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Enzymology & Mol. Biology 2017

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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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Journal of Molecular Biology
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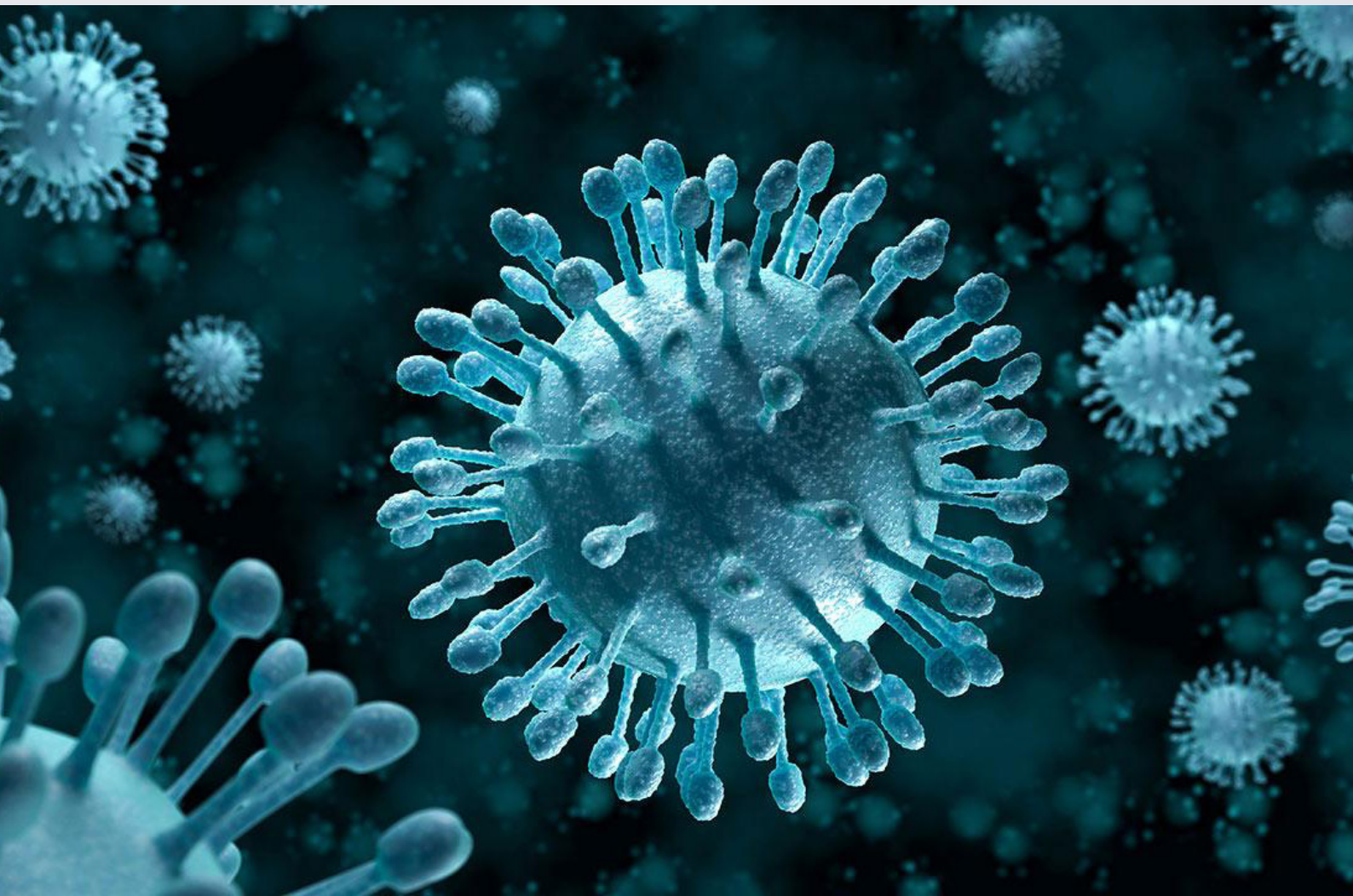
Journal of Proteomics & Bioinformatics
www.omicsonline.org/proteomics-bioinformatics.php



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20th Global Food Processing & Technology Summit Dec 11-13 , 2017 Philadelphia, USA

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19th International Conference on
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2nd International Conference on
Food Microbiology
Nov 09-11, 2017 Madrid, Spain

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Aquaculture & Fisheries
May 25-26, 2017 Osaka, Japan

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8th International Conference on
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Annual Meeting on
Naturopathic Physicians & Acupuncturists
Jul 24-26, 2017 Melbourne, Australia

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Natural & Alternative Medicine
Sep 25-27, 2017 Dubai, UAE

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19th Annual Cardiology Conference
Aug 31-Sep 01, 2017 Philadelphia, USA

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Dec 11-12, 2017 Rome, Italy

World Heart Congress
May 22-24, 2017 Osaka, Japan

16th World Cardiology Congress
December 08-10, 2017 Dubai, UAE

3rd Global Summit on
Heart Diseases
Nov 02-04, 2017 Thailand, Bangkok

CHEMICAL ENGINEERING

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Renewable Energy and Resources
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Petrochemistry and Chemical Engineering
Nov13-15, 2017 Atlanta, USA

2nd World Biodiesel Congress & Expo
Dec 04-05, 2017 Atlanta, USA

6th International Congress and Expo on
Biofuels, Bioenergy & Bioeconomy
Dec 04-06, 2017 Sao Paulo, Brazil

2nd International Conference on
Chemical and Biochemical Engineering
Jun 07-08, 2017 Milan, Italy

5th World Bioenergy Congress and Expo
Jun 29-30, 2017 Madrid, Spain

6th International Conference on
Petroleum Engineering
Jun 29-30, 2017 Madrid, Spain

3rd International Conference and Expo on
Oil and Gas
Jul 13-14, 2017 Berlin, Germany

5th International Conference on
Sustainable Bioplastics
Jul 20-21, 2017 Munich, Germany

6th World Congress on
Biofuels and Bioenergy
Sep 05-06, 2017 London, UK

6th World Congress on
Biopolymers
Sep 07-09, 2017 Paris, France

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Biomass Sep 21-22, 2017 Madrid, Spain

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5th International Conference on
Current Trends in Mass Spectrometry
Sep 25-27, 2017 Atlanta, USA

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2nd International Conference on
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4th International Conference on
Past and Present Research Systems of Green Chemistry Oct 16-18, 2017 Atlanta, USA

7th International Conference on
Medicinal Chemistry & Computer Aided Drug Designing
Nov 02-04, 2017 San Antonio, USA

2nd International Conference on
Nuclear Chemistry
Nov 06-07, 2017 Las Vegas, USA

2nd International Conference and Exhibition on
Polymer Chemistry
Nov 06-08, 2017 Las Vegas, USA

4th European Chemistry Congress
May 11-13, 2017 Barcelona, Spain

6th World Congress on
Medicinal Chemistry and Drug Design
Jun 07-08, 2017 Milan, Italy

4th World Congress on **Mass Spectrometry**
Jun 19-21, 2017 London, UK

International Conference on
Electrochemistry
Jul 10-11, 2017 Berlin, Germany

3rd International Conference and Exhibition on
Advances in Chromatography & HPLC Techniques
Jul 13-14, 2017 Berlin, Germany

2nd International Conference and Exhibition on
Materials Chemistry
Jul 13-14, 2017 Berlin, Germany

4th World Congress on **Chromatography**
Aug 07-09, 2017 Rome, Italy

5th International Conference and Exhibition on
Pain Research & Management
Sep 04-05, 2017 London, UK

5th Global Chemistry Congress
Sep 04-06, 2017 London, UK

International Conference on
Physical and Theoretical Chemistry
Sep 18-19, 2017 Dublin, Ireland

2nd International Conference on
Pharmaceutical Chemistry
Oct 02-04, 2017 Barcelona, Spain

5th International Conference and Expo on
Separation Techniques
Oct 23-25, 2017 Paris, France

10th Annual Chemistry Congress
Oct 18-19, 2017 Osaka, Japan

6th Global Congress on
Mass Spectrometry
October 18-19, 2017 Osaka, Japan

7th Global Mass Spectrometry Congress
Dec 14-16, 2017 Dubai, UAE

COMPUTER SCIENCE

5th International Conference on
Big Data Analysis
Sep 07-08, 2017 Toronto, Canada

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17th Global Dentists and Pediatric Dentistry Annual meeting
Jul 17-18, 2017 Munich, Germany

24th World Congress on
Dentistry and Oral Health
Sep 01-02, 2017 London, UK

24th Euro Congress on
Dental & Oral Health
Oct 19-20, 2017 Budapest, Hungery

2nd International Conference on
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May 01-02 , 2017 Toronto, Canada

International Conference on
Oral Biology & Restorative Dentistry
May 01-02, 2017 Toronto, Canada

30th International Conference on
Dental Science & Advanced Dentistry
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3rd International Conference on
Sports Medicine and Fitness
Sep 21-23, 2017 Barcelona, Spain

International Conference on
Dentistry & Dental Marketing
Oct 05-06, 2017 Las Vegas, USA

29th Annual World Congress on
Dental Medicine & Dentistry
Oct 16-18, 2017 NewYork, USA

37th Global Summit on
Dental Surgeons & Dental Materials
Nov 02-04, 2017 San Antonio, USA

38th Annual Congress on **World Dentistry**
Nov 06-08, 2017 San Antonio, USA

26th American Dental Congress
Dec 04-06, 2017 Atlanta, USA

39th World Dental Congress Summit
Dec 04-06, 2017 Sao Paulo, Brazil

22nd International Conference and Exhibition on
Dentistry & Oral Care
Apr 17-19, 2017 Dubai, UAE

28th Asia Pacific Dental and Oral Health Congress Jul 10-12, 2017 Malyasia, Kuala Lumpur

30th Global Experts Meet on
Advanced Dentistry and Oral Health
Sep 21-22, 2017 Macau, Hong Kong

31st Annual Conference on
Dental Practice Management and Marketing
Sep 21-22, 2017 Macau, Hong Kong

37th Asia Pacific Dental and Oral Care Congress Nov 20-22, 2017 Australia, Melbourne

14th International Conference on
Clincal and Experimental Dermatology
Jun 19-21, 2017 Philadelphia, USA

9th Clinical Dermatology Congress
Oct 16-18, 2017 NewYork, USA

2nd International Conference on
Psoriasis and Skin Specialists Meeting
Sep 20- 21, 2017 Philadelphia, USA

16th European Dermatology Congress
Jun 07-08, 2017 Milan, Italy

12th Global Dermatologists Annual Meeting
Sep 01-02, 2017 London, UK

13th International Conference and Exhibition on
Cosmetic Dermatology and Hair care
Oct 26-27, 2017 Paris, France

23rd Asia Pacific Dermatology Conference
Oct 26-28, 2017 Osaka, Japan

International Conference on
Pigmentary Disorders
Sep 11-12, 2017 Dubai, UAE

17th World Dermatology Conference
Sep 11-12, 2017 Dubai, UAE

DIABETES AND ENDOCRINOLOGY

10th International Conference on
Clinical diabetes, Diabetes care & Nutrition
Jul 20-21, 2017 Chicago, USA

9th Annual Congress on
Endocrine Disorders and Therapies
Sep 11-12, 2017 Dallas, USA

International Conference on
Diabetes
Sep 20-22, 2017 Denever, USA

International Conference on
Diabetes, Metabolism & Obesity
Nov15-17, 2017 Las Vegas, USA

International Conference on
Diabetes and Endocrinology
Dec 06-08, 2017 Atlanta, USA

18th European Diabetes Congress
Jul 17-18, 2017 Lisbon, Portugal

2nd International Conference on
Metabolic Syndrome
Aug 10-11, 2016 London, UK

22nd World Congress on
Diabetes
Oct 05-06, 2017 London, UK

19th Asia Pacific Diabetes Conference
Jul 20-22, 2017 Melbourne, Australia

International Conference on
Endocrinology and Diabetes Summit
Sep 13-14, 2017 Singapore

2nd International Conference on
Herbal and Alternative Remedies for Diabetes and Endocrine Disorders
Nov 02-04, 2017 Thailand, Bangkok

25th Global Diabetes and Medicare Expo
Dec 11-12, 2017 Dubai, UAE

ENVIRONMENTAL SCIENCES

International Conference on
Ecology and Ecosystems
Sep 18-20, 2017 Toronto, Canada

3rd Annual Congress on
Pollution and Global Warming
Oct 16-18, 2017 Atlanta, USA

4th International Conference on
GreenEnergy & Expo
Nov 06-08, 2017 Las Vegas, USA

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5th International Conference on
Recycling: Reduce, Reuse and Recycle
Nov 06-08, 2017 Las Vegas, USA

4th World Congress and Expo on
Recycling
July 27-29, 2017 Rome, Italy

3rd International Conference on
Green Energy and Expo
Sep 28-29, 2017 Berlin, Germany

2nd International Conference on
Pollution Control and Sustainable Environment
Oct 10-11, 2017 London, UK

4th World Conference on
Climate Change
Oct 19-21, 2017 Rome, Italy

6th International Conference on
Biodiversity and Conservation
Apr 27-28, 2017 Dubai, UAE

International Conference on
Natural Hazards and Disaster Management
Jun 01-03, 2017 Osaka, Japan

2nd International Conference on
Coastal Zones
Jul 10-11, 2017 Jakarta, Indonesia

Annual Congress on **Environmental Pollution and Sustainable energy**
Jul 20-22, 2017 Melbourne, Australia

7th World Convention on
Recycling and Waste Management
Aug 10-12, 2017 Beijing, China

2nd World Congress on
Climate Change and Global Warming
Oct 16-17, 2017 Dubai, UAE

EEE & ENGINEERING

3rd World Congress on
Automation & Robotics
Jun 28-29, 2017 San Diego, USA

International Conference on
Artificial Intelligence
Jun 28-29, 2017 San Diego, USA

3rd International Conference on
Data Structures and Data Mining
Aug 17-18, 2017 Toronto, Canada

International Conference on
Agricultural Engineering
Sep 11-12, 2017 San Antonio, USA

8th International Conference and Exhibition on
Biosensors and Bioelectronics Biosensors & Bioelectronics
Sep 27-28, 2017 Chicago, USA

2nd World Summit on **Bioengineering**
Sep 27-28, 2017 Chicago, USA

5th International Conference and Exhibition on
Mechanical & Aerospace Engineering
Oct 02-04, 2017 Las Vegas, USA

4th World Congress and Exhibition on
Construction and Steel Structure
Oct 16-18, 2017 Atlanta, USA

7th International Conference on
Nuclear Engineering
Oct 16-18, 2017 Atlanta, USA

International Conference on
Applied Energy
Oct 23-24, 2017 Orlando USA

6th International Conference on
Biostatistics & Bioinformatics
Nov13-14, 2017 Atlanta, USA

3rd International Conference and Exhibition on
Satellite & Space Missions
May 11-13, 2017 Barcelona, Spain

3rd Euro Congress on
Iron, Steel and Construction Engineering
Jun 15-16, 2017 London , UK

2nd World Congress on **Wind & Renewable Energy** Jun 21-23, 2017 London, UK

International conference on
3D Printing and Technology
Jul 05-06, 2017 Frankfurt, Germany

7th Euro Biosensors and Bioelectronics Conference Jul 10-12, 2017 Berlin, Germany

3rd International Conference and Business Expo on
Wireless & Telecommunication
Jul 20-21, 2017 Munich, Germany

3rd Global Summit and Expo on
Multimedia & Artificial Intelligence
Jul 20-21, 2017 Lisbon, Portugal

2nd International Conference on
Power and Energy Engineering
Jul 20-21, 2017 Munich, Germany

2nd International Conference on
Battery and Fuel Cell Technology
Jul 27-28, 2017 Rome, Italy

2nd International Conference on
Design and Production Engineering
Aug 21-22, 2017 Birmingham, UK

4th International Conference on
BigData Analysis and Data Mining
Sep 07-08, 2017 Paris, France

4th International conference and Expo on
Computer Graphics & Animation
Sep 25-26, 2017 Berlin, Germany

3rd International Conference and Exhibition on
Automobile Engineering
Sep 28-29, 2017 Berlin, Germany

2nd Global Summit on
Fluid Dynamics & Aerodynamics
Oct 19-20, 2017 Rome, Italy

International Conference on
Mechatronics, Automation and Intelligent Materials Oct 23-25, 2017 Paris, France

International Conference on **Steel Structures**
Sep 11-12, 2017 Singapore

International Conference on
Smart Grid Technologies
Sep 11-12, 2017 Singapore

Geotechnical and Water Resource Engineering Summit
Sep 18-19, 2017 Macau, Hong Kong

3rd World Congress on
Robotics and Artificial Intelligence
Oct 23-24, 2017 Osaka, Japan

GASTROENTEROLOGY

International Conference on
Pancreatic Disorders and Treatment
Sep 13-14, 2017 Dallas, USA

2nd International Conference on
Hepatology & Gastroenterology
Nov 13-14, 2017 Las Vegas, USA

11th Global Gastroenterologists Meeting
Jun 12-13, 2017 Rome, Italy

5th World Congress on
Hepatitis & Liver Diseases
Aug 10-12, 2016 London, UK

12th Euro-Global Gastroenterology Conference
Sep 11-12, 2017 Paris, France

2nd International Conference on
Digestive Diseases
Oct 16-17, 2017 London, UK

4th International Conference on **Hepatology**
Apr 27-28, 2017 Dubai, UAE

10th International Conference on
Gastroenterology
Oct 30- Nov 01, 2017 Bangkok, Thailand

GENETICS & MOLECULAR BIOLOGY

6th International Conference on
Tissue Science & Regenerative Medicine
Aug 23-24 , 2017 San Francisco, USA

3rd International Conference & Exhibition on
Tissue Preservation and Biobanking
Aug 23-24 , 2017 San Francisco, USA

3rd Annual Genomics and Toxicogenomics Conference Sep 27-28, 2017 Chicago, USA

Annual Summit on
Cell Signaling and Cancer Therapy
Sep 27-28, 2017 Chicago, USA

Annual Summit on **Cell Therapy**
Sep 27-28, 2017 Chicago, USA

13th World Biotechnology Congress
Oct 19-20, 2017 NewYork, USA

2nd World Biotechnology Congress
Dec 04-05, 2017 Sao Paulo, Brazil

9th International Conference on
Genomics and Pharmacogenomics
Jun 15-16, 2017 London, UK

5th International Conference on
Integrative Biology
Jun 19-21, 2017 London, UK

3rd International Conference on
Bioscience
Jun 19-20, 2017 London, UK

3rd International Conference on
Synthetic Biology
Jul 20-21, 2017 Munich, Germany

2nd World Congress on
Human Genetics
Sep 14-15, 2017 Edinburgh, Scotland

9th Annual Conference on
Stem Cell and Regenerative Medicine
Sep 25-26, 2017 Berlin, Germany

17th EuroBiotechnology Congress
Sep 25-27, 2017 Berlin, Germany

7th International Conference on
Tissue Engineering and Regenerative Medicine
Oct 02-04, 2017 Barcelona, Spain

5th International Conference on **Plant Genomics**
Jul 03-05, 2017 Thailand, Bangkok

World Congress on
Molecular Genetics and Gene Therapy
Jul 03-05, 2017 Thailand, Bangkok

World Congress on
Nano Science and Nano Technology
Jul 10-11, 2017 Jakarta, Indonesia

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14th Asia-Pacific Biotech Congress
Jul 20-22, 2017 Melbourne, Australia

3rd Annual Congress and Expo on **Bioscience**
Aug 10-12, 2017 Beijing, China

8th International Conference on
Tissue Science and Regenarative Medicine
Sep 11-12, 2017 Singapore

10th International Convention on
Stem Cell and Biobanking
Oct 23-24, 2017 Osaka, Japan

GEOLOGY & EARTH SCIENCE

3rd World Congress on
GIS and Remote Sensing
Sept 20-21, 2017 Charlotte, USA

2nd International Convention on
Geophysics and Geo technics
Nov 08-09, 2017 Las Vegas, USA

2nd International Convention on
Geosciences and Remote Sensing
Nov 08-09, 2017 Las Vegas, USA

2nd World Congress on
GIS and Remote Sensing
Jul 20-21, 2017 Munich, Germany

Annual Congress on **Soil Sciences**
Dec 04-05, 2017 Madrid, Spain

4th International Conference on
Geology and Geosciences
Apr 27-28, 2017 Dubai, UAE

6th International Conference on
Earth Science and Climate change
Sep 18-19, 2017 Macau, Hong Kong

5th International Conference on
Oceanography and Marine Biology
Oct 16-17, 2017 Seoul, South Korea

HEALTHCARE MANAGEMENT

4th International Conference on
Biomedical & Health Informatics
May 25-26, 2017 Chicago, USA

3rd International Conference on
Wound Care, Tissue Repair & Regenerative Medicine Sep 11-12, 2017 Dallas, USA

2nd World Congress on
Health & Medical Sociology
Sep 25-26, 2017 Atlanta, USA

2nd International Conference on
Wound Care, Ostomy & Continence Nursing Practices Jun 07-08, 2017 Milan, Italy

International Conference on
Social Sciences & Cultural Studies
Jun 21-22, 2017 London, UK

2nd Global Health Economics Summit
Jun 29-30, 2017 Madrid, Spain

10th World Congress on
Healthcare & Technologies
Jul 17-18, 2017 Lisbon, Portugal

5th International Conference on
Medical Informatics & Telehealth
Aug 29-30, 2017 Prague, Czech Republic

2nd International Conference on
Environmental Health & Safety
Sep 07-08, 2017 Paris, France

2nd International Conference on
General Practice & General Medicine
Sep 18-20, 2017 Zurich, Switzerland

6th International Conference on
Epidemiology & Public Health
Oct 23-25, 2017 Paris, France

2nd International Conference on
Health & Hospital Management
Nov 06-07, 2017 Vienna, Austria

International Conference on
Medical Education
Nov 06-08, 2017 Vienna, Austria

12th World Congress on
Healthcare and Medical Tourism
Oct 16-17, 2017 Dubai, UAE

IMMUNOLOGY

3rd Annual Global Conference on
Parasitology
Jul 31-Aug 01, 2017 Chicago, USA

2nd International Conference on
Tumor & Cancer Immunology and Immunotherapy
Jul 17-19, 2017 Chicago, USA

3rd Antibodies and Bio Therapeutics Congress
Nov 08-09, 2017 Las Vegas, USA

5th International conference on
HIV/AIDS, STDS & STIS
Nov 13-14, 2017 Las Vegas, USA

9th World Congress and Expo on
Immunology
Nov 02-03, 2017 Atlanta, USA

3rd International Conference on
Immunity, Inflammation and Immunotherapies
Nov 02-03, 2017 Atlanta, USA

8th European Immunology Conference
Jun 26-28, 2017 Madrid, Spain

11th International Conference on
Allergy, Asthma & Clinical Immunology
Aug 16-17, 2017 Edinburgh, Scotland

4th International Conference on **Parasitology**
Sep 01-02, 2017 Prague, Czech Republic

2nd International Conference on **Autoimmunity**
Nov 09-10, 2017 Madrid, Spain

International Conference on
Cancer & Tumor Immunology
Jul 03-05, 2017 Thailand, Bangkok

9th Annual Meeting on
Immunology and Immunologist
Jul 03-05, 2017 Kuala Lumpur, Malaysia

Annual Summit on **HIV/AIDS, STDs & STIs**
Aug 07-09, 2017 Beijing, China

World Immunology Congress
Dec 14-15, 2017 Dubai, UAE

INFECTIOUS DISEASES

5th International congress on
Infectious Diseases
May 11-12, 2017 Barcelona, Spain

5th World Congress on
Control and Prevention of HIV/AIDS STDs & STIs Jun 19-20, 2017 London, UK

2nd World Congress on **Rare Diseases**
Jun 29-30, 2017 London, UK

3rd International Conference on
Influenza and Zoonotic Diseases
Aug 21-22, 2017 Birmingham, UK

9th Euro-Global Conference on **Infectious Diseases** Sep 07-09, 2017 Paris, France

13th World Congress on
Infection Prevention and Control
Oct 26-27, 2017 Milano, Italy

5th International Congress on
Bacteriology and Infectious Diseases
May 25-26, 2017 Chicago, USA

3rd International Conference on
Retroviruses, Novel Drugs and Therapies
Jul 27-28, 2017 Vancouver, Canada

3rd Annual Congress on
Infectious Diseases
Aug 21-23 2017 San Francisco, USA

Annual Congress on
Medical Laboratory Congress & Expo
Aug 21-22, 2017 San Francisco, USA

2nd International Conference on
Infection Control
Sep 25-26, 2017 Chicago, USA

3rd Annual Congress on
Rare Diseases and Orphan Drugs
Oct 30-Nov 01, 2017 San Antonio, USA

3rd International conference on
Flu & Emerging Infectious Diseases
Nov 06-07, 2017 Las Vegas, USA

4th International Conference on
Chronic Obstructive Pulmonary Disease
May 29-31, 2017 Osaka, Japan

6th Annual Bacteriology and Parasitology Meeting
Sep 13-14, 2017 Singapore

7th Asia Pacific STD and Infectious Diseases Congress
Oct 23-25, 2017 Osaka, Japan

MATERIALS SCIENCE

International Conference on
Graphene and Semiconductors
Jul 17-18, 2017 Chicago, USA

International Conference on
Diamond and Carbon Materials
Jul 17-18, 2017 Chicago, USA

10th International Conference on
Emerging Materials & Nanotechnology
Jul 27-29, 2017 Vancouver, Canada

3rd International Conference on
Polymer Science and Engineering
Oct 02-04, 2017 Chicago, USA

2nd International Conference on
Applied Crystallography
Oct 16-18, 2017 Chicago, USA

13th International Conference and Exhibition on
Materials Science and Engineering
Nov13-15, 2017 Las Vegas, USA

14th International Conference on
Functional Energy Materials
Dec 06-07, 2017 Atlanta, USA

2nd World Congress on
Polymer Science and Engineering
May 08-09, 2017 Barcelona, Spain

9th World Congress on
Materials Science & Engineering
Jun 12-14, 2017 Rome, Italy

3rd International Conference and Expo on
Ceramics and Composite Materials
Jun 26-27, 2017 Madrid, Spain

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11th International Conference on
Advanced Materials and Processing
Sep 06-07 2017 Edinburgh, Scotland

7th Global Material Science and Engineering Conference
May 29-31, 2017 Osaka, Japan

12th Annual Congress on
Materials Science and Nanotechnology
Sep 25-26, 2017 Dubai, UAE

International Conference on
Advanced Materials and Nanotechnology
Oct 26-28, 2017 Osaka, Japan

MICROBIOLOGY

2nd International conference on
Environmental & Soil Microbiology
Sep 18-20, 2017 Toronto, Canada

7th International Conference on
Clinical Microbiology
Sep 25-26, 2017 Chicago, USA

4th World Microbiologists Annual Conference
Jun 21-23, 2017 Philadelphia, USA

International Conference on
Water Microbiology & Novel Technologies
Aug 28-30, 2017 Philadelphia, USA

2nd International conference on
Human Papillomavirus
Nov13-14, 2017 Las Vegas, USA

International Conference and Expo on
Medical Virology
Aug 31-Sep 01, 2017 Philadelphia, USA

2nd International Congress on
Mycology
Sep 25-26, 2017 Chicago, USA

International Conference on
Infectious Diseases & Diagnostic Microbiology
Sep 13-14, 2017 Dallas, USA

3rd World Congress on **Beneficial Microbes: Food, Pharma, Aqua & Beverages Industry**
Sep 18-20, 2017 Houston, USA

World Summit on
Microbial & Biochemical Technologies
Sep 18-20, 2017 Houston, USA

Global Veterinary Microbiology Summit & Expo
Oct 02-04, 2017 Las Vegas, USA

11th World Summit on
Medical Microbiology
Oct 02-04, 2017 Las Vegas, USA

World Summit on **Nosocomial and Healthcare Associated Infections**
Oct 02-04, 2017 Las Vegas, USA

6th Annual Conference on
Microbiology
Oct 16-17, 2017 Baltimore, USA

11th World Congress on **Virology**
Oct 16-17, 2017 Baltimore, USA

World Yeast Congress
Dec 06-07, 2017 Sao Paulo, Brazil

15th International Pharmaceutical Microbiology and Biotechnology Conference
Jun 21-23, 2017 London, UK

International Conference on
Microbial Pathogenesis & Host Response Mechanism
Aug 24-25, 2017 Toronto, Canada

10th Annual Medical Microbiology Summit & Expo Jun 21-22, 2017 London, UK

World Host-Microbial Interactions Congress
Jul 17-18, 2017 Munich, Germany

6th International Conference on
Microbial Physiology and Genomics
Aug 31-Sep 01, 2017 Brussels, Belgium

46th World Congress on Microbiology
Sep 18-19, 2017 Dublin, Ireland

6th Clinical Microbiology Conference
Oct 26-27, 2017 Paris, France

4th World Congress and Expo on
Applied Microbiology
Nov 09-11, 2017 Madrid, Spain

10th World Congress on **Virology and Mycology**
May 11-12, 2017 Singapore

International Conference on
Medical and Clinical Microbiology
Jul 03-05, 2017 Thailand, Bangkok

2nd International Conference and Summit on
Industrial and Pharmaceutical Microbiology
Oct 23-25, 2017 Osaka, Japan

10th International Congress on
Clinical Virology
Dec 04-05, 2017 Dubai, UAE

Annual Congress on **Microbes and Infection**
Dec 04-05, 2017 Dubai, UAE

NANOTECHNOLOGY

16th World Nano Conference
Jun 05-06, 2017 Milan, Italy

2nd world congres and expo on
Graphene 2D Materials
Aug 15-16, 2017 Edinburgh, Scotland

19th Nano Congress for Next Generation
Aug 31-Sep1, 2017 Brussels, Belgium

22th International Conference and Expo on
Nanoscience and Molecular Nanotechnology
Nov 13-14, 2017 Vienna, Austria

International conference on
Nanobiotechnology
Jul 31-Aug 01, 2017 Chicago, USA

World Congress on
Regulations of Nanotechnology
Jul 31-Aug 01, 2017 Chicago, USA

International Conference on
Nano Science and Technology
Sep 18-19, 2017 Orlando, USA

19th International Conference on
Nanotek and Expo
Nov13-15, 2017 Atlanta, USA

17th Nanotechnology products and Summit
Nov13-15, 2017 Atlanta, USA

World Congress on
NanoScience and NanoTechnology
July 10-11, 2016 Jakarta Indonesia

15th World Medical Nanotechnology Congress & Expo Oct 18-19, 2017 Osaka, Japan

3rd Biomedical Engineering and Expo
November 07-08, 2016 Barcelona, Spain

NEPHROLOGY

15th Annual Congress on
Nephrology & Therapeutics
Aug 28-30, 2017 Philadelphia, USA

2nd Annual Kidney Congress
Aug 28-30, 2017 Philadelphia, USA

12th Global Nephrologists Annual Meeting
Jun 26-28, 2017 London, UK

16th European Nephrology Conference
Oct 02-04, 2017 Barcelona, Spain

13th Annual Conference on
Nephrology & Urology
Jul 06-07, 2017 Kuala Lumpur, Malaysia

17th World Nephrology Conference
Oct 18-19, 2017 Dubai, UAE

NEUROSCIENCE

2nd International Conference on
Neuroimaging and Interventional Radiology
Jun 19-20, 2017 Philadelphia, USA

14th World Congress on
Neurology and Neurological disorders
Jul 17-19, 2017 Chicago, USA

3rd International Conference on
Parkinson's Disease & Movement Disorders
Sep 25-26, 2017 Chicago, USA

3rd International Conference on
Spinal Surgery
Oct 16-17, 2017 Chicago, USA

8th International Conference and Exhibition on
Addiction Research & Therapy
Nov 13-15, 2017 Las Vegas, USA

3rd International Conference on
Neurological Disorders and Brain Injury
Apr 18-19, 2017 Lodon, UK

2nd International Conference and Exhibition on
Dual Diagnosis
May 18-19, 2017 Munich, Germany

12th International Conference on
Neurology and Neurophysiology
May 18-20, 2017 Munich, Germany

13th International Conference on
Neurology and Neurosurgery
Jun 19-21, 2017 Paris, France

2nd International Conference on
Spine and Spinal Disorders
Jul 24-26, 2017 Rome, Italy

3rd International Conference on
Epilepsy & Treatment
Aug 31-Sep 01, 2017 Brussels, Belgium

15th European Neurology Congress
Aug 29-31, 2017 London, UK

7th World Congress on
Addictive Disorders and Addiction Therapy
Aug 29-31, 2017 Prague, Czech Republic

3rd International Conference on
Central Nervous System Disorders
Sep 25-27, 2017 Vienna, Austria

16th International Conference on
Neuro Cognitive Disorders
Oct 10-11, 2017 London, UK

9th International Conference on
Alzheimer's Disease & Dementia
Oct 16-18, 2017 Rome, Italy

6th International Conference on
Brain Disorders and Therapeutics
Nov 06-08, 2017 Madrid, Spain

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18th Global Neurologists Annual Meeting on
Neurology and Neuro Surgery
Nov 16-17, 2017 Vienna, Austria

2nd International Conference on
Neuro-Oncology
Apr 24-25, 2017 Dubai, UAE

3rd International Conference on
Neurological Disorders and Stroke
Apr 24-25, 2017 Dubai, UAE

7th International Conference on
Addictive Disorders and Alcoholism
Jul 03-04, 2017 Kuala Lumpur, Malaysia

15th International Conference on **Neuroscience**
Oct 16-17, 2017 Osaka, Japan

13th Global Neurologists Annual Meeting on
Neurology and Neuro Surgery
Nov 27-28, 2017 Dubai, UAE

NURSING

20th Global Nursing Education Conference
Apr 27-28, 2017 Las Vegas, USA

22nd World Congress on
Community Nursing and Public Health
May 22-23, 2017 Chicago, USA

23rd Cardiovascular Nursing & Nurse Practitioners Meeting
Jul 10-11, 2017 Chicago, USA

4th Annual Congress & Medicare Expo on
Primary Healthcare
Aug 21-22 , 2017 San Francisco, USA

2nd World Congress on
Midwifery and Women's Health
Aug 28-30, 2017 Philadelphia, USA

30th Oncology Nursing & Nurse Practitioners Conference
Aug 28-30, 2017 Philadelphia, USA

32nd International Conference on
Family Nursing and Healthcare
Sep 11-13, 2017 San Antonio, USA

34th Clinical Nursing & Nurse Education Conference
Sep 20-21, 2017 charlotte, USA

3rd International Conference on
Reproductive Health
Oct 05-06, 2017 Chicago, USA

11th Global Healthcare and Fitness Summit
Oct 16-18, 2017 San Francisco, USA

46th Global Nursing and Healthcare Conference
Dec 06-07, 2017 Sao Paulo, Brazil

35th Global Nursing Care and Education Conference Sep 25-27, 2017 Atlanta, USA

40th International Conference on
Nursing & Healthcare
Oct 16-18, 2017 NewYork, USA

5th World Congress on
Women's Health and Breast Cancer
Jun 15-16, 2017 London, UK

2nd International Conferences on
Reproductive Health and Medicine
Jun 26-27, 2017 London, UK

23rd World Nursing and Healthcare Conference
Jul 10-12, 2017 Berlin, Germany

25th Cancer Nursing & Nurse Practitioners Conference
Jul 17-18, 2017 Lisbon, Portugal

29th World Congress on
Advanced Nursing Practicwe
Aug 14-16, 2017 Edinburgh, Scotland

37th World Nursing Education Conference
Sept 01-03, 2017 Prague, Czech Republic

28th International Conference on
Pediatric Nursing and Healthcare
Sep 04-05, 2017 Edinburgh, Scotland

35th Critical Care nursing & Nurse Practitioners Conference
Sep 28-29, 2017 Berlin, Germany

4th International Conference on
Gynecology & Obstetrics
Oct 02-04, 2017 Barcelona, Spain

2nd World Congress on
Midwifery and Women's Health
Oct 02-04, 2017 London, UK

41st Euro Nursing & Medicare Summit
Oct 26-28, 2017 Paris, France

20th Global Nursing Education Conference
May 22-24, 2017 Osaka, Japan

8th World Congress on
Breast Cancer and Women's Health
May 08-10, 2017 Singapore

9th Asia-Pacific Global Summit & Expo on
Healthcare
Jul 03-05, 2017 Kuala Lumpur, Malaysia

4th World Congress on
Midwifery and Women's Health
Jul 20-22, 2017 Melbourne, Australia

World Congress on
Nursing Care
Jul 24-26, 2017 Melbourne, Australia

International Conference on
Oncology Nursing and Cancer Care
Sep 13-14, 2017 Singapore

23rd World Nurse Practitioners Conference
Sep 28-29 2017 Dubai, UAE

27th Surgical Nursing & Nurse Education Conference
Oct 16-17, 2017 Dubai, UAE

Asia-Pacific Nursing and Medicare Summit
Oct 05-07, 2017 Kuala Lumpur, Malaysia

World Congress on
Nursing Pharmacology and Nursing Education
Nov 20-21, 2017 Melbourne, Australia

NUTRITION & OBESITY

16th International conference and Exhibition on
Obesity & Weight Management
Nov16-17, 2017 Atlanta, USA

12th International Conference on
Clinical Diabetes, Diabetes care & Nutrition
Jul 20-21, 2017 Chicago, USA

12th World Congress on
Obesity
Aug 24-25, 2017 Toronto, Canada

17th World Fitness Expo
Nov 16-17, 2017 Atlanta, USA

10th International Conference on
Childhood Obesity and Nutrition
Jun 12-13, 2017 Rome, Italy

11th European Nutrition and Dietetics Conference
Jun 29-Jul 01, 2017 Madrid, Spain

13th International Congress on
Advances in Natural Medicines, Nutraceuticals & Neurocognition
Jul 27-28, 2017 Rome, Italy

14th International Conference on
Clinical Nutrition
Jul 27-29, 2017 Rome, Italy

15th World Congress on
Nutrition and Food Chemistry
Sep 18-20, 2017 Zurich, Switzerland

13th Euro Obesity and Endocrinology Congress
Sep 21-23, 2017 Madrid, Spain

6th International Conference and Exhibition on
Probiotics, Functional and Baby Foods
Oct 02-03, 2017 London, UK

11th World Congress on
Nutrition & Food Sciences
May 29-31, 2017 Osaka, Japan

12th World congress on
Obesity and Endocrinology
Jul 17-19, 2017 Melbourne, Australia

15th Global Obesity Meeting
Oct 23-24, 2017 Dubai, UAE

18th Global Dieticians & Nutritionists Annual Meeting
Oct 02-03, 2017 Kuala Lumpur, Malaysia

16th Obesity Medicine Conference
Oct 30- Nov 01, 2017 Thailand, Bangkok

ONCOLOGY & CANCER

International Conference on
Cancer Biology R&D and Market
Jun 21-22, 2017 Philadelphia, USA

3rd Annual Conference on
Gynecologic Oncology
Jul 20-21, 2017 Chicago, USA

World Congress on
Preventive Oncology
Jul 20-21, 2017 Chicago, USA

25th World Congress on
Cancer Therapy
Oct 18-20, 2017 Baltimore, USA

10th Annual World Congress on
Biomarkers & Clinical Research
Oct 18-20, 2017 Chicago, USA

5th International Conference on
Medical Imaging and Radiology
Oct 19-20, 2017 NewYork, USA

15th World Oncologists Annual Conference
Oct 19-20, 2017 NewYork, USA

World Medical and Clinical Oncology Congress
Nov13-15 , 2017 Las Vegas, USA

5th World Congress on **Breast Cancer**
Oct 16-18, 2017 San Francisco, USA

9th International Conference on
Hematology and Hematological Oncology
Nov 08-09, 2017, Las Vegas, USA

2nd Cancer Diagnostics Conference and Expo
May 08-09, 2017 Barcelona, Spain

7th World Hematologists Congress
May 08-09, 2017 Barcelona, Spain

8th International Conference on
Blood Cancer & Treatment
Jun 26-27, 2017 London, UK

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19th Euro Congress on **Cancer Science and Therapy**
Jul 17-19, 2017 Lisbon, Portugal

7th International Conference on **Nuclear Medicine & Radiation Oncology**
Jul 27-28, 2017 Rome, Italy

20th International Conference on **Radiation Oncology & Anti- Cancer Therapy**
Aug 28-29, 2017 Brussels, Belgium

9th International Conference and Expo on **Molecular & Cancer Biomarkers**
Aug 24-25, 2017 Birmingham, UK

2nd International Congress on **Contemporary Issues in Women Cancers and Gynecologic Oncology** Aug 28-29, 2017 London, UK

2nd International conference on **Medical Imaging and Radiology**
Sep 11-12, 2017 London, UK

11th International Conference on **Hematologic Oncology**
Oct 05-06, 2017 London, UK

25th World Cancer Conference
Oct 19-21, 2017 Rome, Italy

International Conference on **Epigenetics**
Nov 06-07, 2017 Madrid, Spain

16th Global Annual Oncologists Meeting
Apr 24-25, 2017 Dubai, UAE

8th World Congress on **Breast Cancer and Women's Health**
May 08-10, 2017 Singapore

Global Summit on **Oncology & Cancer**
May 25-27, 2017 Osaka, Japan

Hematology and Oncology
Jun 29-Jul 01, 2017 Thailand, Bangkok

9th International Conference on **Biomarkers**
Oct 16-17, 2017 Osaka, Japan

14th Asia Pacific Oncologists Annual Meeting
Oct 26-28, 2017 Osaka, Japan

World Cancer Convention
Nov 27-28, 2017 Dubai, UAE

International Conference on **Cancer Diagnostics**
November 27-28, 2017 Dubai, UAE

International Conference on **Epigenetic Research**
October 26-28, 2017 Osaka, Japan

OPHTHALMOLOGY

Global Congress & Expo on **Optometry and Vision Science**
Jul 17-18, 2017 Chicago, USA

20th World Ophthalmology Summit
Dec 04-05, 2017 Sao Paulo, Brazil

2nd Global Pediatric Ophthalmology Congress
Jun 05-06, 2017 Milan, Italy

2nd International conference and Expo on **Cataract and Refractive Surgery**
Jul 10-11, 2017 Berlin, Germany

15th Global Meeting and Expo on **Vision Science**
Aug 10-11, 2016 London, UK

5th International conference and Expo on **Optometry and Vision Science**
Sep 11-12, 2017 Paris, France

16th International Conference on **Clinical & Experimental Ophthalmology**
Sep 18-20, 2017 Zurich, Switzerland

18th European Ophthalmology Congress
Dec 07-09, 2017 Madrid, Spain

3rd International Conference on **Optometry and Vision Science**
August 7-9, 2017 Beijing, China

11th Global Ophthalmologists Annual Meeting
Jun 29-Jul 01, 2017 Thailand, Bangkok

10th International Conference on **Clinical and Surgical Ophthalmology**
Aug 07-09, 2017 Beijing, China

2nd World Ophthalmology Conference
Oct 23-25, 2017 Osaka, Japan

17th Global Ophthalmology and Glaucoma Conference
Nov 27-28, 2017 Dubai ,UAE

PALLIATIVE CARE

3rd International Conference on **Hospice & Palliative Care**
Jun 21-23, 2017 Philadelphia, USA

2nd International Conference on **Aging & Gerontology**
Jun 26-28, 2017 San Diego, USA

8th International Conference on **Geriatric Medicine & Gerontological Nursing**
Oct 30-Nov 01, 2017 San Antonio, USA

7th International Conference on **Geriatrics & Gerontological Nursing**
Sep 04-05, 2017 Edinburgh, Scotland

PATHOLOGY

15th International Conference on **Pathology**
Jun 26-27, 2017 San Diego, USA

International Conference on **Speech Pathology**
May 22-23, 2017 Las Vegas USA

3rd International Conference on **Cytopathology and Histopathology**
Jun 21-23, 2017 Philadelphia, USA

2nd International Conference on **Molecular Pathology**
Jun 26-27, 2017 San Diego, USA

2nd International Conference on **Internal Medicine**
Sep 13-14, 2017 Dallas, USA

7th International Conference on **Predictive, Preventive and Personalized Medicine & Molecular Diagnostics**
Oct 5-6, 2017 Chicago, USA

6th Experts Meeting on **Medical Case Reports**
Oct 16-18, 2017 San Francisco, USA

2nd International conference on **Digital Pathology**
Nov 02-03, 2017 San Antonio, USA

4th World Congress on **Breast Pathology**
Aug 24-25, 2017 Toronto, Canada

14th European Pathology Congress
Aug 02-03, 2017 Milan, Italy

6th European Conference on **Predictive , Preventive and Personalized Medicine & Molecular Diagnostics**
Aug 24-25, 2017 Birmingham, UK

5th European Conference on **Clinical and Medical Case Reports**
Sep 07-08, 2017 Paris, France

PEDIATRICS

2nd World Congress Pediatric Oncology & Pediatric Medicine
Oct 05-06, 2017 Las Vegas, USA

3rd Annual Summit on **Pediatric Cardiology & Pulmonology**
Sep 25-26, 2017 Chicago, USA

11th World Congress on **General Pediatrics & Adolosent medicine**
Sep 25-26, 2017 Chicago, USA

2nd Annual Congress on **Infancy, Child Nutrition & Development (ICND)**
Oct 19-21, 2017 Atlanta,USA

5th Annual Conference on **Translational Medicine**
Nov15-16, 2017 Las Vegas, USA

11th World Congress on **Pediatric Cardiology and Congenital Cardiovascular Disease**
April 18-19, 2017 London, UK

12th International Conference on **Clinical Pediatrics**
Jun 29-Jul 01, 2017 London, UK

2nd International Conference on **Pediatric Surgery**
Jun 29-30, 2017 London, UK

16th European Pediatrics Conference
Sep 01-03, 2017 Prague, Czech Republic

2nd International Conference on **Pediatric Neurology**
Sep 01-02, 2017 Prague, Czech Republic

20th International Conference on **Neonatology and Perinatology**
Dec 04-06, 2017 Madrid, Spain

2nd Annual Meeting on **Pediatric Nephrology**
Jun 29-30, 2017 Kuala Lumpur, Malaysia

10th World Pediatric Congress
Sep 28-29 2017 Dubai, UAE

PHARMACEUTICAL SCIENCES

6th World Pharmacists & Clinical Pharmacy Annual Congress
May 22-23, 2017 Chicago, USA

3rd International Conference on **Biopharmaceutics and Biologic Drugs**
Jun 19-20, 2017 Philadelphia, USA

8th World Congress on **Bioavailability & Bioequivalence: BA/BE Studies Summit**
Jun 26-27, 2017 San Diego, USA

4th International Conference and Exhibition on **Pain Medicine**
Aug 03-04, 2017 San Francisco, USA

Global Summit on **Emerging Orphan Drugs and Drug Abuse**
Aug 23-24 , 2017 San Francisco, USA

2nd International Pharmacy Conference
Sep 01-02, 2017 Las Vegas, USA

4th International Conference on **Clinical Trials**
Sep 11-13, 2017 San Antonio, USA

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World Congress on
Biotherapeutics and Bioanalytical Techniques
Sep 11-12, 2017 Dallas, USA

6th International Conference on
Forensic Research & Technology
Sep 18-20, 2017 Houston, USA

6th International Summit on
GMP, GCP & Quality Control
Sep 25-26, 2017 Chicago, USA

7th International Conference and Exhibition on
Pharmaceutical Regulatory Affairs and IPR
Sep 25-26, 2017 Chicago, USA

10th Pharmacovigilanace Congress
Sep 21-22, 2017 Charlotte, USA

10th International Conference and Exhibition on
Biologics and Biosimilars
Oct 16-17, 2017 Baltimore, USA

11th World Drug Delivery Summit
Oct 16-18, 2017 NewYork, USA

5th International Conference on **Clinical Pharmacy** Oct 23-24, 2017 Orlando, USA

7th European Biosimilars Congress
May 15-17, 2017 Munich, Germany

2nd International Conference on
Marchine Drugs & Natural Products
Jun 15-17, 2017 London, UK

9th Annual European Pharma Congress
Jul 10-12, 2017 Madrid, Spain

9th International Conference and Exhibition on
Pharmacovigilance & Drug Safety
Jul 17-18, 2017 Munich, Germany

International Conference on
Environmental Chemistry and Engineering
Jul 24-25, 2017 Rome, Italy

13th International Conference and Exhibition on
Pharmaceutical Nanotechnology
Jul 24-25, 2017 Rome, Italy

3rd World Congress and Exhibition on
Antibiotics and Antibiotic Resistance
Jul 31-Aug 01, 2017 Milan, Italy

7th Global Experts Meeting on
Neuropharmacology
Jul 31-Aug 02, 2017 Milan, Italy

2nd International Conference on
Generic Drugs and Biosimilars
Aug 24-25, 2017 Birmingham, UK

14th International Conference and Exhibition on
Pharmaceutical Formulations
Aug 28-29, 2017 Brussels, Belgium

9th World Congress on
Pharmacology
Sep 04-06, 2017 Paris, France

3rd International Conference on
Advanced Clinical Research and Clinical Trials
Sep 20-21, 2017 Dublin, Ireland

8th Annual Pharmaceutical Analysis Conference
Sep 25-26, 2017 Vienna, Austria

International Conference on
Biotech Pharmaceuticals
October 23-25, 2017 Paris, France

3rd International Conference and Expo on
Drug Discovery & Designing
Sep 25-27, 2017 Vienna, Austria

European Biopharma Congress
Nov 16-17, 2017 Vienna, Austria

6th Global Experts Meeting on
Cardiovascular Pharmacology and Cardiac Medications Apr 13-14, 2017 Dubai, UAE

4th International Conference on
Clinical Case Reports
Apr 17-19, 2017 Dubai, UAE

International Conference and Exhibition on
Pharmaceutical Development and Technology
Apr 24-26, 2017 Dubai, UAE

10th Asia-Pacific Pharma Congress
May 08-10, 2017 Singapore

International Conference and Exhibition on
Nanomedicine and Drug Delivery
May 29-31, 2017 Osaka, Japan

International Conference on
Pharmaceutical and Biomedical Engineering
Jun 12-13, 2017 Taipei, Taiwan

3rd Global Summits on
Herbal & Traditional Medicine
October 18-20, 2017 Osaka, Japan

4th world congress on
Drug Discovery & Designing
Jul 03-05, 2017 Thailand, Bangkok

11th International Conference on
Pharmacoepidemiology and Clinical Research
Jul 06-08, 2017 Kuala Lumpur, Malaysia

8th Global Pharmacovigilance & Drug Safety Summit
Jul 10-11, 2017 Jakarta, Indonesia

9th World Congress on
BA/BE Studies and Biowaivers
Jul 17-19, 2017 Melbourne, Australia

5th International Conference and Exhibition on
Pharmacognosy, Phytochemistry & Natural Products
Jul 24-26, 2017 Melbourne, Australia

8th Wolrd Congress on
Pharmacology and Toxicology
Jul 24-26, 2017 Melbourne, Australia

8th Asian Biosimilars Congress
Aug 10-12, 2017 Beijing, China

12th Annual Pharma Middle East Congress
Sep 25-27, 2017 Dubai, UAE

9th Annual Congress on
Drug Formulation & Drug Design
Oct 19-21, 2017 Seoul, South Korea

10th International Conference on
Neuropharmacology and Neuropharmaceuticals
Oct 23-24, 2017 Dubai, UAE

3rd World Congress on
Medicinal Plants and Natural Products Research
Oct 02-04, 2017 Kuala Lumpur, Malaysia

6th Global Congress on **Mass Spectrometry**
Oct 18-19, 2017 Osaka, Japan

16th Annual Medicinal & Pharmaceutical Sciences Congress
July 03-05, 2017 Kuala Lumpur, Malaysia

17th International Conference on
Nanomedicine and Nanotechnology in Health Care
Nov 23-24, 2017 Melbourne, Australia

10th International Conferences on
Immunopharmacology and Immunotoxicology
Nov 20-21, 2017 Melbourne, Australia

PHYSICAL THERAPY & REHABILITATION

5th International Conference and Exhibition on
Physical Medicine and Rehabilitation
Sep 11-12, 2017 Antonio, USA

4th International Conference on
Novel Physiotherapies
Aug 21-22, 2017 Birmingham, UK

World Physiotherapists & Physicians Summit
Jul 24-26, 2017 Melbourne, Australia

6th International Conference on
Physiotherapy
Nov 27-28, 2017 Dubai, UAE

PHYSICS

3rd International Conference on
Theoretical and Condensed Matter Physics
Oct 19-21, 2017 NewYork, USA

2nd International Conference on
Astrophysics and Particle Physics
Oct 30-Nov1, 2017 San Antonio, USA

8th International Conference and Exhibition on
Lasers, Optics & Photonics
Nov 02-04, 2017 San Antonio, USA

2nd International Conference on
Atomic and Nuclear Physics
Nov 8-9, 2017 Las Vegas, USA

6th International Conference on
Photonics
Jul 31-Aug 1, 2017 Milan, Italy

7th International Conference on **Laser Optics**
Jul 31-Aug 2, 2017 Milan, Italy

2nd International Conference on
Physics
Aug 28-30, 2017 Brussels, Belgium

2nd International Conference on
Quantum Physics and Quantum Technology
Sep 25-26, 2017 Berlin, Germany

International Conference on
High Energy Physics
Dec 11-12, 2017 Rome, Italy

PSYCHIATRY

18th International Congress on
Applied Psychology
May 15-16, 2017 Munich, Germany

3rd International Conference on
Mental Health & Human Resilience
Jun 21-23, 2017 London, UK

3rd International Conference on
Depression, Anxiety and Stress Management
Jun 21-22, 2017 London, UK

20th Euro Congress on **Psychiatrists and Psychologists** Aug 07-08, 2017 Rome, Italy

23rd International Conference on
Adolescent Medicine & Child Psychology
Sep 28-29, 2017 Berlin, Germany

2nd Experts Meeting on
Forensic Psychology and Criminology
Oct 02-03, 2017 London, UK

24th International Conference on
Psychiatry & Psychosomatic Medicine
Oct 02-04, 2017 London, UK

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15th World Congress on
Psychiatry and Psychological Syndromes
Apr 24-26, 2017 Las Vegas, USA

16th Global Summit on
Cognitive, Psychological and Behavioral Sciences May 01-03, 2017 Toronto, Canada

17th World Congress on
Positive Psychology and Psychotherapy
May 01-03, 2017 Toronto, Canada

19th Global Congress on
Pediatric & Child Psychiatry
Jul 12-13, 2017 Chicago, USA

25th World Summit on
Psychology, Psychiatry & Psychotherapy
Oct 19-20, 2017 San Francisco, USA

International Conference on **Clinical Psychology**
Jun 26-27, 2017 Thailand, Bangkok

5th International Conference on
Counseling Psychology
Oct 16-17, 2017 Osaka, Japan

International Conference on
Psychiatry and Mental Health
Nov 20-21, 2017 Melbourne, Australia

10th World Psychiatrists Meet
Dec 07-08, 2017 Dubai, UAE

RESPIRATORY

International Conference on
Pulmonology, Pulmonary and Critical Care Medicine
Apr 24-26, 2017 Las Vegas, USA

5th International Conference and Exhibition on
Lung and Respiratory Care
Oct 19-20, 2017 San Francisco, USA

4th International Conference on
Respiratory and Pulmonary Medicine
Jul 17-18, 2017 Melbourne, Australia

SURGERY

5th Global Summit and Medicare Expo on
Head and Neck Surgery
Jun 19-20, 2017 Philadelphia, USA

2nd International Conference and Exhibition on
Plastic and Reconstructive Surgery
Jun 19-20, 2017 Philadelphia, USA

9th Orthopedics Expo & Surgeons Meeting
Jul 12-13 , 2017 Chicago, USA

2nd International Conference on
Plastic and Aesthetic Surgery & Medicine
Jul 27-28, 2017 Vancouver, Canada

International Conference on
Metabolic and Bariatric Surgery
Jun 12-13, 2017 Rome, Italy

2nd International Conference on
Anesthesia and Analgesia
Sep 07-08, 2017 London, UK

6th International Conference and Exhibition on
Surgery Sep 07-09, 2017 London, UK

2nd International Conference on
Ear, Nose and Throat Disorders
Oct 16-18, 2017 Rome, Italy

6th International Conference and Expo on
Cosmetology, Trichology & Aesthetic Practices
Apr 13-14, 2017 Dubai, UAE

10th Global Orthopedicians Annual Meeting
Jul 03-05, 2017 Kuala Lumpur, Malaysia

International Conference on
Ear Nose and Throat Disorders
Jul 06-08, 2017 Kuala Lumpur, Malaysia

International Conference on **Aesthetic Medicine**
Jul 06-08, 2017 Kuala Lumpur, Malaysia

4th International Conference and Exhibition on
Rhinology and Otology
Oct 18-20, 2017 Dubai, UAE

TOXICOLOGY

10th Global Summit on
Toxicology and Applied Pharmacology
Jul 20-22, 2017 Chicago, USA

3rd Annual Genomics and Toxicogenomics Conference Sep 27-28, 2017 Chicago, USA

12th International Conference on
Environmental Toxicology and Ecological Risk Assessment
Oct 19-20, 2017 Atlanta,USA

9th Euro-Global Summit on
Toxicology and Applied Pharmacology
Jun 22-24, 2017 Paris, France

11th International Congress on
Toxicology and Risk Management
Oct 10-12, 2017 London, UK

World Congress on
Toxicology and Pharmacology
Apr 13-15, 2017 Dubai, UAE

International Conference on
Occupational Toxicology and Industrial Health
Oct 16-17, 2017 Dubai, UAE

VACCINES

18th Global Summit and Expo on
Vaccines & Vaccination
Sep 18-19, 2017 Houston, USA

19th World Congress on
Vaccines, Therapeutics for Infectious and Emerging Diseases
Oct 02-03, 2017 Chicago, USA

16th Euro Global Summit and Expo on
Vaccines & Vaccination
Jun 19-21, 2017 Paris, France

17th International Conference on
Children Vaccines
Aug 21-22, 2017 Birmingham, UK

27th Asia Pacific Vaccines & Vaccination Conference
Oct 05-07, 2017 Kuala Lumpur, Malaysia

29th Global Vaccines & Vaccination Summit And Expo
Nov 30-Dec 1, 2017 Dubai, UAE

VETERINARY

8th International Conference on
Animal Health and Veterinary Medicine
Oct 02-04, 2017 Toronto, Canada

9th Global Veterinary Summit
Nov15-16, 2017 Las Vegas, USA

7th International Veterinary Congress
Sep 04-06, 2017 Paris, France

3rd International Conference on
Livestock & Nutrition
Jun 29-30, 2017 Bangkok, Thailand

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2nd International Conference on

ENZYMOLOGY & MOLECULAR BIOLOGY

March 20-21, 2017 Rome, Italy

Keynote Forum

Day 1

Gregg B Fields, J Laser Opt Photonics 2016, 3:3 (Suppl)
http://dx.doi.org/10.4172/2469-410X.C1.001

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ENZYMOLOGY & MOLECULAR BIOLOGY
March 20-21, 2017
Rome, Italy

Gregg B Fields[1,2]

[1]Florida Atlantic University, USA

[2]The Scripps Research Institute, Florida, USA

Structure-guided design of selective matrix metalloproteinase (MMP) inhibitors and their application in animal models of multiple sclerosis, sepsis, and osteoarthritis

Analysis of matrix metalloproteinase (MMP) expression profiles in various pathologies correlated their presence in promoting disease progression. Drugs were designed to inhibit MMPs by chelating the active site zinc ion. This approach did not distinguish between the MMP family members and had devastating consequences during clinical trials. Subsequent knockout mouse studies showed that some MMPs were beneficial in regulating tumor growth and metastasis and stimulating indirectly the immune system. The broad-spectrum inhibitor approach was rethought in order to increase the specificity, taking into account the non-conserved secondary binding sites (exosites) within MMPs. Structural evaluation of the collagenolytic mechanisms of MMP-1 and MT1-MMP revealed differences in exosites, facilitating the development of triple-helical peptide inhibitors (THPIs). THPIs achieved selectivity within the MMP family and showed efficacy in *in vivo* models of multiple sclerosis and sepsis, where MMP-9 and MMP-8, respectively, were targeted. MMP-13 has been identified to be mainly responsible for the cleavage of type II collagen in osteoarthritis, which leads to the destruction of articular cartilage. The development of an allosteric MMP-13 inhibitor began with a lead compound identified as part of a high throughput screening campaign. Subsequent biochemical experiments and X-ray crystallographic structure determination revealed that our hit bound to the S1' subsite, which is surrounded by a long loop that differs significantly among MMPs. Comparative structural analysis and molecular modeling enabled the design and synthesis of small molecules three orders of magnitude more potent (IC50≤5 nM) than the original hit. Further optimization has led to highly potent and selective inhibitors of MMP-13 with favorable PK properties. The recent technological advances that allow us to better understand the function and structure of MMPs are aiding in the development of selective inhibitors.

Biography

Gregg B Fields is the Director at the Center for Molecular Biology & Biotechnology in Florida Atlantic University, USA. He did his PhD in the year 1988 from Florida State University. He has also been an elected president of American Peptide Society and Full Member at University of Minnesota Comprehensive Cancer Research Center. He also received BIT Life Sciences Lifetime Membership Award and Texas Higher Education Science and Technology Acquisition and Retention (STAR) Plus Award. He performs research focusing on collagen-mediated diseases. Cancer, arthritis and neurodegenerative diseases (such as multiple sclerosis) are commonly treated as distinct maladies. However, each of these diseases has overlapping factors that contribute to disease progression. Amongst these factors are proteases that enhance the breakdown of collagen. The progression of cancer, arthritis and neurodegenerative diseases involve similar or even identical proteases. His current researches are to evaluate the link between inflammation and cancer, arthritis, and neurodegenerative diseases, and developing new drugs that block the action of proteases common to all of these disease states.

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Lene Lange, J Laser Opt Photonics 2016, 3:3 (Suppl)
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Rome, Italy

Lene Lange

Technical University of Denmark, Denmark

Developing the bio-economy: Fast track discovery of new enzymes for efficient and value added biomass conversion

A new fast track enzyme discovery technology platform has been developed. It differentiates from existing approaches as it is non-alignment based and facilitates prediction of function of the enzyme directly from the (genome) sequence. New enzymes and enzyme-based processes are being developed for producing biomass-based food ingredients, feed additives, health-promoting products, components for skincare and wound healing as well as fertilizer, fibers, and building blocks for chemicals. Enzyme discoveries of relevance for the following types of biomass feed stock have recently been made: the green biorefinery, making value added products from green grass, clover, etc. Seaweed biomass, from species of brown algae, growing meters high in temperate/colder waters, have already now been documented to hold several components with potentials for being developed into new value chains. Feather is composed of the proteinaceous, highly recalcitrant keratin. It has been shown that a blend composed of three specific types of fungal enzymes can be used for decomposing the keratin into peptides and amino acids. Interestingly, the keratin-degrading fungi in these studies showed four different *LPMO* genes, (Lytic Polysaccharide Monooxygenases) which may be directly involved in breaking down the keratin. Enzymes of relevance for improved processing of fish skin collagen are being studied in the project Collagen Hydrolysate funded as a Nordic Innovation program.

Biography

Lene Lange is a Professor at the Center for Bioprocess Engineering, DTU Chemical Engineering, Denmark. She has held Research Director Positions in both industry and academia. Currently, she holds advisory positions at: The Danish National Bio-economy Panel, the Nordic Bio-economy Panel, Scientific Committee for the BBI JU, and IAB BIOTEC Thailand. Her fields of research are discovery of novel enzymes for improved biomass conversion and biorefinery processes, with specific focus on generating value from agro-industrial side streams and waste products; development of the new enzyme discovery platform, PPR, a non-alignment based sequence analysis method, predicting function directly from sequence; and using PPR analysis, combined with MS, phylogenetic analysis.

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Notes:

Marvin W Makinen, J Laser Opt Photonics 2016, 3:3 (Suppl)
http://dx.doi.org/10.4172/2469-410X.C1.001

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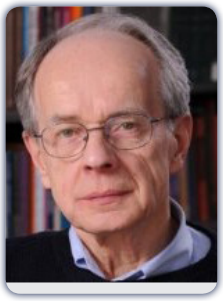

Marvin W Makinen

University of Chicago, USA

Inhibition of protein tyrosine phosphatase-1B in vitro and in vivo

A large number of studies on protein tyrosine phosphatases (PTPases) have been directed towards drug design for therapeutic intervention because of their critical roles in homeostasis and disorders of metabolism. In contrast to protein tyrosine kinases, virtually all inhibitors tested against PTPases exhibit only competitive behavior because of their consensus, active site sequence H/V-C-X 5-R-S/T, a condition leading to low specificity. Having identified protein tyrosine phosphatase-1B (PTP1B) as the target enzyme of the vanadyl (VO^{2+}) chelate bis(acetylacetonato)oxidovanadium(IV) [VO(acac)2] in cultured 3T3-L1 adipocytes, we have investigated the basis of inhibition by the VO^{2+}-chelate through steady-state, kinetic investigations of the recombinant human enzyme (residues 1-321). Our results differ from investigations by others because we compared the influence of the chelate in the presence of the synthetic substrate p-Nitrophenylphosphate (pNPP) and the phosphotyrosine-containing undecapeptide DADE-pYLIPQQG mimicking residues 988-998 of the epidermal growth factor receptor, a physiologically relevant substrate. We also compared the inhibitory behavior of VO(acac)2 to that of two other VO^{2+}-chelates similarly known for their capacity to enhance cellular uptake of glucose as insulin mimetics. The results indicate that VO (acac)2 acts as a classical uncompetitive inhibitor in the presence of DADEpYLIPQQG but exhibits only apparent competitive inhibition with pNPP as substrate because uncompetitive inhibitors are more potent pharmacologically than competitive inhibitors, structural characterization of the site of uncompetitive binding of VO(acac)2 to PTP1B may provide a new approach to design of inhibitors of high specificity for therapeutic purposes.

Biography

Dr. Marvin W. Makinen is Professor in the Department of Biochemistry and Molecular Biology in the University of Chicago, USA and has served as chairman of the department from 1988 to 1993. He is also a founding member of the Human Rights Board at the university. He did his D.Phil., in the year 1976 in Molecular Biophysics at Oxford University, U.K. Over the past 40 years at the University of Chicago, research in the Makinen lab has been directed towards the structural basis of action of metalloenzymes and the application of magnetic resonance methods to characterize active site structure and stereochemical relationships of substrates to active site residues in true reaction intermediates. More recent studies have been carried out to identify the target enzymes of metal -chelates that enhance the cellular uptake of glucose. Because some metal-chelates are associated with the capacity to enhance preferential uptake of glucose into xenograft tumors in small laboratory animal models, present research has been directed towards testing their potential as pharmacologic reagents to increase sensitivity of detection of malignant lesions by PET imaging.

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Scientific Tracks & Abstracts

Day I

Sessions

Day 1 November 9, 2016

Xxxxxxxxxxxxxx | Xxxxxxxxxxxxxxxxxx

Session Chair
Xxxxxxxxxxxx
Xxxxxxxxxxxxxxxx

Session Co-Chair
Xxxxxxxxxxxxx
Xxxxxxxxxxxxxxxx

Session Introduction

Title: **Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx**

Xxxxxxxxxxxxx, Xxxxxxxxxxxxxxxxxxxxxxxxx

Brian G Miller, J Laser Opt Photonics 2016, 3:3 (Suppl)
http://dx.doi.org/10.4172/2469-410X.C1.002

Allokairic regulation of enzyme function

Brian G Miller
Florida State University, USA

Human glucokinase (GCK), the body's primary glucose sensor and a major determinant of glucose homeostatic diseases, displays a unique form of allosteric-like behavior that is manifested as a cooperative kinetic response to glucose. The allosteric-like behavior of GCK is particularly intriguing since the enzyme is monomeric and contains only one glucose binding site. Recent work in our laboratory has shown that millisecond timescale order-disorder transitions within the enzyme's small domain govern cooperativity. Here, we present the results of biophysical studies that elucidate the structural and dynamic origins of the time-dependent, allokairic properties of GCK. Using high-resolution nuclear magnetic resonance, we identify two distinct mechanisms by which GCK can be activated, both of which result in hyperinsulinemia. The first activation mechanism alters the equilibrium distribution of GCK conformers in favor of a single-state, whereas the second mechanism alters the intrinsic dynamics of the enzyme without perturbing the relative distribution of states in the structural ensemble. Time-resolved fluorescence measurements map the dynamic conformational landscape of GCK and provide evidence for three distinct conformations of the enzyme in the absence of glucose. Together our findings provide a framework for understanding the origins of time-dependent changes in activity in other regulatory enzymes.

Biography

Dr. Brian Miller is an Associate Professor of Biochemistry at the Florida State University, USA. He did his Ph.D. from the University of North Carolina, Chapel Hill in the year 2001. His research interest is protein structure, function and evolution.

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Notes:

Min-Kyu Kwak et al., J Laser Opt Photonics 2016, 3:3 (Suppl)
http://dx.doi.org/10.4172/2469-410X.C1.002

Candida albicans glutathione reductase downregulates Efg1-mediated cyclic AMP/protein kinase-A pathway and leads to defective hyphal growth and virulence upon decreased cellular methylglyoxal content accompanied by activating alcohol dehydrogenase and glycolytic enzymes

Min-Kyu Kwak, Myung Hee Ku, Yong-Un Baek and **Sa-Ouk Kang**
Seoul National University, Republic of Korea

Glutathione reductase maintains the glutathione level in a reduced state. As previously demonstrated, glutathione is required for cell growth/division and its biosynthesizing-enzyme deficiency causes methylglyoxal accumulation. However, experimental evidences for reciprocal relationships between Cph1-/Efg1-mediated signaling pathway regulation and methylglyoxal production exerted by glutathione reductase on yeast morphology remain unclear. Glutathione reductase (*GLR1*) disruption/overexpression was performed to investigate aspects of pathological/morphological alterations in Candida albicans. These assumptions were proved by observations of cellular susceptibility to oxidants and thiols, and measurements of methylglyoxal and glutathione content in hyphal-inducing conditions mainly through the activity of *GLR1*-overexpressing cells. Additionally, the transcriptional/translational levels of bio-energetic enzymes and dimorphism-regulating protein kinases were examined in the strain. The *GLR1*-deficient strain was non-viable when *GLR1* expression under the control of a CaMAL2 promoter was conditionally repressed, despite partial rescue of growth by exogenous thiols. During filamentation, non-growing hyphal *GLR1*-overexpressing cells exhibited resistance against oxidants and cellular methylglyoxal was significantly decreased, which concomitantly increased expressions of genes encoding energy-generating enzymes, including fructose-1,6-bisphosphate aldolase, glyceraldehyde-3-phosphate dehydrogenase, and alcohol dehydrogenase (ADH1), with remarkable repression of Efg1-signaling cascades. This is the first report that *GLR1*-triggered Efg1-mediated signal transduction repression strictly reduces dimorphic switching and virulence by maintaining the basal level of methylglyoxal following the enhanced gene expressions of glycolytic enzymes and ADH1. The Efg1 downregulatory mechanism by *GLR1* expression has possibilities to involve in other complex network of signal pathways. Understanding how *GLR1* overexpression affects multiple signaling pathways can help identify attractive targets for antifungal drugs.

Biography

Min-Kyu Kwak is a Research Fellow at Intitute of Microbiology in School of Biological Sciences, South Korea. In the year 2009 he was a Senior researcher, at Institute of Microbiology, School of Biological Sciences, in Seoul National University. He did his Ph.D in Biophysics/Microbiology at Seoul National University. He has expertise in metabolic regulation driven by physiological roles of methylglyoxal biosynthesis/degradation enzymes. His model based on methylglyoxal production/detoxification hierarchy suggests different metabolic control systems between prokaryotes and eukaryotes. Because his findings provide a basis for understanding cell growth, viability, and differentiation to elevate the intracellular metabolites including methylglyoxal, glutathione, and reactive oxygen species, this should be of interest to scientists who are interested in the methylglyoxal metabolism and it's regulating enzymes in cells. His research is also to elucidate the mechanism of energy transfer which is a fundamental mechanism in life. Energy transfer mechanisms are mediated by electrons and photons. He aims to elucidate the function and structure of intermediate products, enzymes and genes involved in cell change down to the level of electrons and photons; mechanisms of "polymorphic changes of *Candida albicans*, developmental processes of *Dictyostelium discoideum*, and sporulation of *Bacillus subtilis* regarding electron transfer.

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Notes:

Petra Borilova Linhartova et al., J Laser Opt Photonics 2016, 3:3 (Suppl)
http://dx.doi.org/10.4172/2469-410X.C1.002

Biotechnological and molecular genetic approaches in the study of enzymes involved in the etiopathogenesis of dental caries

Petra Borilova Linhartova, Jiri Kucera, Patricie Kudelova, Katerina Paskova, Michaela Bartosova, Martina Kukletova and **Lydie Izakovicova Holla**
Masaryk University, Czech Republic

Dental caries is a complex chronic multifactorial disease representing a major oral health problem in the world. In its pathogenesis, metabolic activity of cariogenic bacteria and host enzymes involved in the immune response and dentine formation plays an important role. The advanced molecular genetic method can be used by combining the sophisticated cultivation techniques with genome-level studies to investigate more thoroughly how bacterial pathogens respond to environmental stimuli. *In vitro* study was focused on changes in metabolomes/transcriptomes of cariogenic bacteria (*Streptococcus mutans*, etc.) in dependence on external conditions, such as various substrates (carbohydrates, human/animal milk, and infant formula). Their cariogenic potential was evaluated by measuring acidity of the environment and biomass concentration. The composition of metabolites and gene expression profiles were monitored by modern biotechnology techniques (CE/HPLC/MS and NGS, respectively). Further, case-control association study comprising 803 Czech children (172 controls and 111/520 patients with dental caries in the primary/permanent dentition) was carried out. Candidate genes encoding matrix metalloproteinase-9 and -20 (MMPs), which are included in the development, remodeling and destruction of oral tissues, were selected for the analysis. Polymorphisms rs17576 and rs1784418 were determined by real-time PCR using TaqMan assays. Both SNPs were associated with severity of but not susceptibility to dental caries in the permanent dentition ($P<0.05$). Biotechnological and molecular genetics approaches offer new possibilities for the study of complex diseases etiopathogenesis, such as dental caries.

Biography

Petra Borilova Linhartova has completed her Master's degree from the Faculty of Science and PhD from the Faculty of Medicine, Masaryk University, Czech Republic. She is a team member in the project promoting excellence in basic research at Czech Science Foundation Centre. She has published 12 papers in reputed journals and has been serving as a reviewer of international journals.

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Notes:

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Enzymatic synthesis of prebiotic galacto-oligosaccharide: Application of nanobiocatalysts and structural characterization of product

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University of Belgrade, Serbia

Statement of Problem: Galacto-oligosaccharides (GOS) are group of β- galactoside compounds with significant market value due to their prebiotic properties utilized in infant nutrition products. Physiological activity is based on their short chain carbohydrate structure which makes them non-digestible by digestive enzymes, but digestible by beneficial probiotic bacteria with consequential property of selective promotion of their growth and improvement of overall health status. State of the art in current industrial GOS production based on transgalactosylation activity of β-galactosidases implies that attempts for further advance could be focused on: Fine-tuning of physiological properties by targeted control of enzymatic process toward obtaining GOS of desired structure and developing novel immobilized β-galactosidase preparations with improved affinity towards GOS synthesis.

Methodology & Theoretical Orientation: For evaluation of the effect of enzyme origin on degree of polymerization and type of β-linkages within obtained GOS compounds, transgalactosylation was performed with different β-galactosidases: from Aspergillus oryzae and Lactobacillus acidophilus. Elucidation of chemical structures in obtained GOS mixtures was performed using ion-mobility spectrometry–tandem mass spectrometry (IMS-MS/MS) one-step approach. Improvement in the field of β-galactosidase immobilization was attempted by producing novel nanobiocatalyst with functionalized nonporous fumed nano-silica (FNS) particles as immobilization support.

Conclusion & Significance: IMS-MS/MS analysis has shown that structure of obtained GOS is influenced by origin of β-galactosidase, since one from A. oryzae produced GOSs with β(1→6) and β(1→3) linkages, while enzyme from L. acidophilus produces GOSs with β(1→6) and β(1→4) linkages. Type of glycosidic linkages influences prebiotic properties of GOS, hence determination of linkage type will have great significance in enabling adequate selection of β-galactosidase for targeted prebiotic application. The immobilization on nano-supports indicated that the most adequate support is one functionalized with amino groups, which enabled several times higher transgalactosylation activities than conventionally immobilized β-galactosidase.

Biography

Dejan Bezbradica obtained his PhD degree in Biochemical Engineering and Biotechnology from the Faculty of Technology and Metallurgy in Belgrade in 2007. Since 2013, he is an Associate Professor in the Department of Biochemical Engineering and Biotechnology. During 2009, he was on sabbatical working in the Laboratory of Enzyme Engineering at Institute of Catalysis in Madrid. His scientific work covers following areas: Cell and enzyme immobilization, enzymatic synthesis in microaqueous media, application of membrane reactors in biocatalytic processes; microbial production and purification of industrial enzymes, kinetic modeling of bisubstrate enzymatic reactions, application of enzymes with transglycosylative activity in synthesis of bioactive compounds, chemical modification of enzymes and immobilization supports, and nanobiocatalysis. His recent research activities are focused on the development of food and feed products containing bioactive galactosides with prebiotic activities targeted for specific probiotic species.

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The effect of natural deep eutectic solvent on laccase catalyzed polycatechin synthesis

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Catechin is a crucial member of flavonoids that show antioxidant properties both in vivo and in vitro. However, flavonoid monomers, like catechin, have some disadvantages such as low solubility and pro-oxidant activity. These drawbacks are reported to disappear in the polymerized form. The polymerization of catechin was reported using organic solvents to provide solubility in many studies. We present here the effect of natural deep eutectic solvent (NADES) as green solvents on laccase catalyzed polycatechin synthesis. The reaction media contained catechin (5 mg ml-1), acetate buffer (pH=5) and betaine (B)-mannose (M) (5:2, molar amount) at mentioned amounts. The effect of B-M amount (5, 50-90%), laccase concentration (15.6-125 U) and temperature (25-40°C) were investigated on polycatechin synthesis. The antioxidant activities of the polycatechins were tested in terms of superoxide radical scavenging activity and xanthine/xanthine oxidase activity. Size exclusion chromatography and HPLC analysis were used as analytical methods. According to the results, 5% B-M containing reaction media provided high molecular weight polycatechin that was comparable with acetone containing media. Therefore organic solvent content could be discarded from the reaction. However, handling of the reaction media and recovery of the product were challenging steps at increased NADES content. The conversion rate of catechin was found to increase with increasing laccase amount. Additionally, high laccase concentration (125 U) was found to provide high molecular weight and yield. On the other hand, temperature had no significant effect on polycatechin formation at tested range (25-40°C). All polycatechins obtained were found to have increased superoxide radical scavenging activity and xanthine/xanthine oxidase inhibitory activity when compared to monomer catechin. This study showed that polycatechin synthesis pathway could be shifted to a green route using NADES.

Biography

Ayse Ezgi Unlu has expertise in enzymes, enzymatic reactions, fermentation, protein synthesis, proteomics, enzymatic biopolymers and green solvents. The synthesis of Naproxen, a member of NSAIDs, was the subject of her Master's thesis by using commercial lipase subjected to various pre-treatment strategies that enhanced the activity. Investigation of different parameters on the production of lipase by Candida rugosa and also proteomic analysis of the isoenzymes was another subject of her interest. She has done her Post-doctoral research on the synthesis of flavonoids using green solvents.

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Notes:

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Biochemical effect of some antioxidants on metabolic changes in experimentally induced tumor in female mice

Mohammed F El-Shiekha
October 6 University, Egypt

Biochemical effect of tannic acid and curcumin on female mice which experimentally induced Ehrlich ascites carcinoma (EAC) was investigated in this study. This study was carried out on 220 (12-14 weeks old, 25-30 g each) female mice. Mice were classified into two main large experiments. Experiment 1: Non-tumor bearing mice (NTB) included 100 animals and divided into four groups, each one comprised 25 mice. Group 1: NTB-control saline treated. Group 2: NTB-treated with curcumin orally (350 mg/kg/day) for 6 weeks. Group 3: NTB-treated with tannic acid orally (160 mg/kg/day) for 6 weeks. Group 4: NTB-treated with curcumin and tannic acid orally at ratio (50%:50%) for 6 weeks. Experiment 2: Tumor bearing (TB) mice. Out of the total 120 animals, were divided into four groups each one comprised of 30 mice. Group 1: TBM-control saline treated. Group 2: TBM-treated with curcumin orally (350 mg/kg/day) for 6 weeks. Group 3: TBM-treated with tannic acid orally (160 mg/kg/day) for 6 weeks. Group 4: TBM-treated with curcumin and tannic acid orally at ratio (50%:50%) for 6 weeks. Blood samples were collected from all animals groups after 2, 4 and 6 weeks from treatment. Serum were separated and processed directly for glucose, insulin, total cholesterol, triacylglycerol, total protein determination. The obtained results revealed that, a highly significant decrease in serum glucose, total cholesterol, total protein concentration, meanwhile, a highly significant increase in serum triacylglycerol concentration was also observed. But a non-significant decrease in serum insulin levels were observed in tumor bearing mice when compared with control. The results of this study indicated that curcumin, tannic acid and their combination treatment have potential benefits in cancer treatment.

Biography

Mohammed F El-Shiekha has completed his PhD from the Department of Biochemistry, Faculty of Veterinary Medicine, Benha University, Egypt. He is a Faculty Member in the Department of Biochemistry, Faculty of Pharmacy, October 6 University, Egypt. He has published 6 papers in reputed journals.

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Metabolic engineering strategies for effective use of glycosyltransferases in oligosaccharide synthesis

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As one of the four building blocks of life, sugar molecules permeate almost all aspects of life. The widespread occurrence of glycosylation and its broad impact in biological processes underscores the importance of studying glycosylation. To study glycans and probe their roles in a biological system significant amount of pure molecules are needed. Besides basic research, there are a wide range of opportunities of utilizing oligosaccharides, polysaccharides, and glycoproteins and other glyco-conjugates for diagnosis, vaccine development, as new drug entities, and many other medical applications. Unfortunately, these potential applications are all impeded by the lack of large scale synthesis technology for these molecules. Metabolic engineering, since its inception in late 80's, has grown to be a field impactful in the synthesis of a variety of molecules of commercial and societal importance. Opportunities abound at the interface of glycosciences and metabolic engineering. In fact, all sugar moieties in biological components, small or big, free or bound, are important targets for metabolic engineering. Over the past decades, its use in the synthesis of sugar-containing molecules has gained significance. Glycosidic bond formation catalyzed by glycosyltransferase enzyme is in the center of the synthesis of most glycan structures in nature. Oligosaccharides, polysaccharides and glycoproteins share the commonality that requires glycosyltransferases in their synthesis, differing only in the nature of the acceptors. Therefore, from a metabolic engineering point of view, they share much of the synthesis challenges. These include the high energy demand due to the need for sugar nucleotides as precursors, the complexity of metabolic pathways and regulations involved, and the adequate supply of acceptors when and where the glycosyltransferases are most active. Represented by 2'-fucosyllactose, the success in bringing highly valuable oligosaccharides to commercial production demonstrates the power of metabolic engineering. On the other hand, given the enormous diversity and significant complexity of saccharide-containing structures, a handful of molecules attaining commercial success can only qualify as a promising beginning. In fact, the surface of the gigantic glyco-sphere has barely scratched. Providing scientists with hundreds and thousands of glycans in quantities sufficient to probe their structure and functional relationships, and supplying clinicians with selective compounds (such as Globo H and heparin in Kg quantities) for clinical studies in a cost effective manner are challenges before metabolic engineers and synthetic biologists. The inherent challenges in complex carbohydrates demands innovative metabolic engineering strategies beyond a simple extension of those used in successful examples. In this presentation, metabolic engineering challenges common to glycosyltransferase-catalyzed synthesis of oligosaccharides are analyzed and successful examples from Chen labs are showcased to emphasize the power of metabolic engineering as an enabling technology.

Biography

Rachel Chen has done her PhD from California Institute of Technology in 1994 and subsequently worked as a Research Scientist in Bristol-Myers Squibb. She began her independent academic career in Virginia Commonwealth University and continued at Georgia Institute of Technology. Her research interfaces biology, chemistry, and engineering with major focus on applying molecular engineering tools in the synthesis of molecules that are not attainable with conventional means. She has published over 80 peer-reviewed papers and has been serving as an Associate Editor for *Microbial Cell Factories* and on Editorial Boards of *Biotechnology and Bioengineering, AIMS Bioengineering* and *AIMS Microbiology*.

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Session Introduction

Title: **Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx**

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Wael M Rabeh, J Laser Opt Photonics 2016, 3:3 (Suppl)
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The catalytic and structural roles of the human hexokinase 2 in cancer

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Glucose metabolism is 200 times higher in cancer affected tissues in comparison to normal tissue as a strategy to support tumor growth and progression, historically known as the 'Warburg effect'. Hexokinase is the first enzyme of the glycolytic pathway that catalyzes the phosphorylation of glucose for its activation to glucose-6-phosphate and uses ATP as high-energy source of phosphates. Four isozymes are present in human body with hexokinase 2 (HK2) as most active and specifically expressed in variety of different cancers. However, HK2 binding to the outer mitochondrial membrane not only gives it prime access to ATP generated by the mitochondrial but inhibit apoptosis. Here, we aim to biochemically and structurally characterize interactions of HK2 with the mitochondria and the N-terminal role in catalysis and stability of the full-length enzyme. Here, we solved the crystal structure of human HK2 in complex with glucose and glucose-6-phosphate (PDB code: 2NZT), where it is a homodimer with catalytically active N- and C-terminal domains linked by a seven-turn α-helix. Different from the inactive N-terminal domains of isozymes 1 and 3, the N-domain of HK2 is not only capable of catalyzing reaction but it is also responsible for thermodynamic stabilization of the full-length enzyme. Deletion of first α-helix of the N-domain that binds to the mitochondria altered the stability and catalytic activity of the full-length HK2. In addition, we found the linker helix between the N- and C-terminal domains to play an important role in controlling the catalytic activity of the N-terminal domain. HK2 is a major step in the regulation of glucose metabolism in cancer making it an ideal target for the development of new anticancer therapeutics. Characterizing the structural and molecular mechanisms of human HK2 and its role in cancer metabolism will accelerate the design and development of new cancer therapeutics that are safe and cancer specific.

Biography

Wael M Rabeh has received his PhD in Biochemistry from the Lab of Professor Paul F Cook, where he characterized the last enzymatic reaction of the cysteine biosynthetic pathway in *Salmonella typhimurium*. In 2005, he joined the Structural Genomic Consortium (SGC) at the University of Toronto as a Post-doctoral Fellow, where he characterized the 3D structure of human proteins with medical relevance using X-ray crystallography. In 2007, he joined the Lab of Dr. Gergely Lukacs at McGill University for the characterization of a membrane channel that is the main cause of cystic fibrosis. His research focuses on the characterization of protein structures and mechanism to understand their biological functions.

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Inhibition of the RNA-dependent RNA polymerasic activity of Flavivirus NS5 by heterocyclic compounds

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Among more than 70 related members of Flavivirus genus, Dengue virus (DENV), West Nile virus (WNV), Japanese encephalitis virus (JEV), Yellow fever virus (YFV), and Zika virus (ZV) are considered (re)-emerging pathogens that were originally endemic in the tropical regions but recently are spreading also in a wider geographic area. Indeed, there are several environmental, demographic, and ecological factors that promote the worldwide diffusion of known and/or novel flaviviruses. Flaviviruses can produce from mild flu-like symptoms to hemorrhagic fevers, hepatitis and neuropathies, such as encephalopathy, meningitis, and microcephaly in human embryos depending on the infective agents. Vaccines are available against YFV, JEV, TBEV, and more recently against DENV but the coverage is far from being complete. Moreover, the lack of an effective and specific therapy further worsens the scenario. The RNA-dependent RNA polymerase (RdRp) of the non-structural NS5 protein is one of the most favored targets to find new potential anti-Flavivirus drugs. With the aim to find new inhibitors of the RdRp we undertook a research program exploiting, consecutively, two different approaches: i) A virtual screening carried out on the NS5 polymerase domain (DENV RdRp, 2J7U) followed by a biochemical validation on the isolate target, and ii) a direct biochemical screening carried out on DENV NS5 polymerase with the intent to not exclude any potential hit compounds eventually missed during the in silico procedures. Both these approaches were realized using an in-house library of about 200, published and unpublished, compounds previously designed and synthesized as HCV NS5B inhibitors. To validate the potential of the identified hits, an anti-viral activity against a panel of Flavivirus was evaluated. The two strategies led us to identify new RdRp inhibitors able to reduce the polymerase activity in the low micromolar range. In particular, the in silico procedure (i) was fruitful for the identification of a pyridobenzothiazole which was extensively characterized with biochemical and structural studies; the second approach (ii) led us to identify functionalized 2,1-benzothiaziens with promising anti-RdRp activity, not emerged as hit compounds during the in silico studies (Figure 1). Also in this case, a representative compound derived from a chemical optimization was better characterized in biochemical and virological assays. The strategy applied in this study led us to identify new promising inhibitors of the NS5 polymerase, worthy of further optimization with the final aim to discover anti-Flavivirus agents.

Biography

Giuseppe Manfroni has graduated in Pharmaceutical Chemistry and Technology (2001), and received his PhD in Medicinal Chemistry (2006) from the University of Perugia (Italy). From 2006 to 2008, he worked as a Post-doctoral Researcher at the University of Perugia. From 2008 to date, he is an Assistant Professor in the Department of Pharmaceutical Sciences and is a Lecturer in Pharmaceutical Analysis. He has spent short periods as a Visiting PhD Student at Rega Institute for Medical Research (Leuven, Belgium) and at the Molecular Modeling Laboratory (University of Perugia) under the supervision of Professor Johan Neyts and Professor Gabriele Cruciani, respectively. He is the author of 40 papers, and his research is mainly focused on Medicinal Chemistry of antiviral (HIV, HCV, and Flavivirus), antitumor, and anti-inflammatory (p38 inhibitors) agents. He is an expert in the synthesis of heterocyclic compounds and microwave assisted synthesis.

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Notes:

Zeina Nasr et al., J Laser Opt Photonics 2016, 3:3 (Suppl)
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Knockdown of RPS3, a DNA repair endonuclease, impedes colon cancer growth and progression by decreasing lactate dehydrogenase activity

Zeina Nasr and **Lama Maaliki**
University of Balamand, Lebanon

Statement of the Problem: In addition to their role in ribosome biogenesis, ribosomal proteins (RPs) play important roles in DNA repair, proliferation, apoptosis and resistance to drugs and chemotherapy. Ribosomal protein S3 (RPS3), a DNA repair endonuclease, is known to be overexpressed in colon adenocarcinoma. In order to ensure their survival, cancer cells rely on aerobic glycolysis catalyzed by the enzyme lactate dehydrogenase (LDH). Our aim is to identify the role of RPS3 in colon cancer growth and metabolism.

Methodology & Theoretical Orientation: Human colon adenocarcinoma Caco-2 and normal colon NCM-640 cells were tested for the expression of RPS3 by Western blot. In order to inhibit RPS3 expression, cells were transfected with siRNA against RPS3 or a non-targeting siRNA (siNT) as a negative control. Upon RPS3 knockdown, cell behaviors were tested including proliferation and survival by trypan blue and WST-1 assays, and cell migration and invasion by the Boyden chamber assays. The glycolysis state of colon cancer cells was assessed by measuring LDH activity upon RPS3 knockdown using the LDH assay.

Findings: RPS3 was shown to be expressed in both Caco-2 and NCM-640 cells. RPS3 knockdown in Caco-2 significantly reduced cell proliferation, survival, migration and invasion compared to siNT-transfected cells. In NCM-640, RPS3 knockdown did not significantly affect cell proliferation and survival implying that RPS3 expression is selectively crucial for colon cancer cell growth. Interestingly, LDH activity was suppressed upon RPS3 knockdown, suggesting a decrease in glycolysis which explains in part the decrease in proliferation.

Conclusion & Significance: This is the first report that shows a role of RPS3 in regulating LDH activity therefore affecting the glycolytic state, the survival and proliferation of cancer cells. Our results also demonstrate that RPS3 is a selective molecular marker in colon cancer and a potential attractive target for colon cancer therapy.

Biography

Zeina Nasr is Assistant Professor, at the Department of Biology in the University of Balamand, Lebanon. She did her Ph.D from McGill University in the Department of Biochemistry. She has her interest in understanding the molecular aspect of tumor initiation and progression. Her research focuses on studying the effect of translation initiation dysregulation on cancer behavior. She has worked with several cell lines and transgenic mouse models and deciphered important pathways that contribute to cancer initiation and progression to metastasis. She has experience in conducting research and teaching at various institutions. Currently, her work focuses on the extra-ribosomal functions of ribosomal proteins and their effects on tumorigenesis.

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Upstream and downstream processing of fungal laccase

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Statement of the Problem: Laccase (EC 1.10.3.2, polyphenol oxidases) belongs to the group of oxidoreductases which is characterized by its specific catalytic properties and the ability to oxidize various organic compounds. Therefore the enzyme is very attractive for a wide range of industrial and environmental purposes. However, due to relatively low effectiveness and the possibility of gradual degradation of bioproducts in the reactor or during the separation and purification stages, there is a need for new approaches and research in this field. Therefore, the purpose of this research was to study and integrate the stages of up- and downstream processing (biosynthesis and purification) of laccase from Cerrena *unicolor* in order to obtain a highly active enzymatic product.

Methodology: The biosynthesis was performed in a 14 L bioreactor equipped with a set of sensors for process control. Modifications to the medium (addition of microparticles), MPEC, as well as various types of cultivation/growth strategies were examined. The supernatant was concentrated and purified by an aqueous two-phase system (ATPS) consisting of polyethylene glycol and phosphate buffer solutions, and through foam fractionation (FF) at different pH values and with the addition of different detergents. Ultrafiltration and chromatography methods were also investigated. Molecular mass and isoelectric point was determined with the use of electrophoresis.

Findings: Laccase activity increased 3.5-fold after addition of microparticles to the culture media. The fed-batch mode resulted in high laccase activity (up to 4 U/mL) which remains stable during cultivation. The optimal conditions for laccase purification by FF and ATPS were determined with activity partitioning coefficients between foamate and retentate of almost 200 and 2000, respectively, and with yields reaching 50% and 90%, respectively.

Conclusions: Application of MPEC and fed-batch mode proved successful in increasing enzyme production. Hence, both ATPS and FF can be used for laccase purification.

Biography

Anna Antecka has received her PhD in Environmental Engineering in 2008 from the Lodz University of Technology in Poland, in the Faculty of Process and Environmental Engineering. Currently, she is an Assistant Professor in the Department of Bioprocess Engineering at Lodz University of Technology. From 2004-2005, she has worked at the International Institute Zittau, Germany, in the Department of Environmental Biotechnology. In 2002, she studied at the University of Dortmund, Germany. Her main research interests are in microbial ecology and biotechnology of fungal enzymes especially laccase, including its production, purification and characterization, as well as enzyme applications for industrial and environmental purposes. Currently, she is working in the area of integrated continuous up- and downstream processes for the biosynthesis and purification of fungal laccases.

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Thermophilic enzymes as industrial biocatalysts

Jennifer A Littlechild
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There is an increasing demand for new enzymes with enhanced performance and/or novel functionalities that provide savings in time, money and energy for industrial processes in the areas of high value chemical production and other "white" biotechnology applications. There is limited understanding of the metabolic capacity of life and only a small proportion of nature's catalysts have been utilised for industrial biotechnology. There are new metabolic pathways and enzyme activities to be discovered and many of which could be identified within the large proportion of micro-organisms that cannot be cultured and within their associated viruses. The number of enzymes explored to date remains within the range of 1-2% of known microbial diversity. Enzymes used for commercial biotransformation reactions are required to be stable under the industrial conditions employed. The use of naturally thermostable enzymes isolated from hot environments can be a source of enzymes that are more stable to high temperatures, extremes of pH and exposure to organic solvents. By using both genomic and metagenomic approaches within the projects, HotZyme and THERMOGENE, we have identified hydrolase and transferase enzymes of industrial interest isolated from high temperature environments around the world. A selection of these novel enzymes including esterases, cellulases, epoxide hydrolases, transketolases and transaminases have been characterized both biochemically and structurally. In case of the epoxide hydrolases, two new enzymes with interesting substrate specificity and stereo-selectivity have been discovered from thermophilic metagenomes. Applications of these new epoxide hydrolases have been demonstrated at industrial scale for the production of new chiral chemical building blocks. A new thermophilic cellulase enzyme with activity at pH 5.0 and active under high salt conditions has been isolated which has potential applications for breakdown of biomass.

Biography

Jennifer A Littlechild is a Professor of Biological Chemistry and has established the Henry Wellcome Centre for Biocatalysis at Exeter University in 2003. Her research studies involve the structural and mechanistic characterisation of a range of enzymes from thermophilic bacteria and archaea that have industrial applications. She has a particular interest in thermophilic carbonic anhydrase enzymes and has carried out a project with Statoil from 2011-2013. She has published over 200 publications in high impact journals and has presented her research work internationally. She is the UK Representative and Vice-Chair of the European Section of Applied Biocatalysis, and member of EU Advisory Committee for Industrial Biotechnology.

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Pharmacological chaperones for curing enzymopathies: The case of lysosomal alpha-galactosidase

Valentina Citro
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Pharmacological chaperones are useful for the treatment of enzymopathies arising from mutations that lower the free energy difference between an unfolded and a folded enzyme shifting the equilibrium towards the first form. The unfolded enzyme, although retaining the functional chemical groups is needed for the biological activity, does not maintain them in the appropriate spatial disposition which can be defined as native state. Improperly folded mutant enzymes are usually sensitive to proteolysis and are cleared by the protein quality control systems in the cytosol and endoplasmic reticulum. Activity can be rescued if the equilibrium is pushed back towards the native state. This can be obtained binding a pharmacological chaperone to the folded enzyme. In fact the binding energy of the ligand compensates for the loss in Delta G while unfolding. Lysosomal alpha-galactosidase represents a good model system for the therapy with pharmacological chaperones. Lysosomal alpha-galactosidase catalyzes the removal of α-galactosyl residues from a glycosphingolipid, globotriaosylceramide. Mutations of lysosomal alpha-galactosidase cause Fabry's disease. We used three methods to test the effect of pharmacological chaperones: 1) Thermal shift assay. This test takes advantage of an environmentally sensitive fluorescent dye which binds the enzyme when it reaches the melting temperature; 2) Urea induced unfolding coupled with limited proteolysis and Western blot detection. This test can be carried out on mutants in cell extracts; and 3) Administration of the pharmacological chaperone to cells expressing mutant enzymes. Open reading frames encoding mutated enzymes are introduced into vectors suitable for transient expression. Eukaryotic cells, COS7 or HEK293, are transfected and cultivated in the presence and in the absence of the drug. It can be interpreted that if the chaperones work and the mutants stabilize, a larger amount of protein can be detected by Western blot and consequently a higher enzymatic activity can be measured.

Biography

Valentina Citro is interested in developing Pharmacological Chaperones (PC) to cure rare diseases. She works on the identification of the mutations which can be responsive to chaperones and develop method for assays in vitro in two model systems: The Fabry disease, a lysosomal storage disorder; and PMM2-CDG (CDG-Ia) disease, a disorder of glycosylation with no cure at present.

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Claudio Santi

University of Perugia, Italy

New drugs and catalysts inspired by glutathione peroxidase

Glutathione peroxidase (GPx) among the currently known selenoenzymes is the best characterized in terms of chemical structure and reaction mechanism. The catalytic center of this enzyme is a selenocysteine and, more specifically, a selenium atom that is stabilized by a catalytic triad in the form of nucleophilic selenate. In this form, the selenium is reactive toward peroxides determining their reduction into the non-harmful alcohol or water. The selenol by reaction with the peroxide is transformed into the corresponding selenenic acid which is rapidly reduced by two molecules of glutathione affording a molecule of oxidized glutathione and the native selenate which is ready to start a second cycle. Glutathione peroxidase have a crucial role in the control and prevents the damage produced by the reactive oxygen species (ROS) in living system and, from one side it is important to maintain a healthy status from the other it is necessary to reinforce it during a number of pathologic situation. During the last decades, several small molecules containing selenium as well as some artificial selenoenzymes were developed and tested as antioxidants but also as pro-oxidants as enzyme inhibitors, hormetic agents, antiviral, anticancer, antimicrobial agents. In this talk, the author will report the state of art of the research on this field focusing some new prospective that is currently ongoing in our laboratory: Discovery of new biologically active organoselenium compounds and determination of their reaction mechanism in living systems. Besides that the bio inspiration is an excellent strategy for the development of new efficient and eco sustainable catalyst for application in Green Chemistry, some recent examples of these results will be presented and discussed.

Biography

Claudio Santi received his PhD in Chemical Sciences from the University of Perugia under the supervision of Professor Marcello Tiecco. Currently, he is a Professor of Organic Chemistry and leads the Group of Catalysis and Organic Green Chemistry in the Department of Pharmaceutical Sciences. His research interests range from the application of selenium reagents in green chemistry to the development of new organoselenium containing drugs. He is author of more than 130 publications including review articles and book chapters

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Notes:

Toshiyuki Moriuchi, J Laser Opt Photonics 2016, 3:3 (Suppl)
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Toshiyuki Moriuchi

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Bromoperoxidase mimicking bromination catalysts

Haloperoxidases are enzymes that are able to catalyze the oxidation of halide ions by using hydrogen peroxide. Catalytic activities of haloperoxidases have received great attention because of their capability to halogenate a variety of organic compounds. Vanadium bromoperoxidase (V-BrPO), which is a naturally occurring enzyme in marine algae, is a kind of haloperoxidase. V-BrPO catalyzes two-electron oxidation of the bromide ion in the presence of hydrogen peroxide, leaving a bromonium cation-like species. V-BrPO has been demonstrated to perform the catalytic bromination of organic compounds. Bromination reaction is one of the most fundamental reactions in organic synthesis, providing important precursors and substrates in various coupling reactions. Conventional bromination reaction is performed by using hazardous and toxic elemental bromine. Considerable efforts have been focused on developing a versatile bromination method with a bromide ion as a bromide source instead of bromine. So, the V-BrPO mimicking bromination reaction systems induced by a vanadium catalyst and hydrogen peroxide have attracted much attention. These catalytic systems, however, require a stoichiometric amount of a strong oxidant to generate the bromonium-like species. A more practical catalytic bromination reaction system without the use of hazardous reagents needs to be developed. From the view point of green chemistry perspective, molecular oxygen is regarded as the best candidate for oxidants. We embarked upon the development of an environmentally-favorable catalytic method for selective bromination of a wide range of substrates. In this presentation, bromoperoxidase mimicking versatile and practical bromination catalytic systems by the combination of a commercially available inexpensive ligand-free vanadium catalyst and a Brønsted acid or a Lewis acid under molecular oxygen will be described.

Biography

Toshiyuki Moriuchi received his Bachelor's degree in 1991 and Doctoral degree in 1995 under the supervision of Professor Toshikazu Hirao, from Osaka University. He became an Assistant Professor at Osaka University and was a Post-doctoral Fellow at California Institute of Technology with Professor Jacqueline K Barton (1996-1997). He was promoted to the position of Associate Professor in 2004. His current research interests focuses on the development of novel artificial bio-conjugated systems based on self-organization of biomolecules and redox-active □-conjugated systems for functionalized catalysts and materials. He received the Inoue Research Award for Young Scientists in 1997 and HGCS Japan Award of Excellence 2011 in the year 2012

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Session Chair
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Session Introduction

Title: **Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx**

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Ebru Sakar et all, J Laser Opt Photonics 2016, 3:3 (Suppl)
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Selection based breeding and genetic characterization of selected olive (Olea europaea L.) genotypes from Adiyaman, Mardin, Siirt, Şanliurfa and Şirnak provinces

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[2]Duzce University, Turkey
[3]Cambridge University, Turkey
[4]Atatürk University, Turkey

Present study was aimed to select superior genotypes within olive populations of Adıyaman, Mardin, Şanlıurfa and Şırnak provinces in South East Anatolia, leading fruit and tree characteristics were determined in shoot, leaf and fruit samples collected from 142 genotypes. These genotypes were investigated according to "Weighted Rankit" method using fruit weight, number of fruits per 100 g, flesh/seed ratio, oil ratio, fatty acid composition, habitus, lenticel size, length of internode and 38 promising genotypes as cultivar candidate (20 are table olives and 18 are olive oil) were selected. Among table genotypes, number of fruits per 100 g between 11 (Yurteri-4) and 25 (Derik-20 and Yedi kardeşler-1), flesh/seed ratio between 5.85 g (Yardere-2) and 11.40 g (Yedi kardeşler-3) and oil content between 3.0% (Eski kale) and 13.0% (Amak-1); among oil genotypes, fruit weight between 1.14 g (Derik zeytin pınarı-2) and 8.99 g (Yurteri-4), flesh/seed ratio between 2.73 g (Zinnar-5) and 11.40 g (Yedi kardeşler-3); oil content between 2.0% (Eski kale çıkışı) and 13.0% (Amak-1), oleic acid ratio between 63.25% (Gürmeşe-2) and 74.31% (Yurteri-6) and linolenic acid ratio between 0.49% (Yedi kardeşler-1,Eski kale çıkışı) and 1.42% (Beşdeğirmen-2) were changed. Genetic characterization of 38 selected table and olive (Olea europaea L.) genotypes together with 6 local and 4 foreign reference cultivars obtained from Alata Horticultural Institute was performed using 10 microsatellite markers ((UDO4, UDO9, UDO12, UDO24, UDO26, DCA9, DCA11, DCA13, DCA15 and DCA18) and their genetic similarities were investigated by SSR method. Number of alleles per locus was determined between 7 (UDO9 and UDO24) and 16 (DCA18) for table genotypes and between 4 (UDO4) and 15 for oil genotypes (DCA11ve DCA18). Mean expected and observed heterozygosity were determined as 0.694-0.604 among table genotypes and 0.710 and 0.656 among oil genotypes, respectively. The dendrogram obtained from cluster analysis consisted of two main groups. Several sub-groups were observed within the first group which consisted of the majority of genotypes. This data was further supported by the AFLP analysis. Homonyms and synonyms were not obtained. Close genetic similarities were determined between Amak-1 and Yedi kardeşler-3 in table genotypes and between Zinnar-5 and Yurteri-4; Gürmeşe-1 and Gürmeşe-2 in oil genotypes

Biography

Ebru Sakar is associate professor at Harran University Faculty of Agriculture, in the Department of Horticulture Osmanbey Campus, Turkey. He did his masters in gardens plants from Harran University, Turkey. His research interest is Fruit Growing and Breeding Biotechnology.

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Notes:

Preeti Chanalia et all, J Laser Opt Photonics 2016, 3:3 (Suppl)
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Proline iminopeptidase from probiotic L. plantarum: Physicochemical characterization and role in meat tenderization

Preeti Chanalia, Dimpi Gandhi, Pooja Attri and **Suman Dhanda**
Kurukshetra University, India

Introduction & Aim: Proline iminopeptidase (PIPs) specifically cleaves N-terminal proline from peptides and helps in overcoming restriction of many aminopeptidases to cleave proline rich peptides/proteins. PIPs are used in food processing, meat tenderization as well as in treating collagen rich wastewater to generate bioactive collagen hydrolysates important for food and pharmaceutical industry. Microbial enzymes account for about 60% of total worldwide sale of enzymes. There is increasing demand of industrial enzymes with novel characteristics for different applications. Among microorganisms, lactic acid bacteria have gained great attention because of their GRAS status (generally regarded as safe) and probiotic attributes. Investigation and development of highly potent probiotic consortium (comparable to commercially available products/probiotics) suitable for functioning in adverse conditions is of great value as therapeutics as well as in various industries. The possibility of formation of mono- strains into multi-strain probiotics with potential of improved efficacy is the goal of this kind of studies.

Methodology: Purification using successive column chromatographies, characterization, *in silico* studies of PIP from probiotic *L. plantarum* and its use in collagen degradation and meat tenderization by simple and effective treatment with enzymes was done.

Findings: Membrane bound PIP from *L. Plantarum* was extracted, purified and characterized further. The effectiveness of PIP in purified form, membrane bound form and in combination with other enzymes to degrade collagen and meat tenderization marks its industrial importance.

Conclusion & Significance: Purified PIP as well as whole cells effectively hydrolyzed collagen. Whole cells, PIP alone and with other enzymes tenderized chicken meat efficiently. It is very significant for food, pharmaceutical industry and waste management. It also opens avenue for the formation of multi strain probiotics

Biography

Dr. Preeti Chanalia is assistant professor of Biotechnology at Kurukshetra University, India. Preeti Chanalia has expertise in biochemical, microbiological and microscopic techniques. She is well versed with Protein Isolation and Purification. She has purified and characterized PIP from L. plantarum and extended her studies to explore applications of PIP (alone and in combination with other enzymes) in meat tenderization and collagen degradation. Her work determined that purified PIP as well membrane bound PIP were very effective in collagen degradation and meat tenderization. Her work indicates the possibility of formation of mono-strains into multi-strain probiotics with improved efficiency. She had made a significant contribution to the project and worked as self-motivated researcher to learn and do new things

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Notes:

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The role of zeolite in reducing oxidative damage in tomato plants exposed to drought

Dino Hasanagic[1], **Danijela Kojic**[2] and **Biljana Kukavica**[1]
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[2]University of Novi Sad, Serbia

Drought is a worldwide problem, and insufficient supply of plants with water is one of the most important causes of low agricultural yields and thus representing one of the most common problems faced by the producers. There has been an increased interest in science in recent years in the use of natural aluminosilicates in agriculture where the most famous is zeolite, a mineral whose absorption properties and balanced release of water and nutritive substances solve the issue of water supply and mineral nutrition and have beneficial impact on overall plant growth. The aim of this study was to investigate the role of zeolite in prevention of oxidative stress in tomato plants exposed to drought. Changes in the activity of peroxidase (POD, EC 1.11.1.7), catalase (CAT, EC 1.11.1.6), ascorbate peroxidase (APX, EC 1.11.1.11), superoxide dismutase (SOD, EC 1.15.1.1) as well as reduction and total ascorbate content in plant leaves exposed to drought for 28 days were investigated. Activities of antioxidant enzymes in the leaves of plants exposed to drought were at the same level with and without the addition of zeolite. The obtained results indicate that zeolite did not prevent oxidative damages caused by drought. Native electrophoresis resolved the presence of two peroxidase isoforms specific for drought and their activities were higher in tomato leaves with zeolite. The drought induced an increase in activities of superoxide dismutase, ascorbate peroxidase and ascorbate concentration and this antioxidative strategy were more expressed in zeolite treated plants. Unexpected results related to the role of zeolite open the possibility to different perspectives in discussion on the zeolite role in drought prevention.

Biography

Dino Hasanagic received his MSc degree from the Faculty of Science in Sarajevo, and is currently attending Plant Biochemistry Program at the Faculty of Science, University of Banja Luka, Bosnia and Herzegovina

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Notes:

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Purification, characterization and application of marine Aspergillus nomius GWA5 tannase

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Tannase) EC 3.1.1.20) was produced from the culture filtrate of marine *Aspergillus nomius* GWA5 and purified by 75% acetone precipitation, followed by gel filtration on Sephadex G-100 and on DEAE-Sephadex A-50 ion exchange chromatography, yielding 4.48-fold of purification. The molecular weight of the purified tannase was 30 kDa, determined by a sodium dodecyl sulphate polyacrylamide gel electrophoresis. The optimum pH and temperature of the purified tannase yielding the highest activity (291 U/mg of protein) were 6.0 and 50°C, respectively. It was observed that tannase stability shifted to a more acidic range (4-6). Tannase enzyme was fairly stable to heat treatment in absence of its substrate and it retained about 84.5% of its activity when treated at 80°C for 15 minutes. The effect of activators and inhibitors on tannase activity was investigated, only Mg2+ activated the pure enzyme while Cd2+, EDTA, Pb2+ and Hg2+ inhibited the enzyme activity and it retained about 51.55%, 40.78%, 30.24% and 24.55% of its activity, respectively. Tannase showed promising activity in removing tannin stains of tea from clothes.

Biography

Aida Farag has her expertise in production of important enzymes used in treatment as tannase. We used a marine environment as a new source for isolation of a fungus able to produce the enzyme. Also, the fungus was identified as Aspergillus nomius GWA5. Partial purification by different agents was done followed by purification using two types of columns and characterization of the enzyme was also studied. The properties of Aspergillus nomius GWA5 tannase may make it very good candidate for using in biotechnology field

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Notes:

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Enzymatic changes in obesity-related diseases

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Obesity is a condition of abnormally increased body fat, resulting from increased energy intake relative to energy expenditure. Obesity is defined as having a body mass index (BMI) of 30 kg/m2 or above, with an increasing incidence in all over the world. Obesity is associated with several health related problems that increase the risk of morbidity and mortality. Scientists have found that enzymes play an important role in obesity-related diseases. They found that at very low, basal levels, enzymes control the threshold of cellular function of signaling pathways. The purpose of this review is to describe the role of oxidative stress in various obesity related health problems; since obesity is associated with oxidative stress as result of increased oxygen utilization due to fat deposition in tissues, increased cardiac load, coupled with oxidative phosphorylation in mitochondria and depletion of ATP and consequent free radical formation. Moreover, high dietary saturated fatty acids (SFA) stimulate intracellular pathways, with more oxidative stress through superoxide generation from NADPH oxidases, glyceraldehyde autoxidation, protein kinase C (PKC) activation, and polyol pathway. In addition, oxidative stress is associated with the infiltration of adipose tissue by inflammatory cells, together with production of high levels of free radical as part of the immune response. Thus obesity is viewed as a chronic inflammatory situation that is critically important in development of pathological states due to tissue damage and altered enzyme activity that result in disease state to extent of tumorigenesis, such as insulin resistance diabetes, cardiovascular disease and kidney dysfunction. It can be concluded that weight reduction in obese subjects improve anti-oxidant defense of body; the triggering factor for series of molecular signals. Also, improving anti-oxidant defense through modulation of dietary pattern or pharmaceutical antioxidants, which may be a potential therapeutic approach in obesity related disease.

Biography

Hala Mourad Demerdash is currently an Associate Professor in the Faculty of Pharmacy, Pharos University in Alexandria (PUA) and Consultant in Clinical Pathology at Alexandria University Hospital. She graduated from the Faculty of Medicine, Alexandria University and received her Master's degree from Chemical Pathology department, Medical Research Institute and was a Resident in the Chemical Pathology department from 1992-1995. She received her MD from Clinical Pathology department, Faculty of Medicine, Tanta University in 2007. She was an Associate Professor in 2014 at Tanta University

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Notes:

Ammar I Shihab, J Laser Opt Photonics 2016, 3:3 (Suppl)
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Data analysis of the complexity applied biomedical monitoring of autism

Ammar I Shihab
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Autism is a developmental disorder characterized among other early by alterations of socialization associated with a deficit of visual perception and/or aural and emotional expressions. To better understand the processes involved in autism, neurophysiologists analyzed responses to stimuli of autistic audio and video. The tools are commonly used fMRI, EEG, and more recently "eye tracking". This device is simple to implement and use, has begun to yield interesting results on the processes possibly involved in the perception of lack of photographs or films involving human presence. The paradigm involved in this test is to show on a screen a human face (or a movie involving social interactions), and shoot at the same time the position of the patient wards. Autism is a developmental disorder characterized among other early by alterations of socialization associated with a deficit of visual perception and/or aural and emotional expressions. A preliminary study on eye tracking trajectories of patients studied (see figure), showed a rudimentary statistical analysis (principal component analysis) provides interesting results on the statistical parameters that are studied such as the time spent in a region of interest, the attachment time. Another study, involving tools from Euclidean geometry and non-Euclidean, the trajectory of eye patients also showed interesting results. In this research we want to confirm the results of the preliminary study but also going forward in understanding the processes involved in these experiments. Two tracks are followed, the first will concern the development of classifiers based on statistical data already provided by the system "eye tracking" and the second will be more focused on finding new descriptors from the eye trajectories. Regarding the classification, several types of classification will be studied and implemented. The first classification study (the easiest) is to classify into two groups (people with autism and people without autism) results from the experiments. However, the test population is composed of more or less rehabilitated with autism, several groups will be proposed. The classifiers of the type k-means, neural networks, SVM, etc., will be tested in priority while knowing that other classifiers can be studied. The extraction parameters are most informative when studied in order to connect them with the processes involved in autism spectrum disorders. Concerning the second aspect of this research, it will be directed towards the search for new parameters from the analysis of the trajectory eye as such. Given the complex dynamics underlying the time series or trajectories, it is natural to turn to tools from the information theory, or chaos theory. This assumption is realistic if we consider that the trajectory corresponds to the output of a nonlinear dynamic system (the brain) excited by an input: the visual stimulus. The intrinsic analysis of time series based both on the statistics of trajectories but also their complexity directs us to techniques such as: Levy flight, fractal dimension, Holder exponent, Kolmogorov complexity, complexity of Lempel-Ziv, approximated entropy, entropy sampled and graph recurrence. After considering all of these techniques, they will all be tested on experimental data using “eye tracking" system.

Biography

Dr. Ammar I Shihab is faculty of Science at the University of Baghdad in Iraq. His main research interest is Biochemistry and Biophysics

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Notes:

Muhammad Nauman Aftab, J Laser Opt Photonics 2016, 3:3 (Suppl)
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Cloning, expression and characterization of β-xylanase gene from Thermotoga naphthophila

Muhammad Nauman Aftab
Government College University, Pakistan

Statement of the Problem: More than 90% energy requirements depend on fossil fuels that include crude oil, natural gas, coal, etc. The burning of these energy sources emit greenhouse gases that are harmful for our environment and are major cause of many diseases like lung cancer, asthma etc. The requirement of fossil fuel is increasing day by day due to rapid industrialization and increased number of vehicles. In the middle of this century, world's fossil fuels reserves will be significantly reduced. In this scenario, the alternative fuel, bioethanol, can serve as an ideal candidate in reducing greenhouse emissions and can also help in fulfilling the partial energy needs globally. To achieve bioethanol, highly thermostable β-xylanase gene *Thermotoga naphthophila* was cloned and expressed in E. coli BL21 utilizing pET-21a(+) expression vector. To obtain maximum expression of recombinant xylanase, growth conditions i.e., temperature, pH, inducer and induction time of E. coli were optimized and found to be 7.0, 37°C, 0.5 mM and 4 hours, respectively. Heat treatment was used for the partial purification of recombinant enzyme. Further purification was carried out by ammonium sulphate precipitation followed by the anion exchange chromatography. Molecular weight of pure recombinant β-xylanase enzyme was calculated to be 150 kDa by SDS-PAGE. Considerable stability was exhibited by the purified enzyme at pH value 8.0 and at temperature 90°C. The activity of the enzyme was decreased considerably in the presence of EDTA and significantly increased in the presence of Cu+2. The effect of different organic solvents (methanol, ethanol, n-butanol, acetone and isopropanol) was also explored but no considerable effect on activity of xylanase enzyme was observed. Similarly, inhibitors (urea, triton X-100, Tween-20, Tween-80 and β- mercaptoethanol) had no considerable effect on the enzyme activity, however, addition of SDS significantly reduced the activity of β-xylanase activity. The β-xylanase enzyme obtained can be utilized for the saccharification of lignocellulosic mass which can in turn be used in the production of bioethanol.

Biography

Dr. Muhammad Nauman Aftab is an associate professor at MN Institute of Industrial Biotechnology, Government College University, Lahore, Pakistan. He has worked in the area of cloning and gene expression of Bacillus licheniformis and Geobacillus stearothermophilus that code for industrially important enzymes. Some of the cloned genes by his team are β-glucanase, serine protease, β-glucosidase, xylanase, etc. Apart from cloning genes, he has also worked on the production of various enzymes like tannase, lipase and polypeptide antibiotic (bacitracin) from wild bacterial strains like *Bacillus licheniformis, Bacillus subtilis and Geobacillus stearothermophilus*

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The extra-ribosomal role of ribosomal proteins

Protein synthesis is a highly regulated and coordinated process involving the action of ribosomes and a set of translation factors. Ribosome biogenesis occurs in the nucleolus and requires the action of 80 ribosomal proteins (RPs), 4 ribosomal RNAs (rRNAs), other associated proteins and small nucleolar RNAs. The structure of the ribosomal subunits has identified the role of RPs as RNA chaperones for ribosomal assembly, and as endo- and exo-nucleases essential for the maturation of rRNAs. Some play a role in the joining of 40S and 60S subunits during translation initiation. Others interact with tRNA or stabilize the ribosome by encasing the exit groove. Studies have also shown that RPs may have extra-ribosomal functions, ranging from DNA repair to replication, proliferation, apoptosis, and chemoresistance. Mutations in RPs in animal models and humans induced a wide variety of phenotypes suggesting a role of RPs beyond the ribosome structure. Thus far, 11 RP mutant mice have been reported exhibiting diverse phenotypes including decrease body size, defective organs, and embryonic lethality. Defects in ribosome biogenesis have been linked to many diseases collectively named ribosomopathies. These include myelodysplastic syndromes, due to RPS14 haploinsufficiency and Diamond-Blackfan anemia, caused by mutations in *RPS19* gene. These abnormalities have shown an increase susceptibility to hematological malignancies. Indeed, RPs has been linked to tumorigenesis in several reports, suggesting a role in promoting transformation. Several RPs are overexpressed upon activation of the oncogene *Myc*. Some are found overexpressed in various human tumors, including prostate and colon cancer, metastatic nasopharyngeal carcinomas, metastatic melanomas and metastatic human breast cancer cells. Some RPs has also been proposed as biomarkers for various cancers, such as colorectal, gastric, prostate cancers and lymph node metastasis. These evidences suggest that RPs could be used as potential targets in cancer therapeutics.

Biography

Zeina Nasr is Assistant Professor, at the Department of Biology in the University of Balamand, Lebanon. She did her Ph.D from McGill University in the Department of Biochemistry. She has her interest in understanding the molecular aspect of tumor initiation and progression. Her research focuses on studying the effect of translation initiation dysregulation on cancer behavior. She has worked with several cell lines and transgenic mouse models and deciphered important pathways that contribute to cancer initiation and progression to metastasis. She has experience in conducting research and teaching at various institutions. Currently, her work focuses on the extra-ribosomal functions of ribosomal proteins and their effects on tumorigenesis.

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Ayse Ezgi Unlu et al., J Laser Opt Photonics 2016, 3:3 (Suppl)
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Optimization of catalase activity by Rhodotorula glutinis using experimental design

Ayse Ezgi Unlu and **Serpil Takac**
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Rhodotorula glutinis is a pigmented, salt tolerant yeast and also gains attention due to its oleogenic property. It has high capacity to produce antioxidant molecules such as carotenoids. However, limited research has been conducted on the synthesis of other antioxidant molecules such as catalase (CAT) enzyme. CAT is a heme protein that is present in animal cells, bacteria and plants and it decomposes hydrogen peroxide to water and oxygen (Eqn. (1)). It is widely used in various industrial areas such as textile, food and cosmetics.

$$2H_2O_2 \rightarrow O_2 + 2H_2O \quad (1)$$

The aim of this study is to investigate the parameters that provided the optimum conditions for high CAT activity by Rhodotorula glutinis, and to search for the potential utilization of glycerol as a carbon source for high CAT activity, which is a by-product of biodiesel plants. For this aim, central composite design (Design Expert 7.0.0) including 20 runs with 6 central points was performed and temperature (T°C) (10.6-32.4°C), initial medium pH (pH) (3.99-6.0) and glycerol concentration (Gly, gL-1) (9.77-60.23) were selected as factors to be optimized for the response, CAT activity, according to the previous findings of the research group. The following second order model (Eqn. (2)) was proposed:

$$CAT\ (U) = -4.36106 + 1.34381(pH) + 0.051575(T) + 0.028907(Gly) - 0.13551(pH)^2 - 3.78071 \times 10^{-4}(Gly)^2 \quad (2)$$

The model was found to be statistically significant (R2=0.94, R2adj=0.92, model F value 40.95, lack of fit value 2.21). The most effective factor on CAT activity was found as temperature ($p<0.0001$). The response surface graphics are presented at Fig. 1. Fig. 1a was obtained when Gly was 37.03 mg mL-1. According to the figure, the highest CAT activity was obtained at high T and low pH values. Similarly, Fig. 1b showed that activity increased with increasing T however, medium values of Gly provided higher activity values, maximum at 37.5 mg mL-1. According to Fig. 1c, the highest CAT activity values were obtained at the medium values of both pH and Gly. As a result of the experiments, it was found that determination of the maximum predicted response required a shift of the experimental region to higher temperature values.

Biography

Ayse Ezgi Unlu has expertise in enzymes, enzymatic reactions, fermentation, protein synthesis, proteomics, enzymatic biopolymers and green solvents. The synthesis of Naproxen, a member of NSAIDs, was the subject of her Master's thesis by using commercial lipase subjected to various pre-treatment strategies that enhanced the activity. Investigation of different parameters on the production of lipase by *Candida rugosa* and also proteomic analysis of the isoenzymes was another subject of her interest. She has done her Post-doctoral research on the synthesis of flavonoids using green solvents.

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The role of liver CYP1A1 and CYP2E1 enzyme activities and lipid peroxidation level in diabetic rats

Gökçe Kuzgun, Rahman Başaran and **Benay Can Eke**
Ankara University, Turkey

Diabetes mellitus is one of the most common metabolic disease in which pancreas no longer produce enough insulin or the body cannot use it efficiently. Many studies have implicated that the increased oxidative stress is associated with the progress of diabetes and diabetic complications. Cytochrome P450 monooxygenases are one of the sources of reactive oxygen species in diabetes and lipid peroxidation may occur as a result of oxidative damage. The increased lipid peroxidation may cause cellular retardation, abnormality of blood coagulation, hypertension and cardiovascular disease in diabetic patients. The expression of CYP450 enzymes may be affected by various pathophysiological conditions such as diabetes, hypertension and cancer. It has been reported that the expressions and activities of CYP1A1, CYP2E1 and other drug metabolizing enzymes alter in diabetes. In this study, we used streptozotocin-induced diabetic rats, insulin treated streptozotocin-induced diabetic rats and control group to investigate how diabetes affects liver CYP1A1 and CYP2E1 enzyme activities and lipid peroxidation level. We observed that insulin regulates liver CYP1A1 and CYP2E1 activities and lipid peroxidation level in rats.

Biography

Gökçe Kuzgun has done her graduation from Hacettepe University, Faculty of Pharmacy in 2012. She also works as a Junior Patent Examiner at the Turkish Patent Institute. Currently, she is doing her Master's degree in the Department of Pharmaceutical Toxicology at Ankara University.

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Notes:

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Novel human indoleamine 2,3-dioxygenase inhibitors form a long-lived complex with the enzyme

Julie Alexandre, Michael Swan, Mike Latchem, Dean Boyall, John Pollard, Stuart Hughes and **James Westcott**
Vertex Pharmaceuticals Ltd., UK

Human indoleamine 2,3-dioxygenase 1 (IDO) catalyzes the conversion of L-tryptophan (L-Trp) to N-formylkynurenine through a heme and O2-dependent oxidation process. IDO is recognized as a central regulator of immune responses in a broad variety of physiological and pathological settings and is thus considered an attractive therapeutic target. In search of novel IDO inhibitors, we identified 4-amino-1,2,3-triazoles. Using crystallographic, biochemical and spectroscopic techniques we have fully characterized a representative molecule of this molecular series (VIDOi1) and shown that: VIDOi1 is non-competitive for D-Trp; VIDOi1 interacts with the IDO heme iron; VIDOi1 binds to both the ferric and the ferrous form of the enzyme; VIDOi1establishes a slow complex with the ferrous form of IDO; and the VIDOi1-IDO complex is long-lived. The generation of this tight binding complex between IDO and the 4-amino -1,2,3-triazoles leads to exceptional potencies of this molecule series in a cellular context.

Biography

Julie Alexandre is specialized in Kinetics at the Vertex Pharmaceuticals Europe Ltd., (Abingdon, UK). She holds a PhD in Biochemistry from the University of Edinburgh (Scotland, UK) and undertook Post-doctoral Research in Enzymology at the Pierre-and-Marie-Curie University (Paris, France). She has been working at Vertex since 9 years and has contributed in many internal drug discovery efforts in oncology, targeting kinases, proteases and redox enzymes, through characterization of enzymes' substrates and inhibitors kinetics and mode of action.

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Notes:

Mohammed F El-Shiekha, J Laser Opt Photonics 2016, 3:3 (Suppl)
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Molecular study on the potential therapeutic activity of novel nanocomposite on cancerous tumor bearing mice

Mohammed F El-Shiekha
October 6 University, Egypt

Nanoparticles are making significant contributions in the development of new approaches of drug delivery in cancer and can provide a platform for combined therapeutics with subsequent monitoring of response. Basic curcumin and zinc oxide (ZnO) nanocomposites modified with vitamin C and CTAB have been exerting chemo-preventative activity against cancer in mice animal model. The present results observed that nanocomposite have distinct effects on liver cell viability via killing cancer cells, while posing no effect on normal cells (hepatocytes). The marked difference in cytotoxicity between cancer cells and normal cells suggests an exciting potential for nanocomposite as novel alternatives to cancer therapy. Our molecular data showed that both mRNA and protein levels of tumor suppressor genewere upregulated and induce activity of DNA fragmentation in liver cells.

Biography

Mohammed F El-Shiekha has completed his PhD from the Department of Biochemistry, Faculty of Veterinary Medicine, Benha University, Egypt. He is a Faculty Member in the Department of Biochemistry, Faculty of Pharmacy, October 6 University, Egypt. He has published 6 papers in reputed journals.

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Ameliorative effect of some natural products on hepatic and renal functions in female mice bearing cancerous tumor

Mohammed F EL-Shiekha
October 6 University, Egypt

Curcumin and tannic acid which are naturally occurring dietary polyphenols, have exerted and found to be chemo-preventative against cancer in various animal models. This study was carried out on 220 (12-14 weeks old, 25-30 g each) female mice. Mice were classified into two main large experiments. Experiment 1: Non-tumor bearing mice (NTB) included 100 animals and divided into four groups, each one comprised 25 mice. Group 1: NTB- control saline treated. Group 2: NTB-treated with curcumin orally (350 mg/kg/day) for 6 weeks. Group 3: NTB-treated with tannic acid orally (160 mg/kg/day) for 6 weeks. Group 4: NTB-treated with curcumin and tannic acid orally at ratio (50%:50%) for 6 weeks. Experiment 2: Tumor bearing (TB) mice. The total 120 animals were divided into four groups, each one comprised of 30 mice. Group 1: TBM-control saline treated. Group 2: TBM-treated with curcumin orally (350 mg/kg/day) for 6 weeks. Group 3: TBM-treated with tannic acid orally (160 mg/kg/day) for 6 weeks. Group 4: TBM-treated with curcumin and tannic acid orally at ratio (50%:50%) for 6 weeks. Blood samples were collected from all animal groups after 2, 4 and 6 weeks from treatment. Serum were separated and processed directly for glucose, insulin, total cholesterol, triacylglycerol, total protein determination. The obtained results revealed that, a highly significant decrease in serum glucose, total cholesterol, total protein concentration, meanwhile, a highly significant increase in serum triacylglycerol concentration was also observed. But a non-significant decrease in serum insulin levels were observed in tumor bearing mice when compared with control. The results of this study indicated that curcumin, tannic acid and their combination treatment have potential benefits in cancer treatment.

Biography

Mohammed F El-Shiekha has completed his PhD from the Department of Biochemistry, Faculty of Veterinary Medicine, Benha University, Egypt. He is a Faculty Member in the Department of Biochemistry, Faculty of Pharmacy, October 6 University, Egypt. He has published 6 papers in reputed journals.

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Catabolic route for 3-guanidinopropionic acid utilization by Aspergillus niger: Involvement of 4-guanidinobutyrase

Tejaswani Saragadam, Sunil Kumar and **Narayan S Punekar**
IIT Bombay, India

Aspergillus niger is a metabolically versatile filamentous fungus that utilizes various guanidinium compounds as nitrogen source. The fungus utilizes 4-guanidinobutyric acid (GB), whereas its lower structural homologue 3-guanidinopropionic acid (GP) is very poorly metabolized. The enzyme 4-guanidinobutyrase (GBase) facilitates GB catabolism in this fungus. There is no specific 3-guanidinopropionase (GPase) in *A. niger* but the purified GBase itself exhibits low GPase activity. Based on these observations we hypothesized that the inability of the fungus to mobilize GP as a nitrogen source is because GP is a poor GBase substrate. Two strategies were employed to test this; one was to increase the mycelial GBase levels and tailoring the GBase specificity towards GP was the second approach. A constitutive expression of GBase in A. niger resulted in normal growth on GP indicating that intracellular GBase levels essentially limit GP utilization in this fungus. There was a direct correlation between growth on GP and cellular GBase levels. In the second approach, altering GBase substrate specificity was attempted. A. niger spores were exposed to ethyl methane sulfonate (EMS) and the mutants were selected through differential growth on GP versus GB. One mutant that better utilized GP than the parent strain was selected and analyzed. Neither an increased GBase activity nor a specific GPase activity was observed in this mutant. Furthermore, no mycelial GPase activity was detected when the mutant was grown on GP. The presence of urea in the spent media when the mutant was grown on GP however implicates a GPase. The possibility of an alternate route for GP catabolism, not involving a GBase needs further study.

Biography

Tejaswani Saragadam is an Integrated MSc-PhD student working under Professor N S Punekar at IIT Bombay. She is working on the aspects of enzymology and metabolism in Aspergillus niger, an industrially well-known fungus for citric acid production and various enzymes. Understanding the nitrogen metabolism in this fungus and studying new pathways and enzymes involved in nitrogen metabolism forms her major work. Further characterizing these enzymes and understanding their role in the novel metabolic pathways forms the basis of her study.

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Notes:

Fereniki Perperopoulou et al., J Laser Opt Photonics 2016, 3:3 (Suppl)
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Molecular characterization of glutathione transferase M1-1 from the *Camelus dromedarius*

Fereniki Perperopoulou[1], **Farid Ataya**[2] and **Nikolaos E Labrou**[1]
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Glutathione transferases (GSTs, EC. 2.5.1.18) are a large family of multifunctional enzymes, best known for their involvement in the metabolism and inactivation of a broad range of xenobiotic compounds. GSTs catalyze the nucleophilic attack of the reduced form of glutathione (γ-L-Glu-L-Cys-Gly, GSH) on the electrophilic center of a variety of compounds such as pesticides, herbicides, etc. The result of the conjugation of GSH to such molecules is the increase of their solubility and the reduction of their toxicity. GSTs could be useful tools with a variety of biotechnological applications in many fields. Many studies have been carried out exploiting the natural ability of the GSTs to interact with xenobiotic compounds in order to develop simple and selective biotechnological applications. In the present work, we report the cloning, kinetic and structural characterization of the GSTM1-1 from camel (*Camelus dromedarius*). The Cd-GSTM enzyme was expressed in E. coli and purified by affinity chromatography. The ligand in function of the enzyme was evaluated by measuring the ability of 47 xenobiotic compounds to bind and inhibit the enzyme activity. The inhibition potency was measured with the CDNB/GSH assay system. The IC50 value and the kinetic analysis of the compound that showed the highest inhibition were determined. The results demonstrated that the enzyme exhibits high selectivity towards the fungicide Zoxium/ zoxamide. Hence, this method can be used as an optical biosensor for the determination of Zoxium/zoxamide in environmental samples.

Biography

Fereniki Perperopoulou has studied Agricultural Biotechnology from the Agricultural University of Athens. She has done her Master's degree in Bioactive Protein Products and Technology at the Agricultural Biotechnology department of Agricultural University of Athens. Currently, she is a PhD candidate in the Department of Biotechnology at the Agricultural University of Athens, working on the protein engineering and molecular study of transferase glutathione.

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Engineering of Tau class GSTs for the development of biosensor

Foteini M Pouliou and **Nikolaos E Labrou**
Agricultural University of Athens, Greece

Glutathione transferases (GSTs, EC 2.5.1.18) constitute one of the most important families of detoxifying enzymes in nature with multiple biotechnological applications. GSTs are involved in the detoxification mechanism of endogenous and xenobiotic electrophile compounds by catalyzing the nucleophilic attack of reduced glutathione (GSH) on the electrophilic center of xenobiotic compounds including pesticides. This catalytic activity is the basis for the development of enzyme biosensor for herbicide determination in environmental samples. A library of Tau class GSTs was constructed by DNA shuffling using the DNA encoding the *Glycine max* GSTs GmGSTU2-2, GmGSTU4-4 and GmGSTU10-10. The DNA library contained chimeric structures of alternated segments of the parental sequences and point mutations. Chimeric GST sequences were expressed in Escherichia coli, purified by affinity chromatography and their enzymatic activities towards CDNB (1-chloro-2,4-dinitrobenzene) were determined. A selected chimeric enzyme which exhibited high catalytic activity and stability was used for the development of enzyme biosensor. The inhibition potency of 47 different pesticides towards the chimeric enzyme was evaluated using activity assays. Five compounds, one insecticide and four fungicides, showed high inhibition potency (IC50) towards the chimeric GST. Kinetic inhibition studies revealed that pesticides appeared to bind at the substrate-binding region in a competitive manner with respect to the substrate. The chimeric enzyme will be immobilized and will be explored for the construction of an optical biosensor. This biosensor will be portable, easy to use, allowing the direct determination of pesticides in environmental samples.

Biography

Foteini M Pouliou is a PhD candidate at the Agricultural University of Athens since 2014. She majored in Biotechnology from the Agricultural University of Athens in 2012. She has done her Master of Science studies in 2013 focusing on the Bioactive Products and Protein Technology. Her research interests include protein engineering, enzyme and environmental biotechnology.

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Angiotensin converting enzyme inhibitory activity in the mealworm *Tenebrio molitor* (Coleoptera, *Tenebrionidae*) protein hydrolysates

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Hypertension is well known as one of the major risk factors for cardiovascular disease. The angiotensin converting enzyme (ACE) plays a key role in blood pressure regulation process. Hypertension treatment by synthetic ACE inhibitors (e.g. captopril, lisinopril, enalapril) is effective but their use can cause serious side effects, such as hypotension, cough, reduced renal function and angioedema. Therefore, research was focused on natural ACE inhibitory peptides sources such as foodstuffs and, recently, also insects, promoted by the Food and Agricultural Organization of the United Nations (FAO) as a more environmentally sustainable, nutritious and functional alternative food to conventional livestock for human consumption. The purpose of this study is to investigate the ACE inhibitory activity in protein hydrolysates derived from the larval and pupal stages of the edible insect *Tenebrio molitor* (Coleoptera: *Tenebrionidae*). Each insect protein extract was hydrolyzed by the gastrointestinal enzymes (pepsin, trypsin and chymotrypsin) to simulate digestive process and compared to the crude extract. ACE inhibitory activity was measured by an indirect assay method based on the quantity of hippuric acid released by ACE from hippuryl-L-histidyl-leucine and determined by reverse-phase high performance liquid chromatography. Captopril was used as positive control and ACE inhibition degree expressed as the concentration of protein extract that inhibits 50% of ACE activity (IC50), assuming that the activity of the blank is equal to 100%. The IC50 value of captopril was 2.6x10-6 mg/mL. A significantly lower IC50 was detected after gastrointestinal hydrolysis of the protein extracts obtained from larvae (0.720 vs. 0.097 mg/mL after gastrointestinal hydrolysis) and pupae (0.484 vs. 0.132 mg/mL after gastrointestinal hydrolysis). Based on experimental data, *T. molitor* larvae represent the most promising development stage for the purification and identification of bioactive ACE inhibitory peptides, confirming the potential benefits of this coleopteran for human health.

Biography

Annarita Cito has completed her PhD in Biochemistry and Enzymology from the University of Siena (Italy) in 2010. Her dissertation investigated the role of homocysteine and some oxidative stress markers in neurodegenerative disorders (Alzheimer disease) and in autoimmune digestive disorders (such as celiac disease). She has expertise in cardiovascular disease mechanism and prevention. Currently, she is conducting research, as a Post-doctoral Researcher at CREA-Research Centre for Agrobiology and Pedology in Florence (Italy), on the evaluation of the potential use of the edible insect species *Tenebrio molitor* and *Galleria mellonella* as human diet supplement of polyunsaturated fatty acids and ACE inhibitory bioactive peptides for cardiovascular disease prevention.

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Notes:

Kultanov B Zh et al., J Laser Opt Photonics 2016, 3:3 (Suppl)
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The state of oxidative stress in the body of women living in the Sub-Aral area

Kultanov B Zh, Ivasenko S A, Rakhimova B B and **Kelmyalene A A**
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The Aral crisis is recognized as one of the global environmental problems of our time. Existing environmental trouble in the region is reflected on the health of the population in almost all areas of the Aral Sea region marked increase in the number of diseases of the endocrine, nervous, digestive and urinary systems. Numerous studies conducted by scientists of Kazakhstan shows that the health of population in recent decade's sub-Aral area continues to deteriorate. In the period of 2014-2016 years, the research team of Karaganda State Medical University (KSMU) carried out the study of health status of population in Sub-Aral area in the medical and biological direction under the state program. The study was conducted to determine the integrated approaches in solving problems of the region, to carry out systematic monitoring of the health status of the population of Sub-Aral area and development of complex of therapeutic and preventive measures based on the results obtained. This approach provides multidirectional nature of health research not only in the zone of ecological adversity of Kyzylorda region, but also regions adjacent to Sub-Aral area, namely: Aktobe region and South Kazakhstan regions. As a result of the research, we have established higher values of indicators of oxidative stress on the markers of lipid peroxidation and DNA damage in the blood of women living in zone of ecological disaster in the Aralsk-city and Aiteke-Bi-village (Kzylorda region), and women living in the area environmental pre-crisis state Kyrgyz-village (Aktobe region) and Ulytau-village (Karaganda region), in the age group 30-39 years. The presence of elevated levels in blood markers of lipid peroxidation, and DNA damage indicates the development of a general oxidative stress in the body of women surveyed, and indicates the presence of most acute diseases, aggravation of chronic processes, intoxication and other pathological changes.

Biography

Kultanov B Zh has done his PhD from Kazakh Academy of Nutrition in Almaty in the year 2006. He is Head of the Department of Molecular Biology and Medical Genetics of the Karaganda State Medical University. The main focus of his research is the study of the biochemical, morphological and molecular indicators of reproductive status under the influence of physical and chemical factors. He is the author of various domestic and foreign editions of the textbooks of Biology developed in the state language and Russian languages.

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Biotransformation of inexpensive natural platform chemicals to higher value flavor compounds

Hayley W S Tsang[1], **Serena Gargiulo**[2], **Charlotte Catignani**[2], **Gary W Black**[1] and **Georgios Koutsidis**[1]
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The project focuses on biotranformations of relative inexpensive natural platform chemicals derived from distillation of essential oils and non-volatile compounds to higher value flavour compounds through biocatalysis. Experimental processes using a range of enzymes (cytochrome P450s, aldo-keto reductases/alcohol dehydrogenases and carotenoid cleavage oxygenases) from various sources have been previously described and a number of high value flavour components produced from inexpensive starting materials. In this project similar processes will be used to transform platform molecules using an array of enzymes focussed around those previously described.

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Different structure-oriented design of selective butyrylcholinesterase probe and its application in drug discovery

Wen-Chao Yang, Shu-Hou Yang, Qi Sun and **Guang-Fu Yang**
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The two major human cholinesterases are acetylcholinesterase (AChE; EC 3.1.1.7) and butyrylcholinesterase (BChE; EC 3.1.1.8), and are very important enzymes in multiple areas such as pharmacology, neurobiology and toxicology due to their significant roles in human body and health. Although the biological function is uncertain, the BChE levels have been implicated in lipid metabolism and various human diseases such as liver damage, cirrhosis, Alzheimer's disease (AD) and liver metastasis. BChE is also responsible for detoxifying xenobiotics like organophosphates and cocaine, and is a well-known biomarker for clinical diagnosis. Thus, the quantification of BChE activity and its inhibition is not only important in diseases diagnosis, but also indispensable for drug discovery. We report on the different structure-oriented design and application of a selective fluorogenic molecular probe (BChE-FP) for human butyrylcholinesterase (BChE). This probe, rationally designed by mimicking the native substrate and manipulating the steric feature of the recognition group of designed probes targeting the structural difference of the active sites for BChE and acetylcholinesterase (AChE), exhibits near-zero background fluorescence but produce remarkable fluorescence enhancement upon the catalysis by BChE in a fast biochemical reaction. To the best of our knowledge, BChE-FP is the first probe that can discriminate BChE from AChE, which is successfully applied for BChE inhibitor screening and characterization under physiological conditions, and BChE detection in human serum. These results demonstrate that this molecular probe can function as a useful molecular tool for high-throughput drug discovery against BChE-related diseases, as well as the biosensing for neuromuscular blocking agents.

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A new tRNA-assisted mechanism of post-transfer editing by aminoacyl-tRNA synthetases

Mykhaylo Tukalo
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Statement of the Problem: Aminoacyl-tRNA synthetases (aaRSs) maintain fidelity during protein synthesis by attaching amino acids to their cognate tRNAs. For many aaRSs, the required level of amino-acid specificity is achieved either by specific hydrolysis of misactivated aminoacyl-adenylate intermediate (pre-transfer editing) or by hydrolysis of the mischarged aminoacyl-tRNA (post-transfer editing). Both reactions are depend on a tRNA cofactor and required translocation to the editing site located in the separate domain. In this work we have studied molecular mechanisms of editing by synthetases from two different classes: Thermus thermophilus leucyl-tRNA synthetase (LeuRSTT) from class I and Enterococcus faecalis prolyl-tRNA synthetase (ProRSEF) from class II.

Methodology & Theoretical Orientation: To investigate the mechanism of post-transfer editing of norvaline by LeuRSTT and alanine by ProRSEF, we used molecular modeling, molecular dynamic (MD) simulations, quantum mechanical (QM) calculations, site-directed mutagenesis of the enzymes and tRNA modification. The transition states of the reactions were identified.

Findings: The results support a new tRNA-assisted mechanism of hydrolysis of misacylated tRNA which directly involves two water molecules. The most important functional element of this catalytic mechanism is the 2' or 3'-OH group of the terminal adenosine 76 of aminoacyl-tRNA, which forms an intra-molecular hydrogen bond with the carbonyl group of the misacylated residue. Bonding increases the electrophilic character of the carbon atom and strongly facilitates the subsequent nucleophilic attack by water molecule.

Conclusion & Significance: Class I LeuRS and class II ProRS with a different architecture of editing site have both tRNA-assisted mechanism of post-transfer editing in which free 2' or 3'-OH group of the substrate plays a key role in hydrolysis by forming an intra-molecular hydrogen bond with the substrate amino-acid carbonyl group. Proposed editing mechanism is significantly different from those described in the literature for class-I and class-II aaRSs.

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Advances in recent enzymology

Takashi Yonetani
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Canonical enzymology has been carried out under the pre-requisite conditions of [S] >> [E]. However, advances in analytical instrumentation allow us to investigate enzymes systems with minute quantities of both enzymes and substrates, of very high-affinity reactions, of membrane-bound enzyme-substrate interactions, and hydrophobic environments.

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A new approach to obtain the catalytic sites region of human sACE with correct fold and activity

Regina Affonso[1], Suelen de Barros Sampaio[1], Fagner Sant'Ana Januario[1], Larissa Miranda Pereira[2], Danielle S Aragão[2], Dulce E Casarini[2] and **Caroline Cristina Elias[1]**

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Angiotensin-converting enzyme I (ACE) is a membrane-bound that catalyzes the conversion of angiotensin I to the potent vasopressor angiotensin II. ACE is a key part of the renin-angiotensin system, which regulates blood pressure and is widely distributed throughout the body. There are two isoforms of human ACE, including the somatic ACE (sACE) present in somatic tissue and the testicular ACE (tACE) present in male germinal cells. The sACE possesses two domains, N- C- domains, with catalytic sites which exhibit 60% sequence identity. These domains differ in terms of chloride-ion activation profiles, rates of peptide hydrolysis of angiotensin I, bradykinin, Goralatide, Luliberin, substance P, angiotensina, beta-amyloid peptide and sensitivities to various inhibitors. A more detailed analysis shows that these regions are composed of HEMGH and EAIGD sequences that bind zinc ions to facilitate catalytic activity (Fig. 1). Our question is: If the synthesis of catalytic sites with corrects structure and activity could be a good model per si to study new drugs. The objective was to obtain the Ala361 a Gli468 and Ala959 to Ser1066 catalytic regions sACE in a structural conformation that resembles its native form. The catalytic regions were obtained from bacterial system; the expression of this protein in soluble form enables completion of the solubilization/purification steps without the need for refolding. The characterization of Ala959 to Ser1066 region shows that this has an α-helix and β-strand structure, Fig. 1b, which zinc ion (essential for its activity) binds to, and with enzymatic activity. Our conclusion is that the strategy used to obtain the Ala959 to Ser1066 region in the correct structural conformation and with activity was successful.

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