



European Society of Biomechanics

Newsletter

Spring 2011

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MESSAGE FROM THE PRESIDENT: Being a member of the ESB - choice and implications, Damien Lacroix

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Dear Members,

There must be some good reasons why you are a member of the ESB. The discount obtained at the ESB congresses is a bonus but it is probably not the main driver behind the decision to become member of a Society. Being a member does not give you more or less work. Being a member does not provide you with more recognition on your CV (at least once you have passed the post-doc career stage). Being a member does give you some benefits and the Council of the ESB is working hard to improve and increase these benefits; but I believe that this is not the main reason for membership. The only really tangible reason is that a member has the sense of belonging to a community that strives to improve the science of biomechanics together with all the other members.

A community is a group of people who share interests, knowledge, information, values etc... The success of Facebook is a clear example of the need in our society to share something with other people who are in a different geographical place but with whom we have something in common.

Being a member of the ESB is more than just applying for membership and paying the annual fees. It is usually a long term decision; one is not a member for less than a year or two and is likely to remain a member for many years unless he/she feels that this

sense of community has been broken. Biomechanics is the essential element where we all converge. Europe is its complementarity. A sense of proximity must exist for a community to exist and in our case Europe, in the loose sense of its definition, is our area of interconnection. This can be in the most natural form with people working in Europe, but it can also make sense for people working outside Europe who have European ties, or for people who simply wish to embrace the European community because they identify with it. The sense of identity is critical in belonging to one community or another. Not all European scientists calling themselves biomechanicians wish to become a member of the ESB; simply because they do not identify themselves with the type of research that is being done by this community or by the type of people who make this community. The ESB, just as any other society, has its specificity and it is up to the community to show openness towards other communities to make this specificity evolve over time.

Your membership is therefore not implicit. You decided to become a member of the ESB. In my wedding ring, I have engraved the following words: '*vivre c'est choisir*' (living is to choose). Any situation during our life is the result of a decision, whether explicit or implicit. We are actors and not spectators. Every day you decide to continue working for the development of biomechanics. It is your choice not to work into another engineering field or to study tissue mechanics instead of gait analysis for example. This community belongs to nobody in particular but to all of us. Each one in its own way contributes to its development. The Council of the ESB is no different from the rest of the members in this sense since we are trying to serve the community in the best way possible. This year the ESB will be mostly present at the 23rd Congress of the International Society of Biomechanics (ISB) to be held in Brussels on July 3-7. An ESB workshop on "Biomechanics in Minimally Invasive Endovascular Procedures" will be organized by Pascal Verdonck and Gabriele Dubini. An ESB session on "Multiscale modelling of the skeleton" and

an ESB keynote lecture by Marco Viceconti will form part of the Congress, and many presentations from ESB members will contribute significantly to the scientific programme. I hope to see a large part of the ESB community at the ISB Congress and see points of proximity between the two communities.

As you may know, the ESB is a member of the EAMBES (European Alliance for Medical and Biological Engineering and Science) which has mostly lobbying activities at the European Commission level to leverage the position of biomedical engineering in the scientific and educational European agenda. The EAMBES serves the ESB since it is constituted of a much larger community able to support the promotion of biomedical engineering research and education at the European level. The ESB is well represented within this body since the new President of EAMBES is Marco Viceconti, past-president of the ESB, who is doing tremendous work to improve the influence and visibility of EAMBES, and the Treasurer is Keita Ito, also past-president of the ESB. With Stephen Ferguson as Chair of the EAMBES Committee in the Council of the ESB, a clear objective of the ESB is to increase its visibility and influence at a larger audience and contribute to the overall objectives of EAMBES. It is also because of this sense of community that each of us is an ambassador of ESB who, through any talk or publication, promotes biomechanics in Europe and increases the footprint of biomechanics in the biomedical engineering community.

One of the important changes the ESB will introduce in the future is the organization of annual

congresses instead of biennial congresses. Again, as actor of this community, you have been asked several times to provide your input on this initiative. A few voices were heard but many were silent. In many decision procedures, silence is considered as agreement. So, I hope that this is what it means here. As a consequence of such reorganization of ESB congresses, I have launched a consultation to all the members in order to know whether you prefer to have the usual ESB congress in Europe in 2014 or organize it jointly with the World Congress of Biomechanics (WCB) in Boston. The results of this consultation are pretty clear: 70% of the members who voted would prefer to jointly organize the ESB 2014 with the WCB. I will therefore work with the organizers of WCB to propose such an event under the conditions that the visibility and contribution of the ESB within the scientific programme are ensured. As representative of this community, it is my duty to listen to you and act in consequence.

I hope that I have convinced you that being a member of the ESB is a choice that has many implications. The result of this, at least for me, is that one feels proud to belong to such vibrant community and to be able to contribute to the development of biomechanics in Europe. Let's push forward all together this community initiative that started 35 years ago to further consolidate our sense of community and strengthen our position within the wider biomechanics and bioengineering communities.

SAVE THE DATE: 18th ESB Congress, 1-4th July, 2012

Abstract Deadline December 1st 2011

The 18th Congress of the European Society of Biomechanics (ESB2012) will be held at the Instituto Superior Técnico (IST), Technical University of Lisbon, Portugal, on 1st to 4th July 2012 and chaired by Paulo Fernandes, João Folgado and Miguel Silva. The main objective of the congress is to bring together researchers and practitioners in biomechanics to stimulate and promote research on all core topics of biomechanics, including emerging research areas. The event will open on Sunday 1st July with a pre-course of interest to graduate students, post-docs, and young researchers. The main programme from Monday 2nd to Wednesday 4th July will feature different tracks of presentations from the delegation. Plenary sessions are planned to address current challenges in biomechanics research, and to provide valuable insight into the ever-increasing importance of collaborative research, interdisciplinary programmes, EU funding opportunities and biomechanical education programmes.

Based on the previous Congresses, we believe that ESB2012 will have a strong impact on the development of biomechanics research work, identifying emerging areas of research and promoting the collaboration between its participants. The congress will be held in Lisbon, the capital of Portugal. Lisbon is a beautiful, historic city facing the Atlantic Ocean. Lisbon has been a point of cultural interchange and encounter for many centuries for visitors and people coming from all over the world. It is a safe and pleasant city where delegates and their companions will feel at ease and will be very well received. All up-to-date information can be obtained at the congress website: www.esbiomech2012.org.



IN MEMORIUM: Rik Huiskes

The European Society of Biomechanics is very sad to announce the death of Rik Huiskes on 24th December 2010. Rik was a wonderful colleague and an inspiration to all of us, Patrick Prendergast one of the many ESB members to have been mentored by Rik has written this obituary, we all endorse Patrick's comments on the major contribution Rik made to European Biomechanics he will be greatly missed by our community.

Rik Huiskes - An Appreciation Patrick Prendergast, ESB past-president

Rik Huiskes was a towering figure in biomechanics; I think it not an exaggeration to say that he dominated the field. He came to prominence in the early 1980s with his Orthopaedic Biomechanics Lab in the Department of Orthopaedics in the University of Nijmegen, the Netherlands, and he continued performing high-impact research until some years before his retirement.

Of the many things that could be written about Rik, it seems appropriate here in the ESB Newsletter to note that he was one of the founders of the European Society of Biomechanics; he served as council member from 1976 to 1990, as Secretary General from 1986-1988, and ultimately as President from 1988 to 1990. He was elected an Honorary Member of the ESB at the biennial meeting in Aarhus, Denmark, in 1990.



Rik Huiskes at the first scientific meeting of the European Society of Biomechanics Brussels, 1978.



Rik Huiskes at the General Assembly meeting of the European Society of Biomechanics in Rome in August, 1992. Picture courtesy of Dr.ir. Monique Donkerwolcke.

He often said to me that the ESB was the society where he felt most at home – it merged two things he strongly believed in: Europe and Biomechanics. Born during the WWII years, like many of his generation who experienced the borders melt away in the western part of Europe he was an enthusiast for broadening the scientific landscape beyond the national boundaries to Europe as a whole; many European societies formed in these years reflecting the new arrangements and spurred on by the EEC and later the EU. He was the European Co-Editor-in-Chief of the Journal of Biomechanics from 1979 until 2009, a record of 30 years of service that is unlikely ever to be equalled. He liked the influence that such a prestigious editorship could bring. Of his many awards, two should be specifically mentioned: his award of a Netherlands Academy of Arts and Sciences Professorship and his election as a Foreign Member of the US Academy of Engineering.

But Rik's presence in the field went beyond holding any office or getting any awards. He was a champion of biomechanics. He argued for the importance of biomechanics as a science – a "forceful science", as he once wrote. He believed passionately in the importance of the exchange of ideas, in strong argument if necessary – he disliked passivity and wanted scientists to stand up for their ideas. He livened up many conferences with this robust style of engagement, and not just the scientific sessions but the social interactions afterwards, often late into the night – delegates would be disappointed if Rik wasn't at a conference, but truth to say, they weren't often disappointed because he turned up everywhere – often because he was invited to speak as the organisers knew he was worth the airfare, even in the days when airfares were expensive.

He never missed a meeting of the ESB from its first meeting in Brussels in 1978 until Lucerne in 2008 when his illness prevented him from attending. At the ESB meeting held in Dublin in 2000, he chaired a session on tissue engineering where Farsh Guilak and I gave keynotes: in summarizing he said that the audience had listened to one poet and one physicist – and he left us guessing who was which, and we will be guessing a long time yet.

But just in case it was me, here is a poem that reminded me of Rik, who smoked profusely in his office when I was a post doc there in the early 1990s.

*Smoke might have been already in his eyes
The way he'd narrow them to size you up
As if you were a canvas, all the while*

*Licking and sealing a hand-rolled cigarette,
Each small ash increment flicked off
As white flecks on the horizon line...*

(from Seamus Heaney, *Human Chain*, Faber and Faber, 2010)

His early work was on implant mechanics and his PhD thesis was a comprehensive biomechanical analysis of artificial hip replacement, published as *Huiskes, R. Some Fundamental Aspects of Human Joint Replacement, Acta Orthop. Scand., Suppl. 185, 1980*; it is still an important foundation study for anyone researching the biomechanics of total joint replacement. Later he pioneered the use of computational modelling for analysis of orthopaedic implants. One of his most highly regarded papers was the first simulation of tissue adaptation around an implant [*Huiskes et al, J. Biomech. Vol. 20, pp. 1135-1150, 1987*]. Later he became more interested in bone remodelling and tissue adaptation, leaving aside this research on orthopaedic implants almost completely to focus on it. He was very proud of the paper he later published which presented a complete bone remodelling theory [*Huiskes et al., Nature Vol. 405, pp. 705-706, 2000*].

He supervised some 49 PhD theses, and examined many more – including my own in Dublin in 1991. I

remember arguing that hip prosthesis designs were converging to an optimum as the years go by. 'How could you be so wrong?', said Rik in a classic admonishment for being, indeed, quite wrong. With his passing biomechanics has lost one of its foremost leaders, and we have lost a mentor and a friend.

Rik Huiskes died on the morning of the 24th of December 2010 at his home in Oslo, Norway. He had retired from his Professorship at the Technical University of Eindhoven only two years previously and had moved to Norway to live with his wife Trine.

To Trine, and to his children Suzanne, Sabine, and Willem Frederick, we offer our sympathies for the loss of a husband and a father.



Rik Huiskes at the Technical University of Eindhoven, photo: Bart van Overbeeke, Eindhoven-NL

NEW AWARDS for the European Society of Biomechanics

In the light of the contribution Prof. Huiskes made to the ESB the council has decided to re-name its new medal for outstanding achievement in Biomechanics the 'Huiskes Medal for Biomechanics' the criteria for award of this medal will be as follows:

Criteria for Huiskes Medal for Biomechanics:

- Candidate must have contributed significantly to biomechanics.
- Not restricted to ESB members.
- Candidate nominations submitted by at least two ESB members.
- Award consists of a medal and all expenses are covered.
- Invitation to present a plenary keynote lecture.

Deadline: December 1st 2011.

The Best Doctoral Thesis in Biomechanics is a new award with which the ESB recognizes the development of an outstanding doctoral final thesis that has contributed to the advancement of the theory and/or applications of Biomechanics:

Criteria for Best Doctoral Thesis in Biomechanics:

- An outstanding PhD final dissertation.
- Selection based on the original PhD and related CV.
- ESB members when they apply for this award.
- PhD graduates have up to 3 years after the defense for submission.
- Award will consist of a certificate, 2,000 € and payment of registration and banquet fees.

Deadline: December 1st 2011.

All the current ESB Awards are still available for the next Congress in 2012:

- **S.M. Perren Research Award**

Deadline: December 1st 2011.

- Clinical Biomechanics Award
- Student Award
- Poster Award
- Travel Award (Deadline: March 1st 2012).

Additional information can be consulted on the ESB web page (<http://www.esbiomech.org/Section/esb-awards>).

European Alliance for Medical and Biological Engineering and Sciences (EAMBES) update, Stephen Ferguson



In February, a new General Council of the European Alliance for Medical and Biological Engineering and Science (EAMBES) was elected. The newly elected councillors are Marco Viceconti, Maria Siebes, Patricia Lawford, Keita Ito, Christopher J. James, Karin Lohmann, David Simpsons and Dirk Grijpma. Full details of the General Council can be found on the EAMBES webpage (<http://www.eambes.org>).

Since our last ESB newsletter update, the EAMBES has been active in supporting a public consultation on the European Innovation Partnership for Active and Healthy Ageing (AHAIP). The partnership is part of an innovation strategy with the goal to boost Europe's competitiveness while seeking solutions to problems of major social relevance. The focus of the partnership is relevant for the entire European community, given the ageing population demographic, and Europe has the potential to take a leading role. The partnership will focus on technology-driven solutions to address prevention and health promotion, health and social care for the elderly and independent active living. The EAMBES has recommended to the European Commission three actions: (i) maintain existing research funding instruments into FP8, (ii) ensure that FP8 includes

funding programs for preclinical and clinical assessment of new health technologies and (iii) provide mechanisms for supporting innovation programs, for example to support spin-offs and start-ups during the translation from research to application. The full recommendation for the AHAIP is available from the EAMBES webpage (<http://www.eambes.org/documents>).

In February a delegation of the EAMBES also met with EC officers and selected members of the European Parliament. These meetings took place in the context of EAMBES lobbying activities to promote biomedical engineering and health technology research within the European political environment. There were several immediate outcomes of these meetings. It has been confirmed that the ongoing FP7 will have three more calls, each containing topics related to health technology. More importantly, the planning process for FP8 is underway. The European Union published a first Green Paper on the next framework program and is currently in a consultation process

(http://ec.europa.eu/research/csfr/index_en.cfm).

EAMBES has set a priority on monitoring the developments with FP8 closely, to ensure that appropriate targets are identified for placing biomedical engineering research on the EC agenda. This will also involve active participation of EAMBES representatives on health technology related advisory boards, and reinforce lobbying efforts towards receptive members of European Parliament and member states. A full review of the meeting outcome is available for download as an appendix to this newsletter.

STUDENTS CORNER:

A PhD Student exchange to a different Biomechanics Institute: Arzu Tasci and Silke Wüst

The issue of taking part in a student exchange programme is gaining importance for new graduates, Ph.D. candidates and young postdocs in the increasingly competitive field of research. In this "Students Corner" of the newsletter, we take on and discuss a number of aspects of Student exchanges between different Institutes. While there are a number of known difficulties associated with relocation, new mentors, missing friends etc, such exchanges can generate a lot of advantages not only on the research side, but also for socializing with more people from the field. This could potentially open doors for the students themselves, for example in subsequent career positions, but the benefit could be also in terms of research collaborations, with the student ideally positioned with regard to both institutes. In contrary to Masters or Bachelors students, where it has almost become standard to spend a part of the studies

abroad or at least at a different University, only a limited number of Ph.D. students actually undertake such a research exchange. Although it is clear that PhD students could benefit to a high degree from the knowledge of many experts of the same field during a research exchange, including learning new methods and applying them to their own research, it seems that the time factor required for focusing on a single piece of work is, or at least appears to be, a limiting factor.

In the following, Silke and Arzu talk with Ingrid Knippels, an ESB student member who is undertaking her Ph.D. in Biomechanics and Engineering K.U.Leuven in Belgium, where she discussed difficulties, advantages and the benefits she experienced during her exchange at the Institute for Biomechanics at the ETH Zurich in Switzerland.

A Visit from KU Leuven to ETH Zurich:

SC: Hi Ingrid, as members of the ESB Student Committee, we would like to ask you about a number of aspects of your lab visit from KU Leuven to ETH Zurich. To start with, can you please tell us about your current institute, exchange lab, and time of your stay?

IK: As part of my Ph.D. project at the Division of Biomechanics and Engineering Design at K.U.Leuven (Belgium), which is part of EU FP7 project VPHOP, I paid a six week visit to the Institute for Biomechanics at the ETH Zurich (Switzerland). As the group in Zurich had already developed methodology very useful for my project, this visit was very interesting and helpful.

SC: How did you have the opportunity and the contacts for the exchange?

IK: Organizing it was quite a bit of work. Getting in touch with contacts from Zurich and getting the 'GO' from my home lab was easy, as it was all within the framework of the VPHOP project, and Harry van Lenthe, my promotor, works in both labs.

SC: Lab is arranged. Now, how did you organize your place to stay? Can you give us some tips such as access to facilities at the visited University.

IK: Finding a decent and affordable place to stay was a lot less easy. I got help from people at ETH, but all their options appeared to be booked out for the period I was visiting. Eventually I was lucky to find a place through a website, someone was looking for a short-term flat mate exactly for the time I was visiting. When going there I was a bit worried about sharing an apartment with someone I had never met before, but he appeared to be really nice. As a bonus, his apartment was located between the town center and the ETH.

SC: It is a nice tip - so access to university web facilities helps. What about outside the lab? Was it difficult to adapt to Zurich?

IK: Apart from learning a lot of useful things, during the six weeks I also really enjoyed being in another environment for a while, both during office hours, getting to know more people in the field of biomechanics, as well as during the weekends. Zurich is a beautiful city, full of friendly people, and the best of all, the mountains are close, so during my visit in February I could go for some snowboarding!

SC: It sounds fun. Finally, can you please comment on your overall experience? Were your expectations fulfilled? Do you see future prospects?

IK: In general, it was a very nice experience, I recommend all Ph.D. students to take on such an exchange if you get the chance. Getting to know more

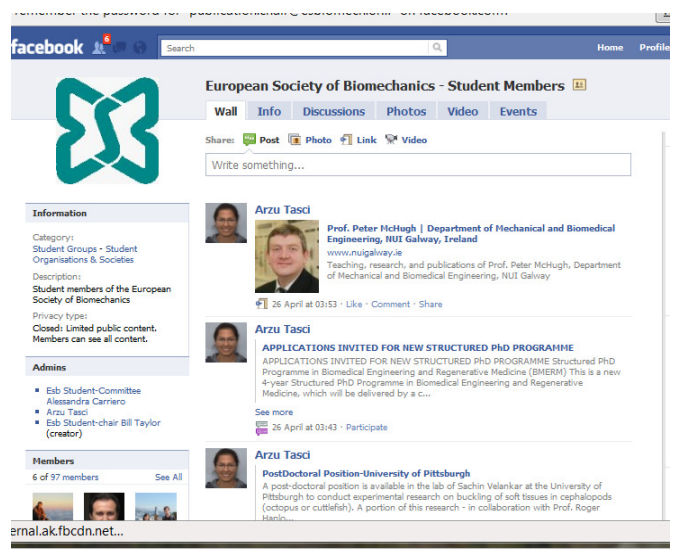
people in your research area is very nice, as you'll probably meet them again at conferences, and it may be useful for a future career options in the field. If I got the chance, I would certainly do it again!

SC: Thanks for sharing the insight of your visit, Ingrid.



Ingrid enjoying her time in Switzerland!

As the Student committee of the ESB council, we would certainly like to encourage more students to take part in exchanges between different Institutes, as well as motivate supervisors to assist students before, during and after an exchange and take the time for scientific discussions. In this case, Ingrid has kindly offered her contact address: Ingrid.knippels@mech.kuleuven.be for any further questions or discussion. Please feel free to contact her or the student committee (student.committee@esbiomech.org) should you have any questions or comments. Please also email us any topics you would like to discuss in the newsletter or on our Facebook Page!



MEETING ANNOUNCEMENTS:

ISB2011: XXIIIrd Congress of the International Society of Biomechanics



There will be an ISB/ESB joint session on the Monday of the ISB congress on the theme of Multiscale Modelling of the Skeleton with a keynote presentation by past-president Marco Viceconti.



Brussels, the Capital of Europe, will be proud to host the **XXIIIrd Congress of the International Society of Biomechanics in 2011**. Located at the very heart of Europe, Brussels offers many top attractions for leisure and cultural activities. ISB2011 will take place on the joined downtown Brussels campus of the Vrije Universiteit Brussel and Université Libre de Bruxelles.

We will be happy to welcome scientists and professionals from the various disciplines related to biomechanics, to which we will propose a high quality scientific program and enjoyable stay in Brussels.

ISB tutorials will be the opportunity for students and young scientists to enrich their knowledge on cutting-edge topics of biomechanics. The Congress will feature outstanding keynote lecturers, the traditional Wartenweiler Memorial Lecture, exciting award contests, as well as oral and poster presentations.

The spirit of the Conference will emphasize the multi-disciplinarity of our research area and integrated research as a cornerstone in this interaction between disciplines. The Congress, together with a fine social program, shall be a cordial place to strengthen bonds between biomechanists around the world.

Scientific themes

The scientific program of ISB2011 will articulate around six approaches (Anatomy-oriented, Physiology-oriented, Clinically-oriented, Integrated research, Bioengineering, Modelling & Methods) that characterize research in biomechanics. Please check the ISB2011 website for the list of topics.

Registration

Registration fees		
	Before April 30th, 2011	After April 30th, 2011
Member	400 €	430 €
Non member	475 €	505 €
Student		
(member) ^{1,2}	280 €	310 €
(non member) ²	310 €	340 €

¹Member of ISB and ISB affiliated societies

²Student rate requires presentation of a valid full time Student ID at conference badge pick-up.



The fee will be charged in Euro (€). Please register through the online registration system that will be available through www.isb2011.org. Fees include meeting attendance, congress bag with the program book and all related documents (certificates of payment and attendance, badge etc.), lunches and coffee breaks, welcome reception on July 3rd, Belgian specialty events during poster sessions, banquet on July 7th and public transportation card for Brussels. Travel and accommodation are not included (please refer to ISB2011 website for information regarding accommodation).

Upon request, a letter of invitation will be sent.

Please contact Steven Provyn for sponsoring and/or partnership opportunities:

Steven.Provyn@vub.ac.be



EUROPEAN SOCIETY OF BIOMECHANICS WORKSHOP/ TUTORIAL:

Biomechanics in Minimally Invasive Endovascular Procedures

3rd July 2011, Brussels, Belgium

This workshop is being organized by Pascal Verdonck and Gabriele Dubini and will be held the day before the International Society of Biomechanics meeting in Brussels. Information on the program schedule and abstract submission procedure will be sent to members as it becomes available.

More and more patients are today benefiting from minimally invasive, endovascular interventions on the arteries and veins from the inside. Blockages in the arteries or veins can be treated with balloon angioplasty, placement of stents, the use of clot-dissolving drug.

The tutorial will describe the striking progress of the engineering contribution to this successful evolution: new developments in vascular imaging and patient specific modelling including device design (stents, vascular access) will be illustrated. Also new company innovations will be addressed in the field of catheter, balloon and stent technologies.

The provisional programme includes the following sessions:

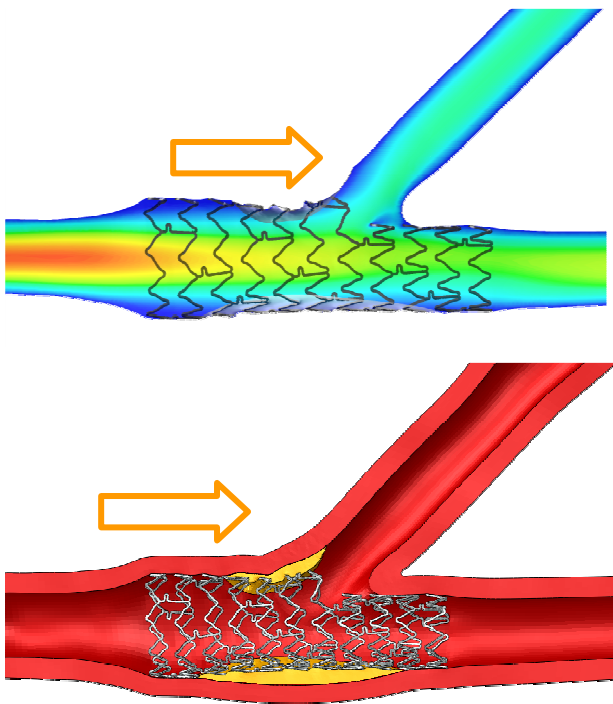
- Vascular Imaging
- From Image to Model
- Stent Modelling
- Percutaneous Valves and Vascular Access
- Company Contributions.

The tentative list of speakers includes:

V. Muthurangu (Great Ormond Street Hospital, London), F. Gijzen (Erasmus MC, Rotterdam), D. Van Loo (Ghent University), P. Segers (IBiTech, Ghent University), M. De Beule (IBiTech, Ghent University), F. Migliavacca (Politecnico di Milano, Milan), P. Zunino (Politecnico di Milano, Milan), C. Capelli (Great Ormond Street Hospital & UCL, London), P. Verdonck (IBiTech, Ghent University).

Lectures will also be given by R&D specialists from Medtronic Invatec CardioVascular (Roncadelle, Italy), Cortronik (Warnemünde, Germany), Materialise (Leuven, Belgium) and FEops (Ghent, Belgium).

Fees for ESB and ISB members will be 50 € (100 € for non members).



Computational fluid dynamics analysis (top) from structural analysis of the stent expansion (bottom). Courtesy of Morlacchi S., Chiastra C., Petrini L., Dubini G. and Migliavacca F., Politecnico di Milano, Milan, Italy.

ENDORSED MEETINGS:

EUROPEAN SOCIETY OF BIOMECHANICS MEMBERS RECEIVE A REGISTRATION DISCOUNT OR EQUIVALENT FOR ALL MEETINGS ENDORSED BY THE ESB. INTERESTED MEETING ORGANISERS SHOULD SUBMIT THEIR REQUEST TO PETER ZIOUPOS, MEETINGS CHAIR.

Materialise Biomedical Summit & Innovation course

23-25 May, 2011, Minneapolis, USA

www.materialise.com/mic2011

3D imaging is playing a critical role in research and development in areas from anthropology to patient-specific medical device design. Materialise, corporate ESB member since the start, is hosting a Biomedical Summit Monday, May 23 – Wednesday, May 25 in conjunction with the RAPID Additive Manufacturing Expo in Minneapolis, Minnesota! The summit includes

- a two-day Innovation Course
- 5th edition of the Rapid Implant Manufacturing Forum (RIMF)
- 8th edition of the Medical Innovation Conference (MIC)
- During the **Innovation Course**, you will learn how to use Materialise's Mimics and 3-matic software efficiently and how to take advantage of the latest functionalities. The course features demos and hands-on training to maximize your knowledge about these
- During the parallel **MIC** and **RIMF** sessions we will cover a variety of topics, including:
- Finite element analysis in the orthopedic and dental fields
- Computational fluid dynamics in the cardiovascular and pulmonary fields
- Virtual prototyping for custom implant design
- Computer aided tissue engineering
- Additive manufacturing in medicine
- Cranio-maxillo-facial engineering
- Clinical biomechanics

The summit wraps-up with a dinner reception and tour of the King Tutankhamun exhibit at the Science Museum of Minnesota where you can see the only replica of Tut's mummy. The mummy was produced on Materialise's mammoth Stereolithography machine.

Members should mention "ESB" or "European Society for Biomechanics" upon registration, to receive a \$50 registration discount.



SimBio-M 2011

20-22 June, 2011, Marseille, France

<http://www.simbio-m.com/>

We are pleased to announce the second edition of the **SimBio-M** conference, June 20th to June 22nd 2011, organised on behalf of IFSTTAR (formerly INRETS-LCPC), CADLM and University of the Mediterranean, Marseille (France).

This conference is organised every two years, and focuses on the advances in **Simulation** technologies in the fields of **BIO**-Sciences and **Multiphysics**: **BioMechanics**, **BioMaterials** and **BioMedicine**.

The objective of this conference is to share and explore findings in numerical analysis techniques and

mathematical modelling tools, allowing for computer-based investigations, resulting in predictive or exploratory work in the various fields of biosciences.

The conference is aimed at three participants categories: "young researcher", "industrial end-user" and "state-of-the-art" and is expected to attract a wide range of papers sweeping "first publication" to "first industrial application" as well as pure research excellence in many related areas. While the conference concentrates mainly on applications of biomedical modelling techniques in various medical or industrial domains, novel modelling techniques will also be considered whenever they promote the state of the know-how in science and technology. In particular, this year's modelling innovations are expected to extend beyond the more traditional finite element method and cover some new areas such as stochastic modelling, optimization based model identification solutions and machine learning techniques for artificial intelligence implementations.

Participate and learn more about:

- New ideas and new research results
- New views on simulation and optimisation by listening to other presenters and keynote speakers
- Networking opportunities in order to launch your activities in the rising industrial domain of biosciences
- New Resources –Meet many highly experimented simulation users. Take this opportunity to make new contacts and earn new business.

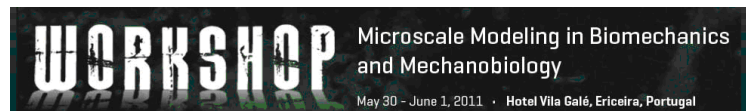


Workshop on microscale Modeling in Biomechanics and Mechanobiology
30 May - 1 June, 2011, Ericeira, Portugal
<http://www.wksp-mbiomech.dem.ist.utl.pt/>

This scientific workshop will address problems in Biomechanics and Mechanobiology. Its main objective is to promote the development of biomechanical analysis capabilities at the microscopic level and characterize their influence across scales. The workshop takes a multidisciplinary approach involving leading researchers from a wide range of areas, namely mathematics, applied mechanics, biomechanics, biophysics, biology and material science. It brings together expertise on theoretical and computational modeling and experimental analysis to investigate multi-scale phenomena related to the behavior of biological materials and systems present in the Human Body. It will be an ideal forum for broad and instructive discussions on the grand challenges of multiscale modeling and scale bridging in Biomechanics and Mechanobiology and how to undertake them.

TOPICS

- Micromechanics and homogenization applied to biological systems.
- Meso-scale mechanics and signaling in biological systems.
- Emergent behavior in complex multi-scale biological systems.
- Applications of heterogeneous computing in multi-scale biological systems.
- Scale-bridging from the molecular to cellular, cell to tissue, and tissue to organ levels.
- Multi-scale mechanosensing at the molecular, cellular, and tissue levels.
- Integration of mechanical and chemical signaling networks and emergent behavior



ECCOMAS THEMATIC CONFERENCE
II International Conference on Tissue Engineering-ICTE2011

2nd-4th June, 2011, Lisbon, Portugal

www.eccomas.org

ICTE 2011 is one of the Thematic Conferences of the European Community in Computational Methods in Applied Sciences (ECCOMAS). For further information on ECCOMAS visit: www.eccomas.org

Tissue engineering (TE) is a recent, interdisciplinary and multidisciplinary field that has seen intense development in the past few years. It combines efforts from biology, engineering and material science methods, and providing suitable biochemical and physiochemical factors towards the development of biological substitutes to restore, maintain, or improve tissue functions. This novel engineering field covers a broad range of applications, mostly associated to the reparation or replacement of tissue portions or the whole tissue itself (such as bone, cartilage, blood vessels or bladder). These require certain mechanical and structural properties for function properly. In other words, TE involves attempts to mimic specific biochemical functions combining cells within artificially-created support systems (scaffolds).

Mathematical and Computational methods have been intensely used for modelling and design scaffolds for tissue engineering, and the computational mechanics research community has demonstrated a special interest in these field.

The purposes of the Second ECCOMAS Thematic Conference on Tissue Engineering are to communicate the most current ideas and strategies on tissue engineering, being designed to be a major international forum for the discussion of the current state-of-the-art in the field. Therefore, the Conference will focus on:

- Understanding the fundamentals of tissue engineering
- Modelling and characterisation of scaffolds for tissue engineering

- Modelling the inter-relationships between scaffolds and cell attachment, proliferation and differentiation
- Design and development of scaffolds for tissue engineering
- Fabrication and testing of scaffolds for tissue engineering
- Cell signaling
- Computational Bone Mechanics

The objective of the conference is to bring together approximately 130 researchers from around the world representing several fields of study related to Tissue Engineering.

The expertise will span a broad range of disciplines including material and biomaterials, chemical and mechanical engineering, biology, biomedical engineering, etc.



OTHER MEETINGS:

24th European Conference on Biomaterials

4th-9th September 2011, Dublin, Ireland

<http://www.esb2011.org>

The next 24th European Conference on Biomaterials will be held on September 4 - 9, 2011, in Dublin, Ireland. Jointly with the European Society for Biomaterials, the European Society of Biomechanics will organize a symposium on 'Biomechanics for biomaterials'.

Mechanical loading plays an important role in cell behaviour as it affects cell adhesion, cell proliferation and cell differentiation. Recently, local mechanical stimuli in the form of substrate stiffness or interstitial fluid flow have been recognized as modulators of cell fate. Therefore, the study of interaction of mechanical stimuli at the molecular and cellular levels on natural tissues and synthetic biomaterials is essential for a better understanding in the relation between biomechanics and biomaterials. In this symposium, talks on the cross-border between biomechanics and biomaterials are invited to be presented.

Annual TERMIS EU Meeting 2011:

7th-10th June 2011, Granada, Spain

<http://www.termis.org/eu2011/>

The next TERMIS-EU chapter meeting will be held on June 7 - 10, 2011, in Granada, Spain. Jointly with TERMIS, the European Society of Biomechanics (ESB) will organize a symposium on 'Biomechanics in Tissue Engineering'.

In this symposium new advances in the biomechanics of tissue engineering will be presented. Contents of the presentations in this symposium with a focus on mechanical stimuli can include:

- Design of new bioreactors
- Mechanical loading on scaffolds
- Effect of mechanical stimuli in scaffolds in bioreactors

- In vivo mechanical stimulation of tissue regeneration
- Simulation of nutrient transport in bioreactors
- Simulation of mechanical stimuli in bioreactors
- Simulation of in vivo tissue growth and regeneration

35th Annual Meeting of the American Society of Biomechanics

Long Beach, CA USA August 10 - 13, 2011

<http://www.visitlongbeach.com/asb2011>

SOCIETY NEWS:

European Society of Biomechanics National Chapters:

Due to the steady growth of the Society and the lack of biomechanics national societies in a number of European Countries the ESB offers their members to establish National Chapters. The advantages are obvious: National ESB Chapters can effectively advance biomechanics research and education in these countries with respect to specific national conditions and can transfer specific national interests into the ESB. Vice versa the ESB activities might be effectively distributed the on a national level by the National Chapters acting as a multiplier. The formation of a National Chapter is dependent on condition that a national society of biomechanics does not already exist in that Country and that at least five active ESB members from that Country jointly apply for the creation of a National Chapter. The details for Chapter creation can be found in the By-Laws of the Society (www.esbiomech.org/Section/statute-and-by-laws).

Italy is the first Country, which has officially applied for the creation of a National Chapter in February 2011. In accordance to the ESB By-Laws a ballot was carried out among the Italian members. The majority (95%) of the Italian members who have voted (54% turnout) were in favour of the creation of a chapter. Therefore, following the ESB By-Laws, we are delighted to officially declare the creation the Italian National Chapter of the ESB. The Executive Board of the Chapter will be elected by the Italian ESB members and announced at the ESB homepage.

Creation of the Italian National Chapter of the ESB

After approval of By-Laws addition about National Chapters creation by the General Assembly held in Edinburgh on 7 July 2010, Italian ESB members Gabriele Dubini, Marco Viceconti, Riccardo Pietrabissa, Francesco Migliavacca and Giancarlo Pennati formally applied to the Council on 4 February 2011. They also submitted the Chapter By-Laws previously drafted and circulated among the Italian ESB members.

On behalf of the ESB Council, the Vice-President verified through an electronic ballot that the majority of the Italian active members agree on the creation of the

Italian National Chapter of the ESB. The ballot officially started on 22 February and terminated on 8 March 2011. Active Italian members of the Society were at the moment 82. 44 electronic votes were cast and only 2 were against the creation of the Chapter.

Therefore, the Italian National Chapter of the ESB was officially created.

Now it is time to start working. Calls for candidates to the Executive Board of the Chapter and for hosting the 2011 General Assembly of the Chapter will open soon.

Congratulations...

...to Patrick Prendergast, past-president of the European Society of Biomechanics who has been elected to be the next Provost of Trinity College Dublin. He will take over the position on August 1st 2011. It is wonderful news for our society to have one of our dedicated and prominent members in such a prestigious position at an internationally renowned University. We hope the job will not prevent Patrick from continuing to make a strong contribution in the field of Biomechanics as his input would be sorely missed!



Patrick Prendergast Elected Provost Trinity College Dublin

ESB on Facebook:

Don't forget the ESB Facebook group is available for advertising of positions viewing current opportunities in Biomechanics and discussion of ESB and biomechanics-related issues. If you have any questions, issues or specific suggestions that you would like to discuss or propose to improve the experience of members within the ESB Facebook group, please feel free to contact Bill Taylor (student.chair@esbiomech.org) or Alessandra Carriero (a.carriero@ymail.com).

We wish you all an excellent continuation in your research activity and looking forward to seeing your active discussions on the ESB Facebook group.

MEMBERSHIP NEWS:

A very warm welcome to the new members who have joined us since spring 2010. The total membership of the European Society of Biomechanics is now 724:

Emre Ak, Ozan Akkus, Alexandru Andrei, Carolina Avila, Arnold Baca, Mamadou Bah, Vasilios Baltzopoulos, John Barden, Guido Bartalena, Sourajyoti (Raj) Basu, Sebastian Baumbach, Kath Bogie, Federica Boschetti, Francesco Boselli, Lisa Bridgett, Albert Busquets Faciabén, Evelyn Campbell, Nick Caplan, Davide Carnelli, Roberto Carretta, Samantha Chan, Ilaria Chiapparini, Craig Childs, Sook-Yee Chong, Patrik Christen Christen, Francesco Clavica, Francesco Maria Colacino, Antonio Completo, Noel Conlisk, Michele Conti, Marta Cristina Da Silva Gama, Philipp Damm, Matej Daniel, Laëtitia Debernard, Despina Deligianni, Finn Donaldson, Marcel Dreischarf, Matt Dressler, Rosemary Dubbeldam, Stefan Dudli, Chris Easthope Schmidt, José Faria, Clare Fitzpatrick, Jasper Foolen, Gerard Fortuny, Andreas Fritsch, Alanna Gannon, Diogo Geraldes, Hamed Ghandchi, Rajesh Ghosh, Magnus Gislason, Inna Gitman, Said Gomaa, Yulia Goryachev, Lorenzo Grassi, Alexander Groetsch, Rachel Groves, Sanjay Gupta, Amir Haim, Benedikt Helgason, Anthony Herbert, Sven Herrmann, Sandra Hofmann, Bernardo Innocenti, Sabrina Yvonne Jauch, Ho Seong Ji, Antoni John, Alena Jonasova, Konstantinos Kaliartas, Brandis Keller, Toby Kemp, Alireza Keshtgar, Hyungmin Kim, Minsuok Kim, Daniel Kluess, Rakesh Koul, Patrick Kugler, Mrudula Kulkarni, Daisoon Kwak, Floor Lambers, Dennis Lambrechts, Nancy Landinez-Parra, Tom Lavrijsen, Sian Lawson, Raymond Lee, Alex Lennon, Ye Li, James Lord, Andrea Lorenz, David Lunn, Warren Macdonald, Christopher MacLean, Kevin Mader, Kamel Madi, Eoghan Maher, Hoda Maleki, Kenneth Mann, Philip Martin, Diana Massai, Dimosthenis Mavrilas, Patrick McGarry, Laoise McNamara, Gerdine Meijer, Simon Mendez, Eric Meyer, Jean-Louis Milan, Gennady Mishuris, Kumar Mithraratne, Luca Modenese, Kevin Moerman, Pier Paolo Monticone, Mark-Patrick Mühlhausen, Andrew Murphy, Thomas Nagel, Naser Nawayseh, Eamonn O Mairtin, Paul O'Callaghan, Dieter Pahr, Bundit Panchaphongsaphak, Martino Pani, Pankaj Pankaj, Koen Peeters, Orlando Pelliccioni, Cecile Perrault, Marco Piccinini, Christian Plaass, Manuela Teresa Raimondi, Annelie Rehmer, Eduard Rohan, Sarah Ronken, Luis Santos, José Sanz-Herrera, Igor Sazonov, Torsten Schenkel, Stefan Schmid, Eric Schmidt, Cédric Schwartz, Andreas Seitz, Pier Nicola Sergi, Eamon Sheehy, Sarah Shultz, Tobias Siebert, Alexander Siefert, Julie Smith, Manos Stefanakis, Marco Stevanella, Martin Stolz, Ioannis Symeonidis, Luciano Teresi, Peter Theobald, Dominic Thewlis, Stephen Thorpe, Philipp Thurner, Pawel Tomaszewski, Mirela Toth-Tascau, Themis Tomanidou, Alexander Tsouknidas, Mahmut Tuncer, Sami Väänänen, Sasidhar Vadapalli, Bahman Vahidi, Annemieke Van Haver, Fred Vermolen, Oliver Warlow, Hugh Watson, Peter Watson, Louise Way, René Widmer, Wojciech Wolanski, Uwe Wolfram, Silke Wüst, Si Yong Yeo, Amir Abbas Zadpoor, Yuanyi Zhao.