



The 1<sup>st</sup> Annual Mountain West  
Biomedical Engineering Conference  
Snowbird, UT. September 16-17, 2005

Sponsored by:

The Department of Bioengineering, University of Utah

W. L. Gore and Associates, Inc.



16 September, 2005

Welcome to the 2005 Mountain West Biomedical Engineering Conference at Snowbird, Utah. In this Program, you will find:

- Program Agenda
- Biography of Keynote Speaker, Alfred E. Mann
- List of Podium Presentations
- List of Poster Presentations

The conference is designed to highlight some of the biomedical engineering and science at the major academic institutions in Utah, to provide a forum for graduate and postdoctoral students to report their work, and to strengthen the network of bioengineers, scientists, and entrepreneurs in the Mountain West.

I would like to thank Mr. Mann for traveling to Utah to share some of the wisdom he has gained from building successful biomedical device companies. I would also like to thank W.L. Gore and Associates, financial sponsors, and the organizing committee (P. Tresco, J. Weiss, R. MacLeod) for their role in making the conference possible.

Enjoy the events,

Richard Rabbitt  
Professor and Chairman  
Department of Bioengineering  
University of Utah

The on-line version of the program includes abstracts (see <http://www.bioen.utah.edu>).



## Alfred E. Mann

Keynote Address: Friday 16 September, 2005, 7:00 p.m., Snowbird Cliff Lodge, Ballroom 1.

### Creating a Winning Biomedical Device Company

Alfred E. Mann serves as Chairman of the Board and CEO of MannKind Corporation, a diversified biopharmaceutical company focused on the development of novel therapeutics and drug delivery technologies for treatment of diabetes, cancer, autoimmune and inflammatory diseases. Mr. Mann founded the company in 1993 and serves as Chairman and co-CEO of Advanced Bionics Corporation (ABC), now a Boston Scientific Company. ABC is a developer, manufacturer and distributor of cochlear implants for the restoration of hearing to the deaf and a broad range of neurostimulation systems for various neural deficits such as chronic pain, migraines, incontinent urges, angina, etc.

Mr. Mann also founded and served as the Chairman of the Board and Chief Executive Officer of MiniMed Inc. from its incorporation in 1993 until August 2001 when it was acquired by Medtronic, Inc. MiniMed develops, manufactures and distributes microinfusion systems and continuous glucose monitoring systems that have revolutionized the treatment of Type 1 diabetes. Mr. Mann was also the founder and until August 2001 was Chairman of the Board of Medical Research Group, Inc. (MRG), a manufacturer of implantable medication infusion systems and developer of a long term glucose monitoring system and prosthetic artificial pancreas, also acquired by Medtronic, Inc. in 2001.

Mr. Mann also founded and was Chairman of the Board and CEO of Pacesetter Systems, Inc., which developed, manufactured and distributed cardiac pacemakers, from 1972 until 1985 when it was acquired by Siemens, AG. From 1985 to September 1992, Mr. Mann continued to serve as Chairman and CEO of the successor company, Siemens-Pacesetter, Inc., Pacesetter is now the Cardiac Rhythm Management unit of St. Jude Medical. Prior to 1972, he was President of Spectrolab, an electro-optical and aerospace systems company, and Heliotek, a semiconductor and electro-optical components manufacturer. Mr. Mann founded these companies in 1956 and 1960, respectively, sold them to Textron Inc. in 1960 and continued to lead them until 1972, when he left for Pacesetter. They are now part of the Boeing Company.

# Alfred E. Mann

## continued

Mr. Mann also founded and is non-executive Chairman of (i) Second Sight, which is developing a visual prosthesis to restore sight to the blind; (ii) Implantable Acoustics, which is developing implantable hearing aids; (iii) NeuroSystec, which is exploring drug therapies to treat tinnitus and other audiologic problems; (iv) Bioness, which is involved in prosthetics for electrostimulation to address functional neural deficits; (v) Quallion, which develops, manufactures and markets advanced batteries for medical, aerospace and military applications, and (vi) Stellar Microelectronics, which produces micro-circuit assemblies.

Mr. Mann is currently Chairman of the Board of Trustees of the Alfred Mann Foundation and of the Alfred Mann Institute at the University of Southern California, medical research foundations founded and endowed principally by Mr. Mann. Since March 1998, Mr. Mann has served as a Trustee for the University of Southern California and as a member of the Board of Overseers of the Keck USC School of Medicine. Mr. Mann also serves as the Chairman of the Southern California Biomedical Council, a nonprofit association dedicated to the fostering of the biomedical industry in the Los Angeles Metropolitan area. Mr. Mann holds B.A. and M.S. degrees in physics from the University of California, Los Angeles and honorary doctorate degrees from the University of Southern California, The Johns Hopkins University and Western University. Mr. Mann is a member of the National Academy of Engineering and has received dozens of honors including the following:

Group Achievement Award (NASA; 1981); Exceptional Public Service Award (NASA 1984); Pioneer in Cardiac Pacing (Cardiostim, 1988); Master Entrepreneur of the Year (Los Angeles, 1996); Arthur Anderson Award for Fostering Innovation (Southern California, 1996); Citation Award; Engineer of the Year (UCLA, 1997); APEX Award for Outstanding Product Design of the Year (for MiniMed Insulin Pump) (The Management Roundtable, 1997); Father of the Year (Juvenile Diabetes Foundation, 1998); Lifetime Achievement Award (Independent Living Center of So. California, 1998); Eleanor Roosevelt Humanitarian Award (League for the Hard of Hearing, 1998); Pioneer in Cardiac Pacing (50th Anniversary of Cardiostim, 1998); Man of the Year (San Fernando Valley Economic Alliance, 1998); Appreciation Award from The Children of PADRE (PADRE Foundation, 1998); School of Engineering Award (USC, 1999); Spirit of Edison Award for Community Service (Thomas Edison State College, 1999); Man of the Year (WISE Senior Services, 1999); Vision of the Future Award (RP International, 1999); Humanitarian of the Year (House Ear Institute, 1999); Named "One of the 10 Most Influential People on the Tech Coast (Los Angeles Times, 1999); Reynolds Society Achievement Award (Harvard University, 1999); Golden Platter Honoree (American Academy of Achievement, 2000); Fellow of the American Institute of Medical and Biological Engineering (2000); Heart of a Child Award (Cardiac Arrhythmia Research and Education Foundation, 2000); Elie Wiesel Humanism in Healing Award (Western University) 2002; Business Person of the Year Award (Los Angeles Business Journal, 2003); Albert Schweitzer Leadership Award (Hugh O'Brian's Youth Organization, 2003); Ernest Borgnine Spirit Award (American Veterans Assoc., 2003); Business Leader and Humanitarian of the Year Award (Jewish Vocational Service, 2004); Albert Einstein Award for Outstanding Achievement in the Life Sciences (Life Sciences, 2004); Phoenix 2004 Innovator Award (Phoenix Medical Device and Diagnostic Conference, 2004); Diabetes Innovator Award (Diabetes Technology Conference, Philadelphia, 2004); Case Western Reserve University, Deima Lecture Series (Engineering for Success, 2004); University of California San Francisco, Robert A. Schindler, M.D. Endowed Lecturer, 2004; Leader of Today Honoree, UCLA Health Services Alumni Association (UCLA, 2005); Research Professor (University of Southern California, 2002); Adjunct Professor (University of California Los Angeles, 2004) Adjunct Professor, Dept. of Bioengineering (Univ. of California Los Angeles, 2005); Honorary Doctor of Humane Letters degree (University of Southern California, 2001); Honorary Doctor of Humane Letters degree (The Johns Hopkins University, 2001); Honorary Doctor of Humane Letters degree (Western University, 2002); Member, National Academy of Engineering (2000)

# The Agenda

## Day 1. Friday, 16 Sept., 2005

Location: Snowbird Cliff Lodge. Ballrooms 1-3. Utah.

- 1:00-5:00 pm **Check-in.** (Cliff Lodge, Snowbird)
- 5:00-7:00 **Poster Setup.** (Ballroom 2 & 3)
- 7:00-7:10 **Welcoming Remarks:** Richard D. Rabbitt (Ballroom 1)
- 7:10-8:00 **Keynote Address: Alfred E. Mann**  
*"Creating a Winning Biomedical Device Company"*
- 8:00- **Getting Acquainted Mixer / Reception**  
Informal Poster Session

## Day 2. Saturday, 17 Sept., 2005

- 7:00-8:00 am **Breakfast.** (Cliff Lodge, Golden Cliff/Eagles)
- 8:00-8:05 **Welcoming Remarks:** Patrick A. Tresco (Ballroom 1)
- 8:05-10:05 **Podium Session 1**  
Session Chair: Patrick A. Tresco
- Balakrishnan, Santosh - *Development of a Basic Life Support System*
- Bartholomeusz, Daniel – *Rapid Prototyping of a Centrifugal Blood Separation and Plasma Delivery System for Multi-Analyte Detection*
- Leng, Bing – *A Rabbitt Model for Evaluating Thrombosis Reduction by Surface-Targeted Recombinant Antithrombin IIIs*
- Anderson, Andrew – *Finite Element Modeling of Hip Joint Biomechanics*
- Rajguru, Suhrud – *Origin and Treatment of Benign Paroxysmal Positional Vertigo*
- Breneman, Kathryn – *Contribution of Cilia to Hair-Cell Capacitance Modulation During Mechanotransduction*
- Sun, Luis Cheng – *Molecular Mechanisms of Endothelial Cell migration under Cyclic Stretch*
- Krishnan, Laxminarayanan – *Alterations in Gene Expression and Mechanical Properties due to Angiogenesis in a 3-D Collagen Construct*
- Zhou, Jiaye – *Influence of Polymer Physicochemical Properties on Cellular Kinetics of Gene Delivery*
- Hui, HJ – *Influence of Transfer Site Variation IN Moment Arms of the Flexor Digitorum Longus*
- 10:05-10:20 **Morning Break**

# The Agenda

## Day 2 continued. Saturday, 17 Sept., 2005

Location: Snowbird Cliff Lodge. Ballrooms 1-3. Utah.

10:05-10:20 **Morning Break**

10:20-12:00 **Podium Session 2** (Ballroom 1)

Session Chair: Patrick Kiser

Khot, Prasanna – *Biofilm Resistance to Amphotericin B Results from Differential Regulation of Ergosterol and  $\beta$ -1, 6 Glucan Pathways in a Nutrient Depleted Subpopulation*

Leung, Braden – *Brain Tissue Response to Implanted Microelectrodes: A Comparison of Two Rat Strains*

Stevens, Brian – *Strategies to Enhance the Bone-bonding of Metal Orthopedic Implants*

Kuwahara, Hiroyuki – *Automatic Abstraction Methodology for Genetic Regulatory Networks*

Blood, Philip – *Molecular Dynamics Simulations of BAR Domain Binding to Phospholipid Membranes*

Kim, Hojin – *The Role of Attached Polymer Chains on the Vibrational Relaxation of a C60 Fullerene in Aqueous Solution*

Geneser, Sarah – *The Influence of Stochastic Organ Conductivity in 2D ECG Forward Modeling: A Stochastic Finite Element Study*

Engelman, Zoar – *Ventricular Repolarization in An Acute Canine Model of Pharmacologically Induced Long QT Syndrome*

12:00-1:00pm **Lunch** (Snowbird, Golden Cliff/Eagles)

1:00-1:50 **Invited Speaker: John M. Hoffman, M.D.** (Ballroom 1)  
*"Molecular Imaging"*

1:50-3:30 **Poster Session** (Ballroom 2 & 3)

3:00-3:30 **Afternoon Break**

# The Agenda

## Day 2 continued. Saturday, 17 Sept., 2005

Location: Snowbird Cliff Lodge. Ballrooms 1-3. Utah.

3:00-3:30 **Afternoon Break**

3:30-5:00 **Podium Session 3** (Ballroom 1)  
Session Chair: Rob MacLeod

*Alston, SM -- A Rapid Inexpensive Method to Make Autolotous Glue*

*Hwang, DoSik – An Accelerated MI-EM Algorithm Using Bigger Step Size*

*Allred, Richard – Partitioned-Image Filtering for Reduction of Gibb's Artifacts*

*Moon, Sung – A Highly Detailed Quadric-Based Analytical Phantom for Efficient Cardiac CT Simulations*

*Veress, Alexander – Normal and Ischemic NCAT SPECT Simulations based on Physiologically Realistic Left Ventricle FE Models*

*Pack, Nate – Regional Myocardial Perfusion and Strain with MRI*

*Laicher, Gernot – Nuclear Magnetic Resonance Studies of Hyprepolarized  $^3\text{He}$  as Part of the "Virtual Lung" Project*

*Lew Seok – Epileptogenic Source Localization for Open Skull Head Model of Epilepsy by Independent Component Analysis and Inverse Dipole Fit Method*

*Rosenbaum, Teri – Effect of Femoral Component on the Structure and Mineral Properties of Cortical Bone Following Total Hip Arthroscopy*

5:00-5:10 **Closing Remarks:** Patrick A. Tresco

5:10-5:30 **Take-down Posters**

# The Agenda

## Posters

Location: Snowbird Cliff Lodge. Ballrooms 2-3. Utah.

Akyuz et al. A Biomechanical Comparison of Thoracic Spine Range of Motion Using Various Fusionless Scoliosis Treatment Strategies Ephraim Akyuz, MS; John T. Braun, MD; Kent N. Bachus, PhD. Department of Orthopedics, University of Utah.

Alston et al. A Rapid Inexpensive Method to Make Autologous Fibrin Glue. Alston SM, Kim M, Solen KA, Department of Chemical Engineering, Brigham Young University.

Barker et al. Learning Genetic Regulatory Network Connectivity from Time Series Data, Nathan Barker, Hiroyuki Kuwahara, Chris Myers. University of Utah.

Black et al. Power and Command Transfer in a Wireless 100-Electrode Neural Recording System Daniel J. Black, Paul T. Watkins, Ryan Kier, Robert Lovejoy, Richard Normann, Florian Solzbacher, and Reid R. Harrison, Departments of Electrical and Computer Engineering, Bioengineering, University of Utah.

Brokopp et al. A Bioreactor for Imposing Equibiaxial Strain and Vibrational Stresses to Cultured Cells. Chad Brokopp, Jeff Wolchok, Patrick Tresco Department of Bioengineering, University of Utah.

Brown et al. Electric Impedance Flow Cytometry Measurements of Liposomes Containing a Temperature Dependent Conductivity. Scott D. Brown, H. Edward Ayliffe, Greg Dittami, Sameera Dharia and Richard D. Rabbitt. Bioengineering Department, University of Utah.

Brownell et al. Comparison of Three Algorithms for Multi-Motor Unit Detection and Waveform Marking Alex Brownell, Department of Biomedical Engineering Mark Bromberg, M.D. PhD., Department of Neurology Oliver Ni, M.D., Department Neurology University of Utah.

Callahan et al. Semitelechelic HPMA Copolymers Possessing the Lipophilic Cation Triphenylphosphonium Are Internalized by Endocytosis and Do Not Localize to Mitochondria. Jon Callahan and Jindrich Kopecek, Departments of Bioengineering, Pharmaceutics and Pharmaceutical Chemistry, University of Utah.

Chen et al. Chronic Inflammation and Neuronal Loss Accompanies the Long-term Foreign Body Response to Planar Michigan Style Silicon Microelectrode Arrays Implanted in Rat Cortex. Xiaoyu K. Chen, Braden K. Leung, Roy Biran and Patrick A. Tresco. Keck Center for Tissue Engineering, Department of Bioengineering, University of Utah.

Cuchelkar et al. Synthesis and Biological Evaluation of Nuclear-Targeted HPMA Copolymer-bound Mesochlorin e6. V. Cuchelkar, A. Nori, C. Gervelas, C. Lim, P. Kopeckova, J. Kopecek. Departments of Bioengineering, Pharmaceutics and Pharmaceutical Chemistry, University of Utah.

Dayande et al. Potential of mean force for penetration of C60 in DMPC lipid bilayer and monolayer. A molecular dynamics simulations study. Hemali Davande, Chakravarthy Ayyagari, Dmitry Bedrov, Grant D. Smith, Department of Chemical Engineering, University of Utah.

Dharia et al. Single Cell Electrophysiology Using Micro-Domain Voltage Clamp. S. Dharia, H.E. Ayliffe, S. Brown, G. Dittami, A. Pungor, D. Christensen, R.D. Rabbitt, Department of Bioengineering, University of Utah.

Diaz et al. Ultrasonic Drug Release from Micelles and Cavitation Mario A. Diaz de la Rosa, Ghaleb Husseini, Douglas A. Christensen, William G. Pitt Chemical Engineering Dept., Brigham Young University, Chemical Engineering Dept., American University of Sharjah, United Arab Emirates, and Dept. of Bioengineering, University of Utah.

Dittami et al. Hydrogel-Actuated, Impedimetric Biochemical Sensor Greg Dittami, H.E. Ayliffe, Patrick Kiser, Douglas Christensen, Scott Brown, Sameera Dharia, Richard D. Rabbitt. Dept. of Bioengineering, University of Utah.

Dowden et al. Multi-site EMG provides feedback for characterization of intrafascicular multielectrode stimulation. BR Dowden, DA McDonnall, AM Wilder, NAT Brown, GA Clark and RA Normann. Departments of Bioengineering and Orthopaedics, and the School of Computing, University of Utah.

# Posters Cont.

Endrizzi et al. Site-Specific, Oriented Immobilization of Proteins to Surfaces via a Metal Catalyzed Dityrosine Crosslink Betsy J. Endrizzi, Patrick F. Kiser, and Russell J. Stewart Department of Bioengineering, University of Utah.

Escudero et al. Poly(ethylene terephthalate)(PET) and poly(tetra fluoroethylene)(PTFE) surface plasma modification for coupling antibodies. Y. Escudero, B.J. Tyler, Dept. of Chemical Engineering, University of Utah.

Fountain et al. Robotic Needle Steering System for Prostate Cancer Treatment. L. Fountain, K. Maloney, A. Nguyen, L. Schell and A. Wilsey. Department of Bioengineering, University of Utah.

Fox et al. Detection of Drug Effects on Phospholipid Membranes in Optically Trapped Vesicles by Confocal Raman Microscopy Christopher B. Fox, Grant A. Myers, Joel M. Harris. Departments of Bioengineering and Chemistry, University of Utah.

Franklin et al. Iridium Oxide Reference Electrodes for Neurochemical Sensing with MEMS Microelectrode Arrays. R. K. Franklin, M. D. Johnson+, K. A. Scott+, D. R. Kipke+, and R. B. Brown\* Departments of Electrical Engineering and Computer Science, University of Michigan, Ann Arbor, MI and Departments of Biomedical Engineering, and Electrical and Computer Engineering, University of Utah.

Gao et al. Ultrasound-Triggered Drug Targeting to Tumors and Effects on Biodistribution In Vivo. Z. Gao, H.D. Fain and N. Rapoport, Department of Bioengineering, University of Utah.

Geneser et al. Sensitivity analysis of cardiac electrophysiological models using polynomial chaos. S.E. Geneser, R.M. Kirby and F.B. Sachse. CVRTI, School of Computing and Department of Bioengineering, University of Utah.

Gupta et al. Thermo and pH sensitive hydrogels: An approach towards bioresponsive microbicides Kavita Gupta, Scott Barnes, Joseph Leyba, Rachel Tangaro, Meredith Roberts, Patrick Kiser Bioengineering Department, University of Utah.

Henninger et al. Decorin proteoglycans do not resist shear deformation in ligament. H.B. Henninger, C.J. Underwood, T.J. Lujan, B.M. Thompson, J.A. Weiss. Dept. of Bioengineering, University of Utah.

Hoaglin et al. Preliminary study of redox behaviors of metal ions associated with bacterial surface Nicholas Hoaglin, Michael Grover, Michael Retford, Anhong Zhou Department of Biological and Irrigation Engineering, Utah State University.

Howard et al. Ultrasonically-Enhanced Chemotherapeutic Treatment of Mouse Lymphosarcoma by Micellar Encapsulated Paclitaxel Bryan Howard, Heidi D. Fain, Zhonggao Gao, Natalya Rapoport. Dept. of Bioengineering, University of Utah.

Huang et al. Analytical reconstruction for helical cone-beam SPECT with non-uniform attenuation correction. Q. Huang, G.L. Zeng and G. T. Gullberg. Dept of Radiology and Bioengineering, University of Utah.

Hui et al. Influence of Transfer Site Variation in Moment Arms of the Flexor Digitorum Longus. HJ Hui, NAT Brown and TC Beals. Orthopaedic Research Laboratory and Dept. of Bioengineering, University of Utah.

Iwamoto et al. Remodeling of vascular endothelial cells under the influence of fluid shear stress and matrix proteins. M. Iwamoto, I. Joung, M. Li and Y. Shiu. Dept. of Bioengineering. University of Utah.

Johnson et al. Selection of Specifically Binding Peptides to the B-Cell Lymphocyte Antigen CD20. Russell Johnson, Jindrich Kopecek, Departments of Bioengineering, Pharmaceuticals and Pharmaceutical Chemistry. University of Utah.

Kamaev et al. Cell sensitivity to ultrasound: effect of the anticancer drug and cell phenotype. Pavel P. Kamaev and Natalya Rapoport. Dept. of Bioengineering, University of Utah.

# Posters Cont.

Kaneshiro et al. Synthesis and In Vivo Study of (Gd-DTPA)-co-(L-Cystine Bisalkylamide) Copolymers As Biodegradable Macromolecular MRI Contrast Agents. T. K. Kaneshiro, T. Ke, J. Guo, D.L. Parker, and Z.-R. Lu. Departments of Pharmaceutics and Pharmaceutical Chemistry, and Radiology, University of Utah.

Kier et al. A Low-Power 433 MHz Transmitter for an Implantable Neural Recording System. Ryan J. Kier, Paul T. Watkins, Daniel J. Black, Robert Lovejoy, Richard Normann, Florian Solzbacher, and Reid R. Harrison. Departments of Electrical and Computer Engineering, and Dept. of Biomedical Engineering, University of Utah.

Kim et al. Microfluidic DNA extraction array with patterned AlOx membrane. Jungkyu Kim, Karl V. Voelkerding, Bruce K. Gale. Departments of Bioengineering, Mechanical Engineering, and Experimental Pathology, University of Utah.

Ledbetter et al. Construction of a Physical Model Neuron for a Science Center. Noah Ledbetter, Joseph D. Andrade. Department of Bioengineering, University of Utah.

Lee et al. Solid Phase Synthesis of Peptide Crosslinkers for Enzyme-Degradable Biomaterials Chang-won Lee, Kavita Gupta, Meredith Roberts and Patrick Kiser. Department of Bioengineering, University of Utah.

Li et al. Pairwise fullerene C60 interactions inside DMPC lipid bilayer. Liwei Li, Dmitry Bedrov, and Grant D. Smith. Department of Materials Science & Engineering and Department of Chemical Engineering, University of Utah.

Lujan et al. Effect of ACL Transection on MCL Strains During Anterior Tibial Translation and Valgus Rotation. Trevor J. Lujan, Brent M. Thompson, Benjamin J. Ellis and Jeffrey A. Weiss. Department of Bioengineering, University of Utah.

Madsen et al. Validation of a flat-sheet model of hydrophilic semipermeable membranes. Ben Madsen, David W. Britt, Floyd Griffiths, Cheryl Ford, Dave Thomas. Fresenius Medical Care, Ogden UT, and Department of Biological and Irrigational Engineering, Utah State University.

Mangum et al. High Resolution Optical Imaging of Axon Guidance Receptors in Zebrafish Retinal Axons. Ben Mangum\*†, Chi-Bin Chien†, and Jordan M. Gerton\* Department of Physics\* and Department of Neurobiology and Anatomy†, University of Utah.

McDonnall et al. Recent advances towards a motor neuroprosthetic device for spinal cord injury patients. Daniel McDonnall, Gregory A. Clark, Brett R. Dowden, Andrew M. Wilder, Nicholas Brown and Richard A. Normann. Departments of Bioengineering and Orthopaedics, and the School of Computing, University of Utah.

McEwen et al. Electrochemical and surface plasmon resonance detection of pathogenic DNA. Gerald D. McEwen, Michael Grover and Anhong Zhou. Department of Biological and Irrigation Engineering, Utah State University.

Mohan et al. Towards the development of a multi-analyte kidney chip to measure metabolites related to renal failure. Praveena Mohan and Joseph D. Andrade. Department of Bioengineering, University of Utah

Moore et al. Differentiation of endothelial progenitor cells under fluid shear stress. T.J. Moore, J.A. Jensen and Y. Shiu. Department of Bioengineering, University of Utah.

Narasimhan et al. Digital pulsed force mode adhesion mapping of biological samples. Gopinath Narasimhan, David W. Britt, Gerald N. Hodgkinson and Vladimir Hlady. Department of Biological and Irrigation Engineering, Utah State University and Department of Bioengineering, University of Utah.

Nesse et al. Neural network smarts: Lessons from the hermissenda eye. William H. Nesse, Christopher R. Butson and Gregory A. Clark. Depts. of Mathematics and Bioengineering, Univ. of Utah.

Patell et al. Enhanced endothelialization for vascular tissue engineering. H. Patel<sup>1</sup>, E. Warnock<sup>1</sup>, S. Su, C. Patterson, and K.T. Nguyen. Utah State University, University of Texas Southwestern Medical Center at Dallas and UT Arlington, and University of North Carolina.

# Posters Cont.

Perica et al. Support Vector Machine Training for Adverse Drug Event Detection. Karlo Perica, John Hurdle, David Price. Yale University and VA Medical Center, University of Utah.

Pollock et al. Age-Dependent Increased Brain Tissue Response to Implanted Michigan Style Silicon Microelectrode Arrays. Amanda L. Pollock, Xiaoyu Chen, Braden Leung, Tracy Williamson, and Patrick Tresco. Keck Center of Tissue Engineering, Department of Bioengineering, University of Utah.

Prasad et al. Measurement of personal biopotentials as a science center learning experience. Rashmi Prasad, Joseph D. Andrade, Department of Bioengineering, University of Utah.

Ramachandran et al. Engineering Peptide-based Biomaterials S. Ramachandran, Y. Tseng, P. Flynn, Jill Trehwella, Y. B. Yu. Departments of Pharmaceutics & Pharmaceutical Chemistry, Bioengineering and Chemistry, University of Utah; and the Department of Chemical Engineering, University of Florida.

Roberts et al. Catalyst-free chemistry for the in situ gelation of microbicidal vehicles. Meredith C. Roberts, Patrick F. Kiser. Department of Bioengineering, University of Utah.

Rosenbaum et al. Effect of the Femoral Component on the Structure and Mineral Properties of Cortical Bone Following Total Hip Arthroplasty. T. Rosenbaum et. al. Departments of Orthopedics and Bioengineering, University of Utah.

Rust et al. Feasibility of rapid dual-tracer  $^{62}\text{Cu}$ -PTSM +  $^{62}\text{Cu}$ -ATSM PET imaging of tumor blood flow and hypoxia. Rust, TC and Kadmas, DJ. Departments of Radiology and Bioengineering, University of Utah.

Sant et al. Field programming in microscale electrical field flow fractionation. H.J. Sant and B.K. Gale. Departments of Bioengineering and Mechanical Engineering, University of Utah.

Shi et al. High-Resolution Myocardial Fiber Orientation Mapping in the Intact Mouse Heart. Yundi Shi, Yi Jiang, Edward W. Hsu. Dept. of Bioengineering, University of Utah and Dept. of Biomedical Engineering, Duke University.

Shome et al. Dispersion of Activation Times in the Ischemic Canine Myocardium: The Role of Pre-Conditioning. Shibaji Shome, Jeroen Stinstra, Bonnie Punske and Rob MacLeod. Dept. of Bioengineering, CVRTI and SCI, University of Utah.

Stevens A. et al. Fluorescence correlation spectroscopy reveals biophysical structure of lung endothelialglycocalyx: the canopy model. Andrew Stevens, Vladimir Hlady, and Randal O. Dull, Departments of Bioengineering and Anesthesiology, University of Utah.

Stevens, M. et al. Structure and Crosslinking Chemistry of the tube cement of *Phragmatopoma californica*. Stevens, Mark E. and Stewart, Russell J. Department of Bioengineering, University of Utah.

Sundberg et al. DNA Melting Analysis on a Nano-Volume Scale. Scott O. Sundberg, Carl T. Wittwer, Bruce K. Gale. Departments of Bioengineering, Pathology, and Mechanical Engineering, University of Utah.

Vaidya et al. Non-invasive In Vivo Imaging of a Polymeric Drug Conjugate Using Contrast Enhanced MRI. Anagha Vaidya, T. Ke, Y. Feng, J. Guo, Zheng and Rong Lu. Departments of Pharmaceutics and Pharmaceutical Chemistry, Material Science and Engineering, Radiology, University of Utah.

Walsh et al. Preventing Ostia Scarring After Sinus Surgery Using a Novel *In Situ* Crosslinkable Hydrogel. Jennifer F. Walsh, Xiaozhen Shu, Richard R. Orlandi and Glenn D. Prestwich. Departments of Med. Chem. and Bioengineering, University of Utah.

Warran et al. The Development of a Model Implant System for the Examination of the Biocompatibility of Chronically Implanted, Recording Electrodes in Cerebral Cortex David J. Warren, Brent D. Winslow, Heather Richardson, Daniel R. Merrill, & Patrick A. Tresco Keck Center for Tissue Engineering, Department of Bioengineering, University of Utah.

Watkins et al. Signal Amplification, Detection, and Digitization in a Wireless 100-Electrode Neural Recording System. Paul T. Watkins, Ryan Kier, Robert Lovejoy, Daniel J. Black, Richard Normann, Florian Solzbacher and Reid R. Harrison. Departments of Electrical and Computer Engineering, and of Bioengineering, University of Utah.

# Posters Cont.

- Williams et al. Development of a real-time DNA diagnostic array platform with improved specificity. Layne D. Williams, Murat Okandan, Steve Blair. Departments of Bioengineering, and Electrical and Computer Engineering, University of Utah and Sandia National Laboratories.
- Williamson et al. Alginate Coatings on Silicon Microelectrode Arrays Decrease the Foreign Body Response Associated with Implantation in Adult Rat Brain Tissue. Tracy Williamson, Xiaoyu Chen, Braden Leung, Dongwan Kim, David C Martin and Patrick Tresco. Materials Science and Engineering, University of Michigan, and the Keck Center for Tissue Engineering, Department of Bioengineering, University of Utah.
- Winslow et al. A novel tool for studying the spatial and temporal changes that take place at the biomaterial-brain tissue interface. B.D. Winslow, C.Underwood, D.J. Warren, D.R. Merrill and P.A. Tresco. Keck Center for Tissue Engineering, Department of Bioengineering, University of Utah.
- Wiskin et al. Acoustic Inverse Scattering in Breast Cancer Imaging. James Wiskin, David Borup, Steven Johnson, Mike Berggren. TechniScan Inc. and Bioengineering, University of Utah.
- Wolchok et al. The Role of Strain and Vibration in Regulating the Behavior of Vocal Fold Fibroblasts. Jeff Wolchok, Clayton Underwood, Chad Brokopp and Patrick Tresco. Keck Center for Tissue Engineering, University of Utah.
- Wright et al. Fluorescence Correlation Spectroscopy on Binding Interactions Involving Resonance Energy Transfer Bryon Wright and Vladimir Hlady. Department of Bioengineering, University of Utah.
- Xie et al. Molecular-Scale Fluorescence Microscopy. Changan Xie, Jon Cox, Chun Mu, Lisa Verzella, and Jordan M. Gerton. Department of Physics, University of Utah
- Xue et al. Rapid Fluoro-CT Reconstruction for a Mobile C-Arm on Graphics Hardware. Xinwei Xue, Arvi Cheryauka, Dave Tubbs.
- Yan et al. Estimation of Attenuator with SPECT Emission Data. Yan Yan and Gengsheng L. Zeng. Departments of Radiology and Bioengineering, University of Utah.
- Yang T. et al. Towards the Development of On-board Calibration for Luminescent Based Biosensors. T.S. Moses Yang, Daniel A. Bartholomeusz and Joseph D. Andrade. Department of Bioengineering, University of Utah.
- Yang X. et al. Application of therapeutic drug monitoring to development of a multi-AED immunochip. Xiaoyun Yang, Jarmila Janatova, Joseph D. Andrade. Department of Bioengineering, University of Utah.
- Yockman et al. Influence of Polymer Physicochemical Properties on Cellular Kinetics of Gene Delivery Zhou, J., Yockman, J.W., Kern, S.E., Myers, C.J. and Kim, S.W. Center for Controlled Chemical Delivery, University of Utah.
- Zhang et al. Noise propagation for iterative reconstruction using line-integral and planal integral data. Bin Zhang and Gengsheng L. Zeng. Departments of Bioengineering and Radiology, University of Utah.