amounts. Stem cells have two major characteristics of self-renewal and differentiation into one or more types of specialized cells. These cells are now being used to treat several degenerative diseases due to their ability to differentiate into different cell types. Photobiomodulation (PBM) or low intensity laser irradiation (LILI) can positively affect human ADSCs by increasing cellular proliferation, viability and protein expression. These characteristics improves their potential in TE applications as the initial cell number could be increased before commencing differentiation leading to a higher yield of differentiated cells. Photobiomodulation at different intensities has been shown to inhibit as well as stimulate cellular processes. Studies on photobiomodulation and stem cells have shown that low-level lasers increase adenosine triphosphate (ATP) production and migration. Photobiomodulation also promote the proliferation of rat mesenchymal bone marrow and cardiac stem cells *in vitro* and can thus be used to stimulate the *in vitro* production of higher stem cell numbers. The addition of specific growth factors could enhance the differentiation of the stem cells into different cell types that could, in turn, be used in TE applications

and reconstructive surgery. However, to be effective for use in TE, certain criteria need to be met including that the cells of interest must be at high concentrations, harvested easily and be multipotent while being able to differentiate into the required tissue and then transplanted safely and effectively back into a host. The potential augmentation of low intensity laser irradiation on ADSCs to differentiate into smooth muscle cells (SMCs) with the view of using as therapeutic modality in regenerative medicine has been the key focus of our research. The effect of different wavelengths of irradiation, as well as different fluences were used to identify laser parameters affecting viability and proliferation of ADSCs. Throughout the project, suitably recognized stem cell markers were used to characterize and confirm stem cells as well as potential differentiation. In addition, dose responses were performed to determine suitable growth factors and concentrations that would induce differentiation. Our results confirm that laser irradiation induce increased viability and proliferation as well as improve the differentiation potential of ADSCs. Methodology used include, ATP content and optical density, flow cytometry, fluorescence microscopy and real-time quantitative polymerase chain reaction RT- qPCR profiles. This further highlights the significant role that LILI has to offer in the use of ADSC therapy in regenerative medicine.

Speaker Biography

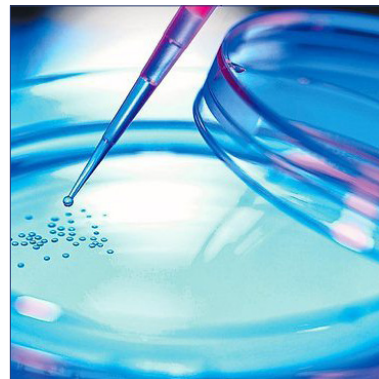
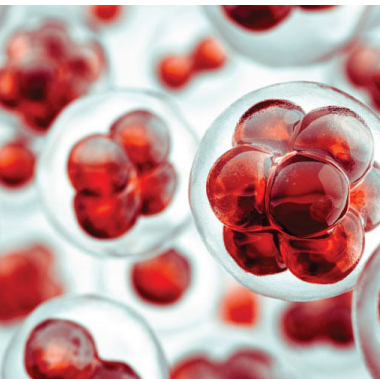
Heidi Abrahamse is currently the director of the laser research centre, University of Johannesburg and Department of Science and Technology/National Research Foundation SARCHI chair for laser applications in health. Her research interests include photobiology and photochemistry with specific reference to photodynamic cancer therapy, stem cell differentiation and wound healing. She has supervised 40 masters; 15 doctorates and 12 post-doctorate fellows and has published over 150 peer reviewed accredited journal publications, 42 accredited full paper proceedings and 11 chapters. She serves on the editorial boards of 8 peer-reviewed internationally accredited journals while acting as reviewer for over 30 journals. She is also the co-editor in chief of the international accredited journal photomedicine and laser surgery.

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Scientific Tracks & Sessions
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Biological effects of different intensities of blue-enriched white light in light emitting diode (LED) on *Caenorhabditis elegans*

Aldana Aldawsari

Princess Nourah Bint Abdul Rahman University, Saudi Arabia

Caenorhabditis elegans is small free-living and bacterial-feeder rhabditid nematode. It is a good model to study the effects of light emitting diode (LED) on the living systems because of its biological characteristics; such as short lifespan of two to three weeks and easy maintenance at the temperature of 20°C. Multiple cells of *C. elegans* including gut, muscle and neuronal cells share homology with humans. Therefore, it has offered many valuable insights into the field of human biological science. This study aims to analyse whether the chronic exposure of the nematode *C. elegans* to the blue-enriched white light in LED light from egg to adult can impact the biology and behaviour of *C. elegans*. In this analysis, four treatments were prepared to evaluate these effects that were exposed to no light (dark) which is the control, low-blue enriched, medium-blue enriched and high blue enriched white in LED light sources. The results showed that the low- blue enriched treatment was very much similar to control. In medium-blue and high-blue enriched exposed treatments, the worms acted differently in comparison of control with significant biological differences.

It was observed in the life span assay, that the mortality rate after 48 h of exposure to low, medium and high-blue light was significantly higher than the control. The worms that were developed while exposed to LED light showed less tolerance and higher mortality when exposed to heat (35°C) and cold (4°C). The reproduction (brood size) was significantly low in Medium and High-blue light comparing to control. The locomotion (body bends) within 20 second was significantly lower in medium-blue light with irregular pattern of movement, and the worm keeps moving in the same area in high-blue light. Therefore, the findings also help in understanding the impact of blue enriched white in LED lights on living organisms and humans.

Speaker Biography

Aldana Aldawsari has completed her master's degree at the age of 25 years from Texas Southern University, USA. She is a researcher in biology who confirmed at which level the blue light is disastrous for our health. She has been involved with studies related to biology. She participated in many scientific conferences, seminars and activities in United States of America. At present, she is a lecturer in Princess Nourah Bint Abdul Rahman University, SA.

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Chitosan/collagen II/nanohydroxyapatite composite hydrogels for osteochondral interface tissue engineering

Ayşe Karakecili

Ankara University, Turkey

Natural composite biomaterials of chitosan and collagen-type I most studied - have been extensively used in tissue engineering for their good structural properties. Collagen type II is one of the major components in calcified cartilage zone together with the proteoglycans. In this study, it was aimed to conduct a composite hydrogel structure for possible use in the regeneration of calcified cartilage. Composite hydrogels consisting of chitosan (Chi), collagen type II (Coll) and nanohydroxyapatite (nHA) were prepared with 0.5% nHA (w/w) and different variations of Chi/Coll composition by using thermal gelation. Beta-glycerol phosphate (beta-GP) was used to initiate gelation of Chi-Coll-nHA composite gel mixture at pH 7.4 and 37°C. Additionally, genipin was used as a chemical crosslinker. Increase in Coll ratio caused a decrease in compressive modulus of the hydrogels. Morphological structure analysis showed the gels exhibited porous structure suitable

for cell encapsulation and proliferation. ATDC5 chondrocytes encapsulated in hydrogels at Chi/Coll ratios of 100/0, 70/30, 50/50 and 30/70 wt% exhibited high viability while the highest viability was observed in Chi70/Coll30/nHA gels over 14 days. DNA content also showed the same increase pattern during the culture. Our findings showed Chi/Coll/nHA composites supported the formation of a calcified cartilage-like matrix and have great potential as gel forming materials for osteochondral interface repair.

Speaker Biography

Ayşe Karakecili has completed her PhD from Department of Chemical Engineering in Hacettepe University. She is currently working as an associate professor in Department of Chemical Engineering in Ankara University. Her research includes design, synthesis and characterization of polymeric biomaterials and nanocomposites for tissue engineering applications.

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The use of advanced platelet-rich fibrin concentrate in tissue healing and regeneration in daily dental practice

Mohamad El Masri and Mohammed Shokry

Beirut Arab University, Lebanon

Platelet-rich fibrin (PRF) concentrate, second generation of platelets concentrates, which was developed by Choukroun et al. It can be used as a membrane or gel form, or it can be used as an injectable material, benefiting from physical and physiologic characteristics and its cellular and hormonal components, PRF is widely used to promote the healing of soft and hard tissues. The A-PRF is a new form of PRF with advanced characteristic. The aims of this lecture are to show the protocol of preparation of the A-PRF and the applicability of A-PRF in the daily dental practice. For this, several articles published between 2007 and 2018 were the references. In addition to a

study that was carried in Beirut Arab University and that was published in June 2018, showing the effect of A-PRF on socket healing in comparison with the collagen membrane. The results of the studies showed that A-PRF presents effective and safe use when used alone or in combination with biomaterials, in different site of daily dental practice.

Speaker Biography

Mohamad El Masri has completed his MSc in oral surgery from Beirut Arab University and he is preparing PhD in molecular Biology in Beirut Arab University. He is a staff member of Department of Oral Surgical Sciences in Beirut Arab University.

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Regeneration of liver by *Platyclusus orientalis* extract

Alok Kumar Dash

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Liver is a vital organ of our body performing wide range of functions. Regeneration of liver by through plant extract is safe and having better patient compliance. Present study was aimed at evaluating protective ability of *Platyclusus orientalis* Linn against paracetamol induced hepatotoxicity in rats. When these extracts screened for hepatoprotective activity, the results obtained from paracetamol induced hepatotoxic model in the healthy male Wister rats indicates that, after the treatment with paracetamol there was significant rise in SGOT, SGPT, ALP and total bilirubin levels which were lowered by petroleum ether extract of *Platyclusus orientalis* leaf, sylimarin 25 mg/kg was taken as the standard drug. In the whole process of hepatotoxicity thioacetamide was used for toxified the liver and it showed same result as like paracetamol in toxification.

In order to detect the oxidative stress in lipid peroxidation in liver checked it's *in-vivo* antioxidant parameter like reduced glutathione (GSH), thiobarbituric acid reactive substances (TBARS), catalase (CAT) and superoxide dismutase (SOD) which

justify the antioxidant property of both the plant. Which also justify the hepatoprotective and antioxidant effect of the plant. The biochemical observations were supplemented by histopathological examination of pancreas and liver section. In histopathological observation, it was showed that the petroleum ether extract of *Platyclusus orientalis* possess effectively hepatoprotective property.

Speaker Biography

Alok Kumar Dash has completed B. Pharm from IGIP, M. Pharma from KMIPS and Ph.D. degree from Suresh Gyan Vihar University (SGVU) in Rajasthan, India. He is working as an assistant professor in Institute of Pharmacy, Veer Bahadur Singh Purvanchal University in Uttar Pradesh, India. His field of research focuses on natural products chemistry, pharmacognosy, pharmacological screening and standardization method development for herbals. He has more than 40 national and international publications and 2 patents in his credit. His biography is published Asian Admirable Achievers in 2016. He received the globally reputed 'Rashtriya Gaurav Award'-2017. His profile is selected for Bharat Vikas Award Recipient of "Certificate of Excellence in Reviewing-2017" by European journal of medicinal plant, Science Domain International and has been serving as an editorial board member of International Journal of Modern botany Scientific & Academic Publishing, Asian Journal of Chemical Sciences and many more.

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