Submit your Abstracts NOW!

for the
World Congress of Biomechanics 2014

Hynes Convention Center, Boston, MA
July 6-11, 2014

Deadline: Friday, January 15, 2014
It is hard for me to believe that I am writing to you as Chair of the ASME Bioengineering Division (BED). Having been involved with the BED for my entire career and watching it grow, change and flourish under the leadership of truly great engineers, I am humbled and honored to now be part of our current, excellent BED leadership team. Those that have preceded us have made the BED one of the strongest divisions at ASME, and have made our flagship meeting – our annual Summer Bioengineering Conference (SBC) – very vibrant and of very high quality. We are in an interesting time with all of the changes that are occurring at ASME (see a PowerPoint presentation describing these changes here: https://community.asme.org/one_asme/m/mediagallery1/5210/download.aspx). Concerns by the leadership of the BED over what these changes mean to the Division and in particular our SBC were voiced at a visit by several of us to ASME Headquarters in New York City in October, 2013. We anticipate that there will be some significant changes to the SBC beginning in 2015. I encourage you to keep in touch with members of the BED Executive Committee and the SBC 2015 Organizing Committee (Chaired by Prof. C. Ross Ethier at Georgia Tech) for news and updates.

For the coming year, the SBC will be held in conjunction with the World Congress of Biomechanics (WCB) in Boston July 6-11, 2014 (see http://wcb2014.com/). This once-every-four-years meeting brings together biomechanics colleagues from around the world. It is being organized by the World Council of Biomechanics, the American Society of Biomechanics, the Canadian Society for Biomechanics, the European Society of Biomechanics, the Global Enterprise for MicroMechanics and Molecular Medicine, the US National Committee on Biomechanics, the German Society of Biomechanics, and the International Society of Biomechanics. Members of the BED Executive Committee – including Michele Grimm, Kris Billiar and Matt Gounis – are working hard with the WCB organizers to retain the SBC elements familiar to us including the Lissner, Mow and Fung Awardee lectures, student paper competitions, and of course an event highlighted by the BED’s very own collection of musically-talented colleagues, BEDrock! The abstract submission site is currently open and will close on January 15, 2014.

In addition to the SBC, the BED also sponsors the NanoEngineering for Medicine and Biology conference (February 2-5, 2014; http://www.asmeconferences.org/nemb2014/), the Design of Medical Devices conference (April 7-10, 2014, in Minneapolis; http://www.dmd.umn.edu/index.html), and the Frontiers in Medical Devices (2014 plans TBA but to be co-sponsored by colleagues at the FDA; contact: Walt Baxter, walt.baxter@medtronic.com). Our volunteers are busy putting these meetings together and deserve our appreciation for their hard work.

I would be remiss to give my own personal gratitude – and we all owe her our appreciation – to Michele Grimm, who shepherded the BED as Chair from 2012-13, and continues to work hard as Past Chair on the BED Executive Committee. Michele clearly cares deeply about the BED to have served as such a vested volunteer.

I hope you enjoy this newsletter, which contain reports from various committees and leaders, and I look forward to seeing you at the WCB in Boston if not before then.

David Vorp, Chair
ASME Bioengineering Division
2013-2014
Message from THE OUTGOING chair

Six months after I handed over leadership of the Division to David Vorp, I wanted to extend my thanks to all Division members for the opportunity to serve as BED Chair from 2012-2013. It was an exciting year for the Division as we continued our excellent efforts to serve the membership through conferences, journals, and outreach to students.

Getting involved with the Division is more important than ever – it is the volunteers who make the Bioengineering Division as strong as it is. BED is a stellar example of what divisions in ASME can do based on the involvement and buy-in of its members. I want to thank all of our Division leadership – members of the Executive Committee, conference committees, and Technical Committees – for their continued hard work. If you have not personally engaged with the Division recently, I encourage you to do so – by attending conferences, participating in Technical Committee discussions, submitting to our journals, and reviewing abstracts or papers, BED members provide the knowledge and expertise which makes this organization valuable to all of us.

David Vorp and his executive committee continue to provide outstanding leadership to the Division, and I want to thank them again for their dedication and service.

I hope to see many of you at the World Congress of Biomechanics in Boston this summer, as we co-host the Summer Bioengineering Conference with the World Council. This opportunity to co-program comes around only every 12 years, when WCB is held in North America, and it promises to be an outstanding meeting!

Michele Grimm
BED Chair, 2012-2013

Upcoming event!

Summer Bioengineering Conference 2014, with the 7th World Congress of Biomechanics, July 6-11, 2014
Abstracts Due January 15! See p.27

Editor’s NOTE

This year’s SBC will be part of WCB2014, with a little different feel, but the breadth and depth of research at the 7th World Congress of Biomechanics should make up for the lack of a resort venue. I for one am very much looking forward to it! There is still plenty of time to submit your abstracts for SBC2014/WCB2014 by the January 15 deadline.

Then plan to explore Boston—its historical sites, waterfront activities, regional foods, and cultural events. Explore harbor islands, take in a concert, walk the Freedom Trail, and much more!

As always, a HUGE thanks to all who contributed to this edition! Anyone can send comments or suggestions of your own, to me at the address below.

Ken Fischer
Editor, BED Newsletter
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Lawrence, KS 66045-7609
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AMERICAN SOCIETY OF MECHANICAL ENGINEERS AWARDS

As outgoing chair of the Honors Committee I wish to thank the BED for this opportunity to help recognize the outstanding accomplishments and career of our colleagues. This has been a truly rewarding experience. Recognizing excellence is an important role of our society and the BED's Honors and Awards Committee strongly encourages the membership to nominate deserving candidates for the Division's three special recognition awards.

Nominations from the pool of active members of the BED are now open for the 2015 awards! To nominate a colleague or yourself for a 2015 award, please submit the nomination form to the Chair of the appropriate Honors Committee no later than Sept. 1, 2014. 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 Honors Committee membership at http://divisions.asme.org/bed/Committees.cfm for the following special recognition awards.

The Y.C. Fung Young Investigator Award recognizes outstanding investigators, early in their careers, for significant potential to make substantial contributions to the field of bioengineering and a demonstrated commitment to bioengineering. Candidates must have earned a relevant Ph.D. or equivalent degree within seven years of their nomination and must be under 36 years of age on June 1 of the year of nomination.

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 H. R. Lissner Medal was created in 1977 by the Bioengineering Division of ASME to recognize significant contributions to bioengineering. These may be (1) research contributions; (2) new methods for measurement; (3) new equipment and instrumentation; (4) educational contributions; and/or (5) service to the BED and/or the bioengineering community.

Please join us this summer as we recognize the recipients of the 2014 awards at the SBC banquet and consider nominating a deserving colleague for the 2015 awards.

Thomas Andriacchi
Honors and Awards Chair
2011-2014

Boston awaits with history and fun! Submit abstracts by Wednesday, January 15!
2013 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.

Dr. Jonathan Vande Geest leads the Soft Tissue Biomechanics Laboratory at the University of Arizona, whose goal is to understand structure-function relationships in soft tissues and to develop novel technologies for the treatment of diseases of these tissues.

Dr. Vande Geest received an NSF Career Award for the development of a novel endovascular treatment of aneurismal disease. Other funded work within his laboratory is aimed at understanding how alterations in the extracellular matrix of ocular tissues in at-risk populations may play a role in glaucoma.

In addition to Biomedical Engineering, Dr. Vande Geest holds appointments in Aerospace and Mechanical Engineering, the BIO5 Institute, and the Applied Mathematics Program. He serves as a reviewer for several biomechanical journals and is a recognized researcher in area of cardiovascular and ocular mechanics.

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. Debkski
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
2012 Marissa Nichole Rylander
2013 Jonathan Vande Geest

Anterior view image of a human lamina cribrosa at low (5 mmHg) and high (45 mmHg) levels of intraocular pressure.

Microbiaxial optomechanical device to assess the load-dependent microstructure of collagenous soft tissues using nonlinear optical microscopy.
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.

Born in Los Angeles, California, Professor Jeffrey Weiss received his bachelor’s and master’s degrees in Bioengineering at the University of California, San Diego. He earned his doctorate in Bioengineering at the University of Utah in 1994, and received post-doctoral training with the applied mechanics group at Lawrence Livermore National Laboratory (1995-96). He is currently a Professor of Bioengineering and an Adjunct Professor of Orthopedics at the University of Utah.

Weiss’ research efforts have focused on the areas of experimental and computational biomechanics, primarily applied to the musculoskeletal and cardiovascular soft tissues. He developed and validated techniques for subject-specific computational modeling of joint mechanics, and applied these techniques to the mechanics of knee ligaments and patient-specific modeling of mechanics in the hip. Fundamental studies of ligament mechanics have included constitutive modeling, elucidation of ligament in situ strains, characterization of multiaxial viscoelastic material behavior, characterization of structure-function relationships, and determining the structural role of non-collagenous components, including decorin, proteoglycans and elastin.

Professor Weiss also developed finite element based techniques to incorporate medical image data directly into biomechanics analyses for strain measurement. His current research interests include the mechanics of angiogenesis and the development of patient-specific analysis methods for joint and tissue mechanics. Professor Weiss’s lab develops, distributes and supports FEBio, an open-source finite element software suite for computational biomechanics (www.febio.org).

Professor Weiss has received a number of highly coveted honors, including a Whitaker Foundation Research Grant (1995), a NSF CAREER Award (2002), the ASME YC Fung Young Investigator Award (2002), Election to Fellow of the AIMBE (2006), and several Best Paper awards.

He has been an active member of the ASME Bioengineering Division (BED), participating regularly in the Summer Bioengineering Conference and serving on the Solid Mechanics Committee since 1993, and he has chaired, organized and served as a reviewer for numerous sessions. Weiss has authored over 100 original research articles in scientific journals.

Jeffrey Weiss, PhD

Professor Weiss has received a number of highly coveted honors, including a Whitaker Foundation Research Grant (1995), a NSF CAREER Award (2002), the ASME YC Fung Young Investigator Award (2002), Election to Fellow of the AIMBE (2006), and several Best Paper awards.

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Lori A. Setton, Chair
V. C. Mow Medal Committee
2011—2014
2013 H. R. Lissner Medal

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 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.

Dr. Mehmet Toner received BS degree from Istanbul Technical University and MS degree from the MIT, both in Mechanical Engineering. Subsequently he completed his PhD degree in Medical Engineering at Harvard-MIT Division of Health Sciences and Technology. He holds the Helen Andrus Benedict Professor of Biomedical Engineering at the Massachusetts General Hospital, Harvard Medical School, and Harvard-MIT Division of Health Sciences and Technology. He is internationally regarded for his work in tissue engineering, biopreservation, and nanotechnology.

Dr. Toner has published more than 250 original papers and has delivered about 400 invited, keynote and plenary presentations. In 2012, he was the Commencement Speaker at his alma mater Istanbul Technical University’s 238th anniversary. He is a Fellow of the ASME, AIMBE, and the Society for Cryobiology. Among the more than 100 graduate and postgraduate students trained by Toner, many occupy major academic positions. Many of his former students and fellows have received the NSF Career Award, NSF Presidential Young Investigator Award, NIH First Award, NIH Director’s Young Investigator Award, and multiple are now Fellows of AIMBE or ASME. A number of his former students secured endowed chairs or other prestigious awards such as Howard Hughes Medical Investigator (HHMI). He is a member of the Board of Trustees of Özyeğin University, and a member of the President’s Council of Olin College of Engineering. In 2010, he was selected to serve a three-year term on the NSF Directorate of Engineering, Board of Advisors. Dr. Toner is also cofounder of multiple biotechnology and medical device start-ups.

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. Tzortzil
2007 Maury L. Hull
2008 Noshir A. Lagranga
2009 Thomas P. Andriacchi
2010 Roger Kamm
2011 Jay D. Humphrey
2012 David L. Butler
2013 Mehmet Toner
ASME Web Site have recently transitioned to ‘ASME communities’ format. This format adopts a social networking structure for facilitating interactions between members. The new format is also expected to help foster the agenda of technical committees and interest/focus groups. The new communities format has a ‘LinkedIn’ feel to it. However, members cannot make use of the new features unless they register to their community, which is obviously supposed to be the BED! You can register to the new website via https://community.asme.org/login.aspx. The registration process is pretty straightforward. While the web allows you to populate your profile automatically from your existing LinkedIn account, I have not found this particularly effective. It is likely that you will have to spend some time entering your information to have your profile fully complete. Your active participation in the communities environment will allow you to build contacts, participate in blogs and many other networking functions. As of December 2013, only 67 members are registered in the BED community and it is my sincere hope that you will spare 5 minutes to get your profile started.

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. There are about 3000 Fellows of ASME; 500 of which have indicated BED as one of the divisions they are affiliated with. These numbers reflect the strong presence of BED within the ranks of Fellows of ASME. The citations for seven of these new ASME Fellows are archived on the ASME website, and are reproduced below. The citations for the remaining Fellows will be included in one of the upcoming newsletters, when made available by ASME.

If you know of a 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 https://www.asme.org/about-asme/get-involved/honors-awards/fellows. Please do not hesitate to direct your questions to me regarding the nomination process. Please inform me of your nominations 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

Melissa Knothe Tate has made significant contributions in the fields of musculoskeletal biomechanics and mechanobiology. She has provided insight to the mechanisms by which the complex fluid flow patterns in bone tissue affect the resident cells. Tate has also unified computational and experimental modalities across multiple size scales to explain repair and adaptation of biological systems at the cell, tissue and organ levels. These contributions generated translational impact by developing mechano-active bio-inspired materials, implants and therapies for salvaging limbs and extremities damaged by trauma and disease. Ph.D. (1998), Swiss Federal Institute of Technology.
Kristen L. Billiar has made significant contributions are in the fields of biomechanics and mechanobiology. In particular he has contributed to an understanding of the physical properties of biological tissues, and the way in which mechanical forces regulate the development and healing of tissues and the pathogenesis of disease. Billiar's lab engineered two- and three-dimensional tissue mimicking constructs as model systems to study the effects of multiaxial mechanical stimulation on cell physiology, matrix biochemistry, and biomechanics of soft tissues and biomaterials. This work has increased the understanding of the mechanisms by which cardiovascular and skin related diseases affect people from a mechanical perspective. Ph.D. (1998), University of Pennsylvania.

Naomi C. Chesler conducts research that seeks to improve cardiovascular health through the integration of mechanical engineering, vascular biology and imaging tools. Her work has advanced knowledge in these fields, and she has educated the next generation of leaders in cardiovascular engineering. Her lab strives to better understand and prevent ventricular failure by focusing on three aspects of physiology and pathophysiology: mechanical properties of large and small arteries, blood flow dynamics and ventricular function. Chesler also conducts assessment-based research on engineering education to help institutions of higher education create a larger and more diverse pool of future leaders in engineering. Ph.D. (1996), Harvard-MIT.

Richard Debski is widely recognized for his contributions to the field of shoulder biomechanics, including: the elucidation of the structure and function of the ligaments, tendons and capsule at the glenohumeral and acromioclavicular joints; and the effects of injuries and repair procedures on joint motion to improve diagnostic, repair and rehabilitation protocols. He is a significant contributor to ASME as an Associate Editor of an ASME journal, and as the current Vice-Chair of the Bioengineering Division of the ASME Biosolids Technical Committee. Debski received the Y.C. Fung Young Investigator Award and the Richard S. Skalak Best Paper Award, both from ASME. Ph.D. (1997), University of Pittsburgh.

Dawn M. Elliott has been successful in developing a research program that seeks to understand the mechanisms of structure-function relationships in load-bearing fiberreinforced tissues and joints, and the associated changes that occur during development, with degeneration and injury, and following therapeutic intervention. Elliott’s focus is on determining mechanical factors that contribute to the pathogenesis and progression of intervertebral disc degeneration, and extend to the structure-function of all musculoskeletal fibrocartilages and to tissue engineered constructs. Throughout, her approach has been to develop and apply innovative, cutting edge technologies, including novel mechanical tests, rigorous mathematical models, and state-of-the-art magnetic resonance imaging and analyses. Ph.D. (1999), Duke University.
Promotions to ASME Fellow (continued)

Darryl G. Thelen was named a fellow of the American Society of Mechanical Engineers. Professor Thelen is the co-director of the University of Wisconsin Neuromuscular Biomechanics Laboratory which conducts research on the biomechanics and neuromuscular coordination of human movement, with applications in orthopedics and rehabilitation. In awarding the honor, ASME cited Thelen’s fundamental research in neuromuscular biomechanics and contributing to knowledge on the effects that age, injury, and disease have on musculoskeletal performance. Ph.D. (1992), University of Michigan.

Kenneth A. Mann has made significant contributions to orthopaedic biomechanics and is an internationally recognized authority on total joint replacement fixation. He has advanced multi-scale experimental and computational approaches to study implant loosening. His research team has also applied engineering mechanics principles to the study of genetic modification to skeletal shape, spine and pelvic injury biomechanics, artificial heart fluid mechanics, and metastatic breast cancer fracture risk assessment. Mann has authored over 240 journal and conference papers and received over $10 million in research support as principal investigator or co-investigator. He has mentored numerous undergraduate, graduate, and postgraduate students. Ph.D. (1991), Cornell University.

Great international science!  
Great times with the family!  
Submit abstracts by Jan 15!  

WCB2014
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 the student competition for WCB 2014, please contact Andy Anderson, chair of the Student Paper Competition Committee.

(andrew.anderson@hsc.utah.edu)

SBC 2013 Student Paper Competition

Each year at the Summer Bioengineering Conference, the Bioengineering Division sponsors a Student Paper Competition at the annual Summer Bioengineering Conference (SBC). At the 2013 conference in Sunriver, Oregon, 235 abstracts were submitted to the competition and 84 finalists competed in multiple technical areas in three competition levels: Ph.D. (podium), M.S., and B.S. Certificates and cash awards were announced at the conference banquet, and the M.S. and Ph.D. winners were invited to submit to the annual special issue of the ASME Journal of Biomechanical Engineering. The entire Student Paper Competition Committee congratulates the winners and thanks the 55 poster and podium judges whose service made this competition a success. The competition will continue at the upcoming WCB 2014 in Boston, so encourage your graduate students to submit their abstracts.

2013 Student Paper Committee
Sarah Kieweg, Overall Chair
Andrew Anderson, Ph.D. Chair
Steven Abramowitch, M.S. Chair
Eric Kennedy, B.S. Chair

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<tr>
<th>Fluid Mech, Biotransport, Cellular/Tissue Engineering - Bachelors Level</th>
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# SBC 2013 Student Paper Competition (continued)

## Solid Mechanics & Rehabilitation - Masters Level

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<tr>
<td>1st</td>
<td>Sachin Shah</td>
<td>University of Minnesota</td>
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<td>2nd</td>
<td>Corinne N. Riggin</td>
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<td>Hassam Baig</td>
<td>University of Pennsylvania</td>
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## Tissue and Cellular Engineering - Masters Level

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<tr>
<td>1st</td>
<td>Gabriela Espinosa</td>
<td>Saint Louis University</td>
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<td>2nd</td>
<td>Kevin A. Yamauchi</td>
<td>California Polytechnic State University</td>
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<td>Amit Paul</td>
<td>University of Illinois at Chicago</td>
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## Imaging, Fluids in Flow - Doctoral Level

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<td>Nicholas Shaffer</td>
<td>University of Akron</td>
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<td>2nd</td>
<td>Mike Weiler</td>
<td>Georgia Institute of Technology</td>
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<td>3rd</td>
<td>M. Haithem Babiker</td>
<td>Arizona State University</td>
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## Soft Tissue Biomechanics and Numerical Methods - Doctoral Level

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<td>Spencer Szczesny</td>
<td>University of Pennsylvania</td>
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<tr>
<td>2nd</td>
<td>John Boyle</td>
<td>University of Washington- St. Louis</td>
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<td>Jiajia Luo</td>
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## Tissue Engineering and Cell Mechanics - Doctoral Level

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<td>Lucas Ting</td>
<td>University of Washington</td>
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<td>2nd</td>
<td>Christopher O’Conor</td>
<td>Duke University</td>
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<td>3rd</td>
<td>Jonathan Henderson</td>
<td>Purdue University</td>
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## Tissue Engineering and Mechanotransduction - Doctoral Level

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<td>1st</td>
<td>Shirin Feghhi</td>
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<td>2nd</td>
<td>Andrew Holle</td>
<td>University of California, San Diego</td>
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<td>3rd</td>
<td>Joseph Chen</td>
<td>Vanderbilt University</td>
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## Transport, Growth, Remodeling, and Repair - Doctoral Level

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<tr>
<td>1st</td>
<td>Kyoko Yoshida</td>
<td>Columbia University</td>
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<td>2nd</td>
<td>Soumyarwit Manna</td>
<td>University of Cincinnati</td>
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<td>Thomas Scherr</td>
<td>Louisiana State University</td>
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## Orthopaedics and Injury Mechanics - Doctoral Level

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<td>Ben Gadomski</td>
<td>Colorado State University</td>
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<td>Corinne Henak</td>
<td>University of Utah</td>
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<td>3rd</td>
<td>Sam Leitkam</td>
<td>Michigan State University</td>
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undergraduate rehabilitation and assistive device
2013 DESIGN PROJECT COMPETITION

The 2013 SBC was the third year of the Undergraduate Design Project Competition in Rehabilitation and Assistive Devices. Many of the entries were senior design projects that involved rehabilitation and assistive technology which were already being developed as part of the curriculum.

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. All abstracts were reviewed by three independent reviewers and six finalists were selected from the submitted abstracts. The six teams selected as finalists were from Rochester Institute of Technology, University of Utah, University of Toledo, University of Delaware, Clarkson University, and the University of Michigan. Monetary awards of $3000 (provided by NSF) were awarded to the finalists to help defray travel expenses to attend the conference. Presentations were judged by a panel of onsite judges using five equally weighted criteria: Product need and market potential, Device description, Device performance, Economic plan, and Presentation clarity and style. The winning teams for 2013 are shown below.

2013 Undergraduate Rehabilitation and Assistive Device Design Competition Awards

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<thead>
<tr>
<th>Place</th>
<th>Name</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Xiaotong Li, Aaron Kirgesner, Adam Stephens, Mitchell Cramer, Mohamed Samir Hefzy, Mehdi Pourazady</td>
<td>The University of Toledo</td>
</tr>
<tr>
<td>2nd</td>
<td>Allen O. Osaheni, Janine M. Amell, Robert W Griffin, Madison B Malfa, Christopher J. Nycz, Byron D. Erath, Kevin Fite, Laurel Kuxhaus</td>
<td>Clarkson University</td>
</tr>
<tr>
<td>3rd</td>
<td>Taylor Grenis, Kolby Sorenson, Clay Williams, Bryan Van Horssen, Brian Hutchings, Andrew S. Merryweather</td>
<td>University of Utah</td>
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2014 marks the fourth year of competition with over $30,000 in travel awards which have been distributed to past student competition teams. Any individual or team of undergraduate students within North America who are graduating no earlier than Fall of 2013 are welcome to submit an abstract. All majors are welcomed. Student teams developing rehabilitation or assistive devices as a senior project are especially encouraged. A simple information template must be submitted by January 15, 2014, and a detailed two-page abstract is due on February 15, 2014 (see http://wcb2014.com/event-info/competitions/asme-undergraduate-design-project/). For more information, see the announcement on page 28 or contact the 2014 committee chair, Tamara Reid Bush (reidtama@msu.edu).

Tamara Reid Bush, Chair
Undergraduate Design Competition
SBC/WCB 2014
RICHARD SKALAK AWARD for Best Paper in JBME

Richard Skalak (1923-1997) played a leadership role in the formative decades of the discipline of biomedical engineering through his technical contributions in biomechanics, his educational influence on students, and his service to many developing societies and journals. Richard Skalak believed in several central approaches to bioengineering and several central values in working with people. In bioengineering, these were 1) the useful combination of mathematical and computational modeling with experimental results, to better inform the new biological understanding that is derived, and 2) the inclusion of both microscale and macroscale phenomena in understanding complex biological systems. In terms of mentoring students and collaborating with colleagues, these were 1) share ideas freely, 2) listen to ideas of others and integrate the best into new developments, and 3) show tolerance and respect for others at all times. 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.

In 2013, the Richard Skalak Best Paper Award from the ASME Journal of Biomechanical Engineering was awarded to Namani R, Feng Y, Okamoto RJ, Jesuraj N, Sakiyama-Elbert SE, Genin GM, Bayly PV for their paper entitled “Elastic characterization of transversely isotropic soft materials by dynamic shear and asymmetric indentation” J Biomech Eng. 2012 Jun;134(6):061004. This paper was selected from the group of Editors’ Choice papers published in the 2013 Annual Special Issue, by a committee (James Moore (chair & 2012 winner), Gerard Ateshian, Ross Ethier, Susan Margulies, Jennifer Wayne). The selected work shows a high degree of innovation in integrating numerical, experimental and theoretical approaches in a sophisticated manner, thus solving a problem of fundamental biomechanical interest, namely, the challenge of estimating the material properties of a transversely isotropic soft biological material in an experimentally efficient way. The authors presented an innovative experimental methodology and then validated it using custom-fabricated transversely isotropic materials. This material assessment approach was originally developed to study brain tissue, but has the potential to impact research on other soft tissues, and is therefore of broad interest to the biomechanical engineering community.

Beth Winkelstein, Ph.D.
Editor, JBME
University of Pennsylvania

Victor Barocas, Ph.D.
Editor, JBME
University of Minnesota, Twin Cities

Ravi Namani

Nithya Jesuraj
Guy Genin
Phil Bayly
Shelly Sakiyama-Elbert
Yuan (Aaron) Feng
Ruth J. Okamoto
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, ranging from cells, tissues, organs to whole body. Subject areas include: native and artificial organs, prostheses, bioinstrumentation and measurements, bioheat transfer, biomaterials, tissue biomechanics, bioprocess engineering, cellular and molecular 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, we are proud to report continued progress towards these goals, as well as the introduction of several new activities which we believe will further strengthen JBME.

Continued Increase in Review Speed & Selectivity of Journal Papers

In the last year, JBME has continued to thrive, with increasing submissions and decreasing review times. Our submissions increased from 631 in 2012 to 684 in 2013, and our acceptance rate was 13% of all submitted papers. Our review times continue to improve, with the 1-month time for a first decision and an average of 2.5 months for final acceptance for most papers submitted in 2013. The continued selectivity and improved review speed is a credit to our Associate Editors and reviewers. In the last year we have added 8 new Associate Editors which has helped to keep up with the increased submissions and reduced review time. We are grateful to all of them for their service!

Update of Journal Activities

In the past year, we have continued to work with ASME Publications to make improvements to the journal, ease the submission process, facilitate publication and promote the journal. In 2013, JBME moved to a digital library, which facilitated publication of and access to accepted manuscripts, and enable publication of color images in digital format without charges to authors. This has also helped to speed up the time to publication after acceptance of manuscripts. With those changes, we also continue to work with ASME to improve the Journal WebTool to facilitate submissions, recommendation of reviewers, and copyright management.

This year also marked the inaugural publication of the Annual Special Issue of the JBME. That issue highlighted reviews by leaders of the field and also papers from Y.C Fung Award, Mow Medal, and Lissner Medal, as well as papers by student award winners at the prior year’s Summer Bioengineering Conference. As the 2014 issue heads to press we are extremely excited about the quality of the papers and the involvement of more senior and junior investigators, as well as students. In addition to the Medal Papers, there will be 19 student award papers and 9 invited reviews.

In addition, authors now have the option of providing supplemental material for on-line publication with their papers. Currently, if you would like to include supplemental material, contact the editors for information about the process. Work is currently underway at ASME to allow authors to provide open access for their publications in ASME journals; the matter is still under discussion, but we hope to have an open-access option available within a year or so. Stay tuned!

Beth Winkelstein, Ph.D.  
Editor, JBME  
University of Pennsylvania

Victor Barocas, Ph.D.  
Editor, JBME  
University of Minnesota, Twin Cities
JOURNAL OF MEDICAL DEVICES

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 2014 Issue will mark 7 full years of this Journal. Since the start of the Journal, 235 papers out of 726 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.

ASME Journal of Nanotechnology in Engineering and Medicine

The Journal of Nanotechnology in Engineering and Medicine is the interdisciplinary ASME journal supported by Bioengineering Division, Fluids Engineering Division, Heat Transfer Division, Materials Division and Nanotechnology Institute. The Journal Associate Editors and Advisory Board include members of the supporting ASME Divisions.

The first issue was published in 2010. The Journal provides an interdisciplinary forum uniquely focused on conveying advancements in nanoscience and applications of nanostructures and nanomaterials to the creative conception, design, development, analysis, control and operation of devices and technologies in engineering, medical, and life science systems. High-quality contributions of three types are sought: original research reports addressing nanoscale phenomena, synthesis and analysis of nanomaterials and devices, and applications of these; reviews of emerging nanotechnology topics and research needs to impact engineering and medicine; and opinions/views on the developments and potential applications of nanoscience, engineering and technology.

Since the start of the Journal, 173 papers out of 451 submitted have been accepted for publication. The current number of hardcopy subscribers is 1296. The Journal Editorial Board encourages you to submit a paper or subscribe to the journal.
Bioengineering Division member Nathaniel Leon, and ASME Lifetime member Andrew F. Conn volunteer for V-LINC in Baltimore, assisting people with disabilities. V-LINC is a non-profit with the mission of “creating technological solutions to improve the independence and quality of life for people living with disabilities.” V-LINC project teams typically have a couple of engineers, often supported by experienced carpenters and/or electronics experts. Student teams from high schools, community colleges and universities also help with projects each year. Below are two projects that illustrate the work of Niel and Andy with V-LINC.

Maryllin’s Motorized Window
Maryllin was 82 years old and living in California, when the need arose for her to seek medical help at The Johns Hopkins University Hospital. She tackled the internet, located a subsidized apartment building in downtown Baltimore, and moved all by herself into the 10th floor where cross-breezes from two windows allowed her to not have to use her (expensive) air-conditioning unit. Then the building’s owners decided to double-pane all windows and suddenly Maryllin could no longer budge her windows (we measured her arm’s lifting force at 7 pounds but it took 20 pounds to move those now too heavy windows). By installing a linear actuator at each window, all Maryllin had to do (see figure below) was push a button to once again be able to enjoy Baltimore’s natural cooling breezes.

Hannah and Her Ramps
When we first met Hannah, she was relaxing in a full-sized hospital bed in the middle of the living room in the small apartment she and her mother shared. Hannah was then 12 years old and had suffered from “brittle bone disease” (osteogenesis imperfecta) since birth. In her short life, Hannah had broken well over 100 bones in her tiny body; she weighs only about 30 pounds, and is unable to walk. However, she moves rapidly about the apartment, using her arms to scoot herself along forward quickly. Previous bone fractures in Hannah’s back meant that she could not be comfortable in any conventional upright chair--thus the need for the hospital bed and pillows for comfort. Still, she is a very verbal, very bright, main-streamed school child, taking several advanced classes.

Knowing of Hannah’s ability to scoot along the floor, we brought a long narrow piece of plywood, covered with some beach towels, and experimentally determined that Hannah could readily go up and down a ramp with a slope of 17 degrees. This slope became the principle for all of the many ramps that V-LINC eventually provided to Hannah.

The first ramp V-LINC created was for the tilting love seat shown above that now serves as Hannah’s living room chair. Her bed is back in the bedroom where it belongs. Additional ramps allow Hannah to get in and out of bed, and on and off the toilet, and on/off her special power chair. Hannah now has greater independence and the ability to leave the apartment.
In June, 2013, the 15th Summer Bioengineering Conference (SBC) was held in the beautiful Sunriver resort in Oregon. This was a return to our roots, as the SBC was also held at the Sunriver resort in the early 90s! The 2013 SBC had 717 attendees, which compares extremely well with previous conferences. Submissions to this year’s conference remained numerous and excellent. We again had a full program of over 600 outstanding contributed papers, posters, and workshops. Attendees enjoyed not only a strong scientific program and the usual excellent networking opportunities, but also all that the resort and the surrounding Deschutes National forest had to offer, including lava beds, nearby wilderness areas and hand-crafted beers, and of course, a concert by our own BEDRock band.

The scientific program (put together under the capable leadership of Dr. Ram Devireddy) had the theme Translational Research as it applies to Bioengineering. Ms. Becky Bergman, the Vice President of New Therapies and Diagnostics for Cardiac Rhythm Disease Management at Medtronic, Inc., delivered an exceptional plenary lecture entitled “Successfully Transferring Medical Technology to Clinical Use: The Important Role of Academic/Industrial Partnerships.”

A special plenary session highlighted the ASME H.R. Lissner medal winner. This year we had the pleasure to acknowledge the accomplishments of Dr. Mehmet Toner (Harvard University/MGH) for his leadership in low-temperature biology and bio-stabilization, and microsystems bioengineering in clinical medicine and biology. A special workshop session highlighted the ASME Van C. Mow and Y.C. Fung medal winners. Dr. Jeff Weiss (University of Utah) was awarded of the Mow medal for accomplishments at the mid-career level for his contributions in biomechanics related to fundamental structure-function relationships in musculoskeletal soft tissues, image-based biomechanics, and the development and distribution of the FEBio software suite. Dr. Jonathan Vande Geest (University of Arizona) was the winner of the Y.C. Fung medal for his work on constitutive modeling of.
soft tissues including native tissues, tissue engineered biomaterials, and medical devices.

The student paper presentations and competition (organized by Dr. Sarah Kieweg and her team) remained a particular highlight of the conference. We were also excited to continue to support the Undergraduate Student Design Competition, the Grand Challenge to Predict Knee Loads and the FEBio tutorial. For the first time, a grant from the National Science Foundation provided support for the finalists of the Ph.D. Student Paper Competition by paying the registration fees for the conference. Hopefully this will be a regular occurrence and create a even healthier competitive environment. Several workshops were presented, ranging from pathways to translation of technologies to clinical utility of blood flow simulations, translational research in orthopedics, bioengineering education, validation before translation, translation tissue engineering and in vitro drug screening. The 2013 SBC also celebrated the achievements of one of our distinguished luminaries, Dr. Robert Eberhart, through a special scientific session.

Generous funding from the National Institutes of Health (NIBIB) and the National Science Foundation (CMII, BMB, CBET and GARDE), as well as excellent industry sponsorships helped make the meeting a success and helped support, among other things, our strong student attendance. The grant from NSF helped As always, the SBC would not even be held, let alone with such success as the 2013 meeting, if it were not for the hard work of a dedicated set of volunteers. Those volunteers that tirelessly and selflessly gave of their valuable time to serve on the SBC 2013 Organizing Committee were: Dr. Ram Devireddy (Program Chair), Dr. Rafael Davalos (Information Chair), Dr. Sarah Kieweg (Student Paper Competition), Dr. Mohamed Samir Hefzy (Finance Chair), Dr. Malisa Sartinranont (Local Arrangements Chair), Dr. Nadeen Chahine (Exhibits Chair), and Dr. Keefe Manning (Publication Chair). I truly owe them all my thanks for being such excellent colleagues and dedicated members of the ASME BED.

We look forward to enjoying WCB 2014 as a regular attendee and wish the Organizing Committee all of the best for a successful conference. See you in Beantown this coming July!

Charles Y. Lee, Conference Chair
Ram Devireddy, Program Chair
SBC 2013 included an incredible concert, performed by its very own band (made of our very own BED members), BEDrock. The venue was at Sunriver Resort, and the attendance by conference goers (and others) was great! It was the 10th Anniversary performance by BEDrock, which as been regular at the Summer Bioengineering Conference, and has also performed at a couple of BMES meetings.

The performers that make up the band vary from year-to-year based on who is coming to the meeting. These dedicated musicians agree on a playlist and practice with recordings, since they don’t get everyone together until onsite at the SBC venue. Since they don’t have a warm-up band most of the musicians rotate in and out of the band for various songs/sets. Although Justin Vorp (son of the BED’s illustrious chair, David Vorp) has played drums for every song for the last two SBC concerts. The drummer, who arguably has the most physical and strenuous job, gets no rest.

The BEDrock concert at SBC 2013 featured Joel Berry, René van Donkelaar, Alan Eberhardt, Ross Ethier, Jimmy Moore, Mike Moreno, Luke Timmins, Jeff Weiss, and as mentioned before Justin Vorp. As usual, some members of the audience could not resist the spotlight, and joined the group for a few songs as vocalists!

The Great Lodge at Sunriver was rocking all evening! here was plenty of room for the usual enthusiastic dancing.

There is a lot of work to make the concert work. Planning the music, practicing, and getting equipment to the venue, etc. I’m sure the band is already planning for its show at SBC WCB 2014 in Boston! Who knows what other talented musicians from the far corners of the globe may join the group. It is a much bigger meeting, and you can be sure the BEDrock concert will be elevated as well!

Check the Spring BED Newsletter for the time & place for the next BEDrock performance at WCB 2014 in Boston, MA!
The Biotransport (BIOT) Committee held its annual committee meeting at the scenic Sunriver Resort, in Oregon during the 2013 Summer Bioengineering Conference (SBC). The BIOT committee unanimously approved the minutes of our meeting from 2012 SBC. We reported on the technical podium and poster sessions organized at the SBC in Sunriver, OR and planned for the next year’s meeting as part of the World Congress of Biomechanics (WCB) in Boston, MA. The technical sessions, organized by our committee at the ASME IMECE Winter Annual Meeting (Nov 15-21, 2013, San Diego, CA), were also discussed. An update was also provided to the committee on member research accomplishments and awards, member promotions.

The committee also discussed several ideas and topics to further improve and expand the activities of our members at the SBC and beyond. For the WCB, nine invited sessions have been proposed. Senior BIOT members actively facilitated nominating interested members for Associate Editorship (AE) of ASME journals, including one member becoming AE of J. of Medical Devices.

The BIOT committee also provided support for the 2013 and 2014 ASME Nano-engineering for Medicine and Biology conference in Boston and San Francisco and 2013 National Heat Transfer Conference, as part of the 75th anniversary of the ASME Heat Transfer Division, in Minneapolis. Several of our members actively helped in organizing these conferences. The committee members felt that BIOT should continue actively pursuing participation in international conferences, such as ICCHMT and jointly conduct conferences with JSME, KSME and BMES of China. BIOT is currently pursuing such initiatives.

Rupak Banerjee, Chair
Biotransport Committee
2012-2015
On behalf of the Design Dynamics and Rehabilitation Technical Committee and I would like to thank Lorin Maletsky for his dedication and leadership over the past 6 years while serving as the committee chair and vice-chair. Under his leadership we have grown the number of committee members, established an undergraduate design competition, and held several workshops.

I am also pleased to announce the election of Tammy Bush to vice-chair of our committee during the 2013 meeting in Sunriver. She has previously served as the Rehabilitation Theme Leader and she is currently leading the 2014 Undergraduate Design Competition for Rehabilitation and Assistive Devices.

The DDR Committee received 105 abstracts for the 2013 meeting in Sunriver. The committee programmed seven podium sessions including some joint sessions with the fluids and solids committees. BJ Fregly and Darryl D’Lima once again held the Grand Challenge to Predict in Vivo Knee Loads with this year’s winner being awarded to Darryl Thelen, Kwang Won Choi, and Anne Schmitz. In addition, the undergraduate design competition was held for the third consecutive year (see page 28) and we had many posters in the two poster sessions.

The DDR committee meeting began with a discussion of the upcoming 2014 World Congress on Biomechanics. Through the hard work of the committee members, DDR will be supporting three invited session at WCB, Rehabilitation Dynamics (Mark Miller & Tammy Bush), State of the Art in Motion Capture and Analysis (Martin Tanaka & Tom Gardner), and 2014 Undergraduate Design Competition in Rehabilitation and Assistive Devices (Tammy Bush & Rob Siston). In addition, several sessions are being organized under the Theme of Brain Rehabilitation in collaboration with the Tissue and Cellular Engineering Technical Committee and Ted Conway from the NSF (Rita Patterson, Sara Wilson, B.J. Fregly, & Guy Genin).

The theme leaders for 2014 are:

- **Human Dynamics** - Tom Gardner and Sarah Wilson
- **Design and Devices** - Mike Moreno and Joseph Iaquinto
- **Rehabilitation** - Mark Miller and Tammy Bush

Finally, I would like to thank the dozens of people who reviewed abstracts submitted to the DDR Committee last year. Your commitment to the operation of the committee is truly appreciated. This year some of you may be asked again to review, but the review process is being organized by the track chairs at the WCB so some of the processes may be different. As the DDR committee continues to grow, I encourage you to attend our committee meeting and invite a friend. Last year we had many participants that are regular members of other committees. This type of cross pollination strengthens the committees and the bioengineering division as a whole.

I am looking forward to seeing you in Boston this summer at the 2014 WCB. It is going to be a big meeting with participants from around the world! Please submit your abstracts online by January 15th (see http://wcb2014.com/)

Martin Tanaka, Chair
Design, Dynamics, and Rehabilitation Committee 2013-2016
FLUID MECHANICS committee

It was great to see everyone at the 2013 SBC meeting in Sun River, Oregon! Thanks to all of you who reviewed fluids abstracts. Also, many thanks to our two Theme Leaders, Keefe Manning and Brandon Dixon, who again successfully led the reviewing and programming efforts for the two major themes: “Cardiovascular Fluid Mechanics” (Manning) and “Respiratory and Other Fluid Mechanics” (Dixon). For 2013 SBC, Fluids organized 10 sessions and, as in previous years, many of these were joint sessions with other committees.

In keeping with this year’s theme of Translational Medicine, Fluids held a Workshop on “The Clinical Utility of Blood Flow Simulations,” organized by Christof Karmonik and Francis Loth. The workshop was well attended and consisted of five presentations and a panel discussion. Thanks to all the speakers especially the Keynote Speaker, Charles Taylor, who is the co-founder and CTO of HeartFlow, a cardiovascular diagnostics company.

The Fluids Committee meeting was well attended (n=32) and discussion focused on 2014 when the SBC meeting will be combined with the WCB meeting in Boston. Specifically, we discussed how committee members could contribute to the WCB invited sessions. Working with the WCB organizers, we are pleased to report that Fluids has contributed dozens of invited sessions.

In February, a journal paper appeared in JBME that described the variability of CFD simulations from 26 participating groups (56 authors) from the Inaugural CFD Challenge Workshop organized by David Steinman and Francis Loth (2012 SBC). Hopefully, more challenges will be organized in the future and focus on various hemodynamic quantities that are of clinical interest.

Keefe, Brandon, and I look forward to seeing all of you in Boston.

Francis Loth, Chair
Fluids Committee
2013–2015

*The Clinical Utility of Blood Flow Simulations* workshop panelists (left to right): Hui Meng, PhD, Justin Cetas, MD/PhD, Juan Cebral, PhD, Charles Taylor, PhD, Christof Karmonik, PhD.
SOLID MECHANICS committee

The Solid Mechanics Technical Committee organized or co-organized 20 podium sessions for SBC 2013; sponsored the workshop “Of Mice and Men: Validation Before Translation”; and co-sponsored the workshop “Translating Tissue Engineering & Drug Treatment Screening in vitro”. We reviewed 231 abstracts, accepting about 90%.

A great way to get involved with the Summer Bioengineering Conference is to review abstracts and organize sessions. Attending the Solid Mechanics meeting at the SBC will help you get involved with the process. Over 45 people attended in 2013. If you missed the 2013 meeting and would like to help review abstracts for 2014 World Congress of Biomechanics (WCB2014), please contact me.

We would also like to take this opportunity to publicly thank our Theme Leaders who led the efforts for the review process and helped with session organization:

- Cardiovascular Tissue Mechanics – David Merryman
- Growth, Remodeling, and Repair – Seungik Baek/Jeffrey Holmes
- Injury – Alan Eberhardt
- Musculoskeletal Soft Tissue Mechanics – David Corr
- Bone Mechanics – Virginia (Ginger) Ferguson
- Joint and Spine Mechanics – Brian Kelly

Other Solid Mechanics – Thao (Vicky) Nguyen

We would also like to thank the long list of individuals that took the time to review abstracts. Finally, I would like to thank Jeffrey Holmes for his service as Chair of the Solid Mechanics Committee from 2010-2013. He did a wonderful job with the committee responsible for the largest number of abstract submissions to the Summer Bioengineering Conference and “taught me the ropes” over the past two years.

The World Congress of Biomechanics looks to be an exciting meeting and we look forward to seeing you in Boston in July of 2014.

Rich Debski, Chair
Solid Mechanics Committee
2013–2016

Take it slow and easy during WCB downtime! Submit your WCB2014 abstracts by January 15!
At the 2013 SBC held two poster sessions, two podium Ph.D. competition sessions, and several podium sessions, some of which were co-organized with other technical committees. We also had a great workshops on Translating Tissue Engineering and In Vitro Drub Screening, organized by Robert Mauck and David Corr.

Many thanks to all who submitted abstracts for making this a great meeting, and also to everyone who reviewed abstracts! You, too, can be on this list in 2014—email us if you’re willing to volunteer for abstract reviews!

Our annual committee meeting was held on the first day of SBC 2013 on an somewhat rainy day in Sunriver. There we planned there for coordination with WCB 2014 and conducted preliminary planning SBC 2015. Now is the time to send in your abstracts! Abstracts are due January 15, so be sure to plan ahead and join us at WCB2014!

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

Take in a game, stroll through the parks or tour historic sites! See you in Boston for WCB 2014!
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. Beyond ASME, the BED has representatives to the American Institute for Medical and Biological Engineering and the U.S. National Committee on Biomechanics.

EDUCATION COMMITTEE

The Education Committee of the Bioengineering Division continues going strong – at the 2013 SBC, at least 18 members attended the committee meeting. A lively discussion ensued, covering topics such as the committee’s strength in organizing workshops and the potentially record-setting number of education-themed posters at SBC. Of the 11 posters presented, five were featured in the Lost in Translation workshop, to which Kris Billiar significantly contributed to the organization thereof. Based on the crowds at the education posters, we should continue the education abstracts and posters at future meetings.

In keeping with the tradition of organizing workshops, the Committee proposed a workshop on best practices in Global Engineering Education, to be co-organized by Ginny Ferguson and Tammy Haut Donahue at World Congress. Despite the enthusiasm, this workshop will have to wait since programming for WCB is awfully competitive. Also at the committee meeting, we thanked the outgoing Education Committee Chair, Kris Billiar, for his service to the committee. Please join me in welcoming Sarah Kieweg as Vice Chair! Sarah is a familiar face to most of us due to her involvement with the Student Paper Competition.

One action item that emerged from the 40th Anniversary Bioengineering Division Leadership Retreat was the development of criteria for an Education and Mentoring-themed award. We have a small sub-committee devoted to identifying the characteristics and qualifications for such an award, but would welcome more help! If you would like to join in this discussion, please contact me (LKuxhaus@clarkson.edu).

On behalf of the Education Committee, I encourage you to submit education-themed abstracts to WCB. What are your best practices for teaching bioengineering and biomechanics? What do you find helps your students learn? Let’s have another record-setting year of Education posters!

Laurel Kuxhaus, Chair
BED Education Committee
2013–2016

Take time to see Boston’s historic sites when attending WCB 2014!
Abstracts due January 15!
The World Congress of Biomechanics is an international meeting held once every four years, rotating among Europe, Asia and the Americas. This, the 7th WCB, will once again bring together bioengineers, life scientists and medical researchers from around the world for 5 days of in-depth discussions and presentations. Vendor exhibitions will highlight the latest technologies, publications, and medical devices.

Plan to join us in Boston, just following the US Independence Day festivities on July 4th.

www.wcb2014.com
Future Conference Announcements

Overview
Undergraduate students engaged in design projects related to rehabilitation or assistive devices during the current (2013-2014) academic year are encouraged to submit an abstract of their design project to the 2014 World Congress of Biomechanics. The top six finalists will be given an opportunity to present their work during a special podium presentation session. The objectives of this undergraduate design competition are to showcase the undergraduate design work, give students an opportunity to describe their work, and provide a chance to meet professionals in the bioengineering field. This competition is sponsored by the Bioengineering Division of the American Society of Mechanical Engineers with support from the National Science Foundation.

Who can enter?
Any individual or team of undergraduate students within North America who are graduating no earlier than Fall of 2013 are welcome to submit a design abstract. The students do not need to be enrolled in a course or completing the project as part of their curriculum to be considered. All majors are welcomed to submit an abstract. The project must be initiated and completed during the academic year (June 2013-June 2014; ongoing projects are not eligible). There is no limit to the number of students on the team. If selected as one of the top six projects, at least one member of the design team must attend the 2014 World Congress to present their work. Some abstracts that were not selected as finalists may be invited to present their work as a poster at the WCB conference. All students on the abstract should be undergraduates at the time the project was completed.

What design projects are desired?
Any design projects related to rehabilitation science or assistive technologies will be eligible. This definition will be broadly interpreted to include any device that helps people perform activities. This includes devices that aid people with disabilities, help people recover from an injury, or enhance physical or mental capabilities of healthy individuals. Specific projects can be checked for approval prior to submission by contacting the competition organizer. Projects must have a significant novel design component and cannot simply be a presentation of data from an existing device or strictly a research project. The abstract of the design proposal will be judged based on its merits as a proposed device to solve a problem, while the presentation competition at the WCB will be judged based on the actual realization of the product or a prototype of the product. The actual duration of the project (semester or yearlong) at the student's institution is not important providing it was completed during the current academic year (between June 2013 and June 2014).

How is the design proposal submitted and how is it judged?
Students must submit a 400 word abstract (or 300 words + 1 figure) design abstract following the WCB guidelines by the normal conference deadline of January 15, 2014. This abstract should contain basic information about the design problem, the potential consumers and student and faculty affiliation information, etc. A detailed two-page design report must be submitted by February 15, 2014 using the Rehabilitation and Assistive Devices submission template.

Judging criteria for Undergraduate Design Competition Abstract Submissions
1. Product need and market potential
2. Device utility and novelty
3. Technical feasibility
4. Budget and economic plan
5. Writing clarity and style

Judging criteria for Undergraduate Design Project Finalists presentations at WCB
1. Product need and market potential
2. Device description
3. Device Performance
4. Economic plan
5. Presentation clarity and style

For more information about the Undergraduate Design Project Competition in Rehabilitation and Assistive Devices see the World Congress of Biomechanics site: http://wcb2014.com/event-info/competitions/asme-undergraduate-design-project/

Questions about the Undergraduate Design Project Competition in Rehabilitation and Assistive Devices should be submitted to the competition organizer for WCB 2014, Tamara Reid Bush, PhD, reidtama@msu.edu.
The *ASME 2014 3rd Global Congress on NanoEngineering for Medicine and Biology* (NEMB2014) will be held Feb. 2-5, 2014 in San Francisco, CA. The 2014 Congress will focus on the integration of Engineering, Materials Science, and Nanotechnology in addressing fundamental problems in Biology and Medicine and in developing devices, materials and methods for quantitative physiology and for the early detection, imaging of pathological and physiological mechanisms, and treatment of disease.

**Organizers**

**Conference Chair:** Rashid Bashir, University of Illinois at Urbana Champaign  
**Program Chair:** John C. Bischof, University of Minnesota  
**Steering Committee:**  
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- Taher Saif, University of Illinois at Urbana Champaign  
- Malisa Sarntinoranont, University of Florida  

**Honorary Chair:** Markus J. Buehler, MIT  
**Student Awards Coordinator:** Malisa Sarntinoranont

**Plenary Speakers**

Paul Alivisatos, UC Berkeley/Lawrence Berkeley National Laboratory  
Mina Bissell, Lawrence Berkeley National Laboratory  
Arun Majumdar, Google/Stanford University  
Stephen Quake, Stanford University  
John Rogers, University of Illinois at Urbana Champaign  
Mehmet Toner, Harvard Medical School/ MGH  
Jennifer West, Duke University

**Tracks**

Track 1 Bioengineering for Imaging and Diagnostics  
Track 2 Nanoengineering for Therapeutics and Drug Delivery  
Track 3 Nano-/Microfluidics in Biology and Medicine: Analysis, Diagnostics, and Therapeutics  
Track 4 Nanoengineering for Regenerative Medicine and Tissue Engineering  
Track 5 Manufacturing and Materials for Nanomedicine, Biology, and Nanoengineering  
Track 6 Biological Nanomechanics: Modeling and Materials in Physiology, Disease, and Treatment  
Track 7 Cellular and Molecular Machines  
Track 8 Biomimetic, Biosynthetic, and Bioinspired Materials and Structures  
Track 9 Nanotoxicology, Metrology, and Environmental Sensors  
Plus Poster Session, Tutorials and Plenary Lectures!

For more information, go to: [http://www.asmeconferences.org/NEMB2014/](http://www.asmeconferences.org/NEMB2014/)
FUTURE CONFERENCES

Future Conference Announcements

DESIGN OF MEDICAL DEVICES CONFERENCE
APRIL 7-10, 2014
The Commons Hotel & McNamara Alumni Center
Minneapolis, Minnesota

NEW THIS YEAR!

Design of Medical Devices Conference
Emerging Medical Innovation Valuation Competition

A way for researchers to get immediate feedback on projects from leaders in medical technology research, engineering & development.

This competition is for inventors (including students, faculty, staff, and corporations) with ideas for new innovations in need of investor support to reach the next stage of development. Initial submissions should be no more than ten slides summarizing the new medical innovation. Six submission will be chosen to present during the DMD Conference on Tuesday, April 8, 2014.

The top three presenters will be awarded a full valuation, including a presentation and report, of their technologies from the University of Minnesota's Medical Industry Valuation Laboratory, (regular fee for this service is $15,000).

Deadline for submissions: January 6, 2014
Top six finalists announced: March 10, 2014

Medical Device Innovation Workshop

In this fast-paced, one-day workshop, you will learn the essentials of being a medical technology innovator and a key opinion leader. Lectures will be complemented by a series of hands-on activities where you will conceive, refine, prototype and develop a business proposition for a new medical product.

Monday, April 7, 2014

Three-in-Five Competition

The top ten contributed papers, describing medical devices with commercial potential, are chosen to present three slides in five minutes and answer questions from a panel of judges. The competition is for researchers to get immediate feedback about their projects from leaders in medical technology research, engineering & development.

Wednesday, April 8, 2014

Live Surgery Session

A University of Minnesota surgeon will be performing a minimally invasive surgical procedure at the University of Minnesota Medical School - Fairview Hospital. The surgery will be transmitted to the conference via live video feed. A moderator will be at the conference explaining the procedure and answering questions from the audience along the surgery.

Wednesday, April 8, 2014

Regulatory Sciences Symposium

Regulatory Science is the science of developing new tools, standards, and approaches to assess the safety, efficacy, quality, and performance of all FDA-regulated products. The future of rapid virtual prototyping, digital patients and populations, virtual clinical trials and personalized medicine is upon us, and bringing better medical devices to patients in the US faster is possible with the important research and investigations made by this community. One of the crucial advancements is establishing computational modeling and simulation as valid scientific evidence because it will transform the regulatory pathway for future medical products.

Thursday, April 10, 2014

Premier Level
Boston Scientific Corporation
Medtronic, Inc.

Supporting Level
7-SIGMA, Inc. | CD-adapco | Medical Devices Center, University of Minnesota | Medical Industry Leadership Institute, University of Minnesota | NOVO Engineering, Inc. | Office of Business Relations, University of Minnesota | Office for Technology Commercialization, University of Minnesota | Starkey Hearing Technologies | Supercomputing Institute, University of Minnesota

Associate Level
3M | XiMedica

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Minnetronix, Inc.

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Questions can be directed to Art Erdrman, Conference Chair (aerdrman@umn.edu) or Jenny Holden, Conference Administrator (ramp002@umn.edu)

Financial sponsorships are used to support medical device education at the University of Minnesota.
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