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Proceedings of

2nd World Biotechnology Congress

December 04-05, 2017 | Sao Paulo, Brazil

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Day 1 December 04, 2017

09:00-09:15 Registrations

Conference Hall: Barba Gato

conferenceseries.com 09:15-09:30 **Opening Ceremony**

Keynote Forum

09:30-10:00 **Title: Novel education model to fit the future of biotechnology**
Meghana Joshi, Biocon-KGI program, Keck Graduate Institute, USA

10:00-10:30 **Title: Genomics and epigenetics with 2d material nano-electronics**
Jean Pierre Leburton, University of Illinois, USA

10:30-11:00 **Title: Exploring detection methods for foodborne pathogens: Shiga toxin-producing *E. Coli* as an example**
Xiaohua He, United States Department of Agriculture, USA

Panel Discussion

Group Photo

Networking & Refreshment Break 11:00-11:20 @ Foyer

Sessions:
Agriclutural Biotechnology | Plant Biotechnology | Food processing and Safety Engineering | Pharmaceutical Biotechnology | Bioprocess & Industrial Biotechnology | Nano Biotechnology

Session Chair: Meghana Joshi, Biocon-KGI program, Keck Graduate Institute, USA
Session Co-chair: Xiaohua He, USDA, ARS, WRRC, USA

Session Introduction

11:20-11:40 **Title: Reducing petroleum use by developing renewable resources that replace petrochemicals**
Thomas A. McKeon, International Society for Biocatalysis and Agricultural Biotechnology(ISBAB), USA

11:40-12:00 **Title: Developing biopesticides, biofertilizers and bioproducts for next generation green revolution and sustainable agriculture**
Ze-Chun Yuan, Agriculture and Agri-Food Canada, Canada

12:00-12:20 **Title: Quick detection method for foodborne bacterial pathogens**
Guodong Zhang, Food and Drug Administration, USA

12:20-12:40 **Title: Scaling up the biotechnological process of the recombinant rabies virus glycoprotein, by S2 cells**
Monize Caiado Decarli, State University of Campinas, Brazil

12:40-13:00 **Title: The past, present and future potential applications in natural product genomics and bioengineering of the medicinal desert shrub *rhazya stricta***
Mohammed Nabih Baeshen, University of Jeddah, Saudi Arabia

Panel Discussion

Lunch Break 13:00-14:00 @ Foyer

14:00-14:20 **Title: Biotechnologies: which one(s) and what trends & future for mid-size pharma companies**
Jean A. Boutin, Institut de Recherches Internationales SERVIER, France

14:20-14:40 **Title: Photo-curable natural polymer derivatives for bio-medical application**
Tae-il Son, Chung-Ang University, Republic of Korea

14:40-15:00 **Title: Improving the nutritional quality of cherry tomato fruits by LED lighting**
Simon Miranda, Universidad de Chile, Chile

15:00-15:20 **Title: Bioinspired solvent-resistant nanofiltration membranes**
Liliana Perez Manriquez, King Abdullah University of Science and Technology, Saudi Arabia

15:20-15:40 **Title: Estimate infectivity of human norovirus in environmental water samples by in situ capture RT-qPCR method**
Peng Tian, United States Department of Agriculture, USA

Panel Discussion

Networking & Refreshment Break 15:40-16:00 @ Foyer

16:00-16:20 **Title: RNA-Seq analysis of aluminum stress response in sugarcane roots**
Kameswara Rao Kottapalli, Texas Tech University, USA

16:20-16:40 **Title: Impact of biotechnology in brazilian agriculture sector**
Adriana Brondani, Council for Information on Biotechnology, Brazil

16:40-17:00 **Title: The probable effect of MT1A (A>G) and MT1A (C>G) SNPs of metallothionein gene on whole blood mercury levels in iranian populations**
Javad Babaei, Valiasr Hospital Research Center, Iran

17:00-17:20 **Title: Bacterial cellulose as matrix to functionalize macromolecules**
Cesar Tischer, State University of Londrina, Brazil

17:20-17:40 **Title: BioCAE: A multiscale framework for complex biological systems and biofabrication of tissues and organs**
Janaina Dernowsek, Center for Information Technology Renato Archer, Brazil

Panel Discussion

Day 2 December 05, 2017

Conference Hall: Barbo Gato

Keynote Forum

09:00-09:30 **Title: The forefront of scientific progresses in plant science: next generation crop breeding**
Huang Yinghua, United States Department of Agriculture, USA

09:30-10:00 **Title: Recombinant proteins from bench to clinics**
Fuad Fares, University of Haifa, Israel

10:00-10:30 **Title: Micro knitting yarn biocomposites (Metallic Fibers, Organic Fibers and Biodegradable Resin) for the smart textile market**
Liliana Rubio, PMO Polymer Business Intelligence Brazil

Panel Discussion

Networking & Refreshment Break 10:30-10:50

Sessions:
Animal Biotechnology | Genetics and Tissue Science & Engineering | Medical Biotechnology | Microbial Biotechnology | Molecular Biology

Session Chair: Fuad Fares, University of Haifa, Israel
Session Co-chair: Huang Yinghua, USDA-ARS Plant Science Research Laboratory, USA

Session Introduction

10:50-11:10 **Title: iPS-derived cardiomyocytes and keratinocytes for drug screening and cytotoxicity assays**
Estela Mitie Cruvinel, Pluricell Biotech, Brazil

11:10-11:30 **Title: Properties of hydrochloric chitosan multifilament fibers modified with nano-calcium phosphate complex**
Luciano Pignehelli, Lutheran University of Brazil, Brazil

11:30-11:50 **Title: Genotoxicity of gemcitabine low dose in white rat bone marrow cells**
Abdul Rahman, Shaqra University, Saudi Arabia

11:50-12:10 **Title: Modeling of fermentation process of *Bacillus Thuringiensis* as a sporulating bacterium**
Navid Mostoufi, University of Tehran, Iran

12:10-12:30 **Title: The future of pharmaceutical biotechnology with the industry 4.0 – managing new technologies, teams and reaching customers from baby boomers to the iGeneration**
Wilker Ribeiro Filho, Instituto Reger, Brazil

12:30-12:50 **Title: Anti-cancer drug discovery: Rational strategy to acquire anti-cancer candidate compounds**
Rosy Iara M A Ribeiro, Federal University of Sao Joao del Rei, Brazil

Panel Discussions	
Lunch Break 12:50-13:50 @ Foyer	
13:50-14:10	**Title: Comparative analysis of two inducible promoters for controlled nuclear transgene expression in *Chlamydomonas reinhardtii*** **Paula Barjona do Nascimento Coutinho,** University of Nurnberg, Germany
Young Researchers Forum	
14:10-14:25	**Title: Bauhinia stem extracts as a possible new treatment for breast cancer and metastasis: Inhibition of migration, invasion and of the activity of matrix metalloproteinases** **Kamilla Santos,** Federal University of Sao Joao del Rei, Brazil
14:25-14:40	**Title: Activity of derived extracts from *Annona coriacea mart* on head and neck tumor lines** **Aline Thaynara de Moura Coelho,** Federal University of Sao Joao del Rei, Brazil
14:40-14:55	**Title: Evaluation of activities of *Miconia cuspidata* extracts on gelatinases and hela cell lines** **Lucas Santos Azevedo,** Federal University of Sao Joao del Rei, Brazil
14:55-15:10	**Title: Evaluation of the antineoplastic potential of new natural compounds in glioblastoma lines** **Lorena Raspante de Sousa,** Federal University of Sao Joao del Rei, Brazil
15:10-15:25	**Title: Antitumor activity of *Miconia chamissois* naudin fractions in human glioma lines: *In vitro* and *In vivo*** **Ana Gabriela Silva,** Federal University of Sao Joao del Rei, Brazil
Panel Discussions	
Networking & Refreshment Break 15:25-15:45 @ Foyer	
15:45-16:00	**Title: Break of dormancy and evaluation of the germination rate of the cerrado medicinal species: *Eriosema pycnanthum*** **Jose Antonio Ribeiro Neto,** Federal University of Sao Joao del Rei, Brazil
16:00-16:15	**Title: Screening of extracts of the cerrado in human glioblastoma tumoral cell line** **Patrik da Silva Vital,** Federal University of Sao Joao del Rei, Brazil
16:15-16:30	**Title: Xylopia aromatic hexane extract promotes antitumor effects in ehrlich tumor carcinoma** **Maria Juliana Ferreira Passos,** Federal University of Sao Joao del Rei, Brazil
Poster Presentations 16:30-17:00	
WBC P1	**Title: ROM-AGROBIOFERTIL NP- Biological fertilizer for a sustainable agriculture** **Nicolae Levandovschi,** ROMVAC, Romania
WBC P2	**Title: Cellulase and Xylanase activities of xanthomonas axonopodis pv. Manihotis (xam) strains collected from different regions of colombia** **Leidy Yanira Rache,** Universidad de los Andes, Colombia
WBC P3	**Title: Cytotype and Molecular variability of *Myriophyllum l*** **Tereza Kavova,** University of South Bohemia, Czech Republic
WBC P4	**Title: Design and Testing of duplex-PCR primers for detection of bacterial spot of tomato** **Dagmar Stehlíkova,** University of South Bohemia, Czech Republic
WBC P5	**Title: Production of extra jam from indigenous grape varieties** **Vlasta Pilizota,** University of J.J. Strossmayer, Croatia
Video Presentations 17:00-18:00	
WBC-V 01	**Title: Pore shape affected by gravity** **Wei Peng Sheng,** National Sun Yat-sen University, Taiwan
WBC-V 02	**Title: Evaluation of flavonoid catechin from an endophytic *Fungus curvularia australiensis* FC2AP for treating cervical cancer in female sprague dawley rats** **Manon Mani,** Hindusthan College of Arts and Science, India
WBC-V 03	**Title: Chemical characterization and optimization of 4mha pentapetide lactone from streptomyces parvulus C5-5Y** **Parimala Gnana Soundari,** Hindusthan College of Arts and Science,India
WBC-V 04	**Title: Un-regulatory actions of ecdb transcription factor present in echinocandin b biosynthetic gene cluster** **Arvind Kumar,** Central University of South Bihar, India
Panel Discussion	
Closing Ceremony	

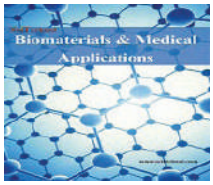
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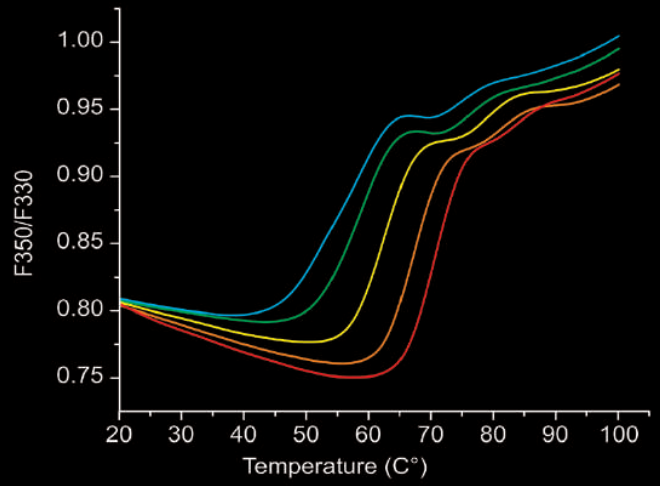
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Biomedical Engineering & Medical Devices	-
Biomedical Sciences	2254-609X
Bioterrorism & Biodefense	2157-2526
Blood	-
Blood & Lymph	2165-7831
Blood Disorders & Transfusion	2155-9864
Blood Pressure: Open Access	-
Bone Marrow Research	2329-8820
Bone Reports & Recommendations	-
Brain Tumors	-
Breast Cancer: Current Research	-
Cancer Biomarkers	-
Cancer Clinical Trials	-
Cancer Diagnosis	-
Cancer Medicine & Anticancer Drugs	-
Cancer Science & Therapy	1948-5956
Cancer Surgery	-
Carcinogenesis & Mutagenesis	2157-2518
Cardiovascular Diseases & Diagnosis	2329-9517
Cardiovascular Pathology: Open Access	-
Celiac Disease: Open Access	-
Cervical Cancer: Open Access	-
Chemotherapy	2167-7700
Chest Diseases	-
Childhood & Developmental Disorders	-
Childhood Obesity	-
Chronic Obstructive Pulmonary Disease: Open Access	-
Colorectal Cancer: Open Access	-
Communication Disorders, Deaf Studies & Hearing Aids	2375-4427
Community Medicine & Health Education	2161-0711
Complex Diseases and Treatment	-
Contraceptive Studies	-
Critical Care Obstetrics & Gynecology	-
Current Trends in Gynecologic Oncology	-
Dental Health: Current Research	-
Dental Implants and Dentures: Open Access	-
Dentistry	2161-1122
Depression and Anxiety	2167-1044
Dermatology Case Reports	-
Diabetes & Metabolism	2155-6156
Diabetes Medication and Care	-
Diabetic Complications and Medicine	-
Drug Abuse	-
Emergency Medicine	2165-7548
Endocrinology & Diabetes Research	-
Endocrinology & Metabolic Syndrome	2161-1017
Epidemiology: Open Access	2161-1165
Evidence based Medicine and Practice	-
Family Medicine & Medical Science Research	2327-4972
Forensic Biomechanics	2090-2697
Forensic Medicine	-

Forensic Nursing: Open Access	-
Forensic Odontology	-
Forensic Psychology	-
Forensic Research	2157-7145
Gastrointestinal & Digestive System	2161-069x
Gastrointestinal Cancer and Stromal Tumors	-
General Medicine	2327-5146
General Practice	2329-9126
Genetic Disorders & Genetic Reports	2327-5790
Genital System & Disorders	2325-9728
Geriatric Psychiatry	-
Gerontology & Geriatric Research	2167-7182
Gynecology & Obstetrics	2161-0932
Gynecology & Obstetrics- Case Report	-
Haematology & Thromboembolic Diseases	2329-8790
Hair: Therapy & Transplantation	2167-0951
Head and Neck Cancer Research	-
Health & Medical Economics	-
Health Care Communications	-
Health Economics & Outcome Research: Open Access	-
Health Education Research & Development (Biosafety & Health Education: Open Access-2332-0893)	-
Health Systems and Policy Research	2254-9137
Heart Transplant and Surgery	-
Heavy Metal & Chelation Therapy	-
Hepatology and Gastrointestinal Disorders	-
Hospital & Medical Management	-
Hypertension- Open Access	2167-1095
Hypo & Hyperglycemia	2327-4700
Imaging and Interventional Radiology	-
Medical Implants & Surgery	-
Informatics and Data Mining	-
Insights in Biomedicine	-
Insights in Medical Physics	-
Integrative Oncology	2329-6771
Internal Medicine	2165-8048
International Journal of Clinical & Medical Imaging	2376-0249
International Journal of Collaborative Research on Internal Medicine & Public Health	-
International Journal of Emergency Mental Health and Human Resilience	1522-4821
International Journal of Mental Health & Psychiatry	2327-4654
International Journal of Pediatric Neurosciences	-
International Journal of Physical Medicine & Rehabilitation	2329-9096
International Journal of Public Health and Safety	-
International Journal of School and Cognitive Psychology	-
Interventional Pediatrics	-
Invasive Cardiology Future Medicine	-
JBR Journal of Interdisciplinary Medicine and Dental Sciences	2376-032X
Kidney	-
Kidney Transplant	-
La Prensa Medica	0032-745X
Laser Surgery and Therapy	-
Leukemia	2329-6917
Liposuction	-
Liver	2167-0889
Liver: Disease & Transplantation	2325-9612
Lung Cancer Diagnosis & Treatment	-
Lung Diseases & Treatment	-
Malaria Control & Elimination	2090-2778
Maternal and Pediatric Nutrition	-
Medical & Surgical Pathology	-
Medical & Surgical Urology	2168-9857
Medical and Clinical Reviews	-
Medical Case Reports	-
Medical Diagnostic Methods	2168-9784
Medical Toxicology and Clinical Forensic Medicine	-
Melanoma and Skin Diseases	-
Mental Health in Family Medicine	2327-4972
Mental Illness and Treatment	-
Metabolic Syndrome	2167-0943
Molecular & Medical Histology	-
Molecular Medicine & Therapeutics	2324-8769
Neonatal Biology	2167-0897
Neonatal Studies	-
Neonatal Medicine	-
Neoplasm	-
Nephrology & Therapeutics	2161-0959
Neurobiotechnology	-
Neuroinfectious Diseases	2314-7326
Neurooncology: Open Access	-
Neurosurgery & Cardiac Surgery	-
Novel Physiotherapies	2165-7025
Nuclear Medicine & Radiation Therapy	2155-9619
Nutritional Disorders & Therapy	2161-0509
Obesity & Eating Disorders	-
Obesity & Weight Loss Therapy	2165-7904
Occupational Medicine Health Affairs	2329-6879
Omics Journal of Radiology	2167-7964
Oncology & Cancer Case Reports	-
Oncology Translational Research	-
Oral Health and Dental Management	2247-2452
Oral Health Case Reports	-
Oral Hygiene & Health	2332-0702
Orthodontics & Endodontics	-
Orthopedic & Muscular System: Current Research	2161-0533
Orthopedic Oncology	-
Osteoporosis & Physical Activity	2329-9509
Otolaryngology:Open Access	2161-119X
Otology & Rhinology	2324-8785
Pain & Relief	2167-0846
Pain Management & Medicine	-
Palliative Care & Medicine	2165-7386
Pancreatic Disorders & Therapy	2165-7092
Pediatric Care	-
Pediatric Dental Care	-
Pediatric Emergency Care and Medicine- Open Access	-
Pediatric Nephrology Practice	-
Pediatric Neurology and Medicine	-
Pediatric Nursing: Open Access	-
Pediatric Oncology: Open Access	-
Pediatric Physiotherapy	-
Pediatric Psychology and Psychiatry	-
Pediatrics & Therapeutics	2161-0665
Periodontics and Prosthodontics: Open Access	-
Pigmentary Disorders	2376-0427
Prevention Infection Control: Open Access	-
Preventive Medicine	-
Primary & Acquired Immunodeficiency Research	2324-853X
Prostate Cancer	-
Psoriasis & Rosacea Open Access	-
Psychiatry	2378-5756
Psychological Abnormalities in Children	2329-9525
Psychology & Psychotherapy	2161-0487
Pulmonary & Respiratory Medicine	2161-105x
Rare Disorders & Diseases	-
Regenerative Medicine	2325-9620
Reproductive Endocrinology & Infertility	-
Reproductive System & Sexual Disorders	2161-038x
Research & Reviews: Journal of Dental Sciences	2320-7949
Research & Reviews: Journal of Medical and Health Sciences	2319-9865
Research Journal of Biology	2322-0066
Sleep Disorders & Therapy	2167-0277
Sleep Disorders : Treatment & Care	2325-9639
Spine	2165-7939
Spine & Neurosurgery	2325-9701
Spine Research	-
Sports Medicine & Doping Studies	2161-0673
Sports Nutrition and Therapy	-
Steroids & Hormonal Science	2157-7536
Stroke Research & Therapy	-
Journal of Surgery [Jurnalul de Chirurgie]	1584-9341
Surgery: Current Research	2161-1076
The Headache Journal	-
The International Journal of Apitherapy	-
The Pancreas	1590-8577
Therapeutic Care and Physical Rehabilitation	-

Thrombosis and Circulation	-
Thyroid Disorders & Therapy	2167-7948
Translational Medicine	2161-1025
Transplant Reports : Open Access	-
Transplantation Technologies & Research	2161-0991
Trauma & Acute Care	-
Trauma & Treatment	2167-1222
Traumatic Stress Disorders & Treatment	2324-8947
Tropical Medicine & Surgery	2329-9088
Tumor Diagnostics and Reports	-
Universal Surgery	2254-6758
Vascular Medicine & Surgery	2329-6925
Vitiligo & Dermatomyositis	-
Voice Medicine & Surgery	-
Women's Health Care	2167-0420
Wound Medicine and Tissue Repair	-
Yoga & Physical Therapy	2157-7595

Microbiology

Advances in Influenza Research	-
Antimicrobial Agents	-
Antivirals & Antiretrovirals	1948-5964
Applied Microbiology: Open Access	-
Archives of Clinical Microbiology	1989-8436
Bacteriology and Parasitology	2155-9597
Clinical Infectious Diseases & Practice	-
Clinical Microbiology: Open Access	2327-5073
Colitis & Diverticulitis	-
Emerging Infectious Diseases	-
Fermentation Technology	2167-7972
Fibromyalgia: Open Access	-
Forensic Pathology	-
Hepatitis	-
Human Papillomavirus	-
Infectious Diseases and Diagnosis	-
Infectious Diseases and Therapy	2332-0877
Medical Microbiology & Diagnosis	2161-0703
Medical Mycology: Open Access	-
Meningitis	-
Mycobacterial Diseases	2161-1068
Pediatric Infectious Diseases: Open Access	-
Research & Reviews: Journal of Microbiology and Biotechnology	2320-3528
Research & Reviews: Journal of Inflammation	-
Research & Reviews: Journal of Pathology & Epidemiology	-
Virology & Mycology	2161-0517

Neuroscience

Addiction Research & Therapy	2155-6105
Alzheimers Disease & Parkinsonism	2161-0460
Autism-Open Access	2165-7890
Brain Disorders & Therapy	2168-975X
Child & Adolescent Behavior	2375-4494
Clinical & Experimental Neuroimmunology	-
Dementia & Mental Health	-
Epilepsy Journal	-
Insights in Clinical Neurology	-
International Journal of Neurorehabilitation	2376-0281
Multiple Sclerosis	2376-0389
Neurological Disorders	2329-6895
Neurology & Neurophysiology	2155-9562
Neurology and Neuroscience	2171-6625
Neuropsychiatry	-
Neuroscience & Clinical Research	-
Schizophrenia Journal	-

Health Care & Nursing

Advanced Practices in Nursing	-
Community & Public Health Nursing	-
Nursing & Care	2167-1168
Nursing & Clinical Research	-
Patient Care	-
Perioperative & Critical Intensive Care Nursing	-
Research & Reviews: Journal of Nursing and Health Sciences	-

Pharmaceutical Sciences

Advances in Pharmacoepidemiology & Drug Safety	2167-1052
Alcoholism & Drug Dependence	2329-6488
Bioanalysis & Biomedicine	1948-593X
Biochemistry & Pharmacology: Open Access Journal	2167-0501
Bioequivalence & Bioavailability	0975-0851
Biomarkers in Drug Development	2327-4441
Biomarkers Journal	-
Biomolecular Research & Therapeutics	2167-7956
Cardiovascular Pharmacology: Open Access	2329-6607
Clinical & Experimental Pharmacology	2161-1459
Clinical Pharmacology and Biopharmaceutics	2167-065X
Current Trends in Nutraceuticals	-
Developing Drugs	2329-6631
Diagnostic Techniques & Biomedical Analysis	-
Drug Designing: Open Access	2169-0138
Drug Metabolism & Toxicology	2157-7609
in Silico & in Vitro Pharmacology	-
Molecular Enzymology and Drug Targets	-
Molecular Pharmaceutics & Organic Process Research	2329-9053
Pharmaceutica Analytica Acta	2153-2435
Pharmaceutical Care & Health Systems	2376-0419
Pharmaceutical Microbiology	-
Pharmaceutical Regulatory Affairs: Open Access	2167-7689
Pharmaceutical Sciences & Emerging Drugs	-
Pharmaceutics & Drug Delivery Research	2325-9604
Pharmacoeconomics: Open Access	-
Pharmacogenomics and Pharmacoproteomics	2153-0645
Pharmacognosy & Natural Products	-
Pharmacokinetics & Experimental Therapeutics	-
Pharmacological Reports	-
Pharmacovigilance	2329-6887
Research & Reviews: Journal of Hospital and Clinical Pharmacy	-
Research & Reviews: Journal of Pharmaceutical Analysis	2320-0812
Research & Reviews: Journal of Pharmaceutical Quality Assurance	-
Research & Reviews: Journal of Pharmaceutics and Nanotechnology	2347-7857
Research & Reviews: Journal of Pharmacognosy and Phytochemistry	2321-6182
Research & Reviews: Journal of Pharmacy and Pharmaceutical Sciences	2320-1215
Virology & Antiviral Research	2324-8955

Physics

Astrophysics & Aerospace Technology	2329-6542
Research & Reviews: Journal of Pure and Applied Physics	2320-2459
Vortex Science and Technology	2090-8369

Social & Political Sciences

Anthropology	2332-0915
Arts and Social Sciences Journal	2151-6200
Civil & Legal Sciences	2169-0170
Forensic Anthropology	-
Global Media Journal	1550-7521
Intellectual Property Rights: Open Access	2375-4516
Mass Communication & Journalism	2165-7912
Political Science & Public Affairs	2332-0761
Research & Reviews: Journal of Educational Studies	-
Research & Reviews: Journal of Social Sciences	-
Socialomics	2167-0358
Sociology & Criminology	2375-4435

Veterinary Sciences

Animal Nutrition	-
Primatology	2167-6801
Research & Reviews: Journal of Veterinary Sciences	-
Research & Reviews: Journal of Zoological Sciences	2321-6190
Veterinary Science & Medical Diagnosis	2325-9590
Veterinary Science & Technology	2157-7579

Impact Factors* (IF)

Journal Name	Pubmed Short Name	Impact Factor
Biological Systems: Open Access	Biol Syst Open Access	0.76
Journal of Biotechnology & Biomaterials	J Biotechnol Biomater	1.94
Journal of Psychology & Psychotherapy	J Psychol Psychother	1.3
Advanced Techniques in Biology & Medicine	Adv Tech Biol Med	1.08
AIDS & Clinical Research	J AIDS Clin Res	2.7
Autism Open Access	Autism Open Access	3.52
Biochemistry & Physiology: Open Access	Biochem Physiol	1.03
Diversity Equality in Health & Care	Divers Equal Health Care	2.49
Drug Designing: Open Access	Drug Des	6
Fungal Genomics & Biology	Fungal Genom Biol	1.15
International Journal of Genomic Medicine	Int J Genomic Med	0.67
Journal of Addiction Research & Therapy	J Addict Res Ther	2.86
Journal of Alzheimers Disease & Parkinsonism	J Alzheimers Dis Parkinsonism	1.18
Journal of Fertilization: In Vitro	JFIV Reprod Med Genet	1
Journal of Genetic Syndromes & Gene therapy	J Genet Syndr Gene Ther	2.34
Journal of Microbial & Biochemical Technology	J Microb Biochem Technol	2.5
Journal of Nursing & Care	J Nurs Care	1.6
Journal of Osteoporosis and Physical Activity	J Osteopor Phys Act	0.66
Journal of Yoga & Physical Therapy	J Yoga Phys Ther	1.17
Molecular Biology	Mol Biol	1.85
Neurology & Neurophysiology	J Neurol Neurophysiol	0.77
Primary health care	Prim Health Care	1
Quality in Primary Care	Qual Prim Care	3.88
Tissue Science & Engineering	J Tissue Sci Eng	2.72
Biochemistry & Analytical Biochemistry	Biochem Anal Biochem	2.6
Molecular and Genetic Medicine	J Mol Genet Med	2.89
Advancements in Genetic Engineering	Adv Genet Eng	1
Enzyme Engineering	Enz Eng	2.3
Depression and Anxiety	J Depress Anxiety	1
Human Genetics & Embryology	Human Genet Embryol	1.2
Current Synthetic and Systems Biology	Curr Synthetic Sys Biol	0.8
Hereditary Genetics: Current Research	Hereditary Genet	1.2
International Journal of Emergency Mental Health and Human Resilience	Int J Emerg Ment Health	6.5
Spine	J Spine	1.9
Cloning & Transgenesis	Clon Transgen	1.5
Journal of Medical Microbiology & Diagnosis	J Med Microb Diagn	1.9
Biosensors Journal	Biosens J	0.33
Defense Management	J Def Manag	0.5
Review of Public Administration and Management	Review Pub Administration Manag	0.2
Single cell biology	Single Cell Biol	1
Gerontology & Geriatric Research	J Gerontol Geriatr Res	1
Neuroinfectious Diseases	J Neuroinfect Dis	2.4
Cell Science & Therapy	J Cell Sci Ther	1.37
Molecular Biomarkers & Diagnosis	J Mol Biomark Diagn	2.1
Brain Disorders & Therapy	Brain Disord Ther	1.6
Clinical Case Reports	J Clin Case Rep	1.2
Gene Technology	Gene Technol	0.83
Socialomics	J Socialomics	2.3
Journal of Trauma and Treatment	J Trauma Treat	0.6
Translational Biomedicine	Transl Biomed	1.06
Journal of Neurology and Neuroscience	J Neurol Neurosci	0.88
Research & Reviews: Journal of Botanical Sciences	J Bot Sci	0.33
Journal of Psychiatry	J Psychiatry	2.32
Anaplastology	Anaplastology	0.73
Tropical Medicine & Surgery	Trop Med Surg	0.4
Orthopedic & Muscular System: Current Research	Orthop Muscular Syst	0.32
Pediatrics & Therapeutics	Pediat Therapeut	1.32
Sports Medicine & Doping Studies	J Sports Med Doping Stud	1.45
Journal of Oral Hygiene & Health	J Oral Hyg Health	0.52
Emergency Medicine	Emerg Med (Los Angel)	0.875
Journal of Transplantation Technologies & Research	J Transplant Technol Res	1.39
Journal of Hypertension: Open Access	J Hypertens (Los Angel)	0.92
International Journal of Waste Resources	Int J Waste Resour	1.95
Surgery: Current research	Surgery Curr Re	0.587
Oral Health and Dental Management	Oral Health Dent Manag	1.23
International Journal of Advancement technology	Int J Adv Tech	5.08
Translational Medicine	Transl Med (Sunnyvale)	1.312
Air and Water Borne Diseases	Air Water Borne Diseases	0.6
Journal of Coastal Zone Management	J Coast Zone Manag	0.54
Biology and Medicine	Biol Med (Aligarh)	3.07
Journal of Bioterrorism and Biodefense	J Bioterror Biodef	0.38
Journal of Tropical Diseases & Public Health	J Trop Dis	0.83
Journal of Surgery	Journal of Surgery [Jurnalul de chirurgie]	0.08
Nephrology & Therapeutics	J Nephrol Ther	0.318
Journal of Fundamentals of Renewable Energy and Applications	J Fundam Renewable Energy Appl	1.41
Advances in Pharmacoepidemiology & Drug Safety	Adv Pharmacoepidemiol Drug Saf	1.37
Bioanalysis & Biomedicine	J Bioanal Biomed	1.67
Biochemistry & Pharmacology: Open Access	Biochem Pharmacol (Los Angel)	2.09
Bioequivalence & Bioavailability	J Bioequiv Availab	1.88
Biomolecular Research & Therapeutics	J Biomol Res Ther	1.67
Cardiovascular Pharmacology: Open Access	Cardiol Pharmacol	1.77
Clinical & Experimental Pharmacology	Clin Exp Pharmacol	1.83
Clinical Pharmacology & Biopharmaceutics	Clin Pharmacol Biopharm	1.69
Data Mining in Genomics & Proteomics	J Data Mining Genomics Proteomics	2
Drug Metabolism & Toxicology	J Drug Metab Toxicol	1.37
Ergonomics	J Ergonomics	1.38
Glycomics & Lipidomics	J Glycomics Lipidomics	1.82
Health & Medical Informatics	J Health Med Inform	1.98
Metabolomics: Open Access	Metabolomics (Los Angel)	3.03
Nanomedicine & Biotherapeutic Discovery	J Nanomedine Biotherapeutic Discov	2.69
OMICS Journal of Radiology	OMICS J Radiol	0.54
Pharmaceutica Analytica Acta	Pharm Anal Acta	1.83
Pharmaceutical Regulatory Affairs: Open Access	Pharm Regul Aff	1.88
Pharmacogenomics & Pharmacoproteomics	J Pharmacogenomics Pharmacoproteomics	1.69
Pharmacovigilance	J Pharmacovigil	2.65
Phylogenetics & Evolutionary Biology	J Phylogenetics Evol Biol	2.76
Proteomics & Bioinformatics	J Proteomics Bioinform	2.55
Advances in Automobile Engineering	Adv Automob Eng	1.750
Advances in Robotics & Automation	Adv Robot Autom	0.813
Arts and Social Sciences Journal	Arts Social Sci J	1.231
Bioceramics Developments and Applications	Bioceram Dev Appl	0.958
Business & Financial Affairs	J Bus & Fin Aff	2.000
Generalized Lie Theory and Applications	J Generalized Lie Theory Appl	1.750
Irrigation & Drainage Systems Engineering	Irrigat Drainage Sys Eng	4.286
Industrial Engineering & Management	Ind Eng Manage	0.474
Aeronautics & Aerospace Engineering	J Aeronaut Aerospace Eng	1.407
Applied & Computational Mathematics	J Appl Computat Math	0.581
Architectural Engineering Technology	J Archit Eng Tech	1.071
Accounting & Marketing	J Account Mark	0.500
Aquaculture Research & Development	J Aquac Res Development	1.272
Bioengineering & Biomedical Science	J Bioeng Biomed Sci	1.235
Biometrics & Biostatistics	J Biomet Biostat	1.272
Biosensors & Bioelectronics	J Biosens Bioelectron	2.137
Civil & Environmental Engineering	J Civil Environ Eng	1.294
Cytology & Histology	J Cytol Histol	0.569
Civil & Legal Sciences	J Civil Legal Sci	0.286
Ecosystem & Ecography	J Ecosyst Ecogr	1.806
Electrical & Electronic Systems	J Elec Electron Syst	0.533
Earth Science & Climatic Change	J Earth Sci Clim Change	2.082
Geography & Natural Disasters	J Geogr Nat Disast	0.800
Hotel & Business Management	J Hotel Bus Manage	1.600
Information Technology & Software Engineering	J Inform Tech Soft Engg	2.789
Molecular Imaging & Dynamics	J Mol Imaging Dynam	2.091

Earth Science & Climatic Change	J Earth Sci Clim Change	2.082
Geography & Natural Disasters	J Geogr Nat Disast	0.800
Hotel & Business Management	J Hotel Bus Manage	1.600
Information Technology & Software Engineering	J Inform Tech Soft Engg	2.789
Molecular Imaging & Dynamics	J Mol Imaging Dynam	2.091
Petroleum & Environmental Engineering	J Pet Environ Biotechnol	2.839
Stock & Forex Trading	J Stock Forex Trad	0.300
Textile Science & Engineering	J Textile Sci Eng	0.667
Tourism & Hospitality	J Tourism Hospit	1.190
Telecommunications System & Management	J Telecommun Syst Manage	0.800
Physical Mathematics	J Phys Math	4.500
Nanomedicine & Nanotechnology	J Nanomed Nanotechnol	4.68
Arabian Journal of Business and Management Review	Arab J Bus Manage Rev	1.42
Research and Reviews: Journal of Engineering and Technology	Engineering and Technology	0.14
Journal of Material Sciences & Engineering	J Material Sci Eng	1.31
Journal of Mass Communication & Journalism	J Mass Communicat Journalism	0.62
Journal of Powder Metallurgy & Mining	J Powder Metall Min	0.71
Journal of Applied Mechanical Engineering	J Appl Mech Eng	1.65
Archives of Clinical Microbiology		0.35
Dentistry	Dentistry	1.22
Journal of Diabetes & Metabolism	J Diabetes Metab	1.77
Otolaryngology: Current Research	Otolaryngol (Sunnyvale)	0.22
Journal of Metabolic Syndrome	J Metabolic Synd	1.27
Journal of Primatology	J Primatol	0.53
Journal of Thyroid Disorders & Therapy	Thyroid Disorders Ther	0.43
Jounal of Novel Physiotherapies	J Nov Physiother	1.24
Journal of Stem Cell Research & Therapy	J Stem Cell Res Ther	2.78
Anatomy & Physiology: Current Research	Anat Physiol	1
Pancreatic Disorders & Therapy	Pancreat Disord Ther	0.54
Journal of Cancer Science & Therapy	J Cancer Sci Ther	4.203
Journal of Biomedical Sciences		0.2
Journal of Nutritional Disorders & Therapy	J Nutr Disord Ther	1.46
Medical & Surgical Urology	Med Surg Urol	0.3
Journal of Biochips & Tissue Chips	J Biochip Tissue Chip	1.7
Journal of Liver	J Liver	0.08
Journal of Family Medicine and Medical Research	Fam Med Med Sci Res	0.78
Gynecology & Obstetrics	Gynecol Obstet (Sunnyvale)	0.52
Journal of Integrative Oncology	J Integr Oncol	1.67
Journal of Neonatal Biology	J Neonatal Biol	0.55
Journal of Glycobiology	J Glycobiology	0.8
Journal of Blood & Lymph	J Blood Lymph	0.12
Journal of Arthritis	J Arthritis	1.87
Journal of Membrane Science & Technology	J Membra Sci Technol	1.18
Medicinal Chemistry	Med Chem (Los Angeles)	2.64
Journal of Physical Chemistry & Biophysics	J Phys Chem Biophys	0.75
Organic Chemistry: Current Research	Organic Chem Curr Res	1.94
Journal of Bioprocessing & Biotechniques	J Bioprocess Biotech	1.74
Journal of Environmental & Analytical Toxicology	J Environ Anal Toxicol	2.58
Journal of Chemical Engineering & Process Technology	J Chem Eng Process Technol	1.21
Journal of Computer Science & Systems Biology	J Comput Sci Syst Biol	1.62
Journal of Analytical & Bioanalytical Techniques	J Anal Bioanal Tech	2.16
Journal of Plant Biochemistry & Physiology	J Plant Biochem Physiol	2.28
Journal of Chromatography & Separation Techniques	J Chromatogr Sep Tech	1.78
Journal of Thermodynamics & Catalysis		0.91
Community Medicine & Health Education	J Community Med Health Educ	1.27
Epidemiology: Open Access	Epidemiology (Sunnyvale)	1.35
Obesity & Weight Loss Therapy	J Obes Weight Loss Ther	0.94
Pain & Relief	J Pain Relief	1.14
Palliative Care & Medicine	J Palliat Care Med	0.88
Steroids & Hormonal Science	J Steroids Horm Sci	0.65
Gastrointestinal & Digestive System	J Gastrointest Dig Syst	0.43
Hair: Therapy & Transplantation		0.6
Andrology	Andrology (Los Angel)	1.16
Endocrinology & Metabolic Syndrome	Endocrinol Metab Syndr	1.12
Internal Medicine		2.48
Sleep Disorders & Therapy	J Sleep Disord Ther	0.5
Nuclear Medicine & Radiation Therapy	J Nucl Med Radiat Ther	0.88
Alternative & Integrative Medicine	Altern Integr Med	1.11
Pulmonary & Respiratory Medicine	J Pulm Respir Med	1.01
Occupational Medicine Health Affairs	Occup Med Health Aff	0.85
Reproductive System & Sexual Disorders	Reprod Syst Sex Disord	1.25
Medical Diagnostic Methods		0.29
Blood Disorders & Transfusion	J Blood Disord Transfus	0.5
General Medicine	Gen Med (Los Angel)	0.86
Bioenergetics: Open Access	Bioenergetics	3.1
Chemotherapy: Open Access	Chemotherapy (Los Angel)	1.8
Clinical & Experimental Pathology	J Clin Exp Pathol	1.54
Carcinogenesis & Mutagenesis	J Carcinog Mutagen	1.9
Clinical Research & Bioethics	J Clinic Res Bioeth	0.95
Vaccines & Vaccination	J Vaccines Vaccin	1.8
Immunome Research	Immunome Res	7.1
Clinical & Experimental Ophthalmology	J Clin Exp Ophthalmol	1.11
Clinical & Experimental Dermotology Research	J Clin Exp Dermatol Res	0.5
Clinical & Experimental Cardiology	J Clin Exp Cardiolog	1.33
Clinical Microbiology: Open Access	Clin Microbiol	0.7
Anesthesia & Clinical research	J Anesth Clin Res	0.7
Mycobacterial Diseases	Mycobact Dis	0.9
Clinical Toxicology	J Clin Toxicol	1.39
Clinical Trials & Research	J Clin Trials	1.33
Antivirals & Antiretrovirals	J Antivir Antiretrovir	1.27
Fermentation Technology	Ferment Technol	3.44
Clinical & Cellular immunology	J Clin Cell Immunol	2.019
Allergy & Therapy	J Allergy Ther	0.762
Bacteriology & Parasitology	J Bacteriol Parasitol	2.025
Rheumatology: Current Research	Rheumatology (Sunnyvale)	1.522
Virology & Mycology	Virol Mycol	0.69
Clinics in Mother and Child Health	Clinics Mother Child Health	0.432
Womens Health Care	J Womens Health Care	0.79
Marine Science: Research & Development	J Marine Sci Res Dev	0.45
Plant Pathology & Microbiology	J Plant Pathol Microbiol	1.75
Geology & Geophysics	J Geol Geophys	0.91
FisheriesSciences	J Fisheries Sci	0.51
Fisheries and Aquaculture Journal	Fish Aquac J	0.69
Bioremediation & Biodegradation	J Bioremediat Biodegrad	2.1
Advances in Crop Science and Technology	Adv Crop Sci Tech	0.39
Journal of Remote Sensing & GIS	J Geophys Remote Sens	0.77
Biofertilizers & Biopesticides	J Biofertil Biopestic.	1.19
Hydrology: Current Research	Hydrol Current Res	1.12
Probiotics & Health	J Prob Health	0.69
Veterinary Science & Technology	J Veterinar Sci Technolo	2.5
Medicinal & Aromatic Plants	Med Aromat Plants	2.02
Forest Research	Forest Res	1.69
International Journal of Sensor Networks and Data Communications	Sensor Netw Data Commun	1.66
Innovative Energy Policies	Innov Energ Policies	0.88
Biodiversity & Endangered Species	J Biodivers Endanger Species	0.25
Biosafety	Biosafety	0.49
Agrotechnology	Agrotechnol	0.69
Journal of Traditional Medicine and Clinical Naturopathy	J Tradition Med Clin Naturopth	0.49
Nutrition & Food Sciences	J Nutr Food Sci	1.14
Entomology, Ornithology & Herpetology	Entomol Ornithol Herpetol	1.26

Impact Factor Calculation:

Impact Factor was established by dividing the number of articles published in 2012 and 2013 with the number of times they are cited in 2014 based on Google search and the Scholar Citation Index database. If 'X' is the total number of articles published in 2012 and 2013, and 'Y' is the number of times these articles were cited in indexed journals during 2014 than, impact factor = Y/X

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Supporting Journals

Supporting Journals

Journal of Biotechnology & Biomaterials
Journal of Bioremediation & Biodegradation
Journal of Bioprocessing & Biotechniques



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Upcoming Conferences

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Keynote Forum

Day 1

Meghana Joshi, J Biotechnol Biomater 2017, 7:6 (Suppl)
DOI: 10.4172/2155-952X-C1-084

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Meghana Joshi

Keck Graduate Institute, USA

A novel education model to fit the future of biotechnology

The pharmaceutical and biotechnology industry continues to experience an exciting growth with the advancement of novel technologies and drug products for safe and effective therapies of different diseases. As the industry takes on interesting endeavors in drugs and biologics, digital health and analytics, there is an utmost need for trained personnel to take translational research from bench to bedside and to pave the way in treating patients using personalized, preventive and precision medicine. According to the US Department of Labor, the life sciences occupation is projected to grow up to 8 percent by 2024. Over the last decades, the existence of a strong cultural gap between academia and industry as a barrier for collaboration has been discussed across the globe. It has significantly delayed the translation of academic research into novel therapies for patients. The graduate students in academia are mainly focused on basic science concepts and research with very little training in applying those concepts towards solving real-world problems. To bridge that gap between academia and industry, it is important to understand how the pharmaceutical industry works and the different aspects involved in taking a drug from discovery to market. Understanding the challenges that the industry faces will help students become effective managers and leaders in different functions such as R&D, Regulatory, Marketing and others within the industry. There are currently many such models in place to help bridge this gap between academia and industry. Keck Graduate Institute has trained students using one such model for the last 20 years. I have designed and implemented a few programs in collaboration with a global biopharmaceutical company, Biocon. With the success of these kind of novel programs, industry and academia can come together and adopt some elements of the Biocon-KGI program to train future leaders of the biopharmaceutical industry.

Biography

Meghana Joshi is the Program Director for Biocon-KGI certificate programs based at Keck Graduate Institute, California, USA. She has received her PhD in Biological Sciences from the University of Illinois at Chicago, followed by Post-doctoral experience at M D Anderson Cancer Center, Houston, Texas and Columbia University, New York. Thereafter, she has completed the KGI Postdoctoral Professional Master's degree, a program training PhD's to work in the Biotech industry. She teaches a course in Pharmaceutical Drug Development and works as a Consultant to Life Science companies to help them conduct market research and to help in licensing products and forming collaborations, particularly in the area of biosimilars.

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Notes:

Jean Pierre Leburton, J Biotechnol Biomater 2017, 7:6 (Suppl)
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Jean Pierre Leburton

University of Illinois, USA

Genomics and epigenetics with 2D material nano-electronics

In this talk, I will review some basic properties of cell biology, and present a scenario that integrates biology with MOS nano-electronics for genomics and bio-medical applications. This scenario involves probing the electrical activity of biomolecules passing through a nanopore, in a semiconductor membrane. Among solid-state porous membranes the use of the single-atom thickness of graphene or novel 2D materials like MoS2, are ideally suited for DNA, RNA or proteins sensing as they can scan molecules passing through a nanopore at high resolution. Additionally, unlike most biological membranes, these new materials are electrically active, which can be exploited to manipulate in addition to sense biomolecules. We will describe a membrane designed as a quantum point contact FET as a viable device for electronically and optically sensing bio-molecules for applications in genomics and cancer detection.

Biography

Jean Pierre Leburton has joined the University of Illinois in 1981 from Germany, where he has worked as a Research Scientist with the Siemens A G Research Laboratory in Munich. In 1992, he held the Hitachi LTD Chair on Quantum Materials at the University of Tokyo, and was a Visiting Professor in the Federal Polytechnic Institute in Lausanne, Switzerland in 2000. He is involved with research in nanostructures modeling and in quantum device simulation. His present research interest encompasses non-linear transport in quantum wires and carbon nanotubes, and molecular and bio-nanoelectronics. He is the author and co-author of more than 300 technical papers in international journals and books, and served in numerous conferences committees.

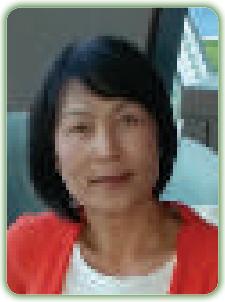
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Xiaohua He, J Biotechnol Biomater 2017, 7:6 (Suppl)
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Xiaohua He

USDA, WRC, ARS, USA

Exploring detection methods for foodborne pathogens: Shiga toxin-producing *E. coli* as an example

Foodborne pathogens are a growing concern for human health worldwide. The Center for Disease Control and Prevention estimated that there are approximately 48 million new cases of foodborne illness each year, resulting in 128,000 hospitalizations and 3,000 deaths in the United States alone. To ensure food safety, demands for methods that are rapid and reliable for detecting foodborne pathogens are increasing. As improvements in biotechnology, new molecular methods, such as DNA-based PCR and antibody-based immunoassays are being developed and improved continuously. These methods enable faster and more sensitive detection of foodborne pathogens. However, challenges in food matrix effect, sample preparation, detection and recovery of viable cells, and reducing test time still exist. This presentation reviews the evolution of detection methods for foodborne pathogens using Shiga toxin *E. coli* as an example, discusses the deficiencies of currently available methods in relation to the industry's needs.

Biography

Xiaohua He is a Research Molecular Biologist at USDA ARS, WRRC, Albany, California. She has received her PhD in Plant Pathology from University of California, Riverside, and had Postdoctoral experience at Purdue and Cornell Universities. Her research focuses on development of molecular tools and technologies for sensitive detection of zoonotic pathogens and toxins in food, environment and clinical samples; investigation of toxin synthesis and mechanisms of host cell injury by toxins. She has received the 2015 USDA Federal Laboratory Consortium, Far West Region, Outstanding Technology Development Award for her contribution to the development of novel monoclonal antibodies against a broad range of Shiga toxins. She has served as Academic Editor and Editorial Board Member of leading journals. Her work has involved significant international collaborations, with applications to food safety and defense. She is an author/inventor of over 80 publications and patents, with 14 technologies licensed to industry.

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Notes:

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Scientific Tracks & Abstracts

Day 1

Sessions

Agriclutural Biotechnology | Plant Biotechnology | Food processing and Safety Engineering | Pharmaceutical Biotechnology | Bioprocess & Industrial Biotechnology | Nano Biotechnology

Session Chair
Meghana Joshi
Biocon-KGI program, Keck Graduate Institute, USA

Session Co-chair
Xiaohua He
USDA, ARS, WRRC, USA

Session I

Title: **Reducing petroleum use by developing renewable resources that replace petrochemicals**
Thomas A. McKeon, International Society for Biocatalysis and Agricultural Biotechnology(ISBAB), USA

Title: **Developing Biopesticides, Biofertilizers and Bioproducts for Next Generation Green Revolution and Sustainable Agriculture**
Ze-Chun Yuan, Agriculture and Agri-Food Canada, Canada

Title: **Quick Detection Method for Foodborne Bacterial Pathogens**
Guodong Zhang, Food and Drug Administration, USA

Title: **Scaling up the biotechnological process of the recombinant rabies virus glycoprotein, by S2 cells**
Monize Caiado Decarli, State University of Campinas, Brazil

Title: **The Past, Present and Future Potential Applications in Natural Product Genomics and Bioengineering of the Medicinal Desert Shrub *Rhazya Stricta***
Mohammed Nabih Baeshen, University of Jeddah, Saudi Arabia

Title: **Biotechnologies: Which One(s) and What Trends & Future for Mid-size Pharma Companies**
Jean A. Boutin, Institut de Recherches Internationales SERVIER, France

Title: **Photo-Curable Natural Polymer Derivatives for Bio-Medical Application**
Tae-il Son, Chung-Ang University, Republic of Korea

Title: **Improving the Nutritional Quality of Cherry Tomato Fruits by LED Lighting**
Simon Miranda, Universidad de Chile, Chile

Title: **Bioinspired Solvent-Resistant Nanofiltration Membranes**
Liliana Perez Manriquez, King Abdullah University of Science and Technology, Saudi Arabia

Title: **Estimate Infectivity of Human Norovirus in Environmental Water Samples by In Situ Capture RT-qPCR Method**
Peng Tian, United States Department of Agriculture, USA

Title: **RNA-Seq Analysis of Aluminum Stress Response in Sugarcane Roots**
Kameswara Rao Kottapalli, Texas Tech University, USA

Title: **Impact of biotechnology in brazilian agriculture sector**
Adriana Brondani, Council for Information on Biotechnology, Brazil

Title: **The Probable Effect of MT1A (A>G) and MT1A (C>G) SNPs of Metallothionein Gene on Whole Blood Mercury Levels in Iranian Populations**
Javad Babaei, Valiasr hospital research center, Iran

Title: **Bacterial Cellulose as Matrix to Functionalize Macromolecules**
Cesar Tischer, State University of Londrina, Brazil

Title: **BioCAE: A Multiscale Framework for Complex Biological Systems and Biofabrication of Tissues and Organs**
Janaina Dernowsek, Center for Information Technology Renato Archer, Brazil

Thomas A McKeon, J Biotechnol Biomater 2017, 7:6 (Suppl)
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Reducing petroleum use by developing renewable resources that replace petrochemicals

Thomas A McKeon
International Society for Biocatalysis and Agricultural Biotechnology, USA

The bio-based economy of previous centuries was rapidly displaced with the widespread availability of petroleum and rapid progress in the development of petrochemistry. However, seed oils from some crops are able to provide chemical products that could readily supplant many petroleum-derived products. Biodiesel is an obvious example, and many seed oils are useful in producing fatty acid methyl esters for biodiesel. Yet, certain oilseed crops are especially useful in providing replacements for more complex, higher value products, such as polymers, lubricants and coatings. These crops include but are not limited to linseed, tung, jojoba and castor, with the castor plant perhaps the most broadly useful. The castor oil plant produces a seed containing >50% oil with up to 90% ricinoleic acid, 12-hydroxy oleic acid. The presence of the mid-chain hydroxyl group imparts physical and chemical properties making castor oil uniquely useful as a feedstock for numerous products. However, limited production of castor has allowed petroleum-derived products to displace many castor oil based products from the marketplace, despite better performance characteristics of the castor-based products. A focus on improving castor will ultimately support expanded castor oil production. While castor oil can provide numerous replacements for petrochemicals, there are other oil crops that are perhaps limited in the number of products that they can provide. Nevertheless, these oil crops can have a significant role in reducing the need for petrochemicals, and these crops will also be discussed..

Biography

Thomas A McKeon has received his PhD in Biochemistry at UC Berkeley with Postdoctoral research in Plant Biochemistry at UC Davis. He is currently a Research Chemist with the US Department of Agriculture, Agricultural Research Service at the Western Regional Research Center in Albany, CA. He has over 100 publications, mostly in plant lipid enzymology and molecular biology. He is an Editor and Chapter Author for the book *Industrial Oil Crops*, published in March 2016 by Elsevier and AOCS Press. He is an Editor for *Biocatalysis and Agricultural Biotechnology* (BAB), a Board Member for American Oil Chemists Society (AOCS) Biotechnology Division and International Society for Biocatalysis and Agricultural Biotechnology (ISBAB). He has organized conferences for ISBAB and for US-Japan Natural Resources (UJNR) Food and Agriculture Panel.

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Notes:

Ze-Chun Yuan, J Biotechnol Biomater 2017, 7:6 (Suppl)
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Developing biopesticides, biofertilizers and bioproducts for next generation green revolution and sustainable agriculture

Ze-Chun Yuan[1, 2]
[1]University of Western Ontario, Canada
[2]Agriculture and Agri-Food Canada, Canada

Modern agriculture is largely based on dense cropping and heavy application of pesticides and fertilizers, resulting in very serious issues such as soil pollution and land degradation. Therefore, it is necessary to develop alternative and greener strategies to combat pests and pathogens towards sustainable agriculture and environment. There are large number of microorganisms in nature, soil, capable of suppress crop pathogen, diseases and pests. In addition, accumulating reports uncovered the beneficial microbes for crop growth promotion, including phosphate or potassium solubilization and nitrogen fixation. The beneficial traits of microorganisms can be harnessed and utilized as alternative strategies to fertilize crops or reduce crop disease and pests. Over the years, we have been isolating, characterizing and applying beneficial microorganisms as biopesticides, biofertilizers or bioproduct factories. These include *Paenibacillus polymyxa* CR1, *Burkholderia cenocepacia* CR318, *Bacillus velezensis* 9D-6, *Arthrobacter sp*. LS16 and *Acinetobacter calcoaceticus* CA16. We are also carrying out complete bacterial genome sequencing to further characterize the genetics and regulatory pathways for the beneficial traits of the isolated bacteria. Here, we will summarize our research and latest discovery in develop biopesticides and biofertilizers, and discussing their potential application in reducing chemical fertilizers and pesticides, towards more sustainable agriculture and environment.

Biography

Ze-Chun Yuan is a Research Scientist and Principal Investigator at Agriculture and Agri-Food Canada. He is a Research Professor and Graduate Student's Supervisor at the Department of Microbiology and Immunology, University of Western Ontario, Canada. He has expertise in soil microbiology, bacterial genetics and genomics with great passion in improving crop health and productivity through alternative strategies. He has been isolating and characterizing beneficial microorganisms to manage crop disease or improve crop health and productivity, in particular, developing biofertilizers and biopesticides to reduce the use of classical fertilizers and pesticides in agriculture and horticulture. He is also interested in developing renewable bioproducts from biomass, in particular, crop residues. His research also involves synthetic biology and microbial engineering aiming at rewiring microbial metabolic pathways towards higher productivity of bio-based products and chemicals. He looks for opportunities for collaborative research and training of highly qualified personnel.

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Guodong Zhang, J Biotechnol Biomater 2017, 7:6 (Suppl)
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2nd World Biotechnology Congress

December 04-05, 2017 | Sao Paulo, Brazil

Quick detection method for foodborne bacterial pathogens

Guodong Zhang
Food and Drug Administration, USA

Globalization of food supplies has increased risks for food safety and contributed to international foodborne outbreaks. Accurate and quick detection of foodborne pathogens is essential for food industry and outbreak investigation. Tremendous efforts have been made to improve current methods and develop new methods, both culture- and molecular-based, by scientists of academics, industries, and government agencies worldwide. The status of quick detection techniques is reviewed. There are many methods available, including conventional polymerase chain reaction (PCR), multiplex PCR, real-time PCR, DNA microarray, metagenomics, whole genomics sequencing (WGS), loop-mediated isothermal amplification (LAMP), isothermal nucleic acid amplification assay based on the nicking enzyme amplification reaction (NEAR) technology (ANSR), biosensors, enzyme-linked immunosorbent assay (ELISA) and lateral flow immunoassay, etc. Nucleic acid-based methods generally are more sensitive and reliable compared to antibody-based methods. Therefore, they are more widely used for the detection of foodborne pathogens. Among nucleic acid-based detection methods, PCR has been accepted as standard detection protocols for numerous pathogens by many organizations. LAMP and ANSR assays are equally effective as PCR for detecting most pathogens, but simpler, faster, and easier to operate. Detection techniques using metagenomics and WGS are advancing rapidly. The future of this technology, in large part, depends on data base construction and development and improvement of software for data analysis. Also, we observed a new trend: mini portable devices, mini devices with smartphone, and 3-D Printing. A few examples of quick detection technology will be illustrated.

Biography

Guodong Zhang has started his career as a Professor at Northeast Agricultural University of China in 1989. He went to Purdue University in 1993 as a Visiting Associate Professor and worked on crop genetics and breeding with USDA. In 2000, he has decided to focus on Food Microbiology at University of Georgia and the Centers for Disease Control and Prevention (CDC). He is currently a Senior Research Microbiologist at the US Food and Drug Administration (FDA), working on both culture and molecular method development and validation for the isolation, detection and identification of foodborne pathogens. Besides more than 90 publications, he has served on Editorial Boards of several scientific journals. He is actively involved in ISO, IAFP and AOAC. He has developed official analytical methods for FDA. He is a FDA subject matter expert for *Salmonella*, shell eggs, produce, and spices. He also serves on a few scientific committees.

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Scaling up the biotechnological process of the recombinant rabies virus glycoprotein

Monize C Decarli[1], Diogo P dos Santos[1], Renato Astray[2], Daniella C Ventini-Monteiro[2], Soraia A C Jorge[2], Daniela M Correia[1], Juliana S da Silva[1], Mayra P Rocca[3], Hélio Langoni[3], Benedito D Menozzi[3], Carlos A Pereira[2] and **Claudio A T Suazo[1]**

[1]Federal University of São Carlos, Brazil

[2]Butantan Institute, Brazil

[3]São Paulo State University, Brazil

The rabies virus glycoprotein (RVGP) is the main antigen of vaccine formulations. A robust *Drosophila* S2 cell line (S2MtRVGPH-His) was engineered by our group for the expression of recombinant RVGP (rRVGP) using metal-inducible promoters. The objective of this work was to evaluate the potential of a WAVE BioreactorTM in the initial steps of scaling-up the rRVGP production process by the S2MtRVGPH-His cell line to produce rRVGP in sufficient quantities for immunization and characterization studies. The WAVE bioreactor is an innovative approach for the cultivation of animal cells as it offers high process flexibility, as well as cost and time savings. For this purpose, we firstly established a Schott flasks procedure for culturing the S2MtRVGPH-His lineage. Using an inoculum of 5x105 cells/mL in culture medium (Sf900-III) induced with CuSO4, adequate pH range and parameter values such as time of induction (72 h) and temperature (28°C) to optimize rRVGP production could be defined. In the sequence, the procedure was reproduced in culture experiments conducted in a WAVE bioreactor 2/10 using a 2 L Cellbag. The results in Schott flasks and WAVE bioreactor were very similar, yielding a maximum titer of rRVGP above of 1 mg/L. After the rRVGP production process, the animals were immunized with rRVGP and submitted to rabies virus challenge. The rRVGP assessed in the immune system of the vaccinated animals showed high levels of anti-RVGP antibodies, statistically not different from the levels induced by a commercial vaccine. The animals immunized with rRVGP also survived the rabies virus challenge, whereas two negative group controls did not. This bioprocess enables an efficient scale-up of the production with high quality immunoactive glycoprotein and may be promising in terms of obtaining rRVGP in the near future in the order of grams for use in immunological, preclinical or clinical assessments.

Biography

Monize C Decarli is Biotechnologist. She has completed her Bachelor's and Master's degrees at Federal University of São Carlos, UFSCar, SP, Brazil and currently, she is developing her PhD Thesis in Chemical Engineering at the State University of Campinas (UNICAMP, SP, Brazil). She has expertise in Bioprocess, Biotechnology, Animal Cell Culture and Microbiology, and has been working in these fields since 2010. She has developed the bioprocess production of rRVGP in Wave Bioreactor for two years and half, in the course of her Master research work. This approach can be promising in terms of obtaining in the near future rRVGP in order of grams to use in preclinical assessments aiming the development of a recombinant rabies vaccine.

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Notes:

Mohammed N Baeshen, J Biotechnol Biomater 2017, 7:6 (Suppl)
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The past, present and future potential applications in natural product genomics and bioengineering of the medicinal desert shrub *Rhazya stricta*

Mohammed N Baeshen
University of Jeddah, Saudi Arabia

Rhazya stricta has recently acquired a strong reputation in the scientific media that have interest with pharmaceutical and biotechnology applications, this was first refer to its therapeutic properties along history in folkloric medicine used by many nations to treat diseases, inflammations and some abnormal conditions. This was proven later by many studies and researches that showed the magnificent potential curative effects against MDR's, cancer, inflammations, diabetes and obesity. With the development of the scientific tools, bionanotechnology applications are invading the *R. stricta* research area. In the other hand, while studying the medicinal properties of the plant, another field of investigation was added to complete the series of its novel discoveries depending on its marvelous properties in resisting many biotic and abiotic stress conditions. This was noticed when founding that the plant was always evergreen all year and sometimes flowering and fruiting when the rain season was absent for two years ones in some areas of Arabia desert with all its harsh conditions. From here, studying the genome of this plant and the metagenomics of its community including all its lifestyles started. The expected results of these investigations will be very useful in the industrial and commercial biotechnology of pharmaceutics, food, agriculture, biofuels and environmental applications.

Biography

Mohammed N Baeshen is an associate professor in the section of genomics and biotechnology, department of biology, faculty of science, University of Jeddah (UJ) – Saudi Arabia since 2016 until now. Also he is the vice dean of the faculty of science (UJ). He had his Ph.D in thesis 2010 from king Abdulaziz University (KAU), department of biology in molecular medical microbiology then been assigned as an assistant professor at the department of medical laboratories at the faculty of health sciences. He was also assigned as a visiting fellow in the period of Nov 2011 – Oct 2013 in the department of biology, university of Essex (UE), UK as a Post-Doc in joint research work of Rhazya stricta metagenomics between KAU and UE.

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Notes:

Jean A Boutin, J Biotechnol Biomater 2017, 7:6 (Suppl)
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Biotechnologies: Which one(s) and what trends and future for mid-size pharma companies

Jean A Boutin
SERVIER, France

The burst of technology has changed the landscape of research and production in Pharmaceutical companies, namely, and among many other areas: the manipulation of the synthetic capacities of microorganisms, the possibility to chemically synthesize enzymes, the access to stem cells-derived cellular tools and the use of vegetal cells to produce new compounds. Considering that the changing capacities in microorganisms is essentially a problem of enzyme(s) manipulation, it comes more and more important to understand the path between fundamental and practical knowledge on enzyme catalysis and mutagenesis and the catalytic capacities of those enzymes performing tasks they did not evolve to do. Further to this, it becomes easier to synthesize proteins in which exotic, non-natural amino acids have been incorporated in the sequence either to gain new function(s) or to incorporate specific signals, for example to follow the fate of the protein in cell. Stem cells can be derived, at least theoretically, to a large set of proteins. Even if the consideration of using those cells as therapeutic agents is still arguable, the use of those cells as host for biological experiments is of the highest importance for a better understanding of physiological processes at the cellular level. Finally, the immense amount of ethno-pharmacological data, accumulated for centuries in various countries, should lead us towards a better rationalization of the finding of the actives in the mixture used. To do so, emphasis should be put on the collection of plants in natura, and the description of the secondary metabolites found by such samples, and the way to render this approach a little more environment-friendly. Taking as examples some approaches, we chose in the last few years, such as protein engineering, total protein chemical synthesis and plant cell modification potential, the impact of those strategic changes and challenges in a mid-size company is described. How these new paradigms alter the classical organization and comprehension of the future of Pharma companies will also be discussed.

Biography

Jean A Boutin is graduated from Nancy University (France) on Drug Metabolism. He did two Postdoctoral training periods at Johns Hopkins University School of Medicine (Baltimore) and at the Karolinska Institutet (Stockholm, Sweden). He was hired as Protein Chemist in Les Laboratoires SERVIER (LLS) in 1986. During the 30th last years, he has moved from oncology to peptide research and then molecular and cellular pharmacology. Recently, LLS has created a drug discovery platform which he led until the 1st October 2016. Since then, he is the Directeur de la Prospective particularly in the technological areas associated with molecular pharmacology. These areas include, but are not limited to drug molecular modeling, ligand/protein biophysical interaction measurements, protein chemistry, stem cells, structural biology, chemogenetics, HTS, biologics. The main interests of him are N-myristoyltransferase, melatonin, quinone reductase 2, MCH and autotaxin.

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Notes:

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Photo-curable natural polymer derivatives for bio-medical application

Tae-Il Son[1], **Jae-Won Kim**[1], **Eun-Hye Kim**[1], **Seung-Hyun Noh**[1], **Shin-Woong Kim**[1] and **Yoshihiro Ito**[2, 3]
[1]Chung-Ang University, Republic of Korea
[2]RIKEN, Japan
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To be biomedical applications, these materials require properties such as biocompatibility, biodegradability, and low-toxicity. Chitosan is a natural polymer with these properties. In addition, chitosan has anti-bacterial activity. For this reason, chitosan is suitable as a biomaterial. Growth factors are biomolecules, mainly proteins. Growth factors such as epidermal growth factor, transforming growth factor-β and bone morphogenetic protein-2 play an important role in the physiological activity process. Although growth factors affect their diverse physiological activities in biological processes, their biomedical applications are very limited. Because growth factors have a half-life that causes to rapidly decrease the physiological activity in the body. Protein immobilization methods are a way to solve these problems. Various immobilization methods have been developed. However, methods using chemical agents may form by-products that can potentially cause denaturation of immobilized protein. It is also difficult to immobilize them in the same chemical method because the residue of each amino acid is different. To solve these problems, our research team have developed a photo immobilization method for immobilizing proteins using UV and visible light photo-reactive chitosan derivatives. The additional advantages of this method are relatively simple process, low cost, easy scale-up, and low toxicity. Photo immobilization methods will be used to immobilize various biomolecules. Our research team report the preparation of photo-reactive chitosan derivatives that can be used for the immobilization of various biomolecules via photo-immobilization method.

Biography

Tae-Il Son has completed his PhD from Tokyo Institute of Technology, Japan in 1989. Currently, he is a Professor in the Department of Systems Biotechnology, Chung-Ang University, Republic of Korea and the President of Biomaterial Field in The Korean Society of Industrial and Engineering Chemistry (KSEC). He has published more than 80 papers in reputed journals.

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Notes:

Simon Miranda et al., J Biotechnol Biomater 2017, 7:6 (Suppl)
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Improving the nutritional quality of cherry tomato fruits by LED lighting

Simon Miranda and **Talia del Pozo**
Universidad de Chile, Chile

Statement of the Problem: Fruits and vegetables account for an important part of the human diet, whose benefits are strongly related to their nutritional quality. In the last few decades, this concept has emerged as an important agricultural trait, due to the increasing demands of consumers who look for healthier commodities. Within this context, LED (light-emitting diode) lighting is emerging as a promising and sustainable technology used in greenhouse cultivation and in food production. For growing plants, the advantage of this kind of lighting is the possibility to optimize the selection of the light spectrum at physiologically relevant wavelengths to regulate specific processes in plants. Despite of LED lights benefits, the relationship between lighting conditions and nutritional quality has not been deeply addressed.

Methodology: Therefore, in this work we studied the effect of light stress doses and/or light regimens with different spectral quality on the accumulation of several nutrients (vitamin C, vitamin E and lycopene) in fruits of cherry tomato *(Solanum lycopersicum* cv. *cerasiforme)*.

Findings & Conclusions: By regulating the lighting conditions, we found that the accumulation of the compounds analyzed was significantly altered. Furthermore, these metabolite changes were correlated with the expression of several genes involved in the main pathways related to the biosynthesis of vitamin C, E and lycopene. Thus, correlations are discussed in terms of the metabolic pathways involved. Experiments for further optimization are underway, which will allow us to increase the nutritional quality of plant crops by a customized selection of spectral quality, but also will provide insights into the complex metabolic network that is responsible for the antioxidant metabolism in fruits.

Biography

Simon Miranda is a Biologist and Master in Biological Sciences of the University of Chile, whose main interests are within the field of plant molecular biology and nutrition. During his Master thesis, he has acquired ample skills in plant molecular biology, phenotyping and in vitro transformation and regeneration of genetically modified plants, for studying the metabolism of antioxidant compounds related to human health. Therefore, he is currently working, along with Talia del Pozo (PI), in a research project for addressing diverse questions related to biofortification of fruits, with the aim of applying available genomic and biotechnological tools for obtaining plants enriched in bioactive compounds.

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Notes:

Liliana Perez-Manriquez, J Biotechnol Biomater 2017, 7:6 (Suppl)
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Bioinspired solvent-resistant nanofiltration membranes

Liliana Perez-Manriquez
King Abdullah University of Science and Technology, Saudi Arabia

In the last decades, there has been a trend towards bio-inspired approaches for the formation of nanocoatings as well as to accomplish energy-intensive industrial separations in a more sustainable fashion. Organic solvent nanofiltration (OSN) is a pressure driven technology where the operation conditions are moderate and additional waste streams are minimized, making this a favorable energy efficient approach for challenging molecular separations such as purification of active pharmaceutical ingredients, production of specialty chemicals and in the petrochemical industry just to mention a few examples, where this technology can be currently applied. The overall performance of OSN membranes is determined by solute/solvent interactions with the membrane top layer. Therefore, the modification of the membrane surface becomes crucial to obtain high -performance OSN membranes, as well as exploring novel and green approaches to improve the separation properties of OSN membranes, without sacrificing their permeation properties. One alternative for the fabrication of the thin-films in OSN membranes proposed in this work is the use of bio-polyphenolic molecules. Among the many classes of phenolic biomolecules, plant phenols are capable of binding and cross-linking due to their strong interfacial activity. Here, the successful optimization of the interfacial polymerization reaction for the manufacture of OSN membranes is demonstrated by replacing the common toxic amines used for this method with natural occurring bio-polyphenols such as dopamine, tannic acid, morin hydrate and catechin. These bio-polyphenols can be found in mussels, date fruits, guava fruits and green tea respectively and they were used to form a selective thin film on top of a crosslinked polyacrylonitrile or a cellulose support. These membranes have shown an exceptional performance and resistance towards harsh solvent environments. Due to the incorporation of natural compounds for the manufacture, they provide a cost-effective alternative for industrial separations due to the ease of chemical modification and preparation, which is potentially easy to scale up at low cost taking advantage of the natural compounds for their manufacture.

Biography

Liliana Perez-Manriquez is pursuing her PhD at King Abdullah University of Science and Technology (KAUST); her main research focuses on the incorporation of natural compounds for the manufacture of solvent resistant nanofiltration membranes providing a cost-effective alternative for harsh industrial separations processes. These membranes are easy to reproduce making them potentially easy to scale up at low cost taking advantage of the natural compounds for their manufacture with applications in pharmaceutical, petrochemical, textile and biotechnological industries. Her research has been showcased in three international conferences so far as a speaker and she won a poster presentation award in the last euromembrane conference.

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Notes:

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Estimate infectivity of human *Norovirus* in environmental water samples by in situ capture RT-qPCR method

Peng Tian
Agricultural Research Service, USA

Human *Noroviruses* (HuNoVs) are highly infectious viruses for which water is an important medium of transmission. In this study, we explored a new *in situ* capture RT-qPCR (ISC-RT-qPCR) methodology to estimate the infectivity of HuNoV in environmental water samples. This assay was based on capturing encapsidated HuNoV by viral receptors, followed by *in situ* amplification of the captured viral genomes by RT-qPCR. We demonstrated that the ISC-RT-qPCR did not capture and enable signal amplification of heat-denatured Tulane Virus (TV) and HuNoVs. We further demonstrated that the sensitivity of ISC-RT-qPCR was equal or better than that of conventional RT-qPCR procedures for the detection of HuNoV GI and GII. We then utilized the ISC-RT-qPCR to detect HuNoV in environmental water samples for comparison against that from a conventional RT-qPCR procedure. TV was used as a process control virus. While complete inhibition of TV genomic signal was observed in 27% of samples tested by RT-qPCR, no inhibition of TV genomic signal was observed by ISC-RT-qPCR. From 72 samples tested positive for HuNoV GI signal by RT-qPCR, only 20 (27.8%) of these samples tested positive by ISC-RT-qPCR, suggesting that 72.2% of RT-qPCR-positive samples were unlikely to be infectious. From 16 samples tested positive for HuNoV GII signal by RT-qPCR, only one of these samples tested positive by ISC-RT-qPCR. Five samples that had initially tested negative for HuNoV GII signal by RT-qPCR, was tested as positive by ISC-RT-qPCR. Overall, ISC-RT-qPCR method provided an alternative assay to estimate infectivity of HuNoV in environmental samples.

Biography

Peng Tian has his expertise in human *Norovirus* and food safety. He has developed several methods to concentrate and detect human norovirus from environmental and food samples. These approaches are available to all stakeholders interested in viral contamination in food.

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Notes:

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RNA-Seq analysis of aluminum stress response in sugarcane roots

Kameswara Rao Kottapalli[1], **Poornasree Kumar**[1] and **Sonia Marli Zingaretti**[2]
[1]Texas Tech University, USA
[2]Universidade de Ribeirão Preto, Brazil

Sugarcane (*Saccharum* spp.) is an important source of sugar and ethanol and it is known that the global sugarcane production will increase by 21% by 2024. With increasing demand for energy, the sugarcane crop expansion is evident in Brazil. It is predicted that due to high demand for sugarcane and ethanol, the acreage under sugarcane will increase from 9.0 million ha to 64 million ha by the years 2018/2019. As a result, more unconventional soils rich in minerals will be brought under cultivation. Aluminum ions (Al^{+3}) together with silicon and iron are the three most abundant mineral elements in soil. Although silicon and iron are required for plant growth, Al is toxic, and its bioavailability is highest on acidic soils, resulting in inhibition of root growth and architecture leading to disruption of root elongation. Our goal is to understand the molecular mechanisms of abiotic stress tolerance in sugarcane and the role of miRNA's in transcriptional regulation. Towards this goal, a relatively tolerant sugarcane cultivar CTC-2 and the susceptible RB855453 cultivar was subjected to Aluminum stress at 221 µMol. RNA-Seq was performed on 12 root tissue samples using 108 bp paired end sequencing on an Illumina HiSeq2500 sequencer. Pairwise comparisons between different treatments in tolerant cultivar identified 16,340 non-redundant differentially expressed transcripts (DETs). Functional annotation of DETs revealed that AL^{+3} tolerance was controlled by several interacting pathways like calcium and G-protein coupled receptor mediated signaling, and regulation by WRKY and R2R3-MYB transcription factors. Some of these genes could be utilized by sugarcane breeders to improve Al^{+3} stress tolerance in field conditions.

Biography

Kameswara Rao Kottapalli has completed his PhD in Biotechnology and currently, he is a Research Associate Professor in Center for Biotechnology and Genomics. He has more than 10 years of experience in functional genomics with expertise in bioinformatics analysis of genotypic data, microarray data, large protein mass data, and next-generation DNA sequence data. He has successfully obtained federal grants like USDA-AFRI, NSF, Borlaug-USDA International award, USDA Ogallala Aquifer Initiative with major focus on bioinformatics and functional genomics. He has more than 25 publications in peer-reviewed journals and was awarded International Generation Challenge Program Postdoctoral Fellow in 2005-06. He currently teaches two graduate courses on gene expression profiling by nextgen sequencing (BTEC 5312) and bioinformatics (BTEC 5001-04). He is currently supervising several MS and PhD students with research focus on functional genomics and bioinformatics.

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Impact of biotechnology in Brazilian agriculture sector

Adriana Brondani
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Brazil is the second largest producer of biotech crops in the world. A strict regulatory environment has been playing a crucial role in the rapid development and commercialization of biotech products in Brazil. The 2005 Biosafety Law defined security mechanisms for genetic modified organisms (GMO) monitoring, establishing supervision procedures over the development, farming, production, research and commercialization of transgenic seeds. As a consequence of a stablished regulatory framework on biosafety, over 300 biotech companies have been working in Brazil. These companies are focusing on a vast array of biotech areas such as human and animal health, bioenergy and agriculture. Thanks to sustainable practices, to the use of technology and to committed farmers, Brazil produces a significant share of food, fibers and renewable energies consumed all over the world. As a result from GMO adoption, Brazil has increased agriculture production by 350% while its land use increased only by 50%, causing a clear impact on sustainability and biodiversity preservation. Agribusiness carries on as a growing industry. According to data released by the National Supply Company, Brazilian grain crop may reach a record production of up to 215 million tons in 2017. To reach this productivity and competitiveness level, the application of scientific knowledge in agriculture is crucial. Thanks to the use and development of new inputs, to the mechanization of the work in the fields and to the adoption of high-performance seeds developed by classical and genetic breeding, we are now able to produce more.

Biography

Adriana Brondani has her expertise in Science Communication. She is the Executive Director of Council for Information on Biotechnology (CIB) since 2011. She is a Biologist, and has completed her Master and PhD in Biochemistry and Molecular Biology. She has years of experience in research and teaching in hospital and education institutions. Currently, she is a Professor of MBA in Agribusiness at Sao Paulo University and at the Brazilian Association of Nutrology (ABRAN).

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Notes:

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The probable effect of MT1A (A>G) and MT1A (C>G) SNPs of metallothionein gene on whole blood mercury levels in iranian populations

Javad Babaei
Valiasr Hospital Research Center, Iran

Polymorphism in metalloproteins may lead to changes in heavy metal levels in the body. The risk factors of polymorphisms in heavy metal concentrations, particularly mercury, may be due to several confounding factors including differences in ethnicity of the analyzes populations, sample size and the type of the studied environment heavy metals to which population are exposed. We study the effect of MT1A (A>G) and MT1A (C>G) polymorphisms on blood mercury level in Iranian population. 300 non exposure people to control group and 150 exposure people to case group were used. DNA extraction and PCR-RFLP and DNA sequencing was done and blood mercury level was measured via AAS technique by DMA-80. Blood mercury concentration in case group was higher than control group (p value<0.001). There was no significant differences in case and control groups to effect of MT1A (A>G) and MT1A (C>G) polymorphism on blood mercury levels and P value were 0.69 and 0.44, 0.59 and 0.56 for case and control groups, respectively. MT1A (A>G) and MT1A (C>G) polymorphism were not associated with increased level of mercury concentration in Iranian, which needs further investigations. In conclusion, this study suggest that MT1A (A>G) and MT1A (C>G) polymorphisms are not attractive susceptibility markers for high blood mercury concentration.

Biography

Javad Babaei has completed his PhD from Jondishapur University and PharmD studies from Mashhad University School of Medicine. He is the Director of Valiasr Hospital Research Center. He has published more than five papers in reputed journals and has been serving as an Editorial Board Member of repute.

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Cesar Augusto Tischer, J Biotechnol Biomater 2017, 7:6 (Suppl)
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Bacterial cellulose as matrix to functionalize macromolecules

Cesar Augusto Tischer
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Statement of the Problem: Cellulose corresponds to the most abundant biopolymer on earth, constituting all plant cells walls, exceeds the biological significance and play and important role as industrial product. The cellulose is biocompatible and the interest for biomedical purposes has grown recently being studied as scaffold for tissue regeneration as well the nanocellulose and for these reasons, a plenty of studies can be found testing cellulose pure, blended or chemically modified on *in vitro* models. Nanocelluloses are the highly ordered α-(1→4) glucan chains produced naturally or by chemical processes and that are in nanometric size in at least one dimension.

Methodology & Theoretical Orientation: Different strategies for functionalization of bacterial cellulose could be used, covalently linked or not, directly on the hydroxyl group, or in more steps. Weak forces as hydrogen linkages or ionic forces could trap small or bigger molecules as proteins as aggregates to membranes. Less labile option is introducing a linker as the succinic acid between cellulose chain and the functional compound, that give steric freedom for the last to act. Different technics could reach it with the advantage that the coupling product results in a pendant carboxylic acid, which provides a site for further chemical reactions.

Findings: Proteins and enzymes could be immobilized in nanocelulose, his activity remains or are improved taking advantage of the persistent suspension formed by nanofiber.

Conclusion & Significance: Bacterial cellulose is a versatile material that is being reinvented by physical and chemical ways creating very attractive new materials.

Biography

Cesar Augusto Tischer works as Professor at Biochemistry and Biotechnology Department of State University of Paraná. He has completed his Doctorate in 2002 in Biochemistry, in the field of structural analysis of glycoconjugates. Leader of the research group called Biotechnology and Glycoconjugates (CNPq certified, CNPq - National Council for Scientific and Technological Development), with founds approved in course on research councils operating in Brazil, CNPq in projects for cellulose modification, CAPES/Araucária foundation, with changes on cellulose for your use as sun blocker activity, both with industry collaboration. He works to develop functionalized nanocellulose with proteins or aggregated with charged polysaccharides as hyaluronic acid.

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BioCAE: A multiscale framework for complex biological systems and biofabrication of tissues and organs

Janaina de A Dernowsek[1], Maria Bolina Kersanach[2], Rodrigo Alvarenga Rezende[3], Pedro Yoshito Noritomi[1] and **Jorge Vicente Lopes da Silva[1]**

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[2]University of Campinas, Brazil

[3]Federal University of Campina Grande, Brazil

Statement of Purpose: 3D bioprinting process can be adapted to produce tissues in a variety of formats, structural complexities, such as material types, cell types, growth factors and differentiation, extracellular matrix composition, mechanical properties, macro and microvasculature and technical challenges associated with the creation of biomodels that mimic real vascularized tissues. In recent years, *in silico* approaches have been practiced in several fields, and offers new opportunities for medical discovery and investigation, helping and improving the storage, organization, and classification of the large data sets of digital biological information that is available. The purpose of this work is to present different approaches to predict the development and behavior of several biological processes, such as molecular networks, gene interactions, diffusion, cell differentiation, tissue and organ development, beyond to provide new perspectives and strategies in the biofabrication of tissues and organs.

Methods: A range of multiscale strategies was employed to develop a BioCAE for biofabrication of tissues and organs. Here we describe some approaches in steps, which may be part of the BioCAE, thereby preventing a significant amount of trial and error experiments in laboratories. *In silico* study focuses on the biological process of the angiogenesis of an aggregate of endothelial cells. The software CompuCell3D (CC3D) was used to mimic angiogenesis *in silico*. CC3D is an open-source environment for multi-cell and single-cell-based modeling of tissues, organs, and organisms.

Results & Conclusions: The emergence of integrated platforms on different systems levels to understand complex biological processes will enable the prediction and creation of biofabricated biological structures. We emphasize here that BioCAE is work-in-progress and there are a vast number of possible additions to the multiscale models for the biofabrication.

Biography

Janaina de A Dernowsek is currently working on a Postdoc Scholarship at the Center for Information Technology Renato Archer (CTI), Campinas, Brazil. She has obtained the MSc and PhD degrees in Genetics from the University of São Paulo (USP). During her PhD studies (2010–2014), she acquired knowledge and skills in posttranscriptional interactions between the miRNAs and mRNAs during the osteoblastic differentiation of human immature dental pulp stem cells. Currently, she is involved in the Biofabrication group at CTI Renato Archer working with several steps of biofabrication, mainly on the multiscale representation of tissue and organs for a blueprint. This hybrid 3D blueprint will contain all the necessary information for all bioprinting steps.

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Keynote Forum

Day 2

Yinghua Huang, J Biotechnol Biomater 2017, 7:6 (Suppl)
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Yinghua Huang

Oklahoma State University, USA

The forefront of scientific progresses in plant science: Next generation crop breeding

Great success in crop improvement contributed to the green revolution, by creating high-yielding varieties/hybrids; but modern crop improvement programs face new challenges because of limited genetic resources for breeding demand, complexity of certain traits, demanding for fast breeding rates and novel approaches for crop improvement. Fortunately, rapid advances in molecular biology and quick development of genomic technologies have tremendously expanded our abilities to analyze and understand plant genomes and to reduce the gap existing between genotype and phenotype. Moreover, the recent completion of whole genome sequencing of many crop species opened the doors for more efficient gene discovery and offers us the opportunities to translate the genome information into improvement of crops through novel breeding strategies. This paper reviews the advances of our knowledge in plant biology and these cutting-edge technologies, such as development and utilization of the genomic resources for gene discovery, genotyping and QTL (quantitative trait loci) identification, development of DNA markers for the next-generation genotyping and marker-assisted selection, next-generation sequencing and genomics-assisted breeding (GSB), gene expression profiling and dissecting the networks of gene regulation in crop plants, plant functional genomics, molecular breeding and genetic enrichment of crops through transgenic approach. Furthermore, the latest invented technology, called "genome editing", represents an advanced plant breeding tool and holds tremendous promise and potential to facilitate precision crop breeding. It will also explore case studies of genotyping by sequencing applications to several crops differing in genome size, organization and breeding systems. Finally, the paper will demonstrate the application of those new tools in crop improvement in terms allowing more precise and quicker manipulation of crop genomes, more easily measuring traits and adding beneficial genes to various crop species around the world

Biography

Yinghua Huang is a Research Geneticist for USDA and serves as the Lead Scientist for the Plant Genetics Program, and an Adj. Professor of Oklahoma State University. His scientific background is in plant genetics and molecular biology, and he has considerable research experience in plant biotechnology, genomics and crop improvement. During his early career, he made a breakthrough in developing a reliable system for producing transgenic larch plant, which represents the first record of genetically engineered conifer tree, carrying the important traits including resistance to insects and herbicide. Recently, using cutting-edge microarray, RNA-seq and next-generation sequencing technologies, his lab has generated the expression profiles and genomic data, leading to the identification of the critical genes and networks that regulate the host defense against insect pests, crop yield, and bioenergy quality in crop species. The overall goals of his research are to conduct basic studies to enhance our understanding of biological processes in plants, to apply newly developing genomic tools to facilitate genetic improvement of crop plants, and finally to improve the production system for a better utilization of agricultural and natural resources.

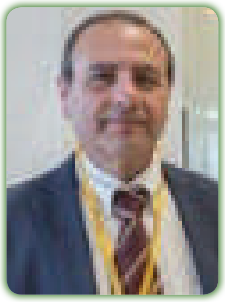
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Fuad Fares

University of Haifa, Israel

Recombinant proteins from bench to clinics

Recombinant proteins from the use of DNA technology are found in essentially every western pharmacy, medical testing laboratory, and biological research laboratory. One major issue regarding the clinical use of many peptides is their short half-life due to the rapid clearance from the circulation. To overcome this problem, we succeeded to ligate the signal sequence of O-linked oligosaccharides to the coding sequence of the hormones. The cassette gene that has been used contains the sequence of the carboxyl-terminal peptide (CTP) of human chorionic gonadotropin β (hCGβ) subunit. The CTP contains 28 amino acids with four O-linked oligosaccharide recognition sites. It was postulated that O-linked oligosaccharides add flexibility, hydrophilicity and stability to the protein. On the other hand it was suggested that the four O-linked oligosaccharides play an important role in preventing plasma clearance and thus increasing the half-life of the protein in circulation. Using this strategy, we succeeded to ligate the CTP to the coding sequence of follitropin (FSH), thyrotropin (TSH), erythropoietin (EPO) growth hormone (GH) and thus to increase the longevity and bioactivity of these proteins *in-vivo*. Interestingly, the new analogs of FSH and GH were found not immunogenic in human and it is already passed successfully clinical trials phase III and phase II respectively. Moreover, FSH long acting was approved by the European Commission (EC) for treatment of fertility. In addition, our results indicated that long acting GH is not toxic in monkeys and the results from clinical trials phase I and phase II seem to be promising. Designing long acting peptides will diminish the cost of these drugs and perhaps reduce the number of injections in the clinical protocols

Biography

Fuad Fares has completed his DSc studies at the Faculty of Medicine, Technion-Israel Institute of Technology, and Postdoctoral studies at the Department of Molecular Biology and Pharmacology, School of Medicine, Washington University, St. Louis Missouri. He is the Director of the Department of Molecular Genetics at Carmel Medical Center and Associated Professor at the Department of Human Biology, University of Haifa. He has published more than 75 papers in reputed journals and serving as a Member of the Israel Council for Higher Education. He is the inventor of designing long-acting recombinant proteins and the initiator of PROLOR Biotech company.

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Liliana Rubio

PMO Polymer Business Intelligence, Brazil

Micro knitting yarn bio-composites (metallic fibers, organic fibers and biodegradable resin) for the smart textile market

On the dynamic business scenario, be functional, smart and interactive are the most valuable assets to become a reference in our markets. The global smart textile market promotes the implementation of nanotech and bio-composite projects in this field. Please note the market by moving beyond traditional path of what means value and fulfilling business future. We can identify the strategic alliance between textile industry and several markets as polymer, cosmetic, health, architecture and fashion. For several years, while these S-textile program have been able to go beyond the original objectives and is seeking its way towards industrialization and mass production for enhancing the breakthrough of intelligence textile systems. Every innovative initiative is committed in improving the convergence between industries and the leading edge of the textile market; on this scenario, the priority is the deep understanding of megatrends and new segments. We discuss about the most important trends that will define the architecture future of smart textile world. The author will also discuss the following; Smart is the new green, innovation to zero, urbanization, connectivity and convergence. Smart is the new green; It is the evolution of green products to smart products and service. Smart is all about efficiency, convenience and savings. We can define better with the implementation of BIOMIMETIC and mathematical equation $\sum Et \times \sum Ee \times \sum Em=0$, where time + force + movement must be Zero. Innovation to zero: means Innovation to negative beyond zero. It is a mega vision. It will be huge progress innovation to zero embrace research development planning and execution. All linked to the common labyrinth of sustainability as slow fashion. The era of Bio Smart-Textile world is a new approach to address the design in the modern architecture. The integration of bio composites and bioclimatic sensors that will lead to the emergence of new, innovative and unique design. Connectivity and convergence: Time in function of functionality, the power to communicate, respond, interact and broadcast information anytime, anywhere. Unique project which combine nano, engineered surfaces and microsystems physical sensors to create a seamless and intelligent life for us. Every project conceives in terms of human factor with profound impact on our society. Smart textile is a blue ocean, a revolution on the innovative and promissory market

Biography

Liliana Rubio is a Chemical Engineer, Master in Project Management, MBA in Business Administration, MBA in Innovation Management, Specialist in polymer; over 18 years' experience working on new business, R&D and marketing. She is a Lecturer on innovation and sustainability at universities and the main trade fairs of polymer and Fashion Industry in Latin America, EUA and Asia. She is the author of several articles that have been published in technology and business magazines. She is the Founder of PMO Polymer Business Intelligence is a Project Management Office, located in Sao Paulo-Brazil, dedicated to project management consulting, mentoring, covering project planning, implementation and execution through a front-to-end creative quantification approach, founder of SmartTex Hub ecosystem for the value chain of textile industry and final applications. She is the winner of the Clariant Corporation Innovation extra award: The sustainable project for the Green Industry on renewable resources. She is the winner Honorable Mention in Think Beyond Plastics Innovation competition on the category most innovative emerging business: plastic smog emissions closed loopon (bio composites from waste micro plastic particles (beads and fibers). She is the Sponsor and Finalist in the competitions Acelera Brasil and SUSTEX Tunisia with the projects about smart and sustainable fashion S-Textil.

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Scientific Tracks & Abstracts

Day 2

Animal Biotechnology | Genetics and Tissue Science & Engineering | Medical Biotechnology | Microbial Biotechnology | Molecular Biology

Session Chair
Fuad Fares
University of Haifa, Israel

Session Co-chair
Huang Yinghua
USDA-ARS Plant Science Research Laboratory, USA

Session II

Title: **iPS-derived cardiomyocytes and keratinocytes for drug screening and cytotoxicity assays**
Estela Mitie Cruvinel, Pluricell Biotech, Brazil

Title: **Properties of hydrochloric chitosan multifilament fibers modified with nano-calcium phosphate complex**
Luciano Pignehelli, Lutheran University of Brazil, Brazil

Title: **Genotoxicity of gemcitabine low dose in white rat bone marrow cells**
Abdul Rahman, Shaqra University, Saudi Arabia

Title: **Modeling of fermentation process of *bacillus thuringiensis* as a sporulating bacterium**
Navid Mostoufi, University of Tehran, Iran

Title: **The Future of pharmaceutical biotechnology with the industry 4.0 – Managing new technologies, teams and reaching customers from baby boomers to the iGeneration**
Wilker Ribeiro Filho, Instituto Reger, Brazil

Title: **Anti-cancer drug discovery: Rational strategy to acquire anti-cancer candidate compounds**
Rosy Iara M A Ribeiro, Federal University of Sao Joao del Rei, Brazil

Title: **Comparative analysis of two inducible promoters for controlled nuclear transgene expression in *Chlamydomonas Reinhardtii***
Paula Barjona do Nascimento Coutinho, Universität Erlangen Nürnberg, Germany

Estela M Cruvinel, J Biotechnol Biomater 2017, 7:6 (Suppl)
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iPS-derived cardiomyocytes and keratinocytes for drug screening and cytotoxicity assays

Estela M Cruvinel
Pluricell Biotech, Brazil

Induced pluripotent stem cells (iPSC) are promising tool for disease modeling, regenerative medicine and drug screening. Pluricell Biotech is a Brazilian startup that develops *in vitro* iPS-derived models. Currently, we have established a highly efficient 2D differentiation protocol to obtain iPSC-derived cardiomyocytes. After 30 days of differentiation, PluriCardio can be replated in 2D monolayers or 3D spheroids. More than 70% of our differentiations have 95% or more of purity seen through positive expression of cardiac specific markers. Different cardiomyocytes subtypes are observed depending on how cells are plated, when in monolayer, 75% of the cells have a ventricular phenotype after 15 days of culture, and 97% have ventricular phenotype in 3D plating. We show electrophysiological response to classical drugs as expected, we checked responses to beta-adrenergic, calcium, sodium, potassium receptors including the verification of the well know hERG/IK potassium receptor. These cardiomyocytes were also used the evaluate doxorrubicin toxicity, we show they are affected by this drug. Taken together, these data suggest that our cardiomyocytes are a good and reliable tool for cardiac research and drug screening. Our future direction is to develop a platform with iPS-derived cardiomyocytes is to create a score of cardiotoxicity based and combined evaluation of different cardiotoxicity assays. We also established an efficient keratinocyte differentiation protocol. To date, we obtained 90% of K14-positive cells. iPS-derived keratinocytes expressed some keratinocyte markers as K14, K5, ITGa6, ITGb4, deltaNp63. After 7 days, exposed to a high concentration of calcium medium some cells expressed K10 and involucrin. Our future direction with iPS-derived keratinocytes is to evaluate their potential to grown in 3D model and evaluated their answers in cytotoxicity analyses.

Biography

Estela M Cruvinel has her expertise in cell culture and human genetics. She is Researcher at Pluricell Biotech, a Brazilian startup that develops *in vitro* iPS-derived models. She believes that iPS-derived cells are powerful tools for basic science and clinical applications. iPS-derived cells can be important for disease modeling. She has worked with these cells in her PhD to study genomic imprinting in Prader-Willi and Angelman syndromes. Moreover, their use in drug screening and cytotoxicity assays are valuable because they are able to replace or reduce the use of some animal models or animal cells. Currently, she coordinates the project that establishes iPS cells differentiation into keratinocytes.

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Properties of hydrochloric chitosan multifilament fibers modified with nano-calcium phosphate complex

Pighinelli L, Wawro D, Guimaraes M F, Paz R L and **Zanin B G**
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The socioeconomic situation of the modern world has raised the interest in renewable materials to use in regenerative medicine. Biomaterials as an artificial bone are classified into surface-active materials such as hydroxyapatite (HAp), and resorbable materials such as ß-tricalcium phosphate (ß-TCP) and bioactive and biodegradable material as a chitosan and its derivatives. The composition of biomaterials as ceramics, polymers and/or composite materials, with all advantages and drawbacks, are developed to be used for bone problems. When all these properties of polymers, ceramics are considered producing composite materials have a reasonable approach. In this studies composition of chitosan and/or calcium phosphates are derived from the junction of two or more different materials, containing organic and inorganic materials, including characteristics like bioactivity and biodegradability and biocompatibility with human tissues. The chemical characteristics of chitosan and nano B-TCP/HAp complex are showed by FTIR studies and can be seen the main peaks of energy vibration of both components organic/inorganic exist in the material complex, also can be seen a good stability of the nano-ceramic formation in the chitosan salt solution by potential zeta and ceramic particles size range from 12.8 to 58 nm. In this study also is showed a new method of preparation of calcium phosphates ceramics from micro size to nano size using a common commercial calcium phosphate and describes a method for preparing chitosan fibers modified with hydroxyapatite (HAp), tricalcium phosphate (β-TCP), and HAp/β-TCP nanoparticles. Fiber-grade chitosan derived from the northern shrimp (Pandalus borealis) and nanoparticles of tricalcium phosphate (β-TCP) and hydroxyapatite (HAp) suspended in a diluted chitosan solution were used in the investigation. Diluted chitosan solution containing nanoparticles of Hap/β-TCP was introduced to a 5.16 wt% solution of chitosan in 3.0 wt% hydrochloric acid. The properties of the spinning solutions were examined. Chitosan fibers modified with nanoparticles of HAp/β-TCP were characterized by a level of tenacity and calcium content one hundred times higher than that of regular chitosan fibers. These materials can be used in future for medical applications as a base for scaffolds production and as implants in regenerative medicine.

Biography

Pighinelli L is currently an Associate Professor of Toxicology and Genetics Research Program in Lutheran University of Brazil and Assistant Professor of research program in materials engineering at the same university. He has completed his Doctorate in Biomaterials area for regenerative medicine and tissue engineering at the University of Innsbruck, Austria, in cooperation with the Institute of Biopolymers and Chemical Fibers in Lodz, Poland, by Marie Skłodowska-Curie Actions-Research Fellowship Program. He has several papers and patents in the field of regenerative medicine, tissue engineering and radiotherapy. Currently, he is developing research in biomaterials area and biodegradation of polymers used in regenerative medicine and drug-delivery. His research fields include Biomaterials and Tissue Engineering: bioactive ceramics; scaffolds for bone and tissue repair; musculoskeletal tissue engineering: bone, cartilage, articular joints, calcium phosphate-based drug delivery devices and ceramics for orthopedics.

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Notes:

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Genotoxicity of gemcitabine low dose in white rat bone marrow cells

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Gemcitabine is a modern chemical drug used widely against many serious diseases including advanced cancers such as lung cancer, bladder and ovarian cancers and several blood cancers. Gemcitabine is one of the preferred choices in the treatment of pancreatic cancer. Short-term tests were conducted, and the drug showed rapid and strong ability to detect toxicity or distorting the material studied in the neighborhood cells. Results showed that there are some changes in cell parameters which can be determined by cellular examination accurately. Exposing male inbred line SWR/J of laboratory mice to low dose of the drug (125 mg/kg) Gemcitabine individually and in combination affected significantly in different times intervals mitotic divisions and chromosomal aberrations and abnormalities. The severity of abnormalities was increased with the passage of treated time.

Biography

Abdul Rahman A I Alyahya is a Cell Biology Scientist since 2005. He has strong research and teaching expertise in Cell Biology, Toxicology, Animal Cell Culture, Anticancer Drugs and Pharmaceutical Biotechnology. He has obtained his PhD from King Saud University in Biology. He has joined Shaqra University in 2009. Since 2009, he has secured many national grants for many research projects. He has published 21 refereed journal papers, 10 conference presentations, three industrial reports, two conference proceedings. Formerly, he was the Dean College of Science and currently he is a Vice Rector of Shaqra University for Promotion and Quality Assurance.

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Modeling of fermentation process of Bacillus thuringiensis as a sporulating bacterium

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Sporulating bacteria constitute a large portion of industrial microorganisms. Many important bioproducts such as solvents, antibiotics, enzymes, and pesticides with applications in food, pharmaceutical, and chemical processes are produced by sporulating bacteria. *Bacillus thuringiensis (Bt)* is an aerobic, rod-shaped, and sporulating bacterium that during its sporulation process produces toxic crystal proteins, called delta endotoxins, which have insecticidal action. Due to the economic importance of this product, great efforts have been made to improve its operation and control procedures especially by means of mathematical models. As shown in Fig. 1, there are three distinct types of cells in a *Bt* culture: vegetative cells, sporangia, and mature spores. The aim of this work was to provide a mathematical model that can estimate the populations of these three types of cells. In this paper, a cell population balance model was used to represent the dynamic behavior of the process. An unstructured and non-segregated model was used for the dynamic fermentation process with 0%, 50% and 100% oxygen saturation in a fed-batch culture. The mathematical model consists of a partial differential equation (PDE) that describes the distribution of a cell population based on the cell age. To solve the mathematical model, the method of lines was used in MATLAB that approximates the PDE model by a set of nonlinear ordinary differential equations (ODEs). Then, the resulted ODEs were solved by the 4th order Rung-Kutta method. The results show that the proposed model can estimate the cell populations properly.

Biography

N Mostoufi is currently a Full Professor of Chemical Engineering at the University of Tehran. He has taught advanced mathematics and fluid mechanics courses for over 16 years. His research interests include process modeling, simulation and optimization, and fluidization. He holds a BEng and MSc degree in Chemical Engineering from Iran's University of Tehran and a PhD in fluidization from Canada's Ecole Polytechnique de Montréal. He has more than 270 publications in major international journals and conferences, plus five books and four book chapters. He is the Co-Author of the textbook *Numerical Methods for Chemical Engineers with MATLAB Applications*, published by Prentice Hall PTR in 1999. He is the Founder and Editor-in-Chief of *Chemical Product and Process Modeling* published by Walter de Gruyter GmbH, Germany and winner of University of Tehran's International Award, 2015. He is also the University of Tehan's distinguished Researcher, 2013.

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The future of pharmaceutical biotechnology with the Industry 4.0: Managing new technologies, teams and reaching customers from baby boomers to the i-generation

Wilker Ribeiro Filho
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The use of tools like Artificial Intelligence (AI), robotics, mobile devices, cloud computing, big data analysis, internet of things and others, are already changing the way we do basic research, products development, innovation, promote sales, perform medical diagnostics, advice treatments and purchase medicines. The world is changing faster day after day. The increase of life expectancy is creating a bigger mix of generations in the work force and consumer habits. Professionals of today, may drastically be reduced or even no longer exist in less than 20 years including scientists, medical doctors, sales personnel, lawyers, being substituted by new hardware and software technologies or new types of professionals. Pharmaceutical and other areas of biotechnology in all of its' production chains, from basic research to reaching their customers, will and is already being highly affected. On the way to reaching customers and making profits, is the challenge of managing teams from different generations, with a different way of doing things, and making them be challenged, interested, productive. The Industry 4.0 should not be seen only with on the technology point of view, but with the whole system involved that will be definitive to the survival of companies, no matter how big they are today. A start up may be able to knock down a super pharma becoming a big hit in just 10 years with innovative technologies and products. Being open and prepared in advance for these changes is key to survive the future not so yet to come. The use of the new technologies becoming more available daily, shall increase results for new products and treatments, as much as reduce general costs from research to production, distribution, marketing and sales. Management shall be the key. Manage the use and the application of technologies and they profile of personnel. Each generation has a different way of seeing things, learning, doing, purchasing and the companies must be prepared from now. Prepare for adaption from now, or perish.

Biography

Wilker Ribeiro Filho is a Biologist, PhD in Medical Science, specialist in pharmaceutical technology and MBA in Business Management. He has experience in public policies for industrial development of the biotech industry, project's management, businesses evaluation and management, innovation, building and managing triple helix teams with technical and C level participants. With the experience from lab tests to higher level management, he has interest in relearning things from bottom and up. Innovative, brings and forms new views and ideas when gathering old information with new ones, some yet to come, to improve competitiveness and results for partners, companies and other stake holders.

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Rosy I M A Ribeiro, J Biotechnol Biomater 2017, 7:6 (Suppl)
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Anti-cancer drug discovery: Rational strategy to acquire anti-cancer candidate compounds

Rosy I M A Ribeiro
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Statement of the Problem: Cancer is a set of malignancies that has in common the exacerbated and uncontrolled cellular growth, as well as the capacity of cellular invasion to different organs of the primary site. Neoplastic transformation occurs through the acquisition of characteristics related to proliferation, invasion, metastasis, resistance to death, genomic instability, among others. Our research group has as main objective the search of new molecules that act inhibiting these pathways.

Methodology: Cell viability assay, combination assay, morphological analysis, proliferation assay, wound healing assay, cell cycle analysis, gelatin zymography, matrigel invasion assay, soft agar colony assay, acridine orange staining, detection of mitochondrial membrane potential, comet assay, western blot, *in vitro* retina model, *in vivo* chick chorioallantoic membrane (cam) assay and in vivo models for studying breast cancer development, and thin layer chromatography and spectrometry of masses.

Findings: We have been able to screen samples from the production of crude to fractionated extracts that are selectively cytotoxic to tumor cells. In addition, we determine the major pathways by which these cells die. We determined whether these treatments cause a change in the pattern of migration and cellular invasion and the involvement of the matrix metalloproteinases 2 and 9 in these processes. We selected several samples that will be submitted to *in vitro* cytotoxicity tests. Finally, with human cell lines, we determine the angiogenic capacity and tumor growth by CAM. If the cell line is murine, we carry out *in vivo* tests in mice. The better samples are directed to bioassay-guided purification that involves diverse chromatography methods. In addition, if the active substance is unpublished, it is directed to identification by appropriate chemical techniques.

Conclusion & Significance: By combining such approaches, we maximized the selection of molecules potentially relevant for the discovery of anticancer molecules.

Biography

Rosy I M A Ribeiro has obtained her postgraduate degree from the University of Minas Gerais (UFMG) in Pathology. She is an Associated Professor of Cell Biology at Medicine Department of Federal University of São João del Rei (UFSJ), Brazil. Currently, she is the Coordinator of the Biotechnology Graduate Program of UFSJ. Her research and publications are about the action of both synthetic and natural products on pathological processes such as wound healing and cancer.

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Comparative analysis of two inducible promoters for controlled nuclear transgene expression in *Chlamydomonas reinhardtii*

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Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany

Genetically, well characterized microalgae like *Chlamydomonas reinhardtii* offer the potential to photosynthetically produce high value products such as recombinant proteins for the pharmaceutical and chemical industry. Several attempts have been made to enhance expression of foreign genes in this green alga and in principle, allow protein production at large scale. However, satisfying and economically attractive levels of recombinant gene products have not been achieved yet. Inducible promoters represent a useful alternative to optimize protein yield. By providing regulated gene expression, they allow the biosynthesis of gene products at most suitable moments of cultivation, guaranteeing higher space-time yields. In this study, two inducible promoters were compared. We demonstrate the kinetics of induction and deactivation of the iron-responsive *Fea1* promoter and the ammonium/nitrate-responsive *Nit1* promoter in the green alga *C. reinhardtii* via the fluorescent protein mCherry and detection of mRNA levels through qPCR. Our work lays the foundation for the establishment of a cyclic process in which promoter activity is activated and deactivated alternately by changes in the iron and ammonium concentrations in the culture media. Fluorescence microscopy picture of *C. reinhardtii* cells expressing mCherry under the control of the *FEA1* promoter

Biography

Paula Barjona do Nascimento Coutinho has her expertise in genetic transformation of the green alga *Chlamydomonas reinhardti* and the methods developed for the detection of the fluorescent reporter protein mCherry (flowcytometry, western blot and fluorescence microscopy).

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Bauhinia stem extracts as a possible new treatment for breast cancer and metastasis: Inhibition of migration, invasion and of the activity of matrix metalloproteinases

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Metastasis is the main cause of cancer-related death and requires the development of effective treatments with reduced toxicity and effective activity. The breast cancer is the most common among women and the second most prevalent type in the entire population. Thus the search for new sources of antitumor and anti-metastatic therapies, such as plants, is very important. In this work, we showed the antitumor and antimetastatic activities of four fractions (ID7, IID10, IA19 and IIIA32) of the stems of *Bauhinia* species on the murine breast cancer line 4T1. These fractions were used because they completely inhibited the MMP-2 and MMP-9 activity. The viability assay (MTT, Trypan blue) showed that all fractions studied decreased the viability of 4T1 cells, being the ID7 fraction the most selective. The fluorescence microscopy assay with acridine orange and propidium iodide showed that fractions increased the apoptotic cells percent. The wound closure and trans well assays were used to evaluate the migration cell, and the trans well assay with Matrigel was used to evaluate the invasion cell, wherein all fractions inhibited the 4T1 wound closure, IID10, IA19 fractions inhibited trans well migration, and ID7, IID10, and IIIA32 decreased invasion cell. Furthermore, all fractions increased the 4T1 adhesion to basement membrane components and decreasing the MMP-2 activity in the 4T1cells supernatant. In the in vivo assay, this fraction decreased the volume and weight of the tumor extracted from mice induced with 4T1 and treated with ID7, in addition to decreasing the number of lung metastases. The ID7 ESI-MS(-) characterization suggesting the presence of fatty acids, phenolic acids, and diterpene. Thus, it was found that the *Bauhinia* fractions tested, exhibited selective antitumor and antimetastatic activity of breast cancer.

Biography

Santos K M is a Biomedical from José do Rosário Vellano University (2010). She has completed her Master's degree in Biotechnology from the Federal University of São João del Rei (2013). Currently, she is a PhD student in Biochemistry and Molecular Biology by Multicentral Program of the Brazilian Society of Biochemistry and Molecular Biology, working on the main themes: medicinal plants (Bauhinia) fractionation and identification of compounds, cancer and metastasis (metalloproteinases), Alzheimer (acetylcholinesterase inhibition), cryopreservation and culture of tumor cells and depression (behavioral assays). She is also Professor at the Biomedicine and Physiotherapy courses at the José do Rosário Vellano University and at the University Center of Formiga.

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Activity of derived extracts from *Annona coriacea Mart.* on head and neck tumor lines

Aline T M Coelho[1], Rodolfo E M Ribeiro[1], Ana G Silva[1], Gilvânia A R Cordeiro[1], João G M Junqueira[2], Vanessa G P Severino[2], Renato J S Oliveira[3], Rui M V Reis[3] and **Rosy I M A Ribeiro[1]**
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Head and neck squamous cell carcinoma (HNSCC) makes up about 90% of head and neck neoplasms. The treatment is aggressive, the 5-year survival rate is around 50-60% and the local recurrence is 20-30%. Studies report that the use of new antitumor drugs of natural origin, besides efficient, offers a wide field for new research. So the objective of this work is to identify the antineoplastic potential of seven extracts of the species *Annona coriacea Mart*. on head and neck tumor lines. In the cell viability assay, only the compound C4 did not reach representative IC50 values on the tested lines (HN13 and FaDu). Of the seven compounds, four (C1, C2, C3, and C5) exhibited better results and were selected to follow in further assays. In the cell migration assay, it was seen that the C2, C3, and C5 compounds inhibited the migration in HN13 and C3 and C5 in FaDu, above all in 48 hours after treatment. Changes in cell morphology were observed in the lines, which after treated with the compounds in the time of 48 hours showed cytoplasmic projections and vacuoles (HN13) and higher nuclear condensation (FaDu) compared to the control (Images 3 and 4). The results of this study contribute to the development of new antineoplastics that may help the treatment of HNSCC improving the prognosis and leading to cure.

Biography

Aline T M Coelho is a Biochemistry student at Federal University of São João del-Rei, Campus Centro-Oeste Dona Lindu (UFSJ-CCO), Technician in Pharmacy by the institution Conceição Ferreira Nunes, Divinópolis/Mg and student of scientific initiation in the Laboratory of Experimental Pathology (Lapatex), UFSJ-CCO.

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Lucas S Azevedo et al., J Biotechnol Biomater 2017, 7:6 (Suppl)
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Evaluation of activities of *Miconia cuspidata* extracts on gelatinases and HeLa cell lines

Lucas S Azevedo[1], **Natália A Ribeiro**[1] and **Rosy I M A Ribeiro**[2]
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Statement of the Problem: According to National Cancer Institute (INCA), in 2016, 12.7 million cases of neoplasms were diagnosed worldwide, of which 7.6 million died. In Brazil, 500 thousand new cases are estimated in 2017, which 61 thousand cases of prostate and 58 of breast cancer. The treatments available have many side effects and, depending on the region affected, provide a poor prognosis, mainly because of metastatic capacity that does not have viable treatments. Thus, it is extremely important to develop more effective and specific treatments of this disease.

Methodology & Theoretical Orientation: There were verified the presence of secondary compounds by phytochemical study analyses. In parallel, zymograms were made with gelatin as a substrate to evaluate the inhibitory capacity against Matrix Metalloproteinases (MMPs). Subsequently, the extract activity on HeLa (human cervical neoplasia) cell lines was evaluated by cell viability assay. Finally, inhibitory capacity was evaluated by migration assay.

Findings: Hexanic partition exhibited the presence of steroids/triterpenoids, flavonoids, saponins, alkaloids, tannins and coumarins. It also inhibited approximately 50 percent of MMP-9 activities. The IC_{50} was achieved with 7.38 µg/mL on HeLa. This extract decreased closure by 20 percent in compared to control in both 24 and 48 hours.

Conclusion & Significance: It is suggested that *Miconia cuspidata* hexanic partition has antitumor potential owing to its secondary compounds.

Biography

Lucas S Azevedo is a Biochemistry student at Federal University of São João del-Rei (UFSJ). He develops research in Experimental Pathology Laboratory (LAPATEX), which focuses on activities evaluation of Cerrado plants in neoplasic cells.

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Evaluation of the antineoplastic potential of new natural compounds in glioblastoma lines

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Nowadays, cancer is one of the diseases with the highest number of deaths worldwide. Glioblastomas are one of the most aggressive tumors of the central nervous system in adults. The average survival rate of patients diagnosed with this disease is only 3% in five years. The available treatments are only palliative, justifying the need of studies aimed at screening new compounds more effective for clinical use. The present study aimed to evaluate the antitumor potential of plant extracts of *Annona coreacea* in two human glioma lines, GAMG and U251. Cell viability was quantified by the reduction of MTT ([3-(4,5-dimethylthiazol-2yl)-2,5-diphenyltetrazolium bromide) to formazan, its metabolization being proportional to the number of viable cells. The absorbance was measured by the spectrophotometer at wavelength 570 nm after 2 hours and 30 minutes incubation with MTT (2.5 mg/mL). The IC50 of all compounds was elucidated by a 24 hours dilution curve with concentrations (1 µg/mL, 7 µg/mL, 15 µg/mL and 25 µg/mL). AcL3 was the most promising partition for U251, with IC50 equal to 1.355µg/mL, and for GAMG AcL1 partition shown the best result, IC50 equal to 3.355 µg/mL. Migration assay was performed using the "wound-healing" methodology and aimed to evaluate the potential inhibition on cell migration of the partitions against U251 cell lines. Cells were treated with the IC50, pre-determined by MTT assay. Relative migration was estimated by the formula: % wound-healing percentage: (%) = 100 (AB)/A, where A is the width of the wounds before treatment, and B is the width of the wounds after treatment. The images were obtained at times 0, 12, 24 and 72 hours after treatment for measurements. AcL3 and AcL4 shown to be the best compounds when analyzed the inhibitory potential of the extracts on cell migration.

Biography

Lorena R Sousa has formed in Biology in 2015 at University Federal of Pampa located in SG, RS. Currently, she is pursuing her MS in Biochemistry and Molecular Biology at University Federal of São Joao Del Rey located in Divinopolis, MG. She works with glioblastomas cell lines, an aggressive tumor of the nervous central system of adults. In past, she worked with some other diseases such as Alzheimer's and Parkinson, using *Drosophila melanogaster* as an alternative model organism.

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Antitumor activity of Miconia chamissois Naudin fractions in human glioma lines: *In vitro and in vivo*

Ana G Silva[1], Fernanda E Pinto[2], Wanderson Romão[2], Alisson R Rezende[3], Fernanda P Cury[4], Viviane A O Silva[4], Renato J S Oliveira[4], Rui M V Reis[4] and **Rosy I M A Ribeiro[4]**

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Introduction: Gliomas represent nearly 70% of the central nervous system tumors. Despite the progress of chemotherapy and radiotherapy, the median survival is around 12-17 months. Studies have shown that the use of new natural antineoplastic agents has been highly effective and offers a wide field of research. The aim of this study is to investigate the antitumor potential of *M chamissois* Naudin chloroform partition and fractions on glioma cell lines.

Results & Discussion: The chloroform partition and fractions exhibited dose-dependent cytotoxic effects in the majority of the glioma cell lines. Amongst the fractions tested, McC1 and McC3 displayed the best activity, with an IC_{50} mean ranging from 0.25 to 30 μg/mL and index selectivity. These fractions also showed a significant reduction in cell migration (35% for McC1 and 24% for McC3), and invasion (24% for McC1 and 22% for McC3). Furthermore, the clonogenicity was reduced 40% for GAMG and 50% for U251MG with McC1. Both fractions had a synergistic effect when combined with the chemotherapeutic temozolomide. The fractions promoted a significant increase of pH2AX, cleaved PARP and cleaved caspases (3, 7 and 9) levels ($p<0.05$), suggesting DNA damage and cell death by apoptosis. *In vivo* chicken chorioallantoic membrane assay, the McC1 fraction inhibited angiogenesis and tumor perimeter. The two best fractions McC1 and McC3 were characterized by electrospray ionization mass spectrometry, both containing six molecules.

Conclusion: These findings contribute to new treatments for human glioblastoma, in addition to the combination with conventional therapy potentiate its therapeutic effect.

Biography

Ana G Silva is a PhD student in the Biotechnology program of the Federal University of São João del-Rei. She has completed her Master's degree in Biotechnology Applied to Health (2017) and Bachelor's degree in Nursing (2014) from the Federal University of São João del-Rei, Campus Centro Oeste Dona Lindu, Divinópolis/MG. She participates in the research group Biological Activity of natural products. It currently focuses on screening new compounds from natural products *in vitro* and *in vivo* in human glioblastoma tumor cell lines.

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Break of dormancy and evaluation of the germination rate of the cerrado medicinal species: *Eriosema pycnanthum*

José A R Neto, Vanessa S Stain Dra and **Rosy I M A Ribeiro**
UFJS, Brazil

Eriosema (DC) Desv. is a genre present in Africa and America. 30 species in Brazil 19 of which are Cerrado species such as *E. pycnanthum*. This species is a subcultural leguminous found in soils of the Iron Quadrangle of Minas Gerais and in the region of Itapecerica, where it is as natural cicatrizant. Although it is used in traditional medicine, there are no studies aimed the germinative effectiveness *in vitro* of this species. The seeds obtained in the field were disinfested with hydroaalcoholic solution (70%-1') followed by hypochlorite (1%-15') and then treated in KNO^3 (2%). The variables of number of groups, time in KNO^3, time at storage were defined by analysis of variables by statistical software SISVAR (Ferreira, 2011). As seeds were inoculated with or without the integument in tubes with MS medium supplemented with 30 g/L of sucrose and solidified with 6 g/L of agar at pH 5.7±0.1. It was evaluated if light (40 µmol, 45 days I in a 16-hour photoperiod affect the germination. Tetrazolium Bromide (1%) was used as a marker of the electron transport chain. Seeds with tegument for 24 hours.

Biography

José A R Neto is a PhD candidate with Biotechnology in the area of isolation of molecules with application in human health. He has completed his Master in Biotechnology, UFSJ, in the area of Isolation of molecules and bioprocesses applied to the environment and Bachelor in Biological Sciences is a Specialist in Environmental Management and Management in Forest Systems-UFLA-MG and international specialization by the Brazil/Argentina Center for Biotechnology in Biotechnology tools for the conservation, management, and analysis of plant genetic resources-CABBIO-Brazil-Argentina. He is an illustrator of books in the areas of Public Health and Parasitology. He has trained in research centers such as Fiocruz and Embrapa. He has experience in laboratory work, bioprospecting, obtaining, fractionation and use of natural extracts to combat *Culicidae*, pest identification, public health, cicatrizant biocomposites production, *in vitro* propagation of plant species, plant acclimatization, maintenance and multiplication *in vitro* of human tumor cell lines, besides the large areas of Bioethics, Entomology, Biochemistry, Microbiology, Cellular and Molecular Biology.

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Screening of extracts of the Cerrado in human glioblastoma tumoral cell line

Patrik S Vital[1], Ana G Silva[1], Alisson R Rezende[2], Renato J S Oliveira[3], Rui M V Reis[3] and **Rosy I M A Ribeiro[3]**
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Introduction: The Cerrado is the second biome among the five largest ones located in Brazil, with a vast variety of species that were still not studied regarding their biological properties. For that reason, the investigation of the potential cytotoxic activities in cancer of these species seems very promising. Glioblastoma, for instance, a central nervous system's tumor, is presented as an of the most aggressive types of cancer, with a poor prognostic and high mortality rate. Thus, this work had as objective the screening of six Cerrado's species in human glioblastoma tumoral cell line.

Results & Discussion: Among the six vegetal extracts evaluated, three species (EB01, EB02 and EB03) presented high cytotoxicity in U251 cell line, having IC50 value lowest that 40 μg/mL at 24 hours of treatment – 38.93 μg/mL, 12.08 μg/mL and 14.27 μg/mL, respectively. The current chemotherapeutic used to treat that type of tumor, Temozolomide, presents an IC50 value of 129.8 μg/mL at 72 hours of treatment. These findings are interesting because, when compared with the currently used chemotherapeutic, these extracts have a much lower cytotoxic concentration.

Conclusion: The early screening allowed to find three potential antitumoral extracts in glioblastoma cell line since they were cytotoxic at very lowest concentration than the currently used chemotherapeutic.

Biography

Patrik S Vital is a Biochemistry student by Federal University of São João del-Rei, Campus Centro-Oeste Dona Lindu (UFSJ-CCO); Industrial Automation Technician by Conceição Ferreira Nunes College (CECON), Divinópolis-MG, Technician Buildings by Serviço Nacional de Aprendizagem Industrial College (SENAI), Divinópolis-MG and Scientific Initiation Student in the Laboratory of Experimental Pathology (LAPATEX), UFSJ-CCO.

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Xylopia aromatic hexane extract promotes antitumor effects in Ehrlich tumor carcinoma

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Introduction: The *Xylopia aromatica*, a typical Brazilian cerrado species, has been used in several studies due to the biological properties related to the presence of alkaloids, flavonoids and acetogenins presence in genus *Annonaceae*. In this study, we evaluated the antitumoral effect of extracts of *X. aromatica* and identify their secondary metabolites.

Methodology: The hexane and ethyl acetate extracts were obtained by liquid-liquid fractionation of hydroalcoholic extract (CE). A cell line of Ehrlich ascites carcinoma cells (EAC) was obtained from the peritoneal cavity. $2.5x10^5$ cells/well and it was distributed and treated with a serial dilution of 1000 $\mu g.mL^{-1}$ to 32.3 $\mu g.mL^{-1}$ of extracts. The cells were count at 6, 12, 18 and 24 hours after treatment. To assay in vivo, the animals were inoculated with $2x10^6$ cells/well in suspension (PBS, pH 7.2), in the right flank. The animals were treated intraperitoneally with 32.3 $mg.kg^{-1}$ of hexane partition and 32.3 mg.kg-1 of ethyl acetate partition. The tumor growth was accompanied for 20 days. Secondary metabolites were identified by HPLC-DAD.

Results: All partitions and CE were cytotoxic against EAC *in vitro*. The lowest concentrations of hexane and ethyl acetate partitions (62.5 $mg.mL^{-1}$ and 32.3 $mg.mL^{-1}$, respectively) were more cytotoxic than other treatments. For the *in vivo* assay, hexane partition induced a decrease of necrosis area, inflammatory infiltrate and MMP-2 expression. The extracts demonstrated a band characteristic for phenolic acid (263 nm), flavonoids (255 and 354 nm) and alkaloids (282 and 302 nm).

Conclusion: The study concludes that hexane extract of *X. aromatic* may be a promising natural source for active compounds against cancer.

Biography

Maria Juliana Ferreira Passos holds a degree in Biochemistry from the Federal University of São João Del-Rei (2013). She has concluded the scientific initiation with the development of the work entitled "Isolation and characterization of isolated peptides of venom of the snake *Crotalus oreganus abyssus* with pharmacological action on the control and release of insulin", in two consecutive years as CNPq fellow. She has completed her Master's degree at the Federal University of São João Del Rei by the Graduate Program in Pharmaceutical Sciences, finalizing the project that involves the research by targets, through the technique of Reverse Vaccinology, that allow the development of vaccines against *Schistosoma mansoni*. Currently, she is a PhD student in the multicenter program of postgraduate in Biochemistry and Molecular Biology, with emphasis on the discovery of natural extracts that have antitumor action on human glioma lines.

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Notes:

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Poster Presentations

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Rom-Agrobiofertil NP- biological fertilizer for a sustainable agriculture

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Romvac Co., Romania

Statement of the Problem: Evolution of modern agriculture has led to extensive use of agricultural chemicals which have degraded the soil fertility, soil profile and rendered the soil unsuitable for plant growth. Biofertilizers are being recognized as an essential component for increasing the sustainable agricultural productivity and maintaining long term soil fertility in an eco-friendly manner. Rom-Agrobiofertil NP is a biological fertilizer based on three bacteria belonging to *Azospirillium lipoferum, Azotobacter chroococcum* and *Bacillus megaterium species*. Rom-Agrobiofertil NP contains living microorganism which, when applied to seed, plant surfaces, or soil, colonizes the rhizosphere and the interior of the plant and promotes growth by increasing the supply or availability of primary nutrients to the host plant.

Methodology & Theoretical Orientation: The product was applied to tomatoes (Prekos F1), cucumbers (Mirabelle F1) and cauliflower (Cornell F1), both in the seedling phase and after planting, as an aqueous solution sprayed on soil. Two treatments were applied on seedlings: 4 days before sowing and 15 days after emergence. During vegetation period were performed three applications, using 15 l/ha. Plant height, number of leaves and the length of the roots as well as the obtained yield were determined and recorded.

Findings: In tomato, cucumber and cauliflower seedlings the application of Rom-Agrobiofertil NP has improved plant height (5.6 -17.9%), number of leaves (> with 20.0-29.6%), number of roots (19.5–40.8%) and the length of the roots (21.2-33.1%). In tomato, cucumber and cauliflower crops, the effect has been reflected both in the growth and development of plants and in the obtained yield higher with 2.3% on tomatoes, 3.7% on cucumbers and 2.4% on cauliflower.

Conclusion & Significance: Additional obtained yield was significant in comparison with untreated controls, in all three vegetable crops

Biography

Nicolae Levandovschi has dedicated his last years in learning and discovering how bacteria works best. His major concern was to ensure the optimal composition of culture media, the right range of both temperature and pH and the exact moment of harvesting the bacterial culture. He applied this model to all the bacteria he was responsible for, as Chief of department of living or inactivated vaccines. The newer the project, the harder the challenge seems to be the pathway for improving range of products of Romanian company Romvac, in order to meet the requirements of Ph. Eur., GMP or EMA. As part of an experienced team, he has included in Romvac Co portfolio Rom-Agrobiofertil NP, a top product for good health of soil and rich crops in agriculture.

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Notes:

Leidy Yanira Rache et al., J Biotechnol Biomater 2017, 7:6 (Suppl)
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Cellulase and xylanase activities of *Xanthomonas axonopodis* pv. *manihotis (Xam)* strains collected from different regions of Colombia

Leidy Yanira Rache, Adriana Bernal Giraldo and **Silvia Restrepo**
Universidad de los Andes, Colombia

Statement of the problem: Microorganisms are an important source of plant cell wall-degrading enzymes. This is especially true for plant pathogenic bacteria because the production of plant cell wall-degrading enzymes is practically a prerequisite for pathogenesis. Recent studies characterized the activity of the enzymes produced by different bacteria, and their utilization in industrial processes, including the degradation of lignocellulosic biomass for biofuel production. Currently, the sources to obtain biofuel are not renewable, and the diversity of enzymes produced by native endogenous bacteria is becoming more importance. Thus, we propose to analyze the carboxymethyl cellulase (CMCe) and xylanase activities of the cassava pathogen, *Xanthomonas axonopodis* pv. *manihotis (Xam)* strains collected from different regions of cassava production in Colombia.

Methodology & Theoretical Orientation: We performed a screening of the enzymatic activity of 660 *Xam* strains maintained at the Natural History museum collection of the Universidad de Los Andes. The hydrolytic activity was determined using 0.2% Congo red and identifying clear halos. Strains showing statistically significant differences and the highest coefficient estimates were selected and individually analyzed for their hydrolytic activity.

Findings: A total of 34 out of 660 *Xam* strains showed significant differences, and the higher coefficient estimate of CMCe activity. The highest ranges of carboxymethyl cellulose degradation ranged from 6.269 to 4.992 cm2 in area, and the lowest between 1,71 and 0.445 cm2. A total of 46 out of 660 Xam strains showed significant differences and highest coefficient estimates of the xylanase activity. The highest ranges of Xylan degradation ranged from 0.3375 to 0.261 cm^2 in area, and the lowest between 0.2096 to 0.2 cm2. Differences in *Xam* hydrolytic activity were analyzed and related at the molecular level.

Conclusion & Significance: This study is an important approach to increase the knowledge on plant hydrolytic activities of *Xam* and to discuss the possible use of these enzymes in biotechnological processes

Biography

Leidy Yanira Rache has developed her studies in different areas of knowledge, such as in vitro plant tissue culture of several fruits species, gene flow in GM cotton, and pesticide degrading capabilities of bacteria. Currently, she is studying the population genetic diversity and cellulolytic activity of *Xanthomonas axonopodis* pv. *manihotis* from different regions in Colombia. The aims of the study are to propose control strategies to the blight caused by the bacteria, and to promote research for knowledge of not only native *Xam* species but also others native pathogenic bacteria in Colombia.

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Cytotype and molecular variability of Myriophyllum L

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Myriophyllum L. (watermilfoil) is the largest genus of the family *Haloragaceae* and belong the most species-rich genera of aquatic plants. Distinguishing of genus *Myriophyllum* is rather challenging. Despite the apparent taxonomic complexity, almost nothing is known about the cytogenetic structure of the genus in North America. In our study, we used flow cytometry and chromosome counting to recognize genome size and DNA ploidy level in species of genus *Myriophyllum*. We analyzed 294 European and 329 North American population samples. All species of genus *Myriophyllum* were found in both areas, except North American *M. alterniflorum*. Large cytotype variability (2x, 3x, 4x, 6x, 8x and 9x) was found in the USA and Europe. Cytotype variability was found in populations of *M. heterophyllum* where diploids and triploids were examined. Sympatric growth of diploid and triploid cytotypes was encountered in one population of *M. pinnatum*. Two populations of *M. aquaticum* in Europe (Hungary) had cytotype variability (6x and 8x) whereas all N. American populations were octoploids. Cytotype variability was also found in populations of *M. sibiricum* where hexaploids and nonaploids were observed. There was clear geografic isolation showing *M. sibiricum* as a hexaploids only in N. American and nonaploids in European populations. Only one nonaploid specimen of *M. sibiricum* was found in N. American populations and just one hexaploid of *M. sibiricum* in the European population. Nonaploids in USA and hexaploids in Europe of M. *sibiricum* were detected for the first time. Genome size (2C) ranged from 0.41 pg in diploid *M. humile* (2n=14) to 2.66 pg in nonaploid *M. sibiricum* (2n=63). These findings give evidence that a detailed study of cytotype composition. Last but not least, studies of ploidy variation have repeatedly proved necessary to elucidate the mechanisms of triggering the invasive behavior in plants.

Biography

T Kávová is a Molecular Geneticist with specialization on population-genetic studies. She is most interested in ecological topic with the implantation of new techniques in molecular analyses. Techniques that she perfectly controls range from basic lab work, through complete knowledge of molecular genetic techniques including sequencing to current flow cytometry specialization. The topic of her thesis is genetic and cytogenetic variability of *Myriophyllum L.* in the native and invasive area of the genus..

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Dagmar Stehlikova et al., J Biotechnol Biomater 2017, 7:6 (Suppl)
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Design and testing of duplex-PCR primers for detection of bacterial spot of tomato

Dagmar Stehlikova, Vladislav Curn and **Pavel Beran**
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This study presents development of duplex-PCR assay for specific detection of plant pathogenic bacteria of *Xanthomonas* genus causing bacterial spot of tomato and pepper. PCR primers for differentiation of *X. euvesicatoria* and *X. vesicatoria* were developed based on the DNA sequences of bacterial type strains. Primer pairs were designed and subsequently thoroughly tested and optimized for parallel detection of the bacteria. Specificity of the primers was tested on a large complex of bacterial strains pathogenic to tomato, pepper and related crops. Following the described protocol *X. euvesicatoria* and *X. vesicatoria* can be quickly and reliably identified in a single duplex-PCR assay.

Biography

Dagmar Stehlíková is a Molecular Geneticist with specialization on detection phytopathogenic bacteria. She is most interested in quarantine bacteria *Xanthomonas, Ralstonia, Burkholderia* etc. Techniques that she is expert in molecular methods are loop-mediated isothermal amplification, reatime PCR and multipex PCR.

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Production of extra jam from indigenous grape varieties

Vlasta Pilizota and **Ante Loncaric**
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Noah, Othello and Isabelle are grape varieties introduced in Europe in the 19th century due to their natural resistance to *Phylloxera*. Since these varieties were directly planted in winegrowers' fields they were called direct producers or direct producer wines. The term came to cover native American species (*Vitis aestivalis, V. labrusca, V. riparia, V. rupestris*) and hybrids obtained from interspecific crossings, either with each other, or with the European common species *Vitis vinifera*. Due to EU Regulation No. 1308/2013, and Croatian Law on Wine (NN 14/14), it is forbidden to produce wine from these grape variates. In this research, we investigated the possibility of exploitation of these grape variates for production of jams to encourage local producers to preserve these grape cultivars. The results of investigation showed that the highest soluble solids content had white Noah followed by red Noah, Isabelle and Othello, 22; 21; 19; 18 Brix, respectively. Othello and white Noah had the highest total acid content (1 g/100 g), while Isabelle had the greatest polyphenol content (2.04 mg/mL), and antioxidant activity (2073.93 μmol trolox/100 mL). The main polyphenols in white grape variate were gallic acid, epicatechin, quercetin and caffeic acid, while in red variates additional anthocyanins were identified (cyanidine-3-glucoside, cyanidine-3-rutinoside, malvidin-3-glucoside and delphinidin-3-glucoside). The soluble solids content of extra jams was set on 60-62%, which is according to the National (Croatian) Law (NN 46/07, 55/11), and directives for production of extra jams. Jam production caused decrease in AOA for 25; 31; 42 and 47% in black Noah, white Noah, Othello and Isabelle, respectively. The amounts of individual polyphenols were lower in jams compared to unprocessed grapes. The smallest change of color, caused by jam production, was measured in Othello (2.22) and Isabelle (2.75) grape varieties.

Biography

Vlasta Pilizota has her expertise in basic research of structure and composition of food (and/or food model systems) such as aroma composition of different food, thermo-physical and rheological properties of foodstuffs, inhibition of browning of fruits and vegetables, safety of minimally processed fruits and vegetables, improving the process for processing and preservation of foods, and the applied research for food processing – industry.

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Video Presentation

Peng-Sheng Wei, J Biotechnol Biomater 2017, 7:6 (Suppl)
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Pore shape affected by gravity

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The pore shape in solid as a result of entrapment of a bubble by a solidification front is predicted in this work. Pore formation in solid influence microstructure of materials, and contemporary issues of biotechnologies, etc. It has been known that scaffolds were engineered to be bioactive or bioresorbable to enhance tissue growth. Scaffolds are also designed to induce bone formation and vascularization. These scaffolds are often porous, biodegradable materials that harbor different growth factors, drugs, genes or stem cells. In this work, extending previous models by accounting for mass and momentum transport across a coupled shape of the cap, and focusing on case 1 which indicates that solute transport is from the pore into surrounding liquid in the early stage, it shows that controlling gravity is an interesting and important factor in manufacturing porous materials. An increase in gravity can increase bond number, hydrostatic head, and ambient pressure. In contrast to hydrostatic head and ambient pressure, an increase in bond number decrease pore size and time for bubble entrapment. The predicted pore shape agrees with experimental data.

Biography

Peng-Sheng Wei has received his PhD in Mechanical Engineering Department at University of California, Davis, in 1984. He has been a Professor in the Department of Mechanical and Electro-Mechanical Engineering of National Sun Yat-Sen University, Kaohsiung, Taiwan, since 1989. He has contributed to advancing the understanding of and to the applications of electron and laser beam, plasma, and resistance welding through theoretical analyses coupled with verification experiments. Investigations also include studies of their thermal and fluid flow processes, and formations of the defects such as humping, rippling, spiking and porosity. He has published more than 80 journal papers, given keynote or invited speeches in international conferences more than 90 times. He is a Fellow of AWS (2007), and a Fellow of ASME (2000). He also received the Outstanding Research Achievement Awards from both the National Science Council (2004), and NSYSU (1991, 2001, 2004), the outstanding Scholar Research Project Winner Award from National Science Council (2008), the Adams Memorial Membership Award from AWS (2008), the Warren F Savage Memorial Award from AWS (2012), and the William Irrgang Memorial Award from AWS (2014). He has been the Xi-Wan Chair Professor of NSYSU since 2009, and Invited Distinguished Professor in the Beijing University of Technology, China, during 2015-2017.

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Evaluation of flavonoid catechin from an endophytic fungus Curvularia australiensis FC2AP for treating cervical cancer in female Sprague Dawley rats

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Introduction: There is an increasing emergence of bio products from microbes such as metabolites in the fields of medical and pharmaceuticals. Most of the people in the current world are affected with cancer; especially, women are in major risk of cervical cancer. In this due, this research has been focused to obtain antioxidants or potential metabolites to treat against the cervical cancer. Majorly among the microbes, endophytic fungi have been considered as prospective one which produces novel metabolites substantially. With this in view, the current investigation has been designed for the activity of anti-cancer drug flavonoid catechin in Sprague Dawley rats.

Materials & Methods: The secondary metabolites have been explored from *Curvularia australiensis* FC2AP (KR363626) isolated from *Aegle marmelos* by statistically optimized fermentation conditions, purified (chromatographic techniques) and characterized (HRLC- MS/MS, FT-IR and NMR: ^{1}C & ^{13}C) as a potential secondary metabolite as flavonoid catechin (MM4). The potential product was taken to assess the acute toxicity in albino mice, anti- inflammatory property in Wistar rats and anti-cancer evaluation in Sprague Dawley rats by following the CPCSEA standards. All animal procedures were performed in accordance with Institutional Animal Ethic Committee (IAEC) guidelines, after getting the approval from the Committee for Control and Supervision of Experiment on Animals (CPCSEA) at KMCH college of Pharmacy, Coimbatore, Tamil Nadu, India.

Results: Through this study, we found that the effective dosage for the survival is 1.25 g/kg (Gp V) and the lethal dosage as 1.5 g/Kg (Gp IV) in acute toxicity assessment. Above 1.5 g/Kg of the purified compound MM4 produced hyper sensitivity, righting reflex, tremors and convulsions leading to the death of the animal. The anti-inflammatory analysis resulted with the percentage of inhibition was found to be 41.09% (300 mg/kg) which was found to be twice than the standard drug indomethacin (20.17%) used whereas, the Group IV showed only 12.9% inhibition. This proved that the compound flavonoid catechin was efficient against inflammatory responses. The cervical cancer was induced in female rats using DEN (N-Nitrosodiethylamine) and the treatment was continued with flavonoid catechin for 180 days. After the stipulated days the rats were taken for hematological, biochemical and histopathological studies and the results indicated that the compound MM4 has the ability to reduce the tumor by not affecting the nearby non- tumor cells. Further, the investigation will be carried in higher animals.

Conclusion: This study explores the biomolecule flavonoid catechin from an endophytic fungus to explore the anticancer potentiality through animal models. This is the first report of flavonoid catechin production from an endophytic fungus *C. australiensis* has the anticancer potentiality. This metabolite can be stated as anticancer drug.

Biography

Vellingiri Manon Mani has started up her research on anti-cancer with bioactive microbial metabolites in a passionate aim to achieve the grail for human wellbeing. Her experience gained on research and teaching has been explored to make the students to get higher knowledge on biotechnological fields. The research gained by her had a great impact on treating the cervical cancer and moreover the drugs obtained by her research have been implied on the medicinal fields. She has developed a new technique on the extraction of microbial metabolites and its application as a drug in medicinal fields which is under filed in IPR. The technical approach developed by her will have highest reach on the research field in future biotechnological field.

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Chemical characterization and optimization of 4MHA pentapetide lactone from Streptomyces parvulus C5-5Y

Arockiam Jeyasundar Parimala Gnana Soundari[1, 2], **Vellingiri Manon Mani**[1, 2], **K P Salin**[1] and **Venkatesan Brindha Priyadarisini**[1]
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Introduction: The needs for increase in novel drugs urged to discover and develop new antibiotics with biopotentiality. The natural products have been developed from medicinal plants and the recent research has mainly focused on the microbial sources for novel antibiotics with bioactivities and this is economical in state. In this investigation we have developed a new bioactive compound with maximum antioxidant and antimicrobial activities.

Methodology: To increase the metabolite production as well as organism's growth, we aimed to optimize the medium with economical parameters and sources rapidly. This bioactive compound was elucidated from *Streptomyces parvulus*.

Results: The maximum growth and pigment production was evaluated with the standard formula, and the production was higher in optimal pH, temperature, carbon and nitrogen sources. The carbon sources are found to increase the growth of the organism especially in starch. The mass production was obtained in the optimized medium and the extracted pigments were subjected to HPLC analysis where the peak 4 was eluted and found to contain bioactivity through antimicrobial assessment. The compound AP4 was structurally elucidated with raw data, finally the AP4 was 4MHA (4-Methyl 3-Hydroxy anthranilic acid) pentapeptide lactone and it represents the half actinomycin structure with antioxidant properties.

Conclusion: Further studies will be focused on two-dimensional NMR spectroscopy to confirm the structure and application of pigment as pharma product in *in vivo* studies.

Biography

Arockiam Jeyasundar Parimala Gnana Soundari has explored her research in Microbial Biotechnology especially in microbial metabolites for human welfare and disease prevention. Her experience has built many years in research and teaching which emphasizes student's development in research areas. Her research is mainly focused to create an economical antibiotics and pharmaceutical products from microbial origin and use it against dreadful diseases. Her foundation implies on separating a purified bioactive metabolite and applies for various medicinal fields. This makes the society to get the antibiotics in low cost. This research is a promising strategy and successful one which could be taking to higher degree levels for prevention of many diseases by microbial metabolites.

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Arvind Kumar et al., J Biotechnol Biomater 2017, 7:6 (Suppl)
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Un-regulatory actions of ecdB transcription factor present in echinocandin B biosynthetic gene cluster

Arvind Kumar and **Antresh Kumar**
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Statement of the Problem: Candida infection is a major threat for, immunocompromised patients, in transplantation, AIDS and malignancy patients undergone in ICU which accounts ~40% ICU mortality. Echinocandin B (ECB), a cyclic hexa-peptide antifungal is mainly used for the treatment of such *Candida* and *Aspergillus* infectious pathogens that refractory to Azoles and Polyenes. It inhibits 1,3-β- glucan synthase by blocking the cell wall synthesis. The biosynthetic gene cluster of Echinocandin B of *Aspergillus nidulans* NRRL 11440 was identified, it contains various structural genes such as NRPS, transporters, acyl-AMP ligase, various oxygenases adjacent to a transcription factor *ecdB*. The regulatory mechanism and function of this *ecdB* transcription factor was not so far known which has been targeted to be explored in present study.

Methodology & Theoretical Orientation: The functional analysis of *ecdB* transcription factor was investigated by gene knockout strategy. The ECB production and transcriptional analysis was observed by HPLC and semi-quantitative PCR respectively.

Findings: The Echinocandin B production in *ecdB* knockout strain (Δ*ecdB*) and WT and no significant difference was found both at production and expression level as compared to WT, while expression of *ecdB* gene is completely lost in Δ*ecdB* strain. Moreover, growth, sporulation, spore germination rates and morphology were also found same with no difference as compared to WT.

Conclusion & Significance: Taken together, *ecdB* present with in the gene cluster has no direct role in regulation the ECB biosynthesis, in addition to that it also not involved in developmental and morphological process of the cell. We suggest that other regulatory network present outside the cluster may have role in ECB biosynthesis.

Biography

Arvind Kumar has completed his MTech in Biotechnology and recently engaged in the research as PhD Fellow in Central University of South Bihar, Patna, (India). He has expertise in elucidation of regulatory network involved in fungal secondary metabolite biosynthetic gene clusters. He also has expertise in the screening, isolation and characterization of bioactive secondary metabolites from fungi as well as plants. Recently, he has started working in the field of molecular characterization and elucidation of regulatory network involved in echinocandin B production. Previously, he has identified a new plant derived insecticide for mosquito control and patented for its commercial use.

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M Shokry, J Biotechnol Biomater 2017, 7:6 (Suppl)
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December 04-05, 2017 | Sao Paulo, Brazil

Commercial polyester fabric repair of abdominal defects and hernias

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Hernias are common surgical affections of human and animals and their treatments may vary from simple herniorrhaphy to hernioplasty with prosthetic materials. This work was designed to study the feasibility of using commercial polyester fabric (CPF) as a prosthetic mesh for reconstruction of abdominal hernias and defects in experimental and clinically affected animals. The subjects of the experimental work were 12 dogs, 3 goats and 3 donkeys. Following anesthesia, an artificial abdominal defect, measured 5X12 cm in dogs and goats and 12X20 cm in the donkeys, was produced by resection of a piece of abdominal muscle in 3 different abdominal regions, such as the epigastrium (3 cases), the mesogastrium (12 cases) and the hypogastrium (3 cases). An appropriate piece of sterilized CPF was implanted either in 2 layers in small animals or in 4 layers (folded) in large animals in the abdominal defects. The techniques of implantation used, were reteroperitoneal (6 cases) in which the CPF was implanted between the internal rectus sheath and peritoneum, intra-peritoneal implantation either with (3 cases) or without (3 cases) mentalization; and double sandwish (3 cases) using 2 layers. Morphological and histo-pathological examinations were carried out on full thickness sections after euthanasia at 1, 2 ,3 ,4, 5 and 6 months postoperatively. The clinically affected cases comprised different species of animals at different locations. Gross examination of the abdominal wall at the experimental implantation site at monthly intervals for 6 months showed the unaltered integrity of the CPF and uniform infiltration of the prosthetic material with a layer of white connective tissue of variable thickness (4 to 10 cm). Histological features correlated well with the gross examination. Complications related to herniorrhaphy in the clinical cases have been rarely serious. In conclusion, CPF has excellent biocompatibility and no adverse histological changes. Low cost CPF therefore offers a worthwhile alternative prosthesis for mesh herniorrhaphy

Biography

M Shokry is currently a Professor Emeritus, Dept. of Vet Surgery, Faculty of Veterinary Medicine at Cairo University in Egypt. He has published more than 100 Articles in the various national and International journals.

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Phylogenetic relationships of the genus *Curcuma* L. based on cytogenetical and molecular inferences

Rama Rao and **Judith Mary Lamo**
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The genus *Curcuma* L. of the family *Zingiberaceae*, is pantropical in distribution and comprises of three subgenera viz. *C.* subg. *Curcuma, C.* subg. *Hitcheniopsis* and *C* subg. Ecomatae. Of the three subgenera, the subgenus *Curcuma* (Baker) K. Schum., contains highly complex polyploid taxa with overlapping morphological characters which contributed to taxonomic perplexity in the genus *Curcuma*. A combination of classical and molecular cytogenetics as well as molecular approaches, are essential for detailed scrutiny particularly polyploid complexes which may offer a reasonable taxonomic concept. To resolve some of these issues, fifteen species belonging to the *Curcuma* subg. *Curcuma* were taken up for cytogenetical (viz. chromosome count, male meiosis and heterochromatin banding pattern) and sequence targeted (viz. nrITS and cpDNA) studies. Mitotic study in root-tip cells, could resolved the species into three groups with 2n=42 (*C amada, C aromatica, C. comosa, C haritha, C mangga* and *C montana*), 2n=63 (*C aeruginosa, C caesia, C latifolia, C longa, C leucorrhiza, C sylvatica, C zanthorrhiza* and *C zedoaria*) and 2n=105 (*C raktakanta*) with male meiotic analysis showing a varying degree of chromosome association(s) suggesting the genus might have been affected by inter-specific crosses and thus confirming their allopolyploid nature. For phylogenetic investigation, a total of 27 *Curcuma* species which included 15 species collected exclusively from India and the remaining 12 world species retrieved from GenBank, were taken up for detailed analysis with *Alpinia galangal and Globba substrigosa* as outgroups. The studies could successfully resolve the species with respect to their infrageneric groups and could deduce some of the taxonomic discrepancy related to the genus *Curcuma. C. comosa, C. montana* and *C. latifolia* with similar morphological and floral traits demonstrated a close phylogenetic relationship. *C. sylvatica* was considered a variant derived from *C. amada* due to the mango-like aroma of the rhizome, etc. However, in light of our cytogenetical data on chromosome count and male meiosis we rule out the possibility of *C. sylvatica* (2n=63) being a variant of *C. amada* (2n=42). In depth, scrutiny of the species within the *Curcuma* clade based on morphology, cytology and molecular parameters could resolve the identity of some closely resembling *Curcuma* species when there is confusion with respect to their identity. Moreover, a close relationship between species within the *Curcuma* clade suggested that hybridization and subsequent chromosome doubling has played an important role in species diversification of *Curcuma*

Biography

Rama Rao has about 30 years of teaching and research experience in the field of Plant Genetics and Molecular Biology. He has mainly focus on characterization of genetic diversity of plant resources of Indian Thar Desert regions, later the North-east regions of India with focus on Meghalaya. Over these years, he has identified novel genotypes in *Vigna, Curcuma, Citrus* and bananas. He has published more than 105 research publications in journals of international repute.

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Notes:

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Antheraea mylitta cocoonase: A boon in silk industry

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Sericulture, both an art and a science of raising silkworms for silk production, has better prospects in developing countries as silk production is highly economical. Silkworm species vary in terms of the quality of silk they produce and the food plants they consume. Wild silkmoths include tasar silkworm, eri-silkworm, oak-tasar silkworm and muga silkworm. The Indian tasar silkworm. *Antheraea mylitta* is a natural fauna of tropical India, represented by 44 ecoraces. Wide distribution and polyphagy of this insect species has resulted in extensive variation in the population. Tasar cocoons are reported to be largest among all the silk-producing insects in the world. Cocoon, shelter for larva development to silk moth, contains fibrous protein, fibroin and is coated by the globular protein, sericin. The escape of the silk moth from cocoon requires the action of cocoonase enzyme secreted by the pupa. Cocoonase is a protease enzyme which hydrolyses sericin, soften cocoon and later they escape out. Seeking this vital function, the study focuses on the production of active recombinant *Antheraea mylitta* cocoonase and its post translation modification (PTM). PTM can significantly modulate the integral properties of protein affecting its stability, interaction and providing proper folding. Several PTMs such as phosphorylation, SUMOylation, myristoylation and glycosylation are being checked. Obtained detailed findings will be discussed

Biography

Dev Mani Pandey is interested in the research areas and scientific expertise includes: molecular biology, functional genomics, stress physiology and bioinformatics approaches on plants like rice, groundnut, medicinal plants etc., using recent biotechnological tools. He is also associated with Central Tasar Research and Training Institute, Ranchi, India for sericulture related research. He is also actively involved in research, teaching and other department and institute activities.

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Technological innovation against arbovirosis: Development of bioinsecticide against the mosquito *Aedes aegypti*

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Recently, several emerging and reemerging arboviruses have caused concern around the world. The *Aedes aegypti* mosquito is the vector of dengue, urban yellow fever, chikungunya and zika. Dengue is the most common arboviruses in the world, affecting more than 2.5 billion people a year. On the other hand, the zika virus brought an alarming fact since it was linked to babies born with microcephaly. Currently, Brazil is experiencing an outbreak of wild yellow fever in several regions of the country, which brings out the fear of the return of urban yellow fever. The most efficient way to combat all these diseases is through the control of the mosquito vector. This is mainly done by chemical insecticides, despite the emergence of resistance. In this sense, the search for new, safe and effective insecticides is necessary. Our research group has explored the biotechnological potential of natural products, especially the *Agave sisalana*. Preliminary studies showed that the *A. sisalana* crude extract has important larvicidal activity against *Ae. aegypti*. Through flow cytometry and histopathology, we observed that exposure to the crude extract of *A. sisalana* caused the necrosis of hemocytes of the exposed larvae, besides lysis of the intestinal cells and the peritrophic membrane. These results show the potential of *A. sisalana* as raw material for the production of an insecticide that helps control emerging and reemerging arboviruses transmitted by *Aedes aegypti.*

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Synthetic biology for detection of contaminants and for diagnose of disease: New biotechnology

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Despite the great advances on diagnostic technologies for disease and for detection of environmental contaminants (i.e. pesticides, heavy metals, hydrocarbons, and others), there is still a need for a non-endpoint diagnose in addition to better precision and real-time results. Therefore, herein we are presenting a novel approach based on synthetic biology to diagnose disease and for detection of environmental contaminants/pollutants. Our technology is based on a construct microbial DNA sensor. Thus, we developed three types of DNA sensors for early detection of diabetes (US Patent No.: 9,683,266 B2, June 20, 2017) Alzheimer's disease (patent pending), respectively. Also, we developed a microbial DNA sensor for detection of heavy metals in soil. Although microbial/molecular sensors have been used for detecting different biological molecules, chemicals, as well as contaminants, their sensitivity is limited. Therefore, we present here three types of sensors with higher sensitivity based on assemblage of different genetic parts which are cloned on benign bake yeast, Saccharomyces cerevisiae. The genetic parts were sequences related to proteins for detections of molecules such as glucose or beta-amyloid for diagnosing of diabetes or Alzheimer's disease, respectively. We also assembled a genetic building block for identification of specific heavy metals in soil. The diagnosis was based on the biofluorescence emitted by the mixture of the DNA sensor with patient blood plasma when the respective molecule or proteins have been detected. Hence, the degree of the diagnosed disease is based on the intensity of the fluorescence unit (FSU). Likewise, the microbial DNA metal sensor was able to identify different heavy metals in soil at very low concentrations, also based on the intensity of the fluorescence of the DNA sensor. The denoted technology brings great advantages, since it enables us to accurately classify diabetes patients in different groups (i.e. diabetic, pre-diabetic, normal), thus predicting development of the disease at early stages. In addition to early detection of the disease, the present technology also allows for earlier clinical intervention. Similarly, the technology enables us to identify metal contaminations which are undetectable under conventional methods. The above mentioned synthetic biology approach was effectively supported by a computational modeling. This new biotechnology applied to the medical and environmental fields facilitate the integration of different molecular techniques with physiological mechanisms at the cellular and molecular level on real time, based on the integration of biological sciences, engineering, and computational modeling for a more predictable biological process. This allows biology to become more effective at the industrial level not only for health solutions but also for economic benefit

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Effect of synthesis process variables on morphological and mechanical properties of vitreous carbon scaffolds for tissue engineering applications

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Vitreous carbon foams have been shown to promote bone cell adhesion, mineralization and proliferation. However, their low mechanical resistance as well as their high manufacturing cost restricts their utilization in the biomedical area. The purpose of this study was to develop bone tissue engineering scaffolds from vitreous carbon foams, which were fabricated through the template route using an economical and renewable precursor. Towards this, cellulose sponges were impregnated with a sucrose-based resin and then carbonized under inert atmosphere. The effect of the concentration of the components of the resin (HNO_3 and sucrose) on the mechanical and morphological properties of the resulting foams was determined. Moreover, the ability of the synthesized foams to promote cell adhesion was evaluated *in vitro* using human osteoblasts. Our results show that it was possible to produce vitreous carbon foams with highly interconnected polyhedral cells (cell size~1000 μm). Scaffold morphology was strongly affected by the concentration of the catalyst in the resin (HNO_3) due to its foaming effect, which lead to porous and irregular surfaces on the carbonaceous materials. Also, increasing the concentration of sucrose in the precursor resin favored the mechanical resistance of the resulting foams, reaching values close to the commercial foams. In conclusion, vitreous carbon foams with trabecular bone-like morphology were obtained from a non-toxic and renewable precursor. The fabricated foams were shown to be highly cytocompatible and to promote human osteoblast adhesion. Although the compressive strength of the foams is much lower than that of native bone, their high porosity will allow their reinforcement using an additional biocompatible phase (coating/filler). Therefore, the vitreous foams synthesized here could be used as the porous component of a composite biomaterial system for the treatment of bone defects

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Study heterotrophic growth of Chlorella sp under different carbon-to-nitrogen and carbon-to- phosphorous ratios

Catalina Andrea Lugo De Ossa, Mariana Peñuela Vásquez, Natalia Andrea Gómez Vanegas and **Juan Martin Delgado**
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Microalgae have caused interest in recent years because of their particular way of accumulating lipids. These microorganisms can be cultivated in autotrophic, mixotrophic, and/or heterotrophic way. Heterotrophic cultures decrease growth time, increase biomass concentration, and total lipid yields. Appropriate composition of the culture medium will favor the growth of the cells, for this reason commercial culture media have been modified to establish the effect of increasing or decreasing the concentration of some nutrients when producing biomass and lipids. However, to achieve good lipid yields, it is necessary to ensure a high concentration of biomass at an initial stage of cultivation. Lipids, being primary metabolites, can be induced by subjecting the microalgae to stress conditions depending on both the species and the abiotic factors. This work evaluated the heterotrophic growth of the native microalga *Chlorella* sp using glucose as carbon source and varying relations carbon/nitrogen and carbon/phosphorus to favor the production of biomass. In addition, the change of fatty acid composition changes with biomass production. Maximum biomass obtained was 9.25 g/L and 8.67 g/L for C/N of 25:1 and C/P of 200:1 during 7 days of cultivation, their productivities were 0.93 g/L*d and 0.99 g/L*d. Total fatty acid production was favored with C/N 50:1 and C/P 400:1 reaching 25.7% and 22% of total fatty acids in dry biomass, also higher fatty acid productivities in biomass of 41.16 mg/L*d and 24.32mg/L*d with C/N 10:1 and C/P 200:1. Low C/N and C/P ratios stimulated biomass production, biomass lipid productivity, and decreased total fatty acid production. High C/N and C/P ratios improved the production of total fatty acids. In this way, the maximum production of biomass must be reached for further achieving the stage of nutritional exhaustion due to the deficiency of N and P in the culture medium. This causes the elongation of polyunsaturated fatty acid chains.

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Effect of *Melissa officinalis* on rat hippocampal and cortex slices subjected to oxygen and glucose deprivation

Mushtaq Ahmed
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Cerebral stroke is 3rd leading cause of death after cancer and heart attack worldwide. Free radicals play key role in brain injury. The results of the present investigation demonstrate that Oxygen-glucose deprivation (OGD) followed by re-oxygenation led to cell damage/death via an increase in free radical's production in rat brain hippocampal and cortex slices compared with control (non-OGD) after 2h OGD followed by 1h reperfusion. *Melissa officinalis* at concentration 40 µg/ml displayed potential role in neuro-protection against OGD, followed by re-oxygenation in mitochondrial viability assays *in vitro*. In addition, *Melissa officinalis* decreased or slowdown the production free radical in the supernatant and slices homogenate of hippocampal and cortex at the end of 2h OGD followed by 1h reperfusion. Furthermore, higher concentrations of *Melissa officinalis* slightly showed neurotoxicity for hippocampal and cortex slices which could be due to a pro-oxidant effect.

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A dry method to preserve tear sample

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The tears overlay the epithelial cells of cornea and conjunctiva surface. It provides lubrication, protection and nutrition to the ocular surface. Tears is an important bio-fluid containing thousands of molecules, including proteins, lipids, metabolites, nucleic acids, and electrolytes. Tear fluid can be easily and noninvasively accessed, and it has become a useful resource for biomarker research of ocular and systemic diseases. According to a recent review, hundreds of potential specific molecular biomarkers in tears had been detected to associate with ocular diseases, such as, dry eye disease, keratoconus, Graves' orbitopathy. Other reports showed that tear can also reflect the states of breast cancer, prostate cancer and multiple sclerosis. Ideally tear samples should be stored by a simple, low-cost and efficient method along with the patient's medical record. The primary methods for collecting tears are using the Schirmer's strip and glass capillary tube, followed by flash-freezing at −80°C. But, cryopreservation of tears cannot absolutely prevent the degradation of proteins, as the samples contain various enzymes and hydrolases. Additionally, use of the required cold chain during sample transportation is challenging and costly. Here, we developed a novel Schirmer's strip based dry method which allows storage of tear samples in vacuum bags at room temperature. Using this method tear protein pattern can be faithfully preserved. LC-MS/MS analysis of proteins recovered from our dry method and from traditional wet method, indicating that there is no significant difference. This dry method facilitates sample transportation and makes it possible to store tear samples at large scale, which in turn increases the research pace of tear related diseases.

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Dihydroxyphenyl glyceric acid biopolyether of plant origin-prospective therapeutic agent

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The structure elucidation of main structural element of high-molecular water-soluble fractions from different species of comfrey Symphytum asperum, S.caucasicum, S.officinale, S.grandiflorum and bugloss Anchusa italica (Boraginaceae) was carried out. According to ^{13}C, ^{1}H NMR, APT, 1D NOE, 2D heteronuclear $^{1}H/^{13}C$ HSQC and 2D DOSY experiments the main structural element of these preparations was found to be poly[oxy-1-carboxy-2-(3,4-dihydroxyphenyl)ethylene] or poly[3-(3,4-dihydroxyphenyl) glyceric acid] (PDPGA). Thus, the polyoxyethylene chain is the backbone of the polymer molecule. 3,4-Dihydroxyphenyl and carboxyl groups are regular substituents at two carbon atoms in the chain. The repeating unit of this regular polymer is 3-(3,4-dihydroxyphenyl)glyceric acid residue. Most of the carboxylic groups of PDPGA from *Anchusa italica* and *Symphytum grandiflorum* unlike the polymer of *S.asperum*, *S.caucasicum* and *S.officinale* are methylated. The 2D DOSY experiment gave the similar diffusion coefficient for the methylated and non-methylated signals of PDPGA. Both sets of signals fell in the same horizontal. This would imply a similar molecular weight for methylated and non-methylated polymers. PDPGA is endowed with intriguing pharmacological properties as immunomodulatary (anticomplementary), antioxidant, anti-inflammatory, burn and wound healing properties. Then the basic monomeric moiety of this polymer, 3-(3,4-dihydroxyphenyl)glyceric acid (DPGA) was synthesized via Sharpless asymmetric dihydroxylation of *trans*-caffeic acid derivatives using a potassium osmate catalyst and a stoichiometric oxidant *N*-methylmorpholine-*N*-oxide. *S.caucasicum* PDPGA and synthetic DPGA exerted anti-cancer efficacy *in vitro* and *in vivo* against human prostate cancer (PCA) cells via targeting androgen receptor, cell cycle arrest and apoptosis without any toxicity, together with a strong decrease in prostate specific antigen level in plasma. However, our results showed that anticancer efficacy of PDPGA is more effective compared to its synthetic monomer. Overall, this study identifies *S.caucasicum* PDPGA as a potent agent agains.

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Screening and characterization of agarolytic bacteria from different sources

Minal Wani, Dinesh Labade and **Ravi Ghule**
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Statement of the Problem: Agar, a complex polysaccharide produced by marine red algae, is used throughout the world in a variety of laboratory and industrial applications, owing to its jellifying properties. In India, more than 100 plant tissue culture laboratories (PTCL) are engaged in plant propagation programme and ~25 are in Maharashtra state. Once the plants are transferred to soil, the residual agar with low nutrient contents thus becomes waste agar. Around 1500 kg waste agar is generated per day in a medium sized PTCL which poses a problem of disposal, as it is dumped in pits and takes months for decomposition. Agarolytic microorganisms produce agarases, which catalyze the hydrolysis of agar. Most agarolytic bacteria described have been isolated from marine sources, though there are few reports from other sources as well.

Methodology & Theoretical Orientation: The aim of the present study is to isolate bacteria which is effective in degradation of agar. Collection of samples for screening of microbes through different sources including river water, spinach field soil and compost has been done. Pure bacterial isolates obtained from enrichment technique followed by repeated sub-culturing were screened for agar-degrading ability by streaking on agar media. Isolates were characterized by using biochemical and molecular methods. Bacterial genomic DNA isolation was carried out using CTAB method. 16S r-RNA of isolates were studied.

Findings: Total 7 strains were selected as the candidates that hydrolyze agar around colony, among which three each from river water and spinach soil and one from compost sample. Three strains of *Pseudomonas, Enterobacter* and *Aeromonas* were identified and characterized using 16S rRNA.

Conclusion & Significance: Investigation on the efficiency of these isolates from non-marine sources may yield useful information and their usage for accelerated degradation of waste agar from PTCL and thus would be valuable for the industry.

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Salinity responsive genes profiling in tomato utilizing RNA sequencing and quantitative real time PCR

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Soil salinity and scarcity of fresh water resources are two of the most environmental constraints that negatively affect plant growth and productivity worldwide. Tomato (*Solanum lycopersicum* Mill.) has been classified as moderately sensitive to salinity at all plant developmental stages. Identification of salinity response genes that control tomato salt tolerance will provide important guide lines for breeding programs and genetic engineering in tomato. In this study, Illumina RNA-sequencing and qPCR were achieved in two improved tomato genotypes (L46 and L56) for salt tolerance evaluation, in order to differentially expressed genes estimation the two genotypes were affected by salinity treatment 0.5 d sm-1 as a control and 9.6 d sm-1 as a salt stress. cDNA libraries were constructed and sequenced. About 13.3 million short reads (92 bp) were generated from cDNA libraries originated from leaves of both genotypes. Genotype L56 showed over expression of major salinity- responsive genes that aid in the salinity tolerance mechanism. Genotype L46 showed different group salinity responsive genes. In conclusion, the salt tolerant breeding genotype L56 is genetically robust, as it shows enhanced expression of salt-responsive genes in response to saline conditions. By contrast, the salt susceptible genotype L46 showed some potential genetic background. These genotypes have great potential for future breeding programs.

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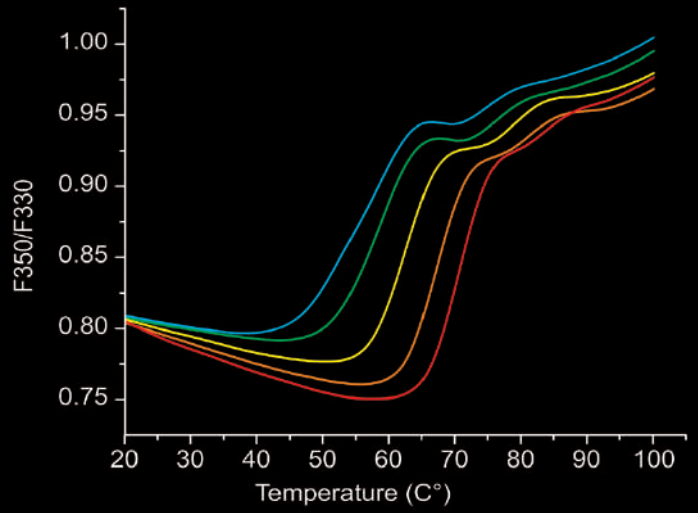
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