

**ASME INTERNATIONAL
BIOENGINEERING DIVISION**

FALL 2005

FALL NEWS 2005

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MESSAGE FROM PAST CHAIR**Ajit Yoganathan**

It has been both a pleasure and an honor to serve the Bioengineering Division as Chair during the past year. The pleasure has been in working closely with BED colleagues in a collaborative atmosphere and to enhance the reputation of the Division, not only within ASME but also nationally among the bioengineering community. The honor has been to provide leadership for a group of such highly respected colleagues in the field of bioengineering.

My service as chair has been particularly rewarding because of the important changes we implemented to our summer bioengineering conference and annual BED awards. This June we started our annual bioengineering conference, replacing the biennial conference. The conference, which was held in Vail, Colorado, was a huge success attracting over 800 participants from more than 15 countries. Much of the credit for the success of the conference goes to Jennifer Wayne, Conference Chair, and Farsh Guilak, Program Chair. For the very first time, we gave all of our division awards at the Summer Conference Banquet. The Van C. Mow Medal had its inauguration at the

*(Continued on page 9)***EDITOR'S MESSAGE**

I have the distinct honor of bringing you the second newsletter of 2005. The Bioengineering Division has been

quite active during the past year and the Summer Bioengineering Conference was quite successful with its new format.

In this issue, we have reports from our technical committees, honors committees and the Journal of Biomechanical Engineering, as well as

articles on the division's major accomplishments. I would like to thank all of those individuals who have contributed to the news bulletin and welcome input for future issues.

Please send your comments to:

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UPCOMING EVENTS

2006 Summer Bioengineering Conference
Amelia Island, FL
June 21-25, 2006



Abstract Deadline: Jan 20, 2006
Student Competition Deadline: Jan 6, 2006
See Page 13 for Additional Details

2007 Summer Bioengineering Conference
Keystone Resort, CO
June 20-24, 2007

HONORS COMMITTEE

The Honors Committee is responsible for administering the awards activities of the Bioengineering Division of the American Society of Mechanical Engineers. These duties include the awarding of the ASME H.R. Lissner Medal, ASME Van C. Mow Medal, ASME Y.C. Fung Young Investigator Award, BED Richard Skalak Best Paper Award (ASME Journal of Biomechanical Engineering), BED Student Undergraduate and Graduate Paper Awards and ASME Fellow

Awards. At the 2005 Summer Bioengineering Conference held in Vail, Colorado, awards were presented to the following individuals: H.R. Lissner Medal was presented to Steven A. Goldstein, University of Michigan, for outstanding accomplishments in the area of bioengineering; Van C. Mow Medal was presented to Kyriacos A. Athanasiou, Rice University for contributions to bioengineering research, education, mentoring, leadership and society service;

Y.C. Fung Young Investigator Award to Jeffrey W. Holmes, Columbia University, for substantial contributions to the field of bioengineering; Skalak Best Paper Award (JBME, v.126, 2004) to Evan A. Zamir and Larry A. Tabor, Washington University, for their paper On the Effects of Residual Stress in Microindentation Tests of Soft Tissues Structures.

Peter A. Torzilli, Chair

H.R. LISSNER MEDAL



The 2005 H.R. Lissner Medal was awarded to Dr. Steven Goldstein of the University of Michigan for his outstanding contributions to orthopedic

biomechanics. At the 2005 Summer Bioengineering Conference in Vail, CO, Steve attributed his many contributions to the help he received from his former students and post-docs. Steve was also elected to the National Academy of Engineering in January 2005, making it a banner year for him in terms of personal honors.

By way of history, the Lissner Medal started out as a divisional award of the Biomechanics and

Human Factors Division of ASME. It was originated by Dr. James McElhaney of Duke University in 1977, who named it in honor of Professor Herbert R. Lissner, a former professor of Engineering Mechanics at Wayne State University. Lissner was a pioneer in trauma biomechanics and made important contributions to the study of head injury. The first recipient of the award was Professor Bob Mann of MIT. In 1987, it became a society-wide award and it took the form of a medal in 2003. All former recipients of the society-wide award were also given a medal retroactively.

The Lissner Medal is awarded for outstanding contributions in Bioengineering. Nominations for the 2006 award are solicited. They should be sent to Albert King (king@rrb.eng.wayne.edu)

using the ASME Honors and Awards Form that is available on the ASME website. A current CV of the nominee is also required along with three letters of support from ASME members. The deadline for submission is February 1, 2006.

Albert I. King, Chair



VAN C. MOW MEDAL



The first Van C. Mow Medal was presented to Professor Kyriacos Athanasiou at the Summer Bioengineering Conference in

Vail. Professor Mow was on hand to congratulate the first recipient and to thank the BED for establishing the award in his honor. Dr. Athanasiou is the Karl F. Hasselmann Professor of Bioengineering at Rice University. He runs an outstanding laboratory in musculoskeletal bioengineering and has an extensive publication record in this area. Most impressively, he has converted several patents into start-up companies and is actively involved in translational research. He was President of the national Biomedical Engineering Society in 2003-2004 and a previous Y.C.

Fung Young Investigator Award winner.

The Van C. Mow Medal is the most recent addition to the slate of awards presented by the BED. It recognizes outstanding mid-career achievement (10-20 years after receipt of the PhD) and comes between the Y.C. Fung Award for a young investigator and the Lissner Medal for a senior investigator.

Please note that nominations for the Van C. Mow Medal will be accepted by the Awards Committee until January 1 and you are encouraged to consider the attributes of colleagues who may be eligible for this prestigious award. Nomination procedures can be found on the BED website.

John M. Tarbell, Chair



Y.C. FUNG YOUNG INVESTIGATOR AWARD



The ASME Committee on Honors and the Bioengineering Division announced that Jeffrey W. Holmes is the recipient of

the 2005 Y.C. Fung Young Investigator Award. Jeff earned a Ph. D. in Biomedical Engineering (1995) and a Doctor of Medicine degree (1998) from the University of California, San Diego. He is now an Associate Professor in the Department of Bioengineering at Columbia University.

Professor Holmes' research interests are in the area of cardiac biomechanics including healing of myocardial infarcts. His research has been supported by numerous grants from the American Heart Association, Whitaker Foundation, National Science Foundation, and the National Institutes of Health. His projects have included the parameterization of endocardial wall motion using three-dimensional ultrasound images to assist diagnosis of coronary artery disease. Jeff has studied the role of mechanical forces in cardiac

hypertrophy and remodeling. He has also designed in vitro experiments and models for studying the mechanobiology in anisotropic collagen gels. This experimental system was described in the inaugural issue of *Biomechanics and Modeling in Mechanobiology*.

Dr. Holmes has written 40 refereed conference abstracts as well as more than 21 articles in noted journals including *Circulation*, *American Journal of Physiology*, *Biomechanics and Modeling in Mechanobiology*, *Tissue Engineering*, *Journal of Biomechanical Engineering*, *Journal of Applied Physiology*, and *Annual Reviews in Biomedical Engineering*.

Professor Holmes has demonstrated a commitment to quality education in bioengineering and in biomechanics at both the undergraduate and graduate levels. Jeff regularly teaches courses in Biomedical Engineering Laboratory, Advanced Quantitative Physiology, Fluid Biomechanics, and Cardiac Mechanics. In addition to teaching traditional bioengineering courses, Jeff introduced and taught an ethics course that is required of all graduating biomedical engineering students. He was also in-

vited to describe this unique course at a workshop on Biomedical Engineering Laboratories at the first Whitaker Foundation Summit on Biomedical Engineering Education. His quality teaching was acknowledged with the 2001 School of Engineering and Applied Science's Distinguished Faculty Teaching Award.

Jeff is a member of major professional and honor societies and has given significant service to the ASME BED. He has served on the BED Solid Mechanics Technical Committee and organized BED sessions on cardiovascular biomechanics at the IMECE and BED Summer Bioengineering Conference meetings. He is currently Chair of the BED Education Committee and was the Publications Chair for the 2005 SBC.

Congratulations to Jeff Holmes as he joins the list of distinguished Y.C. Fung Young Investigators that embody the spirit of this award and the legacy of Bert Fung in his commitment to research and education in the field of bioengineering.

Bruce Simon, Chair

CALL FOR NOMINATIONS - Y.C. FUNG YOUNG INVESTIGATOR AWARD

The ASME BED Committee for the selection of the Y.C. Fung Young Investigator Award is now accepting nominations for the 2006 competition. This award is given annually to young investigators that are in the early stage of their career and have demonstrated innovative high quality research and a strong commitment to the bioengineering profession. The award is given in the honor of Yuan Cheng Bertram Fung, Professor of Bioengineering at the University of California at San Diego. Professor Fung is well known for his outstanding achievements and as a pioneer in the field of bioengineering. The Y. C. Fung Young Investigator Award was established in 1985 and is now an ASME Societal Award. The awardee will receive a bronze medal, certificate, and an honorarium presented at the 2006 Summer Bioengineering Conference.

Qualifications and limitations:

Candidates for the award must

have earned a Ph.D. or equivalent bioengineering degree in any field of engineering, physics, medicine or life sciences. Candidates must have received their terminal degree within seven years of their nomination for this award and must be under 36 years of age on June 1st of the year in which they are nominated. The individual must be committed to pursuing research and have demonstrated significant potential to make substantial contributions to the field of bioengineering. Such accomplishments may take the form of, but are not limited to, design or development of new methods, equipment, or instrumentation in bioengineering; and research publications in peer-reviewed journals.

Deadline and submission: Nominations will be accepted until February 1, 2006 and should be made electronically using the information found on the ASME BED website at:

<http://www.asme.org/honors/ms71/saa/fung.html>

The nomination should include the

ASME Nomination Form available on the ASME website at <http://www.asme.org/honors/ms71/forms/Fungnom.doc> and five letters of recommendation addressed to the selection committee chair. Nominations must be submitted to the committee chair as a single PDF file and one hard copy of the application PDF file.

This award is a distinct honor for our most outstanding young bioengineers and is a tribute to Bert Fung. I encourage you to nominate a promising young bioengineering educator-researcher for the 2006 Y. C. Fung Young Investigator Award.

Professor Bruce R. Simon, Chair
Y. C. Fung Young Investigator
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SBC2005—STUDENT PAPER COMPETITION

The 2005 Summer Bioengineering Conference included the largest Student Paper Competition in the history of the Bioengineering Division. The overall competition chair was Amy Lerner, with the help of Michele Grimm chairing the PhD level competition, James Iatridis and Matt Gounis chairing the MS level, and X. Sheldon Wang chairing the BS level competition. Submissions included 249 full-length abstracts, with 30, 70 and 149 at the BS, MS and PhD levels respectively. These abstracts were sorted into categories representing the technical committee areas of the division and scored by at least two, and in most cases three judges within those technical fields. Of these submissions, 207 were accepted for conference presentation, with 102 selected for on-site judging. At the BS and MS levels, students participated in a

combined poster session, concurrent with the H. R. Lissner Medal Lecture Reception. This poster session was extremely well attended and 18 judges mingled with the crowd to score the posters. For the PhD level, three concurrent podium sessions were held, with 4-5 judges in each area. These podium sessions were treated as a plenary time slot, and no other technical sessions were held during this time slot, successfully encouraging significant attendance at each session. This was followed by a poster session, which was also extremely well attended, with eighteen judges circulating to judge within their area of expertise. It's worth noting that students were not always aware of which posters were being judged, and nearly all presenters appeared very active in conversations. Although at least 48 individuals participated

in on-site judging, no judge was asked to score presentations in more than one level or category of the competition. While this required a bit more effort on the part of the coordinators, it provided much more fair evaluation of the overall students' work, and also more evenly distributed the effort required by judges. During each competition, judges filled out a detailed scoring sheet to provide a score out of 100 points. Scores were normalized as needed and finalists selected with cash prizes to be awarded for 1st, 2nd and 3rd place. As listed below, the finalists were announced and given certificates at the banquet. Sponsorship of the competition was provided by the Whitaker Foundation.

Amy L. Lerner, Chair

BS Level Competition

Solids, Design and Rehabilitation:

1st place: Mindy I Ezra, Tulane University
 2nd place: Nicholas Stepenosky, Rowan University
 3rd place: Mariana Kersh, University of Wisconsin-Madison
 Honorable Mentions: Meghan McGee, Michigan Technical University; Robert Held, University of Washington

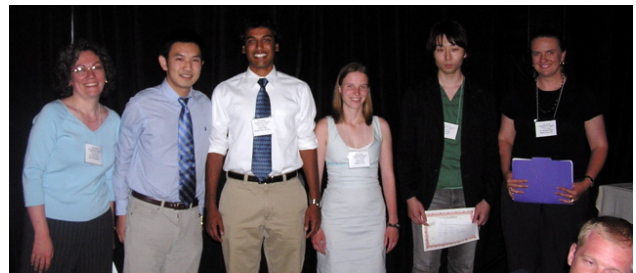
Cell and Tissue, Biofluids and Heat Transfer

1st place: Vishal Patel, Georgia Institute of Technology
 2nd place: Andrea Les, Stanford University
 3rd place (tie): Hiroki Kamada, Tohoku University; Alex Pang, Stanford University
 Honorable Mention: Patrick Harrington, Michigan State

MS Level Competition

Solids, Design and Rehabilitation I

1st place: Casey L Korecki, University of Vermont
 2nd place: Lu Li, University of Kansas
 3rd place (TIE): Bradley S Davidson, Virginia Tech; Silvia Wongum, Eindhoven University of Technology
 Honorable Mention: Yifei Dai, University of Notre Dame



Solids, Design and Rehabilitation II

1st place: Kristen L. Moffat, Columbia University
 2nd place: Saikat Pal, University of Denver
 3rd place: Timothy D. Schwab, Univ. of British Columbia
 Honorable Mentions: Evan J Goldberg, University of Texas at Austin; Bhaskar Thoomukuntla, University of Kansas

Cell and Tissue

1st place (TIE): Kristy T Salisbury, Boston University; Taras Juzkiw, University of Toronto
 3rd place: Melissa A Deitzer, University of Miami
 Honorable Mention: Karin A Wartella, Virginia Commonwealth University; Kevin K Toosi, University of Pittsburgh

Biofluids and Heat Transfer

1st place: Ralph D. Nyilas, Imperial College of Science, Technology and Medicine
 2nd place: Hyun Jin Kim, Stanford University
 3rd place: Raghav Goel, University of Minnesota
 Honorable Mentions: Tomohiro Fukui, Tohoku University; Amit Ogata, Keio University

PhD Level Poster CompetitionSolids, Design and Rehabilitation

1st place: Andrew E. Anderson, University of Utah
 2nd place: Eric C. Huang, University of Minnesota
 3rd place: Seungbum Koo, Stanford University
 Honorable Mentions: Amy E. Kerdok, Harvard University; Brian P. Kelly, University of Tennessee Health Science Center

Cell and Tissue

1st place: Kelly B. Emerton, The City College of New York
 2nd place: Helene Karcher, MIT
 3rd place: Belinda Yap, MIT
 Honorable Mentions: Caren E. Petrie, University of Virginia; George C. Engelmayr, University of Pittsburgh

Biofluids and Heat Transfer

1st place: Veronica Gambillara, École Polytechnique Fédérale de Lausanne
 2nd place: T. Alexander Quinn, Columbia University
 3rd place: Beverly T Tang, Stanford University
 Honorable Mentions: Anne-Virginie LB Salsac, University of California San Diego; Jonathan Barletta, Georgia Institute of Technology

PhD Level Podium CompetitionSolids, Design and Rehabilitation

1st place: Blaine Christiansen, Washington University
 2nd place: Tamim Diab, Rensselaer Polytechnic Institute
 3rd place: James Chris Fritton, Cornell University
 Honorable Mentions: Zuoping Li, University of Alabama, Birmingham; Jason T Maikos, Rutgers University; Costin D Untaroiu, University of Virginia



Cell and Tissue

1st place: Craig L Duvall, Georgia Inst of Tech.
 2nd place: Krishna Sarangapani, Georgia Inst. of Tech.
 3rd place: Bahar Bilgen, Northeastern University
 Honorable Mentions: Ericka Bueno, Northeastern University; Xiefan Lin, University of Virginia; Kristin Michael, Georgia Institute of Technology

Biofluids and Heat Transfer

1st place: Joan M Greve, Stanford University
 2nd place: Christopher M Yakacki, University of Colorado
 3rd place: Steve R Lammers, University of Colorado
 Honorable Mentions: Anna M Fallon, Georgia Institute of Technology; Zhonghua Li, North Carolina State University; Binjian Sun, Georgia Institute of Technology

**2005 SUMMER BIOENGINEERING CONFERENCE**

By all accounts, the 2005 Summer Bioengineering Conference, held June 22-26, 2005 at the Vail Cascade Resort & Spa in Vail Colorado, was a resounding success for the Bioengineering Division. The meeting had record attendance with 840 registered participants, more than 43% of whom were students. The meeting began with excellent participation in all three morning workshops - Micro- & Nano-scale Mechanics of Cells, Funding for Bioengineering, and Bioengineering Education. Our plenary speaker, Dr. Firouz Naderi as director of the Mars Exploration Program at NASA, received accolades for his presentation on "Six minutes of terror, a hole in one and a salty sea: The stories of the Mars exploration rovers, Spirit and Opportunity". 720 abstracts were featured in 8 parallel podium sessions in 8 time slots, with a total of 376 podium presentations and 128 poster presentations. Additionally, the largest student paper competi-

tion for the Bioengineering Division was held with 216 outstanding student competition presentations. Our student researchers were highlighted with poster competitions at the BS and MS levels. At the doctoral level, selected abstracts were chosen for podium presentation in addition to our PhD poster presentations, both in solo timeslots to draw attention to the future researchers in our field. With the new annual structure of the conference, the Bioengineering Division honored its membership at the 2005 Summer Bioengineering Conference by presenting several awards that recognize the recipients' contributions to Bioengineering. These include the H.R. Lissner and Y.C. Fung Young Investigator Award recipients, the inaugural recipient of the Van C. Mow



Medal, authors of the Skalak Best Paper in the Journal of Biomechanical Engineering for 2004, and winners of the student paper competition. Further details of the awards are provided in the newsletter.

Jennifer S. Wayne
 Conference Chair

Farshid Guilak
 Program Chair

MESSAGE FROM PAST CHAIR (CONT)

summer conference. The first recipient was Kyriacos Athanasiou, professor of bioengineering at Rice University. Coincidentally he is a former student of Van Mow. Professor Mow was also honored at the summer conference banquet for his contributions to ASME, BED and the field of bioengineering. Because of the change in format to recognize BED award recipients at the annual summer conference, I had the unique privilege of presiding over the award ceremonies in November 2004 and June 2005.

Next year's summer conference will be held in Amelia Island, Florida and is being organized by Vijay Goel, Conference Chair, and Sohi Rastegar, Program Chair. The executive committee has already appointed Conference and Program Chairs for 2007 and 2008.

The restructuring of ASME continues. Our society is decentralizing and divisions are being encouraged to form self-managing groups called Institutes. Over the past year BED made no decisions about joining an institute. Yet, we have kept all options open. However, the options will need to be weighed carefully in the coming year so that the Division is best positioned to serve the membership, while remaining a strong functioning entity within the greater bioengineering community.

As my term was nearing its end, I received a telephone call in May from Bruce Simon, secretary of BED, to inform me that due to health reasons he could not succeed me as chair of the division, and therefore was stepping down as secretary. The executive com-

mittee decided to elect Lou Soslowsky as secretary (from his position as secretary-elect) and appointed Gerard Ateshian as secretary-elect, for the remainder of the current term (May-June, 2005). We all wish Bruce a speedy recovery and hope that he will re-join the executive committee in the near future. In addition, at its June meeting the executive committee voted to expand its membership by creating two new positions, effective July 1, 2005: Member-Student Affairs and Member-At Large.

As I pass the torch of leadership to my successor Lou Soslowsky, I am profoundly grateful to all of those who served in the many capacities to make our Division successful. It has been my privilege to serve along side each one of you.

SOLID MECHANICS COMMITTEE

The 2005 SBC held at the Vail Cascade Resort & Spa, Vail, Colorado was a great success. The final 2005 program included 33 podium sessions organized by the Bio-solid Mechanics Technical Committee (197 papers). Three sessions were organized jointly with the Cell & Tissue Engineering Committee, and one session was organized jointly with the Design and Rehabilitation Committee. In addition 25 papers were accepted as posters in the general poster session.

The podium sessions were: Aneurysm Mechanics, Cardiovascular Mechanics, Vascular Mechanics, Muscle Mechanics, Tendon and Ligament Mechanics, Cartilage Mechanics, Implant Biome-

chanics, Injury Biomechanics, Trauma and Vehicular Biomechanics, Intervertebral Disc Mechanics, Lumbar Spine Mechanics, Cervical Spine Mechanics, Hand Mechanics, Imaging and Biomechanics, Bone Mechanics, Brain Mechanics, Heart Valve Mechanics, Joint Biomechanics, Computational Joint Biomechanics, Computational Soft Tissue Mechanics.

Joint sessions included: Mechanics of Growth and Remodeling (with Cell & Tissue Committee); Mechanics of Native and Engineered Tissues (with Cell & Tissue Committee); Simulation in Motion Analysis (with Design and Rehab Committee)

The annual meeting of the Bio-

Solid Technical Committee of the BED was held on Wednesday, June 22, 2005 during the 2005 SBC. During this meeting, Dawn Elliott was elected as Vice Chair for the Bio-Solid Technical Committee. She is an Associate Professor in the Departments of Orthopedic Surgery and Bioengineering at The University of Pennsylvania. The focus of her research is the intervertebral disc. Dawn joined the Solid Mechanics Technical Committee in 1999 and has organized technical sessions for the SBC and the IMECE meetings since that time.

Mohamed Samir Hefzy, Chair

HEAT & MASS TRANSFER IN BIOTECHNOLOGY COMMITTEE

The final SBC 2005 program included 4 podium sessions organized by the Bioheat and Mass Transfer Technical Committee (21 papers were in podium sessions, an additional 9 papers were accepted as posters in the general poster sessions, 4 papers were in the Ph.D. Student Poster Competition, and 3 were in the BS/MS Competition). The podium sessions were: Bio-transport I, Biotransport II, Bioheat Transfer, and Computational Bioheat and Mass Transfer.

The final HTD 2005 Summer Conference includes 3 sessions (14 papers). The sessions were: Transport Models at Molecular, Cellular and Tissue Levels; Experimental and Computational Sys-

tems in Biology and Biomedicine; and Thermal Diagnostics and Therapeutics of Tissues and Cells.

We have appointed members to be liaisons between Bioheat and Mass Transfer and other technical committees to promote synergy, collaborations and joint sessions. These members are:

- 1) Sohi Rastegar/Jens Karlsson-BED Cell /Tissue Engineering
- 2) Rupak Banerjee/Ram Devireddy-BED Fluid Mechanics
- 3) David Meaney/Carl Kumara-BED Biosolids
- 4) Neil Wright—HTD Thermophysical Properties
- 5) Ram Devireddy-BED Design and Rehabilitation

- 6) Michael Murphy-BED BioMEMs

Announcements:

- Rupak Banerjee has been promoted to Associate Professor at the University of Cincinnati.
- Sohi Rastegar received NSF Director's Award for Collaborative Integration in recognition of an initiative between NIH and NSF on Bioengineering and Bioinformatics Research, Training, and Education.
- Robin Coger has been appointed as Director of the Center for Biomedical Engineering Systems at UNC-Charlotte.

Charles Lee, Chair

DESIGN AND REHABILITATION COMMITTEE

The Design and Rehabilitation Committee continues to program at both the Summer Bioengineering Conference and through joint symposia at the IMECE.

Two symposia will be held at the IMECE in Orlando in the second week of November. The first, organized by Ahmed Al-Jumaily of Auckland University of Technology, will be held Sunday November 6th with two sessions on Vibrations and Acoustics in Bioengineering. Eleven talks are scheduled in two sessions covering a diverse set of topics on vibratory systems in bioengineering. A joint symposium with the MEMS Subdivision will run Tuesday-November 8th and Wednesday-November 9th and was organized by Jeffrey Zahn of Penn State and Mike Murphy of LSU. Three sessions on Medical Applications of MEMS and BioMEMS will be held on Tuesday, followed by a Wednesday

morning session focused on fabrication of BioMEMS devices as part of the MEMS schedule. A total of 24 papers will be presented in the four sessions.

The committee sponsored three sessions at the SBC in Vail this summer on Forward Dynamic Simulation (organized by Rick Neptune of UT Austin and Ton van den Bogert of the Cleveland Clinic), Motion Measurement in Rehabilitation (chaired by Beth Todd of the University of Alabama and Sarah Wilson of Kansas), and Developing Methods in Motion Analysis (chaired by Lars Muendemann of Stanford and Sarah Wilson). A total of 18 papers were presented in those areas with four posters on Sports Biomechanics in a separate session. Attendance at the technical sessions was strong, and we hope to build upon the interest in the future.

We also plan to continue programming along the same lines for both the SBC in Amelia Island and the next IMECE. Papers are encouraged for the SBC in the broad areas of Analysis and Control of Human Movement (including Simulation, Motion Measurement, Motion Control, and Applications in Rehabilitation), Medical Device Design (including Computer-Aided and Minimally-Invasive Surgery, Rehabilitation Robotics, BioMEMS, and Design of Prosthetics), Rehabilitation Engineering, and Sports Injury Biomechanics. Anyone interested in organizing those areas should contact Mike Murphy (murphy@me.lsu.edu).

At the SBC, Sarah Wilson of Kansas was elected to be vice-chair of the committee. She will serve a three year term and become the next chair.

Mike Murphy, Chair

FLUID MECHANICS COMMITTEE

At the 2005 SBC, the Biofluids Committee hosted 7 sessions with a total of 37 abstracts. One session each was jointly hosted by the Cell and Tissue Engineering Committee and the Solids Committee of BED. The Biofluids Committee also contributed to all levels of the student paper competition.

The Committee had a successful program at the 2005 Summer Bioengineering Conference in Vail, Colorado. A total of 72 papers were given in 12 podium sessions, and an additional 39 posters were

presented in the poster sessions.

The Committee members continue to show interest in diverse areas of biofluid mechanics, including those related to pediatric congenital heart disease, medical imaging applications, cardiovascular devices, thromboembolism/biorheology, the respiratory system, and the cerebrovascular system. In addition, efforts are being made to increase our programming with the K-17 Technical Committee by jointly sponsoring mass transfer and other sessions.

We are continuing our efforts to increase the active membership of the Biofluids Committee, especially our newer colleagues (post-docs and new investigators) to ensure a strong future. We invite all with interests in biofluid mechanics to participate in our next Committee meeting, which will be held during the 2006 Summer Bioengineering Conference. Please contact David Vorp (VorpDA@upmc.edu) for further details.

David A. Vorp, Chair

JOURNAL OF BIOMECHANICAL ENGINEERING

The journal seems to be in good shape on every front. In 2004 we received a near-record 238 submissions, with more than one-third from overseas. Our acceptance rate is 45% and, importantly, both the time to complete the review process and publication are at all-time lows. Several papers submitted early in 2004 were published before the end of the year. Currently there is no backlog of papers waiting to be published, which greatly helps speed up the timely publication of research results. The impact factor for 2003 was 1.62 (up from 1.37 in 2002). For comparison, the impact factors of the *Annals of BME* and *Journal of Biomechanics* for the same two years were 1.60 (up from 1.57 in 2002) and 2.00 (up from 1.89 in 2002), respectively. Thus, among these three journals, we achieved the largest increment.

Other highlights include a special issue focusing on the design of

medical devices which will appear in November, 2005. Art Erdman served as guest editor for that issue. Because of the success of that issue, we are expecting to publish another special issue on the same topic for publication in late 2006. The call for papers has just been announced.

The following Associate Editors completed their second three-year terms at the end of 2004: Ross Ethier, Jay Humphrey, James Moore, and Marcus Pandy. In addition, David Beebe has requested to be relieved of his role after one-year of service. On behalf of the entire BME community, I wish to thank all of these individuals for their past support and valuable service, not only to the journal but also to the entire biomechanics community. Chris Jacobs, Andrew McCulloch and Jennifer Wayne completed their first three-year terms and agreed to serve an additional term. Several new Associate

Editors have begun service: Andrew Amis (Imperial College, London); Ellen Arruda (University of Michigan), David Fitzpatrick (University College, Dublin), Yoram Lanir (Technion, Israel), and David Steinman (Robarts Research Institute, Canada).

Thus, as promised when I assumed the editorship, the journal is becoming more international in scope, at least from the standpoint of the editorial board. How and if this will translate into more international activity remains to be seen.

Please encourage your colleagues to submit their best work to JBME. It is our journal, it is thriving and deserves all of our support.

Frank C. P. Yin, Editor

TISSUE AND CELLULAR ENGINEERING COMMITTEE

The SBC 2005 program was very successful, and included 12 podium sessions and 5 poster sessions. A rejection rate of 15% was used to maintain quality. In addition, the Tissue and Cellular Engineering Committee organized a Symposium on the Mechanics of Growth and Remodeling In Native and Engineered Tissues consisting of 12 presentations. Gerhard Holzapfel and Jay Humphrey, Editors of *Biomechanics and Modeling in Mechanobiology* (BMMB), have

graciously offered a special issue of this new Journal to publish full length papers derived from the invited lectures. Clark Hung of Columbia University has also taken over as chair of the committee to allow Michael Sacks to assume duties of Member Affairs for the Technical Committees. Several sessions are being proposed for the 2006 SBC, including Integrated/multi-scale modeling; Molecular and cellular biomechanics symposium; as well as workshops on ex-

perimental cellular and molecular mechanics, and biological feedback and control. We all strongly encourage interested BED members to participate in the committee and to propose symposia for the 2006 SBC.

Michael S. Sacks, Chair

Preliminary Announcement CALL FOR PAPERS



2006 SUMMER BIOENGINEERING CONFERENCE

Amelia Island Plantation,
Amelia Island, FL
June 21 - June 25, 2006



The Bioengineering Division of the American Society of Mechanical Engineers cordially invites you to attend the 2006 Summer Bioengineering Conference. The meeting is endorsed by the Biomedical Engineering Society (BMES), United States National Committee on Biomechanics (USNCB) and IEEE/EMBS. An outstanding scientific program has been planned with Plenary Lectures, Symposia, Workshops, and Student Competitions with both oral and poster sessions in spectacular surroundings. The Amelia Island Plantation (<http://www.aipfl.com/>) is Florida's premier AAA-Four Diamond destination island resort in perfect harmony with nature. Submissions of abstracts in all areas of bioengineering and biomechanics are invited. Some particular areas of highlight will be **stem cell bioengineering, nanobioengineering, biotherapeutics delivery, spine arthroplasty, pediatric biofluid mechanics, and challenges in technology transfer**. Planned thematic tracks include (but are not limited to):

Analysis/Control of Human Movement	Computer-Aided Surgery	Modeling Multiscale Systems
Biofluid Mechanics	Design of Medical Devices	Occupant Protection
BioMEMS	Design of Prosthetics	Orthopedic Biomechanics
Bioreactors	Drug and Biotherapeutics Delivery	Osmotic Transport Phenomena
Biorheology and Thrombosis	Motion Measurement	Rehabilitation Engineering
Biotransport	Fluid Mechanics of Flight and Swimming	Rehabilitation Robotics
Biothermal therapies	Functional Tissue Engineering	Sports Biomechanics and Equipment Design
Cardiovascular Mechanics	Heart Valve Mechanics	Thermal & Chemical Processing in Cell and Tissue Engineering
Cardiovascular Devices	Hemodynamics of Cardiovascular Devices	Thermal Cooling and Hemodynamics
Cellular Engineering and Biomechanics	Imaging in Biomechanics	Tissue Engineering and Biomechanics
Computational Biomechanics	Imaging in Biotransport	Trauma Biomechanics
	Injury Biomechanics	
	Microfluidic in Bioengineering	

Submission instructions and information about the meeting is available at:
<http://divisions.asme.org/bed/events/summer06.html>

Student Paper Competition: Abstracts are solicited for a student paper competition at three separate levels: BS, MS and PhD. Students selected for the competition will be able to present their work in sessions where only student presentations are given – both in dedicated student poster sessions and in highlighted PhD oral sessions. Cash awards will be made to the top papers at each level in multiple technical areas. Funds are being sought that would allow for reduced conference registration for Student Paper Competition participants. In addition, conference organizers are currently negotiating for reduced lodging costs for all students attending the conference. Further information and instructions for the submission process is available at:

http://divisions.asme.org/bed/events/stu_comp06.htm

Conference Chair:

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Important dates:

January 6, 2006, Submission deadline of two-page abstracts for Student Paper Competition
January 20, 2006, Submission of two-page abstracts (except Student Paper Competition)
April 3, 2006 Notification of Authors

EDUCATION COMMITTEE

The Education Committee is a relatively new committee within BED. Our goal is to organize a small number of high-quality sessions at each conference with information of immediate practical use to BED members, while minimizing overlap with other sessions on education and teaching such as those at the ASEE annual meeting.

At the 2005 Summer Bioengineering Conference, the Education Committee organized two sessions. The Thursday morning tutorial session "Web-Based Teaching Resources for Biomechanics and Biomedical Engineering" focused on web-accessible resources likely to

be of use to BED members in the courses they teach and drew approximately 50 participants. At the request of tutorial participants, a list of links to web-based educational resources discussed during the workshop is provided at: <http://www.columbia.edu/~jh553/teaching/webbiomech.html>. The panel on "New Models for Cross-Disciplinary Graduate Education" mixed brief talks with a discussion to examine emerging ideas for how to best mix graduate students with different backgrounds in the sort of multi-disciplinary training programs receiving attention at the NIH and other funding agencies.

The enthusiastic response to the education sessions at the 2005 Summer Bioengineering Conference included three new members joining the committee; we welcome new members at any time. Anyone who would like to join the committee, suggest and/or organize an education session, or contribute URLs for electronic resources you have found valuable in your own teaching, please contact the Education Committee chair, Jeff Holmes, by email: jh553@columbia.edu.

Jeffrey Holmes, Chair

LINKS TO WEB-BASED EDUCATIONAL RESOURCES FOR BIOMECHANICS / BME

Web-Based Teaching Resources for Biomechanics and Biomedical Engineering
2005 Summer Bioengineering Conference, Vail, CO

Whitaker Foundation

Academics page	http://www.whitaker.org/academic/
Education Summit 2005	http://www.whitaker.org/academic/wrapup.html
Curriculum Database	http://www.whitaker.org/academic/database/index.html
Innovations in BME Education	http://www.whitaker.org/innovations/

American Society for Engineering Education <http://www.asee.org/>

VaNTH ERC for Bioengineering Educational Technologies

Home page	http://www.vanth.org/
VaNTH Courseware Profiles	http://www.fipp.net/vanthmatrix

Biomechanics Classes on the Web

Home Page	http://darkwing.uoregon.edu/~karduna/biomechanics/index.htm
Biomechanics Courses	http://darkwing.uoregon.edu/~karduna/biomechanics/bme.htm
Biomechanics Texts	http://darkwing.uoregon.edu/~karduna/biomechanics/texts.htm

Biofluids Education <http://www.biofluidseducation.org/>

BME Source <http://171.65.102.151/~bmesource>

MIT Open Courseware

Home page

Biological Engineering Division

<http://ocw.mit.edu/OcwWeb/index.htm>[...OcwWeb/Biological-Engineering-Division/index.htm](http://ocw.mit.edu/OcwWeb/Biological-Engineering-Division/index.htm)**American Physiological Society**

Teaching Resources Overview

Physiology Curriculum Objectives

Refresher Courses

APS Teaching Archive

http://www.the-aps.org/education/edu_teachingres.html[.../education/MedPhysObj/medcor.htm](http://www.the-aps.org/education/MedPhysObj/medcor.htm)<http://www.the-aps.org/education/refresher/index.htm><http://www.apsarchive.org/main/index.asp>**ETHICS FORUM**

The 3rd International Conference on Ethical Issues in Biomedical Engineering was held in Rochester, New York, June 4-6, 2005. At this lively two-day conference, biomedical engineers, clinicians, research scientists, biomedical company representatives, attorneys, patient advocates, and students from biomedical engineering programs discussed a large number of diverse topics. The authors came from many of the states in the US as well as several foreign countries. Forty formal papers were presented in seven sessions covering a wide range of topics. The sessions were: 1) Advances in Biomedical Technology: Ethical Concerns; 2) Ethical issues in Biomedical Engineering; 3) Ethics Education in Biomedical Engineering; 4) Biomedical Research: Ethical Issues; 5) Animal Experimentation: Ethical issues; 6) Medical Practice Ethical Concerns; and 7) Nanotechnology and Ethics. In addition, two panels discussed Regulation and Marketing of Medical Devices: Ethical challenges and Ethics Education in Bioengineering.

The keynote speaker for the conference was Dr. David Williams, Professor of Tissue Engineering

and the Director of the UK Centre for Tissue Engineering, University of Liverpool. The title of his talk was "Global Dimensions to the Ethical Aspects of Regenerative Medicine". He discussed the multiple ethical considerations including "the philosophical and spiritual facets of using cells and tissues derived from other humans and animals to treat individuals, the implications of using donated cells without donor consent, some of the logistical aspects of mass production of tissues and organs, problems of intellectual property rights, and problems of health economics associated with high cost treatments". The conference opened with another invited talk, "Who's Responsible Here? Ethics and Duties in Human Subject Research", by Dr. Gary Chadwick from the University of Rochester and Chair of their Institutional Review Committee. In his talk, Dr. Chadwick discussed the role of the investigator when conducting human subjects research, ethical principles described in the Belmont Report, i.e., respect for persons, beneficence, and justice that should serve as the basis for defining the roles and duties of the investigators when planning, designing, con-

ducting and reporting research.

The abstracts of the talks presented at this conference were published in a special issue of the International Journal of Medical Devices and Implants, Vol.1, No. 2, 2005, published by the Medical and Engineering Publishers, Inc. (www.mepublishers.com), distributed to the registrants at the meeting. Those interested in obtaining this special issue can contact the publisher or the Conference Chair, Dr. Subrata Saha. At a future date, selected full-length papers from this conference will be published in a special issue of Medical Engineering & Physics. Many of the participants expressed a strong desire to continue the dialogue on these important topics and encouraged Dr. Saha to plan for the 4th such conference in about two years. A plan is being formed and if anyone is interested, please contact:

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

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News Bulletin

American Society of Mechanical Engineers

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