2021 International Symposium on Biomedical Engineering and Computational Biology (BECB 2021)

Conference Program

(China Standard Time, GMT +08:00)

August 13-15, 2021  Online

www.becbinfo.com
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Join a Meeting & Test

1. Download the application software: VooV Meeting (腾讯会议);
2. Join the meeting with the specific Meeting ID indicated for each session and your name;
3. Click “Join Meeting”;
4. Verify with your mobile number to enter the meeting room
   (If there is a problem to verify with your mobile number, it is suggested to register a VooV Meeting account first and then join the meeting with the ID);
   (Note: Please have your microphone switched off or turned to silent when the speaker is talking.)

Meeting for test:
Time: **August 12, 2021**
   - 09:00-12:00 & 19:00-22:00 (GMT +08:00)
Meeting Room: Test meeting for BECB 2021
Meeting ID: **593 478 858**
# Part I Conference Schedule

## August 13, 2021, Friday

<table>
<thead>
<tr>
<th>Time</th>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>19:00-19:10</td>
<td>Welcome Speech&lt;br&gt;<strong>Prof. Cihui Yang, Nanchang Hangkong University, China</strong>&lt;br&gt;<strong>Prof. Shiping Wen, University of Technology Sydney, Australia</strong>&lt;br&gt;Chair: <strong>Prof. Cihui Yang, Nanchang Hangkong University, China</strong></td>
</tr>
<tr>
<td>19:10-19:50</td>
<td><strong>Plenary Speech 1</strong>&lt;br&gt;<em>Detection of Carotid Artery Stenosis by Passive and Active Medical Infrared Thermal Imaging</em>&lt;br&gt;<strong>Prof. EYK Ng, Nanyang Technological University, Singapore</strong></td>
</tr>
<tr>
<td>19:50-20:30</td>
<td><strong>Plenary Speech 2</strong>&lt;br&gt;<em>Interaction of Protein Aggregates with Biological Membranes: A Key Event in Neurodegenerative Diseases. From Basic Science to Clinical Trials</em>&lt;br&gt;<strong>Prof. Fabrizio Chiti, University of Florence, Italy</strong></td>
</tr>
<tr>
<td>20:30-20:40</td>
<td><strong>Short Break</strong></td>
</tr>
<tr>
<td>20:40-21:20</td>
<td><strong>Plenary Speech 3</strong>&lt;br&gt;<em>Spontaneous Neurological Recovery following Traumatic Spinal Cord Injuries</em>&lt;br&gt;<strong>Prof. Wagih Shafik El Masri(y), Keele University, Staffordshire, UK</strong></td>
</tr>
<tr>
<td>21:20-22:00</td>
<td><strong>Plenary Speech 4</strong>&lt;br&gt;<em>Zaitsev Neighborhood for Cellular Automata</em>&lt;br&gt;<strong>Prof. Dmitry A. Zaitsev, Odessa State Environmental University, Ukraine</strong></td>
</tr>
</tbody>
</table>

## August 14, 2021, Saturday

<table>
<thead>
<tr>
<th>Time</th>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00-12:00</td>
<td><strong>Oral Session 1: Biomedical Engineering I</strong>&lt;br&gt;<strong>VooV Meeting ID: 977 916 712</strong>&lt;br&gt;<strong>Oral Session 2: Bioinformatics and Computational Biology I</strong>&lt;br&gt;<strong>VooV Meeting ID: 810 369 919</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Break Time</strong></td>
</tr>
<tr>
<td>19:00-22:00</td>
<td><strong>Oral Session 3: Biomedical Engineering II</strong>&lt;br&gt;<strong>VooV Meeting ID: 558 675 278</strong>&lt;br&gt;<strong>Oral Session 4: Bioinformatics and Computational Biology II</strong>&lt;br&gt;<strong>VooV Meeting ID: 840 166 596</strong></td>
</tr>
</tbody>
</table>

## August 15, 2021, Sunday

<table>
<thead>
<tr>
<th>Time</th>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00-12:00</td>
<td><strong>Oral Session 5: Bioinformatics and Computational Biology III</strong>&lt;br&gt;<strong>VooV Meeting ID: 653 503 978</strong>&lt;br&gt;<strong>Oral Session 6: Special Session: Leveraging the Power of Regression Analysis</strong></td>
</tr>
</tbody>
</table>
and Machine Learning to Investigate the Factors Mostly Affecting the Performance of Healthcare Processes

**VooV Meeting ID: 413 265 760**

<table>
<thead>
<tr>
<th>Break Time</th>
<th>Oral Session 7: Biomedical Engineering III</th>
</tr>
</thead>
<tbody>
<tr>
<td>19:00-22:00</td>
<td><strong>VooV Meeting ID: 505 684 966</strong></td>
</tr>
</tbody>
</table>
Part II Plenary Speeches

Plenary Speech 1 Detection of Carotid Artery Stenosis by Passive and Active Medical Infrared Thermal Imaging

Speaker: Prof. EYK Ng
School of Mechanical & Aerospace Engineering, Nanyang Technological University, Singapore

Short Biography: Ng obtained a B. Eng (CL I) from Uni. of Newcastle upon Tyne; Ph.D. at Cambridge Univ. with a Cambridge Commonwealth Scholarship; PG Diploma in Teaching Higher Edu., NIE-NTU. He is elected as Academician, EASA (European Academy of Sciences and Arts), and is a Fellow of the American Society of Mechanical Engineers (FASME); Fellow of Institute of Engineering and Technology (FIET, United Kingdom); Fellow of International Engineering and Technology Institute (FIETI, Hong Kong), Distinguished Fellow for Institute of Data Science and Artificial Intelligence, [DFIDSAI, China] and member for Academy of Pedagogy and Learning, USA. His expertise is in commercial and in-house developed software to perform numerical simulation in the biomedical engineering (BME), thermal-fluid and health-related diagnosis fields. He has been an editorial board member for 10 journals and reviewer for 30 journals. He was Editor-in-Chief for 2 ISI-journals which were captured by the JCR within 2-years of their inauguration. He is an expert research funding reviewer for many funding agencies worldwide. He has been recognized internationally for academic excellence. He received numerous best papers, service awards and has directly supervised 5 RFs, graduated 24 PhD and 28 Master students. He was awarded the SPRING-Singapore Merit Award for his work in thermal imagers to screen SARS fever as well as contributions to the Singapore Standardization Program. Being a co-inventor of 3 US patents on software classifiers to identify the different stages of breast cancer development in iTBra-system, he was accoladed with equity in a listed company. His ongoing work on non-contact screening for carotid artery stenosis and superficial vein-finder has resulted in 3 filing patents. He has notable citations in the field of infrared physics & technology in BME research.

Abstract of the speech: Unlike passive infrared (IR) thermal imaging/thermography, where no external stimulation is applied, active dynamic thermography (ADT) results in a high contrast thermal image. In ADT, transient thermal images of the skin surface are captured using an IR thermal camera while the skin surface is stimulated externally, followed by a recovery phase. Upon the application of external stimulation, the presence of stenosis in the carotid artery is expected to differ the recovery rate of the external neck skin surface from the case with no stenosis. In this prospective study, using an external cooling stimulation, the ADT procedure was performed on a total of 54 (N) samples (C: N=19, 0% stenosis; D1: N=17, 10%-29% stenosis; D2: N=18, ≥30% stenosis using Duplex Ultrasound). Analyzing the ADT sequence with a parameter called tissue activity ratio (TAR), the samples were classified using a cut-off value: C versus (D1+D2) and (C+D1) versus D2. As the degree of stenosis increases, the value of the TAR parameter depreciates with a significant difference among the sample groups (C:0.97±0.05, D1:0.80±0.04, D2:0.75±0.02; p<0.05). Under the two
classification scenarios, classification accuracies of 90% and 85%, respectively, were achieved. This study suggests the potential of screening CAS with the proposed ADT procedure.

**Plenary Speech 2 Interaction of Protein Aggregates with Biological Membranes: A Key Event in Neurodegenerative Diseases. From Basic Science to Clinical Trials**

*Speaker: Prof. Fabrizio Chiti*

Professor, Department of Experimental and Clinical Biomedical Sciences, Section of Biochemistry, University of Florence, Italy

**Short Biography:** Fabrizio Chiti received his Degree in 1995 in Biological Science at the University of Florence, in Italy, and his D.Phil in 1999 in Chemistry at the University of Oxford. His research, performed under the supervision of Prof. C.M. Dobson, concerned protein folding studies. His post-doctoral work, performed in the field of protein aggregation and amyloid formation, was carried out at the University of Florence for 2 years and at the University of Cambridge for 1 year. In November 2002 he became Associate professor in Biochemistry at the University of Florence and is now, starting from December 2010, full Professor of Biochemistry at the University of Florence. His scientific interests involve the elucidation of protein aggregation processes, the identification of the molecular determinants of the toxicity of protein aggregates, the study of the effect of chaperones on such processes and the mechanism of cell toxicity. His awards include Election to EMBO Young Investigator program (EMBO), Membership of Academia Europaea, the Jean-Francois LeFèvre Lecture (École supérieure de biotechnologie Strasbourg) and the Maria Teresa Messori Roncaglia ed Eugenio Mari Award (Accademia Nazionale dei Lincei)

**Abstract of the speech:** Alzheimer’s and Parkinson’s diseases are neurodegenerative conditions affecting ca. 50 million people worldwide, and discovering effective treatments is therefore a medical emergency. These currently incurable conditions are characteristically associated with the aberrant deposition of proteinaceous aggregates in the brain, and formation of metastable intermediates known as protein misfolded oligomers thought to play a seminal role in their aetiology. The proteins involved are the amyloid peptide (Aβ) and α-synuclein in Alzheimer’s and Parkinson’s diseases, respectively.

I will describe a key event in such diseases, that is the interaction of protein aggregates with the membranes of neurons and how such interaction initiates a cascade of events culminating in neuronal dysfunction. I will also describe how steroid polyamines (or aminosterols) can target efficiently this interaction with a protective outcome. Indeed, steroid polyamines isolated from the entrails of sharks, namely squalamine and trodusquemine, have the ability to modulate the conversion of these two soluble proteins in nuclei to initiate the process of amyloid fibril formation and act also on secondary nucleation. They also have the ability to displace toxic oligomers from the cell membrane of cultured cells and lipid bilayers of reconstituted liposomes. These effects are mirrored in C. elegans animal models expressing Aβ or α-synuclein and on the basis of this evidence clinical trials have started with promising results. Hence, based on an array of results at the physicochemical, molecular,
cellular, animal model and clinical levels I will show how these natural products offer promising opportunities for chronic treatments for these progressive conditions.

Plenary Speech 3 Spontaneous Neurological Recovery following Traumatic Spinal Cord Injuries

Speaker: Prof. Wagih Shafik El Masri(y) FCCS Ed, FRCP
Hon. Clinical Professor of Spinal Injuries (SI), Keele University, Staffordshire, UK

Short Biography: Between 1971 & 1983 WSEM trained in Spinal Injuries and the allied surgical specialities in the Oxford Group of hospitals, Guys Hospital, Stoke Mandeville hospital and the USA. He obtained the first UK accreditation in the Specialities of Spinal Injuries and General Surgery in 1982. He was the last student of Sir Ludwig Guttman and Dr HL Frankel. WSEM was appointed Consultant Surgeon in Spinal Injuries and Director of the Midland Centre for Spinal Injuries (MCSI) at the Robert Jones and Agnes Hunt Orthopaedic Hospital in 1983. He personally treated and provided ongoing total care at all stages following injury to about 10,000 patients with and without Spinal Cord damage. Between 1983 & 2000 he raised £ 6 million from Charity to build outpatient offices, two bungalows for Transitional accommodation from hospital and to rebuild and equip the MCSI in order to ensure a safe and fit for purpose environment for patients and staff and to conduct clinical research and develop basic science research. He is founder member of three charities and a Trustee of the Institute of Orthopaedics at the RJ&AH Orthopaedic Hospital.

He published over 140 manuscripts and has lectured worldwide. He is the author of the Concepts of “Physiological Instability of the Spinal Cord”, “Time related Biomechanical Instability”, “Hypothesis of Micro-instability of the injured spine” and the largest published series of Bladder cancer in SCI patients to date. He is Past President International Spinal Cord Society and Past Chairman British Association of Spinal Cord Injury Specialists. He advised WHO and prepared a report on Spinal Injuries, was contributed to the National Health Service Framework and to the National Institute of Excellence (NICE) He won many National and International awards.

WEM advocates for the simultaneous and holistic management of the injured spine with all the medical and non-medical effects of the spinal cord injury (SCI) from the first hours of injury in specialised centres equipped with the expertise and infrastructure that are required to manage the complexity of the condition adequately and humanely.

WEM and the service of the MCSI are acknowledged nationally and internationally for their excellence and contribution to knowledge, teaching, training and research in the field of Spinal Injuries and have been quoted the in House of Lords Parliamentary Debates as examples of good practice (Hansard) 8th April 2003, vol 647, no.79, p204; 9th March 2006 vol 679, no 117, p88 and 28th February 2009.

Abstract of the speech: Traumatic spinal cord injuries (TSCI) are potentially lethal and life-changing events from the resulting medical, physical, psychological, social, financial, vocational, environmental & matrimonial effects. The combination of consequent paralysis, generalised physiological impairment, multi-system malfunction, multiple disabilities, wide range of potential complications, sensory impairment together with the non-medical effects impose challenges to patients, carers and clinicians. Early prediction of neurological recovery is important to patients and relatives especially during the early stages following injury.

Spontaneous Neurological Recovery is common following traumatic spinal cord damage and is predictable. The neurological recovery can be either local or for long distances below the level of injury. The extent of the recovery depends on the force or impact and the degree of damage to the spinal cord to cause a complete or an incomplete injury.

Spontaneous Neurological recovery does not depend on the method of management of the injured spine. Interventions on the injured spine by inexperienced teams of professionals can be more damaging to the spinal cord than useful. The quality of Management of the malfunctioning systems of the body to prevent complications that can further damage the injured spinal cord non-mechanically is at least as important as the prevention of damage from interventions.

The positive and negative prognostic indicators of neurological recovery, its extent and the factors that enhance, prevent or cause neurological deterioration in patients with complete and incomplete cord damage will be discussed.

I will demonstrate the value of simultaneous Active Physiological Conservative Management (APCM) of the injured spine together with the multi-system physiological impairment and malfunction in achieving optimum neuro-functional recovery as well as the prognostic indicators of the local recovery of patients who remain paralysed and the distal recovery of patients who regain walking.

I will also demonstrate that with APCM, local recovery from the segments adjacent to the level of injury who remain paralysed can still have healthy, enjoyable, productive, dignified, contributory and often competitive long lives.
Plenary Speech 4 Zaitsev Neighborhood for Cellular Automata

Speaker: Prof. Dmitry A. Zaitsev
Professor of Information Technology at Odessa State Environmental University, Ukraine

Short Biography: Dmitry A. Zaitsev received the Eng. degree in Applied Mathematics from Donetsk Polytechnic Institute, Donetsk, Ukraine, in 1986, the Ph.D. degree in Automated Control from the Kiev Institute of Cybernetics, Kiev, Ukraine, in 1991, and the Dr.Sc. degree in Telecommunications from the Odessa National Academy of Telecommunications, Odessa, Ukraine, in 2006. He is a Professor of Information Technology at Odessa State Environmental University, Ukraine since 2019. He developed the analysis of infinite Petri nets with regular structure, the decomposition of Petri nets in clans, generalized neighborhood for cellular automata, and the method of synthesis of fuzzy logic function given by tables. He developed Opera-Topaz software for manufacture operative planning and control; a new stack of networking protocols E6 and its implementation within Linux kernel; Petri net analysis software Deborah, Adriana, and ParAd; models of TCP, BGP, IOTP protocols, Ethernet, IP, MPLS, PBB, and Bluetooth networks. His current research interests include Petri net theory and its application in networking, computing and automated manufacture. Recently he started working in the area of exascale computing applying his theory of clans to speed-up solving sparse linear systems on parallel and distributed architectures. He was a co-director of joint projects with China and Austria. Recently he has been a visiting professor to Technical University of Dortmund, Germany on DAAD scholarship, to University of Tennessee Knoxville, USA on Fulbright scholarship and to Eindhoven University of Technology, Netherlands. He published a monograph, 3 book chapters and more than a hundred of papers including issues listed in JCR. He is a senior member of ACM and IEEE. Additional information including papers, software, models, video-lectures in put on personal web-site http://daze.ho.ua

Abstract of the speech: A generalized neighborhood for d-dimensional cellular automata has been introduced by Dmitry Zaitsev in 2015. It spans the range from von Neumann's to Moore's neighborhood using a parameter which represents the dimension of hypercubes connecting neighboring cells. Finite hypercubes and hypertoruses are studied, and the number of neighbors on their boundary and the number of connections between cells are calculated. We come to finite constructs when practically implementing computations of cellular automata. Enumerations of cells, neighbors and connections are considered and implemented in ad-hoc software which generates a canvas of hypercube and hypertorus models in the form of a Petri net. A cell model can be replaced while the underlying canvas of connections remains the same. The generalized neighborhood is extended to include a concept of radius; the number of neighbors is calculated for infinite and finite lattices. For diamondshaped neighborhoods, a sequence is obtained whose partial sums equal Delannoy numbers. Traditional application area is modeling networks, computing grids, and clouds. Promising application domains are opening in virology, epidemiology, and entomology for spreading viruses and insects, and corresponding deceases; material science for modeling cracks in life-critical constructs like planes and others.
Part III Poster Presentations

Presentation Link: [https://www.becbinfo.com/##/listofeposters](https://www.becbinfo.com/##/listofeposters)

<table>
<thead>
<tr>
<th>Paper ID</th>
<th>Paper Title &amp; Presenter</th>
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</table>
| BECB-MS-1031  | A biomimetic periosteum — the PCL/decellularized extracellular matrix co-axial electrospun membrane integrated with BMSCs to expedite critical-sized bone defect repair<br>
Shuyi Li, Affiliated Stomatology Hospital of Guangzhou Medical University, China |
| BECB-MS-1052  | Model molecular interactions of trace amine-associate receptor 1 and β1- and β2-adrenergic receptors with ractopamine and dobutamine – a comparative theoretical analysis<br>Bojidarka Ivanova, Technical University Dortmund, Germany |
| BECB-MS-1073  | Evaluation of hierarchical nanoporous gold as a promising platform for use in biosensors<br>Palak Sondhi, University of Missouri, Saint Louis (UMSL), USA |
| BECB-MS-1098  | Analysis of the organic content in two hybrid calcium-silicate cements<br>Desislava Milcheva Tsanova-Tosheva, Medical University, Bulgaria |
| BECB-MS-1099  | Long term clinical repair of endodontic perforations treated with calcium silicate-based cements<br>Desislava Milcheva Tsanova-Tosheva, Medical University, Bulgaria |
| BECB-MS-1175  | Effects of ICIE16 bioactive glass on the viability, migration, and ALP activity of osteoblast-like cells<br>Yu Li, University of Heidelberg, Germany |
| BECB-MS-1192  | New proteins with antimicrobial properties<br>Maria A. Daugavet, Laboratory of the Non coding DNA Study, Institute of Cytology RAS, Russia |
| BECB-MS-1182  | Self-correction in protoacoustic range verification for different proton pulse widths<br>Jiadong Li, Huazhong University of Science and Technology, China |
Part IV Oral Presentations

Online Live Presentation

- Online live presentations will be conducted via VooV Meeting.
- The duration of each invited speech is 25 minutes, including 1-3 minutes of Q&A.
- The duration of each regular oral presentation is 15 minutes, including 1-3 minutes of Q&A.
- All presenters are requested to reach the Online Session Room prior to the schedule time and complete their presentation on time.
- The time of all the presentations is shown in China Standard Time (UTC +8:00).
- If a presenter cannot show up on time or have problems with internet connect, the session chair has the right to rearrange his/her presentation, and let the next presentation start.

Pre-recorded Video Presentation

- A pre-recorded video file (in .MP4 format) is required and the duration of each video is 15-20 minutes. Please make the video record and send it to the Organizing Committee in advance.
- Videos will be played by the Organizing Committee.
- The audience may contact the presenter directly via email for questions and discussions after viewing the video.

Oral Session_1 Biomedical Engineering I

Time: August 14, 2021, Saturday, 09:00--
VooV Meeting ID: 977 916 712
Session Chair: Prof. Peiyu Zhang, Henan University, China

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper ID</th>
<th>Paper Title &amp; Presenter</th>
</tr>
</thead>
</table>
| 09:00-09:15| BECB-MS-1170 | In vitro experimental model of radiofrequency ablation with gold and graphene nanostructures for antitumor treatment 
Melissa Silva Monteiro, University of Brasilia, Brazil |
| 09:15-09:30| BECB-MS-1163 | Human cervix deformation under swelling and growth 
Kun Gou, Texas A&M University-San Antonio, USA |
| 09:30-09:55| BECB-MS-1027 (Invited Talk) | An overview of biomechanically-informed training 
Cyril Donnelly, Nanyang Technological University, Singapore |
| 09:55-10:10| BECB-MS-1033 | Study the weight-bearing capacity and limit of stability on the ankle instability after applying Kinesio Taping technique 
Tossaphon Jaysrichai, Srinakharinwirot University, Thailand |
| 10:10-10:35| BECB-MS-1054 (Invited Talk) | Enhancement of permeation for transdermal drug delivery 
Peiyu Zhang, Henan University, China |
| 10:35-10:50|           | Short Break |

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Online | August 13-15, 2021
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<th>Time</th>
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<th>Title</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:50-11:05</td>
<td>BECB-MS-1153</td>
<td>A DNA nanodevice simultaneously activating the EGFR and integrin for enhancing cytoskeletal activity and cancer cell treatment</td>
<td>Mirza Muhammad Faran Ashraf Baig, The University of Hong Kong, Hong Kong SAR, PR China</td>
</tr>
<tr>
<td>11:05-11:30</td>
<td>BECB-MS-1165</td>
<td>Bioelectrical impedance spectroscopy for evaluating skeletal muscle quality and composition</td>
<td>Yosuke Yamada, National Institutes of Biomedical Innovation, Health and Nutrition, Japan</td>
</tr>
<tr>
<td>11:30-11:45</td>
<td>BECB-MS-1191</td>
<td>The survey of image generation from EEG signals based on deep learning</td>
<td>Delong Yang, Shenzhen Institute of Advanced Technology Chinese Academy of Sciences, China</td>
</tr>
<tr>
<td>11:45-12:00</td>
<td>BECB-MS-1193</td>
<td>Stroke patients walk pattern prediction and tracking control method for a novel intelligent lower limb rehabilitation walker</td>
<td>Xiaojian Zhang, Shenzhen Institute of Advanced Technology, Chinese Academy of Science, China</td>
</tr>
<tr>
<td>12:00-12:15</td>
<td>BECB-MS-1190</td>
<td>A statistical method for footprints analysis based on large-scale high-density piezoresistive films</td>
<td>Bo Wang, Shenzhen Institute of Advanced Technology Chinese Academy of Sciences, China</td>
</tr>
<tr>
<td></td>
<td>Video</td>
<td>Analysis of personal dosimetry and assistance to patients at a radiation therapy clinic, to assign vacation to exposed occupational workers, using circular data analysis</td>
<td>Erick Hernandez, Universidad de San Carlos de Guatemala, Guatemala</td>
</tr>
<tr>
<td></td>
<td>Video</td>
<td>Recovery of previously mastered techniques in a shift from classical to beach volleyball by means of biomechanical analysis (on the example of an attack spike)</td>
<td>Pavel Pavlov, Kursk State University, Russia</td>
</tr>
<tr>
<td></td>
<td>Video</td>
<td>PRIMO Monte Carlo validation of Elekta Synergy Platform linac at Davao Doctors Hospital for a 10 MV photon beam</td>
<td>Vernie C. Convicto, Mindanao State University-Iligan Institute of Technology, Philippines</td>
</tr>
<tr>
<td></td>
<td>Video</td>
<td>Modelling the length of hospital stay in medicine and surgical departments</td>
<td>Antonella Fiorillo, University Hospital of Naples “Federico II”, Naples, Italy</td>
</tr>
<tr>
<td></td>
<td>Video</td>
<td>Pulmonary Lymphangioleiomyomatosis: A state of neoplastic senescence</td>
<td>Charles M. Lombard, El Camino Hospital, USA and Stanford University, USA</td>
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</tbody>
</table>
### Oral Session_2 Bioinformatics and Computational Biology I

**Time:** August 14, 2021, Saturday, 09:00--

**VooV Meeting ID:** 810 369 919

**Session Chair:** Prof. Ahmed El Hashash, University of Edinburgh (UK)-Zhejiang Int. campus

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<th>Paper ID</th>
<th>Paper Title</th>
<th>Presenter</th>
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<tbody>
<tr>
<td>09:00-09:15</td>
<td>BECB-MS-1014</td>
<td>New Energy Decomposition Analysis of Retinal-Opsin Interaction</td>
<td>Wenjin Li, Shenzhen University, China</td>
</tr>
<tr>
<td>09:15-09:30</td>
<td>BECB-MS-1084</td>
<td>Performance evaluation of extreme learning machines classification algorithm</td>
<td>Oyekale Abel ALADE, Universiti Teknologi Malaysia, Malaysia</td>
</tr>
<tr>
<td>09:30-09:45</td>
<td>BECB-MS-1108</td>
<td>The role of miR-21 on the expression of β2-microglobulin in steroid-resistant nephrotic syndrome children</td>
<td>Ahmedz Widiasta, Universitas Padjadjaran, Indonesia</td>
</tr>
<tr>
<td>09:45-10:00</td>
<td>BECB-MS-1124</td>
<td>Evolutionary changes in gene modules and regulatory networks during differentiation of primordial germ cells among monkey, human and mouse</td>
<td>Feng Wang, Kunming University of Science and Technology, China</td>
</tr>
<tr>
<td>10:00-10:15</td>
<td></td>
<td>Short Break</td>
<td></td>
</tr>
<tr>
<td>10:15-10:40</td>
<td>BECB-MS-1127 (Invited Talk)</td>
<td>Stem cells in lung repair, regeneration, and diseases: Current applications and future promise</td>
<td>Ahmed El Hashash, University of Edinburgh (UK)-Zhejiang Intl. campus</td>
</tr>
<tr>
<td>10:40-10:55</td>
<td>BECB-MS-1164</td>
<td>Reconstructing the multicellular structure of a developing metazoan embryo with repulsion-attraction model and cell-cell connection atlas in vivo</td>
<td>Guoye Guan, Peking University, China</td>
</tr>
<tr>
<td><strong>Video</strong></td>
<td>BECB-MS-1028</td>
<td>Targeted transcript quantification in single disseminated cancer cells after whole transcriptome amplification</td>
<td>Franziska Durst, Regensburg Center of Interventional Immunology, Germany</td>
</tr>
<tr>
<td><strong>Video</strong></td>
<td>BECB-MS-1059</td>
<td>The intracellular regulator cyclic PIP triggers anabolism in all cells of a body</td>
<td>Heinrich K. Wasner, University of Illinois at Chicago, USA</td>
</tr>
<tr>
<td><strong>Video</strong></td>
<td>BECB-MS-1106 (Invited Talk)</td>
<td>Network and systems based re-engineering of dendritic cells with microRNAs for cancer immunotherapy</td>
<td>Xin Lai, University Hospital of Erlangen and University of Erlangen-Nuremberg, Germany</td>
</tr>
<tr>
<td><strong>Video</strong></td>
<td>BECB-MS-1166</td>
<td>Modeling binary and graded cone cell fate patterning in the mouse retina</td>
<td>Kiara Eldred, University of Washington, USA</td>
</tr>
</tbody>
</table>
### Oral Session_3 Biomedical Engineering II

**Time:** August 14, 2021, Saturday, 19:00--

**VooV Meeting ID:** 558 675 278

**Session Chairs:** Prof. Chris Dealwis, Case Western Reserve University, USA  
Prof. Igor Pantic, University of Belgrade, Serbia

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<tr>
<th>Time</th>
<th>Paper ID</th>
<th>Paper Title &amp; Presenter</th>
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| 19:00-19:25      | BECB-MS-1066 | Application of metallic nanoparticles in experimental physiology, neurosciences and biomedical engineering  
*Igor Pantic, University of Belgrade, Serbia* |
| 19:25-19:50      | BECB-MS-1075 | The cancer drug target ribonucleotide reductase  
*Chris Dealwis, Case Western Reserve University, USA* |
| 19:50-20:15      | BECB-MS-1078 | Inherent confluence of nano-electronics with organic semiconductors and biomaterials for medical applications  
*Cristian Ravariu, Politehnica University of Bucharest, Romania* |
| 20:15-20:30      | BECB-MS-1107 | Biophysical studies reveal the molecular mechanism of action and dynamics of the human enzyme dihydroorotate dehydrogenase (HsDHODH) N-terminal microdomain  
*Eduardo F. Vicente, São Paulo State University, Brazil* |
| 20:30-20:45      |              | Short Break                                                                            |
| 20:45-21:00      | BECB-MS-1130 | Extraction and evaluation of EEG covariates and their influence on GLM model  
*Vaclava Piorecka, Czech Technical University in Prague, Czech Republic* |
| 21:00-21:15      | BECB-MS-1138 | Induction analyser of kinematic human gait parameters  
*V. S. Ondar, Prof. V.F. Voino-Yasenetsky Krasnoyarsk State Medical University, Russia* |
| 21:15-21:30      | BECB-MS-1194 | Awareness of food-drug interactions (FDIs) among Jordanian Dietitians  
*Natasha F. Bajj, University of Petra, Jordan* |
| 21:30-21:55      | BECB-MS-1113 | Synthesizing spectral data for machine learning: from handcrafted equations to generative adversarial networks  
*Thomas Schmid, Universität Leipzig, Germany* |
| 21:55-22:10      | BECB-MS-1152 | New potential of chronic cough therapy in postnasal drip  
*Yulia O. Nikolaeva, Moscow State University of Medicine and Dentistry named after A.I. Evdokimov, Russia* |
| Video            | BECB-MS-1081 | Differences in spontaneous activity between animal models of Cancer-induced pain and Neuropathic pain  
*Yong Fang Zhu, McMaster University, Canada* |
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<th>Time</th>
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<tbody>
<tr>
<td>19:00-19:15</td>
<td>BECB-MS-1024</td>
<td>Evaluation of growth performance, blood metabolites and gene expression analysis in Egyptian sheep breeds, in relation to age&lt;br&gt;&lt;i&gt;Ayat Alaa-ElDeen Fayed, Cairo University, Egypt&lt;/i&gt;</td>
</tr>
<tr>
<td>19:30-19:55</td>
<td>BECB-MS-1079 (Invited Talk)</td>
<td>An educational bioinformatics project to improve genome annotation&lt;br&gt;&lt;i&gt;Laura Harris, Michigan State University, USA&lt;/i&gt;</td>
</tr>
<tr>
<td>19:55-20:10</td>
<td></td>
<td>Short Break</td>
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<tr>
<td>20:10-20:25</td>
<td>BECB-MS-1112</td>
<td>Telomere length is negatively associated with BMI, R wave in aVL and IL-6 level in patients with new cases of hypertension&lt;br&gt;&lt;i&gt;Olga Podpalova, Republican Scientific and Practical Centre of Cardiology, Belarus&lt;/i&gt;</td>
</tr>
<tr>
<td>20:25-20:40</td>
<td>BECB-MS-1176</td>
<td>Dewetting of polymer films controlled by protein adsorption&lt;br&gt;&lt;i&gt;Kamil Awiuk, Jagiellonian University, Poland&lt;/i&gt;</td>
</tr>
<tr>
<td>20:40-21:05</td>
<td>BECB-MS-1207 (Invited Talk)</td>
<td>Semi-interpenetrating polymer networks for brain-related applications&lt;br&gt;&lt;i&gt;Marta Tunesi, Politecnico di Milano, Italy&lt;/i&gt;</td>
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<tr>
<td>21:05-21:20</td>
<td>BECB-MS-1149</td>
<td>Self-analysis of repeat proteins reveals evolutionarily conserved patterns&lt;br&gt;&lt;i&gt;Matthew Merski, University of Warsaw, Poland&lt;/i&gt;</td>
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<tr>
<td>21:20-21:45</td>
<td>BECB-MS-1225 (Invited Talk)</td>
<td>From nature to machine: Using evolutionary biology to improve nuclear imaging with the sodium iodide symporter&lt;br&gt;&lt;i&gt;Susanna C. Concilio, Mayo Clinic, USA&lt;/i&gt;</td>
</tr>
</tbody>
</table>
| Video | BECB-MS-1045 | Determinants of scale-up from a small pilot to a national electronic immunization registry in Vietnam: qualitative evaluation  
*Nguyen Tuyet, Nga, PATH, Vietnam* |
| Video | BECB-MS-1091 | Investigation of the landscape of repertoire sequencing and its clinical relevance through novel immunoinformatic approaches  
*Li Zhang, University of California San Francisco, USA* |
| Video | BECB-MS-1189 | Transcriptome assembly and gene expression analysis of the Cnidium officinale herb under ambient changing temperature conditions  
*Wei Gai, Kyungpook National University, South Korea* |
| Video | BECB-MS-1208 | The functions of glutathione peroxidase in ROS homeostasis and fruiting body development in Hypsizygus marmoreus  
*Hui Chen, Institute of Edible Fungi, Shanghai Academy of Agricultural Sciences, China* |
| Video | BECB-MS-1168 | Applications and limitations of integrative robust approaches in multiple omics analysis  
*Jesujoba Ovolabi, Covenant University/ Covenant University Bioinformatics Research (CUBre), Nigeria* |

**Oral Session_5 Bioinformatics and Computational Biology III**

**Time:** August 15, 2021, Sunday, 09:00--

**VooV Meeting ID:** 653 503 978

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<tr>
<th>Time</th>
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| Video | BECB-MS-1012 | Honokiol restores polymyxin susceptibility to MCR-1-positive pathogens both in vitro and in vivo  
*Jianfeng Wang, Jilin University, China* |
| Video | BECB-MS-1025 (Invited Talk) | Design of bioconjugated lipid nanoconstructs to act site-specifically towards glioblastoma growth impairment  
*Carla Vitorino, University of Coimbra, Portugal* |
| Video | BECB-MS-1070 (Invited Talk) | Schiff base metal complexes for optical DNA biosensing application  
*Ling Ling Tan, Universiti Kebangsaan Malaysia, Malaysia* |
| Video | BECB-MS-1096 | Antibody numbering schemes: concepts and implications in the humanization of a mouse antibody  
*Mathieu Dondelinger, University of Liège, Belgium* |
| Video | BECB-MS-1119 | Influence of electromagnetic waves on organisms; such as plants  
*Saliba Danho, Johannes Gutenberg-Universität Mainz, Germany* |
| Video | BECB-MS-1120 | Diversity of intestinal bacterial microbiota of indigenous and commercial strains of chickens using 16S rDNA-based analysis  
*Waleed Al-Marzoqi, Sultan Qaboos University, Oman* |
From macro- to micro-scale: multi-parametric optical phenotyping of bacteria as a novel trend in multi-purpose microbiological diagnostics

*Buzalewicz, Wroclaw University of Science and Technology, Poland*

Bioinformatics of SARS-CoV-2 unusual RNA structures

*Martin Bartas, University of Ostrava, Czech Republic*

How to illuminate the dark side of HLA class I immunopeptidomes

*Michele Mishto, King's College London & Francis Crick Institute, UK*

The role of chaperones in iron–sulfur cluster biogenesis

*Rita Puglisi, King's College London, UK*

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**Oral Session_6 Special Session: Leveraging the Power of Regression Analysis and Machine Learning to Investigate the Factors Mostly Affecting the Performance of Healthcare Processes**

**Time:** August 15, 2021, Sunday, 09:00--

**VooV Meeting ID:** 413 265 760

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<th>Time</th>
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| Video| BECB-MS-1137 | Regression analyses to predict the length of stay in patients undergoing hip replacement surgery
*Teresa Angela Trunfio, University Hospital of Naples “Federico II”, Naples, Italy* |
| Video| BECB-MS-1144 | Use of regression models to predict glomerular filtration rate in kidney transplanted patients
*Ilaria Loperto, University Hospital of Naples “Federico II”, Naples, Italy* |
| Video| BECB-MS-1145 | Investigation of factors increasing waiting times in the Emergency Departments of “San Giovanni di Dio e Ruggi d’Aragona” Hospital through machine learning
*Chiara De Lauri, University Hospital of Naples “Federico II”, Naples, Italy* |
| Video| BECB-MS-1146 | Analysis of voluntary departures from the Emergency Department of the hospital AORN “A. Cardarelli”
*Alfonso Maria Ponsiglione, University Hospital of Naples “Federico II”, Naples, Italy* |
| Video| BECB-MS-1158 | Investigating the impact of age, gender, and comorbid conditions on the prolonged length of stay after endarterectomy
*Ylenia Colella, University Hospital of Naples “Federico II”, Naples, Italy* |
| Video | BECB-MS-1159 | A Lean Six Sigma approach to improve the Emergency Department of University Hospital “San Giovanni di Dio e Ruggi d’Aragona”  
*Chiara De Lauri, University Hospital of Naples “Federico II”, Naples, Italy* |
| Video | BECB-MS-1197 | Overcrowding in emergency department: a comparison between indexes  
*Ylenia Colella, University Hospital of Naples “Federico II”, Naples, Italy* |
| Video | BECB-MS-1199 | Trend of the LOS for patients suffering from different kidney injuries  
*Giuseppe Cesarelli, Department of Chemical, Materials and Production Engineering - Piazzale Tecchio, Napoli, Italy* |
| Video | BECB-MS-1200 | A comparison of different Machine Learning algorithms for predicting the length of hospital stay for patients undergoing cataract surgery  
*Arianna Scala, University Hospital of Naples “Federico II”, Naples, Italy* |
| Video | BECB-MS-1202 | Investigation of the risk of surgical infections at the “Federico II” University Hospital by regression analysis using the Firth method  
*Ilaria Loperto, University Hospital of Naples “Federico II”, Naples, Italy* |
| Video | BECB-MS-1203 | Healthcare associated infections in the Neonatal Intensive Care Unit of the “Federico II” University Hospital: statistical analysis and study of risk factors  
*Rossella Alfano, University Hospital of Naples “Federico II”, Naples, Italy* |
| Video | BECB-MS-1204 | Modeling the variation in length of stay for appendectomy and cholecystectomy interventions in the emergency general surgery  
*Arianna Scala, University Hospital of Naples “Federico II”, Naples, Italy* |
| Video | BECB-MS-1206 | Impact of diagnostic procedures on the length of stay in emergency medicine  
*Martina Profeta, University of Naples “Federico II”, Naples, Italy* |
| Video | BECB-MS-1198 | Modelling the hospital length of stay for patients undergoing laparoscopic appendectomy through a Multiple Regression Model  
*Teresa Angela Trunfio, University Hospital of Naples “Federico II”, Italy* |
**Oral Session_7 Biomedical Engineering III**  
**Time:** August 15, 2021, Sunday, 19:00--  
**VooV Meeting ID:** 505 684 966  
**Session Chair:** Dr. Sayed Nour, Technopole of Orleans, France

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<th>Time</th>
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| 19:00-19:15   | BECB-MS-1095 | Esomeprazole vs pantoprazole effects on cyclosporine levels in kidney transplantation: A randomized clinical trial  
**Doaa Mohamed Salah ElDin Diab ElBohy, Future University in Egypt, Egypt** |
| 19:15-19:30   | BECB-MS-1111 | Attenuation dexamethasone adverse effect by nano-green tea phytosome encapsulated dexamethasone on rat Leydig cells in vitro: Part I  
**Reem Mohanad Al-Yasiri, Al-Hadi College University, Iraq** |
| 19:30-19:45   | BECB-MS-1128 | The technique of automated biomechanical analysis of weightlifting exercises in the conditions of training activity  
**Y V Koryagina, North-Caucasian Federal Scientific and Clinical Center of the Federal Medical and Biological Agency, Russia** |
| 19:45-20:00   | BECB-MS-1142 | Video analysis of human gait: advantages and disadvantages in neurological diagnostics  
**S. B. Ismailova, Prof. V.F. Voino-Yasenetsky Krasnoyarsk State Medical University, Russia** |
| 20:00-20:15   |             | Short Break                                                                             |
| 20:15-20:30   | BECB-MS-1154 | Time to Resuscitate Cardiopulmonary Resuscitation! The 3R/CPR: Refill-Recoil-Rebound!  
**Sayed Nour, Technopole of Orleans, France** |
| 20:30-20:45   | BECB-MS-1195 | Food and immunity awareness in Jordan during the COVID-19 era  
**Dima H. Sweidan, University of Petra, Jordan** |
| 20:45-21:10   | BECB-MS-1196 | Features of the action potential upstroke dictating the dynamics of pivoting electrical waves in cardiac tissue  
*(Invited Talk)*  
**Jacques Beaumont, Complex Biosystems SUNY Upstate Medical Univ., USA** |
| 21:10-21:25   | BECB-MS-1179 | Analyzing trio-anthropometric predictors of Hypertension: Determining the susceptibility of blood pressure to sexual dimorphism in body stature  
**Uchenna K. Ezemagu, Alex Ekwueme Federal University Ndufu Alike Ikw, Nigeria** |
| 21:25-21:40   | BECB-MS-1134 | Hippocampal effects of reduced masticatory function  
**Maria Grazia Piancino, University of Turin, Italy** |
| Video         | BECB-MS-1048 | Hormone-independent sexual dimorphism in the regulation of bone resorption by Krox20  
*(Invited Talk)*  
**Yankel Gabet, Tel Aviv University, Israel** |
| Video | BECB-MS-1094 | Computational design of peptide-carbohydrate conjugates to improve drug recognition and tumor targeting  
*Tânia Firmino G. G. Cova, University of Coimbra, Portugal* |
|-------|--------------|-------------------------------------------------|
| Video | BECB-MS-1109 | Is violet LED light efficient to treat superficial lesions such as a low-grade cervical intraepithelial neoplasia?  
*Maria Eugenia Etcheverry, Centro de Investigaciones Opticas, Argentina* |

**Part VI Acknowledgements**

On behalf of the Organizing Committee of BECB 2021, we would like to take this opportunity to express our sincere thanks to the support and contributions of participants from all over the world. We would also like to express our sincere acknowledgements to the Technical Program Committee members who have given their professional guidance and valuable advice to the conference. Below are the lists of the Technical Program Committee members. For those who contribute to the success of the conference organization without listing the name here, we would like to say thanks as well.

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Dr. Shiping Wen, Professor, University of Technology Sydney, Australia  
Dr. Qishen Li, A/Professor, Nanchang Hangkong University, China  
Dr. Cihui Yang, A/Professor, Nanchang Hangkong University, China

**Co-Chairs**

Dr. Cuixia Ma, Professor, Institute of Software, Chinese Academy of Sciences, China  
Dr. Ziyan Sun, A/Professor, Huazhong University of Science and Technology, China

**Technical Program Committee**

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Dr. Xiang Hu, A/Professor, Union Hospital, Huazhong University of Science and Technology, China  
Dr. Yang Liu, RD Medicinal Science & Technology, USA  
Dr. Junfeng Du, A/Professor, Liyuan Hospital, Huazhong University of Science and Technology, China  
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Dr. Raji Sundararajan, Purdue University, USA
Dr. Yulong Sun, Northwestern Polytechnical University, China
Dr. Christopher Cullis, Case Western Reserve University, USA
Dr. Xiao-Ying Yu, Pacific Northwest National Laboratory, USA
Dr. Zahra Motamed, McMaster University, Canada
Dr. Ahmed El Hashash, University of Edinburgh (UK)-Zhejiang Intl. campus
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Dr. Kathleen L. Hefferon, Cornell University, USA