

# Table of Contents

<b>Part I</b>	<b>iCBBE 2016 Conference Schedule .....</b>	<b>1</b>
<b>Part II</b>	<b>Invited Speeches .....</b>	<b>2</b>
	<b>Invited Speech 1: GAMMA Oscillation in Visual Cortex.....</b>	<b>2</b>
	<b>Invited Speech 2: TBD .....</b>	<b>2</b>
	<b>Invited Speech 3: Conjugated Polymer Nanodots as Ultrastable Long-term Trackers to Understand     Mesenchymal Stem Cell Therapy in Skin Regeneration.....</b>	<b>3</b>
	<b>Invited Speech 4: Moving from hERG to CiPA ----- Evolution of preclinical cardiac assessment and     ICE's practices.....</b>	<b>3</b>
<b>Part III</b>	<b>Technical Session .....</b>	<b>5</b>
<b>Part IV</b>	<b>Special Session.....</b>	<b>7</b>
<b>Part IV</b>	<b>Abstracts of Technical Session.....</b>	<b>9</b>
<b>Part V</b>	<b>Instructions for Presentations .....</b>	<b>15</b>
<b>Part VI</b>	<b>Hotel Information .....</b>	<b>16</b>
<b>Part VI</b>	<b>Transportation Information .....</b>	<b>17</b>
<b>Contact Us</b>	<b>.....</b>	<b>18</b>

# Part I iCBBE 2016 Conference Schedule

**Time:** September 20-September 22, 2016

**Location:** Ramada Xi'an Bell Tower (西安华美达兆瑞酒店), Xi'an, China

Date	Time	Lobby	
Sep. 20	14:00-17:00	Registration	
Date	Time	Jude Room(居德厅)	Tongji Room (通济厅)
Sep. 21	08:30-12:00	<p><b>Invited Session:</b>  <b>Bioinformatics &amp; Biomedical Engineering</b></p> <p><b>Prof. Dajun Xing, Prof. Huaiqiu Zhu,            Dr. Guorui Jin, Prof. Weimin Pei</b></p> <p>Chair: TBD            Coffee Break: 10:10-10:30</p>	<p>精准医学与未来大健康产业论坛            (Special Session in Chinese)</p>
	12:00-13:30	<p><b>Lunch</b> Lives Cafe 麗屋咖啡厅 (西餐厅), 2<sup>nd</sup> Floor</p>	
	14:30-18:00	<p><b>Technical Session:</b>  <b>Bioinformatics &amp; Biomedical Engineering</b></p> <p>Chair: TBD            Coffee Break: 16:00-16:15</p>	<p>精准诊断前沿进展高峰论坛            (Special Session in Chinese)</p>
	18:00-19:30	<p><b>Dinner</b> Lives Cafe 麗屋咖啡厅 (西餐厅), 2<sup>nd</sup> Floor</p>	
Date	Time	Tongji Room (通济厅)	
Sep. 22	08:30-12:00	<p>精准医疗临床应用高峰论坛            (Special Session in Chinese)</p>	
	12:00-13:30	<p><b>Lunch</b> Lives Cafe 麗屋咖啡厅 (西餐厅), 2<sup>nd</sup> Floor</p>	
Sep. 23	08:00-18:00	<p><b>One-day Tour (at own expense)</b></p>	

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## Part II Invited Speeches

### Invited Speech 1: GAMMA Oscillation in Visual Cortex

**Speaker:** Dajun Xing, Beijing Normal University, China

**Time:** 08:40-9:25 ,Wednesday Morning, September 21, 2016

**Location:** Jude Room(居德厅), 3<sup>rd</sup> Floor, Ramada Xi'an Bell Tower



#### Abstract

Diverse response dynamics in brain is a reflection of the brain's complex network connectivity. In order to understand the brain network, it is crucial to understand the brain dynamics. We chose Macaque primary visual cortex (V1) to study the involvement and interaction of different networks within V1. Our result reveals a variety of response properties of gamma (20-60 Hz) activity, including stochastic dynamics, laminar distributions and stimulus dependence. A unified model, which explains the response properties of gamma-band activity, implies the generation of gamma band activity and important roles of recurrent and feedback connections in primary visual cortex.

### Invited Speech 2: TBD

**Speaker:** Prof. Huaiqiu Zhu, Peking University, China

**Time:** 9:25-10:10, Wednesday Morning, September 21, 2016

**Location:** Jude Room(居德厅), 3<sup>rd</sup> Floor, Ramada Xi'an Bell Tower



#### Abstract

TBD

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## **Invited Speech 3: Conjugated Polymer Nanodots as Ultrastable Long-term Trackers to Understand Mesenchymal Stem Cell Therapy in Skin Regeneration**

**Speaker:** Dr. Guorui Jin, Xi'an Jiaotong University, China

**Time:** 10:30-11:15, Wednesday Morning, September 21, 2016

**Location:** Jude Room(居德厅), 3<sup>rd</sup> Floor, Ramada Xi'an Bell Tower



### **Abstract**

Stem cell-based therapies hold great promise in providing desirable solutions for diseases that cannot be effectively cured by conventional therapies. To maximize the therapeutic potentials, advanced cell tracking probes are essential to understand the fate of transplanted stem cells without impairing their properties. Herein, we introduce conjugated polymer (CP) nanodots as non-invasive fluorescent trackers with high brightness and low cytotoxicity for tracking of mesenchymal stem cells (MSCs) to reveal their in vivo behaviours. As compared to the most widely used commercial quantum dot tracker, CP nanodots have shown significantly better long-term tracking ability without compromising the features of MSCs in terms of proliferation, migration, differentiation and secretome. Fluorescence imaging of tissue sections from full-thickness skin wound-bearing mice transplanted with CP nanodot-labeled MSCs suggests that paracrine signaling of the MSCs residing in the regenerated dermis is the predominant contribution to promote skin regeneration, accompanied with a small fraction of endothelial differentiation. The promising results indicate that CP nanodots could be used as next generation of fluorescent trackers to reveal the currently ambiguous mechanisms in stem cell therapies through a facile and effective approach.

## **Invited Speech 4: Moving from hERG to CiPA ----- Evolution of preclinical cardiac assessment and ICE's practices**

**Speaker:** Dr. Weimin Pei, ICE Bioscience, Inc., China

**Time:** 11:15-12:00, Wednesday Morning, September 21, 2016

**Location:** Jude Room(居德厅), 3<sup>rd</sup> Floor, Ramada Xi'an Bell Tower



### **Abstract**

The assessment of drug-induced hERG(human Ether-à-go-go-Related Gene) block has become a standard component in cardiac safety evaluations during nonclinical drug development. However, hERG block alone may not be accurate in predicting the risk of QT prolongation. The ECG and cardiac action potential are formed by many different ion channels. hERG block does not always prolong QT due to mixed ion channel effects, including Nav1.5, Cav1.2, Kv1.5, etc. The best description for cardiac safety is to understand mechanisms of action potential which could be achieved by thorough safety package assessment. Here, we introduce a more comprehensive assay to evaluate the cardiac safety of drugs: the Comprehensive in Vitro

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Proarrhythmia Assay (CiPA). The evaluation of drug effects with multi ion channel effects (MICE), has been proved to be superior to the HERG model in predicting drug-induced proarrhythmia, or more specific, Torsades de Points (TdP). Moreover, as a part of CiPA, we offer the stem cell-derived human cardiomyocytes as a nonclinical safety assay in predicting the cardiac risks of drugs. The “off the shelf” availability of cardiomyocytes in large quantities is very appealing due to the potentials to overcome shortcomings of recombinant cell lines, which may not recapitulate physiological conditions, native human tissues which are expensive, and non-human models which may not reflect human physiology.

## Part III Technical Session

Session Chair: TBD

Jude Room(居德厅), 3<sup>rd</sup> Floor

14:00-18:00, Wednesday Afternoon, September 21, 2016

Paper ID	Paper Title	Author	Affiliation
<b>30002</b>	Recent Advances in Finite Element Applications in Artificial Lumbar Disc Replacement	Zhenjun Zhang	Tsinghua University
<b>30003</b>	A more effective method of extracting the characteristic value of pulse wave signal based on wavelet transform	Xuanwei Zhang	Peking University Shenzhen Graduate School
<b>30004</b>	AndroidCare: a simple and low cost assisted living solution	Abraham Otero Quintana	University CEU San Pablo
<b>30009</b>	Mechanism of Magnetic Pulse Wave Signal for Blood Pressure Measurement	Yang Zhang	Institute of Microelectronics, Tsinghua University
<b>30010</b>	Feature Optimization of Speech Emotion Recognition	Chunxia Yu	GuangXi Normal University
<b>30019</b>	Prediction of teleost heat shock protein70 (Hsp70) receptor: Toll-like receptor 4 isolation and its putative binding with Hsp70 based on bioinformatics analysis in grass Carp	Anying Zhang	University of Electronic Science and Technology of China
<b>30023</b>	Finite Element Analysis of Osteotomy Treatment for Kienbock's Disease	Hui Shen	Ohio Northern University
<b>30029</b>	Evaluating the Combined Optimization of Oxygenation and Ventilation in a Patient Simulator	Joern Kretschmer	Institute of Technical Medicine, Furtwangen University
<b>16:00-16:15</b>	<b>Coffee Break</b>		
<b>30030</b>	Comparison of image reconstruction algorithms in EIT imaging	Benjamin Schullcke	Furtwangen University
<b>30031</b>	EIT image reconstruction by modified data	Bo Gong	Furtwangen University

<b>30032</b>	Automatic detection of airways in CT Scans of Cystic Fibrosis patients	Tanusree Chaudhuri	Furtwangen University
<b>30033</b>	A new lung mechanics model and its evaluation with clinical data	Bernhard Laufer	Institute of Technical Medicine
<b>30039</b>	Liver tumor segmentation from abdominal CT images using FCM clustering and graph cuts	Weiwei Wu	Beijing University of Technology
<b>30041</b>	Easy Breathing - Definition of a Gamification System to Support the Chronic Care of Childhood Asthma	Ruofei Hu	Technical University of Madrid
<b>30044</b>	Spatial Organization Research of Chromosomes for Acute Promyelocytic Leukemia	Xueli Tian	Tsinghua University
<b>30045</b>	Methodologies of Biophysical Wound Healing Therapies	Jacquelyn Dawn Parente	HFU Furtwangen University
<b>30047</b>	Hippocampus Gray Matter Atrophy Happens More Seriously in AD Female Patients	Iman Beheshti	Integrative Brain Imaging Center, National Center of Neurology and Psychiatry, Japan
<b>30027 Poster</b>	Auditory BCI Research using Spoken Digits Stimulation and Dynamic Stopping Criterion	Ying Zhang	Hebei University of Technology

## Part IV Special Session

9月20日	全天		与会嘉宾报到	
9月21日上午	开幕式	8:30-9:00	主持人介绍现场嘉宾	
			主办方致辞	
			大会主席或委员致开幕词	
	精准医学与未来大健康产业论坛		9:00-9:25	主题报告 1: 个体化医疗与产业发展探讨 许嘉森, 国家千人, 益善生物技术股份有限公司核心创始人
			9:25-9:50	主题报告 2: 系统医学指导下的精准医疗 程根宏, 国家千人, 中国医学科学院基础医学研究所系统医学研究中心主任
			9:50-10:15	主题报告 3: 精准医疗时代下的投资风口 (拟) 黄反之, 分享投资合伙人
			10:15-10:25	中国医药城政策推介 赵亮 博士 中国医药城招商分局副局长
			10:25-10:35	茶歇
			10:35-11:00	主题报告 4: SAG-SCF E3 ligase in promoting tumorigenesis in the lung and prostate: therapeutic application 孙毅, 国家千人、浙江大学转化医学研究院院长
			11:00-11:25	主题报告 5: 帕金森病的生物标记和靶标治疗研究 乐卫东, 国家千人, 大连医科大学附一院副院长, 神经转化医学中心主任
			11:25-11:50	主题报告 6: Precise Medicine and Human Placenta Project 钟南, 北京大学医学部医学遗传系及北京大学医学遗传中心创建主任
			11:50-12:00	嘉宾合影留念
			12:00-13:30	自助午餐
9月21日下午	精准诊断前沿进展高峰论坛	13:30-13:55	主题报告 7: RNA 测序、大数据和精准医疗 孙毅, 国家千人, 同济大学医学院干细胞研究中心主任	
		13:55-14:20	主题报告 8: 干细胞生物医学技术的未来发展 周萱, 国家千人, 奥思达干细胞有限公司创始人	
		14:20-14:45	主题报告 9: 精准医疗仪器设备研发 周晓光, 国家千人, 中国科学院半导体研究所研究员	
		14:45-15:10	主题报告 10: 多维参数超分辨成像与健康诊断装备 刘学峰, 国家千人, 南京理工大学电子工程与光电技术学院教授	
		15:10-15:35	主题报告 11: 表观遗传学的分子调控机制 苏丹, 青年千人, 四川大学生物治疗国家重点实验室教授	
		15:35-16:00	主题报告 12: 基因电路用于肿瘤及脑血管疾病预警、诊断及治疗技术 王翔, 北京航空航天大学电子信息工程学院教授	
		16:00-16:25	主题报告 13: 多组织代谢模拟与分子诊断新标志物的识别 黄京飞, 中国科学院昆明动物研究所研究员博导、中国科学技术大学兼职博导	
		16:25-17:25	高端访谈 1: 精准诊断前沿进展 访谈嘉宾: 周萱 (主持人)、孙毅、周晓光、姜雨、霍宝群	
			17:30-19:00	自助晚餐

9月22日 上午	精准医疗临床应用高峰论坛	8:30-8:55	主题报告 14: New integrative testing methods for tumor biomarkers and case-control studies 徐雷, 国家千人, 上海交大致远讲席教授、上海交大脑科学与技术研究中心首席科学家、上海交大电院类脑计算和转化生物信息学研究中心主任
		8:55-9:20	主题报告 15: 血液病及造血干细胞移植 艾辉胜, 中国人民解放军三〇七医院血液内科主任、主任医师
		9:20-9:45	主题报告 16: 恶性肿瘤唾液无创伤分子诊断研究 吴正治, 深圳市中西医结合研究所所长
		9:45-10:10	主题报告 17: 充质干细胞的转化应用 李光申, 阳明大学特聘教授、台北市立联合医院副院长
		10:10-10:15	茶歇
		10:15-10:40	主题报告 18: 重症哮喘的靶向治疗研究 应颂敏, 青年千人, 浙江大学医学院教授
		10:40-11:05	主题报告 19: TCR-T、CAR-T、TIL 等免疫治疗新技术 王明军, 深圳市第二人民医院教授、孔雀人才
		11:05-11:50	高端访谈 2: 精准医疗临床应用 访谈嘉宾: 乐卫东 (主持人)、徐雷、李光申、艾辉胜
		12:00-13:30	自助午餐
9月22日 下午	返程	14:30-17:00	返程&深度对接

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## Part IV Abstracts of Technical Session

**Article ID: 30002**

**Title: Recent Advances in Finite Element Applications in Artificial Lumbar Disc Replacement**

**Name:** Zhenjun Zhang

**Affiliation:** Tsinghua University

**E-mail:** zzjok168@126.com

### **Abstract**

As a new choice for the treatment of degenerative lumbar disease, artificial lumbar disc replacement has been widely used in clinical surgery. The finite element is a very effective method to predict and simulate the surgery effect. The purpose of this paper is to review the applications of finite element in artificial lumbar disc replacement, such as design of artificial lumbar disc prosthesis, risk and effect evaluation of artificial lumbar disc replacement, and assessment of operation methods. Lastly, we discuss the future development of finite element method applied in this field, including personalized design of the prosthesis, postoperative behavior guide, and artificial lumbar disc replacement combined with fusion surgery. In conclusion, as an invaluable complement to biomechanical experiments and clinical studies, the finite element method makes important contributions to our understanding of biomechanics of intervertebral disc, and plays an important role in the field of artificial lumbar disc replacement.

**Article ID: 30003**

**Title: A more effective method of extracting the characteristic value of pulse wave signal based on wavelet transform**

**Name:** Xuanwei Zhang

**Affiliation:** The Key Laboratory of Integrated Microsystems, Peking University Shenzhen Gradua

**E-mail:** xuanweiz0413@sz.pku.edu.cn

### **Abstract**

Pulse wave contains human physiological and pathological information. Different people will exhibit different characteristics, and hence determining the characteristic points of the pulse wave of human physiological health makes sense. It is common that extracting the characteristic value of pulse wave signal with the method based on wavelet transform on a small scale, and then de-termining the locations of the characteristic points by modulus maxima and modulus minima. Be-fore determining characteristic value by detecting modulus maxima and modulus minima, we need to determine every period of the pulse wave. This paper presents a new kind of adaptive threshold determination method which is more effective. It can accurately determine every period of the pulse wave, and then extract characteristic values by modulus maxima and modulus minima in every period of the pulse wave. The method presented in this paper promotes the research utilizing pulse wave on health life.

**Article ID: 30004**

**Title: AndroidCare: a simple and low cost assisted living solution**

**Name:** Abraham Otero Quintana

**Affiliation:** University CEU San Pablo

**E-mail:** Abraham.otero@gmail.com

### **Abstract**

Population aging places a growing stress on society's resources. There is a need for Assisted Living (AL) technologies that allow the elderly to live independently as long as possible. The AndroidCare open source project aims to explore what functionality can be provided in a low cost AL solution where no professional health organization is involved in the deployment or maintenance of the solution, nor in supervising the patient; all these

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tasks are carried out by a relative of the elder. Therefore, in the system's design simplicity of use has prevailed over having a lot of features. It is based on standard off-the-shell commodity hardware (a smartphone) and it provides (1) assistance to the elder in complying with the treatment of chronic diseases; (2) monitors and alerts of the occurrence of risk situations such as falls; and (3) simplifies the supervision of the elder's therapy and behavior by the caregiver.

**Article ID: 30009**

**Title: Mechanism of Magnetic Pulse Wave Signal for Blood Pressure Measurement**

**Name:** Yang Zhang

**Affiliation:** Institute of Microelectronics, Tsinghua University, Beijing, 100084, China

**E-mail:** yumaoqiuq@163.com

**Abstract**

Continuous non-invasive blood pressure (BP) measurement can be realized by using pulse transit time (PTT) based on electrocardiogram (ECG) and pulse wave signal. Modulated magnetic signature of blood (MMSB) is a promising approach to obtain PTT. The origin of MMSB is critical to establish the relationship between MMSB and BP. In this paper, two possible origins of MMSB, blood disturbance mechanism and angular variation mechanism, are analyzed and verified through three control experiments under different conditions. The influence of blood velocity alteration and blood volume alteration on magnetic field is investigated through blood flow simulation system. It is found that MMSB comes mainly from the periodic blood flow while the perturbation caused by angular variation between sensitive axis of the magnetic sensor and geomagnetic field can be neglected. As to blood disturbance mechanism, the change of blood volume plays a decisive role while the effect of blood velocity alteration is negligible.

**Article ID: 30010**

**Title: Feature Optimization of Speech Emotion Recognition**

**Name:** Chunxia Yu

**Affiliation:** GuangXi Normal University

**E-mail:** 1219465730@qq.com

**Abstract**

Speech emotion is divided into four categories, Fear, Happy, Neutral and Surprise in this paper. Traditional features and their statistics are generally applied to recognize speech emotion. In order to quantify each feature's contribution to emotion recognition, a method based on the Back Propagation (BP) neural network is adopted. Then we can obtain the optimal subset of the features. What's more, two new characteristics of speech emotion, MFCC feature extracted from the fundamental frequency curve (MFCCF0) and amplitude perturbation parameters extracted from the short-time average magnitude curve (APSAM), are added to the selected features. With the Gaussian Mixture Model (GMM), we get the highest average recognition rate of the four emotions 82.25%, and the recognition rate of Neutral 90%.

**Article ID: 30019**

**Title: Prediction of teleost heat shock protein70 (Hsp70) receptor: Toll-like receptor 4 isolation and its putative binding with Hsp70 based on bioinformatics analysis in grass Carp**

**Name:** Anying Zhang

**Affiliation:** University of Electronic Science and Technology of China

**E-mail:** zhangay@uestc.edu.cn

**Abstract**

In mammals, the cytokine effects of heat shock protein 70 (Hsp70) have been well documented. In fish, extracellular Hsp70 is detected in grass carp peripheral blood lymphocytes (PBLs) culture medium, and the regulatory effects of recombinant fish Hsp70s on the production of pro-inflammatory cytokines have been proved. These data strongly supported the cytokine effects of Hsp70 in fish. However, the information of Hsp70 receptors in fish remains unknown. Toll-like receptor 4 (TLR4) may play a role as a receptor of Hsp70 in mammals. Therefore, in the present study, TLR4 was isolated from grass carp and its putative binding with Hsp70 was predicted by using bioinformatics methods. The full length of grass carp

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TLR4 (gcTLR4) cDNA was 2687 bp and contained 2469 bp of open reading frame (ORF), encoding 822 amino acid residues. Amino acid sequence analysis showed that the gcTLR4 has characteristic domains of TLR4. Phylogenetic tree analysis demonstrated that gcTLR4 is highly conserved during evolution. Tissue distribution analysis by real time quantitative PCR showed that gcTLR4 was highly expressed in the thymus and spleen, and lowly expressed in intestinal and PBLs. To explore the interaction of gcTLR4 and gcHsp70, the AutoDock Vina molecular docking software was used. The amino acid sequences of gcTLR and grass carp (gcHsp70) were performed molecular modeling and protein structure optimization based on crystal structure of TLR4 (PDB id: 3FXI) and Hsp70 (PDB id: 3KVG), respectively, and were subjected to Molecular Dynamics (MD) simulation for 10 nanoseconds, as a preparatory process for docking. Furthermore, the stable docking between gcHsp70 and gcTLR4 was revalidated through semi-flexible docking with simulated annealing algorithm and genetic algorithm. The reliability of results was evaluated by binding free energy. The docking results indicated gcTLR4 as a potential receptor of gcHsp70 in accordance with that in mammals. This finding could extend and reinforce the notion of Hsp70 as a cytokine in teleost.

**Article ID: 30023**

**Title: Finite Element Analysis of Osteotomy Treatment for Kienbock's Disease**

**Name:** Hui Shen

**Affiliation:** Ohio Northern University

**E-mail:** h-shen@onu.edu

**Abstract**

Lateral closing wedge osteotomy is a treatment for Kienbock's disease. It is one of the most frequently used treatment options, which has been reported with relatively good long-term results. However, the results about the treatment are still controversial in some literatures and some key mechanisms are still not clear. The objective of the current study was to study the biomedical mechanism of the treatment. A finite element model was developed based on the geometry of carpal bones. Various situations including inclination angle changes by cutting the radial

with 0°, 5°, 10° and 15° osteotomy angles were studied. The effectiveness of the treatment was also studied for the carpal structure with abnormal positions of the lunate bone. The results show that the effectiveness of the stress reduction with the angle depends on many situations such as the initial morphology of the carpal structure.

**Article ID: 30029**

**Title: Evaluating the Combined Optimization of Oxygenation and Ventilation in a Patient Simulator**

**Name:** Joern Kretschmer

**Affiliation:** Institute of Technical Medicine, Furtwangen University

**E-mail:** krj@hs-furtwangen.de

**Abstract**

The use of mathematical models can aid in optimizing therapy settings in ventilated patients to achieve certain therapy goals. Especially when multiple goals have to be met, the use of individualized models can be of great help. The presented work shows the potential of using models of respiratory mechanics and gas exchange to optimize minute ventilation and oxygen supply to achieve a defined oxygenation and carbon dioxide removal in a patient while guaranteeing lung protective ventilation. The ventilator settings are optimized using respiratory mechanics models to compute a respiration rate and tidal volume that keeps the maximum airway pressure below the critical limit of 30cmH<sub>2</sub>O while ensuring a sufficient expiration. A three-parameter gas exchange model is then used to optimize both minute ventilation and oxygen supply to achieve defined arterial partial pressures of oxygen and carbon dioxide in the patient. The presented approach was tested using a JAVA based patient simulator that uses various model combinations to compute patient reactions to changes in the ventilator settings. The simulated patient reaction to the optimized ventilator settings showed good agreement with the desired goals.

**Article ID: 30030**

**Title: Comparison of image reconstruction algorithms in EIT imaging**

**Name:** Benjamin Schullecke

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**Affiliation:** Furtwangen University

**E-mail:** sben@hs-furtwangen.de

**Abstract**

Electrical Impedance Tomography (EIT) is a medical imaging technique which can be used to monitor the regional ventilation in patients utilizing voltage measurements made at the thorax. Several reconstruction algorithms have been developed during the last few years. In this manuscript we compare a well-established algorithm and a recently developed method for image reconstruction regarding EIT indices derived from the differently reconstructed images.

**Article ID: 30031**

**Title: EIT image reconstruction by modified data**

**Name:** Bo Gong

**Affiliation:** Furtwangen University

**E-mail:** bo.gong@hs-furtwangen.de

**Abstract**

Electrical impedance tomography (EIT) is a radiation-free imaging method. Canonically, in lung EIT, 16 electrodes are placed horizontally on the thorax skin. By injecting currents through electrodes attached to the skin, a set of induced voltage measurements can be collected. The conductivity distribution on the chest plane can be obtained from these electrical boundary conditions. It has been reported that the adjacent current injection pattern is sub-optimal for EIT reconstruction. However, this adjacent current injection pattern is commonly used in commercially available EIT devices. In this study, we modify the boundary conditions according to the superposition principle of the electrical field. As a result, boundary conditions of the adjacent current pattern will be transformed to those corresponding to “skip-3” current injection pattern. Simulation results indicated that reconstruction benefits from the modified boundary conditions.

**Article ID: 30032**

**Title: Automatic detection of airways in CT Scans of Cystic Fibrosis patients**

**Name:** Tanusree Chaudhuri

**Affiliation:** Furtwangen University

**E-mail:** tanusree.chaudhuri@hs-furtwangen.de

**Abstract**

This paper describes a prototype of an automatic system for the detection and evaluation of airways of Cystic Fibrosis (CF) patients from Computed Tomography (CT) Scans. The aim of the study is to present a prototype of an automatic system which could serve as a decision support for radiologists. The area percentages of airway in lung regions have been calculated in CT slices to represent Bronchiectasis stages of CF patients. The proposed automatic system has been tested on a dataset comprising of four CF patients belonging to different stages of Bronchiectasis.

**Article ID: 30033**

**Title: A new lung mechanics model and its evaluation with clinical data**

**Name:** Bernhard Laufer

**Affiliation:** Institute of Technical Medicine

**E-mail:** b.laufer@hs-furtwangen.de

**Abstract**

Acute Respiratory Distress Syndrome (ARDS) is a major cause of morbidity and has a high rate of mortality. ARDS patients in the intensive care unit (ICU) require mechanical ventilation (MV) for breathing support, but inappropriate settings of MV can lead to ventilator induced lung injury (VILI). Those complications may be avoided by carefully optimizing ventilation parameters through model-based approaches. In this study we introduced a new model of lung mechanics (mNARX) which is a variation of the NARX model by Langdon et al.. A multivariate process was undertaken to determine the optimal parameters of the mNARX model and hence, the final structure of the model fit 25 patient data sets and successfully described all parts of the breathing cycle. The model was highly successful in predicting missing data and showed minimal error. Thus, this model can be used by the clinicians to find the optimal patient specific ventilator settings.

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**Article ID: 30039**

**Title: Liver tumor segmentation from abdominal CT images using FCM clustering and graph cuts**

**Name:** weiwei wu

**Affiliation:** Beijing University of Technology

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**Abstract**

This one-page abstract introduces a fuzzy c-means clustering (FCM) and graph cuts based method for three-dimensional (3D) liver tumor segmentation from abdominal contrast-enhanced computed tomography (CT) images.

**Article ID: 30041**

**Title: Easy Breathing - Definition of a Gamification System to Support the Chronic Care of Childhood Asthma**

**Name:** Ruofei Hu

**Affiliation:** Technical University of Madrid

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**Abstract**

Asthma is the most common noncommunicable disease among children. It leads to substantial problems both in health and economic terms to individuals and families. This paper introduces a technological solution, Easy Breathing, that supports the management of childhood asthma, providing tools for both doctors and patients. Through the establishment of an asthma chronic care model, it combines doctors' professional guidance and a gamification system to improve the compliance of patients with their treatments and to provide them with tools for the self-management of their disease. The system is in the testing phase, the first mockup has been developed and validated with 270 medical experts and patients, and it will be tested with 540 end-users over the next months.

**Article ID: 30044**

**Title: Spatial Organization Research of Chromosomes for Acute Promyelocytic Leukemia**

**Name:** Xueli Tian

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**Abstract**

Considering the correlation of disease occurring with chromosomal spatial organization, we used three-dimensional fluorescence in situ hybridization (3D-FISH) technique and confocal microscope system to research the spatial organization of chromosomes for acute promyelocytic leukemia (APL) with t(15;17)(q22;q12) which is characterized by the presence of PML/RARA fusion transcripts. Reverse-transcription polymerase chain reaction (RT-PCR) was used to analyze the gene fusion transcripts as control. For the continual following up of bone marrows from an APL patient, 3D-FISH analysis showed a probable tendency of disease deteriorating. What's more, during the 3D-FISH analyzing of several samples, we found some typical translocations of chromosomes 15 and 17 which were 1r1g2f signals, while RT-PCR results showed negative. So it is essential to use 3D-FISH technique, a useful method to reshow targets in three dimensions, to research the spatial organization of chromosomes for acute promyelocytic leukemia.

**Article ID: 30045**

**Title: Methodologies of Biophysical Wound Healing Therapies**

**Name:** Jacquelyn Dawn Parente

**Affiliation:** HFU Furtwangen University

**E-mail:** pjd@hs-furtwangen.de

**Abstract**

**Purpose:** To evaluate the effects of methodological variations in the application of biophysical therapies on wound healing outcomes, as a preliminary study towards the development of a composite wound healing device. **Methods:** A literature search was conducted amongst reviews focusing on the variable devices, configurations, input parameters, and treatment durations of negative pressure wound therapy (NPWT), electrical stimulation (ES), and low-level light therapy (LLLT) from 2011 to July 2016. **Results:** Use of wound filler in NPWT, as

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compared to topical NP, may contribute to improved tissue granulation. Lower vacuum pressures of -50 and -80 mmHg achieved similar tissue perfusion outcomes as compared to early recommendations of -125 mmHg. Continuous, square wave, or triangular NP waveform regimens have not yet been established due to inconsistent results. An electrical stimulation configuration of high-voltage pulsed current (HVPC) with the stimulation electrode placed in the wound bed best resembles the endogenous skin current, which guides cellular migration. However, no studies have established optimal stimulation parameters. Laser and LEDs are similarly effective devices for LLLT applications. Although red light has been almost exclusively used in human pressure ulcer treatment, studies applying blue, green, and red wavelengths more consistently show biological effects using green light. Conclusions: Variations in the application of mechanical, electrical, and radiant energies may be used to modulate wound healing pathways. To 2012, no studies have examined use of these biophysical modalities in combination. Further methodological studies with a systems approach would help define optimal treatment protocols for improved wound healing outcomes in clinical practice.

**Article ID: 30047**

**Title: Hippocampus Gray Matter Atrophy Happens More Seriously in AD Female Patients**

**Name:** Iman Beheshti

**Affiliation:** Integrative Brain Imaging Center, National Center of Neurology and Psychiatry, Japan

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#### **Abstract**

Hippocampus, an area of cortex that plays an important role in thinking, planning and remembering. In Alzheimer's disease (AD), the hippocampus is one of the first areas of the brain to become shriveled and this leads to the memory less, damage in learning and declaration of emotional behaviors. In this paper, we investigate the effects of sex on hippocampus gray matter (HGM) atrophy in four groups of participants, namely, males with

AD (M-AD, n = 34), age-matched normal male controls (M-NC, n= 34), females with AD (F-AD, n=34), and age matched normal female controls (F-NC, n= 34) from ADNI dataset. In this regard, Analysis of variance (ANOVA) is employed to compare means of HGM differences among groups. The statistical results obtained by ANOVA show that the distribution of HGM atrophy is effected by sex. Also there was a significant diagnosis with higher severity in the F-AD compared to M-AD. The AD studies based on the sex may help to figure out the root of AD mechanisms and potentially can be used as an imaging marker for the studies of AD in the future.

**Article ID: 30027**

**Title: Auditory BCI Research using Spoken Digits Stimulation and Dynamic Stopping Criterion**

**Name:** Ying Zhang

**Affiliation:** Hebei University of Technology

**E-mail:** 18722651020@163.com

#### **Abstract**

Auditory brain-computer interfaces (BCI) provide a method of non-muscular communication and control for late-stage amyotrophic lateral sclerosis (ALS) patients, who have impaired eye movements or compromised vision. In this study, random sequences of spoken digits were presented as auditory stimulation. According the protocol, the subject should pay attention to target digits and ignore non-target digits . EEG data were recorded and the components of P300 and N200 were extracted as features for pattern recognition. Fisher classifier was designed and provided likelihood estimates for the Dynamic Stopping Criterion (DSC). Dynamic data collection was controlled by a threshold of the posterior probabilities which were continually updated with each additional measurement. In addition, the experiment would be stopped and the decision was made once the probabilities were above the threshold. The results showed that this paradigm could effectively evoke the characteristic EEG, and the DSC algorithm could improve the accuracy and communication rate.

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# Part V Instructions for Presentations

## Oral Presentation

### Devices Provided by the Conference Organizing Committee:

- Laptops (with MS-office & Adobe Reader)
- Projectors & Screen
- Laser Sticks

### Materials Provided by the Presenters:

- PowerPoint or PDF files

### Duration of each Presentation:

- Regular Oral Session: 15-20 Minutes of Presentation
- Plenary Speech: 40-50 Minutes of Presentation

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## Part VI Hotel Information

### About Hotel

**Ramada Xi'an Bell Tower**（西安华美达兆瑞酒店） is located in the historic "imperial capital", the hotel unique location, adjacent to Xi'an landmark building - the clock tower. Centrally located downtown commercial area, located in the North Tower Avenue subway station and subway station, east of Shaanxi Provincial People's Government, west of Xi'an Municipal People's Government; around all over the large scale commercial, shopping and financial center. Transportation is very convenient, only 30 minutes from the airport, railway station only 5 minutes. Modern and stylish hotel is the theme of intelligent, digital, information-based multi-functional environmental protection as one of the four-star luxury business conference hotel. It is located on the lobby floor, with a total area of 991 square meters, equipped with front desk, lobby bar, concierge, and public rest areas. Design coherence, the modern West, fashion, pour carefully to take the concept of an international element.

**Address:** 79, North Street, Xi'an, Shaanxi, China（西安北大街 79 号）

**Contact Number:** 86-29-87283999

**Fax Number:** 86-29- 87283888

**Webiste:** <http://www.ramadabelltower.com/en/index.asp>



## Part VI Transportation Information

*For non-Chinese attendees, how to get to the hotel from Xi'an Xianyang International Airport:*

1. Take airport bus line 2 from T2 or T3 (Please see attached picture) to Longhai Hotel (Railway Station) (two stops). Then walk to **WULUKOU subway station**(五路口地铁站) to take metro *line 1* to **BEIDAJIE subway station** (北大街地铁站), then walk to [Ramada Xi'an Bell Tower](#) (西安华美达兆瑞酒店)(About 500m).

Bus Line		Line 2
Average Frequency		Every 20 minutes
Place of Departure	Airport	T2: Outside of T2 (arrivals) T3: Opposite T3 in the Ground Transportation Center
	Railway Station	Longhai Hotel
First Bus	Airport	06:30
	Railway Station	06:00
Last Bus	Airport	1:00
	Railway Station	00:00
Ticket Price		RMB 25

2. By taxi (About RMB110, 1.5 hours)

**For non-Chinese attendees, please show the following info to the driver if you take a taxi:**  
请送我到：中国西安市北大街79号西安华美达兆瑞酒店

*For Chinese attendees :*

起始站	交通路线	就近站点	距酒店距离
西安咸阳国际机场	乘坐机场大巴东大街线至西安威尔佳酒店（朱宏路）站下车，乘坐 235 路北大街站下车，步行前往	北大街站（公交车站）	行车约 1 个小时 4 分钟 距离约 35.1 公里
西安北站	乘坐地铁 2 号线由北客站上车，至北大街站下车，步行前往	北大街站（地铁站 B 出口）	约 40 分钟 距离约 12.2 公里
西安火车站	乘坐 706/707 路由火车站上车，西华门站下车	西华门站（公交车站）	距离约 3 公里 打车约 10 元
西安南站	乘坐 4-23 路从火车南站上车，至东长安街西口下车，航天城站上车，乘坐地铁 2 号线（北客站方向）至钟楼站 D 出口下车	钟楼站（地铁站 D 出口）	约 2 小时 距离 31.9 公里
其他参照			
钟楼地铁站 D 口，步行约 6 分钟，距离 361 米			
北大街地铁站 C1 口，步行约 7 分钟，距离 444 米			

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## Contact Us

### Organizing Committee

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Scan me:

