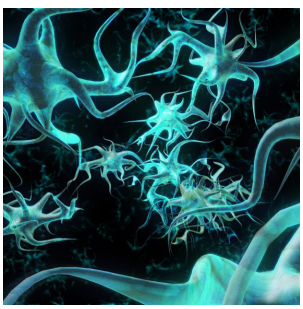
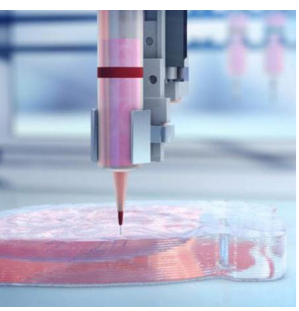
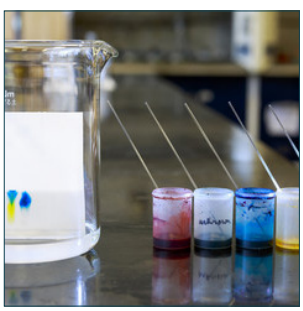
Scientific Tracks & Sessions
June 06, 2019

Tissue Science 2019
Molecular Biology 2019
Separation Techniques 2019




Joint Event on

2nd International Conference on

Tissue Science and Molecular Biology, Stem Cells & Separation Techniques

June 06-07, 2019 | London, UK

Dennis M Lox, Biomed Res, Volume 30
ISSN: 0976-1683

The use of nutraceuticals in regenerative matrix repair in knee OA

Dennis M Lox
Sports and Regenerative Medicine Centers, USA

Nutraceuticals to facilitate the regenerative process, after the use of matrix or stem cell applications in knee osteoarthritis (OA) is examined. Pro-inflammatory cytokines have been extensively studied in various disease models. Recombinant technology in single cytokine modulation has been utilized for various rheumatologic disease states, incorporating blockade of tumor necrosis factor alpha (TNF-a), interleukin 1- beta (IL1-b) and interleukin 1-6 (IL-6). The efficacy of mono cytokine inhibition on knee osteoarthritis (OA) has failed to demonstrate. This is long known to be the case in the well demonstrated progressive nature of knee OA, with downstream inhibition of PGE2 with nonsteroidal anti-inflammatory drugs (NSAIDS). The use of regenerative therapies incorporating biological scaffolds, growth factors and mesenchymal stem cell implants may provide a more comprehensive cell signalling inhibitory pathway. A combination approach, incorporating nutraceuticals based upon clinical laboratory studies, may reflect a possible synergistic mechanism to regenerative therapies. Knowledge of the cytokine modulatory capacity of nutraceuticals can be a useful adjuvant strategy *in vivo* to enhance regenerative capacity.

Speaker Biography

Dennis M Lox graduated from the University of Arizona Phi Beta Kappa and Phi Kappa Phi. His medical education was from Texas Tech University and his residency in physical medicine and rehabilitation at the University of Texas Health Sciences Centre at San Antonio. He chooses a path following sports and regenerative medicine. He has edited two medical textbooks, eight medical textbook chapters and authored numerous scientific articles and abstracts. He is a highly sought-after guest lecturer at both national and international medical symposiums on various topics in the regenerative medicine, stem cell science and tissue engineering fields. He maintains an active clinical practice in Beverly Hills, California and the Tampa Bay, Florida area.

e: Fineclaret59@aol.com

Notes:

Danny Baranes, Biomed Res, Volume 30
ISSN: 0976-1683

Coralline biomaterials for repair of brain damage

Danny Baranes
Ariel University, Israel

Biomaterials can provide supportive microenvironment for cell growth and exciting opportunities for tissue regeneration. We found that biomaterials derived from the calcium carbonate skeleton of corals in the crystalline form of aragonite are protective and nurturing scaffolds for nervous tissue growth and survival *in vitro*. Moreover, implantation of coral skeleton into brain wounds generated following traumatic brain injury in mice causes tissue restoration and functional recovery. Implanted mice showed elevated level of glial fibrillary acidic protein and nestin, markers of nervous tissue generation, as well as reduced anxiety, elevated learning capacity and improved recovery from motor impairment, compared to injured but not implanted mice. These results place coralline scaffolds as a potential new mean to repair damage in the central nervous system.

Speaker Biography

Danny Baranes has established his experience in neuroscience in the lab of the Nobel laureate Dr. Eric Kandel at Columbia University, New York, in the field of learning and memory. He was the first to use coral skeletons scaffolds for brain tissue engineering. He publishes his research in leading international scientific journals and conferences. He is an associate professor and head of the department of molecular biology at Ariel University, Israel.

e: dannyb@ariel.com

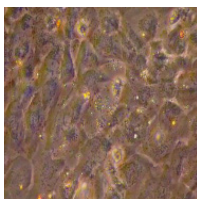
Notes:

Mahesh Shivaji Chavan, Biomed Res, Volume 30
ISSN: 0976-1683

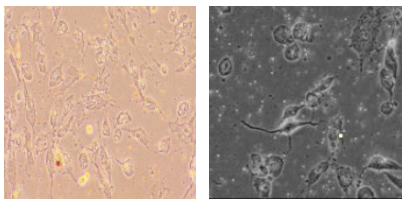
Differentiation of human dental pulp stem cells (hDPSCs) into epithelial and neural lineages with traditional Indian medicine

Mahesh Shivaji Chavan
Dr D Y Patil Dental College, India

It is estimated that up 80% of the Asian and African population use traditional medicine therapies for primary healthcare. Our preliminary data has shown differentiation of human dental pulp stem cells (hDPSCs) into neuron-like and epithelium-like cell lineages with different concentrations of traditional Indian medicine without standard differentiation cocktails. These are very promising and interesting results in which with low concentration epithelial like differentiation was seen while with higher concentration neural like differentiation was seen.



Epithelial-like cells



Neural-like cells

Speaker Biography

Mahesh Shivaji Chavan is 35 years old and has completed MDS in the subject of oral medicine and radiology in Dr D Y Patil Dental College, Pune India. He has over 42 publications that have been cited over 250 times. Honored with PhD degree in oral medicine and radiology in 2018. Invited speaker for oral presentation on "Oral Potentially malignant disorders" in 7th BIT Cancer Congress, Nanjing China 2014 and selected as young scientist under ITS scheme of department of science and technology govt. of India. First rank in M D S examination (Oral Medicine and Radiology) June-July 2009 in Dr D Y Patil Dental College, Pune and highest marks among all postgraduate students in MDS examination) June-July 2009 of all courses in Dr D Y Patil Dental College, Pune.

e: drmaheshschavan@gmail.com

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Emese Palovics et al., Biomed Res, Volume 30
ISSN: 0976-1683

Separation of mixtures of chiral compounds by their distribution between different phases

Emese Palovics and **Fogassy E**
Budapest University of Technology and Economics, Hungary

The distribution of mixtures of chiral compounds between phases is characterized by the same diastereomeric like behavior of the enantiomeric and diastereomeric mixtures. The result of the separation is determined by the eutectic composition of the enantiomeric mixtures of chiral molecules which works as memory. The separation is influenced by the nature of the phases and the time of phase-interactions. Separation can be achieved without solvent by crystallization from melt and by distillation. Separation from solvent can be achieved by fractional crystallization, by crystallization from solvate forming solvent, by extraction with supercritical carbon dioxide or without crystallization using non-miscible solvents. In each case, the result of the separation may be influenced by taking into consideration of kinetic or thermodynamic control.

Speaker Biography

Emese Palovics graduated from the University of Technology "Traian Vuia" of Timisoara in 1990 as a chemical engineer. Since 1994, she has been a scientific assistant at the Budapest University of Technology and Economics in a research group of the Hungarian Academy of Sciences at the department of organic chemical technology working on crown ethers and organophosphorus compounds. Since 2004, she has been working with Prof. Elemér Fogassy as senior research fellow in the field of optical resolution. She earned her PhD in 2009, which studied structurally related compounds with common skeleton in the resolution processes. She is the co-author of 45 papers (the majority of which appeared in international journals) and three patents.

e: epalo@mail.bme.hu

Notes:

allied academies

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Shin-Ichi Tate, Biomed Res, Volume 30
ISSN: 0976-1683

Structural properties of oxidized LDL receptor LOX-1 as a therapeutic target for atherosclerosis and cancers – significance of LOX-1 structure and dynamics in terms of drug design and drug delivery

Shin-Ichi Tate
Hiroshima University, Japan

Atherosclerosis is a chronic inflammatory disease of the arterial wall which causes cardiac morbidity and mortality. Atherogenesis is ignited by oxidized LDL (OxLDL) stimulation to the endothelial cells through the binding to OxLDL receptors on the cells. Lectin-like OxLDL receptor-1 (LOX-1) is the major OxLDL expressed on the endothelial cells. The basic level of LOX-1 expression is low in the normal cells. In the early stage of atherogenesis, OxLDL binding to LOX-1 elevates the LOX-1 expression to progress the cell dysfunction further, which eventually ends in the atheromatous plaque formation. LOX-1 is revealed to engage in the angiogenesis among the cancerous cells. LOX-1 is, therefore, quite a promising therapeutic target for the two major diseases including cardiovascular diseases and cancers. My group has been working on the structural characterization of LOX-1, starting from structure determination of the LOX-1 ligand binding domain, structure dynamics of the LOX-1 extracellular domain and the modes of the ligand recognition on the cell surface that provides the basic ideas for drug delivery exclusively to the dysfunctioned cells in the atherosclerotic lesions. In this presentation, I am going to summarize the structure and dynamics of LOX-1 and show how such structural properties can be applied to the therapeutical purposes.

Speaker Biography

Shin-Ichi Tate has completed his PhD from the University of Tokyo, Japan. He has been working on protein structure and dynamics primarily using NMR. His current interest is in the intrinsically disordered proteins, but he continues the researches on the disease relating proteins like LOX-1. He has 144 publications that have been cited over 1,400 times.

e: tate@hiroshima-u.ac.jp

Notes:

Suphiya Khan, Biomed Res, Volume 30
ISSN: 0976-1683

Development of sensor for fluoride detection and defluoridation of drinking water through Nano-Biotechnology approach

Suphiya Khan
Banasthali Vidyapith, India

Water scarcity is considered as a major crisis of the 21st century. It is reported that in 2015 approximately 663 million people lack access to safe drinking water worldwide. Fluoride (F) is a major contributor to the world water crisis affecting about 200 million people worldwide. The rural population is more prone to F contamination as in some places, the available techniques are neither acquainted nor affordable. The fluorosis is reported more prevalent in rural population due to excess F contaminated water inevitably consumed by the rural population. F is known to cause mottled enamel, osteoporosis, crippling skeletal fluorosis, kidney imbalance and in severe cases leading to mortality. Several methods have been developed to efficiently remove F from water including nanofiltration (NF), reverse osmosis (RO), forward osmosis (FO), coagulation, ion exchange and adsorption. The cost and effectiveness of the defluoridation techniques are still not satisfactory and thus required further improvements. My talk will cover mainly the development of biosensor, colorimetric sensor and hybrid hydrogel composites for defluoridation technology that has been done in my lab. Biosensors consist of a biological entity that can be an enzyme, antibody or nucleic acid that interacts with F and produces the signal that is measured electronically. Other than this, highly sensitive carbon quantum dots (CQDs) based colorimetric detectors for F ions will be mentioned. It will also include the 3D graphene oxide-based hybrid hydrogel, CNT based novel composites and NP-PUF pouches for F remediation from drinking water. Along with this, nano-phytoremediation of F by Prosopis juliflora through the application of Fe_3O_4 NPs will be discussed. Simultaneously, I will give you the insight about our center activities and goals of "Center for Excellence on Water and Energy" of Banasthali Vidyapith, Rajasthan, India. Brief outline of my current going projects and future plan.

Speaker Biography

Suphiya Khan is working as an associate professor in the department of bioscience and biotechnology, Banasthali University, India. Recently her Water and Health Laboratory launched D-Flo Aqua Remedies and Company Ltd. She has fourteen years of teaching and research experience. Her strong background mainly relates to water research which special focus on Fluoride remediation, synthesis of different nonmaterial, DNA fingerprinting, chemoprofiling and Fluoride(F) phytoremediation technology. Recently, she was the finalist in the National Bioentrepreneurship competition 2017 conducted by BIRAC-C-camp. She has received various awards viz DBT-research associateship, young scientist by ISGBRD, ICAR, recognition award for research and teaching and Indian National Academy of Sciences (INSA) international visiting scientist fellowship. She has selected as INSA visiting scientist for Turkey. She has been awarded as a principle investigator and coinvestigator in various projects duly funded by UGC, MHRD, DST and DBT. Currently, she is handling Center of excellence on Water and Energy which is duly funded by MHRD with 2.5 crore rupees. Her work has been recognized internationally at various scientific conferences and journals.

e: suphiyakhan@gmail.com

Notes:

Ghulam Mustafa et al., Biomed Res, Volume 30
ISSN: 0976-1683

Antifouling grafting of nanofiltration membranes: New insights into membrane fouling mechanisms

Ghulam Mustafa, Kenny Wyns, Anita Buekenhoudt and **Vera Meynen**
Karachi University, Pakistan

Membrane technology can be a flexible and viable long-term strategy for water treatment. However, prosperous and effective application of membrane technology has been hampered by membrane fouling induced by a wide spectrum of components in water. Particularly, dissolved natural organic matter (DNOM), a major organic constituent in surface water, has been considered to be a significant foulant, strongly reducing the membranes performance especially for NF (nanofiltration) membranes. Furthermore, it is well known that membrane fouling by DNOM is significantly enhanced in the presence of divalent cations (e.g. Ca^{2+}). Despite much research and industrial developments since the early 1960's, membrane fouling and especially irreversible fouling remains challenging and in-depth studies on mechanisms and solutions for irreversible fouling of inorganic membranes are lacking.

We have developed a smart surface functionalization method to decrease the fouling tendency by preventing the undesired adsorption or adhesion of foulants. Focus is put on two approaches for robust surface functionalization of ceramic NF membranes using Grignard reagents and phosphonic acids. The fouling tendency of polymeric and (surface functionalized) ceramic membranes by DNOM has been investigated. The effect of inorganic ions on fouling was different for hydrophilic and hydrophobic membranes. In hydrophilic membranes, irreversible fouling decreased in the presence of calcium, while an increase was seen for hydrophobic membranes. However, methyl functionalized membranes prepared via Grignard grafting remained unfouled with and without calcium. This gives interesting new insights into the membrane fouling mechanisms.

Secondly, the fouling tendency of these membranes was also tested using different model foulant solutions and real stream waters. Experimental results revealed that grafting of NF TiO_2 membranes by the mentioned techniques definitely decreases their fouling tendency. Especially methyl functionalized membrane (Grignard method) exhibited a significantly lower propensity to foul throughout all measurements using model foulants solutions. Moreover, the antifouling tendency of this particular membrane has proved also excellent in different real streams: real surface water (tested also at pilot scale), olive oil waste water and produced water. All the results can be elegantly explained taking into account the physico-chemical properties of membranes and foulants and their specific interactions.

Speaker Biography

Ghulam Mustafa graduated from University of Leipzig in the field of structural chemistry and spectroscopy and completed PhD form the University of Antwerp in the field of Chemistry (Materials Science, Membrane Science and Engineering, Separation and purification technologies, Water science) in the year 2016. He worked as a researcher in the Laboratory of Adsorption and Catalysis UA & Unit Separation and Conversion Technology VITO Belgium. From 2017 to present he is working as a assistant professor and as a researcher in Karachi University.

e: gmustafa2080@gmail.com

Notes:

Raniah Al Eid, Biomed Res, Volume 30
ISSN: 0976-1683

Molecular biology applications in oral and maxillofacial surgery

Raniah Al Eid
King Saud University, Saudi Arabia

Genetic developments during the 20th century had a great impact on our lives initiated by Mendel principles in 1900. Following the publication of the entire human genome sequence on 2004 chromosomes now can be rapidly analyzed very precisely by microarray techniques and next generation sequencing providing the genetic studies useful for clinical applications. Up to now the number of phenotypes with a known molecular basis reached 5500 while the number of genes with a phenotype causing mutation reached 3400. Genetic is becoming significant to every medical field. Recent discoveries have influences not only on rare genetic diseases and syndromes but extend too many common human disorders. The advancement of genetics refers back once the structure of DNA was discovered in 1953 by James Watson and Francis Crick, while nucleic acid was actually detected in 1849. Then in 1960s, the unraveling of the sequence of bases in DNA and the sequence of amino acids in protein called genetic code, was achieved with sophisticated techniques. Molecular biology provided wide applications in different areas such as genetically modified disease resistant crops, therapeutic drugs produced by genetically engineered animals and the advances to introduce vaccines that are DNA-based. In this article, we are reviewing the general application of molecular biology and its advances in the field of oral and maxillofacial surgery.

Speaker Biography

Raniah Al Eid has completed her master science of oral and maxillofacial surgery from King Saud University. She has published several papers in reputed journals and has been serving as a faculty member in KSU, department of oral and maxillofacial surgery.

e: dr.raniahaleid@hotmail.com

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allied academies

Young Research Forum

Tissue Science 2019
Molecular Biology 2019
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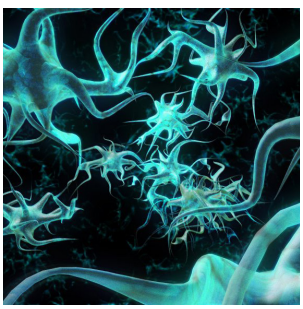

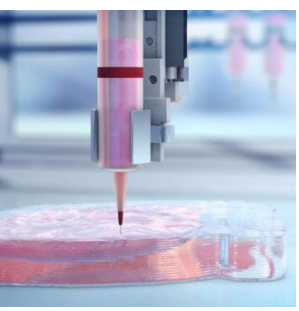
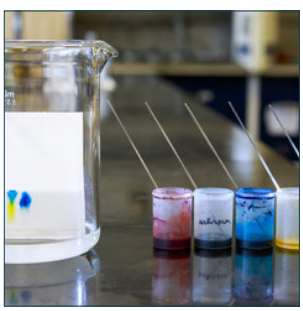


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Jakob Schmid, Biomed Res, Volume 30
ISSN: 0976-1683

An automated perfusion bioreactor system for oxygen-controlled cultivation of 3D-cell cultures

Jakob Schmid
Munich University of Applied Sciences, Germany

Bioreactor systems are an important factor for the successful cultivation of 3D-cell cultures, since they are able to overcome limitations of static cell culture, by providing proper nutrient and oxygen levels. A bioreactor, which is suitable for the reproducible generation of tissue engineered grafts (TEGs), as well as for the optimization of culture conditions, has to meet several requirements, such as built-in measurement instrumentation and control technology, high throughput and high flexibility. In the present study, a perfusion bioreactor system, which allows for the oxygen-controlled cultivation of up to four TEGs in independently operating bioreactors, was designed and manufactured using rapid prototyping technologies. A uniform flow distribution in the developed microbioreactor was shown using computational fluid dynamics. The integrated measurement instrumentation and control technology allows for the cultivation at pre-set oxygen levels. Furthermore, an automated cell-seeding protocol ensures a homogeneous initial cell distribution and thus a reproducible workflow. The developed microbioreactor system opens up new possibilities in the field of tissue engineering by enabling more reproducible experiments, the investigation of optimal oxygen levels in 3D cell cultures and by allowing for the generation of artificial tissue in an oxygen-controlled environment.

Speaker Biography

Jakob Schmid is a PhD student at the center of applied tissue engineering and regenerative medicine (CANTER) at the Munich University of Applied Sciences. He earned his BSc in biotechnology at the Weihenstephan University of Applied Sciences and his MSc in pharmaceutical biotechnology at the Ulm University. CANTER is a cooperative research lab of the Technical University Munich, the Ludwig-Maximilians-University Munich and the Munich University of Applied Sciences. The main focuses of CANTER are to investigate methods of three-dimensional printing for tissue engineering to open new possibilities and applications for tissue engineering research and to characterize tissue and cell-cell interactions on a biophysical level to increase knowledge about macromolecular functions in tissue.

e: jakob.schmid0@hm.edu

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Martin Topiar et al., Biomed Res, Volume 30
ISSN: 0976-1683

Processing of plant wastes using traditional and sophisticated high-pressure extraction techniques

Martin Topiar, Kosovic E and **Cerhova M**
Institute of Chemical Process Fundamentals of the CAS, Czech Republic

Worldwide overproduction in the food and cosmetics industry creates an enormous amount of plant-based wastes which are combusted or landfilled without any additional use. Our project aims to utilize wastes from winemaking industry (i.e. grape cane, grape marc or grape seeds) for the extraction of valuable biologically active substances, which can be used as by-products in dietary supplements. Several extraction techniques including maceration, Soxhlet extraction, ultrasound-assisted extraction (UAE) and pressurized liquid extraction (PLE) were used to obtain trans-resveratrol and ε-viniferine from grape cane and grape marc, while grape seeds were treated by high-temperature pressing, hexane maceration and supercritical fluid extraction (SFE). The chemical composition of plant isolates was determined using HPLC/MS and Folin-Ciocalteu method. Experiments were performed via laboratory equipment and newly developed multipurpose extraction unit with vessels of volume 25 dm^3 and 20 dm^3. The chemical composition of isolates varied based on extraction technique and its process parameters. High concentrations of trans-resveratrol and ε-viniferine were identified in the short-term maceration and Soxhlet isolates. Adopting of an ultrasound probe into the process of maceration and Soxhlet extraction led to a decrease in processing times from days in terms of maceration and hours for Soxhlet extraction to several minutes. On the top of that, concentrations of target compounds were comparable with those obtained at traditional maceration and Soxhlet extraction. Using of SFE has substantial benefits on quality of grape seed oil, because of low extraction temperatures (vs. high temperature pressing) and absence of traces of any organic solvents (vs. hexane extraction).

Speaker Biography

Martin Topiar has obtained his PhD degree at 2019 from the University of Chemistry and Technology Prague with cooperation of the Institute of Chemical Process Fundamentals of the CAS. He is focusing on the SFE from plants with particular interest in a study of different types of fractionation techniques. He has published 5 papers in reputed journals (h-index 2, more than 20 citations) and presented his work in many international conferences dealing with extraction techniques and supercritical fluids utilization.

e: topiar@icpf.cas.cz

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