

## Letter from the President Stephen F. Badylak

To all members of TERMIS,

My congratulations to all of the newly elected officers and council members of TERMIS. The governing board and executive board look forward to working with you to address all issues related to governance of the society. Membership in the society now exceeds 3,000, attendance at the annual chapter meetings seems to set a new record each year, and the submission of scientific articles to our society journal *Tissue Engineering* and related journals is at an all time high. Although these statistics are impressive, they also reflect some of the challenges that are inevitable in a large organization such as effective communication, organization of large meetings, and book keeping. The responsibilities and impact of decisions made by your chapter representatives will undoubtedly be directly correlated with the sustainability of TERMIS, the opportunities and benefits provided by membership of the society, and future growth of the society. I encourage each member to actively participate in the various committees that are so essential to making each chapter and the global society a success. Similarly, it is essential that each member take seriously the responsibility of voting for future representatives. The voting process is simple and painless, can typically be completed within a few short minutes, and provides the opportunity to assure that your chapter representatives reflect your wishes and commitment to the society.

Thank you once again to all of you that participated in the recent election and again congratulations to the new officers and council members.

Sincerely,



Stephen F. Badylak – President of TERMIS

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SANYO North America - Advertisement

#### Edited and Compiled By:

Dietmar W. Hutmacher, PhD, MBA  
Queensland University of Technology

Sarah Wilburn  
TERMIS Administrator

## Letter from the Editor Dietmar W. Hutmacher

Dear Members, Friends and Associates,

Welcome to 2011! In this last issue of the TERMIS newsletter for 2010, we reflect on the conferences, collaborations and successes of the end of last year - including research breakthroughs made by our members.

Join us for the TERMIS chapter meetings to be held in 2011: EU in Granada, Spain from the 7<sup>th</sup>-10<sup>th</sup> June; AP in Singapore from the 3<sup>rd</sup>-5<sup>th</sup> August; and NA in Houston, Texas from the 4<sup>th</sup>-7<sup>th</sup> December. This is the opportunity in 2011 to hear about the latest research outcomes in tissue engineering and regenerative medicine, reach out to new markets and strengthen your presence. I look forward to an exiting year for our society.

Yours sincerely,



Professor Dietmar W. Hutmacher PhD (NUS), MBA (Henley)

All conference information can be accessed via [www.termis.org](http://www.termis.org).



**TERMIS-EU: Granada**

7-10 June 2011

[Submit Your Abstract Today!](#)



**TERMIS-AP: Singapore**

3-5 August 2011

[Submit Your Abstract Today!](#)



**TERMIS-NA: Houston**

December 4-7, 2011

[Save-the-Date](#)



**2012 TERMIS World Congress**

Vienna, Austria

5-8 September 2012

[Save-the-Date](#)

## **2010 TERMIS Election Results**

**We would like to announce the final results of the 2010 TERMIS Election.**

**Congratulations to all of the newly elected  
officers and/or members of the regional Chapter Councils!**

### **Member-At-Large: Asia-Pacific**

Wei Liu

### **Continental Chair-Elect: Europe**

Alicia El Haj

### **Continental Chapter Council: Europe**

Andrea Banfi

Eric Farrell

Bojana Obradovic

### **Continental Chapter Council: North America**

Jennifer Elisseeff

Ali Khademhosseini

Todd McDevitt

Johnna Temenoff

Rocky Tuan

Gordana Vunjak-Novakovic

James Yoo



Tissue Engineering & Regenerative  
Medicine International Society  
2010 asia pacific meeting

15 – 17 September 2010  
Sheraton on the Park, Sydney, Australia

The 2010 TERMIS-AP conference was held from September 15-17 in Sydney, Australia at the Sheraton on the Park. There were 360 attendees representing 31 countries. The conference program included 226 oral presentations and 110 poster presenters.

Plenary speakers included: **Professor Wayne Morrison** Director, O'Brien Institute, University of Melbourne; **Professor Teruo Okano** Director, Institute of Advanced Biomedical Engineering and Science at the Tokyo Women's Medical University (TWMU); **Professor Robert Guldberg** Director, Parker H. Petit Institute for Bioengineering and Bioscience (IBB) at the Georgia Institute of Technology; **Professor Nadia Rosenthal** Director, The Australian Regenerative Medicine Institute (ARMI) at Monash University ; **Professor Silviu Itescu** Chief Scientific Officer, Mesoblast Limited; **Professor James Goh** Interim Program Leader, NUS Tissue Engineering Program (NUSTEP); and David Williams Emeritus Professor at the University of Liverpool, Professor of Biomaterials and Director of International Affairs, Wake Forest Institute of Regenerative Medicine, Visiting Professor in the Christiaan Barnard Department of Cardiothoracic Surgery, CapeTown, Visiting Professorial Fellow at the Graduate School of Biomedical Engineering, University of New South Wales, and a Guest Professor, Tsinghua University, Beijing, and Visiting Professor, Shanghai Jiao Tong University, China.

The student and young investigator section (TERMIS SYIS-AP) organized several activities to encourage participation amongst the students of the Society. The student-meet-mentor session included five mentors: Jöns Hilborn, Uppsala University; Sang Jin Lee, Wake Forest Institute for Regenerative Medicine; Stephen Feinburg, University of Michigan; Simon Cool, A\*Star Institute of Medical Biology; Helmut Thissen, CSIRO Molecular and Health Technologies. This session provides the students with the opportunity to interact with the top researchers in the field.

The second activity was the Best Student Poster Awards. Three awards were presented to the top three student posters.

**First Prize (500 AUD):**

Hidezaku Sekine, Tatsuya Shimizu, Izumi Dobashi, Masanori Wada, Manabu Mizutani, Tetsutarou Kikuchi, Masayuki Yamato, Teruo Okano

*"Ex vivo induction of vascular network within the engineered 3D myocardial tissue"*

**Second Prize (300 AUD):**

Waki Sekine, Yuji Harguchi, Tatsuya Shimizu, Shunichiro Miyoshi, Akihiro Umezawa, Teruo Okano

*"Analyses of the cell viability and metabolism of multilayered cell sheets and a possible solution for overcoming the diffusion limit"*

**Third Prize (200 AUD):**

Thomas KH Teh, Siew-Lok Toh, James CH Goh

*"A comparative study of different mechanical conditioning regimes for the development of tissue engineering anterior cruciate ligament"*



**TERMIS-EU 2011 Granada, Spain**  
**Granada Congress and Exhibition Centre**  
**7 - 10 June 2011**  
<http://www.termis.org/eu2011>

### **CALL FOR ABSTRACTS - Deadline to submit January 28, 2011**

The next TERMIS-EU chapter meeting will be held on June 7 - 10, 2011, in Granada, Spain. The TERMIS-EU Organizing Committee invites you to submit abstracts focused on relevant tissue engineering topics to be presented at the different sessions and symposia of the meeting.

**Submit your abstract today and until January 28th.** The submission instructions are outlined via the conference website, [www.termis.org/eu2011/abstracts.php](http://www.termis.org/eu2011/abstracts.php).

\* Find out more information about Granada. Visit the [About Granada](#) tab to learn general information about Granada. You can also know Granada at [http://www.turgranada.es/?id\\_idioma=2](http://www.turgranada.es/?id_idioma=2) \*

Please contact the Conference Secretariat at the address below for more information and to make a booking as a Sponsor or Exhibitor.

TERMIS-EU 2011  
[jose.rocha@viajesiberia.com](mailto:jose.rocha@viajesiberia.com)

We look forward to seeing you in Granada!

Warm regards,

TERMIS-EU 2011 Granada Organizing Committee

Congress Secretariat  
Mr. José Rocha  
Viajes Iberia Congresos  
Phone: 954.224.095 / Fax:954.210.215  
[jose.rocha@viajesiberia.com](mailto:jose.rocha@viajesiberia.com)  
[www.viajesiberiacongresos.com](http://www.viajesiberiacongresos.com)

## Tissue Engineering & Regenerative Medicine International Society 2011 Asia Pacific Meeting

### **TERMIS AP 2011**

3 – 5 Aug 2011, Singapore

Suntec Singapore International Convention & Exhibition Centre

## **Call for Abstracts**

<http://www.termis.org/ap2011/>

TERMIS-AP 2011 will bring together the international community of persons engaged or interested in the field of tissue engineering and regenerative.

This dynamic and instructive meeting will cover a wide range of topics within the fields of tissue engineering, biomaterials, stem cells, and regenerative therapy. It is a significant platform for the fostering of interactions among scientists, bioengineers, clinicians, and those engaged with funding, regulatory and commercial endeavours.

This is an unique opportunity for all stake holders in this exciting field to come together in the beautiful and vibrant city state of Singapore to promote the worldwide advancement of tissue engineering and regenerative medicine; in particular the integration of advanced technologies and clinical needs in our region. The topic areas will include:

- Biomaterials
- Scaffold designs and fabrication technology
- Nanotechnology and surface topography
- Gene therapy and gene regulation
- Growth Factors and Microencapsulation
- Control Release Delivery Systems
- Stem cells science
- Inflammatory and Immunological responses
- Bioreactors and mechanotransduction
- BioImaging and Monitoring of Tissue Growth
- Commercialisation of engineered tissues
- Regulatory issues in tissue engineering
- Translational Models for Cardiovascular, Musculoskeletal, Neural/Skin ...
- Integration into medicine, dentistry and veterinary science

#### **Schedule**

<b>Abstract Submission Deadline:</b>	<b>15 April 2011</b>
Acceptance Notification:	15 May 2011
Camera-ready Abstract Submission Deadline:	30 June 2011

#### **Abstract Submission**

All abstracts should not exceed 250 words. The abstracts may be submitted on line at this website:

[\*\*http://www.termis.org/ap2011/\*\*](http://www.termis.org/ap2011/)





SAVE-THE-DATE

[www.termis.org/na2011](http://www.termis.org/na2011)

***"Scaffolds in Tissue Engineering:***

***Bridging Matrix Biology and Biomaterials Science"***



**TERMIS-NA 2011: Houston, Texas**

December 4-7, 2011

Conference Co-Chairs: Antonios Mikos, PhD and Jennifer West, PhD

Scientific Program Chair: Jennifer West, PhD

**Keynote Speakers:**

Kristi S. Anseth, Ph.D., University of Colorado

Francois A. Auger, M.D., Centre LOEX de l'Universit'e Laval, Quebec City, Canada

Christopher S. Chen, M.D., Ph.D., University of Pennsylvania

**Artwork Design Competition - Open to Students & Postdocs**

**2011 TERMIS-NA Pre-Conference Workshop Presenters**

## TERMIS-AP Laboratory Feature

### Cell & Tissue Engineering Institute, the Catholic University of Korea

Professor Heung Jae Chun  
Director of Cell & Tissue Engineering Institute  
Medical College, the Catholic University of Korea  
55 Banpo-dong, Seocho-gu, Seoul 137-701, Korea  
Tel: +82-2-2258-7033  
E-mail: [chunhj@catholic.ac.kr](mailto:chunhj@catholic.ac.kr), [ijtr@catholic.ac.kr](mailto:ijtr@catholic.ac.kr)  
Web page: [www.cite.or.kr](http://www.cite.or.kr)



The Catholic Institute of Cell & Tissue Engineering (CITE) of the Catholic University, Korea was established in 2005 in order to realize the Catholic Spirit, the respect of life, and to contribute to the harmonized and balanced development of the regenerative medicine and the related medical services through the research works on the basic and the applied medical sciences. In 2007, the CITE procured National Research Project on tissue regeneration (18 millions USD for 7 yrs.), which is the representative research of CITE, from the Ministry of Knowledge and Economy of Korean Government. The objective of the study is to achieve the long-term retention of transplanted adult stem cells that enables the stem cell-based regenerative medicine to become the next frontier of therapies. The three target diseases of CITE are myocardial infarction, retinal ischemia, and osteolysis. The CITE has 3 divisions working on the target diseases, and 1 additional division that provides basic technologies for scaffold manufacturing to other divisions in collaboration with industry and national research institute

#### **The first research group (Collaboration among Catholic University, MI Tech Co. Ltd, and Korea Institute of Industrial Technology): Tissue engineering technology using bone marrow-derived mesenchymal stem cells for ischemic heart diseases**

There have been numerous attempts to improve left ventricular function in patients with myocardial infarction using adult stem cells. Although, intracoronary infusion is preferred to intravenous injection for providing the maximum number of cells in the ischemic tissue, the results were not as satisfactory as expected due to low intake as well as retention of administrated cells. Therefore, new strategies for particular types of biologics with sustained and safe cell delivery that may result in higher retention with superior therapeutic efficacy are required. In this regard, patch-type scaffolds particularly designed and manufactured by using MEMS and multi-spinning techniques were prepared by our group for cardiovascular applications. Figure 1 represents the *in vivo* images of rabbit heart where the patch with MSCs was applied. A strong fluorescence intensity (Figure 1-A) was found from the patch to the ligated area along the coronary vessels. Interestingly, the MSCs labeled with NEO-STEM transfused the entire of LV wall even after 6 weeks of transplantation (Figure 1-B).



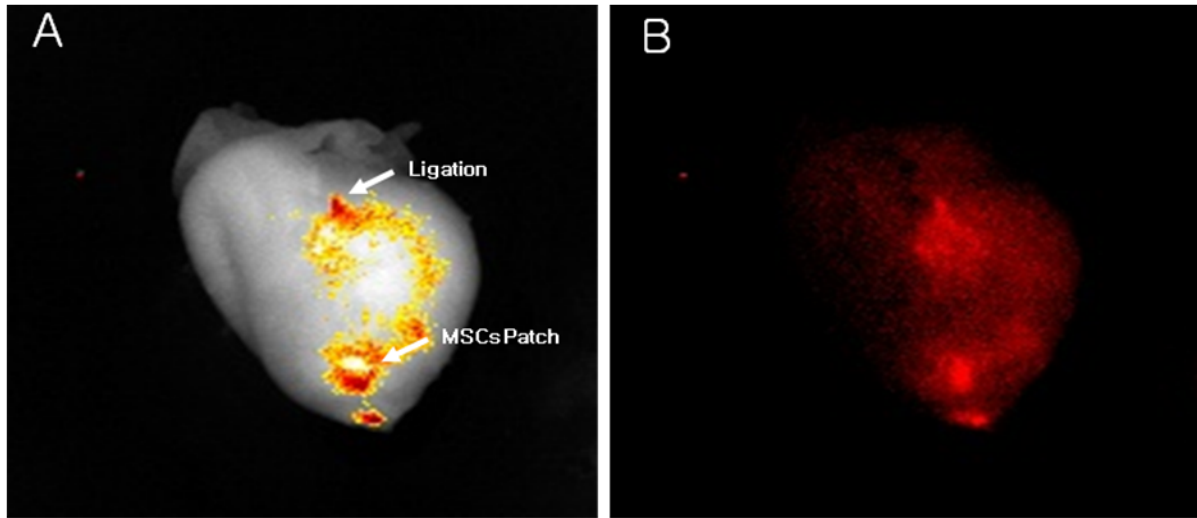
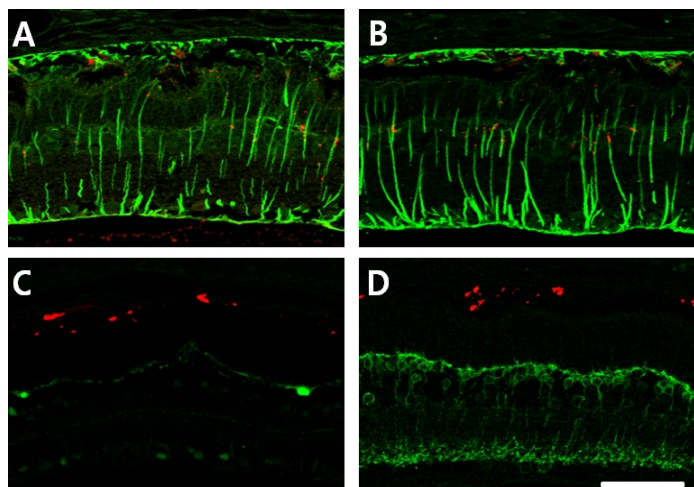


Figure 1. An *in vivo* image of rabbit heart in MI model (deep red filter, excitation 650-797 nm, exposure time 1000 ms). A) fluorescence intensity and B) fluorescence image. MSCs were labeled with NEO-STEM (NIR797).

**The second research group (Collaboration among Catholic University, Dongsung Pharm. Co., LTD, and Korea Institute of Radiological and Medical Sciences): Tissue engineering technology using bone marrow-derived mesenchymal stem cells for curing ischemic retinal diseases**

The retina has been considered as a part of the central nervous system. Neurodegenerative diseases in the retina, such as glaucoma, diabetic retinopathy, and age-related macular degeneration, among others, were classified as incurable just as Alzheimer and Parkinson diseases in the brain. Recently, the stem cell therapy for these incurable neurodegenerative diseases has gained an increasing interest due to a striking investigation, in which pluripotent stem cells were found to be trans-differentiated into neuronal cells. This research group aims to develop tissue engineering technology using bone marrow-derived mesenchymal stem cells for curing ischemic retinal diseases. We combine tissue engineering technology with stem cell therapy to improve specific localization and longevity of the stem cells in the engrafted ischemic retinas using a biodegradable and injectable hyaluronic acid-based hydrogel. Our preliminary results are as follows (Figure 2). Age-related macular degeneration model induced by retinal pigment epithelium degeneration was used in this experiment, and hydrogel-stem cell complex was injected into the potential subretinal space.

Figure 2. Confocal microscopic views of DiI-labeled stem cell (red) application into subretinal space of AMD retinas, processed for double immunofluorescence using GFAP (A & B), calbindin (C), and PKC- $\alpha$  (D) for glial cells and specific neuronal cell population (green). There is no byproduct or artifact evoked by hyaluronic acid-based hydrogel in the retina.



**The third research group (Collaboration among Catholic University, Seoul National University, KBB Co., LTD, and Korea Institute of Science & Technology): Development of bone morphogenic protein for tissue engineering products**

So far, various grafting materials, such as allograft, xenograft, and artificial bone substitute have been used for hard tissue regeneration. However, these materials, due to their acellular characteristics, exhibited some limitations in application. The aim of this group, therefore, has been focused to providing cellular properties to the scaffolds designed to cure the target lesions such as osteomatoid, osteolysis and bone fracture, among others, with the aid of growth factors (Figure 3). We thus developed a vector system that enables massive generation of BMP-2 gene by applying the gene recombination technology. This system transforms animal cells and collects proteins that were massively produced in the cells. Through repeated process of incassation and refinement, target BMP-2 protein was purified from the collected proteins. To the best of our knowledge, we are the first group that has technology and facility for mass production of animal cell-originated BMP-2 in Asia.

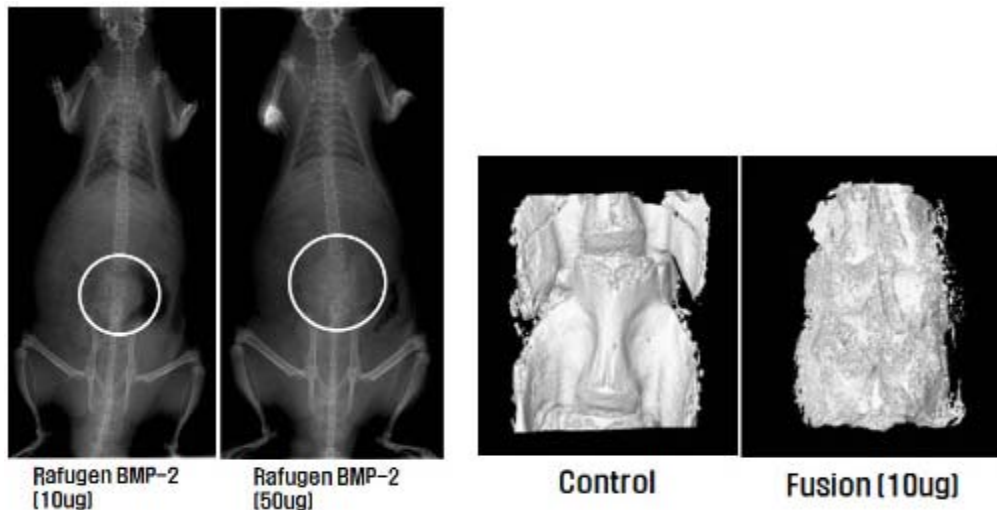


Figure 3. Radiographic and Micro CT findings of growth factor-mediated bone grafting material for rat spinal fusion; concentration of growth factor, BMP2 was 10 ug/ml and 50 ug/ml. The 10 ug/ml-treated group showed 100% spinal fusion rate after 4 weeks implantation.

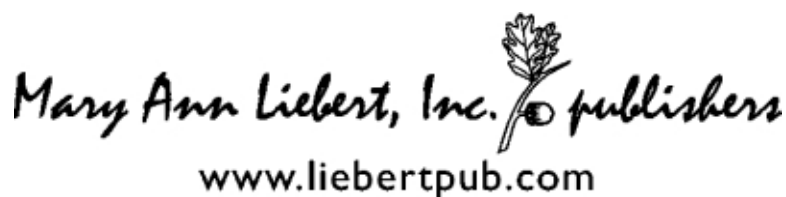


Members of CITE

#### Acknowledgement

We thank the Ministry of Knowledge Economy (MKE) for the long-term financial support.

END...



***Tissue Engineering, Parts, A, B & C***

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***Tissue Engineering, Part A***

Co-Editors: Antonios G. Mikos and Peter C. Johnson

The flagship journal provides a fundamental understanding of structure-function relationships in normal and pathologic tissues with the ultimate goal of developing biological substitutes. The Journal brings together scientific and medical experts in the fields of biomedical engineering, biomaterials science, molecular and cell biology, genetic engineering, and surgery to present and discuss advances in this emerging field.

***Tissue Engineering, Part B, Reviews***

Co-Editors: John P. Fisher, Antonios G. Mikos, and Peter C. Johnson

This journal meets the urgent need for high-quality review papers due to the rapid expansion of the field. The Journal presents critical discussions, analyses, and concise summaries of research in different aspects of the field to assess where we are now and future directions.

***Tissue Engineering, Part C, Methods***

Co-Editors: John A. Jansen, Antonios G. Mikos, and Peter C. Johnson

This journal presents procedures and protocols that will be adopted by the tissue engineering community as the research is translated into clinical applications. Authoritative papers will bring consistency to the research methods employed and help the field grow and mature.

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## Upcoming Conferences Endorsed by TERMIS

### January 2011

- [Expertissues/TERMIS-EU Winterschool 2011](#)  
Winterschool Dates: January 16-19, 2011  
Winterschool Theme: "Preclinical Models and Imaging in Musculoskeletal TE"  
Winterschool Location: Radstadt, Salzburg, Austria  
[Registration Form](#)  
[Registration Information](#)  
[Programm](#)
- [Phacilitate's 7th annual Cell & Gene Therapy Forum](#)  
Conference Dates: 24-26 January 2011  
Conference Location: The Grand Hyatt in Washington, D.C.
- [Stem Cells World Congress 2011](#)  
Conference Dates: January 24-25, 2011  
Conference Location: San Diego, CA

### April 2011

- [2011 Translational Regenerative Medicine Forum](#)  
Meeting Dates: April 6-8, 2011  
Meeting Location: Washington, DC

### May 2011

- [17th Annual ISCT Meeting](#)  
Meeting Dates: May 18-21, 2011  
Meeting Location: De Doelen Conference Centre  
Rotterdam, The Netherlands
- [4th International Conference on Tissue Engineering](#)  
Conference Dates: May 31 - June 5, 2011  
Conference Venue: Minoa Palace Conference Center  
Conference Location: Chania, Crete, Greece

### June 2011

- [TERMIS-EU 2011: Granada, Spain](#)  
Conference Dates: 7-10 June 2011  
Conference Location: Granada Exhibition and Conference Centre  
Conference Chair: Antonio Campos Muñoz, MD, PhD  
To request further information, please send an email to [acampos@ugr.es](mailto:acampos@ugr.es).

### August 2011

- [TERMIS-AP 2011: Singapore](#)  
Conference Dates: 3 - 5 August 2011  
Meeting Chair: Prof. James Goh
- [Rice University Short Course 2011](#)  
Short Course Dates: August 10-13, 2011



Short Course Location: Rice University BioScience Research Collaborative  
Short Course Director: Dr. Antonios G. Mikos

#### **September 2011**

- [ESB 2011](#)  
Conference Dates: 4th-9th September 2011  
Conference Location: Dublin, Ireland  
Dr. Abhay Pandit, Conference Chair

#### **October 2011**

- [bone-tec 2011](#)  
Congress Dates: 12-15 October 2011  
Congress Location: Hannover, Germany  
Congress Chair: Dr. Karl-Heinz Schuckert, Head of Institute Indente

#### **December 2011**

- [TERMIS-NA 2011: Houston, Texas](#)  
Conference Dates: December 4-7, 2011  
Conference Co-Chairs: Antonios Mikos, PhD and Jennifer West, PhD  
Scientific Program Chair: Jennifer West, PhD  
Conference Theme: Scaffolds in Tissue Engineering: Bridging Matrix Biology and Biomaterials Science  
More information to follow.

#### **September 2012**

- [2012 TERMIS World Congress - Vienna, Austria](#)  
Conference Dates: September 5-8, 2012  
Conference Location: Hofburg Congress Center in Vienna, Austria  
Conference Chair: Heinz Redl, PhD  
To request further information, please send an email to [Office@lbitrauma.org](mailto:Office@lbitrauma.org).

#### **June 2013**

- [2013 TERMIS-EU: Istanbul, Turkey](#)  
Conference Dates: June 12-15, 2013  
Conference Location: Istanbul, Turkey  
Conference Chair: Erhan Pişkin

#### **October 2013**

- [2013 TERMIS-AP: P. R. China](#)  
Conference Dates: October 2013  
Conference Chair: Dr. Yilin Cao



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