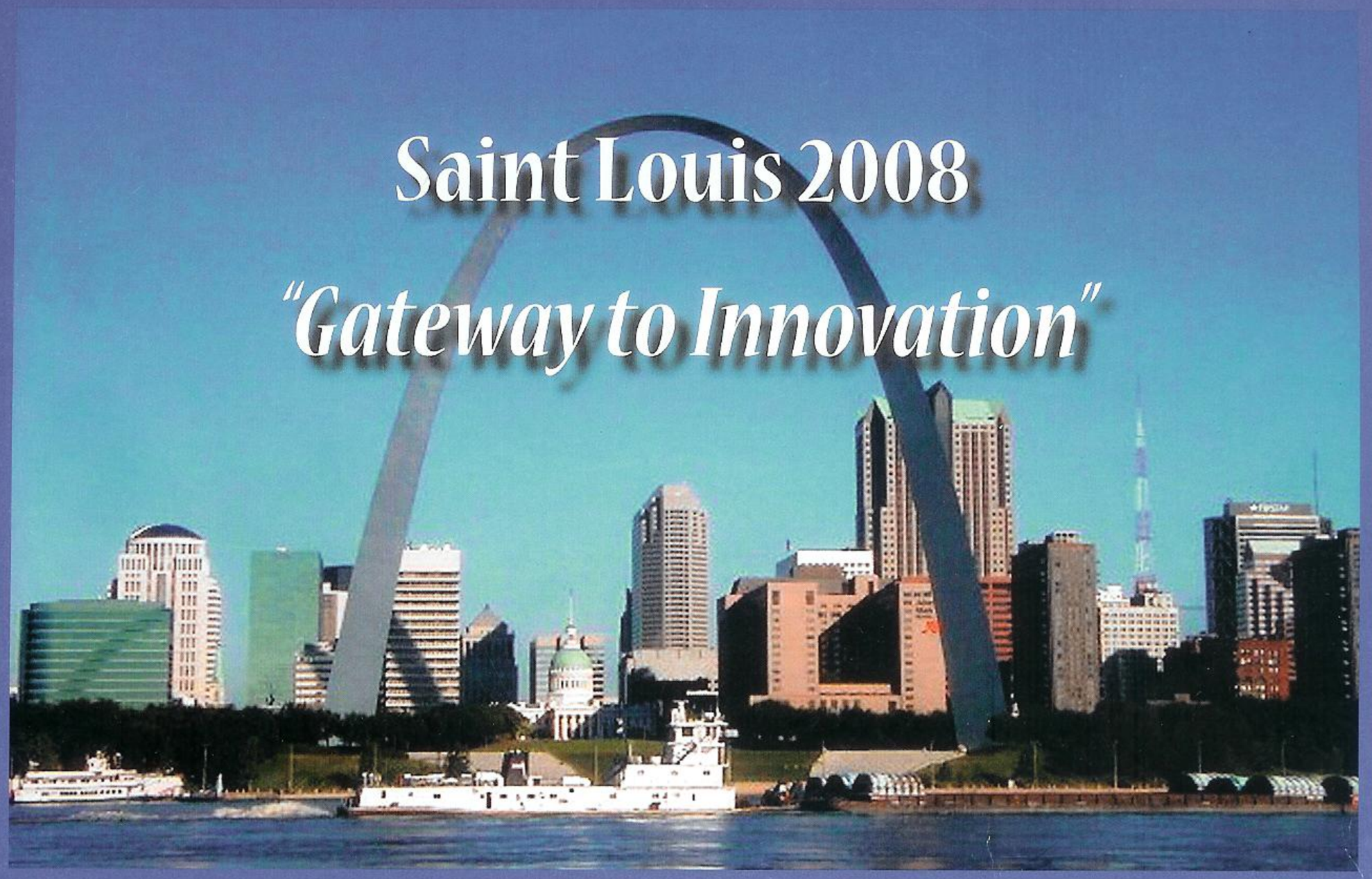
2008 Annual Fall Meeting



BMES

Biomedical Engineering Society

October 1 – 4, 2008

Renaissance Grand Hotel

St Louis, Mo

Hosted by
Washington University
Saint Louis University

Meeting Chair
Frank C-P Yin

Program Co-Chairs
Jin-Yu Shao
Rebecca Kuntz Willits

PROGRAM

P4.85. Polymer Micro-Nano Devices for Applications in Guided Cell Assembly
D. GALLEGO[1], N. HIGUITA[1], S. SHARMA[1], J. LEE[1], J. LANNUTTI[1] AND D. HANSFORD[1]
[1]*The Ohio State University, Columbus, OH*

P4.86. Microfluidic Formation of Lipid Vesicles for Artificial Cell Applications
S. TEH[1] AND A. LEE[1]
[1]*University of California-Irvine, Irvine, CA*

P4.87. Examining the Role of Neureglin-1 in Synaptogenesis Using Microfluidics
A. WU[1], S. KOIRALA[2] G. CORFAS[2] AND A. FOLCH[1],
[1]*University of Washington, Seattle, WA;* [2]*Harvard Medical School, Children's Hospital, MA*

P4.88. Long-Term Maintenance of Immortal Cell-Lines in a Microfluidic Platform
A. VISHWANATHAN[1] AND H. ZERINGUE[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

P4.89. Tunable Microfluidic Devices for Dynamically Controlling Sub-Cellular Environments
N. BHATTACHARJEE[1] AND A. FOLCH[1]
[1]*University of Washington, Seattle, WA*

P4.90. Optimization of a Liquid Crystal-Based Biosensor for the Optical Detection of Sepsis Markers
M. MCCAMLEY[1], M. RAVNIK[2], A. ARTENSTEIN[1], S. OPAL[1], S. ZUMER[2] AND G. CRAWFORD[1]
[1]*Brown University, Providence, RI;* [2]*University of Ljubljana, Ljubljana, Slovenia*

P4.91. Data Reading Ranges of an Implantable Batteryless Wireless Impedance Sensor for GERD Diagnosis
L. HSU[1], W. HUANG[1], T. ATIVANICHAYAPHONG[1], S. TANG[2], H. TIBBALS[2] S. SPECHLER[2] AND J. CHIAO[1],
[1]*The University of Texas at Arlington, Arlington, TX;* [2]*University of Texas Southwestern Medical Center at Dallas, Dallas, TX*

P4.92. Engineering Stationary Gradients Within Microfluidic Stagnant Zones
M. QASAIMEH[1], R. SAFAVIEH[1], C. PERRAULT[1] AND D. JUNCKER[1]
[1]*McGill University, McGill University, Montreal, Canada*

P4.93. Continuous High Gradient Magnetic Separation of E. Coli O157:H7 Cells Using Magnetic Nanoparticles
H. HUANG[1], Y. XIONG[1], C. RUAN[1], M. LI[1], L. COONEY[1] AND Y. LI[1]
[1]*University of Arkansas, Fayetteville, AR*

P4.94. Recirculating Device for QCM Biosensor to Improve the Sensitivity in Detection of E.coli O157:H7
S. LIU[1], J. LIN[1], L. COONEY[1] AND Y. LI[1]
[1]*University of Arkansas, Fayetteville, AR*

Neural Engineering – Poster Session 4
Friday, October 3 *1:30PM - 5:00PM* Majestic D-

P4.95. Stepwise Patterning of Hippocampal Neurons by Electrochemically Switchable Surface
J. KIM[1], S. JEONG[1], Y. NAM[2] AND S. KIM[1]
[1]*Seoul National Univ., Seoul, Korea, Republic of;* [2]*Korea Advanced Institute of Science and Technology, Daejeon, Korea, Republic of*

P4.96. Properties of Extracellular Action Potential Waveforms Recorded fr Auditory Cortex
D. BYREN[1], P. KELLY[1] AND D. BARBOUR[1]
[1]*Washington University, St. Louis, MO*

P4.97. Progress Report on the Integrative Sensor and Stimulator System
J. HE[1], L. HSU[1], T. ATIVANICHAYAPHONG[1], F. AYDIN[1], Y. PENG[1] AND J. CHIAO[1]
[1]*The University of Texas at Arlington, Arlington, TX*

P4.98. Closed-Loop Platform to Generate Multi-Electrode Stimulation Protocols for Neural Interface Devices
A. WILDER[1], B. DOWDEN[1], S. HIATT[1], G. CLARK[1] AND R. NORMANN[1]
[1]*University of Utah, Salt Lake City, UT*

P4.99. Chronic Multi-Contact Surface Recordings from the Cerebellar Co in Behaving Rats
N. SACHS[1], J. GROTH[1] AND M. SAHIN[1]
[1]*New Jersey Institute of Technology, Newark, NJ*

P4.100. A 3-D fMRI Modeling Through Computer Interfaced Programs
Y. GNATYUK[1], H. ESMAILBEIGI[1], K. THULBORN[1] AND P. ROUSCHE[1]
[1]*University of Illinois at Chicago, Chicago, IL*

P4.101. Biomimetic Tactile Feedback for Advanced Prosthetic Limbs
J. FISHEL AND [1]G. LOEB[1]
[1]*University of Southern California, Los Angeles, CA*

P4.102. Self-Stimulation in Rats Using a Wireless Device
C. HAGAINS[1], T. ATIVANICHAYAPHONG[1], J. HE[1], L. HSU[1], Y. PENG[1] AND J. CH
[1]*The University of Texas at Arlington, Arlington, TX*

P4.103. Analyzing the Effect of Stimulus on Rhythmic Pattern Generatio
E. BASHAM[1], W. LIU[1], C. BAKER[2], Z. YANG[1] AND D. PARENT[2]
[1]*Univ. of CA - Santa Cruz, Santa Cruz, CA;* [2]*San Jose State University, CA*

P4.104. Circuit for Generating Asymmetric Current Pulses for *in Vitro* M Magnetic Stimulation
E. BASHAM[1], W. LIU[1] AND Z. YANG[1]
[1]*Univ. of CA - Santa Cruz, Santa Cruz, CA*

New Frontiers – Poster Session 4
Friday, October 3 *1:30PM - 5:00PM* Majesti

P4.105. Single Nanoparticle Detection by DNA Barcoding
T. EUSTAQUIO[1], C. COOPER[1], L. REECE[1] AND J. LEARY[1]
[1]*Purdue University, West Lafayette, IN*

Stepwise Patterning of Hippocampal Neurons by electrochemically switchable surface.

Jin Won Kim[1,3], Se Hoon Jeong[2,3], Yoonkey Nam[3,4], Sung June Kim[1,2,3]

[1]*School of Electrical Engineering, Seoul National University, Seoul, Republic of Korea*
[2]*Interdisciplinary Program in Brain Science, Seoul National University, Seoul, Republic of Korea*
[3]*Nano-Bioelectronics & Systems Research Center, Seoul, Republic of Korea*
[4]*Department of Bio and Brain Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Republic of Korea*

The formation of controlled neural network is essential to study neural signal processing by cultured neural network. To design patterns of neural network, various surface micro-patterning techniques including micro-contact printing and photoresist-based patterning have been used. As an effort to control the network formation in situ, we reported the application of electrochemically switchable surfaces for patterning hippocampal neurons in vitro last year [1]. This year, we will report on the first demonstration of the stepwise patterning of hippocampal neurons for in situ control using the reported approach. The neurites of hippocampal neurons were guided in situ by sequential removal of PLL-g-PEG by electrical pulsing onto the defined electrodes. The characteristics of the patterned networks of neurons will be reported.

[1] J. KIM, S. JEONG, Y. NAM AND S. KIM,"Electrochemical Patterning Of Cell Repulsive And Adhesive Proteins For Patterned Neural Cultures", submitted to 2007 BMES Annual Fall Meeting