ASME International

Fall/Winter 2011-2012

Bioengineering Division News

SET SAIL FOR PUERTO RICO!

Submit your Abstracts NOW!

for the

Summer Bioengineering Conference 2012

El Conquistador Resort

Farjardo, Puerto Rico

June 20-23, 2012

Deadline: Friday, January 13, 2012

Try the ACTIVE hyperlinks in the PDF Newsletter for: Contents, Webpages, Emails

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Bioengineering Divison

ASME
SETTING THE STANDARD

NEWS

ASME International Bioengineering Division

Fall/winter 2011-2012

Message from THE chair

John Bischof

I am pleased to work with an excellent group of colleagues on the Executive Committee (EC) to provide leadership to this vibrant ASME Division defined by excellence in our annual meeting, journals and membership. By all measures BED continues as one of the flagship divisions within ASME. For instance, our summer meeting continues as one of the premier forums for quantitative biomechanical engineering. This is evidenced not only by the outstanding success of SBC 2011 in Nemacolin thanks to conference chair David Vorp and his crew, but also the excellent program planned for SBC 2012 that will take place in the beautiful natural setting of Puerto Rico under conference chair Dawn Elliot. Enticements include several grand challenges in both solid mechanics (knee load prediction) and fluid mechanics (CFD challenge) and our student paper competition. In addition, Jeff Bischoff, our member in charge of external affairs, will be actively engaging local industry with medical device manufacturing plant tours. Finally, for the first time as an experiment for SBC 2012, the executive committee has committed extra support that technical committees can compete for by writing proposals to engage special speakers or initiatives to even further strengthen their technical offerings and the meeting as a whole. As an important note, we do also continue to have a foot-hold at IMECE thanks largely to the Design and Rehabilitation group and the leadership of Ahmed Al-Jumaily.

Another area of achievement for BED involves our journals and satellite meetings. For instance, the Journal of Biomechanical Engineering (JBME) has steadily increased in impact factor and prestige under the leadership of Editor Michael Sacks. The Journal is in fact so successful that the Executive Committee decided this year to create a dual editor position with each editor in charge of a separate area of BED strength: (i) biosolids (molecules, cells, soft tissues and biomaterials), biofluids, heat/mass transfer, nano-mechanics; and (ii) human movement, orthopedic (hard tissues), orthotic devices, hand mechanics, impact/crash injury. I am pleased to inform you that the Executive Committee has approved Professors Victor Barocas and Beth Winklestein as the newco-Editors. Dr. Winklestein began her term starting Jan. 1, 2012 and Dr. Barocas will begin July 1, 2012. Another exciting possibility under discussion is an annual review issue of JBME that will be based in part on the high-level work of invited speakers and keynotes at our summer meetings. Our second Journal of Medical Devices (JMD) serves our membership and the attendees of satellite meetings including: "Design of Medical Devices" occurring annually in Minneapolis, MN and "Frontiers of Biomedical Devices" occurring annually in Irvine, CA. JMD continues to do well under editors Art Erdman and Gerry Miller. Lastly, we have a new journal entitled the "Journal of Nanotechnology in Engineering and Medicine" (JNEM) which will be tied in part to a new BED satellite meeting entitled "NanoEngineering in Medicine and Biology" (NEMB) which is currently

(Continued on page 4)

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Message from THE OUTGOING chair


Rita Patterson

It has been my pleasure to serve as past chair and advise the Bioengineering Division executive committee. I left the division in the very capable hands of John Bischof last summer, the 2011-2012 division chair, who has provided excellent leadership for the first part of his term. I will admit that it has been nice to serve in an advisory role and not be on the front line like last year when I was division chair. I hope the membership reads about and realizes that the leaders of the division are constantly trying to improve the services that the division provides. There are many wonderful innovative initiatives that the executive committee and volunteers accomplish behind the scenes. Many of these tasks are grass roots initiatives completed though the sheer determination and passion that these individuals have for our field of bioengineering. Most notably are changes and new initiatives that most see at the summer bioengineering conference. Others that you will see in the future are changes to the newsletter (initiated by our new newsletter editor, Ken Fischer) and to the Journal of Biomedical Engineering now in the process of appointing dual editors. Please take the opportunity to thank our volunteer leaders for a job well done and ask them how you can get involved.

Rita Patterson
BED Chair, 2010-2011

Upcoming event!

2012 Summer Bioengineering Conference, El Conquistador Resort, Farjardo, Puerto Rico, June 20-23, 2012

Editor's NOTE

Hope you enjoy the new style of the BED newsletter! It is an honor to be selected as the new editor. All your favorite reports and information are still here. Look for new features in upcoming issues.

The El Conquistador Resort cover view beckons *"submit your abstracts"* for the summer conference in Puerto Rico by January 13. Then come for great science, networking, and fun in the sun!

Email any technical committee chair, if you are willing to review abstracts (find their addresses on the back/last page).

Thanks to all who contributed to this edition! If you have any comments or suggestions of your own, send them to me at the address below.

Ken Fischer
Editor, BED Newsletter
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Lawrence, KS 66045-7609
fischer@ku.edu

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Plan to ride the beaches in Puerto Rico! Submit your Abstracts by Friday, January 13!

MESSAGE FROM THE CHAIR (CONTINUED)

being planned for 2013 in Boston under the leadership of conference chairs Markus Buehler and Mehmet Toner. This conference was originally offered in Houston in 2010, and is tentatively being considered for an every other year offering in the future. It should also be noted that there is now a NEMB poster forum that seems to be doing very well annually at IMECE. Finally, we helped to sponsor the Rehabilitation Engineering summit this year, a once in several year meeting that highlights activities nationwide and provides a vision or roadmap to activities related to Engineering research, service delivery and education important in the Design and Rehabilitation technical committee.

Recognition of our members through honors at both the student and faculty level remains an important part of our BED culture. This is fueled in part by well maintained custodial and honors fund accounts that support these well-deserved recognitions. Also, as the membership is increasingly international we have taken several steps. First, we have created a new position on the executive committee entitled: "International Member at Large." We will be voting on candidates for this position in Puerto Rico. Second, we are adding more international Associate Editors to the Journal of Biomechanical Engineering.

I would like to close by thanking Guy Genin for an excellent job as the outgoing NewsLetter Editor and to his replacement Ken Fischer who is responsible for compiling the content you see here. Finally, as you can tell from my message BED is strong because we have volunteers who engage and lead within the division structure. I encourage you to consider volunteering and leading by attending our annual meeting (SBC) and engaging in technical and other committee meetings. Please visit our BED website for more information: http://divisions.asme.org/BED/

John Bischof, Chair
ASME Bioengineering Division

The executive committee has an open administrative meeting at each summer bioengineering conference.

Minutes of this meeting are available on the BED website: http://divisions.asme.org/bed/

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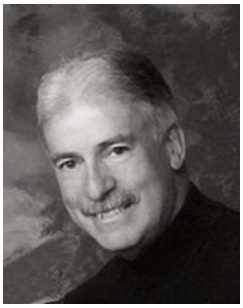
AMERICAN SOCIETY OF MECHANICAL ENGINEERS AWARDS



Thomas Andriacchi

The ASME Bioengineering Division (BED) encourages members to submit nominations for the three society-level awards: H.R. Lissner Medal, Y.C. Fung Medal and V.C. Mow Medal. These Medals presented at the Summer Bioengineering Conference recognize the highest level of achievement and contribution to bioengineering. To nominate a colleague or yourself for a 2013 award, please submit the nomination form to the chair of the appropriate Honors Committee no later than Sept. 1, 2012.

In preparing nomination packages please note that Honors committee members cannot submit a candidate or provide a letter of support to the committee they are serving. Nominations forms can be found at http://divisions.asme.org/bed/Honors_Awards.cfm and each award committee chair is listed on the back page and the full memberships can be found at http://divisions.asme.org/bed/Committees.cfm.

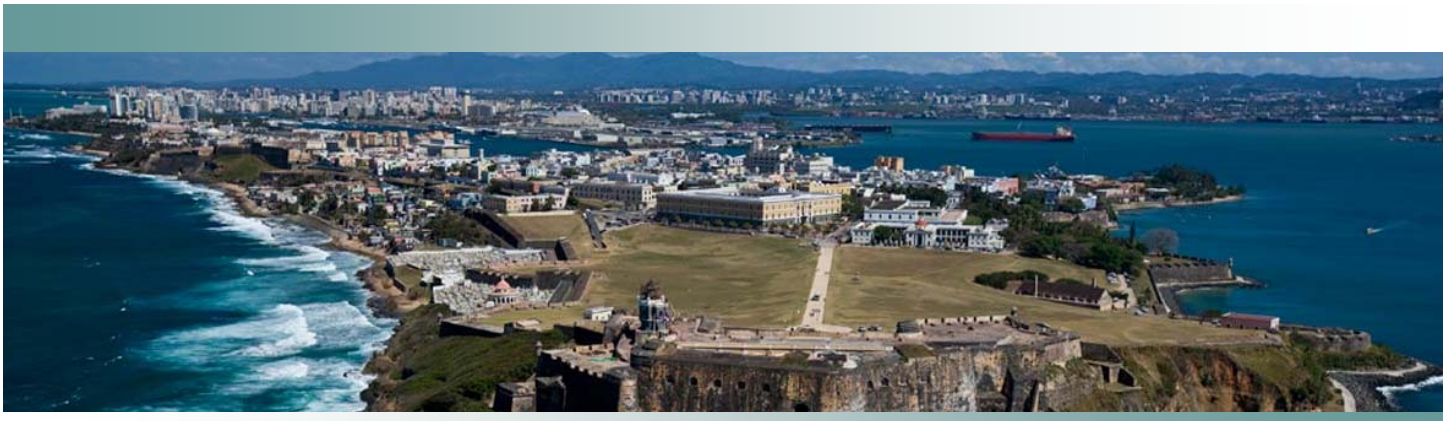
The ASME Bioengineering Division (BED) is pleased to announce the 2011 winners of these society-level awards in this newsletter: **Jay D. Humphrey** (H.R. Lissner Medal), **David A. Vorp** (V.C. Mow Medal), and **Ali Khademhosseini** (Y.C. Fung Medal).

In addition to these awards, BED members are eligible for additional awards issued by ASME. The first of these is promotion to fellow. The BED is pleased to announce that **2** of our members were promoted to ASME Fellow this year. Instructions for nominating a colleague are described in the membership committee's report and at: http://www.asme.org/about-asme/honors-awards/fellows

The Robert Henry Thurston Lecture Award has been a society award since 2000 to individuals who are an "outstanding leader in pure or applied science or engineering with the honor of presenting to the Society a lecture that encourages stimulating thinking on a subject." The award is administered by the Basic Engineering Technical Group; nominations should be sent to Mark Horstemeyer (mfhorst@cavs.msstate.edu); questions can also be directed to Don Giddens (don.giddens@coe.gatech.edu), the BED's representative to the selection committee.

The ASME presents the Dedicated Service Award to "honor dedicated voluntary service to the Society marked by outstanding performance, demonstrated effective leadership, prolonged and committed service, devotion, enthusiasm and faithfulness." It is awarded by the ASME Committee on Honors; queries can be directed to K.A. Thole (mckivorf@asme.org). This year, the honor was bestowed on **Mohamed Samir Hefzy.**

Thomas P. Andriacchi
Honors and Awards Chair



See the sights in Puerto Rico! Submit your Abstracts by Friday, January 13!

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2011 Y.C. Fung Young Investigator Award

The Y.C. Fung Young Investigator Award recognizes outstanding investigators, early in their careers, for innovative quality research and a demonstrated commitment to bioengineering. This award was a division level award from 1985 to 1998, but has been a society level award since 1998.

1986 Mark H. Holmes
1987 Steven A. Goldstein
1989 David N. Ku
1990 Jay D. Humphrey
1991 Michael Kwan
1992 Cheng Zhu
1993 John A. Frangos
1994 Mehmet Toner
1995 Cheng Dong
1996 Tony Keaveny
1997 Gerard A. Ateshian
1998 Louis J. Soslowsky
1999 Rebecca Richards-Kortum
2000 Farshid Guilak
2001 David F. Meaney
2002 Jeffrey A. Weiss
2003 Sangeeta N. Bhatia
2004 Richard E. Debski
2005 Jeffrey W. Holmes
2006 Beth Winkelstein
2007 Stavros Thomopoulos
2008 Gabriel A. Silva
2009 Robert L. Mauck
2010 Matthew J. Gounis
2011 Ali Khademhosseini

Ali Khademhosseini received his PhD in Biomedical Engineering from MIT, and MASc (2001) and BASc (1999) degrees from University of Toronto both in chemical engineering. He is an Associate Professor at Harvard-MIT's Division of Health Sciences and Technology, Wyss Institute of Biologically Inspired Engineering, Brigham and Women's Hospital and Harvard Medical School. He also directs a satellite laboratory at the World Premier International Advanced Institute for Materials Research at Tohoku University, Japan. His laboratory is developing bioinspired approaches for generating tissue-like structures as well as fabricating combinatorial biomaterials for regenerative medicine applications. He has edited 3 books and is an author on over 120 peer-reviewed papers, 35 book chapters, 120 abstracts, and 15 patent/disclosure applications. He has been invited to give 115 seminars. He has been cited over 3100 times and has an H-index of 31. Dr. Khademhosseini has received numerous awards from various societies including the AIChE Colburn Award, as well as other awards from TERMIS-NA, NSF, BMES, ONR, SFB, SLAS, IEEE-EMBS, the Coulter Foundation and ACS. He has also been named by the Technology Review Magazine as one of the "Top Young Innovators" (TR35) and received the BMW Group Scientific award.

Ali Khademhosseini

Jay D. Humphrey, Chair
Y. C. Fung Young Investigator Award
Committee 2008—2014

Microfluidics screening device in Dr. Khademhosseini's BioMEMs research laboratory.

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2011 Van C. Mow Medal

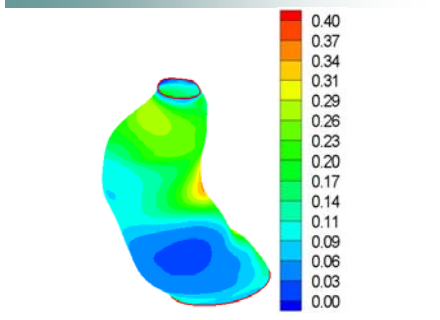
2005 Kyriacos A. Athanasiou
2006 Robert Lie-Yuan Sah
2007 Lori A. Setton
2008 Scott L. Delp
2009 Michael Sacks
2010 Tony Keaveny
2011 David A. Vorp

The Van C. Mow Medal is bestowed upon an individual who has made significant contributions to the field of bioengineering through research, education, professional development, leadership in the development of the profession, mentoring of young bioengineers, and service to the bioengineering community. The individual must have earned a Ph.D. or equivalent degree between ten and twenty years prior to June 1 of the year of the award. The award was established by the Bioengineering Division in 2004.

David A. Vorp received his PhD from the University of Pittsburgh in Mechanical Engineering, where he is currently Professor of Bioengineering, Cardiothoracic Surgery and Bioengineering. He is a leader in the fields of vascular biomechanics and tissue engineering, helping to define the biomechanical factors responsible for aortic aneurysm rupture and developing vascular tissue engineering technologies for treatment of arterial disease. He has been an outstanding teacher and mentor, supervising many graduate students, post-doctoral fellows and medical students. Dr. Vorp has served ASME and the broader biomechanics community through professional leadership, primarily through its Bioengineering Division (Executive Committee), as Chair of the ASME NIH Task Force, program chair for the ASME BED 2008 Summer Bioengineering Conference (SBC), conference chair for SBC 2011 , and as ASME Representative to the US National Council on Biomechanics. He has been elected Fellow of the ASME, the Biomedical Engineering Society (BMES) and the American Institute for Medical and Biological Engineering (AIMBE). He is on the Board of Directors of BMES and serves on the Executive Council and as Secretary-Treasurer of the International Society for Applied Cardiovascular Biology. Dr. Vorp also recently co-founded Neograft Technologies, Inc. He serves as the founding director of the University of Pittsburgh's Center for Vascular Remodeling and Regeneration. Dr. Vorp lives in Pittsburgh, PA with his wife Allison and son Justin.

David A. Vorp

Lori A. Setton, Chair
V. C. Mow Medal Committee
2011—2014



Rupture potential index distribution for an abdominal aortic aneurysm .

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2011 H. R. Lissner Medal

Jay D. Humphrey

The H. R. Lissner Medal was created in 1977 by the Bioengineering Division of ASME to recognize significant contributions to bioengineering. The H. R. Lissner Medal became a Society-wide award in 1987 through a donations from Wayne State University and the University of California San Diego. The award is named in honor of Prof. Herbert R. Lissner of Wayne State University for his pioneering work in biomechanics that began in 1939.

Jay D. Humphrey received his PhD in Engineering Science and Mechanics from The Georgia Institute of Technology and completed a post-doctoral fellowship in Medicine - Cardiovascular at the Johns Hopkins University. He is currently Professor of Biomedical Engineering at Yale University. He has authored a graduate textbook (*Cardiovascular Solid Mechanics*), co-authored an undergraduate textbook with a former student (*An Introduction to Biomechanics*), co-authored a handbook (*Style and Ethics of Communication in Science and Engineering*), co-edited a research text (*Cardiovascular Soft Tissue Mechanics*), published chapters in over 15 other books or encyclopedias, and published more than 160 archival journal papers. He serves as founding coeditor-in-chief for the international journal *Biomechanics and Modeling in Mechanobiology*, which recently received the highest impact factor in the field of biomechanics. He serves on the World Council for Biomechanics and on the Executive Committee of the US National Committee on Biomechanics. He is a Fellow of the American Institute of Medical and Biological Engineering and a Fellow of the American Society of Mechanical Engineers. He lives with his wife Rita of 29 years, and two daughters Kaitlyn and Sarah, in Madison, CT.

Thomas P. Andriacchi, Chair
H. R. Lissner Award Committee,
2011—2014

1977 Robert W. Mann
1978 Y.C. Fung
1979 Robert F. Rushmer
1980 F. Gaynor Evans
1981 Max Anliker
1982 R.M. Kenedi
1983 Henning E. von Gierke
1984 Perry L. Blackshear
1985 Richard Skalak
1986 Albert H. Burstein
1987 Van C. Mow
1988 Alf Louis Nachemson
1989 Robert M. Nerem
1990 Albert B. Schultz
1991 Savio Lau-Yuen Woo
1992 John C. Chato
1993 Don P. Giddens
1994 Sheldon Weinbaum
1995 Robert E. Mates
1996 Albert I. King
1997 Ajit P. Yoganathan
1998 Malcolm H. Pope
1999 Stephen C. Cowin
2000 Morton H. Friedman
2001 W. Michael Lai
2002 Kenneth R. Diller
2003 Vijay K. Goel
2004 John M. Tarbell
2005 Steven A. Goldstein
2006 Peter A. Torzilli
2007 Maury L. Hull
2008 Noshir A. Lagranga
2009 Thomas P. Andriacchi
2010 Roger Kamm
2011 Jay D. Humphrey

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ASME DEDICATED SERVICE AWARD

In 1983, the ASME Board of Governors approved the establishment of the Dedicated Service Award. It honors unusual dedicated voluntary service to ASME marked by outstanding performance, demonstrated effective leadership, prolonged and committed service, devotion, enthusiasm and faithfulness.

The American Society of Mechanical Engineers presents the Dedicated Service Award to **Mohamed Samir Hefzy, PhD** for dedicated voluntary service to the society marked by outstanding performance, demonstrated effective leadership, prolonged and committed service, devotion, enthusiasm, and faithfulness. Dr. Hefzy is a Professor at the University of Toledo. Mohamed Samir's contributions to ASME are listed below.

- Founder & Secretary – West Michigan Group of ASME (1984-1985)
- Member – Board of Directors of ASME Central Michigan Section (1984-1985)
- Executive Committee Member – ASME Northwest Ohio Section (1992-1995)
- Secretary – Solid Mechanics Committee, BED (1995-1999)
- Publications Chair – Summer Bioengineering Conference (1995, 1997, 2001)
- BED Excecutive Committee Member, External Affairs (1999-2003)
- ABET evaluator for ASME (2000-present)
- Chair – ASME NIH Bioengineering Task Force (2000-2002)
- Member of the National Nominating Committee (2001-2005)
- Member – ASME NIH Bioengineering Task Force (2003-2004, 2010-present)
- Local Arrangements Chair – 2003 Summer Bioengineering Conference

Mohamed Samir Hefzy

- Basic Engineering Group Representative to ASME IMECE (2004, 2005)
- Chair – BED Biosolids Technical Committee (2004-2007)
- Treasurer & Executive Committee Member – BED (2007-2013)
- Associate Editor – Journal of Biomechanical Engineering (2007-present)

Try deep sea fishing or just an ocean cruise off Puerto Rico! Submit your Abstracts by Friday, January 13!

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Promotions to ASME Fellow

We are pleased to report that, since the last edition of this newsletter, the Bioengineering Division has been successful in promoting 2 more members to the rank of Fellow within ASME. As described on the ASME website, "Fellow Grade is the highest elected grade of membership within ASME, the attainment of which recognizes exceptional engineering achievements and contributions to the engineering profession."

The citations for these new ASME Fellows are archived on the ASME website, and are reproduced below.

Do you know of a BED colleague who meets this standard and who has a minimum of 10 years of active service to ASME? Please nominate him or her through the ASME fellow website. The nominations are accepted four times a year (March, June, September and December). Eligibility criteria and the outline of the nomination process can be found on the ASME website at http://www.asme.org/about-asme/honors-awards/fellows/nomination-steps. Questions regarding the nomination process can be directed to Ozan Akkus at ozan.akkus@case.edu. Also, please inform me of your nomination so that we can be certain to recognize all BED Fellows in this newsletter and at the banquet of the Summer Bioengineering Conference.

Ozan Akkus, Chair
Membership Committee
2011—2014

Ozan Akkus' contributions have advanced musculoskeletal mechanics and biomaterials through understanding associations between omposition and bone mechanics at the supramolecular scale, mitigation of gamma radiation induced embrittlement of cadaveric bone transplants, and replacement of tendons with engineered tissues. These application of engineering to orthopaedics benefit elderly suffering from osteoporosis, people with substantial bone loss, and athletes and soldiers under intense training. Professional patent filiings and a start-up company have resulted, with the potential to generate real-life impact by translating bench to the clinic. Akkus' research has been funded by the NIH, NSF, the Whitaker Foundation, the U.S. Army and the Musculoskeletal Transplant Foundation. Ph.D. (2000), Case Western Reserve University.

Rupak Banerjee has successfully met the pressing challenge to engage in interdisciplinary research. He has developed expertise in numerous and diverse areas, including bio-fluid, mass and heat transfer, fluid-structure interaction, electro-hydrodynamics and pharmacokinetics in biological systems. He has effectively linked patient diagnoses with bio-transport analyses for predicting and treating patho-physiologic conditions, defects, diseases, and device performances. In the area of biomechanical engineering, Banerjee has distinguished himself as both a theoretician and an experimentalist. And he is a skilled numerical analyst of empirical data. He has been distinctly successful in obtaining financial support from many institutions for his research. Ph.D. (1992), Drexel University.

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ASME BIOENGINEERING DIVISION AWARDS

The ASME Bioengineering Division presents a series of awards to the authors of outstanding research contributions to BED journals and conferences. The Richard Skalak Award is presented to the authors of the paper voted by the *Journal of Biomechanical Engineering* editorial staff to be the most meritorious amongst those nominated over the course of a year. Nominations for this award are submitted to the JBME editorial staff (see instructions in this newsletter!)

A series of awards are presented to B.S., M.S., and Ph.D. level students for research contributions to the summer bioengineering conference. Awardees are selected by a panel of faculty volunteers from throughout the BED. If you are willing to volunteer for judging abstracts or on site presentations at the 2012 SBC, please contact Tammy Haut Donahue, chair of the Student Paper Competition Committee. (Tammy.Donahue@ColoState.edu)

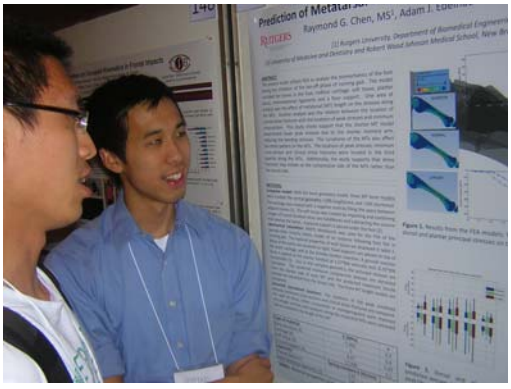
SBC2011 student paper competition

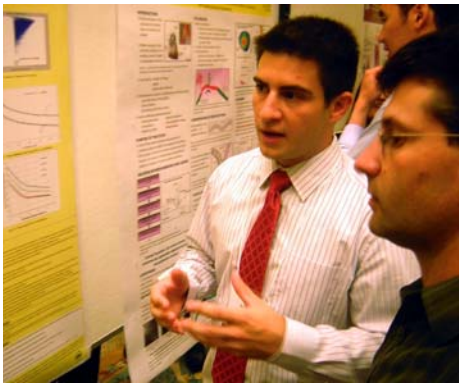
Tammy Haut-Donahue

The 2011 Student Paper Competition had a great turn out in 2011. In all, 292 abstracts (210 PhD, 53 MS and 29 BS) were submitted to the PhD, MS and BS competition. **This is nearly a 50% increase compared to 2010**. The competition saw a dramatic change this year. Abstract submitted to the PhD Competition were reviewed by the Technical Committees. The scores from these reviews were made available to the Student Paper Competition Committee, which normalized the scored and selected the top 36 abstracts for onsite podium competition, organized into 6 concurrent sessions. The PhD poster competition was eliminated. The MS and BS abstracts were reviewed by a separate set of reviewers selected by our committee. Scores were normalized by reviewer, averaged, and ranked within each category per competition. Subthemes for each level of the competition were created for onsite judging. An awesome effort by over 80 PI's from 71 different institutions helped judged poster and podium presentation for 20 BS level, 39 MS level and 36 PhD level students. Using a composite, normalized score of the abstract judging and onsite presentation score, cash prizes were awarded to the top 3 students in each subtheme for each level. The SPC was sponsored by The University of Arizona, Wake Forest- Virginia Tech Center for Injury Biomechanics, and Depuy.

The review of the 2012 Student Paper Competition abstracts will begin shortly. If you would like to contribute to judging these papers, please contact the overall chair of the 2012 competition: Tammy Haut Donahue. (Tammy.Donahue@ColoState.edu)

Tammy Haut-Donahue, Overall Chair
Sarah Kieweg, M.S. Chair
Andrew Anderson , B.S. Chair
2011 Student Paper Competition





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student paper competition: DOCTORAL LEVEL AWARDS

Microdevices and Biotransport - Doctoral Level	
1st Place	Anurag Tripathi, University of Michigan
2cd Place	Frederic Maes, Ghent University
3rd Place	Christopher Arena, Virginia Tech

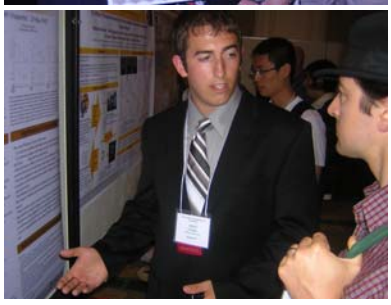
Orthopaedic Biomechanics - Doctoral Level	
1st Place	Nathaniel Dyment, University of Cincinnati
2cd Place	Feng Wei, Michigan State University
3rd Place	Corinne Henak, University of Utah

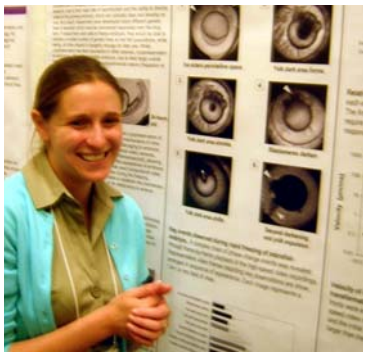
Physical Effects on Cells- Doctoral Level	
1st Place	Danielle Wu, City College of New York
2cd Place	Laura Hansen, Georgia Institute of Technology
3rd Place	Alicia Jackson, University of Miami

Cardiovascular Flow- Doctoral Level	
1st Place	Charlotte Debbaut, Ghent University
2cd Place	Bram Trachet, Ghent University
3rd Place	Jianping Xiang, SUNY-Buffalo

Biomaterials and Nanotechnology - Doctoral Level	
1st Place	Shirley Masand, Rutgers
2cd Place	Neha Shah, University of Minnesota
3rd Place	Daniel Weisgerber, University of Illinois at Urbana-Champaign

Cell Mechanics and Signaling- Doctoral Level	
1st Place	William Ronan, National University of Ireland Galway
2cd Place	Jennifer Mann, University of Michigan
3rd Place	Dannielle S. Figueroa, Drexel University





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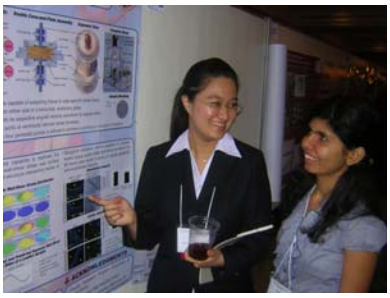
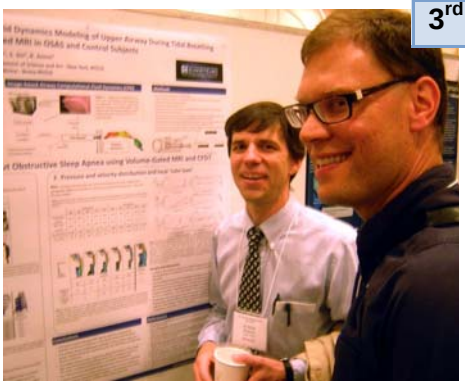
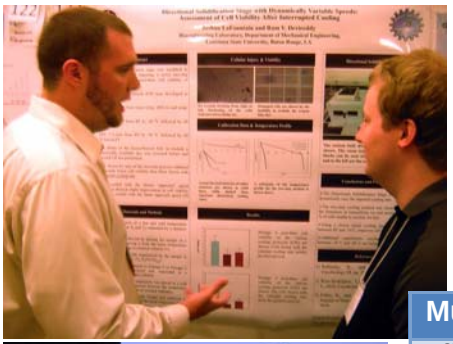
student paper competition: M.S. AND B.S. AWARDS







Biotransport, Biofluids, Tissue & Cell Engineering, Imaging - MS Level	
1st Place	Shirin Feghhi, University of Washington
2cd Place	Abhishek Tondon, Texas A&M University
3rd Place	Liza Shrestha, University of Iowa

Dynamics, Design, Rehabilitation and Injury - Masters Level	
1st Place	Stephanie Beeman, Virginia Tech
2cd Place	Ling Sun, University of Notre Dame
3rd Place	Scott H. Zenier, Oregon State University

Solid Mechanics - Masters Level	
1st Place	Theresa Koys, Johns Hopkins University
2cd Place	John T. Moyer, Michigan Technological University
3rd Place	Emma Baillargeon, University of Pittsburgh

Musculoskeletal Biomechanics and Imaging- Bachelors Level	
1st Place	Kathy Chou, Cornell University
2cd Place	Adam Griebel, Purdue University
3rd Place	Kelvin Luu, University of Pittsburg

Tissue Engineering, Biotransport and Cell Mechanics- Bachelors Level	
1st Place	Christina Frey, University of Minnesota
2cd Place	Margaret Thomas, University of Minnesota
3rd Place	Kathleen Bommer, Villanova University

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undergraduate rehabilitation and assistive device DESIGN PROJECT COMPETITION

For SBC 2011, senior year design-and-build projects that involved rehabilitation and assistive technology were encouraged to enter their design. We had 18 abstract submissions from 12 different schools.

Each abstract was reviewed using the following five criteria, all equally weighted: 1) Product need and market potential, 2) Device utility and novelty, 3) Technical feasibility, 4) Budget and economic plan, and 5) Writing clarity and style. The top six projects were selected from the submitted proposals. Monetary awards of $3000 (provided by NSF) for the six finalist teams were made to help defray building costs for the projects and travel expenses to the conference. The six schools represented were Clarkson, NJIT, Purdue, Rice, Wayne State, and Western Carolina and the student teams ranged from freshmen to graduating seniors. Students presented their final designs at the SBC during a special podium session. Presentations were judged on five criteria (percentage weighting): Product need and market potential (15%), Device description (25%), Device performance (20%), Economic plan (15%), and Presentation clarity and style (25%). The winning teams are noted below.

The competition is also planned for the 2012 SBC. Abstract format and submission rules vary from standard abstracts. See the 2012 program announcement (http://www.asmeconferences.org/SBC2012/UndergraduateCompetition.cfm) or contact the 2012 committee chair, Martin Tanaka, for more information (*mtanaka@wcu.edu*).

Lorin Maletsky, Chair
Undergraduate Design Competition
SBC 2011

Undergraduate Rehabilitation and Assistive Device Design Competition Awards	
1st Place	Avery Cate, Dillon Eng, Jessica Scully, Rachel Jackson, Allison Scully Quantification of Dexterity through a Novel Electronic Device, Rice University
2nd Place	Elsbeth Adams, Travis Kiser, Rochelle LaPorte, Tracy Roux, Eric Stanistreet, Caitlin Storey A Partial Weight Bearing Reminder Device for Rehabilitation After Lower Extremity Surgery Clarkson University
3rd Place	Angela Calderon, Bushra Hossain, Yamin Noor, Marieme Dembele, Sarah Ovsiew Stereoscopic Motion Tracking System New Jersey Institute of Technology

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RICHARD SKALAK AWARD for Best Paper in *JBME*

The Richard Skalak Award is presented to the authors of the paper voted by the BED Honors Committee to be the best published in the *Journal of Biomechanical Engineering* over the course of a calendar year. The award is named in honor of the late Richard Skalak (1923-1997), a pioneer in the field of bioengineering and editor of *Journal of Biomechanical Engineering* from 1983 to 1987.

The ASME BED/JBME best paper is intended to honor the memory of Richard Skalak by recognizing an outstanding paper published in JBME in the prior year of the award. For 2010, the Skalak Best Paper was awarded to N.J. Drury, B.J. Ellis, J.A. Weiss, P.J. McMahon, and R. Debski for their paper entitled "The Impact of Glenoid Labrum Thickness and Modulus on Labrum and Glenohumeral Capsule Function," published in J Biomechanical Eng., DECEMBER 2010, Vol. 132.

The awardees certainly exemplify all of these characteristics, and in addition, during his career in bioengineering, Richard Skalak worked on significant problems in the function and repair of bone and joint complexes. He would be proud to see this substantial advance in understanding of one of the most complex biomechanical joints. Thus, we feel that the legacy of Richard Skalak's example is greatly enhanced by this outstanding example of modern bioengineering.

The abstract of their work follows:

"The glenoid labrum is an integral component of the glenohumeral capsule's insertion into the glenoid, and changes in labrum geometry and mechanical properties may lead to the development of glenohumeral joint pathology. The objective of this research was to determine the effect that changes in labrum thickness and modulus have on strains in the labrum and glenohumeral capsule during a simulated physical examination for anterior instability. A labrum was incorporated into a validated, subject-specific finite element model of the glenohumeral joint, and experimental kinematics were applied simulating application of an anterior load at 0 deg, 30 deg, and 60 deg of external rotation and 60 deg of glenohumeral abduction. The radial thickness of the labrum was varied to simulate thinning tissue, and the tensile modulus of the labrum was varied to simulate degenerating tissue. At 60 deg of external rotation, a thinning labrum increased the average and peak strains in the labrum, particularly in the labrum regions of the axillary pouch (increased 10.5%

(Continued on page 17)

Nicholas J. Drury

Benjamin J. Ellis

Jeffrey A. Weiss

Patrick McMahon

Richard E. Debski

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JOURNAL OF BIOMECHANICAL ENGINEERING

Michael S. Sacks

The Journal of Biomechanical Engineering reports the results of original research involving the application of mechanical engineering knowledge, skills, and principles to the analysis, design, development, and function of native and engineered biological systems across all dimensional scales. Subject areas include: native and artificial organs, prostheses, bioinstrumentation and measurements, bioheat ransfer, biomaterials, tissue biomechanics, bioprocess engineering, cellular and biomolecular mechanics, design and control of biological and physiological systems. The journal presents full-length original research articles, technical briefs, announcements, calls for papers, calendar of events, and letters to the Editor. Along with the Associate editors and the BED, we continue to make JBME a premier biomedical engineering journal. For this year, I am proud to report significant progress towards these goals, as detailed in the following.

Major upgrades for the Journal Tool and Production.
Work with ASME Publications, we have made many improvement to the Journal WebTool that has made it much easier for all users to submit papers, invite and obtain reviews, and submit final manuscripts. Of critical importance is the auto upload of NIH funded research papers to NLM/PUBMED. On the Production side, ASME will no longer be working with AIP and will be working with a new typesetting vendor to dramatically speed up the accepted manuscript to proof to publish timeline.

	Papers Submitted	Papers Rejected	Rejection Rate
2007	418	279	66.7%
2008	447	276	61.7%
2009	430	289	67.2%
2010	459	304	66.2%
2011	552	348	63.0%

Continued selectivity and substantial increases in review speed.
JBME has made continued strides in increasing submissions, reducing review times, and increasing selectivity. Our submissions increased from 459 in 2010 to 552 total submissions in 2011 (a 20% increase). Our review times have decreased to an average of 1 month from submission to AE recommendation, and we accept only 27% of all submitted papers.

Dual Editors for JBME.
Many mainstream journals have adopted a two Editor Journal. Given the increase in submissions, the need to continue to improve the Review/Production processing, and Editor/BED initiatives to promote the Journal, clearly having Co-Editors would be very beneficial. In addition, having Co-Editors facilitates an expertise in a broader range of topics. Each Editor will supervise one of the following areas:

Area 1: Biosolids (molecules, cells, soft tissues and biomaterials), biofluids, heat/mass transfer, nano-mechanics.

Area 2: Human movement, orthopedic (hard tissues), orthotic devices, hand mechanics, impact/crash injury.

I am pleased to inform you that the BED Executive Committee has approved Professors Victor Barocas (BME, U. Minnesota) and Beth Winklestein (Bioengineering, U. Pennsylvania) as the new Co-Editors for Area 1 and Area 2, respectively. Dr. Winklestein began her term staring in January 1, 2011, and Dr. Barocas will begin on July 1, 2011, after I step down. I am very much looking forward to working with both Victor and Beth over the next year.

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JBME (CONTINUED)

Monthly Newsletter

Finally, starting in January 2012 we will be working with ASME to publish a monthly newsletter to be sent to all BED and ASME members. This newsletter will include latest publications, most cited papers, and other news on the progress of the Journal.

I look forward to reporting more good news in the very near future.

Michael S. Sacks, Editor
University of Texas at Austin

Skalak Best Paper (CONTINUED)

average strain) and anterior band (increased 7.5% average strain). These results suggest a cause-and-effect relationship between age-related decreases in labrum thickness and increases in labrum pathology. A degenerating labrum also increased the average and peak strains in the labrum, particularly in the labrum regions of the axillary pouch (increased 15.5% strain) and anterior band (increased 10.4% strain). This supports the concept that age-related labrum pathology may result from tissue degeneration. This work suggests that a shift in capsule reparative techniques may be needed in order to include the labrum, especially as activity levels in the aging population continue to increase. In the future, validated finite element models of the glenohumeral joint can be used to explore the efficacy of new repair techniques for glenoid labrum pathology."

Michael S. Sacks, JBME Editor
University of Texas at Austin

JOURNAL OF MEDICAL DEVICES

Co-editor
Arthur G. Erdman
agerdman@umn.edu

Co-Editor
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Journal of Medical Devices focuses on applied research and the development of new medical devices or instrumentation, this new journal presents papers on devices that improve diagnostic, interventional, and therapeutic treatments. It provides special coverage of novel devices that allow new surgical strategies, new methods of drug delivery, or other devices that are intended to reduce the complexity, cost, or adverse results of health care. Significant biomechanical, clinical, or engineering content is expected. The Design Innovation Paper category is encouraged for reporting about novel devices for which there may be less extensive clinical or engineering results.

The March 2012 Issue will mark 5 full years of this Journal. Since the start of the Journal, 171 papers out of 512 submitted have been accepted for publication (not including accepted abstracts published from the Annual Design of Medical Devices Conference: www.dmd.umn.edu). Hard copy subscribers to this journal number over 1,200. The Co-Editors encourage you to submit a paper or subscribe to the journal.

The Journal of Medical Devices is now accepting Associate Editor nominations. Please send your nominations to the Editors.

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2011 summer bioengineering conference—final report

David A. Vorp

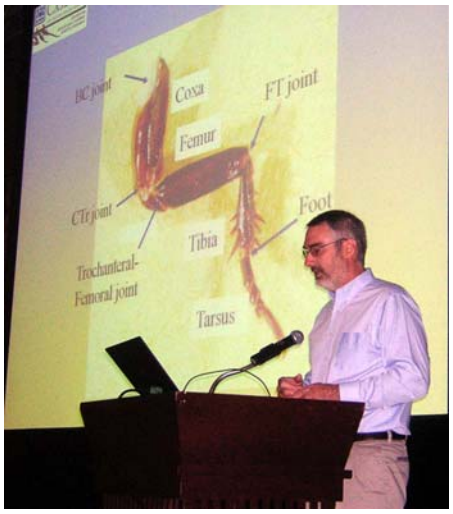
Ozan Akkus

In June, 2011, the 13th Summer Bioengineering Conference (SBC) was held at the incredibly beautiful Nemacolin Woodlands Resort in the Laurel Mountains of Pennsylvania. There was nothing "unlucky" about the number 13 in this case! SBC 2011 was a record-breaking meeting in terms of numbers of attendees (824!), who enjoyed not only a strong scientific program and the usual excellent networking opportunities, but also all that Nemacolin and its surroundings had to offer, including Frank Lloyd Wright's Fallingwater House, world-class white water rafting, hiking, biking, sporting clay shooting, and many others. Generous funding from the NSF and NIH, as well as record-breaking sponsorships (through the hard work of Exhibits Chair Dr. Jonathan Vande Geest) made the meeting a success. The scientific program (put together under the able leadership of Dr. Ozan Akkus) was expanded to accommodate an increase in abstract submissions by adding a 7th parallel podium session and by holding two poster sessions. "Age-related disabilities engineering" was a focus of the conference, highlighted by a first for the SBC: An undergraduate rehabilitation design competition (organized by Dr. Lorin Maletsky).

Thanks to all those who contributed to the committee meetings at the 2011 SBC. Now you cannot say your job is "thankless"!

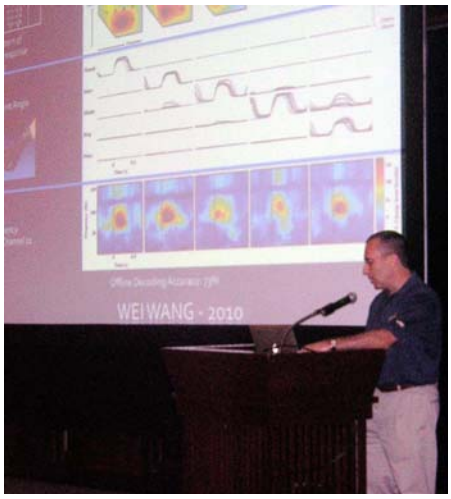
SBC 2011 organizers and attendess enjoy the opening reception at Nemacolin Woodlands.

Two exceptional plenary lectures were delivered by Dr. Elazer Edelman, the Thomas D. and Virginia W. Cabot Professor of Health Sciences and Technology at MIT, Professor of Medicine at Harvard Medical School, and Prof. Roger Quinn, the Arthur P. Armington Professor of Engineering at Case Western Reserve University and Director of the Center for Biologically Inspired Robotics Research. SBC 2011 also honored the lifetime achievements of Dr. Savio L-Y. Woo by



Roger Quinn's talk on animal-inspired robots was one of two plenary sessions.

symposia on soft tissue and joint mechanics, organized by his friends, former trainees and colleagues in recognition of his 70th birthday. A special workshop and a technical session, respectively, were held to remember two great leaders from our field who recently passed away: Prof. John Chato and Prof. Rik Huiskies.



The SBC featured eight well-attended workshops, on topics such as fluid-structure interaction in ABAQUS, announcement of this years BED grand challenge winners, *and two focused on research to aid persons with disabilities.*

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Conference report from Nemacolin (CONTINUED)

Savio L-Y. Woo accepts his well-earned Superman underwear from Al Banes.

medal winners, Drs. David Vorp and Ali Khademhosseini, respectively.

As always, the SBC would not even be held, let alone with such success as the 2011 meeting, if it were not for the hard work of a dedicated set of volunteers. Those volunteers that tirelessly and selflessly gave of their

Once he got to Nemacolin, SBC 2011 Chair, David Vorp, was on the downhill slide.

The standard highlights of the SBC were also a success, including the student paper presentations and competition (diligently organized by Dr. Tammy Haut-Donahue, with 99 finalists presenting in the Bachelor, Masters and Doctoral levels. A special plenary session highlighted the ASME H.R. Lissner medal winner, Dr. Jay Humphrey, and another special session highlighted the ASME Y.C. Fung and Van C. Mow

Nothing quite like that marshmallow roasted over an open fire.

I look forward to enjoying SBC 2012 as a regular attendee again, and wish the SBC 2012 Organizing Committee all of the best for a successful conference. See you in Puerto Rico!

David A. Vorp, Conference Chair
Ozan Akkus, Program Chair
SBC 2011

At SBC 2011, BED members were loaded for bear!

valuable time to serve on the SBC 2011 Organizing Committee (and participate in my annoying monthly conference calls!) were: Dr. Ozan Akkus (Program Chair), Dr. Matthew Gounis (Information Chair), Dr. Tammy Haut-Donahue (Student Competition), Dr. Mohamed Samir Hefzy (Finance Chair), Dr. Charles Lee (Local Arrangements Chair), Dr. Jonathan Van De Geest (Exhibits Chair), and Dr. Beth Winkelstein (Publication Chair). I truly owe them all my thanks for being such excellent colleagues and dedicated members of the ASME BED.

Even families enjoyed the great poster sessions!

Random bagpiper? Was it Pennsylvania or Scotland?

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BEDrock report

The 2011 SBC proved once again that the Bioengineering Division knows how to rock, led by its very own band, BEDrock.

BEDrock formed in 2003 at the SBC meeting in Key Biscayne, FL. They have played at every Summer Bioengineering Conference since then, as well as at a couple of BMES meetings.

The BEDrock concert at SBC 2011 featured Joel Berry, Danny Bluestein and daughter Zoe, René van Donkelaar, Alan Eberhardt, Clark Hung, Jimmy Moore, Mike Moren, Andrea Muschenborn, Luke Timmins, David Vorp's son, Justin. The band was assisted by Steve Abramowitch, who helped to transport the musical equipment from Pittsburgh to the Nemacolin Woodlands resort.

The Friday evening show was very well attended, and very enjoyable. The weather was perfect, and many at the show danced the night away to the rock and roll tunes. Those shaking a leg included BED executive committee members, conference attendees and their kids. It was perhaps the best BEDrock performance yet!

The BED's favorite band, BEDrock, at SBC 2011.

The band has already been planning for its performance for SBC 2012 on the sunny island of Puerto Rico! Rumor has it that the famed Jeff Weiss will rejoin the band there. Perhaps they'll also throw in several tropical tunes! Steel drum, anyone?

Watch for more news of the next BEDrock performance at the SBC 2012 at the El Conquistador Resort in Farjardo, Puerto Rico!

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UPDATES FROM THE TECHNICAL committeeS

BIOTRANSPORT committee

The Biotransport (BIOT) Committee held their annual committee meeting at the picturesque Nemacolin Woodland Resorts in Farmington, PA as part of the 2011 Summer Bioengineering Conference. The committee unanimously approved the minutes of our meeting from 2010 SBC. We reported on the technical podium and poster sessions organized at the SBC in Farmington and planned for next year's meeting in Puerto Rico. The technical sessions organized by our committee at the ASME/JSME 8th Thermal Engineering Joint Conference (March 13-17, 2011, Honolulu, Hawaii), at the ASME IMECE Winter Annual Meeting (Nov 11-17, 2011, Denver, Colorado) were also discussed. An update was also provided to the committee on member research accomplishments and awards, member promotions and relocations. And finally, there was a positive interest expressed by the committee to holding a day-long symposium on topics of interest to the Biotransport committee either at either the SBC 2012 or SBC 2013 Meeting.

For SBC 2011 in Farmington, Biotransport members submitted 66 abstracts to the conference. This represents ~50% increase in the number of submitted abstracts from last year. We thank the following reviewer's for their time and effort to review abstracts: K. Mitra, J. Smith, Y. Liu, E. Wissler, B. Han, X. He, J. Bischof, K. Diller, R. Banerjee, R. Devireddy, J. Xu, R. Eberhart, S. Bhowmick, C. Rylander, M.N. Rylander, M. Sarntinoranont, S. Thirumala, A. Zhang, R.E. Diaz-Rivera, R. Goel, Z. Huang, N. Wright, L. Zhu, R. Davalos, J. Pearce, R. Visaria - Shrivastava, D. Shrivastava, C. Lee and R. Coger. In addition, some of our members also participated in reviewing abstracts of the student paper competitions and served as judges to the student poster competitions. The final SBC 2011 program included 5 podium sessions sponsored by BIOT committee, one of the podium session was co-sponsored with the Cell and Tissue Engineering. We also had two poster sessions spread over the conference representing an additional 23 abstracts. Seven more abstracts were selected for various student paper competitions. The titles of the five technical podium sessions (and the corresponding session chairs) were:

Multiscale Modeling in Biotransport
(Chairs: M. Sarntinoranont and Y. Liu)


Ram Devireddy

Targeted Delivery & Electroporation
(Chairs: X. He and R. Davalos)

Biothermal Engineering: In Memoriam of Prof. Chato
(Chairs: A. Shitzer and K. Diller)

Bioheat Transfer and Bionanotechnology
(Chairs: M.N. Rylander and S. Bhowmick)

Biotransport in Tissue and Cellular Engineering
(Chairs: B. Han and S. Ramaswamy)

BIOT committee was very saddened to hear the loss of Professor John Chato. He was very active as a leader within the bioheat transfer community, providing leadership and mentoring for generations of younger professionals. He organized a series of meetings on bioheat transfer at Allerton House over a period of 25 years that had a profound influence on advancing the discipline and in guiding the careers of many investigators in the field. We shall miss him greatly as a friend and colleague. To commemorate Prof. Chato's

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Support from exhibitors and grants helps to make the Summer Bioengineering Meeting possible with affordable registration fees!

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DESIGN, *DYNAMICS*, & REHABILITATION committee


Lorin Maletsky

Thanks to everyone who attended SBC 2011 in Farmington, PA for making it one of our best meetings. The committee had great participation with 97 abstracts submitted through DDR in three broad themes: Design and Devices, Human Dynamics, and Rehabilitation. Thank you to the following volunteers for reviewing abstracts and judging at SBC 2011: Ahmed Al-Jumaily, Bryce Baker, Sudhaker Chabra, Tim Craig, Adam Cyr, Linda Denney, Ken Fischer, Katherine Fraser, Brian Garner, Trent Guess, Mohamed Hefzy, Joseph Iaquinto, Clif Johnston, Mark Komosa, David Ku, Vitaly Kyfyts, Kuxhaus Laurel, Alison Marsden, Craig McGowan, Anil Misra, Mike Murphy, Rick Neptune, Rita Patterson, Sethuraman Sankaran, Vijaykumar Sathyamurthi, Rob Siston, Kevin Shelbourne, Antonis Stylianou, Martin Tanaka, Amy Throckmorton, Lucas Timmons, Beth Todd, Andrew Walker, Jim West, and Sara Wilson.

Six podium sessions were programmed, some in conjunction with the fluids or solids committee, as well as a number of theme areas in the poster sessions. Rehabilitation was a main theme of the conference and we had some excellent workshops to support this area. Ted Conway from NSF, Nancy Shinowara from NIH, and Jerry Weisman from RESNA presented a highly informative workshop titled, *How Will Engineers Assist People with Disabilities in the 21st Century?* The second workshop reviewed some fascinating current research in the rehabilitation and assistive devices field with Michael Boninger, Jonathan Pearlman, and Kevin Fite in the *Frontiers to Aid People with Disabilities* workshop. Thanks to Jenni Buckley for organizing the *Research Development on Orthopaedic Technology* with Jeff Bischoff, Vijay Goel, and Payman Afshari as speakers. In a continuation of our challenge, BJ Fregly and Darryl D'Lima again ran the *Grand Challenge Competition to Predict in Vivo Knee Loads*.

One of the exciting additions from DDR at SBC 2011 was the inaugural Undergraduate Design Project Competition in Rehabilitation and Assistive Devices. The objectives of this undergraduate design competition are to showcase undergraduate design work, provide students with an opportunity to present their work, introduce them to the Bioengineering Division of ASME, and provide a chance to meet professionals in the bioengineering field. Eighteen teams submitted designs and the top six projects presented their concepts at a special podium session during the meeting. The top team selected was from Clarkson University who presented their design for the *Quantification of Dexterity through a Novel Electronic Device*. We are continuing the competition again in 2012 (organized by Martin Tanaka) and with generous funding from NSF each of the six finalist teams will receive $3000 to help with the project and cover expenses to attend the meeting. Undergraduate students engaged in design projects related to rehabilitation or assistive devices during the current (2011-2012) academic year are encouraged to submit an abstract of their design project. In a change from last year, to encourage more submissions from teams working on projects in the Spring semester, students must submit basic information about the design problem and student and faculty affiliation information by the normal conference deadline of January 13, 2012. A detailed two-page abstract of the project that will be judged must be submitted by February 15. The top six finalists will again be given an opportunity to present their work during a special podium presentation session.

SBC 2012 looks to be another exciting meeting for DDR in sunny Puerto Rico. We are running the same three themes (with numerous subthemes): Human Dynamics (Rick Neptune), Rehabilitation (Tamara Bush), and Design and Devices (Mike Moreno and Tony Petrella). If you aren't already preparing, please consider submitting abstracts to these themes so that we can again program a number of sessions. If you are interested in reviewing abstracts please let one of the theme coordinators or committee chairs know. We appreciate all the help we can get. Rehabilitation will continue to be emphasized with an interesting workshop on *Bringing Assistive Devices to Market* (organized by Ken Fischer). Assistive devices that are designed and developed through student capstone design projects or through fundamental research may have excellent design features, but the majority never makes it to the point of commercialization and availability to the rehabilitation market. Hopefully this workshop will help. We are also again running the *Grand Challenge Competition to Predict in Vivo Knee Loads*.

BED DDR had great participation in the Biomedical and Biotechnology

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FLUID MECHANICS committee


David Steinmann

As we gear up for SBC 2012 (especially me as Program Chair!), it's worth first briefly recounting SBC 2011. Fluids organized 13 sessions under the themes of "Cardiovascular Fluid Mechanics" and "Biofluid Mechanics and Techniques". More than half of these were joint sessions with other committees, continuing Fluids' tradition of playing well with others. Keefe Manning also led a successful workshop on Mechanical Circulatory Support to complement one of the sessions. The Fluids Committee meeting was very well attended (N=36), with vigorous discussions about our theme structure, workshops for SBC 2012, and plans for a CFD Challenge that has been germinating in the minds of your Chair and Vice-Chair, Frank Loth, for several years.

For SBC 2012, we decided to stick with two separate themes, but now moving away from an applications vs. techniques approach to focusing on "Cardiovascular Fluid Mechanics" and "Respiratory and Other Fluid Mechanics" themes. Following the organizational approach taken by the Solids Committee, Frank and I enlisted Keefe Manning and Brandon Dixon as respective Theme Chairs, to lead the reviewing and programming efforts, and more generally to invigorate theme planning. If you have received an invitation to review from Keefe or Brandon, please respond if you haven't already. If you haven't received an invitation yet, please let either of them know, you are willing as sometimes these things slip through the cracks.

The overall theme of SBC 2012 will be "The Art and Science of Imaging", and we are fortunate to have recruited the legendary Mark Henkelman, director of Toronto's Mouse Imaging Centre, to provide an overview of the possibilities for imaging mice to (wo)men. In keeping with the Imaging theme, the Fluids Committee is organizing a workshop on 4D Phase Contrast Magnetic Resonance Imaging (PCMRI), which has emerged as a viable alternative to image-based CFD for illuminating the details of cardiovascular hemodynamics in vivo. Our resident MRI Flow & Motion experts John Oshinski and Yannis Papaharilaou have organized a dream team of PCMRI experts (Petter Dyverfeldt, Alex Frydrychowicz, Michael Markl, Oliver Wieben; look 'em up, you'll see what I mean!), and are planning a program around the promise and pitfalls of PCMRI, and very real opportunities to engage with the CFD community.

Finally, this year Frank and I took to plunge and have organized what we hope will be the first of several CFD Challenges, this one centred around an aneurysm case generously donated by Juan Cebral. More than 30 groups from around the world have requested the Challenge dataset, and presumably are working feverishly the meet the Phase I abstract submission deadline of January 13th. At the same time, a group led by Michael Walsh is working feverishly to provide experimental measurements to kick start Phase II. At SBC 2012, we will hold a CFD Challenge Workshop to present the results, and discuss plans for future challenges.

Frank and I look forward to your submissions, your reviews, and your attendance at SBC 2012. See you in Puerto Rico in June!

David A. Steinman, Chair
Fluids Committee
2009—2012

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SOLID MECHANICS committee


Jeff Holmes

The Solid Mechanics Committee had a great showing at SBC 2011. We reviewed 323 abstracts, accepting about 85%, and organized or co-organized 29 podium sessions, including a special symposium in honor of Savio Woo's 70th birthday and a tribute to Rik Huiskes, as well as 2 workshops: Research and Development of Orthopaedic Technology: A 360 Degree View; and the Grand Knee Challenge Competition. Rich Debski from the University of Pittsburgh was elected Vice-Chair of the Solid Mechanics Technical Committee and began his term at the meeting.

A big part of putting together such a large program of sessions, workshops, and posters is reviewing all the abstracts. A big thanks to all 131 SBC 2011 Solids reviewers: Steven Abramowitch, Ozan Akkus, Patrick Alford, Andy Anderson, William Anderst, Dennis Andrews, Albert Banes, Philip Bayly, Michael Bey, Kristen Billiar, Cynthia Bir, Danny Bluestein, Sachin Budhabhatti, David L Butler, Juan Cebral, Nadeen Chahine, KB Chandran, Ajit MW Chaudhari, Boyle Cheng, David Corr, Duane Cronin, Darryl D'Lima, Kurosh Darvish, Richard Debski, Louis DeFrate, Scott Delp, Constantine Demetropoulos, Kathleen A. Derwin, Elena S. Di Martino, Denis DiAngelo, Todd Doehring, Xuanliang Dong, J. Crawford Downs, Donna Ebenstein, Alan Eberhardt, Alejandro A. Espinoza Orias, Virginia Ferguson, Ender Finol, Kenneth J Fischer, Matthew Fisher, Matthew Ford, Cy Frank, B.J. Fregly, Morton Friedman, Hiromichi Fujie, Bo Gao, Frank J Gijsen, Gaurav Girdhar, Vijay Goel, Matthew Gounis, Nicole Grosland, Trent M. Guess, Rasim Guldiken, Jason Hallman, Hai-Chao Han, Lorena Havill, Chris Hernandez, Jeffrey Heys, Yiemeng Hoi, Jeffrey Holmes, Hanna Isaksson, Jingfeng Jiang, Liang-Der Jou, Christof Karmonik, Eric Kennedy, Ellen Kuhl, Spencer Lake, Guoan Li, Zong-Ming Li, Jun Liao, Xiaowei (Sherry) Liu, Glen Livesay, X. Lucas Lu, Keefe Manning, Joseph Mansour, Haojie Mao, Alison Marsden, Takeo Matsumoto, Robert Mauck, Colin McDonald, Timothy McGloughlin, Hui Meng, W. David Merryman, Mark Miller, Ken Monson, Elise F. Morgan, Kristin Myers, Raghu Natarajan, Nandan Nerurkar, Corey P. Neu, Niamh Nowlan, Jeffry Nyman, Makoto Ohta, TIm Ovaert, Yannis Papaharilaou, Avinash Patwardhan, Kerem Pekkan, Michelle Previtera, Paolo Provenzano, Christian Puttlitz, Madhavan L. Raghavan, Alberto Redaelli, Jeffrey W. Ruberti, Marcel C.M. Rutten, Michael S. Sacks, Edward A. Sander, Jason Shearn, David I. Shreiber, Nigel Shrive, Ian Sigal, Jessica Sparks, Lambert Speelman, Brian Stemper, Joel Stitzel, Wei Sun, Larry Taber, Dalin Tang, Stavros Thomopoulos, Gail Thornton, Lucas Timmins, Jonathan Vande Geest, Pamela VandeVord, Devendra Verma, Pavlos Vlachos, Liming Voo, Jennifer Wayne, Lakiesha Williams, Xiaoyi Wu, Michalis Xenos, Katherine Yanhang Zhang, and Liying Zhang.

Everything about the SBC – from reviewing to organizing sessions to the fun discussions in the hall – relies on people who love the meeting and volunteer to help. If you would like to get involved in reviewing abstracts, organizing sessions, etc., please do two things: 1) email the appropriate 2012 Theme Leader and offer to review abstracts; and 2) arrive early for the next SBC so you can attend our committee meeting on Wednesday and offer your ideas for sessions, workshops, and things you would like to see at the next SBC. The 2012 Solid Mechanics Committee Theme Leaders are:

- David Merryman – Cardiovascular Tissue Mechanics
- Seungik Baek – Growth, Remodeling, and Repair
- Alan Eberhardt – Injury
- David Corr – Musculoskeletal Soft Tissue Mechanics
- Todd Bredbenner – Bone Mechanics
- Brian Kelly – Joint and Spine Mechanics
- Vicky Nguyen – Other Solid Mechanics

See you at SBC 2012 in Farjardo, Puerto Rico!

Jeff Holmes, Chair
Solid Mechanics Committee
2010—2013

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TISSUE AND CELLULAR ENGINEERING committee


Guy M. Genin

SBC 2011 was the largest gathering of tissue and cellular engineering researchers in ASME history, beating out by 50% the previous record number of abstracts presented. Congratulations to all of us! We were everywhere: we had one major award winner (congratulations again to committee member Ali Khademhosseini!), a standing-room only workshop on interfaces in tissue engineering organized by Robin Coger and Stavros Thomopoulos (thanks Stavros and Robin, and apologies to all those who were standing with me in the back!), and two poster sessions, three Ph.D. competition podium sessions (thanks to Tammy Haut Donahue!), and 13 podium sessions, 5 of which were organized jointly with other technical committees. Many thanks to all of who submitted abstracts for making this happen, and also to all of you who reviewed abstracts: Teresa Abney, Steve Abramowitch, Alex Almarza, Brendon Baker, Kris Billiar, Todd Bredbenner, Nadeen Chahine, Chris Chen, Erik Clayton, David Corr, Brandon Dixon, Jennifer Dolan, Ginger Ferguson, Jianping Fu, Guy Genin, Rudy Gleason, Brendan Harley, Hamed Hatami-Mabrini, Alice Huang, Clark Hung, Iwona Jasuik, Roland Kaunas, Ali Khademhosseini, Phil LeDuc, Sheng-Lin Lee, Marc Levenston, Nicholas Liaw, Ding Ma, Rob Mauck, Patrick McGarry, Hui Meng, Mohammad Mofrad, Alisa Morss Clyne, Ravi Namani, Ali Nekouzadeh, Corey Neu, Steve Nicoll, Ruth Okamoto, Ashwin Ramasubramaniam, Sharan Ramaswamy, Amber Rath Stern, Jin-Yu Shao, Lester Smith, Nate Sniadecki, Alex Spector, Jeremy Suggs, Wei Tan, Steve Thomopoulos, Rene van Donkelaar, Jessica Wagenseil, Amy Wagoner, Gang Xu, Eda Yildirim-Ayan, and Evan Zamir.

We bid farewell this year to our outgoing chair, Dan Nicollela of Southwest Research Institute. Many thanks to Dan for his highly successful efforts in strengthening our committee. The committee is also pleased to announce that the executive committee has approved our choice of Rob Mauck as our new co-chair—congratulations, Rob!

Our annual meeting was held on the first day of SBC 2011 on the grounds of the conference site, and planned there for 2012. Our offerings include ten themes, each of which is headed by a chair: biological machines and engineered bio-hybrid systems (chair: Bahareh Behkam); cardiovascular tissue engineering (chair: Alisa Morss Clyne); mechanotransduction and subcellular biophysics (chairs: Roland Kaunas, Adam Engler, and Nate Sniadecki); mechanics and synthesis of biological interfaces (chairs: Ginger Ferguson and Brendan Harley); musculoskeletal tissue engineering (chair: Ozan Akkus); nano, micro and multiscale mechanics (chairs: Nadine Chahine and X. Sherry Liu); organs, morphogenesis and development (chairs: Nandan Nerurkar and Evan Zamir); quantitative micro/nano-devices and systems (chairs: Jianping Fu and Sharan Ramaswamy); the cellular environment (chairs: Wei Tan and Paolo Provenzano); and a session on transport in cells in tissues that is being organized jointly with the Bioheat Transfer technical committee.

Abstracts are due January 13, so be sure to plan ahead and join us at SBC 2012! But you don't have to wait until this summer to get involved: we will need help soon with reviewing this year's abstracts. Send an email to genin@wustl.edu if you'd be willing to help!

Guy M. Genin, Chair
Tissue and Cellular Engineering
Committee 2011–2014

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Biotransport Report (CONTINUED)

contributions to our committee and to BED a special symposium/workshop was organized at SBC 2011 (funded by the NSF CBET-TTP program). Participants at this tribute workshop included Profs. Avraham Shitzer, Ken Diller, Boris Rubinsky, John McGrath, John Bischof, Robin Coger, Liang Zhu, Lisa Xu, Neil Wright, and several other past colleagues and friends of Prof. Chato. A commemorative record of the proceedings from the workshop is also available and can be requested from Ram Devireddy (devireddy@me.lsu.edu).

BIOT also sponsored a workshop on "Biotransport Education" (funded by the NSF CBET – BME program). In addition, R. Coger along with S. Thompoulous co-organized a workshop at SBC 2011 entitled: Manipulating Gradients to Improve the Performance of Tissue Engineered Products" – co-sponsored by the Tissue and Cellular Engineering Committee.

The committee tentatively identified the following sub-themes for SBC 2012:

BioMEMs and Microfluidics, *Biomimetics*, *Biotransport Design and Devices*, *Fluid-Structure Interactions*, *Multi-Scale Modeling and Multi-Domain Modeling*, *Nano-Medicine & Targeted Delivery*, *Nanoparticles in Thermal Applications*, *Non-invasive Imaging (SPECT, CT, PT)*, *Non-themal and Thermal Ablation*, *Quantitative Transport Imaging*, *Transport in Cells and Tissues*, and *a special session/tribute to celebrate Prof. Ken Diller's 70th Birthday*.

And finally, the committee also discussed several ideas and other topics to further improve and expand the presence of our industrial partners at the SBC. The members felt that we should actively pursue the following: development of an industry focused workshop, inviting NIH SBIR/STTR program administrators, inviting NIH-NSF-FDA personnel to discuss the regulatory process, actively pursuing and soliciting co-chairs for our sessions from industry and inviting local (at or near the conference-site) industry experts. We hope to pursue these goals for future SBC meetings.

Ram Devireddy, Chair
Biotransport Committee
2010-2013

DDR Report (continued)

Track at the 2011 IMECHE in Denver thanks to the tireless effort of Dr. Ahmed Al-Jumaily of Auckland University of Technology. This track focuses on the implementation of various engineering principles in the conception, design, development, analysis and operation of biomedical and biotechnological systems and applications. Initially there were over 210 abstracts submitted, but only 145 were finally accepted and the track was split over eleven topics. Plenary presentations were given by Clyde Oakley (W.L. Gore & Associates) from medical ultrasound industries and Robin Shandas from the University of Colorado-Denver.

Lorin Maletsky, Chair
Design, Dynamics, and Rehabilitation
Committee 2010-2013

Try snorkeling in the clear blue ocean water of Puerto Rico!

Submit your Abstracts by Friday, January 13!

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BIOENGINEERING DIVISION ADMINISTRATIVE COMMITTEES

The BED has four administrative committees: Education, Honors & Awards, Membership, and New Directions. Additionally, the BED selects representatives to other bioengineering organizations and to committees within ASME. Within ASME, the BED has representatives to the Thurston Award Committee, the ASME annual meeting (the "IMECE"), and the Basic Engineering Group (see report in this section). Beyond ASME, the BED has representatives to the American Institute for Medical and Biological Engineering and the U.S. National Committee on Biomechanics.

Reports of the Honors & Awards and Membership Committees can be found in the "Society Awards" section of this newsletter. A report from the education committee follows. Look for other administrative committee reports in the spring edition of this newsletter!

EDUCATION COMMITTEE

The BED education committee has continued to focus on incorporating biomedical and biomechanical engineering education activities into the annual SBC.

There were good opportunities for participation at the SBC 2011 meeting held in Farmington, Pennsylvania. The Education Committee organized and co-organized two workshops during the SBC 2011. A workshop on "Mentoring in Academia" (co-organized by Laurel Kuxhaus and Nadeen Chahine) was focused on mentorship and development of postdocs and early career investigators. Interactive roundtable discussions led by experienced Bioengineering Division members addressed topics such as research success strategies, laboratory management, multitasking in bioengineering, working with biomedical industry, culture and gender diversity, student mentorship. A second workshop on "Biotransport Education", organized by Rupak Banerjee, focused on effective strategies and approaches to teach and stimulate interest in transport phenomena ubiquitous in bioengineering at different scales. This workshop was co-sponsored by the Biotransport Committee and funded by the National Science Foundation.

Thanks to the great success of these workshops and the strongly positive feedback they received last year, both of these workshops will be continued in SBC 2012. Specifically, the 2012 meeting will feature three workshops as follows: (1) A workshop on "**Tips for Tenure in Bioengineering**" (co-organized by Laurel Kuxhaus and ASME's Tatyana Polyak, Thomas Perry, Lee Hawkins, and the rest of ASME Bio-X Team) will present tips on how to start a successful academic career. Another workshop on "**Biotransport Education**" (organized by Rupak Banerjee, co-sponsored with Biotransport Committee and funded by NSF) will address new and emerging topics in biological transport phenomena. In addition, the Education Committee together with Tissue and Cellular Engineering Committee will offer a new workshop on "**Teaching Cell and Tissue Engineering**" (co-organized by Kris Billiar, Roland Kaunas, Ali Khademhosseini, and Robert Mauck) presenting new and effective approaches in teaching of tissue and cellular bioengineering. All of these workshops will feature speakers with distinguished backgrounds and experience in bioengineering education, and should provoke good discussion as well as offer hands-on experience to SBC attendees.


Mohammad Mofrad

The committee participation continues to grow, and we welcome new members and of course new ideas and suggestions. In particular, we are eager to increase undergraduate and graduate student involvement. Join us for a discussion of all this and more at our annual meeting, which will be held at SBC 2012 on Wednesday, June 20 (see program book for more details about exact time and location)! Anyone who would like to join the committee, suggest and/or organize an education session, or contribute Web resources you have found valuable in your own teaching, please contact the Education Committee chair, Mohammad Mofrad, by email: mofrad@berkeley.edu.

Mohammad R. K. Mofrad, Chair
BED Education Committee
2009 – 2012

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CALL FOR PAPERS
2012 SUMMER BIOENGINEERING CONFERENCE
Farjardo, Puerto Rico, June 20-23, 2012

The Bioengineering Division of the American Society of Mechanical Engineering cordially invites you to attend the 2012 Summer Bioengineering Conference. An outstanding scientific program is planned, including Plenary Lectures, Topical Sessions, Workshops, and Student Paper Competitions. Both oral and poster sessions will be presented in the spectacular setting of Puerto Rico. The El Conquistador Resort lies between the Caribbean shoreline and the El Yunque Rain Forest. It offers a water park, high-speed catamaran, private 100-acre island, water sports, horseback riding and a golf course in addition to 23 restaurants and bars (http://www.elconresort.com/). As a US territory, Puerto Rico is accessible without a passport for US citizens and with a US visa for non-US citizens. Flights are surprisingly affordable from many parts of the United States.

This year's plenary lecture by Dr. Mark Henkelman from the University of Toronto will serve as the anchor event for this year's **special focus on the Art and Science of Imaging**. Dr. Henkelman is an internationally-recognized pioneer in magnetic resonance flow and motion imaging, and lately, as director of the Mouse Imaging Center at Toronto's Hospital for Sick Children, he has turned his attention to the field of phenogenomics. Dr. Henkelman's lecture will introduce the state of the art in human and small animal imaging, and its potential applications to various areas of biomechanical engineering research. This lecture will be complemented by workshops and special sessions around this year's Imaging theme.

Student Paper Competition: Abstracts are solicited for consideration in the **student paper competition at the levels of BS, MS and PhD**. Students at the BS and MS levels that are selected as finalists for the competition will present their work in poster sessions. For the PhD Student Paper Competition, there will be 6 parallel podium sessions where the 36 highest scoring abstracts will be presented. The remaining abstracts submitted to the PhD competition, but not selected as a podium finalist, will be considered for the general program, either podium or poster presentation. Cash awards will be made to the top papers at each level in multiple technical areas. All finalists must be present at the conference for consideration in the competition. Further information and instructions for the submission process are available at conference website.

The Bioengineering Division is also hosting an **undergraduate design competition** with a focus on rehabilitation and assistive devices. This competition is particularly well suited for students enrolled in a senior design course, but it is also open to undergraduates at any level. Interested teams are encouraged to enter their intent to submit a proposal by January 13, 2012. Monetary awards for the six finalist teams are planned to help defray project costs and travel expenses to the conference, based on availability of funding.

Submission of abstracts in all areas of Bioengineering and Biomechanics are invited.

Submission instructions and conference details may be found at: www.asmeconferences.org/SBC2012
Important Dates: January 13, 2012 Submission of two-page abstracts (including Student Competitions)
March 16, 2012 Notification of Authors

Conference Chair:
Dawn Elliott, Ph.D.
University of Delaware

Program Chair:
David Steinman, Ph.D.
University of Toronto

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http://divisions.asme.org/bed/

Bioengineering Divison

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News Bulletin

American Society of Mechanical Engineers

ASME BED roster 2011-2012

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