Design of Medical Devices
Conference
2009

April 15 - 17  Minneapolis, MN

Design of Medical Devices Conference
2009

April 14th-16th
Radisson University Hotel
Minneapolis, MN

www.dmdconf.org
Welcome! We are excited to present the 2009 University of Minnesota Design of Medical Devices Conference. This conference was created in 2001 to enhance collaboration between academia and industry, promote policy, research and educational initiatives as they relate to medical device design, and support the graduate fellowship program.

Over the years, this forum, uniquely positioned in the middle of one of the most significant medical device communities in the world, has provided invaluable insight and leadership in promoting the future of this evolving industry. Conference attendance has more than tripled in size since its inception, and we expect it to grow even larger.

The success of this conference is due, in large part, to the continued support from our University of Minnesota partners and industry sponsors. On behalf of the entire DMD planning committee, we thank you. We hope you enjoy this year’s conference!

Sincerely,
Arthur Erdman, Ph.D.
Conference Chair

William Durfee, Ph.D.
Technical Program Chair

Paul Iaizzo, MD
President’s Conference Chair

The Design of Medical Devices Conference
is Presented by:

The University of Minnesota’s Institute for Engineering in Medicine’s Medical Devices Center, the Institute of Technology, the Academic Health Center, the Office of the President, and the Department of Mechanical Engineering

In Cooperation with:
American Society of Mechanical Engineers
Academic and Corporate Relations Center, UMN

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**Tuesday, April 14th**

*Registration and Continental Breakfast*
8:15 am  
Conference Welcome and Plenary Session  
Moderators: Arthur Erdman, Conference Chair; William Durfee, Technical Program Chair  
Sponsored by Boston Scientific Corporation

**Keynote Addresses:**

40 years of Implantable Medical-Electronics  
Joseph H. Schulman, President Emeritus of the Alfred Mann Foundation and Chief Scientist of Incumed LLC  

Medical Device Development at the University of Minnesota  
Arthur Erdman  
Conference Chair  
University of Minnesota

**NEURO ENGINEERING 1**

Session Chairs:  
Taner Akkin, University of Minnesota; Theoden Netoff, University of Minnesota  

Polarizing Low-frequency Electrical Field (PLEF) Brain Modulation for Seizure Control and Neural Prosthetics  
Bruce Gluckman  
The Pennsylvania State University  

High-Density Transcranial Electrical Stimulation (HD-tES)  
Marom Bikson  
The City College of New York of CUNY  

Novel Neural Tools and Prostheses using Infrared Nerve Stimulation  
Mark Bennet  
Lockheed Martin Aculight

**MEMS/NANO 1**

Session Chair:  
Rajesh Rajamani, University of Minnesota  

Microscale Neural Repair  
David Sretavan  
University of California at San Francisco  

Ultra-Small Sensors for Quantification of Muscle Forces in Neuromuscular Diseases  
A. Serdar Sezen  
St. Cloud State University  

Portable Low-Cost Measurement of Thin Film Elasticity for Analyte Detection  
Shyam Sivaramakrishnan  
University of Minnesota  

Nanomaterials and Stem Cells for Tissue Engineering  
Song Li  
University of California Berkeley

**ASSESSMENT AND VALUATION OF EARLY STAGE MEDICAL DEVICE TECHNOLOGY**

**Session Chairs:**  
Ballroom C-D  
Ruth Taylor, M.J.L, University of Minnesota; Stephen Parente, M.J.L, University of Minnesota

**Producing Medical Technology Assessments for an Investor Audience**  
Stephen Parente  
University of Minnesota  

**Overview of the University of Minnesota Medical Industry Valuation Laboratory**  
Michael D. Finch  
Finch & King  

**Medical Industry Valuation Laboratory Best Live Cases**  
Randy Nelson  
Evergreen Medical Technologies, LLC

**THREE-IN-FIVE COMPETITION**

**Session Chair:**  
Marie Johnson, University of Minnesota

**Competition Presentations:**

- **Design of a Catheter-Based Device for Performing Percutaneous Chordal+++Cutting Procedures**  
  Alexander H. Slocum, Jr., Massachusetts Institute of Technology

- **The Therexpress 1600v: Accelerating Knee Rehabilitation**  
  Andrew Geronimo, The College of New Jersey

- **Pre-Clinical Evaluation of Direct Current Ablation for the Treatment of Benign Prostatic Hyperplasia**  
  Benjamin Fruland, OncoStim Inc.

- **A Fibre Optic System for the Detection of Dental Caries**  
  David A Hughes, DTC Medical Devices

- **Mechanism Design for the Bending Section Motion Control of a Colonoscope**  
  Debao Zhou, University of Minnesota

- **A Muscle Energy Converter for Powering Implantable Cardiac Assist Devices**  
  Dennis R. Trumble, Carnegie Mellon University & The Gerald McGinnis Cardiovascular Institute

- **A Novel Combination Therapy for Post-Operative Atrial Fibrillation**  
  Eric Richardson, University of Minnesota

- **A Wireless Insufflation System for Capsular Endoscopes**  
  Jenna L. Toennies, Vanderbilt University

- **Recumbent Exercise Bicycle for Low-Impact Rehabilitation of Obese Individuals**  
  Kimberly Newman, University of Denver

- **A Soft-Polymer Piezoelectric Bimorph Cantilever-actuated Peristaltic Micropump**  
  Neil J. Graf, University of Minnesota

**Judges:**

- Sarah Audet - Medtronic, Inc.  
- Buzz Benson - Sightline Partners  
- Joe Biller - Sightline Partners  
- David Boudreaux - Stanford Biodesign  
- Doug Johnson, University of Minnesota  
- Trevor McCaw - Aegis Medical  
- Tom Savard - St. Jude Medical

**HUMAN FACTORS 1**

**Session Chair:**  
Ballroom C-D  
Richard Stein, St. Jude Medical

**Profiles in Outrage: The Audacity of Industry**  
Matthew B. Weiner  
Vanderbilt University

**Lessons Learned by FDA**  
Peter B. Carstensen  
Wiklund Research and Design

**Using Work Process Analysis and Cognitive Science to Guide the Design of Medical Technology**  
Kathleen Harder  
University of Minnesota

**KEYNOTE LUNCHEON**

Sponsored by St. Jude Medical  
Moderator: William Durfee, Technical Program Chair

**War Stories from a Medical Device Career**  
Mark Kroll  
Mark Kroll & Associates

(Keynote lunches are a separate billable event, meal tickets are required.)

**2:00 pm - 3:30 pm**

**NEUROENGINEERING 2**

**Session Chairs:**  
Taner Akkin, University of Minnesota; Theoden Netoff, University of Minnesota

**Excitation and Secretion at Mammalian Nerve Terminals: Optical and Mechanical Studies with and without Voltage-Sensitive Dyes**  
Brian M. Salzberg  
University of Pennsylvania

**Optical Detection of Neural Activity: Action Potentials Related Transient Deformations and Dye Signals**  
Tamar Akkin  
University of Minnesota

**Flavoprotein Imaging of Neural Circuits in Vivo**  
Timothy J. Ebner  
University of Minnesota

**MEMS/NANO 2**

**Session Chair:**  
Ballroom B  
Tian Cui, University of Minnesota

**Layer-by-Layer Self-Assembled Carbon Nanotube-based Electrochemical pH and Biological Sensors**  
Dongjin Lee  
University of Minnesota

**Differentiation of Stem Cells on Carbon Nanotube Substrates**  
Xun Yu  
University of Minnesota-Duluth

**BioMEMS: Designing for Liquid Environments**  
Sue Mantell  
University of Minnesota

**Other contributors-S. Mubassar Ali and Ellen Longmire**
**CARDIOVASCULAR 1**

**CARDIAC BIOENGINEERING**

Session Chair: Ballroom C-D
Daniel Sigg, University of Minnesota/Novo Nordisk Inc.

Building Hearts with Molecules and Stem Cells
Daniel Gary
University of Minnesota

Dual Oxygen Sensing Genetic Vectors: New Bio-device for the Failing Heart
Joseph Metzger
University of Minnesota

Gene and Cell Therapies for Cardiac Arrhythmias: Biological Pacemaker and Conduction Repair
Yong-FU Xiao
Medtronic, Inc.

**WEARABLE MEDICAL SENSORS**

Session Chairs: Regents
Lucy Dunne, University of Minnesota; Ahmed Tewfik, University of Minnesota

Movement and Contact Artifacts in Garment-Integrated Body Sensing
Lucy Dunne
University of Minnesota.

IEEE Standards for Body Area Networks
Srinath Hosur
TI

Low Power IC Design for Wearable Sensors
Chris Kim
University of Minnesota

Low Power RF Design for Wearable and Implantable Sensors
Ramesh Harjani
University of Minnesota

Sleep Apnea Detection with Wearable Sensors
Co-presented by:
Abilash Patangay
Boston Scientific Corporation
Ahmed Tewfik
University of Minnesota

Wireless Body Area Networks Based Medical Devices: Issues and Applications
Emil Jovanov
University of Alabama in Huntsville

**HOME TELEMEDICINE**

Session Chair: Johnson Great Room (McNamara Alumni Center)
Lars Oddson, Sister Kenny Research Center, Stan Finkelstein, University of Minnesota

Independent Living Through Remote Monitoring
Bryan Fuhr
Healthsense Inc.

Mobile Health Care Applications in the Developing World
Ron Poropatich, COL MIL USA
MEDCOM USA/MRMC, Deputy Director Telemedicine and Advanced Technology Research Center

M-REHABILITATION: WIRELESS SYSTEMS TO SUPPORT PATIENT ADHERENCE
Co-Presented by:
Mary Vining Radomski
Sister Kenny Research Center
Holly Pavliscausk
Medical Research and Material Command (MRMC) and Telemedicine and Advanced Technology Center (TATRC)-South

**NEUROENGINEERING 3**

Session Chair: Balloon A
Tamer Akkin, University of Minnesota; Theoden Netoff, University of Minnesota

Epilepsy Surgery: State-of-the-Art and Remaining Challenges
Aviva Aboch
University of Minnesota Medical School

Dynamic Neuronal Imaging in Animal Models of Epilepsy
Douglas A. Coulter
University of Pennsylvania School of Medicine and Children's Hospital of Philadelphia

Dynamical Approaches to Understanding and Predicting Seizures
Theoden Netoff
University of Minnesota

**MEMS/NANO 3**

Session Chair:
Sang-Hyun Oh, University of Minnesota

Overview Of Optical Oxygen/Perfusion Sensing Technologies For Implantable Use
Can Cinbis
Medtronic, Inc.

Nano Magnetic Sensing System with Zeptomol Sensitivity for Potential Personalized Medicine
Jian-Ping Wang
University of Minnesota

Applications and Opportunities for Nanohole Array Sensing
Dale Larson
Draper Laboratory

Size-Controlled Synthesis of Multifunctional Mesoporous Silica Nanoparticles
Christy L. Haynes
University of Minnesota

3:30-4:00 pm

**SPONSOR EXHIBIT SHOWCASE**

**CARDIOVASCULAR 2**

**CARDIAC ANATOMY**

Session Chair: Ballroom C-D
Alex Hill, Medtronic, Inc.

3-D Computed Tomography Imaging of the Aortic Root in the Context of Transcatheter Aortic Valve Implantation
Paul Schoenhagen
The Cleveland Clinic Foundation

Valve Anatomy
Jason Quill
University of Minnesota

Loading Conditions within RV-PA Conduits
Tim Kelley
Medtronic, Inc.

**DESIGN OF SURGICAL SIMULATORS**

Session Chair: Regents
Rob Sweet, University of Minnesota

Developing a Surgical Simulation Program for the Device Industry
David Hananel
Medical Education Technologies, Inc. (METI)

Design of Surgical Simulators: an Engineer's Perspective
Yunhe Shen
University of Minnesota

Design of Surgical Simulators: a Surgeon's Perspective
Rob Sweet
University of Minnesota

**ENTREPRENEURSHIP**

Session Chair: Johnson Great Room (McNamara Alumni Center)
Karen Kaehler, University of Minnesota; Doug Johnson, University of Minnesota

Raising Capital for Early-Stage Medical Device Companies in a Tough Funding Environment
Co Presented By:
Norm Cocke
Twin Cities Angels, LLC
Archie Smith
Sightline Partners
Katie Szyman
Medtronic, Inc.

5:30 pm

**ADJOURN**
High-Impact Networking Breakfast for Scientists & Engineers

This session is designed with scientists and engineers in mind, and hosted by LifeScience Alley, the region's leading trade association for the life sciences. Learn how to effectively expand your network of experts and collaborators, and how to make these new connections work for both parties.

This one-hour breakfast will feature a brief presentation by Janet Stacey, communications and networking expert, who will share some tried and true techniques for identifying potential collaborators and other helpful resources that can impact your work today and in the future.

Wednesday, April 15, 2009 (Day 2, Design of Medical Devices Conference)

7:00 am   Registration and Continental Breakfast
7:15 am   Networking techniques presentation
7:45 am – 8:15 am  Focused Networking – attendees put new skills to good use!

Strategies to Develop Biologically Active Orthopedic Devices
William Murphy
University of Wisconsin

Industry Perspective on Musculoskeletal Regenerative Technologies
Elliott A. Gruskin
SYNTHES (USA)

Regenerative Technologies: Orthopaedic Surgeon - Practical Considerations
Joel J. Smith
University of California San Diego

What Are The Technologies & Requirements Needed For Future Cardiac Leads?
Rick McVenes
Medtronic CRDM

Panel Discussion & Audience Questions

HUMAN FACTORS 2
Johnson Great Room

Session Chair: (McNamara Alumni Center)
Kathleen Harder, University of Minnesota

Visuomotor Coordination in Endoscopic Surgery
Caroline Cao
Tufts University

Involving Human Factors from the Start: Design of an Infusion Pump
Co-Presented by:
Robert A North
Human Centered Strategies, LLC
Anjum Chagpar
The University of Toronto Health Network

Human Factors, Design Lessons Learned, Case History
Richard E. Stein
St. Jude Medical

10:00-10:30am

SPONSOR EXHIBIT SHOWCASE
Monday, April 27, 2009

10:30 am - 12:00 pm
Concurrent Technical Sessions

INDUSTRY MEDICAL DEVICE AIRWORTHINESS
Session Chairs: Chip Laingen, Defense Alliance; Betsy Lulfs, MN DEED
Military Airworthiness Testing for Twin Star Medical’s Compartment Monitor
Rick Odland
Twin Star Medical

Military Airworthiness Testing for Nonin Medical’s Portable Pulse Oximeters – 1991 to Present
Co-Presented by: Terry deBruyn
Nonin Medical
Brodie Pedersen
Nonin Medical

CARDIOVASCULAR 4
ARTIFICIAL HEARTS AND VADS
Session Chair: James St. Louis, University of Minnesota
Mechanical Circulatory Support in 2009 and Beyond
Ranjit John
University of Minnesota

Anticoagulation Management of Pediatric Ventricular Assist Devices
Marie E. Steiner
University of Minnesota

Pediatric Cardiac Mechanical Support
Mark Flunkett
University of Kentucky

The Evolution of Cardiac Assist Devices: Total Artificial Hearts versus Left Ventricular Assist Devices
Lyle Joyce
Mayo Clinic

CARDIAC VALVES: REPAIR, REPLACE OR ?
Session Chair: Richard W. Bianco, Director, Experimental Surgical Services

“Heart Valve Replacement in the Aortic, Mitral, and Tricuspid Positions”
Sarah Shamway
University of Minnesota

“Aortic Valve Treatment in the Modern Era: Small Puncture, Big Valve”
Robert F. Wilson
University of Minnesota

“The Development of Trascatheter Heart Valves: Opportunities and Challenges”
Timothy G. Laske, PhD, Cardiovascular, Medtronic, Inc

“New Directions in Cardiac Valve Repair”
J. Scott Rankin
Vanderbilt University

MEDICAL DEVICE INNOVATION 1
Session Chair: Marie Johnson, University of Minnesota
Post-It® Notes Were Not an Accident
Art Fry

3M, Inventor of Post-It® Notes

Innovation Processes and Tools
Larry Schmitt
Inovo Technologies

The Intersection of Innovation and IP
Thomas E. Bejin
Rader Fishman and Grauer

UNIVERSITY OF MINNESOTA’S MEDICAL DEVICES CENTER TECHNOLOGIES SHOWCASE
Organizers: Arthur Erdman, University of Minnesota; Dillon Hodapp, University of Minnesota; Stefan Hertel, University of Minnesota

This informal session will include an opportunity to view in 3D the types of surgical procedures available on the simPORTAL. You will be able to experience this state of the art method of gaining device needs directly from the medical professionals. Also, staff from the Medical Devices Center will be present to show various medical devices and inform you how the Medical Devices Center can work with you to develop prototypes and perform testing of device concepts.

12:15 p.m.
AWARD LUNCHEON
Sponsored by Medtronic, Inc.
Moderator: Arthur Erdman, Conference Chair
Recipient of 2009 Design of Medical Device Conference Award
“Medical Devices and the Future World of Healthcare Delivery”
Rebecca M. Bergman
Medtronic’s Task Force on Conflict of Interest

Conflict of Interest - the FDA Perspective
Sonali P. Gunawardhana
U.S. Food and Drug Administration

Physicians and the Medical Device Industry - The Right Relationship
Susan Alpert
Medtronic, Inc.

Update from University of Minnesota Medical School’s Task Force on Conflict of Interest
Denis Gloshy
University of Minnesota

MEDICAL DEVICE INNOVATION 2
Session Chair: Marie Johnson, University of Minnesota

Framing the Problem
Benjamin Arcand
University of Minnesota

Framing a Solution: Ideation/Brainstorming Tools
David Boudreault
Stanford Biodesign

Opportunities and Challenges from the Real World
Daniel Titcomb
Pulse Innovation

Panel Discussion

3:30pm-4:00pm
SPONSOR EXHIBIT SHOWCASE

3:30pm-5:30pm
SCIENTIFIC POSTER SESSION I
See website www.dmdconf.org or the conference folder insert for a complete list of 50+ poster titles and authors

5:30 pm
ADJOURN
Thursday, April 16th
President's 21st Century Interdisciplinary Conference: “Translational Research: from Prototype to Product”

7:00 a.m.
Registration and Continental Breakfast

8:00 a.m. - 10:10 a.m
President’s Conference Keynote Addresses

PLENARY SESSION
Moderators:
Paul Iaizzo, Program Chair, President’s Conference
Welcoming Remarks:
Frank Cerra
Senior Vice President for Health Sciences, McKnight Presidential Leadership Chair, Academic Health Center, University of Minnesota

Paul Iaizzo
Associate Director for Institute for Engineering in Medicine, University of Minnesota

Keynote Addresses:
The CTM and the NIH Clinical and Translational Science Award (CTSA) Program at the U of MN
Bruce Blazer
Chief of the Pediatric Blood and Marrow Transplantation Program, Director-ACH-Center for Translational Medicine, University of Minnesota

The Changing Role of R&D in an Emerging Medical Device Company
Dave Stassen
Managing Director Split Rock Partners

8:00 a.m. - 10:00 a.m
Concurrent Technical Sessions

NOTES
Session Chairs:
Timothy Kinney, University of Minnesota; Perry Li, University of Minnesota
NOTES: The Next Revolution in Surgery
Christopher Gostout
Developmental Endoscopy Unit at Mayo Clinic, Rochester, MN

Natural Orifice Surgery: Designing the Next Generation of Surgical Devices
Vihar Surti
Cook Endoscopy

10:10 a.m. - 10:40 a.m
SPONSOR EXHIBIT SHOWCASE

10:40 a.m. - 12:00 p.m
President’s Conference Keynote Addresses

KEYNOTE ADDRESS:
Training Individuals to Perform Translational Research
Prof. Russell V. Luepker
Mayo Professor of Public Health
University of Minnesota

KEYNOTE ADDRESS:
Commercialization of Medical Devices - Successes and Lessons Learned
Mr. Imran
Managing General Partner
Incube Laboratories

10:40 a.m. - 12:00 p.m
Concurrent Technical Sessions

COMPUTER AIDED DESIGN
Session Chair:
Victor Barocas, University of Minnesota
Case Studies on the Use of Numerical Simulation for Design and Optimization of Medical Devices
Co-Presented by:
Eph Sparrow
University of Minnesota
J. Abraham
University of St. Thomas

Free Convection in a Parallel-flow Protein Crystallizer
Co-Presented by:
Masano T. Sugiyama
University of Minnesota
Victor H. Barocas
University of Minnesota

A Dissolution-diffusion Model for the TAXUS Trade Mark Drug-eluting Stent with Surface Burst Estimated from Continuum Percolation
Ed Parsonage
Boston Scientific Corporation

Static Analyses of Spine Interbody Implants
Andreas Pflaum
Devicix, LLC

LEGAL ISSUES IN THE DESIGN OF MEDICAL DEVICES: FROM PATENT PORTFOLIOS TO PRODUCT LIABILITY
Session Chair:
Ruth Okediji, University of Minnesota
The Preemption Defense to Product Liability Claims Brought Against Device Manufacturers
Mark Herrmann
Jones Day

Parallels between FDA Device Regulations and Common-law Tort Claims after Riegel: Private Enforcement of Alleged Regulatory Violations Against Medical Device Manufacturers as an Exception to Preemption
Jim Beck
Dechert, LLP

12:15 pm - 12:45 pm
SPONSOR EXHIBIT SHOWCASE

12:15 p.m.
KEYNOTE LUNCHEON
Moderator:
Paul Iaizzo, Program Chair, President’s Conference
Three-in-Five Awards
Presented by:
Marie Johnson
University of Minnesota

“Project Destination 2025 Analyst”
Dale Wahlstrom
BioBusiness Alliance of Minnesota

2:00 p.m. - 3:30 p.m
SCIENTIFIC POSTER SESSION I
See website www.dmdconf.org or the conference folder insert for a complete list of 50+ poster titles and authors

2:00 p.m. - 3:30 p.m
TOURS
Tour departures will take place near the Registration Desk. You will be escorted to the facility. See the tour ads on the next page of the program for more information on each of these facilities.

EXPERIMENTAL SURGICAL SERVICES
www.ess.umn.edu/

MEDICAL DEVICES CENTER
www.mdc.umn.edu/

SimPORTAL
www.simportal.umn.edu/index.html

THE VISIBLE HEART LABORATORY
www.vhlab.umn.edu/

3:30 pm
ADJOURN
The following tours will take place on Thursday, April 16th from 2:00 pm - 3:30pm.

If you wish to attend any one of these tours, please meet at the registration table on the second floor of the Radisson University Hotel.

**Experimental Surgical Services**
www.ess.umn.edu/

At Experimental Surgical Services, we're experts in designing and conducting the appropriate research to determine the safety and efficacy of medical devices. We have 25 years experience in pre-clinical assessment for the medical industry. In fact, we're the industry leader in researching and testing cardiac devices and surgical techniques. We complete over 500 open heart procedures a year and over 1,500 procedures annually, and you will be escorted to the ESS Lab.

ESS is Directed by Richard W. Bianco who has 25 years of experience in the pre-clinical assessment of virtually every animal model. The ESS staff of in-house surgeons work with device companies to develop and/or validate research methods, provide consultation as necessary and offer interpretative and technical support.

**Medical Devices Center**
www.mdc.umn.edu/

The Medical Devices Center at the University of Minnesota is a unique interdisciplinary program that resides within the Institute for Engineering in Medicine. The Center has a combined mission of basic research, applied and translational research education and training, and outreach and public engagement all related to medical devices.

The Medical Devices Center aims to strengthen interdisciplinary research among faculty in the health sciences and engineering specifically related to medical devices. The center trains the next generation of medical device inventors and fosters new relationships with the medical device industry and government agencies to improve health care worldwide.

**SimPORTAL**
www.simportal.umn.edu/index.html

SimPORTAL (Simulation PeriOperative Resource for Training and Learning) is the primary simulation training “portal,” or point of entry, for the procedurally oriented departments within the Medical School at the University of Minnesota. It arranges for, or directly provides space, equipment, technical and logistical support for educational activities involving technical skills and team training via simulation. Via the Center for Research in Education and Simulation Technologies (CREST), it also supplies research and evaluation capacity to support innovation in simulation equipment, tools, and processes as well as training curricula.

The mission of SimPORTAL is:

“To augment the procedural training needs of medical professionals through leadership in the use and development of simulation resources.”

**The Visible Heart Laboratory**
www.vhlab.umn.edu/

Dr. Paul Iaizzo has been at the University of Minnesota since 1990, performing research and teaching graduate and undergraduate courses. In 1997, Dr. Iaizzo and his coworkers began working on large mammalian isolated heart models, and thus the Visible Heart® laboratory was created in collaboration with Medtronic, Inc. Today, this lab is a premiere place to perform translational systems physiology research which ranges from cellular and tissue studies to organ and whole body investigations. The Visible Heart® lab embodies a creative atmosphere which is energized by some of the best and brightest students at the University. Our lab staff has over 100 years of collective research experience and functions as a highly efficient and productive team.
Join us at the 31st Annual International Conference of the IEEE Engineering in Medicine and Biology Society.

The theme of EMBC’09, “Engineering the Future of Biomedicine,” covers a broad spectrum of topics, from engineering and physical sciences to medical and clinical applications. Leading experts from all around the world will present state-of-the-art reviews of rapidly-developing and exciting areas, report the latest significant findings and developments in all the major fields of biomedical engineering, and discuss government and industry-related issues. Papers of up to 4 pages will be peer reviewed, and accepted papers will be included in IEEE Xplore and indexed by PubMed. Conference keynote and plenary speakers are:

Andrew Zachary Fire, PhD
Professor, Stanford University Medical School
2006 Nobel Laureate in Medicine or Physiology

Earl Bakken, DSc, hon; MD, hon; NAE
Co-founder of Medtronic, Inc.
Inventor of battery-powered pacemaker

Gary Glover, PhD, NAE
Professor and Director of Radiological Sciences Lab
Stanford University

Douglas Lauffenburger, PhD, NAE
Whitaker Professor and Director
Department of Biological Engineering, MIT
Wireless internet access is available in the Alumni room to DMD Conference attendees. Connect to wireless network: DMD_Conference With case-sensitive password: Translational.
MEDICAL DEVICES CENTER

The Medical Devices Center at the University of Minnesota is a unique interdisciplinary program that resides within the Institute for Engineering in Medicine. The Center has a combined mission of basic research, applied and translational research education and training, and outreach and public engagement all related to medical devices.

The Medical Devices Center aims to strengthen interdisciplinary research among faculty in the health sciences and engineering specifically related to medical devices. The center trains the next generation of medical device inventors and fosters new relationships with the medical device industry and government agencies to improve health care worldwide.

The MDC has many roles within the U of M including:

* Acceleration of interdisciplinary medical device R&D
* Funding new medical device projects based on a rigorous peer review process
* Maintaining a Core Lab with common use equipment for creative prototypes
* Facilitating connections to other Centers and Labs
* Supporting UMN functions related to medical devices
* Supporting UMN the teaching/training programs of departments related to medical devices
* Interfacing with the medical device industry
* Focus on improvement of health care world-wide

INNOVATION FELLOWS PROGRAM

The Medical Devices Center Innovation Fellows Program is a full immersion educational and product development program. Each Fall, the MDC Fellows Program brings together a cross-disciplinary team comprised of postgraduate engineers, seasoned medical device professionals and physicians to develop medical devices across a broad range of clinical areas. The team, led by Dr. Marie Johnson, collaborates for one year to identify and solve unmet clinical needs through a disciplined decision making technique which includes consideration of FDA regulatory pathway, insurance reimbursement, intellectual Property and business strategies. This one-year product clinical literature development experience includes identification, development, prototype and test of medical devices.

The Fellows Program curriculum includes formal instruction in product development and innovation. Fellows observe surgery, attend medical rotations, and participate in medical device company visits. In addition, the Fellows teach, share and learn by mentoring undergraduate and graduate student design teams across the Institute of Technology, and support the Design of Medical Devices conference. MDC Fellows work with faculty collaborators from both engineering and medicine. The program generates a minimum of 20 patent disclosures for advanced novel medical technologies over the course of the year.

Sponsorships Available for 2009-2010

Named Fellow Sponsor Privileges

- Named annual fellowship sponsor
- Membership on the MDC Fellows Program Advisory Board
- Annual on-site seminar/workshop with MDC Fellows
- Special receptions at two events—Fall and Spring Open House
- Two seats at the annual DMD conference
- Early information about research findings and technology
- Access to MDC Facilities

Fellows Program Affiliate Privileges

- Information about upcoming research findings, technologies, and licensing opportunities
- Special reception at a Spring Open House

Contact Marie Johnson (612) 624-1060
mariej@umn.edu
2009 DMD Planning Committee:
    Alyssa Davidson, Conference Coordinator
    Will Durfee, Technical Program Chair
    Arthur Erdman, Conference Chair
    Tonya Femal, Planning Committee
    Jenny Holden, Conference Administrator
    Paul Iaizzo, President’s Conference Chair
    Marie Johnson, Planning Committee
    Sarah Kern, Assistant to the Coordinator
    Jessica Schynoll, Planning Committee
    Mandy Wallace, Assistant to the Coordinator
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    Education Taiwan R.O.C.

Special thanks to :
    Jeff McCullough
    Dick Sommerstad
    Robert Tranquillo
    LifeScience Alley
    The Radisson University Hotel
    Conference Volunteers