

6th Annual Mountain West Biomedical Engineering Conference

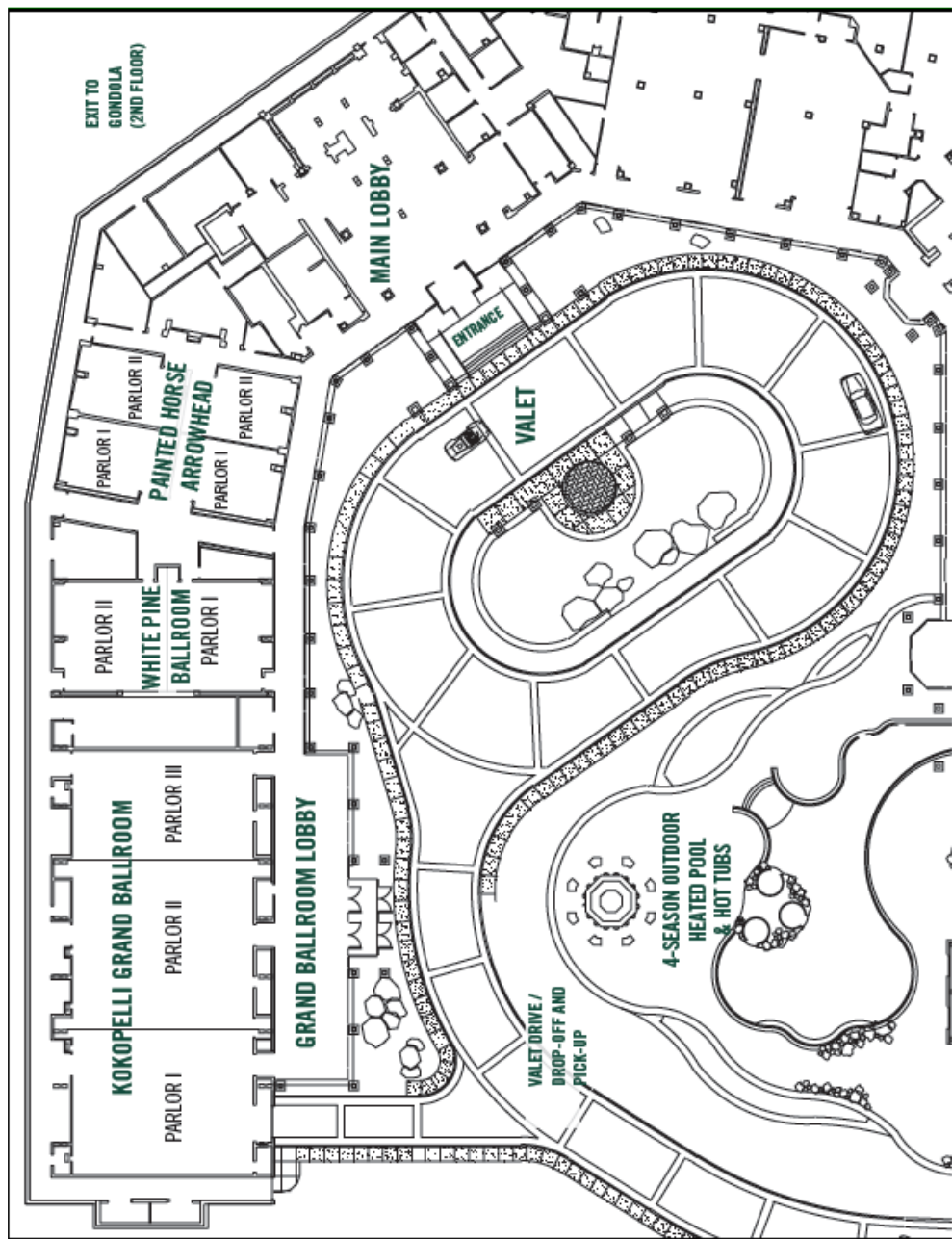


Program of Events

September 10th and 11th, 2010
Grand Summit Hotel
The Canyons Resort
Park City, Utah



Department of
BIOENGINEERING
THE UNIVERSITY OF UTAH



Schedule of Events

Friday, September 10, 2009

1:00 - 1:50 p.m.	Registration	Ballroom Lobby
1:00 - 1:50 p.m.	Poster/Exhibit Setup	Parlors 1 and 3/ Ballroom Lobby
1:50 - 2:00 p.m.	Opening Remarks	Parlor 2
2:00 - 3:30 p.m.	Podium Session I	Parlor 2
	<i>Levacor VAD™ Update: Initiation of US BTT Clinical Trial</i>	
	Pratap Khanwilkar, Ph.D., MBA, WorldHeart Inc.	
	<i>Development and Characterization of 3D Cardiac Tissue Models In-Vitro</i>	
	Richard Lasher, University of Utah, Biomedical Engineering	
	<i>Cardiac Position Sensitivity on Electrocardiograms Using Stochastic Collocation</i>	
	Darrell Swenson, University of Utah, Biomedical Engineering	
	<i>Heterogeneous Electrographic Response of the Myocardium During Ischemia</i>	
	Kedar Aras, University of Utah, Biomedical Engineering	
	<i>Characterization of Multiple High-Channel-Count Neural Interfaces Using Evoked Endpoint Forces</i>	
	Brett Dowden, University of Utah, Biomedical Engineering	
3:30 - 4:15 p.m.	Poster Session I	Parlor 1
4:10 - 4:40 p.m.	Break/Refreshments	Ballroom Lobby
4:30 - 5:15 p.m.	Poster Session II	Parlor 3
5:15 - 6:30 p.m.	Podium Session II	Parlor 2
	<i>Importance of Testing in Biomedical Research</i>	
	Larry Nelson, MBA, Bose ElectroForce	
	<i>Computational Simulations Accurately Predict Microvessel Response to Changes in Matrix Stiffness</i>	
	Lowell Edgar, University of Utah, Biomedical Engineering	
	<i>Anisotropic characterization of spinal ligament material response using a small punch test</i>	
	Daniel Robertson, Brigham Young University, Mechanical Engineering	
	<i>The influence of decorin on the fibrillogenesis and mechanical properties of collagen gels</i>	
	Shawn Reese, University of Utah, Biomedical Engineering	
	<i>A gel filled Intravaginal Transducer for Extended Measurements of Intra-abdominal Pressure</i>	
	Tanner Coleman, University of Utah, Biomedical Engineering	
6:30 - 7:30 p.m.	Keynote Address	Parlor 2
	<i>Toward High-Performance Cortically-Controlled Motor Prosthesis</i>	
	Krishna V. Shenoy, Ph.D, Stanford University	
7:30 - 10:30 p.m.	Evening Reception	Ballroom Lobby
	Entertainment provided by <i>The Blue Wailers</i>	

Schedule of Events

Saturday, September 11, 2010

7:30 - 8:30 a.m.	Breakfast Buffet	Sundial Pavilion
8:30 - 9:30 a.m.	Podium Session III	Parlor 2
	<i>Clinical neurophysiology and the engineering of implantable devices</i>	
	Beth Bagley, Ph.D, Blackrock Microsystems	
	<i>Simulated Overcrowding Extrudes Live Cells from an Epithelium</i>	
	Patrick Loftus, University of Utah, Biomedical Engineering	
	<i>4D MAP MRI Image Reconstruction</i>	
	Jacob Hinkle, University of Utah, Biomedical Engineering	
	<i>Functional Connectivity Model for Regional Specialization of the Insula</i>	
	Michael Ferguson, University of Utah, Biomedical Engineering	
9:30 - 10:15 a.m.	Poster Session III	Parlors 1 and 3
	Refreshments	Ballroom Lobby
10:15 - 11:15 a.m.	Distinguished Lecture	Parlor 2
	<i>Multimodal Probes for Molecular Imaging</i>	
	Angelique Louie, Ph.D, UC Irvine	
11:15 - 11:30 a.m.	Poster & Podium Awards	Parlor 2
	Poster/Exhibit Takedown	Parlors 1 and 3



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The Brain Institute is a coordinating center for neuroscience research and education at the University of Utah.

Speaker Biographies

Krishna V. Shenoy, Ph.D

Prof. Shenoy heads the Neural Prosthetic Systems Lab (NPTL) at Stanford University where his group conducts neuroscience and neuroengineering research to better understand how the brain controls movement, and to design medical systems to assist those with movement disabilities. His neuroscience (systems and cognitive neuroscience) research investigates the neural basis of movement preparation and generation using a combination of electrophysiological (single-electrode and chronic electrode-array recordings in rhesus monkeys), behavioral, computational and theoretical techniques. His neuroengineering (electrical, bio, and biomedical engineering) research investigates the design of high-performance neural prosthetic systems, which are also known as brain-computer interfaces (BCIs) and brain-machine interfaces (BMIs). These systems translate neural activity from the brain into control signals for prosthetic devices, which assist disabled patients by restoring lost function. This work includes statistical signal processing, machine learning, low-power circuits, and real-time system modeling and implementation.

Angelique Louie, Ph.D

Angelique Y. Louie received the B.S. degree from the University of California, Davis, and the M.S. degree from the University of California, Los Angeles, both in electrical engineering. She received the Ph.D. degree in biological sciences from the University of California, Irvine. She held a Postdoctoral Fellowship at the California Institute of Technology, Pasadena. She is currently an Associate Professor in the Department of Biomedical Engineering, University of California, Davis. Her research focuses on the development of multimodal probes for molecular imaging. Recent work from her lab describes paramagnetic quantum dots, dual-mode agents to visualize atherosclerosis, activatable MRI agents, and nontoxic silicon nanoparticles for MR/optical imaging.

Dr. Louie is a member of Tau Beta Pi, the International Society for Magnetic Resonance in Medicine, the Biomedical Engineering Society, the Society of Women Engineers, and the Society for Molecular Imaging.

Poster Sessions

Friday 3:30 - 5:15 p.m.

Saturday 9:30 - 10:15 a.m

1. Diffeomorphic Matching of Cardiac Surface Data
A Alexander, J Blauer, S Joshi
2. Comparison of Binary Conversion Methods to Facilitate the use of a Hough Transform
in Quantifying Actin Filaments
C Andersen, M Yoshigi
3. Computational Modeling of the Basal Ganglia for the Prediction of New Deep Brain Stimulation Therapies for Parkinson's Disease
C Anderson, A Dorval
4. A Comparison of Hexahedral vs. Tetrahedral Elements on Nonlinear Modeling of the Lumbar Spine
T Ashworth, D Reece, G Von Forell, A Bowden
5. Gel encapsulation of kidney proximal tubules improves drug toxicity screening
A Astashkina, B Mann, D Grainger
6. Fractal analysis of the cerebral cortex in Alzheimer's disease
B Brown, J Berberich, R King
7. Prestin Transfected Cells for Microchannel Recordings at Frequencies Exceeding 100 kHz
S Brown, G Dittami, R Rabbitt
8. Forward Mapping Of Myocardial Ischemia From A Novel Transmembrane Source Model
B Burton, D Swenson, D Wang, K Aras, R Macleod
9. Confocal Microscopy-Based Characterization of the 3D Spatial Distribution of Connexin43 in Left Ventricular Cardiac Tissue
E Carruth, D Lackey, R Lasher, R Hitchcock, F Sachse
10. The foreign body response to nerve cuffs is associated with persistent inflammation.
MB Christensen, P Tresco
11. Sustained delivery of tenofovir from polyurethane intravaginal rings
J Clark, U Nagaraja, A Tuitupou, M Clark, D Friend, P Kiser
12. Upstream platelet surface contacts prime platelet for downstream adhesion in vitro.
L Corum, K Meidell, A Cook, V Hlady
13. Antibiotic-Releasing Polymer Coatings On Bone Allograft To Mitigate Orthopedic-Associated Infections
S Davidoff, B Brooks, M Fisher, D Grainger, A Brooks
14. Monitoring Voltage-Sensitive Protein Dynamics using Radio Frequencies
S Dharia, G Dittami, R Rabbitt

16. Pulsed infrared (IR) radiation evoked calcium release in neonatal cardiac myocytes
G Dittami, S Rajguru, R Lasber, R Hitchcock, S Dharia, R Rabbitt
17. Adhesion mapping and XPS analysis of PEO surface density gradients
C Eichinger, N Gooch, V Hlady
18. Gain control in pyramidal neurons using membrane voltage fluctuations and changes in conductance
F Fernandez, T Broicher, A Truong, J White
19. Multiple-Input Single-Output Closed-Loop Isometric Force Control Using Interleaved Intrafascicular Multi-Electrode Stimulation
M Frankel, VJ Mathews, S Meeke, B Dowden, G Clark, R Normann
20. Neuromodulation with coherent, near infrared radiation in a rat model of Parkinson's disease.
M Freck, A Dorval, R Rabbitt
21. A Novel Quantification Method for Analysis of the Regional Distribution of Structural Remodeling of the Left Atrium in Patients with Atrial Fibrillation
G Gardner, N Burgon, N Marrouche, R MacLeod
22. Implantable Polymer Capsule Drug Ring as an Ocular Drug Delivery Modality
N Gooch, C Sharp, H Sant, B Gale, B Ambati
23. Cellular Uptake and Biodistribution of Surface Functionalized Gold Nanorods for Photothermal Therapy
A Gormley, R Robinson, J Hui, A Malugin, A Ray, K Greish, H Ghandebari
24. Effect Of Paclitaxel Combined With Thermal And Ultrasound On Pancreatic Cancer Cells
R Gupta, P Moban, J Shea, N Rapoport
25. Safety of Matrix-Mediated Adenoviral Gene Delivery with Silk-Elastinlike Hydrogels
J Gustafson, R Price, K Greish, H Ghandebari
26. Influence of brain state on spatial extent and frequency of local field potentials in human and cat neocortex
S Hanraban, T Davis, R Parker, K Thomson, B Greger, P House
27. The use of Piezoelectric Film Sensors to Capture and Analyze Obsessive Compulsive Disorder in Rodents
B Hayden, A Dorval
28. Correlation of Physiochemical Characteristics of Geometrically Defined Silica Nanoparticles to Specified Biological Mechanisms
H Herd, A Malugin, H Ghandebari
29. Innovating in vitro models of the foreign body response
D Holt, D Grainger
30. Astrocyte Adhesion and Migration on Dot Gradients of Aggrecan and Laminin
T Hsiao, P Tresco, V Hlady

31. A Preparation for Evaluating Imaging of Cardiac Tissue Using Fiber-Optics Confocal Microscopy
C Huang, R Lasher, A Kaza, R Hitchcock, F Sachse
32. A Rapid, Point of Care Method for Diagnosing Ricin Exposure Using Evanescent Planar Waveguide Technology
J Jensen, K Seo, D Christensen, J Herron
33. Biomechanical characterization of the lung microvascular endothelial glycocalyx: studies with albumin
K Job, R O'Callaghan, R Dull, V Hlady
34. Safety and Pharmacokinetics of a HIV Reverse Transcriptase Inhibitor in Pig-tailed Macaques Using Elastomeric Intravaginal Rings
T Johnson, T Albright, K Watson, R Buckbeitz, Jr, P Kiser
35. Channeled scaffold increases mesenchymal stem cell density in perfusion culture
J Kennedy, S McCandless, A Rauf, R Hitchcock
36. In vivo fracture targeting on a HPMA construct
S Low, H Pan, S Miller, J Kopeček
37. Phenylboronate-Salicylhydroxamate Crosslinked Hydrogels as a pH Responsive Microbiocide Vaginal Drug Delivery Vehicle
A Mahalingam, J Jay, K Langbeinrich, S Shukair, T Hope, L Roban, P Kiser
38. Change in ellipticity of transverse tubules during strain in rabbit ventricular myocytes
T McNary, J Bridge, F Sachse
39. Nanochemically oriented astrocytes direct adjacent nerve cell outgrowth
F Meng, V Hlady, P Tresco
40. Radio-Frequency, Transducer and Tank System Used for Magnetic Resonance Guided High Intensity Focused Ultrasound of Breast Tumors
E Minaglia, R Merrill, U Vyas, A Payne, R Hadley, D Christensen, D arker
41. PerFlexMEA: A multi-electrode array for cell culture on a thin perforated flexible polycarbonate membrane
A Mondal, A Moreno, I Harvey, B Baker
42. Containment System for the Utah Slanted Electrode Array
C Petty, E Gibbons, G Clark, R Normann
43. Comparison of Recombinant Silk-Elastinlike Hydrogels for Viral Gene Delivery with Poloxamers
R. Price, J Gustafson, K Greish, J Frandsen, H. Ghandehari
44. NCX Dominance Determines Propensity for Triggered Activity in a Drug Induced Model of Andersen-Tawil Syndrome
P Radwanski, S Poelzing
45. Novel Chemical Biology Approaches to Modulate Cancer Heparanome and Elucidate their Role in Cancer
K Raman, B Kuberan

46. HPMA Copolymer-Docetaxel-RGDfK Conjugates for Prostate Cancer Therapy
A Ray, N Larson, D Pike, H Bauer, M Grüner, A Malugin, K Greish, H Ghandehari
47. Frequency Analysis of Inward Rectifier Kir 2.1
J Rigby, S Poelzing
48. Finding Relationships Between Neural Battery Assessments and Structural Brain Volume Using Symmetric Partial Least Squares Regression
R Russon, N Singh, S Joshi, R King
49. A New Framework For Analyzing White Matter Maturation In Early Brain Development
N Sadeghi, M Prustawa, J Gilmore, W Lin, G Gerig
50. A Spider Silk-based Protein Block Copolymer Cassette for Medical Device Coating
K Schoen, D Grainger, A Brooks
51. Effects of di-4-ANEPPS on Cardiac Conduction Velocity
K Sciuto, P Larsen, S Poelzing
52. Effect of counter-ion valence on the swelling kinetics of a polyelectrolyte gel
S Sircar, J Keener, Aaron Fogelson
53. Electrode Constitutive Properties Modulate The Brain Tissue Foreign Body Response
J Skousen, B Winslow, Sr., M Merriam, O Srivannavit, G Perlin, K Wise, P Tresco
54. An open-source parametric model of the lumbar vertebrae
S Smith, A Bowden
55. Effects of Temperature and Bending Rate on Biomechanical Response of the Human Lumbar Spine
D Stolworthy, S Zirbel, L Howell, A Bowden
56. Stamped proteoglycans as tools for neuronal outgrowth studies
V Swarup, T Hsiao, K Balagurunathan, V Hlady
57. Measurement of Defibrillator Surface Potentials: The Validation of a Predictive Defibrillation Computer Model
J Tate, J Stinstra, T Pilcher, R MacLeod
58. In Vivo Nanotoxicity of Dendritic and Silica Constructs
G Thiagarajan, K Greish, H Herd, R Price, H Bauer, T Yu, A Anwar, H Ghandehari
59. Software Development for Time-Frequency Analysis of Magnetic Source Data
W Thompson, A Dorval
60. Factors influencing microstimulation in a chronically implanted microelectrode array
K Torab, T Davis, P House, R Normann, B Greger
61. Using subject-specific spatial priors from longitudinal data to improve segmentation quality in pediatric MRI images
A Vardhan, G Gerig

62. Gap Junctions and Cardiac Conduction: Is Myocardial Edema the Missing Link?
R Veeraraghavan, S Poelzing
63. Non-invasive patient-specific acoustic property estimation for treatment planning in MR-guided focused ultrasound surgery
U Vyas, N Todd, A Payne, D Parker, R. Roemer, D Christensen
64. Noninvasively Computing Myocardial Ischemia from Body-Surface ECG Recordings: A Simulation Study
D Wang, R Kirby, R MacLeod, C Johnson
65. Breast vasculature visualization using MRI
Y Wang, G Morrell, D Parker
66. Inhibiting osteoclast-mediated excessive bone resorption using small interfering RNAs
Y Wang, D Grainger
67. DTI reconstruction using GRAPPA formulation
C Welsh, E Hsu, E DiBella
68. Use of the Inherent Electric Properties of Tendon to Measure Strain
C West, A Bowden
69. Frustrated Total Internal Reflection for Small Animal Behavioral Assays
A Wilsie, A Dornal
70. Coating of 1-bromoperfluorooctane (PFOB) emulsions using Poly-L-Lysine and Chitosan
C Wu, A Ostifan
71. Intervertebral disc degeneration alters lumbar spine segmental stiffness in all modes of loading under a compressive follower load
S Zirbel, DK Stolworthy, E Dodgen, A Bowden, L Howell

Thank you to the Conference Committee

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