

JOINT EVENT ON
International Conference on
Stem Cell and Orthopedics
&

International Conference on
Psychosomatic and Laboratory Medicine
&

International Conference on
Pediatric and Nutritional Research



July 19-20, 2023 | Rome, Italy



Organizational Representations



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SCIENTIFIC PROGRAM

MEETING ROOM 1

July 19, 2023

Conference Agenda

Day 1

08:00 - 09:00

Registration

Opening Ceremony

09:00 - 09:10

Introduction

Keynote Presentation

09:10 - 09:30

Title: Nobel and advances treatments neurodegenerative diseases

Domingo Guerra, Polyclinic La Vega, Dominican Republic

09:30 - 09:50

Title: Mastering regenerative medicine

Issam Mardini, Emirates Hospital, UAE

09:50 - 10:20

Title: Orthobiologics and regenerative medicine to treat osteoarticular pain

Paulo Cezar Schutz, Dr. Paulo Cezar Schutz Clinic, Brazil

10:20 - 10:40

Title: Exploring learning potential of the Brain for emotional stability

Eveline Bush, Director of Clinica Psicologia, USA

Networking and Refreshments Break and Group Photo 10:40-11:00@Foyer

Sessions : Stem Cell | Regenerative Medicine | Orthopedics | Drug Discovery | Pathology

11:00 - 11:20

Title: The importance of the soil for the regenerative treatment

Greice Cristina Nitschke Fontana, Dr. Paulo Cezar Schutz Clinic, Brazil

11:20 - 11:40

Title: Sub trochanteric femur fractures treated with femoral nail: The effect of circulate wire augmentation on complications, fracture union, and reduction: A systematic review and meta-analysis of comparative studies

Laura McDonald, The Alfred Hospital, Australia

11:40 - 12:00

Title: Dynamic palmar dislocation of the ulnar head at the distal radioulnar joint (DRUJ) after radius shaft malunion

Stefanie Schmitt, Kantonsspital Lucerne, Switzerland

12:00 - 12:20

Title: Novel EGFR ectodomain mutations and resistance to anti-EGFR and radiation therapy in H&N cancer stem cells

Markus Bredel, University of Alabama at Birmingham, USA

12:20 - 12:40

Title: Filtered back projection (FBP) in testing reactor (TREAT) and medical imaging sources

Harish Aryal, Marymount University, USA

12:40 - 13:00

Title: Fat graft enriched with adipose-derived stem cells for breast augmentation and reconstruction: clinical, histological, and instrumental evaluation

Pietro Gentile, University of Rome, Italy

Lunch Break 13:00 - 13:30@Restuarant

13:30 - 13:50

Title: Retrospective analysis of arthroscopic cam decompression. Is hip joint still preserved although at learning curve?

Cihangir Türemiş, Department of Orthopedic Surgery, Dokuz Eylül University, Turkey

13:50 - 14:10

Title: Reconstruction of distal femur medial column with fibular strut graft and on-lay plate augmentation in a 33c2.3 Fracture with critical bone loss, a novel technique and its outcome

Soutrik Mukherjee, Medical College and Hospital, India

14:10 - 14:30

Title: Eco-artistic therapeutic effects and tools in medical humanities

Visnja Bandalo, University of Zagreb, Croatia

14:30 - 14:50

Title: Biocompatibility of ceramic materials in $Ca_2P_2O_7$ - $Ca_3(PO_4)_2$ system obtained via heat treatment of cement-salt stone

Konstantin Malyutin, Moscow State University, Russia

Sessions : Tissue Engineering | Rheumatology | Immunotherapy | Bone grafting | Neuropathology

14:50 - 15:10

Title: Effect of low level laser with and without shoulder mobilization on shoulder function in patients with shoulder impingement syndrome

Hind Mohammed El Mahdy Nasser Alsharief, Heliopolis University for sustainable development, Egypt

15:10 - 15:30

Title: Developing a school-based depression prevention program for co-ruminating adolescent girls: an intervention mapping approach

Patricia vuijk, Rotterdam University of Applied Sciences, Netherlands

15:30 - 15:50

Title: The efficiency of combination of fibrin glue, platelet rich plasma and stem cells in diabetic foot ulcer recovery

Vladimir Jovanovic, Clinical Centre Nis, Serbia

15:50 - 16:10

Title: The cytology of cancer

Sudha Banasode, Shankarrao Mohite Mahavidyalaya, India

16:10 - 16:30

Title: Paracetamol (Acetaminophen) in pediatric pain management: What do we know today?

Rassa Pegahi, UPSA, France

Stéphane Moniotte, Leuven University, Belgium

Networking and Refreshments Break and Group Photo 16:30 - 16:50@Foyer

16:50 - 17:10

Poster Presentations

Title: α -Globin lentiviral vectors for hematopoietic stem cell gene therapy of α -Thalassemia

Eva Segura, University of California, USA

17:10 - 17:30

Title: Generation of TUBB3-mCherry reporter knock-in human pluripotent stem cell line (SNUe003-A-4) using CRISPR/Cas9-mediated genome engineering
Kim A-Hyon, Catholic Kwandong University, South Korea

17:30 - 17:50

Title: Establishment of α MHC-EGFP knock-in reporter human pluripotent stem cell line (SNUe003-A-3) by CRISPR/Cas9-based genome editing
Ha Myoung Lee, Catholic Kwandong University, South Korea

17:50-18:30

Awards and Closing Ceremony

Day 2 | July 20, 2023

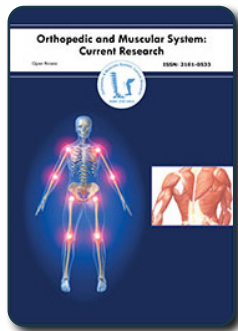
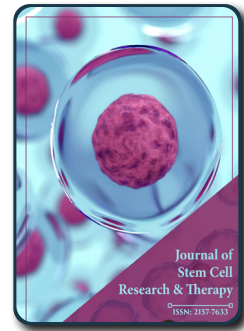
Networking & B2B

Closing Ceremony



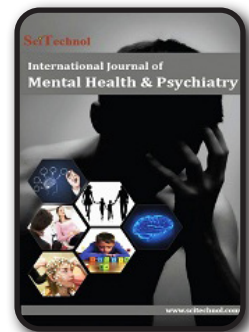
JOURNALS

Journal of Stem Cell Research & Therapy



**Orthopedic & Muscular System:
Current Research**

**International Journal of Mental
Health & Psychiatry**



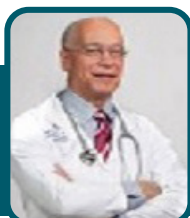
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KEYNOTE PRESENTATIONS

International Conference on
STEM CELL AND ORTHOPEDICS
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PSYCHOSOMATIC AND LABORATORY MEDICINE

July 19-20, 2023 | Rome, Italy



Domingo Guerra Pimentel

Polyclinic La Vega, Dominican Republic

Nobel and advances treatments neurodegenerative diseases

The study of their consists in a series of clinical cases. It includes neurodegenerative diseases such as Alzheimer's, Parkinson's; stroke, small vessels diseases and cervical trauma; among other.

Symptoms of neuronal damage were present in all of the patients, these included: memory loss, cognitive impairment, hearing impairment (some cases with complete hearing loss), visual impairments (and loss), loss of balance, fine motor skills decline, loss of sphincter control, gait impairment, tremor, and muscular rigidity. All of which translated to incapacity in performing basic life activities (eating, getting dressed, doing dishes, bathing). These symptoms have been proven to ameliorate (and in some instances disappear) through the use of stem cells and regenerative therapy, increasing function and prolonging life expectancy with better life quality.

In this study neurotrophins along with BDNF were given directive or with signalling substances, such as:

- IGF 1 (and analogs)
- P21 gene stimulator: which targets the entirety of the nervous system (both peripheral and central)
- Selank and Semax: peptides that improve the cerebral vascular system and stimulate the production of neurons and

reduce stress/inflammation in the glial system

- Growth Hormone: influences neuronal development while reducing inflammation

Different cytokines for improve immunologic system; reduce inflammation and fibrosis.

- Epithelia: a peptide that improves the hypothalamus-pituitary axis improving both nervous and endocrine system

Signalling and activation of diverse types of Stem cells for diverse chronic diseases is becoming today the treatment gold standard in regenerative medicine. This is being used alongside with genetic activation of specific genes that have been silenced due to oxidative stress, mutations, external factors, and etcetera.

It is to be noticed that certain carrier proteins and their affinity for both nuclear and mitochondrial receptors have an important role as well in regenerative medicine. Focus is being targeted to the glutamate (especially NMDA), glycine, serotonergic, dopaminergic; gabaergic and cholinergic receptors when it comes to the treatment of neurodegenerative diseases. This is a very promising source of treatment and even cure of certain neurodegenerative conditions; moreover, it is noticeable that these novel therapies also have a positive impact almost of these conditions.

Biography

Domingo Guerra studied at the medical school from Pontificia Universidad Catolica Madre y Maestra, Dominican Republic. While performing as an outstanding student he was a physiology tutor and professor's assistant, graduated with honors. He was then admitted to the general surgery residency, where he performed as Chief Resident during his final year, and where he also graduated with highest honors. While having a tremendous career as a surgeon, as science advanced into more deep grounds, he decided to start looking into and studying regenerative medicine, cellular culturing, peptide therapy. As of 2002, he started his regenerative medicine practice (along with his surgical practice) becoming a pioneer in the field in the Dominican Republic. Now after 20 years of a successful career, more than approximately 1,600 patients treated, he has received numerous awards, IOCIM (International Organization for medical research and capacitation) Medical Research Award, Professional Health Excellency, and Prize to the Medical by Achievement for a Better Life. Speaker in various conferences, and numerous interviews, he is now fully dedicated to his Regenerative Medicine practice and research, with outstanding clinical outcomes in patients with degenerative diseases and continuing to update his practice as science advances with new discoveries.

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Issam Mardini

Emirates Hospital, UAE

Mastering regenerative medicine

The autologous blood and cell therapies have become increasingly popular in the last decade due to the great results in management of musculoskeletal problems and disease, in particular in sport injuries and expected to multiply in the near future. The self-healing power of the body are used in side effect-free treatment and promoted an accelerating healing process and fast pain-free recovery. All biologics are characterized by their regenerative and signalling capacities. Goal of autologous biologics is to introduce the cells directly to the site of tissue injury/repair to augment healing. There are three essential factors for tissue healing

that result in revascularization. The stem cells should contain the heterogeneous mix of cells and signaling factors that orchestrates tissue healing. Not all systems are created equal; consistency is key

To enhance such treatment it should be individualised and taking into account the individual circumstances and environment and the team work effectiveness. A summarised plan and protocol for beginners on how to master the work in Regenerative therapy is proposed and sharing the experience about the effectiveness of regenerative therapy in the world of Orthopaedics.

Biography

Issam Mardini is a Syrian National. He obtained his Postgraduate qualifications from France, USA and Germany. He has worked in several orthopedic and trauma centers in France, USA, Germany and UAE. He has more than 30 years' experience in orthopedic and trauma surgeries.

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Paulo Cezar Schutz

Dr. Paulo Cezar Schutz Clinic, Brazil

Orthobiologics and regenerative medicine to treat osteoarticular pain

The increasing burden of musculoskeletal disorders combined with the high utilization of opiates, NSAIDs and the relatively limited ability of traditional approaches to satisfactorily address many of the conditions that causes osteoarticular pain has spurred an increased interest in alternative treatments such as regenerative medicine therapies. Osteoarticular pain is a critical health, social, and economic issue in modern societies. Evidence is growing to support the use of orthobiologic injection treatments. Regenerative injection-based therapy has

established itself as a therapeutic option for the management of osteoarthritis pain for most orthopedic conditions using platelet-rich plasma (PRP), bone marrow aspirate concentrate (BMAC), bone marrow aspirate (BMA) and mesenchymal stem cell from fat (biofat). This conference will show the results of this therapies in a sample of Brazilian patients with low back pain involving the muscle-ligament-facet-discal complex, and other orthopedic degenerative conditions and osteoarthritis of joints.

Biography

Paulo Cezar Schutz is working as a Orthopaedic Surgeon in Brazil. He has done his masters degree in Molecular genetic diagnosis.

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Eveline Bush

Director of Clinica Psicologia 3D, USA

Exploring learning potential of the Brain for emotional stability

Brain education is an innovative approach that focuses on understanding and optimizing the brain's functions to promote mental health and well-being. This main idea explores the intersection between brain education and mental health, highlighting the potential benefits and applications of this approach. It examines how brain education techniques, such as mindfulness, cognitive exercises, and neurofeedback, can enhance brain functioning, regulate emotions, and improve overall mental health. Such approach considers discussing the role of brain education in stress reduction, resilience building, and self-awareness, emphasizing its potential as a preventive and therapeutic tool for mental health disorders. Furthermore, it explores the emerging field of neuroscience and its contributions to our understanding of brain plasticity and the potential for neural regeneration. The conclusion emphasizes the importance of incorporating brain education practices into mental health interventions and promoting further research in this exciting and promising field.

References:

- Sara-Jane, Blackwell, Uta Frith (2005) The learning brain: Lessons for education.
- Battro, A. M., Fischer, K. W., & Léna, P. J. (Eds.). (2008) The education brain: Essays in neuroeducation.
- Levine, H. Brain & Life (2023) From Panic to Power.
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- Ellen, G.W (1977) Mind Character and Personality: Interrelationship of body and mind.
- DMS V (2013) Diagnostic and Statistical Manual of Mental Disorders.



Figure 1: Effects of alcohol on the pharmacokinetics of methamphetamine (METH), 3,4-methylenedioxymethamphetamine (MDMA), cocaine, and nicotine. (↑: increase or enhancement; ↓ decrease or deterioration).

Biography

Eveline Bush has experience on psychological assessment based on invested effort toward dignity of clinical diagnosis. Her main focus is in human well being, hence she has built a career considering value-pluralism, professional team input on case study. As continuity of years of professional practice in clinical cases, Eveline Bush, obtained a certificate on: Brain Anatomy to gain familiarity about the neurobiology of the everyday life. Gained also a certificate in: Integrative Pain & Energy Psychology. She is devoted personal growth knowledge in this field to better serve the population in need.

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ORAL PRESENTATIONS

**International Conference on
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&****International Conference on
PEDIATRIC AND NUTRITIONAL RESEARCH**

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The importance of the “soil” for the regenerative treatment**Greice Cristina Nitschke Fontana**

Dr. Paulo Cezar Schutz Clinic , Brazil

Chronic diseases confer tissue and organ damage that reduce quality of life and are widely refractory to therapy. Degenerative diseases are strongly associated with chronic inflammation in patients who are candidates for regenerative medicine treatments. Although stem cells hold promise for treating degenerative diseases, the regenerative capacity of stem cells is influenced by regulatory networks guided by local immune responses to tissue damage. Recent research has turned to how cellular and signaling components of the local stromal microenvironment (the 'soil' to the stem cells' seed), such as local inflammatory

reactions, contribute to successful tissue regeneration. For this reason, it is important to consider that all measures capable of decreasing the degree of inflammation in the body are appropriate for the preparation of the patient: sleep, gut microbiome, environmental toxins, hormone balance, electromagnetic fields and other illness conditions, to pose the patient in a balanced position for the regenerative procedures. Application of “preparing the soil” concepts to regenerative medicine strengthens prospects for developing cell-based therapies or for promotion of endogenous repair

Biography

Greice Cristina Nitschke Fontana is an Obstetrician-gynecologist, OB/GYN Sonographer specialist and neurologist in Brazil. Member of International Society of Neuro Psycho Physical Optimization with REAC Technology. Attending post-graduation course in Regenerative Medicine - Orthoregen International Course.

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Subtrochanteric femur fractures treated with femoral nail: The effect of cerclage wire augmentation on complications, fracture union, and reduction: A systematic review and meta-analysis of comparative studies**Laura McDonald**

The Alfred Hospital, Australia

Objective: To perform a systematic review and meta-analysis of subtrochanteric femur fractures treated with an intramedullary nail, augmented with or without cerclage wiring, comparing the risk of reoperation, nonunion, loss of fixation, and implant failure; fracture reduction and time to union.

Data Source: A systematic review according to Preferred Reporting Items for Systematic Reviews and Meta-Analyses guide lines was performed through MEDLINE, EMBASE, PubMed, Web of Science, and Scopus databases using a combination of controlled vocabulary and keywords on September 30, 2020.

Study Selection: All comparative (prospective and retrospective) studies of subtrochanteric fractures managed with intramedullary nail, that compared the addition of cerclage wire to without in patients 16 years of age or older were included. Pathological, atypical bisphosphonate, and segmental fractures were excluded, as were non-English

literature.

Data Extraction: Data from each study were independently recorded by 2 investigators.

Data Synthesis: Agreement was obtained on 18 studies (all retrospective) for final inclusion, with 378 patients receiving cerclage wire and 911 without. A random-effects meta-analysis was used to analyze the pooled aggregate data.

Conclusions: There is no statistically significant advantage in using cerclage wire with femoral intramedullary nail when treating subtrochanteric femur fractures regarding risk of reoperation, non union, loss of fixation, and implant failure or time to union. An advantage favoring cerclage wire was seen for accuracy of fracture reduction. Cerclage wiring was used more often in cases associated with high-energy trauma. Given the relatively small number of events available to be modelled, a clinical benefit for cerclage wiring may still exist for certain fracture types.

Biography

Laura McDonald is working as a orthopedic doctor in the Department of Orthopaedics at The Alfred in Hospital, Australia

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Dynamic palmar dislocation of the ulnar head at the distal radioulnar joint (DRUJ) after radius shaft malunion**Stefanie Schmitt**

Kantonsspital Lucerne, Switzerland

Statement of the Problem: Palmar instability of the distal radioulnar joint (DRUJ) is a rare condition, which is, in contrast to the dorsal dislocation, scarcely represented in the literature. This palmar instability can result from a dorsally angulated malunion of the radial shaft after forearm fracture in childhood. Treating such a condition is controversial in the literature and was described in small case series. This study represents the largest case series in the literature that dealt with this condition, alongside a review of the key papers in the English literature.

Methodology and Theoretical Orientation: This is a retrospective case series. Ten patients were operated between 2007 and 2014. Six patients could be followed up clinically and radiologically after radius corrective osteotomy at the site of malunion with a mean time of 5.6 years. Patient history revealed a conservatively treated forearm fracture in childhood, a symptom-free period of several years [mean of 21.5 (min–max: 9.4–26.5) years] and a minor trauma as a trigger for clinical symptoms. All patients had clinically a DRUJ instability with palmar luxation of the ulnar head at supination. A diagnostic key feature is a radiograph of the whole forearm, revealing malunion of the radius at shaft level. Retrospective patient history, diagnostic imaging,

operative technique and clinical results (DASH, modified Mayo Wrist Score, pain, grip strength, range of motion) were analyzed.

Findings: Four patients were lost to follow-up. In all patients, a radius corrective osteotomy could stabilize the DRUJ. In one patient, the osteosynthesis was revised due to metal failure after one month. In all the six patients, bony union of the osteotomy was achieved. In another patient, an additional ulnar shortening osteotomy was done one year later due to a positive ulnar variance. Postoperative range of motion of the wrist had an average of 136° in extension/flexion and 149° in pronation/supination, and grip strength was 89% of the opposite side. With an average of 12.5 points at the DASH score and 82 at the modified Mayo Wrist Score, patients rated their hand function as good.

Conclusion & Significance: DRUJ is a rare and late complication after fore arm fracture. The presented patients show, that a simple corrective osteotomy of the radial shaft was adequate to treat the complex pathology of a dynamic palmar instability of DRUG. A soft tissue procedure was not required. Whole Forearm radiographs were the key diagnostic feature to detect and understand this rare pathology.

Biography

Stefanie Schmitt is a hand surgeon. The research Group around Prof. van Schoonhoven found this unique Diagnosis and classified it as an own posttraumatic entity of Instability of the DRUJ. Careful analyze of patient history, simple forearm x ray and a one step procedure (radius corrective osteotomy) will help patients to get a stable DRUJ. She has published several articles about reconstructive handsurgery. Presently she is a senior consultant at the Clinic for Plastic and Handsurgery at the Kantonsspital Luzern, Switzerland. She graduated from the University of Wuerzburg in 2005. Her dissertation was Bio-mechanically based rehabilitation approach for different pathologies of the wrist“. She is an Orthopedic and Trauma Surgereon since 2012, specialized in Handsurgery 2014 in Bad Neustadt an der Saale/Germany and is a Member of the European Board of Hand Surgery since 2014.

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Novel EGFR ectodomain mutations and resistance to anti-EGFR and radiation therapy in H&N cancer stem cells

Markus Bredel

University of Alabama at Birmingham, USA

Purpose: EGFR-targeted monoclonal antibodies (mAbs) provide clinical benefit in some patients with H&N squamous cell carcinoma (HNSCC), but others progress with minimal response. Missense mutations in the EGFR ectodomain (ECD) can be acquired under mAb therapy by mimicking the effect of large deletions on receptor untethering and activation. Little is known about the contribution of EGFR ECD mutations to EGFR activation and anti-EGFR response in HNSCC. **Methods:** We selected patient-derived HNSCC cells (UM-SCC-1) for resistance to mAb Cetuximab (CTX) by repeated, stepwise exposure to mimic what may occur clinically and identified two concurrent EGFR ECD mutations (UM-SCC-1R). We examined the competence of the mutants to bind EGF ligand or CTX. We assessed the potential impact of the mutations through visual analysis of space-filling models of the native side chains in the original structures vs. their respective side-chain mutations. We performed CRISPR in combination with site-directed mutagenesis to test for the effect of the mutants on ligand independent EGFR activation and sorting. We determined the effects on receptor internalization, endocytosis, downstream signaling, and radiation sensitivity.

Results: UM-SCC-1R cells carried two non-synonymous

missense mutations (G33S and N56K) mapping to domain I in or near the EGF binding pocket of the EGFR ECD. Structural modeling predicted that these mutants restrict the adoption of a tethered, inactive EGFR conformation while not permitting association of EGFR with the EGF ligand or CTX. Binding studies confirmed that the mutant, untethered receptor displayed a reduced affinity for both EGF and CTX but demonstrated sustained activation and presence at the cell surface with diminished internalization and sorting for endosomal degradation. Single and double-mutant models demonstrated that the G33S mutant is dominant over the N56K mutant in its effect on EGFR activation and EGF binding. CTX-resistant UM-SCC-1R cells demonstrated cross-resistance to mAb Panitumumab but, paradoxically, remained sensitive to the reversible receptor tyrosine kinase inhibitor Erlotinib.

Conclusions: HNSCC cells can select for EGFR ECD mutations under EGFR mAb exposure that converge to trap the receptor in an open, constitutively activated state. These mutants impede the receptor's competence to bind mAbs and EGF ligand and alter its endosomal trafficking, possibly explaining certain cases of clinical mAb and radiation resistance.

Biography

Markus Bredel is a radiation oncologist in Birmingham, Alabama and is affiliated with University of Alabama at Birmingham Hospital. He received his medical degree from University of Vienna Faculty of Medicine and has been in practice between 11-20 years. He is one of 15 doctors at University of Alabama at Birmingham Hospital who specialize in Radiation Oncology. He also speaks multiple languages, including German.

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Filtered back projection (FBP) in testing reactor (TREAT) and medical imaging sources**Harish Aryal**

Marymount University, USA

Filtered back projection is a technique that unfolds the source information from the image. It has two distinct steps: a) Back projection of each event that provides information about the source location. Since these projections are summed up together, there is a significant blurring at the regions where these projections overlap b) Filtering by means of an appropriate filter in the frequency domain, we may reconstruct the image with higher resolution. Several image reconstruction techniques have been used such as maximum likelihood algorithms, and algebraic reconstruction techniques (ART). However, these indirect methods are computationally intensive. Filtered back projection is preferable when computational time is limited, and it has powerful applications in imaging when used with the right choice of filter. This research presents multiple illustrations of the Filtered Back Projection (FBP) technique. These demonstrations include a) FBP for a Hodoscope Plane neutron Flux obtained from the Transient Reactor Test (TREAT), b) FBP of Step Function, and c) FBP of a cosine source.

FBP technique was successfully implemented in real-time imaging of fuel slumping behavior during transient tests at the TREAT reactor. Transient Reactor Test (TREAT) reactor is the principal facility in the US for safety testing of reactor fuel. It was in operation from 1959 to 1994 and has been restarted in 2018 after a 25-year hiatus. A key instrument used in TREAT is the hodoscope. It records the motion of fissionable material in the test capsule as the fuel fails during accident scenarios. It consists of multi-channel front and back collimators. During the experiment, fast neutrons produced in the test capsule are collimated providing a 2-dimensional "map" of fuel location, and are time stamped in the hodoscope detection system. Hodoscope system measurements need improvements to yield higher-

resolution images and the purpose of this research was to support imaging and was a part of the restart program and was successful. The research involves an MCNP model with a central fuel element replaced by dummy slotted fuel for sample positioning for flux information at the hodoscope plane and the corresponding image was successfully reconstructed using FBP and Hann filter with minimum blurring. It was found that the right choice of cut-off frequency removes noises that cause blurring, and the cut-off frequency determines how the filter affects both image noise and resolution. In other words, the higher the cut-off frequency, the better the spatial resolution, and therefore much more detailed image can be obtained. In conclusion, the Hann filter with a cut-off frequency close to 1 cycle/cm was recommended for image reconstruction.

These imaging modalities have broader impacts on nuclear medicine for developing diagnostic and therapeutic procedures. For instance, to treat tumor cells a radioactive drug is typically administered in targeted organs along with gamma cameras to acquire two-dimensional projections of the activity. These projections data are then filtered and back-projected to get the image of the targeted organ. Proper selection of filter and cut-off frequencies are crucial in imaging will be discussed in detail in the preceding sections. In addition, detailed analytical FBP solutions for Cosine and Step functions are also presented to provide insights into its mathematical implications. In summary, this research provides both the analytical and computational analysis of FBP used in imaging that has applications both in nuclear engineering as well as in medical studies. In the future, we are optimistic to create a holistic model that provides high quality images with optimal resolution and minimal blurring.

Biography

Harish Aryal is a Tenure-Track Assistant Professor in the College of Sciences and Humanities, School of Science, Mathematics, and Engineering at Marymount University since Spring 2023 prior to MU he was an Assistant Professor at the University of Texas-Permian Basin from 2020-2022. He holds Ph.D. in Nuclear Engineering (2020), two masters' in mechanical (2016) and Nuclear Engineering (2014), and Bachelor's in Nuclear Engineering with a Physics minor (2012), all degrees from ABET-accredited universities from the States with High Honours. His expertise involves the study of heat/mass transfer, and fluid mechanics processes in nuclear-mechanical systems. Key sub-areas: phase change, single/multi-phase fluids, HTGR, MSR, LMFBR, LWR using RELAP, CFD, MCNP, Scale, multi-physics, PRA, Mathematica, SAPHIRE, OpenBUGS, Fusion 360. Has grant experience with NSF, DoEd, DOE, NRC, and DOD (and has experience in modeling and simulation of reactor systems, radiation shielding, medical imaging, nuclear security, and non-proliferation. Currently, his lab involves creating renewable energy-Engr projects tailored to historically underrepresented cohorts at MU. Another avenue includes the use of radioisotopes in nuclear medicine image reconstruction/applications to support real-time imaging.

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Fat graft enriched with adipose-derived stem cells for breast augmentation and reconstruction: Clinical, histological, and instrumental evaluation

Pietro Gentile

University of Rome, Italy

Introduction: Fat graft enriched with adipose-derived stem cells (FG-e-ASCs) has been utilized in outcomes of radiotherapy after mastectomy, and breast soft tissue defects. The scientific results using FG-e-ASCs in breast augmentation and breast reconstruction have been reported.

Methods: A total of 46 patients affected by breast hypoplasia (SG-1) were treated with FG-e-ASCs, comparing results with those of a CG-1 (n=30) treated with fat graft not enriched with adipose-derived stem cells (FG-ne-ASCs). 121 patients affected by the outcomes of breast oncological surgery (SG-2) were treated with FG-e-ASCs, comparing the results with the CG-2 (n = 50) treated with FG-ne-ASCs. The preoperative evaluation included a complete clinical evaluation, photographic assessment, magnetic resonance imaging (MRI) of the soft tissue, ultrasound (US), and mammography (MG). Biopsy was performed only in SG-2. Postoperative follow-up took place at 1, 3, 7, 12, 24, 36, and 48 weeks, and then annually.

Results: SG-1 patients, treated with FG-e-ASCs showed 58% maintenance of the contour restoring and of 3-dimensional (3D) volume after 3 years compared with the patients of the CG-1 treated with FG-ne-ASCs, who showed only 29% maintenance. In 67.4% (n = 31) of breast augmentation treated with FG-e-ASCs, we observed a restoration of the breast contour and an increase of 10.3 mm in the 3D volume after 36 months, which was observed in only 20.0% (n = 6) of patients in the CG treated with FG-ne-ASCs. Volumetric persistence in the SG-1 was higher than that in the CG-1 (P < .0001 SG vs. CG). In 72.8% (SG-2 n = 88) of breast reconstruction treated with FG-e-ASCs, we observed a restoration of the breast contour and an increase of 12.8 mm in the three-dimensional volume after 12 weeks, which was only observed in 27,3% (n = 33) of CG-2. Volumetric persistence in the SG-2 was higher (70.8%) than that in the CG-2 (41.4%) (p < 0.0001 vs. control group).

Conclusion: The use of FG-e-ASCs was safe and effective in patients of SG-1 and SG-2.

Biography

Pietro Gentile working as a Associate Professor of Plastic and Reconstructive Surgery in the department of Surgical Science Department at University of Rome

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July 19-20, 2023 | Rome, Italy

Retrospective analysis of arthroscopic cam decompression. Is hip joint still preserved although at learning curve?**Cihangir Turemis**

Dokuz Eylul University, Turkey

Hip arthroscopy is an effective treatment for femoroacetabular impingement (FAI). The purpose of the present study was to report retrospectively the patients self-reported outcomes, and hip survival rates within a mean follow-up of five years. Retrospectively collected data on 25 patients with FAI within a minimum follow-up of 42 months (mean 60 months) treated with hip arthroscopy and labrum repair were analyzed. The primary outcome measures were the Hip Outcome Score (HOS) Activities of Daily Living (ADL) subscale, HOS-Sport subscale, Visual analog scale (VAS) for pain. Patient satisfaction was rated. Measurement of joint spaces and osteoarthritis (Tonnis) grading were done preoperatively and at the last follow-up visit. Pre- and postoperative mean alpha angles were 67 ± 4 degrees 46 ± 3 degrees, respectively. Minimal

clinically important difference (MCID) was achieved for HOSADL in 76 %, and for HOSSS in 56% of the patients , while all patients achieved MCID for VAS pain scores. Mean satisfaction level was 7.5 ± 1.8 Mean preoperative Tonnis stage of the patients was 0.9 ± 0.9 which increased to 1.1 ± 0.8 ($p:0.046$). Mean preoperative lateral joint space was 4.8 ± 1 which decreased to 4.5 ± 1 $p<0.001$. Mean middle joint space also decreased from 4.5 ± 0.9 to 4.3 ± 0.7 ($p:0.04$). However this decrease was not statistically significant at joint space measured at foveal level ($p>0.05$) (5 ± 0.8 vs 4.9 ± 0.7). Mid-term results show that after cam decompression, it is possible to say that hip joint is at least preserved and progression of hip osteoarthritis seems to be delayed. Patient functional results, and pain scores are generally improved in accordance with the literature data.

Biography

Cihangir Türemiş after working in the field of hip and knee arthroscopy and arthroplasty for 5.5 years in the Department of Orthopedics and Traumatology at Izmir Dokuz Eylül University, he continues his studies on knees and hips at Izmir Cesme State Hospital, where he still works.

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Reconstruction of distal femur medial column with fibular strut graft and on-lay plate augmentation in a 33c2.3 Fracture with critical bone loss, a novel technique and its outcome**Soutrik Mukherjee**

North Bengal Medical College and Hospital, India

Introduction: Open fractures involving the distal femur are secondary to high velocity trauma. These patients often exhibit critical bone defects, which pose a serious therapeutic challenge.

Case: A 19 years old male presented with an open fracture involving the right distal femur with substantial bone loss, involving near total metaphysis, mostly the medial column, part of the diaphysis and an articular fracture. The patient also had an ipsilateral patella and an extra articular proximal tibia fracture at the metaphysio-diaphysial junction. We planned for a two-staged intervention, where in the first stage we treated soft tissue injury defects along with definitive primary fixation of tibia and patella; we also

stabilized the limb with a spanning external fixator. In the second stage we reconstructed the distal medial column with an appropriate size fibular strut graft, augmenting it with a reconstruction plate (novel technique). We followed up for two years, achieving osteosynthesis, perfect graft integration and consolidation, good functional outcome and an unaided painless ambulation.

Conclusion: Preservation of biology with appropriate bone and soft tissue management, stabilization with a biomechanically superior construct of strut graft - plate combination to facilitate early mobilization, are key factors in completing the injury cycle and restoring the function of the damaged limb.

Biography

Soutrik Mukherjee, is an orthopaedic trauma surgeon who works with a Government Medical College along with two private hospitals in West Bengal, India. He has a masters degree in Orthopaedic surgery and has also done a fellowship in complex trauma and pelvi-acetabular surgery. He has a public practice of three years and a private practice of about four years. He has presented his works on many national and international conferences over the years.

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July 19-20, 2023 | Rome, Italy

Eco-artistic therapeutic effects and tools in medical humanities**Visnja Bandalo**

University of Zagreb, Croatia

Statement of the Problem: In tracing proto-ecological aspects, the analyses will be made from various spheres of visibility, attuned to the symbology of nature connectable to the Anthropocene, in their interweaving with the literary realm, with the purpose of developing effective interpretative and practical artistic tools for enhancement of resilience and mindfulness strategies to achieve wellness.

Methodology & Theoretical Orientation: The present paper offers completely original angles and an innovative approach allowing to trace multidisciplinary connections in the light of modern ecology and literarily mediated visibility, consisting of sets of techniques and an array of methodologies of intersectional nature adaptable to the field of psychosomatic medicine in clinical settings.

Findings: Of particular interest is regulation of psychological mechanisms applicable in narrative medicine based on the categories related to the idea of consciousness, as explorations of imaginative and unconscious components innately present in artistic creations presenting themselves also through concepts of preverbal or non-verbal memories

as belonging to natural wholeness, and producing entwinements between one's instinctual selfness and social markers. Analyzed are relational cognitive and affective aspects bringing to the development of hermeneutical skills, relatable to autonomous creative acts.

Conclusion & Significance: The aim of this paper is to research scientifically innovatively and in great detail unexplored psychoanalytical and ecocritical perspective focused on canonic modern artworks having eco-poetic dimension as the main constituent, and referring to their literary expressions, thereby creating a significant increase of societal knowledge of both philosophical and empirical nature. This paper places attention on observations of natural phenomena, reflected as sublimated art and literary experiences, highlighting aesthetic purposefulness with its positive psychological effects also in the reception of respective works, as being in tune with eco-interconnectedness. The presentation includes the display of visual art pieces and graphically representable literary works resulting from or inducing further reflective writing.

Biography

Visnja Bandalo obtained a B.A. in Italian and French at the University of Zagreb. She obtained an M.A. in Philology, and she received a Ph.D. in the same discipline, both at the Zagreb University. Since 2004 she works at the Department of Italian, Zagreb University, obtaining a qualification of Research Associate in 2013. She authored more than 100 publications. She is the author of monographs "The Book About Oneself" (Ceres, 2011); "Discursive Features of Diaries in Modern Italian Literature" (LAP, 2018); "Convergences and Comparisons: Alvaro, C. Campo, Betocchi" (LAP, 2019). She presented 29 papers at 27 International Scientific Conferences in USA, UK, Italy, Croatia, Austria, Bulgaria and Slovenia. She is a Peer reviewer, Editor and Member of the Scientific Boards in many international Book Series, Learned Societies, Scientific Projects as well as academic journals and scholarly platforms. Her Postdoctoral specialisations include, among other, Cornell University (SCT, 2018).

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Biocompatibility of ceramic materials in $Ca_2P_2O_7$ - $Ca_3(PO_3)_2$ system obtained *via* heat treatment of cement-salt stone**Konstantin Malyutin**

Skolkovo Institute of Science and Technology, Russia

Biocompatibility of ceramic materials in $Ca_2P_2O_7$ - $Ca_3(PO_3)_2$ system was investigated using different methods, including *in vitro* and *in vivo* tests. Ceramic materials in the $Ca_2P_2O_7$ - $Ca_3(PO_3)_2$ system were obtained by annealing cement-salt stone based on powder mixtures of calcium citrate tetrahydrate $Ca_3(C_6H_5O_7)_2 \cdot 4H_2O$ and monocalcium phosphate monohydrate (MCPM) $Ca(H_2PO_4)_2 \cdot H_2O$. The phase composition of cement-salt stone included brushite, monetite as a result of chemical reaction of starting components after adding of water. The presence of citric acid as by-product of chemical reaction,

leads to increase the setting time of the cement-salt stone. Highly concentrated aqueous suspensions based on calcium citrate and MCPM powders providing content of calcium polyphosphate $Ca_3(PO_3)_2$ up to 20 wt % in ceramics were used for designing bioresorbable materials. The presence of an excess of monocalcium phosphate monohydrate makes it possible to reduce the annealing temperature of ceramics, which is associated with the formation of a lower melting phase of $Ca_3(PO_3)_2$. *In vivo* tests shown that obtained ceramic materials can be recommended for regenerative treatments for bone defects.

Biography

Konstantin Malyutin is an innovation specialist at the Skolkovo Foundation. He holds a specialist degree in materials science in 2003 and is currently pursuing a PhD in Materials Science from the Moscow Polytechnic University. Konstantin has been passionate about various 3D printing methods since 2012. He has also been involved in the research of ceramic materials as part of major government projects.

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Effect of low level laser with and without shoulder mobilization on shoulder function in patients with shoulder impingement syndrome

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Besides the traditional physical therapy interventions (infrared and strengthening exercises for scapular and shoulder muscles), recently, low-level laser (LLL) and mobilization with movement (MMM) gained more attention in the treatment of shoulder impingement syndrome (SIS).

Objective: To examine the effects of adding LLL to MMM in patients with SIS.

Design: A prospective double-blinded trial.

Settings: Physical therapy outpatient clinic of Heliopolis University.

Participants: Forty patients complaining of unilateral shoulder impingement syndrome for a period of not less than three months and not more than twenty-four months were included.

Methods: The patients were randomly allocated to group A (n=20, received the active LLL, MMM, and the above-

mentioned traditional physical therapy interventions), and group B (n=20, received the same treatments as group A but the LLL was sham). All treatments were applied 3 times per week, for 6 successive weeks. Shoulder functionality (assessed *via* Disabilities of the Arm, Shoulder, and Hand Questionnaire), hand grip strength (assessed with a hand-held dynamometer) and shoulder muscles strength (subscapularis, supraspinatus, and teres minor muscles were assessed using manual muscle testing) were assessed in both groups.

Results: The within-group analysis of revealed a significant improvement in all parameters relative to the baseline ($P < 0.05$). Except for shoulder muscle strength, the between-group analysis indicated a trend of a significant improvement in all tested parameters toward group A ($P < 0.05$). Conclusion: LLL could magnify the gained improvements in shoulder function and hand grip strength when added to MMM and traditional physical therapy interventions in patients with SIS.

Biography

Hind Mohammed working as a technical manager of integrative health center in Heliopolis University for sustainable development as a physiotherapist in a co-working with psychologists, art therapists and movement therapists. At the same time she is a lecturer assistant at faculty of physical therapy Heliopolis University, basic science department. After graduating from faculty of physical therapy, Misr University for science and technology in 2007. She worked as an instructor, and then became the head of physical therapy department in Almadinah National Hospital in Saudi Arabia for three years. Then, she started second master in social science regarding the I.C.T in education for sustainable development, Fredrick University, Cyprus. This master enlightens her to work from the perspective of holistic intervention. In addition to her diploma in sports nutrition from gold's academy, U.S.A. Recently, she finished her PhD in the field of medical application of laser in patients with shoulder problems. Throughout my journey, She share with colleague in the medical field the different techniques and approaches in treating patients with musculoskeletal disorders and sport injuries. Her experience in this field is about 15 years. Moreover, her participation in the academic staff exchange between Heliopolis University and EMUNI University in Kooper, Slovenia, added to her experience, especially in the field of biomechanics and motion analysis.

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The efficiency of combination of fibrin glue, platelet rich plasma and stem cells in diabetic foot ulcer recovery**Vladimir Jovanovic**

Clinical Centre Nis, Serbia

One of the most common problems in patients with diabetes mellitus is development of symptom is diabetic foot ulcer. Until now, various methods have been used to treat the developed foot problem with some great or less great success. In their research, they used modified method by combing various methods to reach better treatment of the patients. Namely, in patients with developed diabetic foot ulcer we used fibrin glue with platelet rich plasma (Regenlab BCT2, Switzerland) and stem cells obtained by using kit RegenKit Extra cell BMC (Regenlab, Switzerland) obtained from each patient. On the other hand, some of the patients were treated with classic treatment without using

named reagents. Obtained results showed that in patients treated with fibrin glue PRP and stem cells results with great recovery and better condition compared to the patients treated with classical method. The reason for this rapid recovery might be huge among of growth factors released from PRP as well as combination with different reeling factors from stells. Further research should be provided to prove the noticed difference as well to evaluate the factors involved in wound healing.

Key words: diabetic foot ulcer, platelet rich plasma, stems cells recovery

Biography

Vladimir Jovanovic is an Orthopedic Surgeon working at Department of Orthopaedics, Clinical Centre Nis, Serbia.

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The cytology of cancer**Sudha Banasode**

Shankarrao Mohite College, India

Cell division is a normal process in multi-cellular organisms. Growth and repair (replacement of dead cells) take place as a result of cell division (mitosis). Except for cells like the liver and brain cells, which rarely divide in the mature adult, most cells undergo frequent division. Sometimes, however, cell division becomes very rapid and uncontrolled, leading

to cancer. It should be clearly understood that rapid growth means a high rate of cell division for a particular cell type. It is possible for perfectly normal cells, e.g. the bold- forming cells, to have a higher rate of division than some cancerous cells.

Biography

Sudha Bansode is a Professor in Zoology at Shankarrao Mohite College, Akluj, and Maharashtra State, India. Recently she has completed her Post-Doctoral Studies at University of California, Riverside, USA. She is a active researcher & passionate teacher in India. Still she has been published above 25 research papers in International Journals & she is interested on Bone Research. Also she has honor of Distinguished Editorial Board Member of several International Journals. She is an own author of "Textbook Histological Techniques" & "Outlines of Physiology". And now she is working on another own reference book "Rhythms in Freshwater Crustaceans". She is a University recognized research guide for Ph.D students in India. She was a invited Indian Speaker of "OXFORD SYMPOSIUM" on 27-29 August, 2014 at Balliol College, Oxford, United Kingdom & CELL SIGNALING & CANCER THERAPY – International Conference at Double Tree, Hilton Chicago on 27-28 September 2017. She was academic visitor of Bangkok- Thailand, Colombo-Sri Lanka, Daira-Daira-Dubai-UAE. Her recent intellectual Interaction is with many International Professional groups.

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Paracetamol (*Acetaminophen*) in pediatric pain management: What do we know today?

¹Rassa Pegahi, UPSA, France

²Stéphane Moniotte, Leuven University, Belgium

Background: There is still a need for appropriate analgesia and fever management in children from birth.

Objective: This work was performed to provide updated information regarding the use of paracetamol in children.

Methods: A bibliographic search regarding published clinical studies as well as reviews and meta-analyses using paracetamol was performed to investigate the analgesic effect of paracetamol in the treatment of mild to moderate pain of various origins. It also included publications aimed to investigate the antipyretic efficacy of paracetamol. Safety information is based on well-known safety data for paracetamol, recent studies and metaanalyses as well as Authorities recommendations.

Results: The analgesic efficacy of paracetamol 15mg/kg/day was demonstrated in headache/migraine, traumatic pain, and ENT conditions as pharyngotonsillitis, acute otitis media, sore throat pain or tonsillectomy, post-operative pain following dental extraction. Due to its central COX independent antinociceptive action, paracetamol is a very good alternative to NSAID for mild-to-moderate acute pain. Its antipyretic efficacy was also demonstrated in several studies. Overall, Paracetamol is safe in children, and undesirable effects at therapeutic doses are rare.

Conclusions: Paracetamol demonstrated its good efficacy/safety profile from birth for analgesia and. It is recommended as first line antipyrexia and analgesic treatment for mild to moderate pain by main scientific societies.

Biography

Rassa Pegahi is working at UPSA, France and Stéphane Moniotte is currently working at Leuven University, Belgium

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BOOK MARK DATES

9th International Conference on
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December 04-05, 2023 | Dubai, UAE

4th International Conference on
Rheumatology

November 23-24, 2023 | Dubai, UAE



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α -Globin lentiviral vectors for hematopoietic stem cell gene therapy of α -Thalassemia

Eva Segura

University of California, USA

Background: α -Thalassemia is an inherited blood disorder caused by mutations in α -Globin genes (HBA1 and HBA2) resulting in the reduction of α -Globin chains, the subunit along with β -globin chain constituting adult hemoglobin ($\alpha\beta_2$). Severe α -Thalassemia arises with α -Globin expression levels of <30% or less, and α/β -globin ratio of <0.2, caused by defects in or absence of three or all four α -Globin genes. Treatment for survival entails lifelong, biweekly blood transfusions with daily chelation therapy. While these therapies enable patients to live into mid- to late-adulthood, they continue to engender serious clinical manifestations.

To answer this clinical need, our laboratory has developed a stem cell gene therapy in which functional copies of α -Globin gene integrate into the genome of patient's hematopoietic and progenitor stem cell (HSPC) by lentiviral vectors (LVs) to normalize the globin chain imbalance and restore hemoglobin function. The design of our α -Globin LVs (AGLVs) is based on GLOBE β -globin LV utilized in a clinical trial for β -thalassemia (NCT02453477), which has achieved transfusion independence in patients with transfusion-dependence β -thalassemia major. To target excess infective erythropoiesis and hemoglobin restoration, we have constructed a series of short proviral length AGLVs for optimized titer production, HSPC infectivity, and gene expression.

Research: Twelve AGLVs varying in gene and regulatory element compositions were constructed and assessed for raw titer yields and characterized for gene transfer efficiency, mRNA expression and hemoglobin production in a α -Globin knockout (KO) human erythroid cell line. Successfully, all AGLVs confer high raw titers $\sim 1e7$ TU/mL and were able to yield adult hemoglobin. Identified two optimal AGLVs by them for further characterization in human primary HSPCs: 1) Alpha2 LV for yielding highest raw titers and gene transfer efficiency, and 2) LCR-Globe LV for producing the most α -Globin mRNA. Both Alpha2 and LCR-Globe LVs harbor HBA2, are regulated by the β -globin promoter and enhanced by the core or large β -LCR enhancer region, respectively. To assess candidate AGLVs in human HSPCs, AGLVs were tagged at the transcription level to enable identification and

quantification of vector-derived α -Globin mRNA proceeding HSPCs transduction and erythroid differentiation. Alpha2 demonstrated optimum CD34+ infectivity and gene transfer, and LCR-Globe expressed a high $\sim 30\%$ of α -Globin mRNA per total β -globin per vector copy number (VCN), achieving levels of one endogenous α -Globin gene ($\sim 25\%$ per total β -Globin).

Then they assessed one of these vectors in Alpha Thalassemia Major (ATM) patient HPSCs – lacking all four α -Globin genes. We successfully demonstrated that a low average of copies per cell (~ 2) restored adult hemoglobin formation by 50%, which was determined by measuring α -Globin chains (produced by the introduced α -Globin gene) to other endogenous β -Globin chains. (To note, two endogenous α -Globin genes, or 50% gene expression, result in asymptomatic cases of α -Thalassemia in most patients). Further they showed that transduced cells are similar to healthy RBCs; round, pale enucleated RBCs, unlike the untransduced patient RBCs which contained more nucleated cells (sign of ineffective RBC maturation). These preliminary patient cell results are promising and will be repeated with further morphologic and gene expression measurements.

Based on these positive results, confidently they moving forward with animal studies. The selected mouse model contains a mild form of α -Thalassemia caused by a deletion of two α -Globin genes and present human-like symptoms of AT, such as anemia and an enlarged spleen. These vectors have been converted to murine-carrying α -Globin., currently they assessing these newly converted murine vectors in an erythroid murine cell line, containing a large deletion of all four α -Globin genes. Overall, these animal assays will determine the candidate clinical vector, and underpin the potential of this promising stem cell gene therapy as a curative approach for patients suffering from severe α -Thalassemia.

Benefits to stem cell science: This research project will pave the way for the first development of a potential curative approach for α -Thalassemia using the patient's own hematopoietic stem cells. Moreover, these assays will provide further characterization of uncorrected and

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corrected RBC development in α -Thalassemia patients, thereby shedding light on the characterization of the disease. Fundamentally, this research project will deepen our understanding and expertise on the usage of lentiviral

vectors for stem cell gene addition treatments for immune system and blood disorders, such as β -Thalassemia and sickle cell disease.

Biography

Eva Segura originally from France but have done her schooling in the United States. She graduated from University of California Los Angeles (UCLA) with a Bachelor of Science in Biochemistry in 2018. In her undergraduate studies she worked with Dr. Eric Vilain and Dr. Margot Quinlan in the Human Genetics Department and the Biochemistry Department, respectively. Her experiences working with Drs. Vilain and Quinlan gave her an extensive background in molecular biology and galvanized her to pursue a doctoral degree in translational research. Now she is a 4th year Ph.D. candidate in the Molecular Biology Interdepartmental Program at UCLA, in Dr. Donald Kohn's laboratory, recognized for developing a gene therapy cure for ADA-SCID. Her doctoral research is to develop a hematopoietic stem cell gene addition therapy for alpha thalassemia, an inherited blood disorder, to improve erythropoiesis and restore hemoglobin function.

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Establishment of α MHC-EGFP knock-in reporter human pluripotent stem cell line (SNUe003-A-3) by CRISPR/Cas9-based genome editing**Ha Myoung Lee**

Catholic Kwandong University, Republic of Korea

The cardiac muscle-specific protein, α -myosin heavy chain (α MHC), is a major component of cardiac muscle filaments involved in cardiac muscle contraction. Here, we established an α MHC-enhanced fluorescent protein (EGFP) knock-in human pluripotent stem cell (hPSC) line by linking the EGFP gene to the C-terminal region of α MHC *via* a 2A

non-joining peptide using CRISPR/Cas9 nuclease. The EGFP reporter precisely reflected the endogenous level of α MHC upon the induction of cardiac differentiation. This reporter cell line will be a valuable platform for cardiotoxicity tests, drug screening, and investigating the pathological mechanisms of cardiomyocytes.

Biography

Ha Myoung Lee completed a master's degree at Catholic Kwandong University in republic of korea. She conducted a study to establish a knock-in cell line using hPSC, and published it in the journal Stem Cell Research. Since then, research using hPSC has been conducted at Seoul National University's Institute of Reproductive Medicine and Population, Medical Research Center, and is mainly related to Adrenoleukodystrophy (ALD), a disease caused by the accumulation of Very long-chain fatty acids (VLCFAs) in the adrenal cortex and white matter by mutations in the ABCD1 gene located in the X chromosome (Xq28).

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Generation of TUBB3-mCherry reporter knock-in human pluripotent stem cell line (SNUe003-A-4) using CRISPR/Cas9-mediated genome engineering

A-Hyeon Kim

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TUBB3 is a structural neuronal protein important for multiple neuronal functions including axonal guidance and maturation. This study aimed to generate a human pluripotent stem cell (hPSC) line with a TUBB3-mCherry reporter using CRISPR/SpCas9 nuclease. The stop codon in the last exon of TUBB3 was replaced with a T2A-mCherry cassette using CRISPR/SpCas9-mediated homologous

recombination. The established TUBB3-mCherry knock-in cell line exhibited typical pluripotent characteristics. The mCherry reporter faithfully replicated the endogenous level of TUBB3 upon induction of neuronal differentiation. The reporter cell line could contribute to the investigation of neuronal differentiation, neuronal toxicity, and neuronal tracing.

Biography

A-Hyeon Kim completed a master's degree at Catholic Kwandong University in republic of korea. She conducted a study to establish a knock-in cell line using human pluripotent stem cells, and published it in the journal Stem Cell Research. After completing the master's degree, she went to the Ph.D. course at this university and is conducting research on the mechanism of Moyamoya disease, a rare, progressive cerebrovascular disorder caused by blocked arteries at the base of the brain in an area called the basal ganglia. And research on human induced pluripotent stem cells (hiPSCs)-derived red blood cells (RBCs) differentiation is being conducted to express beta-globin and increase mass production and enucleation.

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A decellularized flowable placental connective tissue matrix supports cellular functions of human tenocytes *in vitro*

Anna Gosiewska
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Statement of the Problem: Tendon healing is a slow and complex process that cannot restore the structure and function of the native tendon. Flowable connective tissue matrices (CTMs) may promote tendon healing, given their structural and biochemical extracellular matrix components, minimally invasive properties, and capacity to fill irregular spaces. Due to variations in processing procedures, however, not all flowable CTMs are equivalent. The purpose of this study is to evaluate the effects of flowable, placental CTMs on the cellular activities of human tenocytes. Decellularization, the removal of cells, cell fragments, and DNA from CTMs has been shown to reduce the host's inflammatory response. Therefore, the authors hypothesize that a decellularized flowable CTM (DF-CTM) will provide a more cell-friendly matrix to support tenocyte function.

Methodology and Theoretical Orientation: Three human, flowable, placental CTMs were selected for comparison: (1) a minimally manipulated non-viable cellular particulate (MM-CTM); (2) a liquid matrix (L-CTM); and (3) a decellularized flowable CTM (DF-CTM). Outcome variables included tenocyte adhesion, proliferation, migration, phenotype maintenance, and inflammatory response. Adhesion and proliferation were evaluated using cell viability assays and tenocyte migration using a transwell migration assay. Gene expression of tenocyte markers and pro-inflammatory

markers were assessed using quantitative polymerase chain reaction. Phenotypic markers included scleraxis (SCX), tenascin-C (TNC), type I collagen (COL1A1), type III collagen (COL3A1), and decorin (DCN). Inflammatory markers included interleukin 8 (CXCL8), tumor necrosis factor (TNF), transforming growth factor beta 1 (TGFβ1) and beta 3 (TGFβ3), and matrix metalloproteinase 1 (MMP1).

Findings: Although MM-CTM supported significantly more tenocyte adhesion than DF-CTM ($p = 0.004$), tenocyte proliferation was significantly higher on DF-CTM than MM-CTM and L-CTM ($p < 0.001$). Unlike MM-CTM, tenocyte migration was higher for DF-CTM than the control ($p = 0.005$). In tenocytes cultured on DF-CTM, gene expressions (SCX, TNC, COL1A1, and COL3A1) significantly increased over time ($p < 0.001$). Conversely, in tenocytes cultured on MM-CTM, gene expressions remained unchanged (SCX and TNC, $p \geq 0.102$) or significantly decreased over time (COL1A1 and COL3A1, $p \leq 0.018$). DCN expression increased over time for both CTMs ($p < 0.001$). Compared with MM-CTM, DF-CTM diminished the effects of TNF-α, significantly reducing the expression of CXCL8 ($p = 0.024$) and MMP1 ($p < 0.001$). Over time, tenocytes cultured on MM-CTM promoted the expression of CXCL8 and MMP1, while DF-CTM promoted the expression of antifibrotic growth factor TGFβ3.

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Unleash the power of plant based stemcells: beat degenerative diseases naturally

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Humans, animals and plants are the main living reigns on planet earth. Their common factor is stem cells. For more than 3 decades humans Stem Cells has been researched, and used for regenerative medicine purposes with excellent results. Because of the controversy around embryonic stem cells, researchers have been looking for alternatives. They were lucky to discover that plants have stem cells hidden in their meristem. A wide range of biotechnologies has been developed to extract and cultivate plant based stem cells for healthcare, cosmetic industry with very promising and extravagant success. It is known and proven that plants are very resistant to all kind of difficulties and pressure in their life time. The plant resistance is also called Plant Intelligence. Plant Intelligence generally is tribute to 6 different

phytochemicals groups manufactured by plants: Flavonoids, Carotenoids, Polyphenols, Organic sulfides, Phytoestrogens and remaining phytochemicals such as ginger, curcumin, chlorophyll, limonin, etc. Researches have confirmed that phytochemicals containing diverse biological actives and can help humans in various ways, including anti-oxidation, tumor inhibition, anti-inflammation, cardiovascular improvement, microorganism inhibition, immunity regulation, whitening, and wrinkle elimination, etc., and can prevent many chronic diseases.

In this discussion we will share some plant based Stemcell products and the mind blowing testimonials of former sick people that consumed them.

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Golden patient initiative: A systematic review

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Background: Inefficiencies in emergency theatre lists are a recognized problem across all surgical specialties. An hours delay to starting the trauma list costs a trust approximately £1486 and a delay to intervention can contribute to morbidity and mortality (Fractured neck of femur). Though multifactorial, surgical or anaesthetic pre-assessment usually performed on the day of operation is common cause for delay. The golden patient initiative aimed to counteract these inefficiencies, by identifying the first patient on the list one day prior, ensuring appropriate work up is performed. We aim to review the impact of this on theatre start times, case cancellations and overall efficacy using a Systematic approach.

Methods: A literature search using four databases - MEDLINE, CINAHL, EMBASE, and the Cochrane library identified all clinical research concerning the golden patient initiative. At least two independent authors screened articles against an eligibility criterion, using a process adapted from

the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines. Data extracted included outcomes measured, follow-up period and study design. The result displayed significant heterogeneity; therefore a narrative review was conducted

Results: 13 of 73 eligible articles were included for analysis. Outcomes included Delay in theatre start time, number of case cancellations and changes to total case numbers. A 19-30 minute improvement of theatre start time was reported ($P < 0.05$), and a statistically significant decrease in case cancellations.

Conclusion: Our analysis gives promising conclusions for greater theatre efficiency with the Golden Patient Initiative, a low cost easily implementable change that can improve patient safety and savings. However at present it is largely implemented amongst local trusts, hence larger multicenter studies are required to provide conclusive evidence.

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Endoplasmic reticulum stress-mediated inflammatory signaling pathways within the osteolytic periosteum and interface membrane in particle-induced osteolysis

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Aseptic loosening secondary to periprosthetic inflammatory osteolysis results from the biological response to wear particles and is a leading cause of arthroplasty failure. The origin of this inflammatory response remains unclear. We aim to validate the definite link between endoplasmic reticulum (ER) stress and particle-induced inflammatory signaling pathways in periprosthetic osteolysis. We examine the histopathologic changes of osteolysis and the expression of specific biomarkers for ER-stress-mediated inflammatory signaling pathways (IRE1 α , GRP78/Bip, c-Fos, NF- κ B, ROS and Ca²⁺). Moreover, pro-inflammatory cytokines (TNF- α , IL-1 β and IL-6) and osteoclastogenic molecules (VEGF, OPG, RANKL and M-CSF) were assessed in clinical interface membranes and murine periosteum tissues. We found wear particles to be capable of inducing ER stress in macrophages within clinical osteolytic

interface membranes and murine osteolytic periosteum tissues and to be associated with the inflammatory response and osteoclastogenesis. Blocking ER stress with sodium 4-phenylbutyrate (4-PBA) results in a dramatic amelioration of particle-induced osteolysis and a significant reduction of ER-stress intensity. Simultaneously, this ER-stress blocker also lessens inflammatory cell infiltration, diminishes the capability of osteoclastogenesis and reduces the inflammatory response by lowering IRE1 α , GRP78/Bip, c-Fos, NF- κ B, ROS and Ca²⁺ levels. Thus, ER stress plays an important role in particle-induced inflammatory osteolysis and osteoclastogenic reactions. The pharmacological targeting of ER-stress-mediated inflammatory signaling pathways might be an appealing approach for alleviating or preventing particle-induced osteolysis in at-risk patients.

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Efficacy of hirudotherapy for ankylosing spondylitis: Case report and literature review

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Treatment with leeches has been studied by researchers for centuries for rheumatic diseases, inflammatory diseases or post-surgical complications. There are over 100 bioactive substances with different properties in the salivary gland secretions of leeches. These secretions have been shown to be effective in vasodilation, analgesia, suppression of inflammation, increase of anticoagulation in blood, inhibition of bacterial proliferation, resolution of edema, acceleration of microcirculation, increase of permeability and vitality in damaged vascular structures of organs and tissues, correction of hypoxia, reduction of blood pressure, reduction of pain and regulation of immunity. Food and Drug Administration of USA permitted the sale of leeches and their use in general purpose and plastic surgery and microsurgery in 2004. Ankylosing spondylitis (AS) is an inflammatory, chronic, progressive disease of unknown etiology. It often presents with insidious onset inflammatory low back pain. It is a disease that progresses with sacroiliac joint inflammation in the early stages and axial and peripheral joint inflammation in the late stages, and can also involve the eye, lung and intestine. The HLA-B27 gene has a great effect on the etiology. The "European League Against Rheumatism (EULAR)" has developed evidence-based recommendations for the treatment and care of patients with AS. Nonsteroidal anti-inflammatory drugs (NSAIDs), local corticosteroid administration, disease-modifying antirheumatic drug therapy such as sulfasalazine (SLZ), methotrexate, and tumor necrosis factor inhibitors from biological treatments

are among the treatment options as pharmacological treatments. All 3 of our patients have chronic low back pain and are being treated with the diagnosis of AS with axial involvement, which is an etiologically inflammatory disease. Patients regularly use NSAIDs and SLZ 2 gr/day. Patients received additional leech therapy while continuing standard medical therapy. The difficulty in doing activities at home and at work improved by 40% in the first patient, 25% in the second patient, and 37.5% in the third patient. One month after the leech application, morning stiffness, which lasted for 1 hour, disappeared completely in two of our patients, while it decreased to 10 minutes in the other patient. Fatigue scores of the patients decreased by 50%, 54% and 37.5%. All three of our patients stopped using NSAIDs and stated that they could tolerate their current pain with exercise. According to the VAS pain scale, three patients reported their pain before hirudotherapy as 7, after treatment as 4 in one patient and as 3 in the other two patients. It was observed that CRP values decreased to normal after 1 month in all three patients. Fatigue, morning stiffness and acute phase reactants decreased in all three patients. There were no side effects. In conclusion, although there are many studies with hirudotherapy in various diseases in the medical literature, research on inflammatory low back pain is limited. The results obtained from three patients show us that promising results can be obtained with hirudotherapy for AS patients.

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Immunodeficiency generated by energy deficiency as the cause of non-improvement of nosocomial osteomyelitis in the knee post motorcycle accident.

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Introduction: In another article written by me, through one research in my clinic in Brazil, I concluded that the majority of population that I am attending is considered immune deficient due to the lack of energy inside the five internal massive organs (Heart, Spleen, Lungs, Kidney, Liver). The purpose of this study is to demonstrate that patients with chronic nosocomial osteomyelitis have energy deficiency in the five internal massive organs, that are responsible for the production of Yin, Yang, Qi and Blood and the reduction in one or a combination of deficiencies in these energies, can cause the formation of internal Heat, responsible for the

yellowish secretion in the bone and not necessary caused by the bacteria infection.

Methods: Through one case report of a 32 years-old female patient with history of motorcycle accident in 2020 with exposed-fracture of the right knee. She was submitted to surgery and after some days, it began to have redness in the skin and began to have yellowish secretion through the right knee. She was submitted to the use of many kinds of intravenous antibiotics use with no improvement of her clinical condition of hospital osteomyelitis (meropenem,

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vancomycin, etc..). She went to my clinic this date and told me all her history and I performed the measurement of the internal five massive organs energy with the use of crystal-pendulum.

Results: All her internal five massive organs were in the lowest level of energy, rated one out of eight, with exception of the seventh chakra, that was normal, rated in eight. The treatment consisted in Chinese dietary counseling, auricular acupuncture with apex ear bloodletting and systemic acupuncture and replenishment of the internal massive organs with the use of homeopathic medications according to the theory Constitutional Homeopathy of the

Five Elements based on Traditional Chinese Medicine and crystal-based medications. The patient improved from her condition 100% without using any kind of antibiotics.

Conclusion: The conclusion of this study is that patients with nosocomial osteomyelitis has energy deficiencies in the five internal massive organs and the treatment using antibiotics and anti-inflammatory medications can reduce even more this vital energy, that is already low, and causing the symptoms of nosocomial infection or aggravating the evolution of his patient.

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Licorice-based homeopathic immune booster

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Introduction: Homeopathic remedies are prepared according to special technology, used in small doses, and the advantage of their use is that they make it possible to eliminate not only the symptoms of diseases, but the causes of diseases as well resulting in almost complete recovery of patient. The main effect of homeopathic medicines is aimed at restoring adaptation mechanisms boosting the immune system, the final effect is realized not only *via* immune system, but endocrine, cardiovascular, nervous systems as well.

Purpose of study: The aim of the present study was to prepare homeopathic sugar granules and drops based on licorice (*Glycyrrhiza glabra*) as well as other medicinal plants used for the treatment of respiratory tract diseases in children and the elderly and for strengthening the immune system.

Study design: To obtain the homeopathic remedy first, the extract from fresh collected licorice and appropriate medicinal plants using 70% ethyl alcohol was prepared. The final phytopreparation was prepared in the form of drops and granules in 6D dilution. For this, the freshly harvested roots and herbs were crushed to obtain the mushy mass,

poured with 70% ethyl alcohol in a ratio of 1:5, kept for 30 minutes, squeezed well. The resulting parent extract was potentiated with demineralized water to a pure potency of 6D. Then, depending on the target form, the resulting extract was added to the sugar granules, or to 25% ethyl alcohol to obtain the drop form.

Discussion: The benefits of the newly developed homeopathic composition compared to known ones are as follows: this composition of herbal origin exhibits a pronounced immunomodulatory effect and is harmless to newborns. Lack of contraindications and side effects, convenience of admission for patients of all age groups and the possibility of using in combination with allopathic drugs makes it an indispensable tool for treatment diseases of the upper respiratory tract of an inflammatory nature.

Conclusion: The essence of the developed invention is that treatment with the obtained remedy in children and the elderly leads to improvement of the general condition and relief of cough, increases immunity and has an effect in the treatment of the upper respiratory tract diseases without creating an allergy background.

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Addressing mental health issues in the context of emergencies at border points

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Mental Health care is concerned with normal and abnormal reactions to situations. During the recent emergency of COVID 19, which saw total lockdown and closer of borders at some point, many business travellers, students and families were separated and depending on the capability of a person, many experienced stressful conditions that nearly resulted into death or death at some point and some went into total mental retardation. At the border point where I supervise border health activities, that is Elegu/ Nimule Border, over 80% of the cross border community from South Sudan feed on fresh foods and agricultural harvest from Ugandan market at Elegu. Therefore, getting the news that all markets and borders in Uganda were closed, with total lockdown, there were visible increased level of stress

on the population of cross border communities, who feed hand to mouth and buy everything to eat from the market. At my duty Station, I saw many families coming from all over South Sudan and wanting to cross to Uganda to go and see their families, but the situation could not be contained.

The use of GATHER (Greet, Ask, Tell, Help, Explain, and Return) approach in offering continuous psychosocial counselling is helpful in the promotion of mental recovery. The purpose of this study is to describe the experience of stressful situations observed in pursuit of cross border movement and how best the concerned Governments can strengthen the mental health aspects in the mobile cross border population and travelers.

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Mesenchymal stem cell transplantation for covid-19 patients: An emerging therapy

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Statement of the Problem: COVID-19 infection and long-term COVID-19 syndrome remain to burden healthcare systems and cause significant morbidity and mortality. Novel molecular targets related with the dynamics of pathogenesis of COVID-19 disease, and the use of mesenchymal stem cells (MSCs) in cell therapies have been methods that deserve attention and are frequently investigated [1]. In fact, MSCs are effective and safe alternatives for treating cytokine storm and acute inflammation, as there are no reductive medications to improve pulmonary fibrosis, acute respiratory distress syndrome (ARDS) and post complications of immune unregulation [2].

Methodology and Theoretical Orientation: Eight severe/ critically severe COVID-19 patients who were unable to respond to the treatment algorithms suggested by the Turkish COVID-19 Scientific Committee had MSC transplantation between April 1 and May 4, 2020 [3]. About a year later, we also performed UC-MSC transplantation in 210 patients with severe or critically severe COVID-19, and we assessed the clinical outcomes.

Findings: According to the findings, stem cell therapy has the

potential to reduce mortality and morbidity [4]. Stem cells can enhance lung function and diminish symptoms by lowering inflammation, thus significantly lowers COVID-19 patients' mortality and morbidity, specifies a recent meta-analysis study that included our findings as data from Turkey [5]. Another meta-analysis study that included our subsequent investigation concluded that MSC transplantation is safe and beneficial for patients with severe COVID-19, which is consistent with our findings [6]. Additionally, it can be indicated that MSCs are quite beneficial in improving the clinical signs of COVID-19 infection and lowering systemic complications significantly due to their immunomodulation and regenerative properties.

Conclusion & Significance: Since it has a significant effect in reducing pulmonary fibrosis and enhancing lung function, it can be suggested that emerging treatment for COVID-19 is mesenchymal stem cell therapy. Studies conducted in this context point to promising results. However, further prospective studies are needed to confirm the results and establish a uniform protocol.

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A rare case of staphylococcus caprae-caused periprosthetic joint infection following total hip arthroplasty: A literature review and antibiotic treatment algorithm suggestion

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In this study, we discuss a case of a 59-year-old male who developed a periprosthetic joint infection (PJI) three months after a total hip arthroplasty (THA). The patient complained of groin and buttock pain, swelling, and high temperature. A palpable fluid collection, discomfort, edema, and elevated local temperature were present in the clinical examination. Laboratory analysis revealed elevated white blood cells, erythrocyte sedimentation rate (ESR), and C-reactive protein (CRP). The preoperative joint aspiration came up positive for *Staphylococcus caprae* (*S. caprae*) infection. Diagnosis and pathogen identification were confirmed by histological examination of six tissue samples obtained during surgery. We initially performed

early debridement, antibiotics, and implant retention (DAIR) followed by antibiotic therapy suggested by an infectious disease specialist. DAIR failed two months later, and we proceeded to a two-stage revision. Following surgery, the patient was treated with intravenous antibiotic combination therapy for three weeks and thereafter with oral antibiotics for three months. Four months down the line, the patient is free of symptoms, and the inflammatory markers are normal. Finally, we will proceed with the second stage of revision. This study highlights a very rare case of PJI infection by *S. caprae*, reviews the limited literature, and provides the available evidence for surgical and antibiotic management.

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High-school and college youth comparison towards the psychological status under the influence of sleep state

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Statement of the Problem: Adolescents experience the critical physical and psychological growth, many factors influences their psychological status and have great significance. However few studies focused on the difference between high school period and college freshmen year (which shared the similar age but different social background).

Methodology & Theoretical Orientation: 365 high school students and 333 college freshmen were included in the current analysis by a cross-sectional design, objective to make the epidemiological comparison towards the social phobia/depression prevalence and potential determinants.

Findings: The social phobia/depression symptoms are more prevalent among the high school students in this study, and with a gender difference. There were two features for their psychological status: First, the association between sleep status and social phobia is more obviously among high school students, while the higher MMR as a risk factor was found for both. Second, the interaction between social phobia and depression was obviously for both populations.

Moreover, the potential determinants for social phobia among high school youth were: higher PSQI score, lower RU-SATED score, female gender, obtaining depression and higher MMR ($P < 0.05$). As for the college freshmen were: worse academic performance and obtaining social phobia ($P < 0.05$). While, the potential risk factors for depression among high school youth were: male gender, lower BMI, worse academic performance and obtaining social phobia ($P < 0.05$). For the college freshmen were: higher MMR and obtaining social phobia ($P < 0.05$).

Conclusion & Significance: Psychological problems including social phobia/depression symptoms are more prevalent among high school girls when compared with their male and freshmen peers. Important determinants for the risk of psychological problems were different for high school youth and freshmen, but media multitasking status should be paid attention to for both. The findings here might be viewed as a public health issue and call for proper improvement/correction from according fields.

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Tissue remodeling of the adrenal gland, testis, visceral adipose tissue, liver during obesity

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Statement of the Problem: Obesity arises from an imbalance between energy intake and energy expenditure. This study aims to determine the mechanism of cooperation and harmonization between energy homeostasis and tissue homeostasis to maintain a stable body weight variable orchestrated by the immune system.

Methodology and Theoretical Orientation : Two groups of local adult male rabbits (n = 16) were fed a high calorie diet: HCD (4538 Kcal/kg DM) and a finishing diet (FD: 3964 Kcal/kg DM). After fifteen weeks of feeding, the animals were sacrificed according to Algerian legislation. Blood glucose, insulin, leptin, total cholesterol, high-densitylipoprotein (HDL), low-densitylipoprotein (LDL) and triglyceride were determined. The heart, the kidneys, visceral adipose tissue (VAT) from the abdominal cavity, mesentery and retroperitoneal fat, liver, adrenals and testis were dissected, removed and fixed in 4% formalin. These removed organs were divided between histology (for structural and morphometric analysis cells) and immunohistochemistry (to determine apoptosis and cell proliferation) by analysis of CD45 and KI67 expression. The body weight, a total weight (g tissue) and relative weights (g tissue/body weight) for VAT, testis and adrenals were then estimated. The Image J program (Image J, Version 1.52v) using for quantitative analyses of digital images whereas R programming language version (4.1.0) was used for statistical analysis.

Findings: It has been shown that HCD-received rabbits have developed visceral obesity, dyslipidemia and insulin resistance (IR) by dramatically increasing body weight, visceral fat tissue, testis and adrenal weight. HCD also causes the process of inflammatory fibrosis in the adrenal gland and adipose tissue, also a microvesicular steatosis in liver, hyperplasia and hypertrophy of adipose tissue, testis and adrenal gland with angiogenesis in heart. The surplus calorie in fed rabbits caused them too, disorganization of structural architecture of testis and adrenal gland.

In our study, we found that the CD45 antibody could be immunoreacted with the adipose tissues in the membrane significantly in HCD fed animals. Thus, in this practice, we determined if Ki-67 and CD45 expression would be useful for calculating apoptosis and cell proliferation as well as a morphometric analysis of cells.

Conclusions : Tissue remodeling either by hypertrophy or hyperplasia compensates for the energy imbalance as a defense mechanism against this imbalance. This study gives a new concept to obesity so th calorie in excess of the body's need, represented an stimulus, whereby the system immune and Stem cell progeny of some organs coloboreted to maintain a balance : energy homeostasis-tissue homeostasis.

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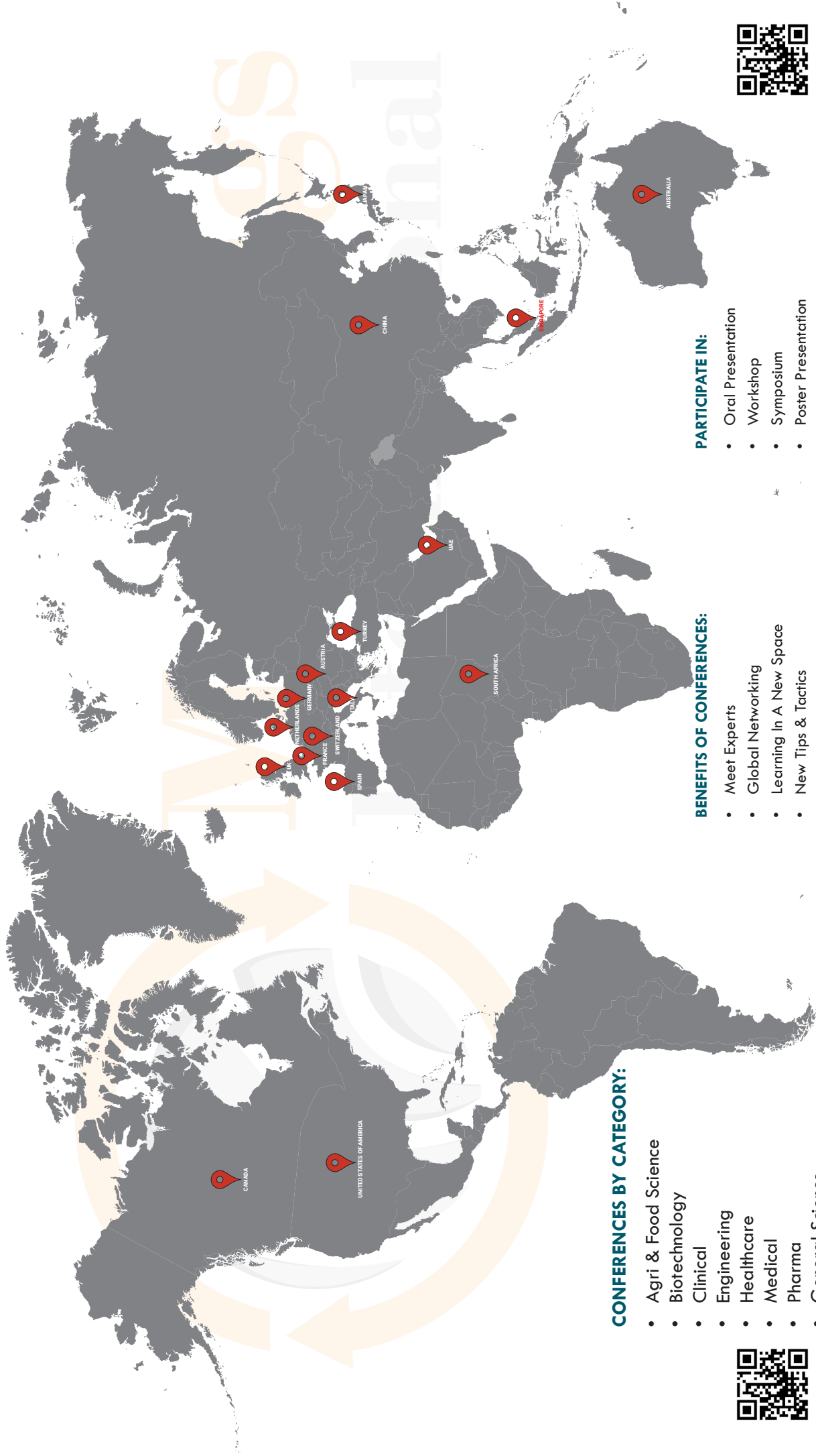
July 19-20, 2023 | Rome, Italy

INDEX

A-Hyeon Kim	31
Anna Gosiewska	34
Bassil Azam	35
Cihangir Turemis	18
Domingo Guerra Pimentel	8
Eva Segura	28
Eveline Bush	11
Greice Cristina Nitschke	12
Gulay Trak	36
Guoyin Liu	35
Ha Myoung Lee	30
Harish Aryal	16
Hind Mohammed El Mahdy Nasser Alsharief	22
Huang Wei Ling	36
Issam Mardini	9
Johana Saron Tedjo	34
Konstantin Malyutin	21
Lamot Patrick Louis	38

Laura McDonald	13
Markus Bredel	15
Mokrani Zoulikha	40
Nesrin Ercelen	38
Paulo Cezar Schutz	10
Philip Domashenko	39
Pietro Gentile	17
Rassa Pegahi & Stéphane Moniotte	25
Sevinc Huseynbala qizi Maharramova	37
Soutrik Mukherjee	19
Stefanie Schmit	14
Sudha Banasode	24
Visnja Bandalo	20
Vladimir Jovanovic	23
Ziyu Zhang	39

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