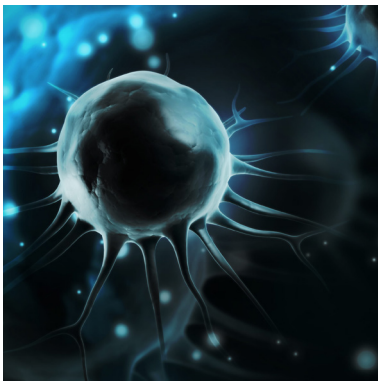
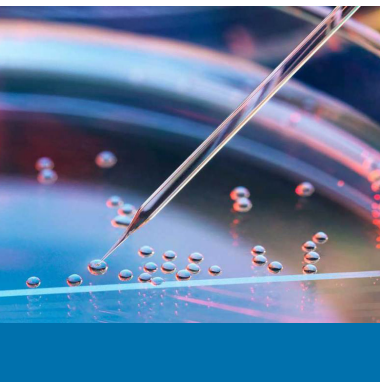
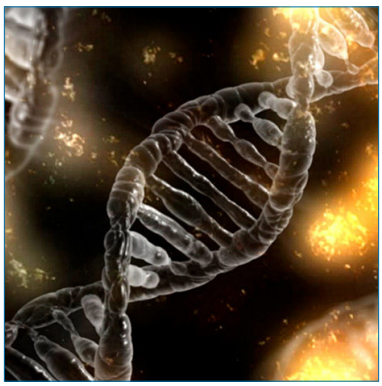
Keynote Forum
November 19, 2018

Molecular Biology, Tissue Science & Heart Congress 2018







Joint Event

International Conference on

Molecular Biology, Tissue Science and Regenerative Medicine

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4th World Heart Congress

November 19-20, 2018 | Paris, France

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Jeffrey E Friedman

University of Florida, USA

Obesity and advanced heart failure, can bariatric surgery help?

Background: Obesity is associated with heart failure due to structural and functional changes within the heart. Obesity increases metabolic demand, total blood volume and stroke volume.Thiscausesleftventriculardilatation,cardiachypertrophy and atrial enlargement. Definitive treatment for severe heart failure is cardiac transplantation. Transplantation is not an option for patients with a BMI over 35 kg/m^2. Bariatric surgery is the most effective means of sustained weight loss when diet and exercise fail, however there are very few reports of weight loss surgery in patients with advanced heart failure in the literature.

Methods: Thirteen morbidly obese patients with end stage heart failure with left ventricular assist device (LVAD) in place that underwent LSG between 2013 and 2018, were reviewed retrospectively. All thirteen patients suffered from severe advanced heart failure requiring left ventricular assist device support. Bariatric, cardiac and renal parameters, operative and postoperative complications, comorbidities and United Nation of Organ Sharing (UNOS) transplant candidacy status were analyzed.

Results: 6 of the 13 patients achieved adequate weight loss with a BMI under 35 and received a heart transplantation. 5 of the 13 patients achieved adequate weight loss with a BMI under 35 and are listed for transplantation with status 1B. 2 of the 13 patients achieved adequate weight loss and had significant improvement in ejection fraction and are currently under evaluation for removal of their LVAD.

Conclusion: Advanced heart failure requiring LVAD support in association with obesity is a difficult problem, sleeve gastrectomy can be safely utilized in patients with end-stage heart failure and morbid obesity in order to achieve weight loss to become eligible for transplant listing.

Speaker Biography

Jeffrey E Friedman is as an assistant professor in the division of general surgery and the director of bariatric surgery. He earned his medical degree from the University of Mississippi and completed his residency in general surgery at Carraway Methodist Medical Center in Birmingham, Alabama and Mary Imogene Bassett Healthcare in Cooperstown, New York. He served as a research fellow at the Mary Imogene Bassett Research Institute and as a minimally invasive surgery/bariatric surgery fellow at Sacred Heart Health System in Pensacola, Florida. He has previously worked as assistant medical director of the Sacred Heart Institute for Medical Weight Loss, as medical director of the Baptist Healthcare Bariatric Program in Pensacola and as chief of the minimally invasive surgery/bariatric program at Previty Clinic for Surgical Care in Beaumont, Texas. He has twice received the American Medical Association's Physician's Recognition Award and is a member of the American College of Surgeons, the Society of American Gastrointestinal and Endoscopic Surgeons, the Pensacola Surgical Society and the American Society of Metabolic and Bariatric Surgeons.

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Notes:

Alain Chapel

Institute of Radiological Protection and Nuclear Safety, France

Stem cell therapy for the treatment of severe tissue damage after radiation exposure

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.

The clinical status of four first patients suffering from severe pelvic side effects resulting from an over-dosage was improved following MSC injection in a compassional situation. A quantity of 2x106 - 6x106 MSC/kg were infused intravenously to the patients. Pain, hemorrhage, frequency of diarrhoeas and fistulisation as well as the lymphocyte subsets in peripheral blood were evaluated before MSC therapy and during the follow-up. Two patients revealed a substantiated clinical response for pain and haemorrhage after MSC therapy. In one patient pain reappeared after 6 months and again substantially responded on a second MSC infusion. A beginning fistulisation process could be stopped in one patient resulting in a stable remission for more than 3 years of follow-up. The frequency of painful diarrhea diminished from an average of 6/d to 3/d after the first and 2/d after the 2nd MSC injection in one patient. In all patients, prostate cancer remained in stable complete remission. A modulation of the lymphocyte subsets towards a regulatory pattern and diminution of activated T cells accompanies the clinical response in refractory irradiation-induced colitis. No toxicity occurred.

MSC therapy was safe and effective on pain, diarrhea, haemorrhage, inflammation, fibrosis and limited fistulisation. For patients with refractory chronic inflammatory and fistulising bowel diseases, systemic MSC injections represent a safe option for salvage therapy. A clinical phase II trial will start in 2018.

Speaker Biography

Alain Chapel has been developing gene and cell therapy using non-human primates, immune-tolerant mice and rats to protect against the side effects of radiation. He collaborates with clinicians to develop strategies for treatment of patients after radiotherapy overexposures. He has participated in the first establishment of proof of concept of the therapeutic efficacy of mesenchymal stem cells (MSCs) for the treatment of hematopoietic deficit, radiodermatitis and over dosages of radiotherapy. He has contributed to the first reported correction of deficient hematopoiesis in patients (graft failure and aplastic anemia) thanks to intravenous injection of MSCs restoring the bone marrow microenvironment, mandatory to sustain hematopoiesis after total body irradiation. He is scientific investigator of clinical phase II trial evaluating the efficacy of systemic MSC injections for the treatment of severe and chronic radiotherapy-induced abdomino-pelvic complications refractory to standard therapy.

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Ki-Chul Hwang

Catholic Kwandong University, South Korea

More insights into mesenchymal stem cells as therapeutics

Challenges to the application of stem-cell therapy for treatment of cardiac disease include isolation and safe, stable long-term integration of cells. Stem cell isolation, delivery, survival and proliferation in host tissues have been the focus of many studies, but concerns about the long-term electrochemical integration and safety of implanted cells have been largely neglected. We have also published studies focused on enhancing the survival of MSCs transplanted in the harsh pathologic conditions of infarcted myocardium. However, we have found that improved MSC transplantation does not provide a proportional survival benefit that is compatible with a significant improvement in cardiac contractile function. One possible explanation for this discrepancy is that the focal application of MSCs that have not differentiated into electrically functional cardiomyocytes creates fixed heterogeneity between host tissues in the engrafted region, possibly predisposing the heart to ventricular arrhythmia. A previous report described the trilineage differentiating capacity of MSCs after implantation in an infarcted heart, but we have observed that MSCs do not differentiate into cardiomyocytes, at least not during the early phase after myocardial infarction, when the risk of sudden arrest or death is highest. Transplantation of undifferentiated MSCs seems to attenuate their beneficial effects and thus impede their ability to prevent sudden arrhythmic death. We concluded, therefore, that naïve MSCs are not optimal cells for cardiac regeneration in clinical settings and determined that MSCs must be modified before transplantation to possess cardiogenic properties and the ability to electromechanically integrate with the host myocardium. Inexcitable properties of undifferentiated MSCs contribute to decreases of conduction velocity, increasing the susceptibility to ventricular arrhythmia and leading to sudden death. In order to obtain a cardiogenic cell type capable of electromechanically integrating with host tissue for cardiac regeneration, we induced differentiation of MSCs with protein kinase C activation. We show that small molecules, including kinase inhibitors, can change the fates of stem cells in recognizable ways and that a protein kinase C (PKC) activator, phorbol myristate acetate (PMA), induces the expression of cardiogenic markers. This approach provides a new strategy in cell-based therapy for myocardial infarction that may prevent fatal arrhythmia and mortality and improve contractile function.

Speaker Biography

Ki-Chul Hwang is vice-president and professor of College of Medicine, Catholic Kwandong University and director at Institute for Bio-Medical Convergence, International St. Mary's Hospital of Korea. He received his doctor of philosophy degree from the Korea University in Republic of Korea and completed his postdoctoral fellowship at the Cleveland Clinic Foundation, Cleveland, OH, USA and the Victor Chang Cardiac Research, NSW University, Sydney, Australia. He has consecutively filled (Senior) editorial board at the World Journal of Stem Cells, American Journal of Stem Cells and Journal of Geriatric Cardiology. Much of his research career has focused on the adult stem cells and he is recognized to be at the forefront of the emerging field about functional enhancement in stem cells and its therapeutic role associated with many diseases.

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Mohamed Abd Ellatif

King Khalid University, Saudi Arabia

Optimal scheduling of combination PDT with anti-angiogenic therapy for effective control of local prostatic tumor and distant metastasis

Angiogenesis is an important component in tumor development, progression and spread. As a result, there are ongoing efforts to combine existing cytotoxic therapy with anti-angiogenic therapy to enhance the efficacy of cancer treatment. However, the optimal scheduling of anti-angiogenic therapy with cytotoxic therapy, although crucial for maximizing treatment efficacy, remains unclear. The aim of this study is to investigate VEGF regulation following cytotoxic therapy as a basis for the efficacy of combination anti-angiogenic therapy.

Materials and methods: Orthotopic prostate tumors were implanted in the prostate of 6-week-old male severe combined immunodeficient mice. In particular, we investigated the effect of the combination treatment strategy on the two major patterns of metastasis: Hematogenous as well as lymphatic metastasis. Here, we investigated an optimal protocol for combining avastin anti-angiogenic therapy with photodynamic therapy (PDT), a cytotoxic therapy for various diseases including cancer. We demonstrate that PDT leads to a temporally-transient regulation of vascular endothelial growth factor (VEGF) following treatment. More importantly, combination avastin therapy was most effective in inhibiting lung metastasis when delivered around the peak of VEGF response following PDT. Considering that temporally transient VEGF regulation was observed following PDT, radiotherapy and chemotherapy. In conclusion, optimal scheduling of combination of anti-angiogenic therapy based on temporal dynamics of the VEGF response has effective control of the local tumor as well as distant metastasis in cancer prostate.

Speaker Biography

Mohamed Abd Ellatif completed his studies at Mansoura University (1985-1995) and Toronto University (2001). Then he went back to Mansoura University and joined as a professor in Medical Biochemistry and Molecular Biology, Faculty of Medicine. In 2007, he joined as a professor of Clinical Biochemistry and Molecular Biology, College of Medicine, King Khalid University, Kingdom of Saudi Arabia during the period from 2/9/2007 till now. He has more than 55 research papers in national and international journals. He attended more than 43 international and national workshops and conferences. He is an active reviewer for many scientific journals and conferences. He handled 8 master thesis and 7 PhD thesis.

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